



Draft General Management Plan / Environmental Assessment



Painted Hills Unit



Clarno Unit



Paleontology Center



Painted Hills Unit



Sheep Rock, Sheep Rock Unit



Palisades, Clarno Unit

Draft
General Management Plan / Environmental Assessment
John Day Fossil Beds National Monument
Grant and Wheeler Counties, Oregon

John Day Fossil Beds National Monument was authorized by an act of Congress on October 26, 1974 (Public Law 94-486). A full legislative history is found in appendix A. The last comprehensive management plan for John Day Fossil Beds National Monument was completed in 1979. Much has changed since then, including the construction of new facilities. As a result, visitor use has changed. Also, resource conditions continue to change and are impacted by visitation. Each of these changes has implications for how visitors access and use John Day Fossil Beds National Monument, how the existing facilities need to be used to support these uses, how resources are managed, and how the National Park Service manages its operations. Consequently, a new general management plan is needed.

This plan examines three alternatives for managing John Day Fossil Beds National Monument for the next 15 to 20 years. It also analyzes the impacts of implementing each of the alternatives. **Alternative A (no action)** consists of the continuation of existing John Day Fossil Beds National Monument management and trends, and serves as the basis for evaluating the other alternatives. In **alternative B (preferred alternative)**, resource protection, research, and visitor opportunities would be the focus of NPS management. Management in **alternative C** would focus on research and the protection and restoration of resources while providing some different visitor facilities than alternative B.

This *Draft General Management Plan / Environmental Assessment* will be released to the public for a 60-day comment period. The National Park Service will determine whether the environmental consequences of the preferred alternative require preparation of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

HOW TO COMMENT ON THIS PLAN

Comments on this Draft General Management Plan/Environmental Assessment (GMP/EA) are welcome and will be accepted for 60 days after its release. During the comment period, comments may be submitted using several methods as noted below.

Online: at <http://parkplanning.nps.gov/joda>

We prefer that readers submit comments online through the park planning website identified above, so the comments become incorporated into the NPS Planning, Environment and Public Comment System. An electronic public comment form is provided through this website.

Mail: John Day Fossil Beds National Monument General Management Plan
National Park Service
Denver Service Center – PDS
P.O. Box 25287
Denver, CO 80225

or

John Day Fossil Beds National Monument Headquarters
32651 Highway 19
Kimberly, OR 97848-9701

Hand delivery: at public meetings to be announced in the media following release of this plan.

Our practice is to make comments, including names, home addresses, home phone numbers, and email addresses of respondents, available for public review. Individual respondents may request that we withhold their names and/or home addresses, etc., but if you wish us to consider withholding this information, you must state this prominently at the beginning of your comments. In addition, you must present a rationale for withholding this information. This rationale must demonstrate that disclosure would constitute a clearly unwarranted invasion of privacy. Unsupported assertions will not meet this burden. In the absence of exceptional, documentable circumstances, this information will be released. We will always make submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety.

SUMMARY

INTRODUCTION

John Day Fossil Beds National Monument, located in east central Oregon in Grant and Wheeler counties, was authorized in 1974 and established in 1975. It encompasses 14,000 acres in the John Day River valley. The monument features sedimentary rocks that contain a plant and animal fossil record spanning 40 million years of the Age of Mammals.

The monument is geographically dispersed over three widely separated units: the Clarno Unit, the Painted Hills Unit, and the Sheep Rock Unit. All three units provide a variety of opportunities for recreation and study and serve to introduce the paleontological story of the much larger basin to the public.

A new management plan for John Day Fossil Beds National Monument is needed because the last comprehensive planning effort for the national monument was completed in 1979 and much has occurred since then. Among the changes that have occurred, private land within the authorized boundary of the Clarno Unit was acquired; a new visitor/paleontology center was built; visitation has increased; monument staff and researchers have learned much more about the significance of the monument's resources; and National Park Service (NPS) staff are now coordinating paleontological research, collection, and curation on all federal lands throughout the John Day Basin. Each of these changes has major implications for the management of the monument.

The approved general management plan will be the basic document for managing John Day Fossil Beds National Monument for the next 15 to 20 years. The purposes of this general management plan are as follows:

- Provide a realistic vision for the monument's future, setting a direction for the monument that considers the

environmental as well as the financial impact of proposed facilities and programs.

- Establish a common management direction for all monument divisions and units.
- Clearly define resource conditions and visitor uses and experiences to be achieved in the monument.
- Provide a framework for monument managers to use when making decisions about how to best protect monument resources, how to provide quality visitor uses and experiences, how to manage visitor use, and what kinds of facilities, if any, to develop in or near the monument.

This planning effort has been designed to ensure that the plan has been developed in consultation with interested stakeholders and adopted by the NPS leadership after an adequate analysis of the benefits, impacts, and economic costs of alternative courses of action.

Legislation establishing the National Park Service as an agency and governing its management provides the fundamental direction for the administration of John Day Fossil Beds National Monument (and other units and programs of the national park system). This general management plan will start with these laws and with the legislation that established John Day Fossil Beds National Monument, and will build on them to create a vision for the monument's future. The general management plan does not describe how particular programs or projects should be prioritized or implemented. Those decisions will be addressed in future more-detailed planning efforts. All future plans will tier from the approved general management plan.

This General Management Plan / Environmental Assessment examines three

SUMMARY

alternatives for managing John Day Fossil Beds National Monument for the next 15 to 20 years. It also analyzes the impacts of implementing each of the alternatives.

The implementation of the approved plan, no matter which alternative, will depend on future NPS funding levels and Servicewide priorities, and on partnership funds, time, and effort. The approval of a GMP does not guarantee that funding and staffing needed to implement the plan will be forthcoming. Full implementation of the plan could be many years in the future.

ALTERNATIVE A, THE NO-ACTION ALTERNATIVE

This alternative would provide a baseline for evaluating changes and impacts in the other alternatives. In the no-action alternative, the National Park Service would continue to manage John Day Fossil Beds National Monument as it has been managed since the approval of the 1979 *General Management Plan*.

The natural resource program would continue to focus on inventorying and monitoring, resource protection and preservation, mitigation, and applied research efforts. The cultural resource program would continue to focus on protecting historic structures and landscapes, particularly in and around the Cant Ranch.

The National Park Service would continue to foster partnerships with other agencies, primarily for resource stewardship, interpretation, and administrative purposes. The education programs would continue to focus primarily on schools and paleontology-focused organizations in the region.

ALTERNATIVE B, THE PREFERRED ALTERNATIVE

In alternative B, management would focus on protecting natural and cultural resources and increasing visitor opportunities with new trails and limited new facilities. In an effort to minimize human impacts within the monument, visitors would be encouraged to use existing designated trails. While many unofficial human-created trails would be eliminated, several throughout the monument would be designated as official trails, with accompanying improvements where needed.

The resource management program would maintain existing research programs and facilities while expanding educational and interpretive activities concerning the environment, paleontology, and geology. The mammal quarry in the Clarno Unit would be opened for research and interpretation.

Monument staff would focus on gaining a greater understanding of the monument's paleontological resources through expanded research. In an effort to expand monument collections, staff would seek more partnerships with other research institutions and museums while expanding the permanent and volunteer research staff at the monument.

The National Park Service would pursue a land exchange with an adjacent private landowner and the Bureau of Land Management around Cathedral Rock in the Sheep Rock Unit. This land exchange, covering about 100 acres, would protect a key geologic feature and important riparian habitat along the John Day River.

ALTERNATIVE C

Management would focus on further expanding visitor opportunities with additional visitor facilities and trails, and improving natural resources through site

restoration. A new visitor contact station/office would be constructed in the Clarno Unit, new restrooms would be constructed at Cant Ranch, and a new picnic facility would be constructed at the paleontology center. Several human-created trails throughout the monument would be designated as official trails, with accompanying improvements where needed. New trails would be constructed in the Clarno and Sheep Rock units.

The Cant Ranch agricultural fields would be restored to native vegetation, and the Leaf Hill Trail in the Painted Hills Unit would be closed and the area revegetated.

The resource management program would maintain existing research programs and facilities while expanding educational and interpretive activities concerning the

environment, paleontology, and geology. The mammal quarry in the Clarno Unit would be opened for research and interpretation.

As in alternative B, NPS managers would focus on gaining a greater understanding of the monument's paleontological resources through expanded research. To expand monument collections, staff would seek more partnerships with other research institutions and museums while expanding the permanent and volunteer research staff at the monument.

As in alternative B, The National Park Service would pursue a land exchange with an adjacent private landowner and the Bureau of Land Management around Cathedral Rock in the Sheep Rock Unit.

A GUIDE TO THIS DOCUMENT

This *Draft General Management Plan / Environmental Assessment* is organized in accordance with the Council on Environmental Quality's implementing regulations for the National Environmental Policy Act, the National Park Service's "Park Planning Program Standards," and Director's Order 12 and Handbook, "Conservation Planning, Environmental Analysis, and Decision Making."

Chapter 1: Introduction sets the framework for the entire document. It describes why the plan is being prepared and what needs it must address. It gives guidance for the management alternatives that are being considered—guidance that is based on the national monument's legislation, its purpose, the significance of its resources, special mandates and administrative commitments, servicewide laws and policies, and other planning efforts in the area.

The chapter also details the planning opportunities and issues that were raised during public scoping meetings and initial planning team efforts; the alternatives in the next chapter address these issues and concerns. This chapter concludes with a statement of the scope of the environmental assessment—specifically what impact topics are or are not analyzed in detail.

Chapter 2: Alternatives, Including the Preferred Alternative, begins by describing the management zones that would be used to manage the national monument in the future. It includes the continuation of current management practices and trends in the national monument (alternative A - no action). Two alternatives for managing the monument, the preferred alternative (alternative B) and alternative C, are next presented. Mitigation measures proposed to minimize or eliminate the impacts of some

proposed actions in the alternatives are described, followed by a discussion of future studies or implementation plans that would be needed. The environmentally preferable alternative is identified next, followed by a discussion of alternatives or actions that were considered but dismissed from detailed evaluation. The chapter concludes with summary tables of the alternatives and the environmental consequences of implementing those alternatives.

Chapter 3: The Affected Environment describes those areas and resources that would be affected by implementing the actions contained in the alternatives. It is organized according to the following topics: natural resources, cultural resources, visitor use and experience, and national monument operations.

Chapter 4: Environmental Consequences analyzes the impacts of implementing the alternatives on topics described in the "Affected Environment" chapter. Methods that were used for assessing the impacts in terms of the intensity, type, and duration of impacts are outlined at the beginning of the chapter.

Chapter 5: Consultation and Coordination describes the history of public and agency coordination during the planning effort, including Native American consultations, and any future compliance requirements. It also lists agencies and organizations that will be receiving copies of the document.

Appendixes, a Glossary, Selected References, and a list of Preparers and Consultants are found at the end of the document.

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Painted Cove, Painted Hills Unit



Painted Hills Unit



Agricultural Fields, Sheep Rock Unit



CHAPTER 1
Introduction

Painted Hills Unit

INTRODUCTION TO THE PLAN

GENERAL MANAGEMENT PLANNING

The National Parks and Recreation Act of 1978 requires each unit of the National Park Service (NPS) to have a general management plan; and NPS *Management Policies 2006* (§2.3.1) states “The Park Service will maintain a general management plan for each unit of the national park system.”

The purpose of a general management plan is to ensure that a national park system unit (park unit) has a clearly defined direction for resource preservation and visitor use that will best achieve the NPS mandate to preserve resources unimpaired for the enjoyment of future generations. In addition, general management planning makes the National Park Service more effective, collaborative, and accountable by

- providing a balance between continuity and adaptability in decision making. This defines the desired conditions to be achieved and maintained in a park unit and provides a touchstone that allows NPS managers and staff to constantly adapt their actions to changing situations while staying focused on what is most important about the park unit.
- analyzing the park unit in relation to its surrounding ecosystem, cultural setting, and community. This helps NPS managers and staff understand how the park unit can interrelate with neighbors and others in ways that are ecologically, socially, and economically sustainable. Decisions made within such a larger context are more likely to be successful over time.
- affording everyone who has a stake in decisions affecting a park unit an opportunity to be involved in the planning process and to influence and understand the decisions that are made. Park units are

often the focus of intense public interest. Public involvement throughout the planning process provides focused opportunities for NPS managers and staff to interact with the public and learn about public concerns, expectations, and values. Public involvement also provides opportunities for NPS managers and staff to share information about the park unit’s purpose and significance, as well as opportunities and constraints for the management of park unit lands.

The ultimate outcome of general management planning for park units is an agreement among the National Park Service, its partners, and the public on why each area is managed as part of the national park system, what resource conditions and visitor experience should exist, and how those conditions can best be achieved and maintained over time.

This *Draft General Management Plan / Environmental Assessment* presents and analyzes alternative future directions for the management and use of John Day Fossil Beds National Monument. General management plans are intended to be long-term documents that establish and articulate a management philosophy and framework for decision making and problem solving in the parks. General management plans usually provide guidance during a 15- to 20-year period.

Actions identified by general management plans or in subsequent implementation plans may be accomplished over time. Budget restrictions, requirements for additional data or regulatory compliance, and competing national park system priorities may preclude implementation of many actions. Major or especially costly actions could be implemented 10 or more years in the future.

BRIEF DESCRIPTION OF THE MONUMENT

The monument, located in east central Oregon in Grant and Wheeler counties, was authorized in 1974 (PL 93-486; see appendix A) and established in 1975. It encompasses 14,000 acres in the John Day River valley.

Eastern Oregon holds many unexpected elements: pine-forested mountains, glades that preserve tall native grasses and wildflowers, deep canyons, trout streams, and small coves of pinnacled badlands. Badlands are steep, barren (non-vegetated) lands that are dissected by many intermittent drainage channels. Intriguing, too, are the area's hidden landscapes — the fossil remains of the jungles, savannas, and woodlands that once flourished here. The 20 square miles of John Day Fossil Beds National Monument feature sedimentary rocks that hold a plant and animal fossil record spanning 40 million years of the Age of Mammals.

Due to the rain shadow effect of the Cascade and Ochoco Mountains to the west, the area has a semi-arid climate. Elevations range between 2,000 and 4,500 feet above sea level. Average annual precipitation is approximately 14 inches, with much of that coming in the spring as rainfall. The area receives little snowfall at the lower elevations.

Numerous creeks in the area flow into the John Day River, which is a major tributary of the Columbia River and the longest undammed river that flows into the Columbia River today. The natural erosion processes associated with the area's waterways have created features that have exposed the monument's vast fossil record.

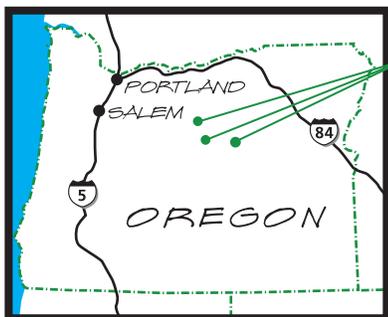
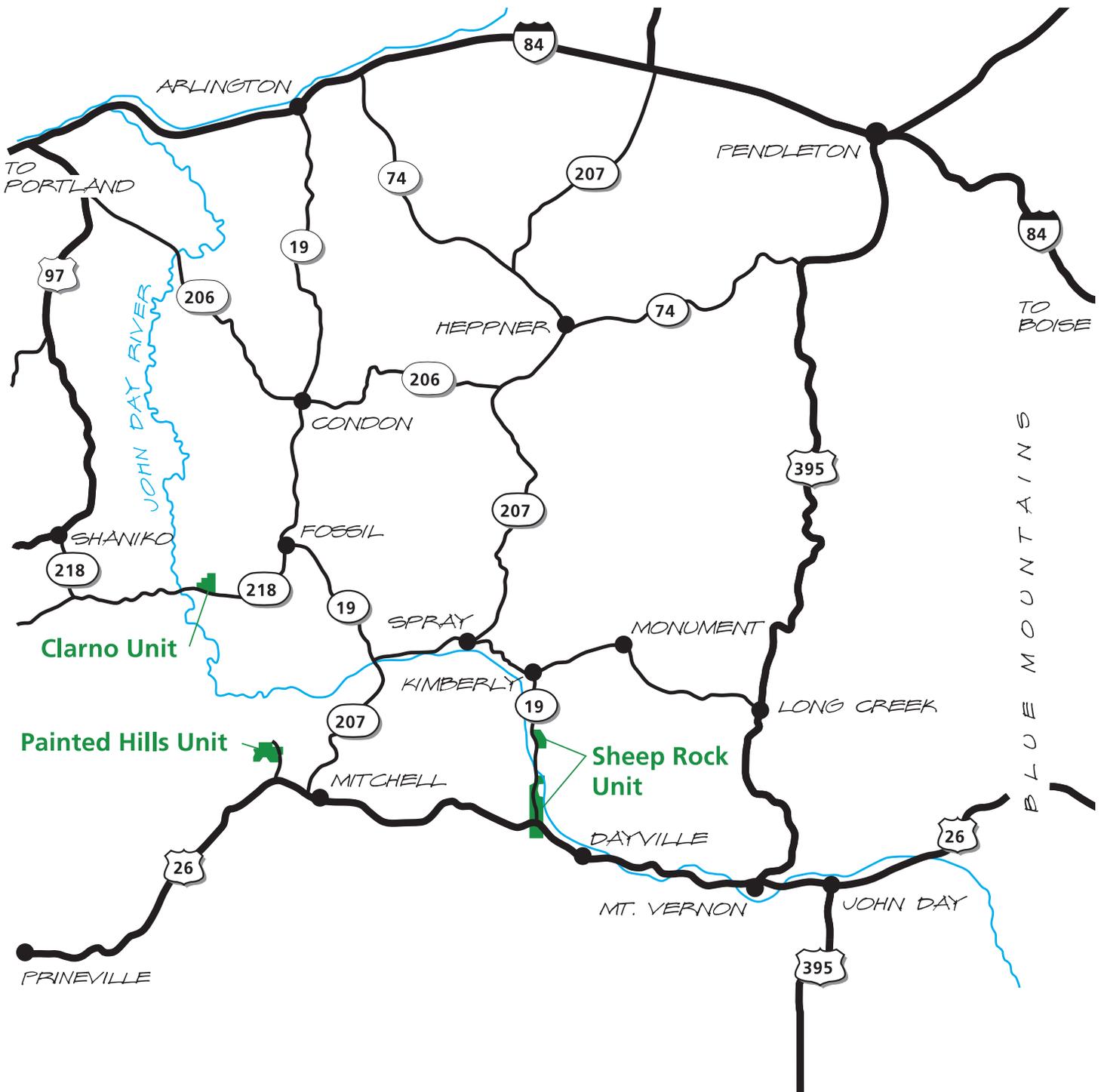
The monument is geographically dispersed over three widely separated units: the Clarno Unit, the Painted Hills Unit, and the Sheep Rock Unit (see figure 1). All three units provide a variety of opportunities for recreation and study.

The Clarno Unit is located 18 miles southwest of the town of Fossil on State Highway 218. It contains 1,969 acres and includes trails and a picnic area. The most prominent natural feature is the towering Clarno Palisades, which are a series of sharp cliffs up to 150 feet high formed from a series of prehistoric volcanic mud flows. The Hancock Field Station, owned and operated by the Oregon Museum of Science and Industry, is located on private land within the Clarno Unit.

The Painted Hills Unit is located 9 miles northwest of the town of Mitchell. It contains 3,129 acres and includes trails, a scenic overlook, a picnic area, and informational exhibits. The most prominent natural feature is a series of multi-colored hills and ridges derived from exposed paleosols.

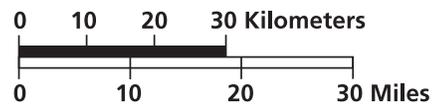
The Sheep Rock Unit contains three parcels of land (totaling 8,916 acres) situated along State Highway 19 northwest of Dayville. This unit contains the Thomas Condon Paleontology Center, the 200-acre James Cant Ranch Historic District, trails, picnic areas, scenic overlooks, and informational exhibits. Prominent natural features include Picture Gorge, Sheep Rock, Goose Rock, Blue Basin, and Cathedral Rock. The unit is bisected by the John Day River.

Visitation to the monument has averaged about 110,000 visits per year, with a high of 134,710 in 1989 and a low of 74,800 in 1976. Visitation in 2006 was just under 120,000 (NPS 2006).



Inset

**John Day
Fossil Beds**



**Figure 1
Vicinity**

John Day Fossil Beds National Monument

U.S. Department of the Interior / National Park Service

DSC • Feb 08 • 177 • 20045

PURPOSE OF AND NEED FOR THE PLAN

Purpose of the Plan

The approved *General Management Plan* will be the basic document for managing John Day Fossil Beds National Monument for the next 15 to 20 years. The purposes of this management plan are as follows:

- provide a realistic vision for the monument's future, setting a direction for the monument that considers the environmental as well as the financial impact of proposed facilities and programs.
- establish a common management direction for all monument divisions and units.
- clearly define resource conditions and visitor uses and experiences to be achieved in the monument.
- provide a framework for monument managers to use when making decisions about how to best protect monument resources, how to provide quality visitor uses and experiences, how to manage visitor use, and what kinds of facilities, if any, to develop in or near the monument.
- ensure that this foundation for decision making has been developed in consultation with interested stakeholders and adopted by the NPS leadership after an adequate analysis of the benefits, impacts, and economic costs of alternative courses of action.

Legislation establishing the National Park Service as an agency and governing its management provides the fundamental direction for the administration of John Day Fossil Beds National Monument (and other units and programs of the national park system). This *General Management Plan* started with these laws, and the legislation that established John Day Fossil Beds National Monument, and built on them to create a vision for the monument's future. The management plan does not describe how particular programs or projects should be prioritized or

implemented. Those decisions will be addressed in future detailed planning efforts.

Need For the Plan

A new management plan for John Day Fossil Beds National Monument is needed because the last comprehensive planning effort for the national monument was completed in 1979 and much has occurred since then. In 1999, 1,000 acres of private land within the authorized boundary of the Clarno Unit were acquired, and a new visitor/paleontology center was recently constructed. In addition, since 1979 visitation has increased, monument staff and researchers have learned much more about the significance of the monument's resources, and NPS staff are now coordinating paleontological research, collection, and curation on all federal lands throughout the John Day Basin. Each of these changes has major implications for how visitors access and use the monument and the facilities needed to support those uses, how resources are managed, and how the National Park Service manages its operations. Furthermore, most of the issues and action items identified in the 1979 plan have been addressed or completed, so a new plan is needed.

THE NEXT STEPS

After the distribution of The *General Management Plan / Environmental Assessment* there will be a 60-day public review and comment period after which the NPS planning team will evaluate comments from other federal agencies, tribes, organizations, businesses, and individuals regarding the draft plan. If no significant environmental impacts are identified and no major changes are made in the alternatives, then a Finding of No Significant Impact (FONSI) can be made and approved by the Pacific West Regional Director. Following a 30-day waiting period, the plan can then be implemented.

IMPLEMENTATION OF THE PLAN

The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan* could be many years in the future.

The implementation of the approved plan also could be affected by other factors, such as changes in NPS staffing, visitor use patterns, and unanticipated environmental changes. Once the *General Management Plan* has been approved, additional feasibility studies and more detailed planning, environmental documentation, and consultations would be completed, as appropriate, before certain preferred alternatives can be carried out. For example,

- additional environmental documentation may need to be completed
- appropriate permits may need to be obtained before implementing actions
- appropriate federal and state agencies would need to be consulted concerning actions that could affect threatened and endangered species
- Native American tribes and the State Historic Preservation Officer would need to be consulted, as appropriate, on actions that could affect cultural resources

Future program and implementation plans, describing specific actions that managers intend to undertake and accomplish in the monument, will tier from the desired conditions and long-term goals set forth in this general management plan.

GUIDANCE FOR THE PLANNING EFFORT

PURPOSE AND SIGNIFICANCE

Purpose

Purpose statements are based on the monument's legislation and legislative history and NPS policies. The statements reaffirm the reasons for which the John Day Fossil Beds National Monument was set aside as a unit of the national park system and provide the foundation for its management and use.

The purpose of John Day Fossil Beds National Monument is

to preserve, and provide for the scientific and public understanding of the paleontological resources of the John Day region, and the natural, scenic, and cultural resources within the boundaries of the national monument.

Significance

Significance statements capture the essence of the monument's importance to our country's natural and cultural heritage. Significance statements do not inventory monument resources; rather, they describe the monument's distinctiveness and help to place the monument within a regional, national, and international context. Significance statements answer questions such as "Why are John Day Fossil Beds National Monument's resources distinctive?" and "What do they contribute to our natural or cultural heritage?" Defining the monument's significance helps managers make decisions that preserve the resources and values necessary to accomplish the monument's purpose.

For John Day Fossil Beds National Monument, primary and other significance

statements were created to better articulate the relative significance of the monument's resources. Elements of primary significance are most important: they include the essential components of why the monument was established. Elements of other significance contribute to and complement the primary elements and help the National Park Service fulfill its mission of resource preservation and public enjoyment. Both are important and together support the purpose of the monument.

The significance statements are as follows:

Primary Significance

- The John Day region contains one of the longest and most continuous Tertiary records of evolutionary change and biotic relationships in the world; this outstanding fossil record heightens our understanding of earth history. John Day Fossil Beds National Monument contains a concentration of localities that are a major part of that record.
- The John Day region is one of the few areas on the planet with numerous well-preserved and ecologically diverse fossil biotas that are entombed in sedimentary layers and are found in close proximity with datable volcanic rocks; these biotas span intervals of dramatic worldwide paleoclimatic change.

Other Significance

- John Day Fossil Beds National Monument contains regionally representative scenic, natural and cultural landscapes—notably, the James Cant Ranch Historic District, which represents the history of sheep ranching in the region.

FUNDAMENTAL RESOURCES AND VALUES

Fundamental resources and values are systems, processes, features, visitor experiences, stories, scenes, etc. that warrant special consideration during planning and management because they are critical to achieving the monument's purpose and maintaining its significance.

Fundamental and other important resources and values, which are linked directly to the significance statements, are as follows.

Fundamental Resources and Values

- John Day Fossil Beds National Monument contains important geological formations that contain fossil-bearing sedimentary strata, fossil soils, and numerous datable volcanic rock layers. Special paleontological resources include vertebrate, botanical, and invertebrate fossils; conformable layers of rocks (strata); fossil localities; datable ash layers; and identified paleosol units.
- The paleontology museum, archives, databases, and library collections at John Day Fossil Beds National Monument allow scientists to conduct important paleontological research on the history of life on planet Earth during the past 40 million years.

Other Important Resources and Values

- The colorful and diverse landscape presents scenic and educational features and vistas. Examples of these scenic resources are found in Sheep Rock, Painted Hills, Cathedral Rock, Picture Gorge, Blue Basin, Foree, and the Clarno Palisades.
- The ecosystem of the monument contains examples of protected, regionally representative, native plant and animal species.
- The John Day River and its tributaries are valued resources for
 - their position and integrity within the Columbia River system

- habitat for threatened and endangered species
- free flowing water important to anadromous fish
- recreation
- water quality and quantity
- fisheries
- important hydrological resources within the near desert ecosystem
- tribal interest in traditional use
- riparian area habitat
- Archeological sites and pictographs, especially those in Picture Gorge, are valued for their association with and representation of the cultural heritage of American Indians and others.
- The James Cant Ranch Historic District, listed on the National Register of Historic Places, contains irrigated bottomlands, corrals, buildings, and landscape characteristics within the Sheep Rock Unit. It is valued for its intact cultural landscape that represents ranching history.

INTERPRETIVE THEMES

Interpretive themes are the key stories, concepts, and ideas of the monument. They form the basis that NPS staff will use for educating visitors about the monument and for inspiring visitors to care for and about the monument's resources. Using these themes, visitors can form intellectual and emotional connections with monument resources and experiences.

Interpretive themes are based on the monument's purpose and significance, and fundamental and other important resources and values. Primary and secondary interpretive themes have been developed.

Primary Interpretive Themes

- At John Day Fossil Beds National Monument
 - there are great numbers of fossils

- there is a great diversity of fossils
- the fossils are very well preserved
- the fossils represent an unusually long time span
- the fossils are datable

Thus, it is a wonderful place to study earth history.

- The large sequence of fossil biotas and paleosols in the John Day region shows us that climate and life are intrinsically linked and continually changing.
- There are multiple, well-preserved fossil assemblages in the John Day region that represent over 40 million years of the earth's history and may be dated with great accuracy.

Secondary Interpretive Theme

- The landscape and people of the John Day region have been shaped by many factors; a major influence was sheep ranching, which was economically very important to the John Day region in the early 20th century.

SPECIAL MANDATES AND ADMINISTRATIVE COMMITMENTS

Special mandates and administrative commitments refer to monument-specific requirements. These formal agreements are often established concurrently with the creation of a unit of the national park system. The legislative and administrative constraints for John Day Fossil Beds National Monument include the following.

Lands

PL 93-486, passed on October 26, 1974, contained a provision that limited acquisition of privately owned lands to a total of 1,000 acres. However, PL 95-625, which was passed on November 10, 1978, amended the 1974 Act by deleting that provision. Therefore, currently there is no limitation on the amount of privately owned lands within the boundary of the monument that could be acquired.

Visitor Center

PL 93-486 contained a requirement that “the principal visitor center shall be designated as the ‘Thomas Condon Visitor Center.’” The visitor center was completed in 2004 and was named the Thomas Condon Paleontology Center.

Access Easement

According to the final judgment issued by Circuit Judge J.A. Campbell in Case No. 2250, an easement must be reserved for the purposes of transporting cattle and equipment across monument lands in the Painted Hills Unit. The reservation applies to the west half of Section 36, T10S, R20E (except the SW quarter of the SW portion of said Section) and along County Road No. 538 for a distance of 60 feet on each side of the road centerline.

Hancock Field Station

The Hancock Field Station is located on a 10-acre parcel of private land within the Clarno Unit. The land and facilities are owned by the Oregon Museum of Science and Industry (OMSI) and are used for research and educational purposes. A formal agreement (General Agreement No. G9325070006) between the museum and the National Park Service was executed on May 5, 2007 and is effective for five years beginning June 1, 2007. The agreement authorizes certain OMSI activities on monument lands, provides for access to the Hancock Field Station across monument lands, and addresses the provision of potable water to the field station by the National Park Service. The agreement also includes a Permit of Right-of-Way (RW9325-91-001A1) that allows the museum to maintain existing water lines across monument lands. This permit was originally issued on June 12, 1991, and renewed ten years later. It will expire on June 12, 2011.

Federal Interagency Agreements

The National Park Service has a 2006 interagency agreement with the Bureau of Land Management and the U.S. Forest

Service that provides for NPS staff to conduct inventories on lands administered by these agencies in the John Day Basin, and to store their fossils in the monument's repository.

AMERICAN INDIAN RELATIONS

The monument staff enjoys good relations with its traditionally associated American Indian neighbors: the Burns Paiute Tribe, the Umatilla Confederated Tribes, and the Warm Springs Confederated Tribes. These three American Indian governments have legal and cultural interests that may require special consideration in monument management.

The Burns Paiute Tribe has an interest in the three units of the monument because the units are within the aboriginal territory of the Northern Paiute people of which the tribe is a part (Zucker, Hummel, and Hogfoss 1987).

The *Treaty with the Wallawalla, Cayuse, et cetera, 1855* established the Umatilla Indian reservation and delineated certain ceded lands. The monument is not located within the ceded lands of the present-day Confederated Tribes of the Umatilla; however, they do have interests in central Oregon as these lands were where ancestors of certain constituent groups traveled from time to time (Mark 1996; Zucker, Hummel, and Hogfoss 1987).

The *Treaty with the Tribes of Middle Oregon, 1855* established the Warm Springs Reservation and delineated certain ceded lands. The three units of the monument are located within those ceded lands of the present-day Confederated Tribes of the Warm Springs (Mark 1996; Zucker, Hummel, and Hogfoss 1987).

The two treaties mentioned above reserved the right for American Indians, on ceded lands off of each reservation, to continue certain subsistence activities, including “the

privilege of hunting, gathering roots and berries, and pasturing their stock on unclaimed lands, in common with [United States] citizens.” The treaties also reserved, off the reservation and outside the ceded lands, an exclusive right for American Indians “to take fish in the streams running through and bordering said reservation ...and at all other usual and accustomed stations in common with citizens of the United States, and of erecting suitable buildings for curing the same.”

The National Park Service recognizes the validity of existing treaty rights. The monument staff is committed to consulting with tribal governments on issues of concern and maintaining positive relations.

SERVICEWIDE LAWS AND POLICIES

This section identifies what must be done at John Day Fossil Beds National Monument to comply with federal laws and policies of the National Park Service. Many monument management directives are specified in laws and policies guiding the National Park Service and therefore are not subject to alternative approaches. For example, there are laws and policies about managing environmental quality, such as the Clean Air Act, the Endangered Species Act, and Executive Order 11990, “Protection of Wetlands”; laws governing the preservation of cultural resources and cultural values, such as the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act; and laws about providing public services, such as the Americans with Disabilities Act—to name only a few. In other words, a general management plan is not needed to decide, for instance, that it is appropriate to protect endangered species, control nonnative species, protect archeological sites, conserve artifacts, or provide for universal access—laws and policies already require the National Park Service to fulfill these mandates. The National Park Service would continue to strive to implement these

requirements with or without a new general management plan.

Some laws and executive orders are applicable solely or primarily to units of the national park system. These include the 1916 Organic Act that created the National Park Service; the General Authorities Act of 1970; the National Parks and Recreation Act of 1978, relating to the management of the national park system; and the National Parks Omnibus Management Act (1998). Other laws and executive orders, such as those addressing environmental quality, have much broader application.

The NPS Organic Act (16 USC § 1) provides the fundamental management direction for all units of the national park system:

[P]romote and regulate the use of the Federal areas known as national parks, monuments, and reservations...by such means and measure as conform to the fundamental purpose of said parks, monuments and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

The National Park System General Authorities Act (16 USC § 1a-1 et seq.) affirms that while all national park system units remain “distinct in character,” they are “united through their interrelated purposes and resources into one national park system as cumulative expressions of a single national heritage.” The act makes it clear that the NPS Organic Act and other protective mandates apply equally to all units of the system. Further, amendments state that NPS management of park units should not “derogat[e]...the purposes and values for which these various areas have been established.”

The National Park Service also has established policies for all units under its

stewardship. These are identified and explained in a guidance manual entitled *NPS Management Policies 2006*. The alternatives considered in this document incorporate and comply with the provisions of these mandates and policies.

To truly understand the implications of an alternative in this *General Management Plan/ Environmental Assessment*, it is important to combine the servicewide laws and policies with the management actions described in an alternative.

Table 1 shows some of the most pertinent servicewide laws and policy topics related to planning and managing John Day Fossil Beds National Monument. For each topic there are a series of desired conditions that the NPS staff is striving to achieve for that topic. Thus the table is written in the present tense. In addition, the table cites the law or policy behind these desired conditions, and gives examples of the types of actions being pursued by NPS staff. The alternatives in this *General Management Plan / Environmental Assessment* address the desired future conditions that are not mandated by law and policy and must be determined through a planning process.

WILDERNESS ELIGIBILITY

The Wilderness Act and *NPS Management Policies 2006* (§6.2.1, NPS 2006) require that all lands administered by the National Park Service be evaluated for their eligibility for inclusion within the national wilderness preservation system.

Portions of John Day Fossil Beds National Monument in the Sheep Rock and Painted Hills units meet most of the criteria for wilderness designation, but do not meet the size criterion: standing on their own, these areas are not big enough to provide visitors with opportunities for solitude or primitive and unconfined recreation. They are smaller in size than the areas envisioned to be designated as wilderness under the Wilderness Act. However, these lands also

are adjacent to unroaded Bureau of Land Management (BLM) lands that also may be suitable for wilderness designation, although the Bureau of Land Management has not recently evaluated these lands. Recognizing the wilderness characteristics of the NPS lands, the lands have been included in management zones (i.e., primitive and

backcountry zones) in the alternatives that would continue to protect these areas' existing wilderness qualities. No actions are being proposed in the alternatives that would be inconsistent with or jeopardize possible future designation of the areas, in combination with the adjacent BLM lands, as wilderness.

Table 1: Servicewide Laws and Policies Pertaining to John Day Fossil Beds National Monument

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Relations with Private and Public Organizations, Owners of Adjacent Land, and Governmental Agencies</p>	<p>The NPS <i>Management Policies 2006</i> (§1.6) stresses the need for cooperative conservation beyond park boundaries. This is necessary in order for the National Park Service to fulfill its mandate to preserve the natural and cultural resources unimpaired for future generations. Local and regional cooperation may involve other federal agencies, tribal, state, and local governments, neighboring landowners, and nongovernmental and private sector organizations.</p> <p>The Bureau of Land Management administers public lands that are adjacent to all three units of the monument. Private landowners also have lands adjacent to the units.</p> <p>Desired Conditions: John Day Fossil Beds National Monument is managed as part of a greater ecological, social, economic, and cultural system.</p> <p>Good relations are maintained with adjacent landowners, such as the Bureau of Land Management, surrounding communities, and private and public groups that affect, and are affected by, the monument. The monument is managed proactively to resolve external issues and concerns and ensure that monument values are not compromised.</p> <p>Because the monument is an integral part of a larger regional environment, the National Park Service works cooperatively with others to anticipate, avoid, and resolve potential conflicts, protect national monument resources, and address mutual interests in the quality of life for community residents. Regional cooperation involves federal, state, and local agencies, American Indian tribes, neighboring landowners, and all other concerned parties.</p> <p>Strategies: NPS staff would continue to establish and foster partnerships with public and private organizations to achieve the purposes and missions of John Day Fossil Beds National Monument. Partnerships would continue to be sought for resource protection, research, education, and visitor enjoyment purposes.</p> <p>To foster a spirit of cooperation with neighbors and encourage compatible adjacent land uses, NPS staff would continue to keep landowners, land managers, local governments, and the public informed about management activities. Periodic consultations would continue with landowners who might be affected by visitors and management actions. NPS staff would continue to respond promptly to conflicts that arise over NPS activities, visitor access, and proposed activities and developments on adjacent lands that could affect John Day Fossil Beds National Monument. NPS staff</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Relations with Private and Public Organizations, Owners of Adjacent Land, and Governmental Agencies (continued)</p>	<p>may provide technical and management assistance to landowners to address issues of mutual interest.</p> <p>NPS staff would continue to work closely with adjacent landowners, local, state, and federal agencies, and tribal governments whose programs affect, or are affected by, activities in John Day Fossil Beds National Monument. NPS managers would continue to pursue cooperative regional planning whenever possible to integrate the monument into issues of regional concern.</p>
<p>Government-to-Government Relations with American Indian Tribes</p>	<p>The Presidential Memorandum of April 29, 1994, Executive Order 13175, and Executive Order 13007 (Indian Sacred Sites), a variety of federal statutes (e.g., National Historic Preservation Act), and NPS <i>Management Policies 2006</i> (§1.11.1) call for the National Park Service to maintain a government-to-government relationship with federally recognized tribal governments.</p> <p>The Confederated Tribes of the Warm Springs Reservation are affiliated with John Day Fossil Beds National Monument as are the Burns Paiute Tribe and the Umatilla Confederated Tribes.</p> <p>Desired Conditions: The National Park Service and tribes culturally affiliated with the monument maintain positive, productive, government-to-government relationships. Monument managers and staff respect the viewpoints and needs of the tribes, continue to promptly address conflicts that occur, and consider American Indian values in monument management and operation.</p> <p>Strategies: NPS staff would continue to meet and communicate with tribal officials to identify problems and issues of mutual concern and interest, and work together to take actions to address these concerns.</p> <p>Tribal officials would continue to be kept informed of planning and other actions in John Day Fossil Beds National Monument that could affect the tribes.</p> <p>When appropriate, NPS staff would provide technical assistance to the tribes, including sharing information and resources, to address problems and issues of mutual concern.</p> <p>NPS staff would continue to recognize the past and present existence of native peoples in the region and the traces of their land use and occupation as an important part of the cultural environment to be researched, preserved, and interpreted, if appropriate.</p> <p>NPS staff would consult with the tribes traditionally associated with the monument, including the Burns Paiute Tribe, the Umatilla Confederated Tribes, and the Warm Springs Confederated Tribes, to develop and accomplish the programs of John Day Fossil Beds National Monument in a way that respects the beliefs, traditions, and other cultural values of the tribes with ties to monument lands.</p> <p>NPS staff would accommodate access to traditionally used areas, once identified through further consultation and research, in ways consistent with monument purposes and American Indian values, and that avoid adversely affecting the physical integrity of such sites and resources.</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Government-to-Government Relations between American Indian Tribes (continued)</p>	<p>NPS staff would conduct appropriate ethnographic, ethnohistorical, or cultural anthropological research in conjunction with, and in cooperation with, American Indian tribes traditionally associated with the monument and cooperate as appropriate in light of law and policy with any continuation of subsistence activities.</p>
<p>Relations with Nearby Communities (e.g., Fossil, John Day, Dayville, Mitchell)</p>	<p>As noted earlier, the <i>NPS Management Policies 2006</i> (§1.6) stresses the need for cooperative conservation beyond park boundaries. The cooperation includes working with nearby communities.</p> <p>Desired Conditions: NPS staff maintain close working relationships with nearby communities. NPS staff and local officials maintain a high level of trust and goodwill. Local officials feel they have an important stake in the monument, and NPS staff feel they have an important stake in the local communities. NPS managers are familiar with local issues and concerns.</p> <p>Strategies: NPS staff would communicate and meet with local officials to identify problems and concerns facing the communities and the monument, and actions that can be taken to address these problems and concerns.</p> <p>Local officials would be kept informed of planning and other actions in the monument that could affect the communities. NPS staff would continue to work with local law enforcement, emergency services, and community education programs, as appropriate.</p> <p>When appropriate, the NPS staff would provide technical and management assistance to local communities, including sharing information and resources, to address problems and issues of mutual interest; such as the spread of nonnative, invasive species. NPS staff would continue to be involved in community-based efforts.</p>
<p>Relations with the Hancock Field Station</p>	<p>The Oregon Museum of Science and Industry (OMSI) has operated the Hancock Field Station for over 50 years—from a time well before the establishment of the monument. It is on 10 acres of land within the Clarno Unit. The field station consists of 30 structures, including cabins, restrooms, a dining hall, and laboratories/classrooms. The field station is open to students for nine months of the year. On average, 3,000 students annually attend sessions, taking classes on a variety of subjects, such as paleontology, geology, botany, archeology, and astronomy.</p> <p>Desired Conditions: The National Park Service continues to maintain its partnership with the Hancock Field Station, working together to achieve the field station’s education mission while also preserving and protecting the monument’s resources and values. The field station plays an important role in achieving conservation goals in the monument, and provides valuable assistance to monument staff through educational programs, resource restoration, and scientific research. Field station staff and participants connect with the monument, appreciate and respect its resources, and commit themselves to long-term stewardship.</p> <p>Strategies: NPS staff would continue to periodically meet with field station staff to address opportunities and issues of mutual interest (e.g., trail access in the Clarno Unit). The National Park Service would continue to provide water to the field station.</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Relations with the Hancock Field Station (continued)</p>	<p>The field station would make significant efforts to minimize its water use through low-flush toilets, low-flow showerheads, and xeriscaping.</p> <p>The field station would work with NPS staff to restore areas that have been disturbed in the past by people.</p> <p>The field station and NPS staff would continue to share information regarding research and inventory work. Field station participants work with researchers in the monument, as appropriate.</p>
<p>Natural Resources</p>	
<p>Paleontological Resources</p>	<p>John Day Fossil Beds National Monument is world renowned for its fossil resources. This remarkably complete record spans more than 40 of the 65 million years of the Cenozoic Era (the "Age of Mammals and Flowering Plants"). Research has been active in the monument since the 1860s, and continues today.</p> <p>The National Park Service Organic Act (16 USC 1-4) and 36 <i>Code of Federal Regulations</i> §2.1 generally apply to the protection of all resources in park units. NPS <i>Management Policies 2006</i> (§4.8.2) and the NPS "Reference Manual 77: Natural Resource Management" provide direction for the protection and management of paleontological resources in park units. The National Park Service also has a 2006 interagency agreement with the Bureau of Land Management and U.S. Forest Service to conduct inventories on lands they manage in the John Day Basin and store those fossils in the NPS collections.</p> <p>Desired Conditions: John Day Fossil Beds National Monument's paleontological resources, including both organic and mineralized remains in body or trace form, are protected, preserved in situ, when appropriate, or are collected and stored by taxonomic group in museums. Opportunities continue to be provided for public education, interpretation, and scientific research. Federal and other landowners in the John Day Basin also are encouraged to protect and preserve fossils. Protection may include construction of shelters over specimens, stabilization in the field, or collection, preparation, and placement of specimens in museum collection. The monument is systematically monitored for newly exposed fossils. Fossil localities and associated geologic data are adequately documented when specimens are collected. Impacts to paleontological resources from human activities, including construction of facilities and illegal collecting, are minimized.</p> <p>General Strategies: A paleontological research plan that directs future research efforts has been developed and is updated as needed.</p> <p>Paleontological resources in the monument would continue to be inventoried and assessed to determine their extent and scientific significance, and to ensure that these nonrenewable resources are not lost. Fossils collected would be managed in accordance with the monument's collection management plan. Cyclic prospecting would be relied on, whereby areas of high erosion that also have high potential for significant specimens, are periodically examined for new sites. The periodicity of cyclic prospecting would depend on the abundance of fossils and the rate of erosion. Fossil localities and associated geologic data would be documented when specimens are collected. Paleontological resource stability indicators, covering such elements as rates of erosion and human activity, would be developed and monitored to establish vital signs and assess the conditions for fossil resources. Because these elements vary widely depending on the nature of the strata, specific stability measures need to be developed for each locality and stratigraphic occurrence.</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Paleontological Resources (continued)</p>	<p>A variety of methods would be followed to protect resources, such as data recording, stabilization in the field, collection, preparation, and placement of specimens in a museum collection, or construction of shelters over specimens. Paleontological resources would be managed and studied in their geologic context, which provides information about the ancient environment.</p> <p>NPS staff would be a partner with other federal, tribal, state, and local agencies, and academic institutions to conduct paleontological research both in the monument and in the greater John Day River Basin. Researchers with the academic community would continue to be encouraged to conduct paleontological research in the John Day Basin. NPS staff would continue to coordinate scientific research and fossil identification, preparation, and curation on all federal lands in the John Day River Basin. The NPS staff would continue to expand opportunities for researchers to use the monument’s fossil collection to further paleontological knowledge.</p> <p>All areas with potential paleontological resources in the monument would be surveyed prior to construction of new facilities. If destructive and preventable erosion occurs or ground disturbing activities, such as construction of new trails, are proposed in areas with potential paleontological resources, a qualified paleontologist would survey the areas for paleontological resources, evaluate their significance, and specify whether data recording, stabilization, or specimen collection is necessary. New facilities would be avoided on areas that may yield fossils, or if necessary, the resource may be collected prior to the initiation of construction.</p> <p>All areas that are not zoned for public use would continue to be closed to public use and entry. However, some guided public hikes may be permitted in closed areas.</p> <p>Management actions would be taken to prevent illegal collecting and may be taken to prevent damage from natural processes such as erosion. If important sites or areas are discovered they would be patrolled to prevent theft and vandalism. Paleontological resources along high use trails would be monitored and actions taken to reduce impacts.</p> <p>The NPS staff would exchange casts of fossils only with other qualified museums and public institutions dedicated to the preservation and interpretation of natural heritage.</p> <p>Interpretive and educational programs would continue to be developed to educate visitors and the public about paleontology. Fossils would be prepared, exhibited, and stored according to NPS museum standards. Fossils from the greater John Day River Basin would continue to be stored at the Thomas Condon Paleontology Center.</p> <p>NPS staff would work with the Hancock Field Station staff, teachers and students to conduct programs on paleontological resources and ensure that their activities are consistent with NPS management policies and standards and the field station’s general agreement with the National Park Service. Hancock staff may also assist the NPS staff in monitoring the area for potential impacts. Combining a resource protection and stewardship message with resource monitoring would help limit potential adverse impacts to paleontological resources.</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Ecosystem Management</p>	<p>NPS <i>Management Policies 2006</i> (§1.6, 4.1, 4.1.4, 4.4.1) provides general direction for managing park units from an ecosystem perspective.</p> <p>Desired Conditions: John Day Fossil Beds National Monument is managed holistically, as part of a greater ecological, social, economic, and cultural system. The National Park Service demonstrates leadership in resource stewardship and conservation of ecosystem values within and outside the monument. John Day Fossil Beds National Monument is managed from an ecosystem perspective, where internal and external factors affecting visitor use, environmental quality, and resource stewardship goals are considered at a scale appropriate to their impact on affected resources. Natural processes, ecosystem dynamics, and population fluctuations occur with as little human intervention as possible. Monument resources and visitors are managed considering the ecological and social conditions of John Day Fossil Beds National Monument and the surrounding area. NPS managers adapt to changing ecological and social conditions within and outside the monument and continue as partners in regional planning and land and water management. The monument is managed proactively to resolve external issues and concerns to ensure that John Day Fossil Beds National Monument’s values are not compromised.</p> <p>Strategies: NPS staff would continue to participate in and encourage ongoing partnerships with local, state, and federal agencies; educational institutions; and other organizations in programs that have importance within and beyond the monument’s boundaries. Cooperative agreements, partnerships, and other arrangements can be used to set an example in resource conservation and innovation, and to facilitate research related to recreation area resources and their management. Partnerships important to the long-term viability of natural and cultural resources include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • inventorying, monitoring, and managing terrestrial resources with the Oregon Department of Fish and Wildlife, Oregon Natural Heritage Program, U.S. Geological Survey (USGS), U.S. Fish and Wildlife Service, Bureau of Land Management, U.S. Forest Service, Bonneville Power Administration, Warm Springs Indian Tribes, and the Hancock Field Station • monitoring, enforcing regulations, and managing aquatic resources with the Oregon Department of Fish and Wildlife, U.S. Geological Survey, U.S. Fish and Wildlife Service, and National Marine Fisheries Service • monitoring and managing federally threatened and endangered species with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, Bureau of Land Management, Oregon Department of Fish and Game, and Oregon Natural Heritage Program • supporting scientific research and ecological monitoring to guide recovery/conservation efforts in collaboration with professionals from federal, tribal, and state agencies, academic institutions, museums, and research organizations • approaching all resource management questions from an ecosystem standpoint, taking into account all biological interrelationships • continuing long-term monitoring of the change in condition of natural resources and related human influences (see “Natural Resources Strategies” below); monitoring of high priority vital signs that capture the condition and trend of ecosystem health • identifying management considerations for areas external to the monument where ecological processes, natural and cultural resources, and/or human use

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Ecosystem Management (continued)</p>	<p>affect monument resources or are closely related to monument resource management; joint management actions, agreements, or partnerships to promote resource conservation would be initiated (see natural resources strategies)</p> <p>As called for in the monument’s wildland fire management plan (NPS 2004b), NPS staff would continue to use prescribed fire as appropriate to reduce hazardous fuel conditions, supplement the ecological role of fire as a natural processes in fire-dependent vegetative communities, eliminate or reduce nonnative species, protect or restore key plant or animal habitats or communities, promote ethnographic resources and maintain cultural and historic scenes in the monument.</p>
<p>Natural Resources – General</p>	<p>John Day Fossil Beds National Monument’s natural resources are a key element in the use and management of the monument. Protection, study, and management of natural resources and processes are essential for achieving John Day Fossil Beds National Monument’s purposes and mission. NPS <i>Management Policies 2006</i> (§4) and Reference Manual #77, “Natural Resource Management” provide general direction on natural resource management for the monument.</p> <p>Desired Conditions: John Day Fossil Beds National Monument retains its ecological integrity, including its natural resources and processes. Natural processes, ecosystem dynamics, and population fluctuations occur with as little human intervention as possible. The monument continues to be a dynamic, bio-diverse environment. The natural features of the monument remain unimpaired. All native plants and animals are maintained as part of the monument’s natural ecosystems. (“Native species” are defined as all species that have occurred or now occur as a result of natural processes on lands designated as units of the national park system.) Native soils and the processes of soil genesis are preserved in a condition that maintains historic soil associations. Soils are maintained in a condition to sustain plant and animal productivity, maintain or enhance water and air quality, support human health and habitation, and protect and preserve cultural resources and landscapes. Soils consistent with maintenance of associated historic practices are conserved. Sources of air, water, and noise pollution affecting John Day Fossil Beds National Monument’s resources are limited to the greatest degree possible. Potential threats to the monument’s resources are identified early and proactively addressed. Visitors and staff recognize and understand the value of the monument’s natural resources. NPS staff uses the best available scientific information and technology to manage the monument’s natural resources. John Day Fossil Beds National Monument is recognized and valued as an outstanding example of resource stewardship, conservation, education, and public use.</p> <p>General Strategies: Science-based, adaptive, decision making would continue to be followed, with the results of resource monitoring and research incorporated into all aspects of monument operations. NPS staff would continue to apply ecological principles to ensure that natural resources are maintained and not impaired.</p> <p>NPS staff and other scientists would continue to inventory monument resources to quantify, locate, and document biotic and abiotic resources in the monument and to assess their status and trends. Inventories and monitoring of the monument’s plants and animals would continue. Collected data would be used as a baseline against which to regularly monitor the distribution and condition of selected species, including indicators of ecosystem condition and diversity, rare or protected species, and invasive exotics. Management plans would be modified to be more effective, based on the results of monitoring.</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Natural Resources – General (continued)</p>	<p>NPS staff would work with the Oregon Department of Fish and Wildlife to inventory, monitor, enforce regulations, and manage terrestrial and aquatic wildlife and habitat. NPS staff would periodically review state fishing regulations that apply to the monument and make recommendations to the state to revise them as needed to support native fish populations.</p> <p>Fish and wildlife habitat would be protected through timing of monument activities and through consultations with the Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Native American tribes.</p> <p>NPS staff and other scientists would conduct long-term, systematic monitoring of resources and processes to discern natural and anthropogenically induced trends, document changes in species or communities, evaluate the effectiveness of management actions taken to protect and restore resources, and mitigate impacts on resources.</p> <p>NPS staff would expand monitoring programs to include geographic areas and resources that are not currently monitored. Partnerships with institutions, agencies, and scientists would be an important component of this endeavor.</p> <p>Future facilities would be built in previously disturbed areas with as small of a construction footprint as possible. NPS staff would also apply mitigation techniques to minimize the impacts of construction and other activities on monument resources.</p> <p>Actions that have the potential to result in significant soil disturbance would include appropriate mitigation to control erosion and allow revegetation of disturbed areas.</p> <p>Integrated pest management procedures would continue to be used when necessary to control nonnative organisms or other pests.</p> <p>Scientific research would be encouraged. Cooperative basic and applied research would be encouraged through various partnerships and agreements to increase the understanding of John Day Fossil Beds National Monument’s resources, natural processes, and human interactions with the environment, or to answer specific management questions.</p> <p>NPS staff would continue to expand the data management system, including a geographic information system (GIS) and a research and literature database for analyzing, modeling, predicting, and testing trends in resource conditions.</p> <p>NPS managers would prepare and periodically update a “Resource Stewardship Strategy” that includes a comprehensive list of prioritized actions to achieve the desired resource conditions identified in the general management plan.</p>
<p>Natural Resources – Restoration of Natural Environment and Management of Nonnative Species</p>	<p>NPS <i>Management Policies 2006</i> (§4.4) calls for the National Park Service to maintain natural ecosystems in park units and to restore native plant and animal populations. “Reference Manual 77: Natural Resource Management” also provides general direction on the restoration of natural resources for the monument.</p> <p>Many of John Day Fossil Beds National Monument’s natural ecosystems have been altered by the activities of people and the introduction of nonnative species. (Nonnative species — also referred to as exotic, alien, or invasive species — are those species that occupy or could occupy monument lands directly or indirectly as the result of deliberate or accidental human activities.) More specifically, the condition of</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Natural Resources – Restoration of Natural Environment and Management of Nonnative Species (continued)</p>	<p>natural vegetation communities has declined in the monument due to the expansion of annual grasses and the spread of nonnative plant species. Fires have also been suppressed, which has led to the expansion of western juniper. In recent years efforts have begun to restore John Day Fossil Beds National Monument’s brush and grass ecosystems with the application of prescribed burns.</p> <p>Desired Conditions: With the exception of culturally significant areas, John Day Fossil Beds National Monument’s bunchgrass/sagebrush steppe environment is restored as nearly as possible to the conditions it would be in today had natural ecological processes not been altered. Native species populations that have been severely reduced in or extirpated from the monument are restored where feasible and sustainable. Populations of native plant and animal species function in as natural condition as possible except where special considerations are warranted. Vegetation is in a condition reminiscent of the period before Europeans began altering the monument. All federally and state threatened and endangered species are no longer in danger of extinction and are at least stable. The natural fire regime has been restored.</p> <p>The presence of nonnative species in the monument is minimized to the degree possible. The NPS staff provides for their control to minimize the economic, ecological, and human health impacts that these species cause.</p> <p>Strategies: Active restoration efforts would continue throughout the monument, primarily focusing on management of nonnative (weed) species, western juniper control, revegetation of native plants, prescribed fire, and restoration of native plants and animals. The management of populations of nonnative plant and animal species, up to and including eradication, would be undertaken wherever such species threaten monument resources or public health, and when control is prudent and feasible.</p> <p>Western juniper would continue to be controlled in areas where the tree has become invasive.</p> <p>Inventories and monitoring of invasive nonnative plant species would continue. High priority is given to managing exotic species that have or potentially could have a substantial impact on monument resources, and that can reasonably be expected to be successfully controllable. Efforts would continue to control or eradicate nonnative plants that are particularly invasive and destructive pests, or have the potential to rapidly spread and dominate plant communities, such as Russian knapweed and whitetop. Lower priority would be given to nonnative species that have almost no impact on monument resources or that probably cannot be successfully controlled. Restoration of previously or newly disturbed areas would be done using native genetic materials (when available) from the local region to regain maximum habitat value. Should facilities be removed, the disturbed lands would be restored to natural topography and soils, and the areas would be revegetated with native species. Only plants that are not invasive and would remain within developed areas would be used.</p> <p>Historically, fire periodically occurred in the monument. However, in more recent times, regional fires have been suppressed, resulting in a build up of fuel. The current fire management plan (NPS 2004b) discusses and deals with these issues and would continue to be followed. Monument fire management programs would be designed to meet resource management objectives prescribed for the various areas of the monument and to ensure that the safety of firefighters and the public are not compromised.</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Natural Resources – Restoration of Natural Environment and Management of Nonnative Species (continued)</p>	<p>All wildland fires would be effectively managed, considering resource values to be protected and firefighter and public safety, using the full range of strategic and tactical operations as described in the approved fire management plan.</p> <p>NPS staff would participate in regional ecosystem efforts to restore native species.</p> <p>Research would be supported that contributes to management knowledge of native species.</p> <p>Interpretive and educational programs would continue to be provided on the preservation of native species for visitors and for residents neighboring the monument.</p>
<p>Federally Listed and State-listed Threatened and Endangered Species</p>	<p>Under the Endangered Species Act, the National Park Service is mandated to promote the conservation of all federal threatened and endangered species and their critical habitats within park unit boundaries. <i>NPS Management Policies 2006</i> (§ 4.4.2.3) also call for the agency to survey for, protect, and strive to recover all species native to park units that are listed under the Endangered Species Act. In addition, the National Park Service is directed to inventory, monitor, and manage state-listed species in a manner similar to the treatment of federally listed species, to the greatest extent possible.</p> <p>A few threatened and endangered species have been recorded at John Day Fossil Beds National Monument. Bull trout, mid-Columbia steelhead, and the state-listed peregrine falcon are the only listed species known to regularly occur in or use the monument. However, there is the possibility that threatened and endangered species, occur in the monument but have not yet been documented as being present.</p> <p>Desired Conditions: John Day Fossil Beds National Monument contributes to the overall recovery and eventual delisting of all listed species and species proposed for listing. Essential habitats that support these species are all protected. Federally listed and state-listed threatened and endangered species and their habitats are protected and sustained.</p> <p>Native threatened and endangered species populations that have been severely reduced in or extirpated from the monument are restored where feasible and sustainable.</p> <p>General Strategies: NPS staff, cooperators and contractors would continue to survey and monitor for presence of federally and state threatened and endangered species in the monument, including bald eagle, bull trout, mid-Columbia steelhead, and the state-listed peregrine falcon. NPS staff would cooperate with the U.S. Fish and Wildlife Service, National Marine Fisheries Service and Oregon Department of Fish and Wildlife in inventorying, monitoring, protecting, and perpetuating the natural distribution and abundance of all state and federally listed species and their essential habitats. These species and their required habitats would be specifically considered in ongoing planning and management activities. If appropriate, surveys for threatened and endangered species would be undertaken prior to permitting ground-disturbing activities or developments.</p> <p>If any state or federally listed, or proposed threatened or endangered species, were found in areas that would be affected by construction, visitor use, or restoration activities proposed in any of the alternatives in this plan, the NPS staff would first consult informally with the above agencies. The NPS staff would then take action to</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
Federally Listed and State-listed Threatened and Endangered Species (continued)	address any potential adverse impacts on state or federally listed species. Should it be determined through informal consultation that an action might adversely affect a species that is federally listed or proposed for listing, NPS staff would initiate formal consultation under section 7 of the Endangered Species Act.
Air Quality	<p>The Clean Air Act (42 USC 7401 et seq.) gives federal land managers the responsibility for protecting air quality and related values, including visibility, plants, animals, soils, water quality, cultural resources, and public health, from adverse air pollution impacts. NPS <i>Management Policies 2006</i> (§4.7), and “Reference Manual 77: Natural Resource Management” provide further direction on the protection of air quality and related values for park units.</p> <p>John Day Fossil Beds National Monument is classified as a Class II area under the Clean Air Act (42 USC 7401 et seq.). This air quality classification is the second most stringent and is designed to protect the majority of the country from air quality degradation. The Clean Air Act gives federal land managers the responsibility for protecting air quality and related values, including visibility, plants, animals, soils, water quality, cultural resources, and public health, from adverse air pollution impacts. The only known source of air degradation is occasional smoke from fires, mostly outside the monument.</p> <p>Desired Conditions: Good to excellent air quality is maintained. Air quality in the monument meets national ambient air quality standards for specified pollutants. The monument’s air quality is maintained or enhanced with no significant deterioration. Nearly unimpaired views of the landscape both within and outside the monument are present. Scenic views, both day and night, are protected and unimpaired for the enjoyment of current and future visitors.</p> <p>Strategies: NPS staff would continue to work with appropriate federal and state government agencies and nearby communities to maintain and improve the monument’s regional air quality. NPS staff would participate in regional air quality planning, research, and the implementation of air quality standards.</p> <p>Air quality in the monument would be periodically monitored to gain baseline information and to measure any significant changes (improvement or deterioration) to John Day Fossil Beds National Monument’s airshed.</p> <p>To minimize smoke impacts, controlled burns would occur only when favorable meteorological conditions are present. The vegetation to be burned would be in a condition that would facilitate combustion and minimize the amount of smoke emitted during combustion.</p>
Water Quality	<p>Water is a key resource in John Day Fossil Beds National Monument, shaping the landscape and affecting plants, animals, and visitor use. The Clean Water Act strives to restore and maintain the integrity of U.S. waters, which includes waters found in the recreation area. NPS <i>Management Policies 2006</i> (§4.6.3) and “Reference Manual 77: Natural Resource Management” provide direction on the protection and management of surface and groundwater in the monument.</p> <p>Desired Conditions: John Day Fossil Bed National Monument’s water quality reflects natural conditions and supports native plant and animal communities, and administrative and recreational uses. All water in the monument meets applicable</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Water Quality (continued)</p>	<p>state standards. All human sources of water pollution, both within and outside the monument, that are adversely affecting John Day Fossil Beds National Monument are eliminated, mitigated, or minimized.</p> <p>Strategies: Surface water quality would be monitored on a regular basis in the monument, focusing on bacterial and other organic contamination. Chemical contaminants, such as pesticides, would be periodically monitored.</p> <p>NPS staff would work with adjacent landowners and the Oregon Department of Environmental Quality to identify pollution sources outside the monument’s boundaries that are affecting John Day Fossil Beds National Monument, such as ranch and farmlands along the John Day River.</p> <p>NPS staff would continue to pursue a minor boundary adjustment to protect a spring located on BLM land that serves as the primary source of water for the Thomas Condon Paleontology Center.</p> <p>A water resource stewardship report would be prepared to identify comprehensive strategies to address water issues facing the monument.</p> <p>A hazardous substance and spill contingency plan would be prepared to address contamination from hazardous materials (e.g., petroleum products, raw sewage, and agricultural chemicals).</p>
<p>Water Quantity</p>	<p>NPS <i>Management Policies 2006</i> (§4.6.1, 4.6.2) calls for the National Park Service to perpetuate surface and groundwater as integral components of aquatic and terrestrial ecosystems in park units. “Reference Manual 77: Natural Resource Management” provides further direction on the management of water quantity in park units, stating the National Park Service would manage and use water to protect resources, accommodate visitors, and administer park units within legal mandates.</p> <p>John Day River, Rock Creek, and Bridge Creek are important for recreation, fish and wildlife habitat, and irrigation of fields in the monument. The National Park Service owns water rights on the John Day River and its tributaries, which it uses to provide water for monument operations and to irrigate agricultural fields.</p> <p>Desired Conditions: All documented springs and streams continue to flow and the flows are natural to the extent possible. The monument exhibits water quantity characteristics consistent with those that first attracted people to the area. The groundwater and quantity of water that underlies and shapes all of John Day Fossil Beds National Monument’s natural and cultural features is maintained and protected.</p> <p>Strategies: NPS staff would monitor flows of the John Day River and its tributaries within the monument.</p> <p>NPS staff would continue to educate the public about the importance of in-stream flows and groundwater for John Day Fossil Beds National Monument.</p> <p>A water resource stewardship report and watershed condition assessment would be prepared to identify comprehensive strategies to address water issues facing the monument.</p> <p>NPS staff would continue to pursue a minor boundary adjustment to protect a spring located on BLM land that serves as the primary source of water for the Thomas Condon Paleontology Center.</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Water Quantity (continued)</p>	<p>To protect water resources within John Day Fossil Beds National Monument, NPS staff would work with state and federal agencies, landowners, conservation districts, and other entities to monitor water use within and adjacent to the monument. NPS staff would continue to monitor water rights applications, attend hearings, and protest applications if necessary.</p> <p>NPS staff would continue to work with appropriate federal and state agencies, including the Bureau of Land Management, to develop a comprehensive, unified approach to managing the John Day River. The National Park Service would work within the state administrative process to provide protection to surface and groundwater resources in the monument.</p> <p>NPS staff would encourage neighbors of the monument to emphasize conservation of water in their operations (e.g., using low flow conservation technology and more efficient ways to irrigate fields).</p> <p>NPS staff would strive to conserve water in all monument operations. Examples of actions that could be taken include installing low-flow fixtures such as toilets and showers, or installing self-contained, evaporative toilets.</p>
<p>Floodplains</p>	<p>Floodplains exist along the John Day River, and Bridge and Rock creeks. Floods can occur due to thunderstorms, posing a risk to structures, visitors, and employees. Floodplains are protected and managed in accordance with Executive Order 11988 (“Floodplain Management”), NPS Director’s Order 77-2 and its accompanying procedural manual, and NPS <i>Management Policies 2006</i> (§4.6.4).</p> <p>Desired Conditions: Natural floodplain values are preserved or restored. Long- and short-term impacts associated with the occupancy and modification of floodplains are avoided. Hazardous conditions associated with flooding that could affect visitor safety are minimized.</p> <p>Strategies: Whenever possible, new structures would be located on sites outside floodplains. If it is not possible to avoid locating a new structure on a floodplain or to avoid a management action that would affect a floodplain, the National Park Service would</p> <ul style="list-style-type: none"> • prepare and approve a statement of findings in accordance with Director’s Order 77-2 • use nonstructural measures as much as practicable to reduce hazards to human life and property while minimizing impacts on the natural resources of the floodplains • ensure that structures and facilities are designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program (44 CFR 60) <p>Mitigation measures would be required as part of construction to avoid any potential indirect effects on floodplains. Before initiating any ground-disturbing projects, further investigation would be conducted to determine if floodplain resources would be affected. Floodplains would be addressed at the project level to ensure that projects are consistent with NPS policy and Executive Order 11988.</p> <p>Visitor interpretive and education efforts would emphasize the hazards that exist when flash flooding occurs in the recreation area, and appropriate responses.</p>

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<p>Wetlands</p>	<p>John Day Fossil Beds National Monument does not have extensive wetlands. Although there is not a detailed wetlands inventory for the monument, small wetlands are located in the vicinity of seeps and springs, and along the John Day River and its tributaries. Wetlands are protected and managed in accordance with Executive Order 11990, "Protection of Wetlands"; NPS Director's Order 77-1, and its accompanying procedural manual; and NPS <i>Management Policies 2006</i> (§4.6.5).</p> <p>Desired Conditions: The natural values of wetlands are maintained and protected. When practicable, natural wetland values are enhanced by using them for educational, recreational, scientific, and similar purposes that do not disrupt natural wetland functions.</p> <p>Strategies: A monument-wide wetland inventory, condition assessment, and functional evaluation would be done to help ensure proper management and protection of wetland resources. More detailed wetland mapping would be performed in areas that are proposed for development or are otherwise susceptible to degradation or loss due to human activities.</p> <p>NPS staff would be trained in wetlands identification to ensure that operational activities do not inadvertently drain or alter wetlands, including ephemeral (seasonal) wetlands.</p> <p>The construction of new developments in wetlands would be avoided. If it is not possible to avoid locating a new development in a wetland or to avoid a management action that would adversely affect a wetland, the National Park Service would comply with the provisions of Executive Order 11990, the Clean Water Act, and Director's Order 77-1. All practicable measures (including the best management practices described in appendix 2 of the NPS Procedural Manual #77-1, "Wetland Protection") would be included in the preferred alternative to minimize harm to wetlands. The loss of any wetlands would be compensated.</p> <p>A statement of findings for wetlands would be prepared (according to the guidelines defined in the NPS Procedural Manual #77-1) if the action would result in an adverse impact on a wetland. The statement of findings would include an analysis of the alternatives, delineation of the wetland, a wetland restoration plan to identify mitigation, and a wetland functional analysis of the impact site and restoration site.</p>
<p>Lightscape Management</p>	<p>NPS <i>Management Policies 2006</i> (§4.10), recognizes that the night sky contributes to the visitor experience. The policy further states that the NPS staff would seek to minimize the intrusion of artificial light into the night scene. In natural areas, artificial outdoor lighting would be limited to meet basic safety requirements and would be shielded when possible.</p> <p>Desired Conditions: Opportunities to view the night sky at John Day Fossil Beds National Monument are available. Artificial light sources within the monument do not unacceptably affect night sky viewing opportunities or wildlife populations.</p> <p>Strategies: To the extent possible, the NPS staff would work within a regional context to protect the night sky quality.</p> <p>NPS staff would seek to minimize the intrusion of artificial light into the night scene. In natural areas, artificial outdoor lighting would be limited to meet basic safety requirements and would be shielded when possible. If it is determined that light sources within the monument affect views of the night sky, alternatives would be</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Lightscape Management (continued)</p>	<p>studied to address the impact, such as shielding lights, changing lamp types, or eliminating unnecessary sources.</p> <p>NPS managers would participate in planning meetings at the state and county level to protect the night sky from light from new developments adjacent to the monument.</p>
<p>Soundscape Management</p>	<p>NPS <i>Management Policies 2006</i> (§4.9) and NPS Director’s Order 47: <i>Sound Preservation and Noise Management</i>, require NPS managers to strive to preserve the natural soundscape (natural quiet) associated with the physical and biological resources (i.e., the sounds of the wind in the trees). The concept of natural quiet was further defined in the <i>Report on Effects of Aircraft Overflights on the National Park System</i> (NPS 1995):</p> <p style="padding-left: 40px;">What is <i>natural quiet</i>? Parks and wildernesses offer a variety of unique, pristine sounds not found in most urban or suburban environments. They also offer a complete absence of sounds that are found in such environments. Together, these two conditions provide a very special dimension to a park experience—quiet, itself. In the absence of any discernible source of sound (especially man-made), quiet is an important element of the feeling of solitude. Quiet also affords visitors an opportunity to hear faint or very distant sounds, such as animal activity and waterfalls. Such an experience provides an important perspective on the vastness of the environment in which the visitor is located, often beyond the visual boundaries determined by trees, terrain, and the like. In considering natural quiet as a resource, the ability to clearly hear the delicate and quieter intermittent sounds of nature, the ability to experience interludes of extreme quiet for their own sake, and the opportunity to do so for extended periods of time, is what natural quiet is all about.</p> <p>The primary sources of noise in John Day Fossil Beds National Monument are motor vehicles driving through the monument and the sounds of people in developed areas, such as the Thomas Condon Paleontology Center and the Hancock Field Station.</p> <p>Desired Conditions: Visitors have opportunities in John Day Fossil Beds National Monument to experience natural sounds in an unimpaired condition. The sounds of civilization are generally confined to developed areas and specific hours of the day. Disruptions from visitors are minimized, ensuring a high-quality visitor experience.</p> <p>Strategies: NPS managers would minimize noise generated by management activities by strictly regulating NPS administrative use of noise-producing machinery such as motorized equipment. Noise would be a consideration when procuring and using NPS equipment.</p> <p>NPS staff would work with the Department of Defense and Whidbey Island Naval Air Station to develop a process to address the occasional impacts on natural soundscapes that arise from military flights over the monument.</p>
<p>Scenic Viewshed Protection</p>	<p>The NPS Organic Act and NPS <i>Management Policies 2006</i> (§1.4, 1.6, 3.1) call for the National Park Service to conserve and protect scenic vistas. Scenic vistas are an important element of the visitor experience at John Day Fossil Beds National Monument. These views are both within and outside the monument. Actions by others outside the monument can affect visitor experiences.</p> <p>Desired Conditions: The scenic views at John Day Fossil Beds National Monument continue to stir imaginations, inspire, and provide opportunities for visitors to understand, appreciate, and forge personal connections to the monument. Intrinsically important scenic vistas and scenic features are not significantly diminished by man-made developments.</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Scenic Viewshed Protection (continued)</p>	<p>Strategies: NPS staff would continue to work with Grant and Wheeler Counties to incorporate viewshed issues into county land use plans, and to express concerns at land use hearings regarding potential developments that might affect those viewsheds.</p> <p>NPS staff would work with adjacent and nearby landowners to minimize any visual impacts from nearby developments and to ensure that developments do not encroach on the monument.</p>
<p>Cultural Resources</p>	
<p>Archeological Resources</p>	<p>NPS <i>Management Policies 2006</i> (§5.3.5.1) calls for the National Park Service to manage archeological resources in situ unless physical disturbance is justified and mitigated by data recovery or other means in concurrence with the State Historic Preservation Officer. See also 36 CFR Part 79 and the <i>Secretary of the Interior's Standards and Guidelines for Archeological Documentation</i>.</p> <p>Over a hundred known archeological sites are contained within the three units of John Day Fossil Beds National Monument. Additional undiscovered sites may be present in the monument.</p> <p>Desired Conditions: Archeological sites are protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable.</p> <p>Strategies: Archeological surveys would continue as needed in the monument to identify, inventory, and document archeological sites and determine their significance regarding eligibility for the National Register of Historic Places. When disturbance or deterioration is unavoidable, the site through data recovery is professionally excavated and documented, and the resulting artifacts, materials, and records are curated and conserved in consultation with the Oregon State Historic Preservation Officer and appropriate American Indian tribes. Some archeological sites that can be adequately protected may be interpreted to visitors.</p>
<p>Historic Structures</p>	<p>The National Historic Preservation Act calls for analyzing the effects of possible federal actions on historic structures on or eligible for the national register and for inventorying and evaluating their significance and condition. NPS <i>Management Policies 2006</i> (§5.3.5.4) calls for the treatment of historic structures, including prehistoric ones, to be based on sound preservation practice to enable the long-term preservation of a structure's historic features, materials, and qualities. See also the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties</i>.</p> <p>In John Day Fossil Beds National Monument there are historic structures in the James Cant Ranch Historic District. The district, with its main house and surrounding outbuildings, is one of the most intact, locally significant examples of a historic sheep and then cattle ranch in Wheeler and Grant counties, Oregon.</p> <p>Desired Conditions: Structures individually eligible for the National Register of Historic Places or identified as contributing to the Cant Ranch Historic District are managed to ensure their long-term preservation and protection of character-defining features. Protection and preservation of historic structures are emphasized as a critical component of the monument's ongoing maintenance and resource protection programs.</p> <p>Strategies: Monitoring of historic structures would continue to ensure the</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Historic Structures (continued)</p>	<p>preservation of qualities that contribute to the listing or eligibility for listing of historic structures in the national register.</p> <p>Protection is and would be in accordance with the <i>Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation</i>, unless it is determined through a formal process that disturbance or natural deterioration is unavoidable. Then mitigation through documentation would be called for via consultation with the Oregon State Historic Preservation Officer. Appropriate preservation treatments for historic structures would be carried out in accordance with the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties</i>. Historic structures requiring rehabilitation, or in rare cases restoration, would receive further investigation and documentation via a historic structure report to inform about the condition and recommend treatment of the historic fabric and architecturally significant features.</p>
<p>Ethnographic Resources</p>	<p>NPS <i>Management Policies 2006</i> (§5.3.5.3) calls for gathering ethnographic information through anthropological and collaborative community research that recognizes the sensitive nature of such cultural data and documents and the meanings that traditionally associated groups assign to traditional natural and cultural resources and the landscapes they form. In accordance with the National Historic Preservation Act, the purpose is to preserve, conserve, and encourage the continuation of the diverse traditional prehistoric, historic, ethnic, and folk cultural traditions that underlie and are a living expression of American heritage as manifested in the traditional use of ethnographic resources in park units. Executive Order 13007 also calls for NPS managers to accommodate the access to and the ceremonial use of American Indian sacred sites by practitioners and to preserve the sites' physical integrity.</p> <p>The only known ethnographic resources in John Day Fossil Beds National Monument are pictographs, although others may exist. No known sacred sites exist in the monument.</p> <p>Desired Conditions: All ethnographic resources that are listed in or determined eligible for listing in the National Register of Historic Places are protected as traditional cultural properties. American Indians associated with the monument may continue to access certain sites of cultural importance. Any traditional use is consistent with the monument's purposes and the protection of resources.</p> <p>If sacred sites are found at John Day Fossil Beds National Monument, the National Park Service accommodates access to and ceremonial use of American Indian sacred sites by Indian religious practitioners and avoids adversely affecting the physical integrity of these sacred sites.</p> <p>If there are American Indian uses of a unit of the national park system, NPS general regulations on access to and use of natural and cultural resources in the unit are applied in an informed and balanced manner. This application of regulations is consistent with monument purposes, does not unreasonably interfere with possible American Indian use of any traditional areas, and do not result in the degradation of monument resources.</p> <p>Strategies: The national monument would continue to adhere to all American Indian treaty obligations. Appropriate cultural anthropological research would be conducted in cooperation with groups associated with the monument to identify potential ethnographic resources, determine their significance as traditional cultural properties,</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Ethnographic Resources (continued)</p>	<p>and suggest preservation treatments and management options.</p> <p>NPS managers would consult with tribal governments before taking actions that affect federally recognized tribal governments. These consultations are to be open and candid so that all interested parties may evaluate for themselves the potential impacts of relevant proposals.</p> <p>If disturbance of ethnographic resources is unavoidable, formal consultation with the Oregon State Historic Preservation Officer and with the appropriate American Indian tribes would be conducted.</p> <p>This consultation would be in accordance with the National Historic Preservation Act, as amended, the implementing regulations of the Advisory Council on Historic Places, and other laws, policies, regulations or agreements, and would be conducted openly and candidly for the potential impact of relevant proposals. American Indian tribes would be included in these consultations as would other American Indian individuals and groups linked by ties of kinship or culture to ethnically identifiable human remains, sacred objects, objects of cultural patrimony, and associated funerary objects when such items may be disturbed or encountered on monument lands. Protection and preservation of ethnographic resources would be emphasized as a critical component of the monument’s ongoing maintenance and resource protection programs.</p> <p>The identities of community consultants and information about sacred and other culturally sensitive places and practices would be kept confidential when research agreements or other circumstances warrant.</p>
<p>Cultural Landscapes</p>	<p>NPS <i>Management Policies 2006</i> (§5.3.5.2) calls for the preservation of the physical attributes, biotic systems, and uses of cultural landscapes that contribute to historical significance. In the monument the James Cant Ranch Historic District constitutes a historic cultural landscape and is managed as such. Additional cultural landscapes may exist in the monument but have not been identified and evaluated.</p> <p>Desired Conditions: Landscape characteristics and features contributing to the Cant Ranch Historic District are appropriately protected and preserved, including rehabilitation and restoration when necessary. Cultural landscape inventories are completed for the Cant Ranch and other cultural landscapes if determined potentially eligible for the National Register of Historic Places.</p> <p>Cultural landscapes in the monument are protected and maintained consistent with the Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guideline’s for the Treatment of Cultural Landscapes. Protection and preservation of cultural landscapes is emphasized as a critical component of the monument’s ongoing maintenance and resource protection programs.</p> <p>Strategies: Treatment recommendations identified in the “Cultural Landscape Report: Cant Ranch Historic District” (Taylor and Gilbert 1996) would be carried out in accordance with the <i>Secretary of the Interior’s Standards for the Treatment of Historic Properties, with Guidelines for the Treatment of Cultural Landscapes</i>, to ensure long-term preservation objectives.</p> <p>Potential cultural landscapes would continue to be identified and their national register eligibility evaluated to assist in future management decisions and to ensure their protection and preservation.</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Cultural Landscapes (continued)</p>	<p>Management of cultural landscapes would focus on protecting and preserving a given landscape’s physical attributes, biotic systems, and use when that use contributes to its historical significance. The preservation, rehabilitation, restoration, or reconstruction of cultural landscapes would be undertaken in accordance with the <i>Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes</i>.</p>
<p>Museum Collections</p>	<p>NPS <i>Management Policies 2006</i> (§5.3.5.5) states that the NPS “...will collect, protect, preserve, provide access to, and use objects, specimens, and archival and manuscript collections...in the disciplines of archeology, ethnography, history, biology, geology, and paleontology to aid understanding among park visitors, and to advance knowledge in the humanities and sciences.”</p> <p>John Day Fossil Beds National Monument’s paleontological specimens are stored in the Thomas Condon Paleontology Center. The center features secure and comfortable work and storage space that meets museum standards on all counts.</p> <p>Natural and cultural history collections are stored in the Cant Ranch House. Adequate space exists on the third floor of the Cant Ranch House to properly house historic and ethnographic artifacts and related items.</p> <p>Desired Conditions: All museum collections and archives and their component artifacts, objects, specimens, documents, photographs, maps, plans, and manuscripts, are properly inventoried, accessioned, catalogued, curated, documented, protected, and preserved. Appropriate provision is made for the access of the collections by NPS staff and other researchers and for their use in scientific and historical research, exhibits, and interpretation. The qualities that contribute to the significance of collections are protected and preserved in accordance with established NPS museum curation and storage standards.</p> <p>Strategies: NPS managers would continue to ensure adequate conditions for the climate control of collections and means for fire detection and suppression, integrated pest management, and research and interpretation access are maintained.</p>
<p>Visitor Use and Experience</p>	
<p>Visitor Use and Experience</p>	<p>The NPS Organic Act, NPS General Authorities Act, and NPS <i>Management Policies 2006</i> (§1.4, 8.1) all address the importance of park units being available to all Americans to enjoy and experience. Current laws, regulations, and policies leave considerable room for judgment about the best mix of types and levels of visitor use activities, programs, and facilities. For this reason, most decisions related to visitor experience and use are addressed in the alternatives. However, all visitor use of the national park system must be consistent with the following guidelines.</p> <p>Desired Conditions: Monument resources are conserved “unimpaired” for the enjoyment of future generations. Visitors have opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the monument; opportunities continue to be provided for visitors to understand, appreciate, and enjoy John Day Fossil Beds National Monument. For all of the monument’s units and management zones, the types and levels of visitor use are consistent with the desired resource and visitor experience conditions prescribed for those areas. No activities occur that would cause derogation of the values and purposes for which the monument was established.</p> <p>Visitors have opportunities to understand and appreciate the significance of the</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Visitor Use and Experience (continued)</p>	<p>monument and its resources, and to develop a personal stewardship ethic.</p> <p>To the extent feasible, all programs, services, and facilities in the monument are accessible to and usable by all people, including those with disabilities.</p> <p>High quality public opportunities continue to be available for appropriate uses, including such activities as hiking, picnicking, photography, sightseeing, and fishing.</p> <p>Strategies: All of John Day Fossil Beds National Monument’s programs and facilities would be evaluated on a regular basis to ensure that they are accessible to the extent feasible.</p> <p>Visitor surveys would be periodically conducted to determine visitor satisfaction with the monument facilities, NPS management, and the experiences they are having.</p> <p>NPS staff would periodically meet with managers from other areas in the region, such as the Bureau of Land Management, U.S. Forest Service, and tribal land managers, to improve visitor trip planning, information and orientation; and enrich interpretation and education opportunities for monument visitors.</p> <p>NPS staff would continue to enforce the regulations governing visitor use and behavior in Title 36 of the <i>Code of Federal Regulations</i> (36 CFR) and in the monument’s “Superintendent’s Compendium.”</p> <ul style="list-style-type: none"> • Pets must be crated, caged, restrained on a leash 6 feet long or less, or otherwise physically confined at all times. (36 CFR 2.15) • Bicycles are prohibited in the monument except on established public roads and parking areas. (36 CFR 4.30) • The use of off-road vehicles is prohibited except on public roads and parking areas. (36 CFR 4.10) <p>NPS staff would continue to monitor visitor comments on issues such as crowding, availability of parking, user conflicts, and facility conditions, and would monitor for resource impacts caused by visitors. Should any of the trends increase to levels unacceptable to managers, the NPS staff would consider what actions to take. (Additional information on user capacity can be found in the alternatives chapter.)</p>
<p>Public Health and Safety</p>	<p>NPS <i>Management Policies 2006</i> (§8.2.5) states that the saving of human life would take precedence over all other management actions as the National Park Service strives to protect human life and provide for injury-free visits. Other federal statutes and regulations that apply to the protection of public health and safety include Director’s Order 50 and RM-50 “Safety and Health”; Director’s Order 58 and RM-58 “Structural Fire Management”; Director’s Order 83 and RM-83 “Public Health”;</p> <p>Director’s Order 51 and RM-51 “Emergency Medical Services”; Director’s Order 30 and RM-30 “Hazard and Solid Waste Management; and OSHA 29CFR.</p> <p>Desired Conditions: While recognizing that there are limitations on its capability to totally eliminate all hazards, the National Park Service and its partners, contractors, and cooperators work to cooperatively to provide a safe and healthful environment for visitors and employees. The NPS staff strive to identify recognizable threats to safety and health and protect property by applying nationally accepted standards. Consistent with mandates and nonimpairment, the NPS staff reduces or removes known hazards or applies appropriate mitigating measures, such as closures, guarding, gating, education, and other actions.</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Public Health and Safety (continued)</p>	<p>Strategies: A documented safety program would be maintained in the monument to address health and safety concerns and identify appropriate levels of action and activities.</p> <p>Maintenance efforts would continue to ensure that all potable water systems and waste water systems in the monument would continue to meet state and federal requirements.</p> <p>Interpretive signs and materials would be provided as appropriate to notify visitors of potential safety concerns, hazards and procedures to help provide for a safe visit to the monument and to ensure visitors are aware of possible risks of certain activities. NPS staff would continue to work with local emergency and public health officials to make reasonable efforts to search for lost persons and rescue sick, injured or stranded persons.</p>
<p>Other Topics</p>	
<p>Sustainable Design/ Development</p>	<p>Sustainability can be described as doing things in ways that do not compromise the environment or its capacity to provide for present and future generations. Sustainable practices consider local and global consequences to minimize the short- and long-term environmental impacts of human actions and developments through resource conservation, recycling, waste minimization, and the use of energy-efficient and ecologically responsible materials and techniques.</p> <p>Over the past several years, the federal government has been emphasizing the adoption of sustainable practices. In particular, Executive Order 12873 mandates federal agency recycling and waste prevention; and Executive Order 12902 mandates energy efficiency and water conservation at federal facilities. <i>NPS Management Policies 2006</i> (§1.8, 1.9.5.2, 8.2, 9.1.1, 9.2) also call for sustainable operations, facilities, and uses in park units.</p> <p>Desired Conditions: John Day Fossil Beds National Monument is a leader in sustainable practices. Administrative and visitor facilities are harmonious with monument resources, compatible with natural processes, aesthetically pleasing, functional, as accessible as possible to all segments of the population, energy-efficient, and cost-effective. All decisions regarding operations, facilities management, and development in the monument—from the initial concept through design and construction—reflect principles of resource preservation. Thus, all monument developments and operations are sustainable to the maximum degree possible and practical. New developments and existing facilities are located, built, and modified according to the <i>Guiding Principles of Sustainable Design</i> (NPS 1993) or other similar guidelines. John Day Fossil Beds National Monument has state-of-the-art water systems for conserving water, and uses energy conservation technologies and renewable energy sources whenever possible. Biodegradable, nontoxic, and durable materials are used in the monument whenever possible. The reduction, use, and recycling of materials is promoted, while materials that are nondurable, environmentally detrimental, or that require transportation from great distances are avoided as much as possible.</p> <p>Strategies: NPS staff would work with experts both inside and outside the National Park Service to make John Day Fossil Beds National Monument’s facilities and programs sustainable. Partnerships would be sought to implement sustainable practices in the monument. NPS staff also would work with stakeholders and business partners to augment NPS environmental leadership and sustainability efforts.</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Sustainable Design/ Development (continued)</p>	<p>NPS staff would be educated to have a comprehensive understanding of their relationship to environmental leadership and sustainability.</p> <p>NPS staff would support and encourage the service of suppliers and contractors that follow sustainable practices.</p> <p>Energy usage would be monitored, and energy efficient practices and renewable energy sources would be promoted wherever possible.</p> <p>John Day Fossil Beds National Monument’s interpretive programs would mention sustainable and nonsustainable practices. Visitors would be educated on the principles of environmental leadership and sustainability through exhibits, media, and printed material.</p> <p>Monument managers would perform value analysis and value engineering, including life cycle analysis, to examine the energy, environmental, and economic implications of proposed developments.</p> <p>NPS managers would measure and track environmental compliance and performance. Audits would ensure environmental compliance, emphasize best management practices, and educate employees at all levels about environmental management responsibilities.</p>
<p>Transportation to and within the Monument</p>	<p>The location, type, and design of multimodal transportation facilities (e.g., roads, bridges, parking areas, sidewalks, bikeways, pedestrian trails, transit centers and shelters) strongly influence the quality of the visitor experience and the preservation of park unit resources. These systems also affect, to a great degree, how and where park unit resources would be affected by visitors. <i>NPS Management Policies 2006</i> (§9.2) calls for NPS managers to identify solutions to transportation issues that preserve natural and cultural resources while providing a high-quality visitor experience. Management decisions regarding transportation require a comprehensive alternatives analysis and thorough understanding of their consequences. Traditional practices of building wider roads and larger parking areas to accommodate more motor vehicles are not accepted practice today.</p> <p>Visitors access the three units of John Day Fossil Beds National Monument primarily in private motor vehicles via county and state highways. How people travel to the monument’s three units and how they travel within the monument plays a major role in the protection of monument resources, in visitor levels and the visitor experience, and the need for modified or new infrastructure. In this regard, it is critical for the National Park Service to participate as a partner in local, regional, and statewide planning efforts that would affect transportation to and within the monument.</p> <p>Desired Conditions: Multimodal transportation facilities in the monument provide access for the protection, use, and enjoyment of monument resources. They preserve the integrity of the surroundings, respect ecological processes, protect monument resources, and provide the highest visual quality and a rewarding visitor experience.</p> <p>Strategies: NPS staff would participate in transportation studies and planning processes that may result in links to the monument’s units or impacts to monument resources. NPS managers would work closely with other federal agencies (e.g., U.S. Department of Transportation, the Federal Highway Administration), tribal, state and local governments (e.g., Oregon Department of Transportation), regional planning</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Transportation to and within the Monument (continued)</p>	<p>bodies, citizen groups, and others to enhance partnering and funding opportunities, and to encourage effective regional transportation planning. Working with these agencies and other stakeholders on transportation issues, NPS managers would seek reasonable access to John Day Fossil Bed National Monument units, and intermodal connections to regional multimodal transportation systems.</p> <p>In general, the preferred modes of transportation would be those that contribute to maximum visitor enjoyment of, and minimum adverse impacts to, monument resources and values. Before a decision is made to design, construct, expand, or upgrade transportation access to or within the monument, nonconstruction alternatives—such as distributing visitors to alternative locations—would be fully explored. If nonconstruction alternatives would not achieve satisfactory results, then a development solution should consider whether the project</p> <ul style="list-style-type: none"> • is appropriate and necessary to meet management needs • is designed with extreme care and sensitivity to the landscape through which it passes • would not cause adverse impacts to natural and cultural resources, and would minimize or mitigate those impacts that cannot be avoided; • reduces traffic congestion, noise, air pollution, and adverse effects on monument resources and values • would not violate federal, state, or local air pollution control plans or regulations • would not cause use in the areas to exceed the areas’ user capacity • incorporates the principles of energy conservation and sustainability • is able to demonstrate financial and operational sustainability • incorporates universal design principles to provide for accessibility for all people, including those with disabilities • takes maximum advantage of interpretive opportunities and scenic values • is based on a comprehensive and multi-disciplinary approach that is fully consistent with the monument’s <i>General Management Plan</i> and <i>Asset Management Plan</i> • enhances the visitor experience by offering new or improved interpretive or visitor opportunities, by simplifying travel within the monument, or by making it easier or safer to see monument features
	<p>The Telecommunications Act of 1996 directs all federal agencies to assist in the national goal of achieving a seamless telecommunications system throughout the United States by accommodating requests by telecommunication companies for the use of property, rights-of-way, and easements to the extent allowable under each agency’s mission. The National Park Service is legally obligated to permit telecommunication infrastructure in park units if such facilities can be structured to avoid interference with park unit purposes.</p> <p>Rights-of-way for utilities to pass over, under, or through NPS property may be issued only pursuant to specific statutory authority, and generally only if there is no practicable alternative to such use of NPS lands. Statutory authorities in 16 USC 5 and in <i>NPS Management Policies 2006</i> (§8.6.4) provide guidance on these rights-of-way.</p> <p>Columbia Power Cooperative has powerline rights-of-way in John Day Fossil Beds National Monument’s three units. The phone company has a right-of-way for a phone line to the Hancock Field Station. There are commercial telecommunication</p>

TOPIC	Current Laws and Policies Require That the Following Conditions Be Achieved at John Day Fossil Beds National Monument
<p>Utilities and Communication Facilities (continued)</p>	<p>facilities in the monument.</p> <p>Desired Conditions: Monument resources or public enjoyment of the monument are not denigrated by nonconforming uses. Telecommunication structures are permitted in the monument to the extent they do not jeopardize the monument’s mission and resources. No new nonconforming use or rights-of-way are permitted through the monument without specific statutory authority and approval by the director of the National Park Service or his/her representative, and are permitted only if there is no practicable alternative to such use of NPS lands.</p> <p>Strategies: NPS staff would work with service companies, local communities, and the public to locate new utility lines and maintain existing lines so that there is minimal effect on monument resources.</p> <p>If necessary, and there are no other options, new or reconstructed utilities and communications infrastructure would be placed in association with existing structures and along roadways or other established corridors in developed areas. For reconstruction or extension into undisturbed areas, routes would be selected that minimize impacts on the monument’s natural, cultural, and visual resources. Utility lines would be placed underground to the maximum extent possible, away from sensitive fossil resources.</p> <p>NPS policies would be followed in processing applications for commercial telecommunications facilities.</p>

RELATIONSHIP OF OTHER PLANNING EFFORTS TO THIS GENERAL MANAGEMENT PLAN

John Day Fossil Beds National Monument is located in Grant and Wheeler counties in east central Oregon. Properties surrounding the monument include land owned and managed by private entities, the Bureau of Land Management, and the state. Land use in the area is mainly agricultural with some rural residential use.

The Confederate Tribes of the Warm Springs Reservation is over 30 miles from the monument; however, other tribal-owned lands (the Pine Creek Conservation Area) are located adjacent to the Clarno Unit of the monument, across State Highway 218.

Several plans have influenced or would be influenced by the approved *General Management Plan for John Day Fossil Beds*

National Monument. These plans have been prepared (or are being prepared) by the National Park Service, the Bureau of Land Management, the State of Oregon, and Grant and Wheeler Counties. Some of these plans are described briefly here, along with their relationship to this management plan.

National Park Service Plans
Integrated Pest Management Plan (2005). This plan outlines the necessary best management practices and action thresholds to address both common and potential impacts by the full spectrum of known pests on the important cultural, natural, and scenic resources of the monument for the next 10 years. The plan acknowledges that individual Integrated Pest Management (IPM) practices would be developed as specific tasks or problems are identified related to invertebrate accidental pests, museum pests, orchard pests, vertebrate pests, and exotic weeds and native plant pests. The plan was consulted during the

development of the general management plan. This *General Management Plan* addresses invasive plant management as an issue; however, the IPM plan would continue to provide detailed guidance on how the monument would conduct IPM activities.

Socioeconomic Atlas for John Day Fossil Beds National Monument and its Region (2005). The atlas provides socioeconomic data and identifies trends for the John Day region. The report is a useful reference tool that can be used by decision makers to better manage and conserve monument resources. This atlas was consulted during the development of the general management plan.

Wildland Fire Management Plan (2004). This plan is an operation guide for managing the monument's wildland fire and prescribed fire program. It defines levels of protection needed to ensure personnel and public safety, protect facilities and resources, and restore and perpetuate natural processes. It is a detailed program of action to carry out fire management policies and objectives.

John Day Fossil Beds National Monument Visitor Study (2004). This study describes the activities, expenditures, and attitudes of people who visited the monument during the late summer of 2004. The study provides some important data and insights into visitor preferences that were used in the development of alternatives for the general management plan.

Superintendent's Compendium (2003). The *Superintendent's Compendium* is a list of designations, closures, permit requirements, and use restrictions promulgated under the discretionary authority of the superintendent. The compendium covers visitor hours; public use limits; closures and area designations for specific uses or activities; a list of activities that require a NPS permit; regulations regarding preservation of natural, cultural and archaeological resources; and general regulations regarding wildlife protection, hunting and fishing, camping, rock climbing, boating, and pets among other topics. The

compendium would be modified as necessary to reflect any changes resulting from implementation of this general management plan.

Strategic Plan: 2002–2007 (2002). The strategic plan describes the purpose, significance, and interpretive themes of the monument and outlines the primary mission goals. The plan also includes a list of prioritized tasks that are intended to meet the mission goals. The desired conditions, goals, and tasks included in the strategic plan would need to be updated to reflect the management directions presented in the approved general management plan.

Resources Management Plan (1999). This plan documented natural and cultural resource management efforts and deficiencies, and outlined objectives for future resource management and tasks for accomplishing those objectives. The long-range plan laid out a course of work and funding needs for 10 or more years. Although these documents are no longer being prepared by the National Park Service, the existing resources management plan was used in preparing this plan. A Resources Stewardship Strategy would be prepared, which incorporates the management directions presented in this document.

Cultural Landscape Report: Cant Ranch Historic District (1996). This report identified and evaluated existing landscape features that have historical significance, reviewed and assessed potential treatments for agricultural lands associated with the ranch, and developed guidelines and recommendations that address treatment of all cultural landscape resources. This report was consulted during the development of the general management plan.

Paleontological Research Plan (1988). This plan describes the paleontological and geological efforts completed to date and the ongoing resources management program; identifies the known questions or information gaps needed to manage the resource; and suggests general subjects for future research

efforts. It is also intended to help evaluate both solicited and unsolicited research proposals and communicate opportunities for study to the research community. This plan was consulted during the development of the general management plan.

John Day Fossil Beds National Monument Statement for Management (1983). The Statement for Management discussed different influences that affect management of the monument, including legislative and administrative requirements, resource conditions, land uses and trends, visitor uses and trends, and facilities. Major issues facing the monument were identified, including land protection, public awareness, interpretation and education, research, and staffing. General management objectives were identified to resolve these issues. Although these documents are no longer being prepared by the National Park Service, the existing statement for management was used in preparing this plan.

General Management Plan for John Day Fossil Beds National Monument (1979). This plan was prepared after the monument was established in 1975, and remained as the monument's guiding document for 28 years. It zoned the monument, provided management direction for resource management and visitor use, included acquisition proposals, and provided monument-wide development concepts. The new management plan builds on this existing plan by updating management direction and identifying new actions for the next 15 to 20 years.

Cyclic Prospecting Plan (undated). The Cyclic Prospecting Plan was developed in the late 1980s. It is a fluid document intended to anticipate variability in observed patterns of weathering. The purpose of the plan is to establish an orderly schedule for canvassing a wide variety of fossiliferous exposures to retrieve any scientifically significant specimens that, once exposed, are subject to damage.

BLM (Prineville District) Plans

John Day River Management Plan; Two Rivers, John Day, and Baker Resource Management Plan Amendments and Final EIS (2000). This document includes a management plan for BLM lands found within the designated wild and scenic segments of the John Day River. The document also amends three resource management plans that were developed in the 1980s. The treatment of paleontological and cultural and historic resources on lands within the John Day Basin was not changed as a result of this plan. The final plan includes land use decisions and resource allocations that are intended to protect and improve river values. This plan was considered during the development of the general management plan.

“John Day Basin Resource Management Plan” (undated). In 2006 the Bureau of Land Management (Prineville District) began updating guidance for BLM lands in the John Day Basin. The plan would address resource management, public access, land tenure adjustments, special management areas, visual resources management, and other issues. The BLM's planning process for the basin is expected to be completed in the fall of 2008.

Oregon Parks & Recreation Department Plans

Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP): 2003–2007 (2002). The SCORP is Oregon's basic five-year plan for outdoor recreation. It establishes the framework for statewide comprehensive outdoor recreation planning and the implementation process. The plan includes analysis on recreation needs and trends; defines recreation roles and key statewide outdoor recreation issues; and develops statewide outdoor recreation goals, objectives and strategies. This plan was considered during the development of the general management plan.

Oregon Trails 2005–2014: A Statewide Action Plan (2005). This plan is Oregon's “official plan for recreational trail management” through 2014, serving as a

statewide and regional information and planning tool to assist recreation providers (local, state, federal, and private) in providing trail opportunities and promoting access to trails and waterways. It also identifies how the state's limited resources would be allocated for motorized, nonmotorized, and water trail projects throughout Oregon. Some of the plan's recommendations are addressed in the *General Management Plan* through proposed new trails and recreation amenities.

Grant County Plans

Comprehensive Land Use Plan (1996). This plan is designed to provide long-range guidance on growth and development issues in Grant County. Portions of this plan most relevant to the *General Management Plan* include policies related to agricultural lands, forest lands, natural resources, open space, scenic and historic resources, recreation, economics, and energy conservation. This plan was consulted during the development of the general management plan. There are no known conflicts with any of the alternatives and preferred alternatives outlined in the general management plan.

Wheeler County Plans

Comprehensive Plan (2003). This plan is designed to provide long-range guidance on growth and development issues in Wheeler County. Portions of this plan most relevant to this *General Management Plan* are those related to agricultural lands; forest lands; open spaces; scenic and historic areas; natural resources; air, water, and land resources quality; recreational needs; and economic conservation. This plan was consulted during the development of the general management plan. There are no known conflicts with any of the alternatives and preferred alternatives outlined in the general management plan.

Oregon Paleo Lands Institute Plans

Oregon Paleo Plan Prospectus (undated). Also known as the "Paleo Project," this plan outlines a comprehensive strategy to advance the understanding and appreciation of Oregon's paleontological resources. A major component of the plan is the Paleo Learning

Center, which is proposed to be located in Fossil. This plan was considered during the development of the general management plan.

PLANNING ISSUES AND CONCERNS

NPS staff, the general public, and representatives from county, state, and federal agencies, and various organizations identified a variety of issues and concerns during scoping (early information gathering) for this general management plan. An issue is defined as an opportunity, conflict, or problem regarding the use or management of public lands. Comments were solicited at public meetings, through planning newsletters, and on the monument's web site (see the "Consultation and Coordination" chapter).

Comments received during scoping demonstrated there is much that the public likes about the national monument—its management, use, and facilities. The issues and concerns generally involve determining the appropriate visitor uses, types and levels of facilities, services, and activities that would be compatible with desired resource conditions. The alternatives in the *General Management Plan* provide strategies for addressing the issues within the context of the monument's purpose, significance, and special mandates. The following major issues and concerns were identified.

Hancock Mammal Quarry

This site is of great importance to scientists' knowledge of vertebrate fossils from the early Tertiary Period. Preliminary analysis suggests that this is the best early Oligocene vertebrate fauna of the northwestern United States and western Canada. The site was briefly opened by researchers in the late 1950s and again in the 1960s. There are differing opinions on whether or not the quarry should be reopened. Much information likely would be gained by reopening the quarry, and it would add a new facet to the visitor experience. But opening the quarry would require additional funds and staff—there would be a substantial cost in this operation. There are also questions

regarding the feasibility of reopening the quarry as the lateral extent of the fossiliferous strata is not known—a very large amount of material may have to be removed to gain access to the fossils. And without careful monitoring, there also would be increased potential for vandalism and theft of fossils.

Visitor Opportunities and Visitor Facilities

Decisions need to be made on what, if any, new facilities or facility improvements should be made in the monument. Restrooms and trails are among the facilities the public has identified as a need in the monument.

Formalizing existing social trails and maintaining new trails can increase opportunities for the public to experience and enjoy the monument's resources, but also can increase the potential for resource impacts. Providing or maintaining new facilities also can increase the need for additional funding and staff.

User Capacity

Visitors have adversely affected resources and the quality of visitors' experiences in a few areas of the monument, particularly in the Clarno Unit, which is used by large groups.

With the potential for some increased visitation in the future, there also is the potential for unacceptable impacts to monument resources in some areas.

Implementation of a user capacity framework will help ensure that desired monument resource conditions and visitor experience opportunities are maintained.

Cant Ranch

The James Cant Ranch Historic District is an important part of the monument's story. The commitment and level of cultural landscape rehabilitation of the ranch is an important issue for the monument. Decisions need to be made on whether or not to continue irrigating the agricultural fields or to restore the fields to a more natural condition.

River Corridor

Natural processes along the John Day River corridor are hampered by the presence of bank armoring and past ranching practices. Alterations of the river channel and its floodplain have resulted in changes to riparian communities. Although the NPS staff could take a variety of actions to restore the river corridor within the monument, land uses upstream of the monument would continue to affect the river corridor. How much should the NPS staff devote to restoring the river corridor in an era of tight budgets?

Alien Species

Invasive alien plants have become established throughout much of the monument and threaten native species. If left untreated, the native habitat and natural character of the area would be severely impacted. Weed management, including the continued use of prescribed fire to control an expanding western juniper population, is an issue that the monument must address.

These issues are briefly addressed in this plan; however, they are addressed in depth in the monument's *Integrated Pest Management Plan* (2005) and *Wildland Fire Management Plan* (2004).

Monument Operations

Staffing and maintenance needs would likely increase as visitation in the monument increases. The geographical separation of the monument's three units presents operational challenges. Current funding levels also present challenges to monument operations and management.

Partnerships

Partnerships are a key to meeting and expanding the monument's ability to study and manage paleontological resources, as well as to educate and inform local residents, students, and others about the monument. The NPS staff have cooperated with the Bureau of Land Management, U.S. Forest Service, Bonneville Power Administration, and Warm Springs Indian Tribes in this

regard. With a tight and decreasing budget, partnerships are an important aspect of the management of John Day Fossil Beds National Monument. To help fully realize the monument's purpose, existing partnerships need to be strengthened, and new partnerships need to be sought.

Boundaries of the Monument

The monument's present boundaries do not encompass all of the important and fundamental resources associated with the monument. Without action, there is a concern that some of these resources may be lost. Minor boundary adjustments may be needed for resource protection and improved land management.

IMPACT TOPICS: RESOURCES AND VALUES AT STAKE IN THE PLANNING PROCESS

Identification of Impact Topics

An important part of planning is seeking to understand the consequences of making one decision over another. To this end, general management plans are typically accompanied by an environmental impact statement. Environmental impact statements identify the anticipated impacts of possible actions on resources and on monument visitors and neighbors. Impacts are organized by topic, such as "impacts on the visitor experience" or "impacts on vegetation." Impact topics serve to focus the environmental analysis and to ensure the relevance of impact evaluation. Impact topics identified for the *John Day Fossil Beds National Monument General Management Plan / Environmental Assessment* were identified based on federal laws and other legal requirements, Council on

Environmental Quality (CEQ) guidelines, NPS management policies, staff subject-matter expertise, and issues and concerns expressed by the public and other agencies early in the planning process (see previous section). The planning team selected the impact topics for analysis based on the potential for each topic to be affected by the alternatives. Also included is a discussion of some impact topics that are commonly addressed in general management plans, but that are dismissed in this plan for the reasons given.

The "Environmental Consequences" chapter contains a more detailed description of each impact topic to be affected by the actions described in the alternatives.

Impact Topics Retained and Dismissed

Impact topics are retained if there could be appreciable impacts from the actions of the alternatives considered. Impact topics are dismissed if they are commonly considered during the planning process, but may not be relevant to the development of the management plan because either: (a) implementing the alternatives would have no effect, negligible effect, or minor effect on the resource, or (b) the resource does not occur in the national monument.

Table 2 identifies all of the impact topics considered for this *General Management Plan/ Environmental Assessment* and states whether they were retained or dismissed. The table is organized by theme (e.g., natural resources, cultural resources, visitor use and experience, socioeconomic environment, public health and safety, and monument administration) and includes a brief rationale as to why the impact topic was retained or dismissed.

Table 2: Impact Topics Retained and Dismissed for John Day Fossil Beds National Monument

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Natural Resource Impact Topics			
Soils	Retained	John Day Fossil Beds National Monument’s soils are a key resource; the soils help determine where native vegetative communities occur in the monument and they affect the area’s productivity, drainage patterns, and erosion. Soils also provide structural support to buildings and other facilities in the monument. Proposed developments in the alternatives would affect the monument’s soils. Any impacts that would adversely affect these resources would be of concern to NPS managers and the public.	NPS <i>Management Policies 2006</i>
Prime and Unique Farmlands	Retained	<p>Prime farm lands are defined as lands that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and are also available for these uses. Prime farm lands have the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. Unique farmlands are lands other than prime farmland that are used for the production of specific high value food and fiber crops.</p> <p>No unique farmlands have been identified in the monument. One of the alternatives being considered would remove from production prime farmlands. Council on Environmental Quality regulations (§1508.27) require that changes to prime agricultural lands be addressed in an EIS. Thus, this topic must be considered in this environmental assessment.</p>	Council on Environmental Quality 1980 memorandum; Farmland Protection Policy Act
Paleontological Resources	Retained	The monument was established primarily to protect its outstanding fossils. They are a fundamental resource of the monument. Any actions that would result in the degradation or loss of fossils would be of major concern to scientists, NPS managers, visitors, and the public.	NPS Organic Act; NPS <i>Management Policies 2006</i>
Vegetation	Retained	The monument supports a variety of vegetative communities and plant species, including species of concern and many nonnative species. Actions in the alternatives could beneficially or adversely affect these resources, which would be of concern to many people as well as NPS managers.	NPS Organic Act; NPS <i>Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Wildlife	Retained	The monument supports a variety of wildlife. The monument's wildlife populations are one of the attractions that add to the quality of the visitor experience. Changes in wildlife habitat or in wildlife populations due to the alternatives would be of concern to visitors, the public, and NPS managers.	NPS Organic Act; NPS <i>Management Policies 2006</i>
Air Quality	Dismissed	The monument is a Class II area under the Clean Air Act. Because of the limited development in the surrounding area, air quality is considered to be good. Visible pollutants rarely diminish the vistas within the monument. The only known source of air degradation is occasional smoke from fires, mostly outside the monument. Prescribed burns within the monument contribute to air pollution, but are not frequent and usually last for 2 to 4 days in any given year. In all of the alternatives the National Park Service would continue to protect air quality as required under the Clean Air Act and NPS <i>Management Policies</i> . No actions are being proposed in the alternatives that would measurably alter the monument's overall air quality. Construction of new facilities would have a short-term, negligible impact on the airshed. Use levels may increase with implementation of the alternatives, but the increase is not expected to be substantial and the emissions from additional vehicles would be negligible compared to current levels.	Clean Air Act; NPS <i>Management Policies 2006</i>
Water Quality	Dismissed	The water quality of the John Day River, Bridge Creek, and Rock Creek is generally good. High sediment loads after storms can affect water quality, but are of short duration and often result from naturally occurring exposed paleosol soil sources outside as well as inside the monument. No significant point sources of pollution are known to threaten monument waters. Nonpoint source pollution from agricultural operations, such as fecal coliform sources, fertilizers and pesticides, can affect monument waters but largely is due to sources outside of the monument. No actions are being proposed in the alternatives that would be expected to increase the potential for water pollution within the monument—any impacts accrued would be negligible. Thus, there is no need to address this impact topic in further detail.	Clean Water Act; NPS <i>Management Policies 2006</i>
Water Quantity	Dismissed	Water is a scarce resource in John Day Fossil Beds. The John Day River, Rock Creek, and Bridge Creek are important for recreation, fish and wildlife habitat, and irrigation of fields. A number of springs also contribute to wildlife habitat and vegetation variety. Two of the springs provide potable water for visitor facilities and NPS housing within the Sheep Rock Unit. None of the proposed changes in the alternatives would substantially alter surface water flows. Although the monument may use less water to irrigate the agricultural fields in one of	NPS <i>Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Water Quantity (continued)		the alternatives, the impact on the flow of the John Day River would be negligible. In addition, because the river is over appropriated, any water that is not used by the monument would likely be used by a water rights holder upstream of the monument. So even if the monument used less water to irrigate the agricultural fields, there would not necessarily be more water in the river within the monument.	
Fisheries	Dismissed	<p>The John Day River and its tributaries contain a variety of native and nonnative fish. Recreational fishing in the monument is regulated by the Oregon Department of Fish and Wildlife. None of the alternatives would change the management of fishing or would result in substantial changes that would affect the fish populations within the monument. Recreational fishermen would continue to be able to harvest fish within the boundaries of the monument in all of the alternatives, subject to the regulations of the Oregon Department of Fish and Game. With implementation of the alternatives, increased sport fishing may occur with slightly increased recreational use in some areas, but it is expected that the state’s regulation of the fisheries would avoid adverse impacts to the monument’s fish populations. The National Park Service would continue to work with the state to ensure that healthy fish populations are maintained in the John Day River and its tributaries.</p> <p>The John Day River also is designated essential fish habitat for chinook salmon. However, no actions would be taken in any of the alternatives that would have more than a minor effect on this habitat. In the action alternatives, such actions as the removal of dikes and rock barbs (to help restore the river’s natural hydrologic condition) would have a minimal effect on the salmon and its habitat. Some water is removed from the John Day River and Rock Creek for irrigation, following Oregon Water Resources Department and state water right guidelines. Some herbicides also are used for invasive weed control on lands adjacent to the drainages, but NPS staff follow all Oregon Department of Agriculture and manufacturer requirements. No known adverse effects have been reported on chinook salmon from these activities in the monument.</p>	<i>NPS Management Policies 2006</i>
Floodplains	Dismissed	Segments of the John Day River, Rock Creek and Bridge Creek are located within the monument. All of these drainages are subject to flooding following major storms or rapid snow melt in the headwaters. No structures are believed to be in the 100-year floodplain in the monument. The floodplains of these drainages have been substantially modified by past agricultural and	Executive Order 11988; Director’s Order 77-2; <i>NPS Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Floodplains (continued)		<p>flood control activities, but they still contain important habitat for fish and wildlife, and are valuable for recreational uses. Efforts have been underway to restore native cottonwood galleries and riparian vegetation communities, and to allow natural geomorphological processes to occur.</p> <p>No new actions or facilities are being proposed in any of the alternatives that would adversely affect the protection, management, and use of these floodplains, or substantially change the character and natural processes of the floodplains. In all of the alternatives the National Park Service would continue to protect natural floodplains values and take appropriate action to avoid safety risks to visitors and employees, as required by Executive Order 11988 and NPS Director’s Order 77-2: <i>Floodplain Management</i>. Although there would be changes in the irrigation of lands in the floodplain in two of the alternatives, this would have a negligible impact on the floodplain. Also in the two action alternatives, some existing barbs and dikes in the John Day River in the Sheep Rock Unit would be removed to restore hydrologic functions. But the impacts of removing the structures would be temporary—just while the river adjusted to flowing in a more "natural" state—and the beneficial effects probably would be minor in magnitude.</p>	
Wetlands	Dismissed	<p>Wetlands in the monument are limited to small riparian areas and around springs and seeps. Much of the riparian wetland vegetation has been altered by past livestock, agricultural, and flood control activities. All wetlands in national park units are protected and managed in accordance with Executive Order 11990, "Protection of Wetlands"; NPS Director’s Order 77-1: <i>Wetland Protection</i> and its accompanying handbook (NPS 2002); and NPS <i>Management Policies 2006</i> (§4.6.5, NPS 2000). This guidance requires the National Park Service to protect and enhance natural wetland values, and requires the examination of impacts on wetlands. It is NPS policy to avoid affecting wetlands and to minimize impacts when they are unavoidable.</p> <p>In all of the alternatives in this plan, facilities proposed for development would be sited to avoid wetlands. No new developments in the alternatives would be proposed in areas known to contain wetlands. No new uses of water originating from or directly supplying wetlands are being proposed. Areas that may have wetlands would be mapped and delineated prior to construction of developments to ensure that these areas are avoided. Thus, wetlands were not evaluated as an impact topic.</p>	Executive Order 11990; Clean Water Act; NPS Director’s Order 77-1; NPS <i>Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
<p>Federally Listed and State-listed Threatened and Endangered Species</p>	<p>Dismissed</p>	<p>Two federally listed threatened fish species, bull trout (<i>Salvelinus confluentus</i>) and middle Columbia River steelhead (<i>Oncorhynchus mykiss</i>), pass through the monument via the John Day River and its tributaries. However, the monument is used only as a travel corridor by these fish—no spawning or rearing habitat is known to occur in this area. Although some of the actions in the alternatives could affect irrigation and the river’s hydrology in the monument, these actions would not substantially affect stream flows—and it is stream flow which could affect these fish and their habitat. Likewise, no actions in the alternatives would measurably alter water quality of the drainages.</p> <p>Peregrine falcons (<i>Falco peregrinus</i>) are a state-listed endangered species. They have been reported in the monument area and may be nesting in the Cathedral Rock-Johnny Creek area. However, no actions are being proposed in the alternatives that would affect the birds’ use of the area or their habitat.</p> <p>Two mammals, the state-listed endangered gray wolf (<i>Canis lupus</i>) and the state-listed threatened California wolverine (<i>Gulo gulo lutens</i>) are identified as being in the two counties where the monument is located, but have not been reported inside the monument boundary.</p> <p>Likewise, two state-listed threatened plant species, South Fork John Day milk-vetch (<i>Astragalus diaphanous</i> var. <i>diurnus</i>) and arrow-leaf thelypody (<i>Thelypodium eucosmum</i>), have been found in Grant and Wheeler counties. But after completing four plant surveys inside the monument, researchers have not documented these species as being present in the monument.</p>	<p>Endangered Species Act; NPS <i>Management Policies 2006</i></p>
<p>Soundscape Management</p>	<p>Dismissed</p>	<p>None of the changes proposed in the alternatives would substantially alter the natural soundscape. Several developments may be built or improved in the alternatives (e.g., trails, sun shade structures, rest room), but they would only temporarily affect noise levels in parts of the monument. None of the proposed changes would likely result in more than a minor impact on the overall monument soundscape. Additional visitors may also use the monument over the long term, with noise levels increasing at popular trails, parking areas, and attractions. But substantial increases in use levels would not be expected, and the impact on the monument’s overall natural soundscape would be expected to be no more than a minor impact.</p>	<p>Director’s Order 47; NPS <i>Management Policies 2006</i></p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Lightscape Management	Dismissed	NPS <i>Management Policies (2006)</i> state that the National Park Service will preserve, to the greatest extent possible, the natural lightscapes of park units, including natural darkness. The agency strives to minimize the intrusion of artificial light into the night scene by limiting the use of artificial outdoor lighting to basic safety requirements, shielding the lights when possible, and using minimal impact lighting techniques. No new facilities are being proposed in the alternatives that would necessitate new night-time lighting. Thus, lightscape was dismissed as an impact topic.	NPS <i>Management Policies 2006</i>
Natural or Depletable Resource Requirements and Conservation Potential	Dismissed	None of the alternatives being considered would result in the extraction of new resources from the monument. In all of the alternatives, ecological principles would be applied to ensure that the monument's natural resources were maintained and protected. New fossils would continue to be collected for scientific and education purposes, but the specimens would be stored in the NPS collection in the monument. Fields in the James Cant Ranch Historic District also would continue to be annually harvested for hay to maintain the cultural landscape. The fields would be managed to sustain this harvest. Implementation of the alternatives would result in the use of limited natural resources and energy for construction and operation of new facilities (e.g., trails). New development would be designed to be sustainable to the maximum extent practicable. Thus, there would likely be a negligible impact on this topic.	NPS <i>Management Policies 2006</i>
Energy Requirements and Conservation Potential	Dismissed	None of the alternatives presented in this environmental assessment would result in a major change in energy consumption, energy availability, or costs compared to current conditions. The National Park Service would pursue sustainable practices whenever possible in all decisions regarding operations, facilities management, and development in the monument. Whenever possible, the National Park Service would use energy conservation technologies and renewable energy sources. Overall, the impact on energy requirements and conservation potential would be minor.	NPS <i>Management Policies 2006</i>
Scenic or Visual Resources and Viewsheds	Dismissed	None of the alternatives being considered would result in a major change or impact on scenic resources or viewsheds. Overall, the impact on scenic resources and viewsheds would be minor.	NPS <i>Management Policies 2006</i>
Wild & Scenic Rivers	Dismissed	Although much of the John Day River in north-central Oregon has been designated as a Wild & Scenic River (WSR), no WSR reaches are located within monument boundaries. The 17-mile-long stretch of the John Day River that passes through the Sheep Rock Unit, between the	Section 5 (d) National Wild and Scenic River Act

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Wild & Scenic Rivers (continued)		<p>towns of Kimberly and Dayville, is not designated as a WSR.</p> <p>Bridge Creek, a tributary to a reach of the John Day River designated as Wild & Scenic, passes through the Painted Hills Unit but is located more than five miles from the confluence.</p> <p>No existing or proposed activities in any of the monument's units would negatively affect the wild and scenic qualities of the John Day River. Therefore, this topic was dismissed from further consideration.</p>	
Cultural Resource Impact Topics			
Archeological Resources	Retained	Ground disturbance associated with proposed development actions (i.e., new trails or other facilities) have the potential to disturb currently unidentified archeological resources.	Section 106 of the National Historic Preservation Act as amended; Director's Order 28; <i>Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation</i> ; <i>NPS Management Policies 2006</i> ; National Environmental Policy Act; Director's Order 28A: <i>Archeology 2004</i>
Historic Structures and Cultural Landscapes	Retained	A strategy for treating the James Cant Ranch, listed as a historic district in the National Register of Historic Places, needs to be developed. Changes to the cultural landscape that could result from implementing one or more of the alternatives would also be of concern to visitors, the public, and NPS managers.	Sections 106 National Historic Preservation Act; Director's Order 28; <i>NPS Management Policies 2006</i> ; 1931 amendment to enabling legislation.
Museum Collections	Dismissed	The topic of museum collections is dismissed from further consideration because the situation regarding collections management would be the same in all alternatives. Under each alternative, the National Park Service would curate specimens, associated field records, archives, and photographs related to paleontology by preparing, cataloging, and storing them under state-of-the-art collection conditions at the national monument's Thomas Condon Paleontology Center. The center is specially staffed and equipped to collect, identify, prepare, and preserve rare fossil specimens from the last 50 million years. After being processed, specimens are carefully indexed, catalogued	Department of the Interior Manual on Museum Property Management 411 DM; <i>NPS Museum Handbook</i> ; Director's Orders 24 and 28; 36 CFR 79; Curation of Federally Owned Archeological Collections; Sections 106 of the National

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
<p>Museum Collections (continued)</p>		<p>and stored so they can be retrieved and studied by researchers from all over the world. Storage is climate controlled to avoid any possible damage from excesses of humidity or temperature. There is a sprinkler system for fire detection and suppression, as well as scientifically sound laboratory facilities to prepare fauna and flora fossils and other natural history specimens. Research permits involving excavation specify that paleontological specimens are turned over to the national monument for permanent curation.</p> <p>Each alternative would maintain current collection conditions for the cultural resource artifacts and other materials stored on the third floor of the James Cant Ranch House. This situation includes individual temperature controls on each floor for heat and air conditioning plus a sprinkler system for fire detection and suppression in place for the building on all three floors of the Cant Ranch House. Archeological artifacts and related materials recovered during archeological work over the past few years within the national monument during legal compliance projects are now being cataloged and stored at Mount Rainier National Park because of the park's archeological expertise. After ongoing cataloging, they will be returned in the not too far distant future to John Day Fossil Beds National Monument and stored at the Thomas Condon Paleontology Center for permanent curation. They will be made available for research there at the national monument.</p> <p>In all alternatives, museum collections would continue to be acquired, accessioned, cataloged, protected, preserved, and made available for research according to NPS standards and guidelines. Both the Bureau of Land Management and National Park Service will continue to operate as if their 1997 interagency agreement is in effect. That agreement, numbered IA9325-8-0001, is titled: "Interagency Agreement between John Day Fossil Beds National Monument and Bureau of Land Management, Prineville District, Burns District, Vale District, and Lakeview District" and is being renewed. It calls for NPS curation of fossils recovered from the BLM districts named above.</p> <p>NPS management of museum collections recovered from non-NPS lands is an uncommon arrangement for units of the national park system. (NPS <i>Management Polices 2006</i>: Section 1.6). Involving the national monument, there is an interagency exchange of BLM archeological-investigation services on national monument lands for NPS paleontological-investigation services on BLM lands of the above named BLM districts.</p>	<p>Historic Preservation Act; NPS <i>Management Polices 2006</i>.</p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Museum Collections (continued)		<p>BLM fossils are accessioned as NPS fossils, not loans. This arrangement of cooperative conservation is mutually beneficial. The Bureau of Land Management lacks paleontological expertise in the area, and the National Park Service lacks archeological expertise in the area. The two agencies, therefore, exchange archeological and paleontological services on an as-needed basis by relevant professionals of each agency. The arrangement enhances scientific understanding of paleontological resources because of the paleontological expertise at John Day Fossil Beds National Monument, including the acquisition, preparation, and curation of fossils from BLM lands. Please note that archeological artifacts and related materials recovered from national monument lands are being temporarily held at Mount Rainier National Park where they are being catalogued because the national park has archeological expertise. After cataloging, the archeological artifacts are due to be returned to John Day Fossil Beds National Monument for permanent curation. This situation between the National Park Service and the Bureau of Land Management does not constitute a precedent for other units of the national park system servicewide.</p>	
Ethnographic Resources, including sacred sites	Dismissed	<p>Ethnographic resources are defined by the National Park Service as any “site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of group traditionally associated with it” (Director’s Order 28: <i>Cultural Resource Management Guideline</i>).</p> <p>Pictographs are the only known ethnographic resource within the monument. They likely date back to prehistoric times when earlier American Indians were in the John Day River basin. Contemporary American Indian neighbors traditionally associated with what is now the monument (the Burns Paiute Tribe, the Umatilla Confederated Tribes, and the Warm Springs Confederated Tribes) recognize the pictographs as part of their cultural history and heritage.</p> <p>The monument is committed to involving and consulting with the affiliated tribes on this issue. Copies of the environmental assessment will be forwarded to each affiliated tribe for review and comment. If the tribes subsequently identify the presence of ethnographic resources, appropriate mitigation measures would be undertaken in consultation with the tribes. The location</p>	<p>Sections 106 and 107 of the National Historic Preservation Act; Native American Graves Protection and Repatriation Act of 1990; Executive Order 13007; National Environmental Policy Act; Director's Order 28; NPS <i>Management Policies 2006</i></p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Ethnographic Resources, including sacred sites (continued)		<p>of ethnographic sites would not be made public. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, the Guideline for the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed.</p> <p>Sacred Sites. According to Executive Order 13007, "Indian Sacred Sites," (1996) the National Park Service will accommodate, to the extent practicable, access to and ceremonial use of Indian sacred sites by religious practitioners from recognized American Indian and Alaska Native tribes and would avoid adversely affecting the integrity of such sacred sites. Because there are no known sacred sites in the monument and because, if there were, no actions proposed in this management plan would affect areas that may be potentially important to the affiliated tribes that could contain sacred sites, sacred sites as an ethnographic resource category, is dismissed as an impact topic with no further analysis.</p> <p>None of the alternatives would affect known ethnographic resources; therefore, this topic was dismissed from further consideration.</p>	
Indian Trust Resources	Dismissed	None of the actions proposed by this general management plan and none of the actions that might be implemented as a result of the plan would change any existing conditions or practices concerning American Indian treaty or statutory rights or cultural interests that the tribes traditionally associated with the national monument maintain in relation to the national monument. Therefore, this topic was dismissed from further consideration.	Secretarial Order 3175
Visitor Use and Experience Impact Topics			
Visitor Use and Experience	Retained	<p>Actions could affect visitor use and experience in the monument. In particular, recreational facility development, such as new trails (or the removal of some existing trails), roads, and interpretive facilities, would affect visitor use and experience. Implementation of a user capacity framework is needed to enhance visitor experiences and protect monument resources. Accessibility of facilities and programs is another issue that could affect visitor use. Furthermore, alternatives in the plan could have an impact on overall visitor understanding, including interpretive and educational opportunities. Research and interpretation of regional paleontological resources is an issue that needs to be addressed, as well as interpretation of museum</p>	Organic Act; National Parks and Recreation Act; NPS <i>Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Visitor Use and Experience (continued)		collections and provision of other general visitor opportunities.	
Public Health and Safety	Dismissed	The proposed developments and actions in the alternatives would not result in any identifiable adverse impacts on human health or safety.	CEQ regulations; <i>DO-12 Handbook</i>
Visitor Access and Transportation	Dismissed	Visitor access and transportation could be affected by one or more of the actions in the alternatives, such as roadway improvements. The impacts of these actions on visitor access would be negligible. Local and regional transportation could be adversely affected on a short-term basis during construction; however, the impact would be minor. Therefore, visitor access and transportation was dismissed as an impact topic.	<i>NPS Management Policies 2006</i>
Socioeconomic Impact Topics			
Regional Economy	Dismissed	The economy of the area is tied primarily to the timber and farming and ranching industries, although recreation-related tourism is becoming increasingly more important. Some increase in monument visitation is expected over the life of the plan, but this increase is not expected to have any effect on the regional economy. Furthermore, due to the minimal amount of development and employment-related actions included in the alternatives, no substantial change to the economy is expected. The overall economic effect of implementing the alternatives on the regional economy would be negligible; therefore, regional economy was dismissed from further consideration.	National Environmental Policy Act
Conformity with Local Land Use Plans	Dismissed	<p>Actions proposed in the alternatives would not be in conflict with any local, state, or tribal land use plans, policies, or controls for the area.</p> <p>The basic land use of the monument as a public recreation and resource management area is in conformance with local land use plans. The creation of additional recreation and visitor service opportunities in the monument as proposed in the alternatives would be consistent with existing monument land uses or local (non-monument) land use plans. Therefore, this topic was dismissed from further consideration.</p>	CEQ regulations; <i>DO-12 Handbook</i>
Environmental Justice	Dismissed	Executive Order 12898, <i>General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations</i> , requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high or adverse human health or environmental effects of	Executive Order 12898

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
<p>Environmental Justice (continued)</p>		<p>their programs and policies on minorities and low-income populations and communities. According to the Environmental Protection Agency, environmental justice is the</p> <p>...fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.</p> <p>The goal of 'fair treatment' is not to shift risks among populations, but to identify potentially disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.</p> <p>Grant and Wheeler counties contain both minority and low-income populations; however, environmental justice is dismissed as an impact topic for the following reasons:</p> <ul style="list-style-type: none"> • The monument staff and planning team actively solicited public participation as part of the planning process and gave equal consideration to all input from persons regardless of age, race, income status, or other socioeconomic or demographic factors. • Implementation of the proposed alternative would not result in any identifiable adverse human health effects. Therefore, there would be no direct or indirect adverse effects on any minority or low-income population. • The impacts associated with implementation of the preferred alternative would not disproportionately affect any minority or low-income population or community. • Implementation of the preferred alternative would not result in any identified effects that would be specific to any minority or low-income community. • The impacts to the socioeconomic environment resulting from implementation of any of the action alternatives would be negligible. In addition, the monument staff and planning team do not anticipate the impacts on the socioeconomic environment to appreciably alter the physical and social structure of the nearby communities. <p>Therefore, this topic will not be addressed further.</p>	

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Monument Operations Impact Topics			
National Monument Operations	Retained	Monument operations would be affected by the actions in the alternatives, including staffing changes, facility construction, and facility or infrastructure maintenance.	<i>NPS Management Policies 2006</i>



Cant Ranch House, Sheep Rock Unit



Painted Hills Unit



Picture Canyon



CHAPTER 2 Alternatives, Including the Preferred Alternative

INTRODUCTION TO THE ALTERNATIVES

Many aspects of the desired condition of John Day Fossil Beds National Monument are defined in the establishing legislation, the monument's purpose and significance statements, and the servicewide mandates and policies that were described earlier. Within these parameters, the National Park Service solicited input from the public, NPS staff, governmental agencies, tribal officials, and others regarding issues and desired conditions for John Day Fossil Beds National Monument. Planning team members gathered information about existing visitor use and the condition of the monument's facilities and resources. Then a set of seven management zones and three management alternatives were developed to reflect the range of ideas proposed by NPS staff and the public.

This chapter describes the management zones (see table 3) and the alternatives for managing John Day Fossil Beds National Monument for the next 15 to 20 years. It includes tables that summarize the key differences among the alternatives (see table 9) and the differences in key impacts (see table 10) that would be expected from implementing each alternative. Table 10, containing the summary of differences in key impacts, is based on the analysis in chapter 4, "Environmental Consequences." This chapter also describes mitigation measures that would be used to reduce or avoid impacts, and the environmentally preferable alternative. Also discussed are several actions the planning team considered but dismissed.

This *Draft General Management Plan / Environmental Assessment* presents three alternatives, including the NPS preferred alternative (alternative B), for future management of John Day Fossil Beds National Monument. Alternative A, the no-action alternative, presents a continuation of current management direction and is included as a baseline for comparing the consequences of implementing each alternative. The action alternatives are alternative B (preferred) and

alternative C. These alternatives present different ways to manage resources and visitor use and improve facilities and infrastructure at John Day Fossil Beds National Monument. These three alternatives embody the range of what the public and NPS staff want to see accomplished regarding natural resource conditions, cultural resource conditions, visitor use and experience conditions, and management at John Day Fossil Beds National Monument.

As noted in the "Guidance for Planning" section in Chapter 1, the National Park Service would continue to follow existing agreements and servicewide mandates, laws, and policies regardless of the alternatives considered in this plan. These mandates and policies are not repeated in this chapter.

FORMULATION OF THE ALTERNATIVES

The two action alternatives included in this management plan are hybrids of the three preliminary action alternatives that were released for public review in January 2006. The three preliminary alternatives were organized around the themes of environmental leadership and preservation; research; and visitor connections. Many of the elements contained in the environmental leadership and preservation alternative are already required by law or policy; some were already being accomplished through current management practices. Much of the public comment that was received indicated a preference for a blending of these themes into one or more alternatives that contain a reasonable complement of environmental preservation, research, visitor access, and visitor opportunities.

Therefore, the action alternatives proposed in this plan rely on the strengths and advantages of the three themes that typified the preliminary alternatives. The alternatives seek

to balance resource protection with visitor opportunities and were developed to be functional and viable. Alternative B (the preferred alternative) maximizes resource protection and visitor opportunities by enhancing existing conditions and providing limited new visitor service facilities. Alternative C maximizes visitor opportunities by providing more facilities for visitors.

The alternatives focus on *what* resource conditions and *what* visitor uses, experiences, and opportunities should be at John Day Fossil Beds National Monument rather than on details of *how* these conditions, uses, and experiences should be achieved. Thus, the alternatives do not include many details on resource or visitor use management.

More detailed plans or studies would be required before most conditions proposed in the alternatives are achieved. The implementation of any alternative also depends on future funding and environmental compliance. This plan does not guarantee that funding will be forthcoming. The plan establishes a vision of the future that would guide day-to-day and year-to-year management of the monument, but full implementation could take many years.

IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The preferred alternative was developed through a process called “Choosing by Advantages” (CBA). Using this process, the planning team identified and compared the relative advantages of each alternative according to a set of factors. The benefits or advantages of each alternative were compared for each of the following CBA factors:

- protecting paleontological resources and advancing paleontological research
- protecting other natural resources
- protecting cultural resources
- providing visitor opportunities and enhancing visitor experience
- protecting scenic resources

- improving national monument operational efficiency

The relationships among the advantages were used to combine the best attributes of the three preliminary action alternatives into the preferred alternative. This alternative gives the National Park Service the greatest overall benefits for each factor listed above for the most reasonable cost.

POTENTIAL FOR BOUNDARY ADJUSTMENTS

The National Park and Recreation Act of 1978 requires general management plans to address whether boundary modifications should be made to park units. The action alternatives propose the addition of an area adjacent to the Sheep Rock Unit that would require a boundary adjustment. The details of this proposal are included in the description of the preferred alternative and alternative C. (See also appendix B for an analysis of the boundary adjustment according to NPS land protection criteria.) Although the outcome of the boundary adjustment is contingent on agreements with other outside parties, this plan does not prohibit small additions, such as land for administrative use, that may be identified in the future by other land planning processes.

IMPLEMENTATION OF THE GENERAL MANAGEMENT PLAN

Once the general management planning process is completed, the selected alternative would become the new management plan for the monument and would be implemented in phases over 15–20 years. The monument’s strategic plan, business plan, and annual work plans would help develop priorities that would determine how best to implement the plan.

Implementation of the actions and developments proposed within the management plan is dependent upon funding

available at the time of need. The approval of this *General Management Plan* does not guarantee that the funding and staffing needed to implement the plan would be forthcoming.

In addition to funding, the implementation of any preferred alternative also could be affected by other factors. More detailed planning and environmental documentation may be completed, as appropriate, before some of the actions would be carried out.

MANAGEMENT ZONES

Management zones apply to different areas of a park unit and consist of descriptions of the desired conditions for resources and visitor experiences in those different areas. Together, they identify the widest range of potential resource conditions, visitor experiences, and

facilities for the park unit that fall within the scope of the park unit’s purpose, significance, and special mandates. Seven potential management zones were identified for John Day Fossil Beds National Monument: cultural, frontcountry, pedestrian, backcountry, primitive, transportation, and operations.

In formulating the two action alternatives, the management zones were placed in different locations or configurations on a map of the monument according to the overall concept of each alternative.

The seven management zones identified for John Day Fossil Beds National Monument are presented in table 3. Visitor experiences, resource conditions, and appropriate activities and facilities are described for each management zone.

Table 3: Management Zones

Management Zone	Resource Conditions	Visitor Experience	Facilities
<p>CULTURAL</p> <p>The primary purpose of the cultural zone would be to protect the resources of the James Cant Ranch Historic District. These resources would be managed intact and for a high level of protection. A diversity of orientation, outdoor recreation, and interpretive opportunities may be provided, intermixed within both natural and developed environments, and supported by a variety of visitor services that complement and enhance the experience.</p>	<p>Paleontological resources would be maintained and retrieved in the least intrusive manner possible</p> <p>Paleontological mitigation would be performed to accommodate features of the historic district.</p> <p>Natural resources could be modified to accommodate visitors, visitor services, and facilities.</p> <p>Cultural resources would be managed to preserve and protect features of the historic district.</p> <p>Because these areas would be managed for high visitor use levels, minor natural resource impacts associated with visitors would be tolerated. There also would be allowance for minimal natural resource impacts associated with visitor facilities.</p>	<p>Visitors would be provided with a wide range of recreational, interpretive and educational opportunities supported by a variety of visitor services.</p> <p>High levels of visitor encounters would be expected and groups of all sizes would be accommodated.</p> <p>Intended to accommodate visitors, these areas could provide visitor orientation, interpretation, education, and other services.</p>	<p>Facilities in this zone would include historic buildings, outbuildings, associated landscape features (such as fences and ditches), developed trails, interpretive panels, and signs. Facilities could include visitor parking areas, picnic areas, and restrooms. This zone would include the monument’s administrative headquarters.</p>

Management Zone	Resource Conditions	Visitor Experience	Facilities
<p>FRONTCOUNTRY</p> <p>The purpose of the frontcountry zone would be to provide convenient access to developed visitor use areas that provide for high density use and support services. This zone includes trailheads and areas that are used for operational and administrative functions, as well as areas used for access, sanitation, and other needs.</p>	<p>Paleontological resources of scientific value would continue to be stabilized in place, periodically prospected, or quarried. In some cases, specimens may be exposed in place and stabilized for public appreciation. Quarries may be preserved intact. Where appropriate, natural resources would be maintained in their natural condition and appearance.</p> <p>Natural resources could be modified to accommodate monument operations.</p> <p>All cultural resources would be preserved and protected.</p> <p>Because these areas would be managed for high visitor use levels, minor natural resource impacts associated with visitors would be tolerated. There also would be allowances for minimal natural resource impacts associated with visitor facilities.</p>	<p>Visitors would be provided convenient and easy access to developed, high use areas.</p> <p>Moderate to high levels of visitor encounters in these developed areas could be expected.</p> <p>Intended to accommodate visitors, these areas could provide visitor orientation, interpretation, education, and other monument services.</p>	<p>Examples of facilities that might be permitted include picnic areas, trailheads, parking areas, restrooms, drinking fountains, informational signs, universally accessible trails, and maintained (paved or unpaved) trails.</p>
<p>PEDESTRIAN</p> <p>The purpose of the pedestrian zone would be to provide high-use trailheads and trail corridors that access prime monument features.</p> <p>These areas would be predominately natural but with much evidence of the sights and sounds of people.</p>	<p>Paleontological resources of scientific value would continue to be stabilized in place, periodically prospected, or quarried. In some cases, specimens may be exposed in place and stabilized for public appreciation. Quarries may be preserved intact.</p> <p>Natural resources could be modified for essential visitor and monument operation needs, but they would be changed in ways consistent with the natural environment, natural processes, and scenic quality of the adjacent zones.</p> <p>All cultural resources would be preserved and protected.</p> <p>Tolerance for impacts relating to visitor use would be moderate; the zone primarily would accommodate activities such as hiking and walking.</p>	<p>High use areas and trail corridors in this zone would provide access to prime monument features. Visitors would be able to see, touch, smell, and hear the resources as they move along well-defined trails and walkways.</p> <p>The experience would be highly social and interpretive, with consideration for the natural appearance of the area. Visitor uses, sites, and trails might be intensively managed to ensure resource protection and public safety.</p>	<p>Facilities that might be present include trailheads, heavily used trails (which could be paved or unpaved), foot bridges, and interpretive media. Small visitor support structures, such as restrooms, benches, and picnic tables, would be appropriate. To the extent feasible, facilities and services would be accessible to people with disabilities.</p>

Management Zone	Resource Conditions	Visitor Experience	Facilities
<p>BACKCOUNTRY</p> <p>The purpose of the backcountry zone would be to provide access to dispersed recreational opportunities within a natural setting that remains largely undeveloped. These areas would be managed for low to moderate levels of visitor encounters, limited impacts to resource protection, and public safety.</p>	<p>Paleontological resources would be maintained and/or retrieved in the least intrusive manner possible, e.g., all quarries would be restored to an appearance similar to that which existed prior to excavation.</p> <p>Natural resources would be maintained predominately in their natural conditions and most natural processes would predominate.</p> <p>Tolerance for resource degradation would be low.</p> <p>All cultural resources would be preserved and protected.</p> <p>Tolerance for impacts relating to visitor use and development would be low; the zone would accommodate dispersed visitor use activities such as hiking and walking.</p>	<p>Visitors would have an opportunity to get away from the sights and sounds of a developed environment and explore the natural features of the monument. Although trails would occur in this zone, the emphasis would be on dispersed non-motorized recreational activities within a natural setting.</p> <p>There would be opportunities for a range of visitor encounters from relative solitude to informal gatherings depending upon time of week or season.</p>	<p>Examples of facilities that might occur here include improved unpaved trails, bridges, stairs, and boardwalks.</p>
<p>PRIMITIVE</p> <p>The purpose of the primitive zone would be to provide for minimal visitor encounters, personal challenge, and self-discovery within an intact natural and wildland environment. These areas provide visitors with an opportunity to be immersed in nature.</p>	<p>Paleontological resources would be maintained and/or retrieved in the least intrusive manner possible, e.g., all quarries would be restored to an appearance similar to that which existed prior to excavation.</p> <p>Natural resources would be maintained in their natural conditions and natural processes would dominate.</p> <p>All cultural resources would be preserved and protected.</p> <p>Tolerance for impacts relating to visitor use would be extremely low.</p>	<p>Visitors would be in a wildland environment. They would be provided with opportunities to experience the natural sounds, closeness to nature, and a sense of remoteness and self-reliance.</p> <p>There would be only occasional encounters with others outside of one's group.</p> <p>Visitors would have the opportunity to experience a sense of discovery and adventure in a non-motorized setting.</p>	<p>No trails or facilities would be provided.</p>
<p>TRANSPORTATION</p> <p>The transportation zone would include developed road corridors and adjacent road rights-of-way used for</p>	<p>Paleontological resources would be maintained and/or retrieved in the least intrusive manner possible while undertaking necessary transportation-related improvements. These activities would be coordinated with paleontological staff.</p>	<p>Visitors would access and experience the monument primarily by traveling on rural highways and secondary roads. Travel time would be dependent on the</p>	<p>Examples of facilities would include paved and gravel roads, interpretive signs, pullouts, waysides, guard rails, and associated improvements.</p>

Management Zone	Resource Conditions	Visitor Experience	Facilities
<p>access, and for visitor interpretive and educational purposes.</p>	<p>Natural resources could be highly modified to ensure safe and efficient transportation for the public.</p> <p>All cultural resources would be preserved and protected as much as feasible.</p> <p>Tolerance for impacts relating to the provision of a safe transportation network would be high.</p>	<p>visitor’s destination.</p> <p>Automobiles, buses, and other motorized vehicles would have access to the monument via safe and efficient roadways.</p>	
<p>OPERATIONS</p> <p>The purpose of the operations zone would be to support the day-to-day management and administration of the monument. Efficiency, safety, and convenience would be important elements of all facilities and activities in this zone.</p> <p>These areas would generally be closed to the public.</p>	<p>Paleontological resources would be maintained and/or retrieved in the least intrusive manner possible while undertaking necessary operational activities. These activities would be coordinated with paleontology staff.</p> <p>Natural resources may be highly modified in this heavily used and developed area. Times of high noise levels during the operation of equipment would be expected. Facility development would occur in areas previously disturbed or in areas of low natural resource sensitivity.</p> <p>All cultural resources would be preserved and protected as much as feasible.</p> <p>Cultural resources might be rehabilitated for adaptive uses, which would be preferable to new construction. Facility development would occur in areas previously disturbed or in areas of low cultural resource potential.</p> <p>Tolerance for natural resource impacts would be higher than in other zones.</p>	<p>There generally would be no visitor use in this zone but the area would be heavily used by monument staff, volunteers, partners, and others engaged in monument operations and administration.</p>	<p>This zone might contain concentrated facilities. Examples of administration facilities include headquarters, maintenance areas, staff housing, maintenance roads, and other facilities necessary for the management of the monument.</p>

USER CAPACITY

General management plans are required to include identification of and implementation commitments for user capacities for all areas of a park unit. The National Park Service defines user capacity as the type and level of visitor use that can be accommodated while sustaining the quality of resources and visitor opportunities consistent with the purposes of a National Park Service unit. It is not necessarily a set of numbers or limits, but rather a process involving monitoring, evaluation, actions (managing visitor use), and adjustments to ensure a park unit's values are protected.

With any use on public lands comes some level of impact that must be accepted. Therefore it is the responsibility of the National Park Service to decide what level of impact is acceptable and what actions are needed to keep impacts within acceptable limits. Instead of solely tracking and controlling user numbers, NPS staff manage the levels, types, and patterns of visitor use and other public uses as needed to manage the condition of the resources and quality of the visitor experience. The monitoring component of this process helps test the effectiveness of management actions and provides a basis for informed adaptive management of public use.

Five key elements are involved in user capacity decision making:

- resource and visitor experience
- desired conditions as described in the management zones
- indicators and standards
- monitoring
- management strategies

The foundation for user capacity decision making is the qualitative descriptions of desired resource conditions, visitor experience opportunities, and general levels of development and management described in the management zones. Based on these desired conditions, indicators and standards

are identified. An indicator is a measurable variable that can be used to track changes in resource and social conditions related to human activity, so that existing conditions can be compared to desired conditions. A standard is the minimum acceptable condition for an indicator.

User capacity decision making is a continuous process; decisions are adjusted based on monitoring the indicators and standards. Management actions are taken to minimize impacts when needed. The indicators and standards included in this management plan would generally not change in the future. However, as monitoring of the monument's conditions continues, managers may decide to modify, add, or delete indicators if better ways are found to measure important changes in resource and social conditions. The results of the monument's monitoring efforts, related visitor use management actions, and any changes to the monument's indicators and standards would be available for public review.

Indicators and Standards

This management plan includes identification of user capacity indicators and standards. Table 4 includes the indicators, standards, related monitoring, and potential future management strategies allocated by management zone that would be implemented as result of this planning effort. These indicators and standards help translate the broader qualitative descriptions of desired conditions into measurable conditions.

Measurable indicators have been selected for monitoring key aspects of visitor experiences and resources at John Day Fossil Beds National Monument. Standards that represent the points where visitor experience and resource conditions become unacceptable in each zone were then assigned based on desired conditions. The indicators would be monitored in each zone, and when necessary, management actions would be taken to ensure that visitor use and

resource impacts remain within the established standards.

Two sets of indicators and standards were selected as measures of visitor use effects at John Day Fossil Beds National Monument: unofficial trails and visitor encounters. The monument staff considered other potential resource indicators that would identify visitor use impacts of concern, but many were eliminated because they were not easy to monitor or did not provide adequate information on the issue of concern. The presence of human-created (unofficial) trails was selected as an indicator to measure the increase in vegetation and soil disturbance that may be occurring outside of the monument's designated facilities. This indicator was considered to be feasible because it would be fairly easy to monitor and would provide useful information about important resource impacts. These human-created trails increase the total footprint of disturbed lands in the monument and may adversely affect sensitive wildlife habitats and important archaeological and paleontological resources.

The monument staff also considered several potential social or visitor experience indicators that would measure how visitor use levels, types, and behaviors were affecting other visitors. The social indicator selected relates to visitor encounter rates on designated (official) trails. In many studies conducted in the national park system and other areas, this indicator has been demonstrated to be an important indicator of crowding and associated impacts on the visitor experience, especially in backcountry settings (see Roggenbuck, Williams and Watson 1993, Manning 1999).

The standards selected for each indicator were based on best professional management judgment that was informed by the general management plan's desired conditions, the monument's baseline conditions for each indicator, and relevant monument-specific and national research studies.

The monument staff would continue general monitoring of use levels and patterns and would conduct periodic visitor surveys of visitor characteristics, expectations, evaluations, and preferences. In addition, the monument staff would begin monitoring the user capacity indicators identified in the zone descriptions. The rigor of monitoring the indicators (e.g., frequency of monitoring cycles, amount of geographic area monitored) may vary considerably depending on how close existing conditions are to the standards. If the existing conditions are well below the standard, the rigor of monitoring may be less than if the existing conditions are close to or trending towards the standards.

In addition, the initial phases of monitoring for the indicators and standards defined above would help the NPS staff identify if any revisions are needed. The initial testing of the indicators and standards would determine if the indicators are accurately measuring the conditions of concern. Monument staff may decide to modify the indicators or standards and revise the monitoring program if more effective and efficient methods are found to measure changes caused by public use. Most of these changes should be made within the first several years of initiating monitoring. This iterative learning and refining process is the strength of this approach to managing user capacity—it can be adapted and improved as knowledge grows.

After this initial testing period of monitoring indicators and standards, adjustments should not occur unless there is a compelling reason. Monument staff need to be cautious of adjusting indicators and standards to a point where the indicators and standards are no longer consistent with the desired conditions for the zone. If desired conditions and, subsequently, indicators and standards need to be changed, these decisions may be subject to additional compliance.

Finally, if use levels and patterns change substantially, the monument staff may need to initiate additional monitoring of new indicators to ensure that desired conditions are maintained. Some of the potential future user capacity indicators may relate to the topics of vegetation trampling along the John Day River and near pictograph sites, trail condition, and number of people at one time at the monument's major attractions. The selection of any new indicators and standards for monitoring purposes, changes

to the indicators and standards identified in this general management plan, or the implementation of any management actions that affect use would comply with NEPA, the National Historic Preservation Act, and other laws, regulations, and policies as needed. The NPS staff would also inform the public of progress and proposed revisions to indicators and standards through regular reporting on the user capacity program.

Table 4: Summary of User Capacity Indicators, Standards, and Strategies for Monitoring and Management

	User Capacity Indicators	User Capacity Standards	Related Monitoring Strategies	Potential Management Strategies
Cultural Zone	Number of people encountered per hour on designated (official) trails	No more than 80 people encountered per hour	Observations of encounter rates as part of regular patrols; systematic observations would be done, if needed, as a result of an increasing trend in encounter rates	Education (e.g., encourage voluntary redistribution of use); site management (e.g., resize parking lot/access points, alter trail opportunities)
Frontcountry Zone	N/A – User capacity managed by facility capacities	N/A – User capacity managed by facility capacities	Sufficiency of facility capacities would continue to be monitored	Future planning would address conflicts between facility capacity deficiencies and maintaining desired resource conditions and visitor experiences
Pedestrian Zone	<p>1. Number of human-created (unofficial) trails per mile branching from a designated (official) trail</p> <p>2. Number of people encountered per hour on designated (official) trails</p>	<p>1. No more than four human-created (unofficial) trails per mile branching from a designated (official) trail</p> <p>2. No more than 60 people encountered per hour</p>	<p>1. Observations of human-created trails as part of regular patrols; periodic mapping of human-created trails</p> <p>2. Observations of encounter rates as part of regular patrols; systematic observations would be done, if needed, as a result of an increasing trend in encounter rates</p>	<p>1. Education (e.g., educate regarding resource sensitivity and need for appropriate behaviors); site management (e.g., place physical barriers along the trails, close areas); enforcement (e.g., provide signs, increase law enforcement presence, impose sanctions)</p> <p>2. Education (e.g., encourage voluntary redistribution of use); site management (e.g., resize parking lot/access points, alter trail opportunities); reallocation of use (e.g., institute a permitting or reservation system); regulations (e.g., limit group sizes, limit length of stay)</p>
Backcountry Zone	1. Linear feet of human-created (unofficial) trails per acre	1. No more than 5 linear feet of human-created (unofficial) trails per acre	1. Observations of human-created trails as part of regular patrols; periodic mapping of human-created trails	1. Education (e.g., educate regarding resource sensitivity and need for appropriate behaviors); site management (e.g., place physical barriers along trails, close areas); enforcement (e.g., provide signs, increase law enforcement presence, impose sanctions)

	User Capacity Indicators	User Capacity Standards	Related Monitoring Strategies	Potential Management Strategies
Backcountry Zone (continued)	2. Number of people encountered per hour on designated (official) trails	2. No more than 40 people encountered per hour	2. Observations of encounter rates as part of regular patrols; systematic observations would be done, if needed, as a result of an increasing trend in encounter rates	2. Education (e.g., encourage voluntary redistribution of use); site management (e.g., resize parking lot/access points, alter trail opportunities); reallocation of use (e.g., institute a permitting or reservation system); regulations (e.g., limit group sizes, limit length of stay)
Primitive Zone	1. Linear feet of human-created (unofficial) trails per acre 2. Number of groups seen per day (6 a.m. to 9 p.m.) within the primitive zone	1. No more than 1 linear foot of human-created (unofficial) trails per acre 2. No more than three groups seen per day in the zone	1. Observations of human-created trails as part of regular patrols; periodic mapping of human-created trails 2. Observations of encounter rates as part of regular patrols; systematic observations would be done, if needed, as a result of an increasing trend in encounter rates	1. Education (e.g., educate regarding resource sensitivity and need for appropriate behaviors); site management (e.g., close areas); enforcement (e.g., provide signs about appropriate behaviors, increase law enforcement presence, impose sanctions) 2. Education (e.g., encourage voluntary redistribution of use); reallocation of use (e.g., institute a permitting or reservation system); regulations (e.g., limit length of stay)
Transportation Corridor Zone	N/A – The National Park Service does not have management authority over the county and state road corridors, so no user capacity indicators and standards are identified			
Operations Zone	N/A – Minimal public use occurs in this zone, so no user capacity indicators and standards are necessary			

ALTERNATIVE A, NO ACTION

CONCEPT

This alternative would provide a baseline for evaluating changes and impacts in the other alternatives. In the no-action alternative, the National Park Service would continue to manage John Day Fossil Beds National Monument as the monument has been managed since the approval of the 1979 general management plan. For the foreseeable future there would be no major change in the management of the monument. Facilities and resource programs would continue as they are, without change. The natural resource program would continue to focus on inventorying and monitoring; resource protection; and preservation, mitigation, and applied research efforts. The cultural resource program would continue to focus on protecting historic structures and landscapes, particularly in and around the Cant Ranch. The National Park Service would continue to foster partnerships with other agencies, primarily for resource stewardship, interpretive, and administrative purposes. The education programs would continue to focus primarily on schools and paleontology-focused organizations in the region.

Natural and cultural resources would continue to be managed under existing approved plans (e.g., fire management, integrated pest management). As appropriate, archeological surveys and/or monitoring would precede any ground disturbance associated with excavation or construction, and national register-eligible or national register-listed archeological resources would be avoided to the greatest extent possible. To appropriately preserve and protect national register-listed or national register-eligible historic structures and cultural landscapes, all stabilization, preservation and rehabilitation efforts, as well as daily, cyclical, and seasonal maintenance, would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995).

MANAGEMENT ZONING

In alternative A, NPS managers would continue to follow the management zoning scheme described in the *1979 General Management Plan for John Day Fossil Beds National Monument*. Most of the land in the three units would continue to be in either a natural environment zone or outstanding natural feature subzone (which incorporates the most significant paleontological and scenic geologic resources of the monument).

The Cant Ranch would be included within a historic zone while a few small areas that serve the needs of monument visitors and management would continue to be in a development zone (e.g., parking areas, picnic areas, overlooks).

USER CAPACITY

In this alternative NPS managers would continue managing visitors as they have in the past, relying on approved plans. The monument staff would continue to respond to user capacity issues on a case by case basis, with facility capacity largely setting the monument's user capacity. No major new initiatives would be pursued to manage visitors and a monument-wide user capacity approach (i.e., monitoring indicators and standards) would not be established.

MANAGEMENT OF SPECIFIC AREAS

Clarno Unit

Mammal Quarry. The mammal quarry would not be opened under current management, but would be preserved for future study.

Existing Unofficial Trails. The extensive network of human-created unofficial trails that exists around the Hancock Field Station would not be formalized, but trails would be removed as staffing and funding allowed.

Large groups would continue to be permitted with minimal requirements.

Indian Canyon. No changes would occur regarding the management of Indian Canyon. Visitors would continue to be allowed to hike in the area so long as they were not on exposed paleosols.

Visitor Contact Station/Office. Rangers would continue to operate out of the existing facility located adjacent to State Highway 218.

Painted Hills Unit

Painted Hills Overlook. The overlook would be maintained in its present condition with limited shade for visitors and no defined parking space for the Carroll Rim trailhead.

Road to Painted Cove. In the short term, the road to Painted Cove (owned and maintained by Wheeler County) would remain in its present condition as a gravel road.

Painted Hills Picnic Area. The picnic area would be maintained in its present condition, which includes a maintained turf grass area along with a small arboretum. Shade for visitors would remain limited.

Leaf Hill Trail. The Leaf Hill Trail would be maintained in its present condition.

Bridge Creek. Efforts would continue on NPS lands to remove invasive plants and plant native trees to restore the riparian area to a more “natural” landscape.

Sheep Rock Unit

Cant Ranch. The James Cant Ranch Historic District would continue to be managed to maintain its cultural landscape and features. As part of maintaining the cultural landscape, the four fields would continue to be leased for hay production, with flood irrigation and traditional agricultural practices being employed. Efforts would continue to preserve the barn through stabilization and some rehabilitation. Picnic facilities would remain near the Cant Ranch house, which would continue to be used as the monument

headquarters. Public restrooms would continue to be available inside the ranch house, accessible during normal monument business hours.

Thomas Condon Paleontology Center. The paleontology center would continue to serve as the primary visitor contact site for the monument. No new services or facilities would be provided.

John Day River. NPS managers would continue to focus their efforts on vegetation management and plantings along the riparian area.

Butler Basin. No changes would occur regarding the management of Butler Basin above the paleontology center. Visitors would continue to be allowed to hike in the area so long as they were not on exposed paleosols.

Research Natural Area. One research natural area exists in the monument in the Sheep Rock Unit. The Sheep Rock Research Natural Area was nominated in 1985 and includes approximately 920 acres. It is composed of two geographically separated sites: the Rock Creek and Waterspout Gulch sites. The Rock Creek site includes 440 acres and consists of three distinct parts: a steep hillside on the north side of State Highway 26, the riparian zone along Rock Creek, and the steep hillside on the south side of State Highway 26. The Waterspout Gulch site includes 480 acres and lies to the east of the John Day River on steeply sloped uplands above the rock prominence called Sheep Rock.

Most of the research natural area is relatively inaccessible and is unaffected by past livestock grazing. Consequently, the vegetative communities are in fairly pristine condition. In alternative A, the research natural area would continue to be managed to protect its pristine qualities.

BOUNDARY ADJUSTMENTS

No new boundary adjustments would be pursued in Alternative A.

PARTNERSHIPS, PROGRAMS, AND ACTIVITIES

The National Park Service would continue its partnership with the Bureau of Land Management, U.S. Forest Service, and the U.S. Fish and Wildlife Service to share resources on paleontology and archaeology in the John Day Basin. An interagency agreement, signed by the three agencies in 2001, allows the monument to provide staffing and expertise on paleontological resource needs in the John Day Basin while the Bureau of Land Management provides staffing and expertise on archeological resource issues in the monument. Furthermore, the agreement allows NPS staff to conduct paleontological inventories on the other agencies’ lands in the John Day Basin and to store their fossils in the monument’s repository. The National Park Service also has a formal arrangement with the Bureau of Land Management for law enforcement. The Bureau of Land Management provides a full-time law enforcement ranger that is assigned to the monument. This ranger spends one-half of his time on NPS law enforcement under a reimbursable agreement between the two agencies. This would continue in alternative A.

The monument would continue to work with museums and universities around the world on paleontological research and curation methods.

The monument would continue its long-standing partnership with the Oregon Museum of Science and Industry through its Hancock Field Station located in the monument. Monument staff would continue to work with Hancock staff on interpretive programs and special projects in the Clarno Unit.

ESTIMATED COSTS

Cost estimates for alternative A are identified below in Table 5. The cost estimates, in 2006 dollars, shown here are not for budgetary purposes; they are only intended to show a very general *relative* comparison of costs between the alternatives. A discussion of the development of the costs and a comparison between the alternatives is included after the description of the alternatives.

The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan* could be many years in the future.

Development

Alternative A would continue the current level of facilities with no additional development.

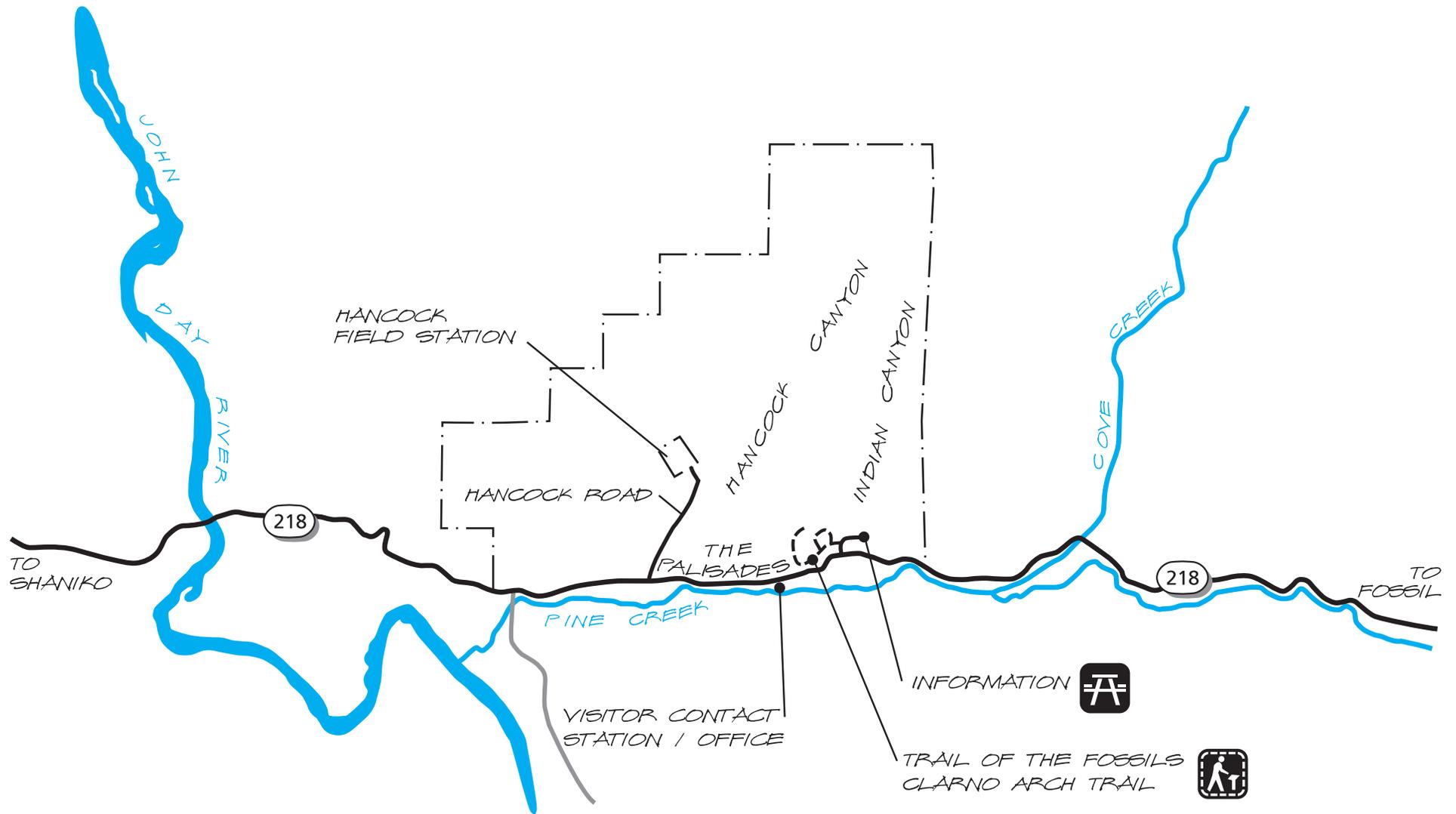
Staff and Operations

As of 2006, the monument’s staff consisted of 19 permanent employees. With the hiring of seasonal staff, the monument’s staff grew to as high as 40 people in the summer. This approximate staffing level would continue in alternative A.

The monument’s annual operating budget (FY 2006) was \$1,348,000.

Table 5: Estimated Costs, Alternative A

Recurring Costs	
NPS Operations	\$ 1.3 Million/Year
Bridge Creek Restoration	\$ 30,000/Year
John Day River Restoration	\$ 91,000/Year
No One-time Capital Costs	



— . Park Boundary

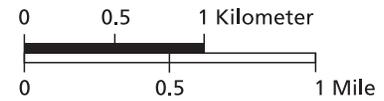


Figure 2 Alternative A Clarno Unit

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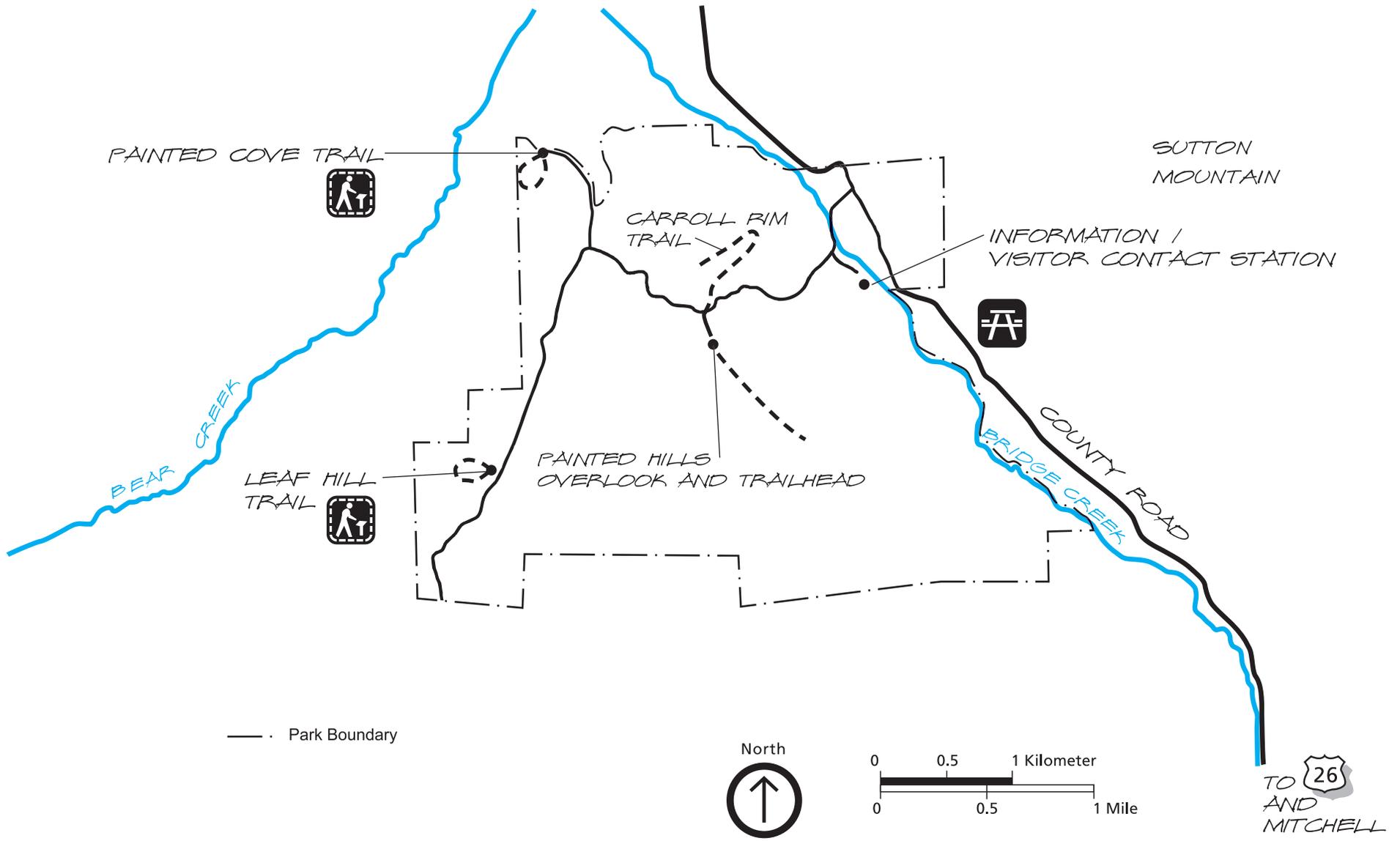


Figure 3 Alternative A Painted Hills Unit

John Day Fossil Beds National Monument
U.S. Department of the Interior / National Park Service
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ALTERNATIVE B, THE PREFERRED ALTERNATIVE

CONCEPT

Alternative B is the National Park Service's preferred alternative. In this alternative, resource protection, research, and visitor opportunities would be enhanced while operational efficiencies would be improved. Natural conditions in the monument would be restored and enhanced where considered most effective. Visitor opportunities would be expanded through improvements in existing facilities, establishment of new trails, and increased interpretive efforts. Sustainability of monument operations would be stressed.

Monument staff would focus on gaining a greater understanding of the monument's paleontological resources through expanded research. The monument staff would seek more partnerships with other research institutions and museums while expanding the permanent and volunteer research staff at the monument. On a regional level, the monument staff would increase the amount of partnerships in the John Day Basin.

Interpretive programs at locations such as the mammal quarry would be implemented and the public would be provided better access to important research areas that may currently be difficult to access or are unpublicized.

In an effort to minimize human impacts within the monument, visitors would be encouraged to use existing designated trails, and human-created unofficial trails would be eliminated. Group sizes would be limited in the backcountry. Construction of new monument facilities would be limited and would focus on improving visitor opportunities. It is important to stress that although new visitor opportunities would be offered in alternative B, the National Park Service would continue to maintain and protect natural and cultural resources in the

monument and not permit new developments that would be inappropriate for the monument.

In this alternative, where possible, any new facilities would be constructed in already disturbed areas. Disturbance to sensitive areas such as wetlands would also be avoided or mitigated whenever possible. (See the "Mitigation" section.)

As appropriate, archeological surveys and/or monitoring would precede any ground disturbance associated with excavation or construction, and archeological resources that are listed in or eligible for listing in the national register would be avoided to the greatest extent possible. To appropriately preserve and protect national register-listed or national register-eligible historic structures and cultural landscapes, all stabilization, preservation and rehabilitation efforts, as well as daily, cyclical, and seasonal maintenance, would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995).

MANAGEMENT ZONING

Figures 5, 6, and 7 show how John Day Fossil Beds National Monument would be zoned in alternative B. (The management zones are described near the end of the "Introduction to the Alternatives" section.) Most of the monument would be included in the backcountry or primitive zones, with a few relatively small frontcountry, cultural, and monument operations zones. Popular trails are generally included within the pedestrian zone. Existing circulation patterns in the monument would be maintained; therefore, all primary roads are included in the transportation corridor zone.

USER CAPACITY

As described in the management zones and in the beginning of this chapter, monument staff would monitor social and resource indicators, evaluate current conditions against standards, and take appropriate steps to ensure the monument's user capacity is not exceeded. See table 4 for the user indicators, standards, and management and monitoring strategies that would be followed under this alternative.

MANAGEMENT OF SPECIFIC AREAS

Clarno Unit

Mammal Quarry. Working with interested partners, monument managers would open the mammal quarry for research and interpretation. Testing would be conducted with the intent of excavating portions of the mammal quarry that show significant fossil deposits. Analyses would be conducted to ascertain the abundance, distribution, and orientation of the fossiliferous sediments proximal to the quarry and to perform excavations to test paleoecological hypotheses, taphonomic explanations, and paleoclimatic models. A small awning would be constructed to protect paleontological resources and allow public visitation, and secure perimeter fencing would be installed. The focus would be on a seasonal operation that provides opportunities to advance research goals alongside public viewing and interpretation.

Geo-Loop Trail. A new gravel parking area, accommodating approximately eight cars and two RVs, and a trailhead would be constructed immediately east of the Hancock Field Station. Existing human-created unofficial trails would be formalized in order to provide a loop trail, approximately 4 miles in length, that accesses the Hancock Tree, the Clarno Nut Beds, and the mammal quarry. If possible, that portion of the trail that goes from the new trailhead to the Hancock Tree (approximately 0.4 miles) would be made

accessible for people with disabilities, constructed of a combination of asphalt and a boardwalk. Because this trail would be designed to receive higher levels of use, it would be included in a pedestrian management zone.

Mimulus Trail. This existing, human-created unofficial trail, approximately 2 miles long, would be formalized. The official trail would extend southwest of the Hancock Field Station, run across the top of the palisades to the ridge between Indian and Hancock canyons, and then connect with a trail between the ridges (see figure 5). Although most of the trail is already present, approximately 0.5 mile of new trail would need to be constructed. The Mimulus Trail would be designed for low to moderate use levels, which would be consistent in character with the surrounding backcountry zone.

Stegamonster Trail. This existing human-created unofficial trail would be formalized. This trail is about 2 miles long, and runs from just south of the Hancock Field Station to the east and up to the ridge between Indian and Hancock canyons (see figure 5). The Stegamonster Trail would be designed for low to moderate use levels, which would be consistent in character with the surrounding backcountry zone.

Trail Removal. All undesignated human-created trails would be removed and the areas restored.

Indian Canyon. No changes would occur regarding the management of Indian Canyon. Visitors would continue to be allowed to hike in the area so long as they were not on exposed paleosols.

Visitor Contact Station/Office. Rangers would continue to operate out of the existing facility located adjacent to State Highway 218.

Painted Hills Unit

Painted Hills Overlook. The overlook would be redesigned to improve visitor access and overall aesthetics. It would accommodate parking for the Carroll Rim Trail and a new shade structure would be added for visitor comfort.

Road to Painted Cove. In this alternative, the National Park Service would work with Wheeler County to seek funding to pave the county-owned and county-maintained road to Painted Cove. If funds were obtained, the NPS managers would work with the county to incorporate a design that would ensure that the rural character of the area is retained. NPS managers would encourage the county to adopt NPS road standards and use alternative surfacing treatments.

Painted Hills Picnic Area. The picnic area would be maintained in its present condition, which includes a maintained turf grass area along with a small arboretum. New shade structures would be added for visitor comfort.

Leaf Hill Trail. The Leaf Hill Trail would be maintained in its present condition.

Bridge Creek Restoration. As in the no-action alternative, efforts would continue on NPS lands to remove invasive plants and to plant native trees to restore the riparian area to a more “natural” landscape. In addition, in this alternative NPS managers would seek a cooperative agreement to partner with the adjacent landowner on a collaborative creek restoration effort. If an agreement were obtained, NPS managers would work with the landowner to remove invasive plants and to plant native trees on their side of the creek.

Sheep Rock Unit

Cant Ranch. The James Cant Ranch Historic District would continue to be managed to maintain its cultural landscape and features. As part of the cultural landscape, the four fields would continue to be leased for hay production, with flood

irrigation, sprinkler irrigation, and traditional and modern agricultural practices being employed. However, management would focus on improvements in sustainability of the agricultural operation, such as improving water conservation through land leveling and/or sprinkler installation. The National Park Service would continue to irrigate the fields under its existing water rights. The focus for the Cant Ranch barn would continue to be on preservation, including some rehabilitation.

As in the no-action alternative, public restrooms would be available inside the Cant Ranch house, accessible during normal monument business hours.

Thomas Condon Paleontology Center. The paleontology center would continue to serve as a primary visitor contact / interpretive focal point for the monument. No new services or facilities would be provided.

NPS managers also would work with the Oregon Department of Transportation to explore possible safety measures or options for visitors to safely cross State Highway 19 to access Cant Ranch. These measures could include lowering speed limits or putting in a crosswalk.

John Day River. As in the no-action alternative, NPS managers would continue to focus their efforts on vegetation management and plantings along the riparian area. In addition, in this alternative NPS managers would take actions to restore the river’s hydrologic and riparian function in the monument. Dikes and rock barbs would be removed when the banks are stabilized either through the reestablishment of riparian vegetation or other factors.

Butler Basin. No changes would occur regarding the management of Butler Basin, above the paleontology center. Visitors would continue to be allowed to hike in the area so long as they were not on exposed paleosols.

Research Natural Area. One research natural area exists in the monument in the Sheep Rock Unit. The Sheep Rock Research Natural Area was nominated in 1985 and includes approximately 920 acres. It is composed of two geographically separated sites: the Rock Creek and Waterspout Gulch sites. The Rock Creek site includes 440 acres and the Waterspout Gulch site includes 480 acres. Both of these sites are in steep, rugged topography, are relatively inaccessible, and are unaffected by past livestock grazing. In alternative B the research natural area would continue to be managed to protect its pristine qualities. The proposed management zoning for Alternative B is compatible with this special designation.

BOUNDARY ADJUSTMENTS

The National Park Service would pursue a land exchange between an adjacent private landowner and the Bureau of Land Management around Cathedral Rock in the Sheep Rock Unit. This land exchange, involving up to 1,000 acres, would protect a key geologic feature and up to 100 acres of important riparian habitat along the John Day River. As noted in appendix B, if this land were managed by the National Park Service, a boundary adjustment would satisfy NPS criteria and policies.

PARTNERSHIPS, PROGRAMS, AND ACTIVITIES

The National Park Service would continue its partnership with the Bureau of Land Management, U.S. Forest Service, and the U.S. Fish and Wildlife Service to share resources on paleontology and archaeology in the John Day Basin. An interagency agreement signed by the three agencies in 2001, allows the monument to provide staffing and expertise on paleontological resource needs in the John Day Basin while the Bureau of Land Management provides staffing and expertise on archeological resource needs in the monument.

Furthermore, the agreement allows NPS staff to conduct paleontological inventories on other agencies' lands in the John Day Basin and to store fossils from those lands in the monument's repository. The National Park Service and Bureau of Land Management would continue to share and jointly fund a full time law enforcement ranger.

The monument would continue to work with museums and universities around the world on paleontological research and curation methods. Planning assistance would be sought from such sources for opening the Mammal Quarry and for programming assistance for developing and operating interpretive activities on site.

The monument staff would continue its long-standing partnership with the Oregon Museum of Science and Industry through its Hancock Field Station located in the monument. Monument staff would continue to work with Hancock staff on interpretive programs and special projects in the Clarno Unit. In particular, the monument staff would seek to engage Hancock staff and volunteers in eliminating human-created unofficial trails and restoring the areas to natural conditions.

As noted above, in the Painted Hills Unit monument staff would seek to collaborate with the adjacent landowner on a comprehensive restoration effort that encompasses both sides of Bridge Creek. In addition, NPS staff would work with Wheeler County to obtain funding to pave the road to Painted Cove using a design approach that would maintain the rural character of the area.

ESTIMATED COSTS

Cost estimates for alternative B are identified below in table 6. The cost estimates, in 2006 dollars, shown here are not for budgetary purposes; they are intended to only show a very general *relative* cost comparison among

the alternatives. The actual costs to the federal government could vary depending on various factors such as the final design of each facility, opportunities for partnerships, and future economic conditions. Note that these costs do not include the costs for any additional plans or studies. A discussion of the development of the costs and a comparison between the alternatives is included after the description of the alternatives.

The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan* could be many years in the future.

Development

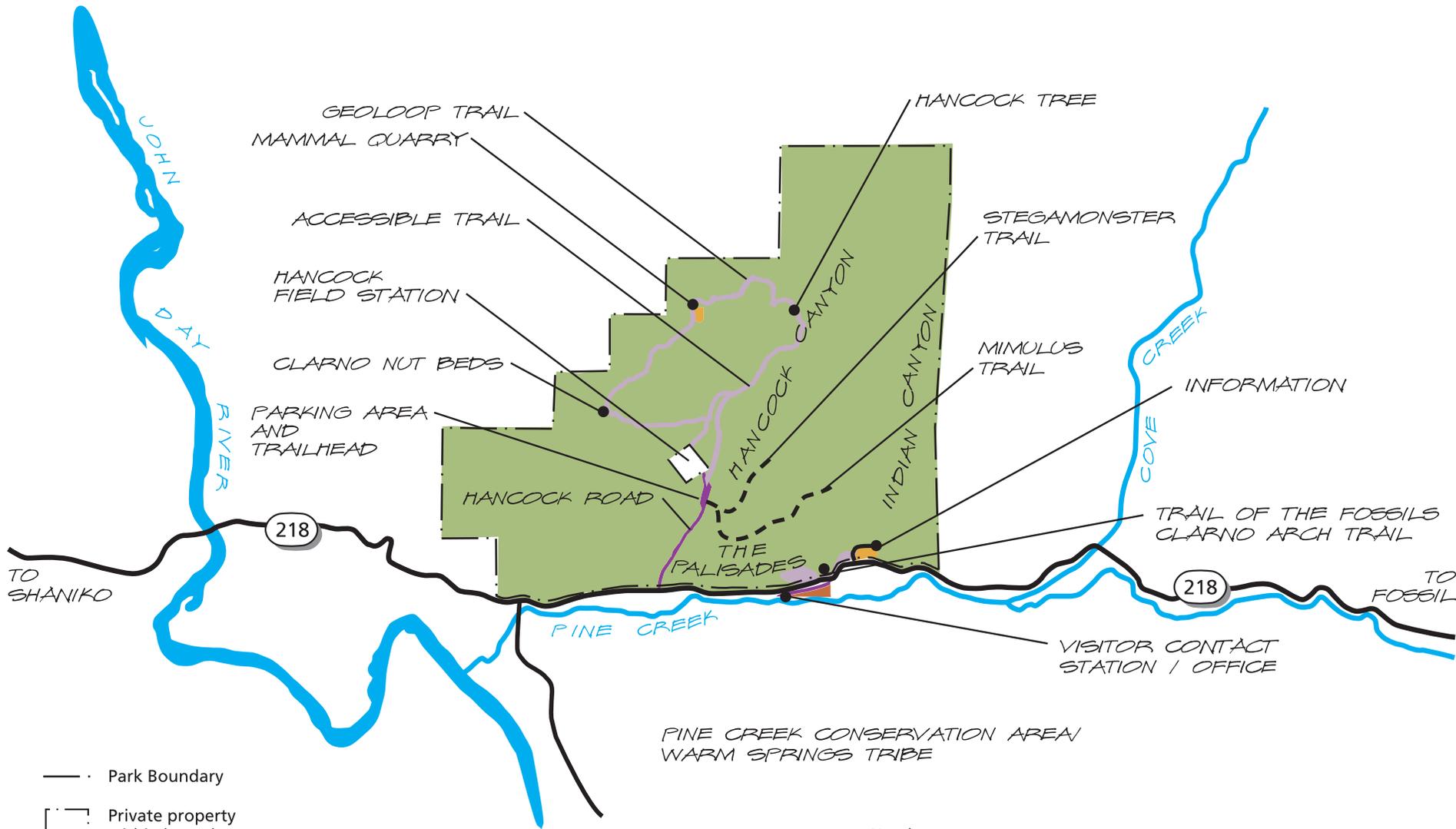
Alternative B would consist of the improvements to facilities and structures described previously in the alternative. The estimated development cost in 2006 dollars is approximately \$1.0 million.

Staff and Operations

This alternative would be implemented with the current staffing levels plus 6.5 full-time equivalent staff (FTEs) for research, resource protection, and interpretation. (One FTE is one person working 40 hours per week for one year, or the equivalent.) The monument’s operating budget would need to be increased by approximately \$650,000. The total cost to operate the monument in this alternative would be \$2.0 million per year (in 2006 dollars).

Table 6: Estimated Costs, Alternative B

Recurring Costs	
NPS Operations	\$ 2.0 million/year
Bridge Creek restoration	\$ 30,000/year
John Day River restoration	\$ 91,000/year
6.5 FTE	\$650,000/year
One-time Capital Costs	
Clarno Unit	
Mammal quarry facility	\$ 45,500
Geo-Loop Trail and parking area	\$ 528,200
Formalize Mimulus & Stegamonster trails	\$ 51,680
Painted Hills Unit	
Redesign Painted Hills Overlook	\$ 88,400 (if paved)
Shade structure at Painted Hills picnic area	\$ 30,000
Monument-wide	
Social trail closure and restoration	\$ 25,000
TOTAL CAPITAL COSTS (rounded)	\$ 770,000



PINE CREEK CONSERVATION AREA
WARM SPRINGS TRIBE

- Park Boundary
- - - Private property within boundary
- - - Proposed trail (in backcountry zone)

- ZONE**
- Park Operations
 - Frontcountry
 - Pedestrian
 - Backcountry
 - Primitive
 - Transportation Corridor

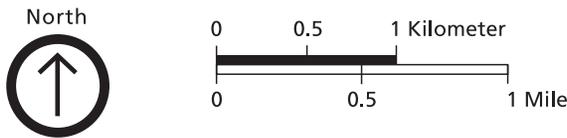


Figure 5 Alternative B Clarno Unit

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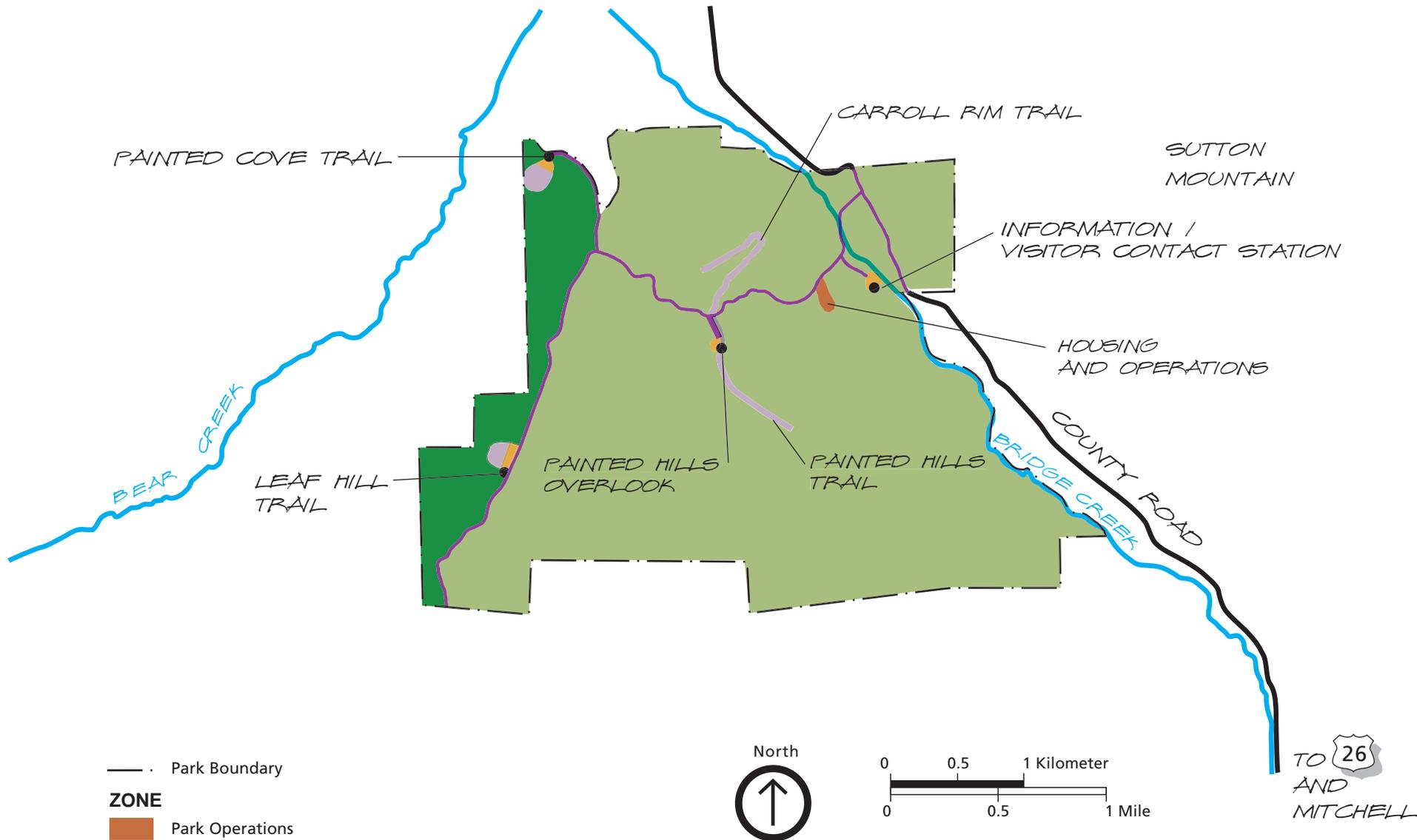
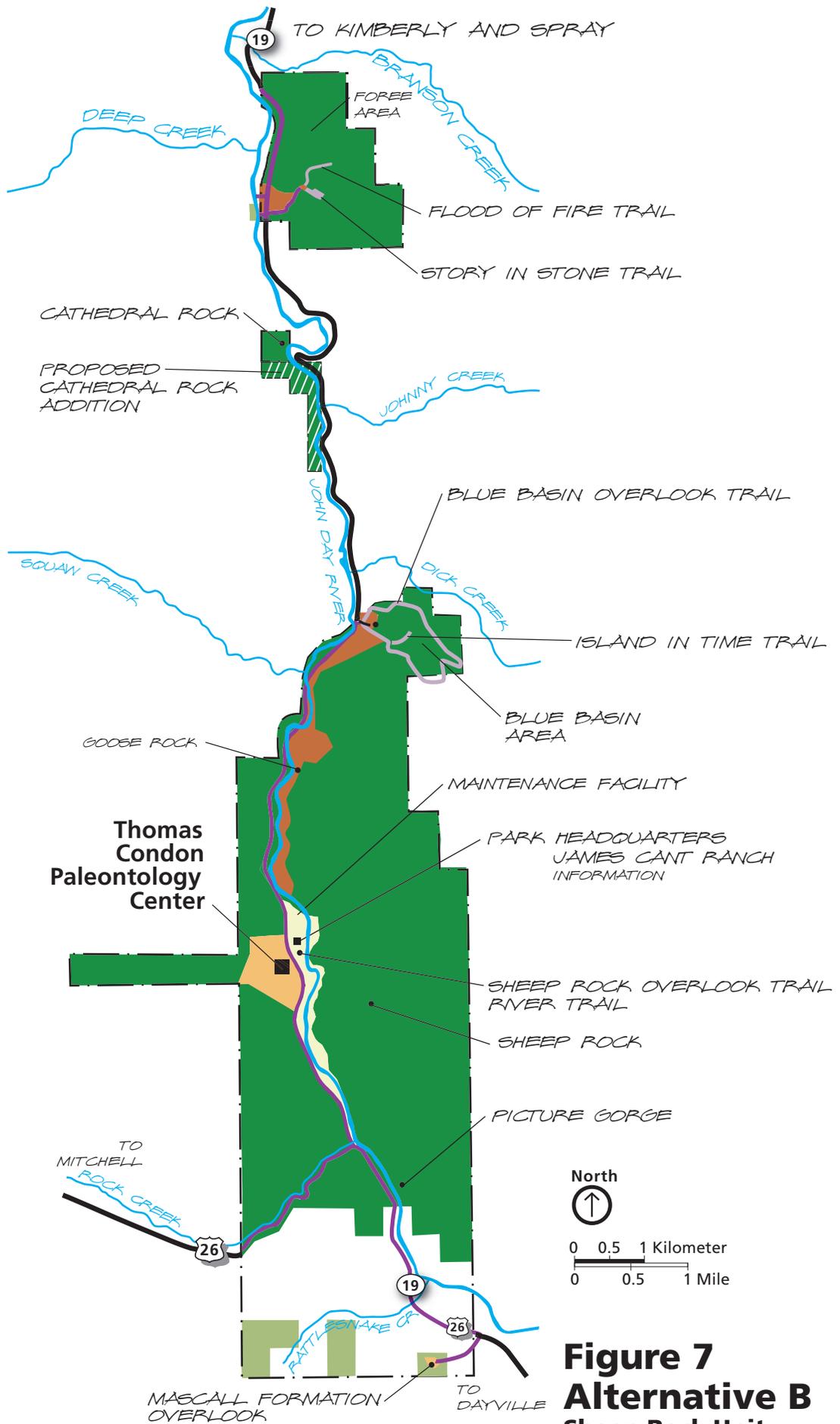


Figure 6 Alternative B Painted Hills Unit

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-  Private property within boundary
-  Proposed Boundary
-  Park Boundary

- ZONE**
-  Park Operations
 -  Cultural
 -  Frontcountry
 -  Pedestrian
 -  Backcountry
 -  Primitive
 -  Transportation Corridor

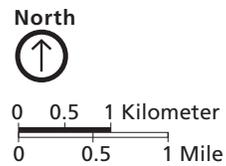


Figure 7 Alternative B Sheep Rock Unit

John Day Fossil Beds National Monument
U.S. Department of the Interior / National Park Service
DSC • Dec 07 • 177 • 20050

ALTERNATIVE C

CONCEPT

In alternative C, NPS managers would focus on enhancing resource protection, research, and visitor opportunities. Although there would be more visitor facilities built in this alternative, it would provide a greater opportunity for visitors to experience resources in relatively natural or recovering conditions. Environmental conditions in the monument would be restored and enhanced wherever possible.

NPS managers would focus on gaining a greater understanding of the monument's paleontological resources through expanded research. On a regional level, the monument staff would increase the amount of partnerships in the John Day Basin to encourage this research. The monument staff would seek more partnerships with other research institutions and museums while expanding the permanent and volunteer research staff at the monument.

Interpretive programs at locations such as the mammal quarry would be implemented and the public would be provided better access to important research areas that may currently be difficult to access or are unpublicized.

In an effort to minimize human impacts within the monument, visitors would be encouraged to use existing designated trails and human-created unofficial trails would be eliminated. As in alternative B, the National Park Service would continue to maintain and protect natural and cultural resources in the monument and not permit new developments that would be inappropriate for the monument.

The remainder of this section describes how different areas of the monument would be managed and what actions the National Park Service would take in this alternative. These actions are believed most likely to be implemented over the next 15 to 20 years. In

this alternative, where possible, any new facilities would be constructed in already disturbed areas. Disturbance to sensitive areas such as wetlands would also be avoided or mitigated whenever possible. (See the "Mitigation" section.)

As appropriate, archeological surveys and/or monitoring would precede any ground disturbance associated with excavation or construction, and archeological resources that are listed in or eligible for listing in the national register would be avoided to the greatest extent possible. To appropriately preserve and protect national register-listed or national register-eligible historic structures and cultural landscapes, all stabilization, preservation and rehabilitation efforts, as well as daily, cyclical, and seasonal maintenance, would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995).

MANAGEMENT ZONING

Figures 8, 9, and 10 show how John Day Fossil Beds National Monument would be zoned in alternative C. (The management zones are described near the end of the "Introduction to the Alternatives" section.) Most of the monument would be included in the backcountry or primitive zones in the three units, with a few relatively small frontcountry, cultural, and operations zones. Popular trails are generally included within the pedestrian zone. Existing circulation patterns in the monument would be maintained; therefore all primary roads are included in the transportation corridor zone. The primary distinction between the zoning of this alternative and alternative B is that in alternative C the pedestrian zone was not applied to the Leaf Hill area in the Painted Hills Unit, and a backcountry zone was applied to Butler Basin in the Sheep Rock Unit.

USER CAPACITY

As described in the management zones and in the beginning of this chapter, monument staff would monitor social and resource indicators, evaluate current conditions against standards, and take appropriate steps to ensure the monument's user capacity is not exceeded. See table 4 for the user indicators, standards, and management and monitoring strategies that would be followed under this alternative.

MANAGEMENT OF SPECIFIC AREAS

Clarno Unit

Mammal Quarry. Working with interested partners, monument managers would open the mammal quarry for research and interpretation. Testing would be conducted with the intent of excavating portions of the mammal quarry that show significant fossil deposits. Analyses would be conducted to ascertain the abundance, distribution, and orientation of the fossiliferous sediments proximal to the quarry and to perform excavations to test paleoecological hypotheses, taphonomic explanations, and paleoclimatic models. A small awning would be constructed to protect paleontological resources and allow public visitation, and secure perimeter fencing would be installed. The focus would be on a seasonal operation that provides opportunities to advance research goals alongside public viewing and interpretation.

Geo-Loop Trail. A new gravel parking area, accommodating eight cars and two RVs, and a trailhead would be constructed east of the Hancock Field Station. Existing human-created unofficial trails would be formalized in order to provide an approximately 4-mile-long loop trail that accesses the Hancock Tree, the Clarno Nut Beds, and the mammal quarry. If possible, that portion of the trail that goes from the new trailhead to the Hancock Tree (approximately 0.4 mile) would be made accessible for people with disabilities, constructed of a combination of asphalt and a

boardwalk. Remaining undesignated human-created trails would be removed.

Mimulus Trail. This existing, human-created, unofficial trail, approximately 2 miles long, would be formalized. The official trail would extend southwest of the Hancock Field Station, traverse the palisades to the ridge between Indian and Hancock canyons, then connect with a trail between the ridges (see figure 8). Although most of the trail is already present, approximately 0.5 mile of new trail would need to be constructed. The trail would be in a backcountry zone.

Stegamonster Trail. The existing human-created, unofficial trail would be formalized. This trail, about 2 miles in length, runs from just south of the Hancock Field Station to the east and up to the ridge between Indian and Hancock canyons (see figure 8). The trail would be in a backcountry zone.

Indian Canyon Trail. As a way to provide a long distance trail experience at the Clarno Unit, a new trail, approximately 3 miles long, would be constructed up Indian Canyon to provide hikers with additional opportunities to see and enjoy the wonderful scenery. The trail would be in a pedestrian zone.

Visitor Contact Station/Office. The existing Clarno Unit ranger office provides very limited equipment storage space and space for visitor contact. To address these needs, a new 200-square-foot visitor contact station / ranger office would be constructed in the Clarno Unit at the picnic area.

Painted Hills Unit

Painted Hills Overlook. The overlook would be redesigned to improve visitor access and overall aesthetics. It would accommodate parking for the Carroll Rim Trail and a new shade structure would be added for visitor comfort.

Road to Painted Cove. In alternative C the National Park Service would work with Wheeler County to seek funding to pave the county-owned and county-maintained road to

Painted Cove. If funds were obtained, NPS managers would work with the county to ensure that the rural character of the area is retained. NPS managers would encourage the county to adopt NPS road standards and use alternative surfacing treatments.

Painted Hills Picnic Area. The picnic area would be maintained, but the area would be restored to a native plant community with the arboretum removed. New shade structures would be added for visitor comfort.

Leaf Hill Trail. In alternative C the Leaf Hill Trail would be closed to public access and restored. The trail would be closed to reduce the potential for visitors illegally taking fossils from this area.

Bridge Creek Restoration. As in the no-action alternative, efforts would continue on NPS lands to remove invasive plants and to plant native trees to restore the riparian area to a more “natural” landscape. In addition, in this alternative NPS managers would seek a cooperative agreement to partner with the adjacent landowner on a collaborative creek restoration effort. If an agreement were obtained, NPS managers would work with the landowner to remove invasive plants and to plant native trees on their side of the creek.

Sheep Rock Unit

Cant Ranch. The James Cant Ranch Historic District would continue to be managed to maintain its cultural landscape and features. However, in alternative C the four fields would be restored to native vegetation to the degree possible, thereby reducing water consumption and improving ecosystem health. In the interim, efforts would also be needed to monitor for and control invasive weeds that would likely spread over the fields. The focus for the Cant Ranch barn would continue to be on preservation, including some rehabilitation.

In this alternative, new public restrooms would be constructed outside of the Cant Ranch house. Unlike the current situation, these new restrooms would be open to the

public outside of normal monument business hours. This would also require the expansion of existing utilities (septic tank/leach field) in the area.

Thomas Condon Paleontology Center. The paleontology center would continue to serve as a primary visitor contact / interpretive focal point for the monument. In alternative C, a new picnic area would be constructed near the paleontology center as a convenience for visitors.

NPS managers also would work with the Oregon Department of Transportation to explore possible safety measures or options for visitors to safely cross State Highway 19 to access Cant Ranch, such as lowering speed limits or putting in a crosswalk.

John Day River. As in the no-action alternative, NPS managers would continue to focus their efforts on vegetation management and plantings along the riparian area. In addition, in this alternative NPS managers would take additional actions to restore the river’s hydrologic and riparian function in the monument. Dikes and rock barbs would be removed when the banks are stabilized either through the reestablishment of riparian vegetation or other factors.

Butler Basin. A new trail, approximately 2.5 miles in length, would be constructed. This new trail would provide visitors with another opportunity to see and enjoy the monument. The trail would depart the paleontology center and travel west to an overlook. The trail would be in a backcountry zone.

Research Natural Area. One research natural area exists in the monument in the Sheep Rock Unit. The Sheep Rock Research Natural Area was nominated in 1985 and includes approximately 920 acres. It is composed of two geographically separated sites: the Rock Creek and Waterspout Gulch sites. The Rock Creek site includes 440 acres and the Waterspout Gulch site includes 480 acres. Both of these sites are in steep, rugged topography, are relatively inaccessible, and are

unaffected by past livestock grazing. In alternative C the research natural area would continue to be managed to protect its pristine qualities. The proposed management zoning for Alternative C is compatible with this special designation.

BOUNDARY ADJUSTMENTS

The National Park Service would pursue a land exchange with an adjacent private landowner and the Bureau of Land Management around Cathedral Rock in the Sheep Rock Unit. This land exchange, covering about 100 acres, would protect a key geologic feature and important riparian habitat along the John Day River. As noted in appendix B, this boundary adjustment would satisfy NPS criteria and policies for adjusting the monument's boundary.

PARTNERSHIPS, PROGRAMS, AND ACTIVITIES

The National Park Service would continue its partnership with the Bureau of Land Management, U.S. Forest Service, and the U.S. Fish and Wildlife Service to share resources on paleontology and archaeology in the John Day Basin. An interagency agreement signed by the three agencies in 2001, allows the monument to provide staffing and expertise on paleontological resource needs in the John Day Basin while the Bureau of Land Management provides staffing and expertise on archeological resource needs in the monument. Furthermore, the agreement allows NPS staff to conduct paleontological inventories on their lands in the John Day Basin and to store fossils from those lands in the monument's repository. The National Park Service and Bureau of Land Management would continue to share and jointly fund a full time law enforcement ranger.

The monument would continue to work with museums and universities around the world on paleontological research and curation methods. Planning assistance would be sought

from such sources for opening the Mammal Quarry and for programming assistance for developing and operating interpretive activities on site.

The monument staff would continue its long-standing partnership with the Oregon Museum of Science and Industry through its Hancock Field Station located in the monument. Monument staff would continue to work with Hancock staff on interpretive programs and special projects in the Clarno Unit. In particular, the monument staff would seek to engage Hancock staff and volunteers in eliminating human-created unofficial trails in the Clarno Unit and restoring the areas to natural conditions.

As noted above, in the Painted Hills Unit, NPS staff would seek to collaborate with the adjacent landowner on a comprehensive restoration effort that encompasses both sides of Bridge Creek. In addition, NPS staff would work with Wheeler County to obtain funding to pave the road to Painted Cove in a fashion that maintains the rural character of the area.

ESTIMATED COSTS

Costs shown here are not for budgetary purposes; they are only intended to show a very general *relative* comparison of costs between the alternatives. A discussion of the development of the costs and a comparison between the alternatives is included after the description of the alternatives. The actual costs to the federal government could vary depending on various factors such as the final design of each facility, opportunities for partnerships, and current economic conditions. Note that these costs do not include the costs for any additional plans or studies needed. A discussion of the development of the costs and a comparison between the alternatives is included after the description of the alternatives.

The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding

and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan* could be many years in the future.

Development

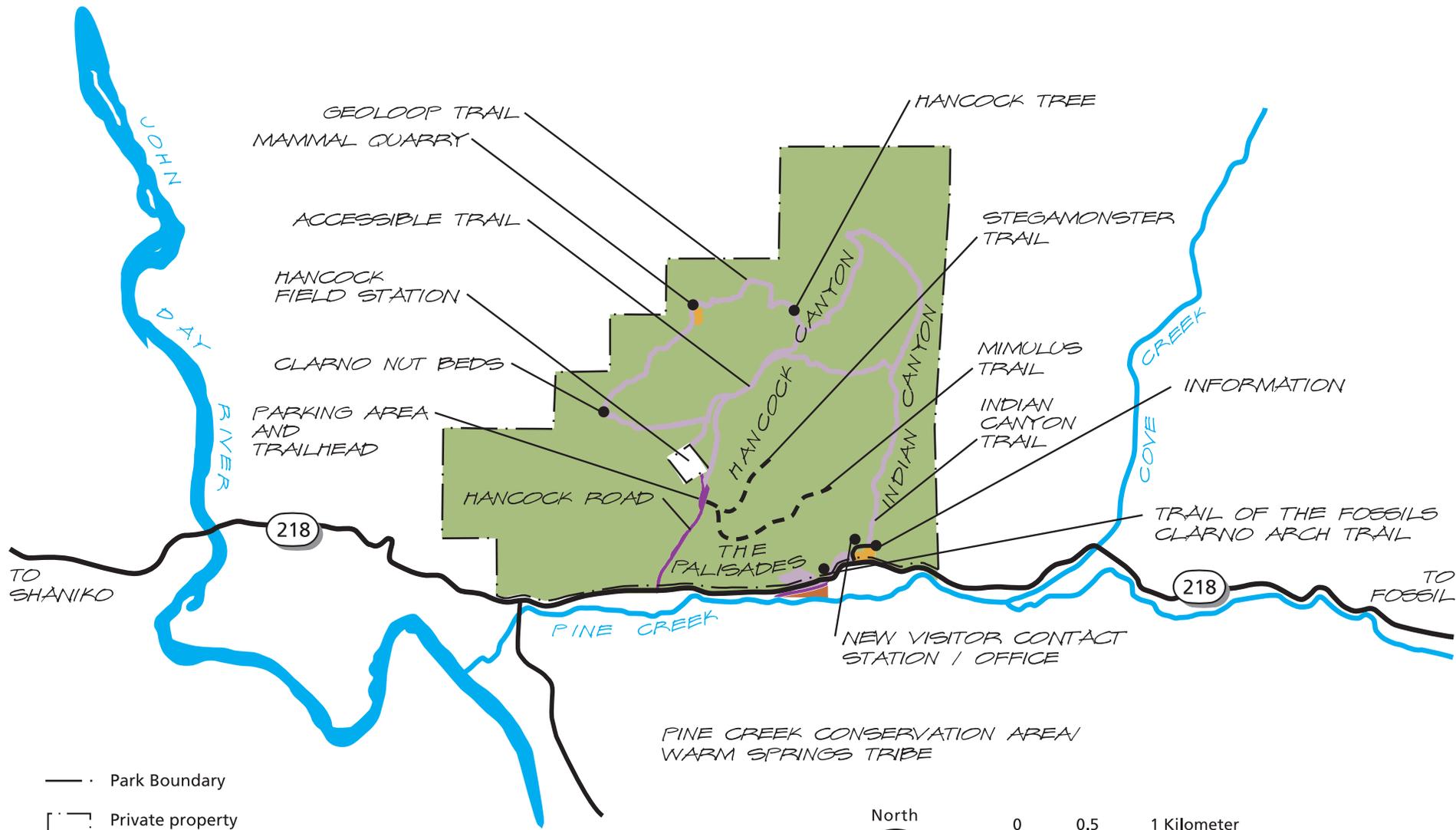
Alternative C would consist of the improvements to facilities and structures described previously in the alternative. The estimated development cost (in 2006 dollars) is \$1.8 million.

Staff and Operations

This alternative would be implemented with the current staffing levels plus 6.5 full-time equivalent staff (FTEs) for research, resource protection, and interpretation. (One FTE is one person working 40 hours per week for one year, or the equivalent.) The total cost to operate the monument in this alternative would be \$2.0 million per year (in 2006 dollars).

Table 7: Estimated Costs, Alternative C

Recurring Costs	
Monument Operations	\$ 2.0 million/year
Restore Painted Hills picnic area	\$ 3,000/year for 3 years
Bridge Creek restoration	\$ 30,000/year
John Day River restoration	\$ 91,000/year
6.5 FTE	\$650,000/year
One-time Capital Costs	
Clarno Unit	
Mammal quarry facility	\$ 45,500
Geo-Loop Trail and parking area	\$ 528,200
Formalize Mimulus & Stegamonster Trails	\$ 51,680
Indian Canyon Trail	\$ 234,000
Visitor contact station/office	\$ 78,000
Painted Hills Unit	
Close and restore Leaf Hill Trail	\$ 5,000
Redesign Painted Hills Overlook	\$ 88,400 (if paved)
Shade structure at Painted Hills picnic area	\$ 30,000
Sheep Rock Unit	
Restore Cant Ranch agricultural fields	\$ 111,000
Cant Ranch restrooms	\$ 169,000
Butler Basin Trail	\$ 206,500
Picnic area at Paleo Center	\$ 60,000
Monument-wide	
Social trail closure and restoration	\$ 25,000
TOTAL CAPITAL COSTS (rounded)	\$ 1.64 million



PINE CREEK CONSERVATION AREA
WARM SPRINGS TRIBE

- Park Boundary
- ⌈ Private property within boundary
- - - Proposed trail (in backcountry zone)

- ZONE**
- Park Operations
 - Frontcountry
 - Pedestrian
 - Backcountry
 - Primitive
 - Transportation Corridor

North



0 0.5 1 Kilometer

0 0.5 1 Mile

Figure 8
Alternative C
Clarno Unit
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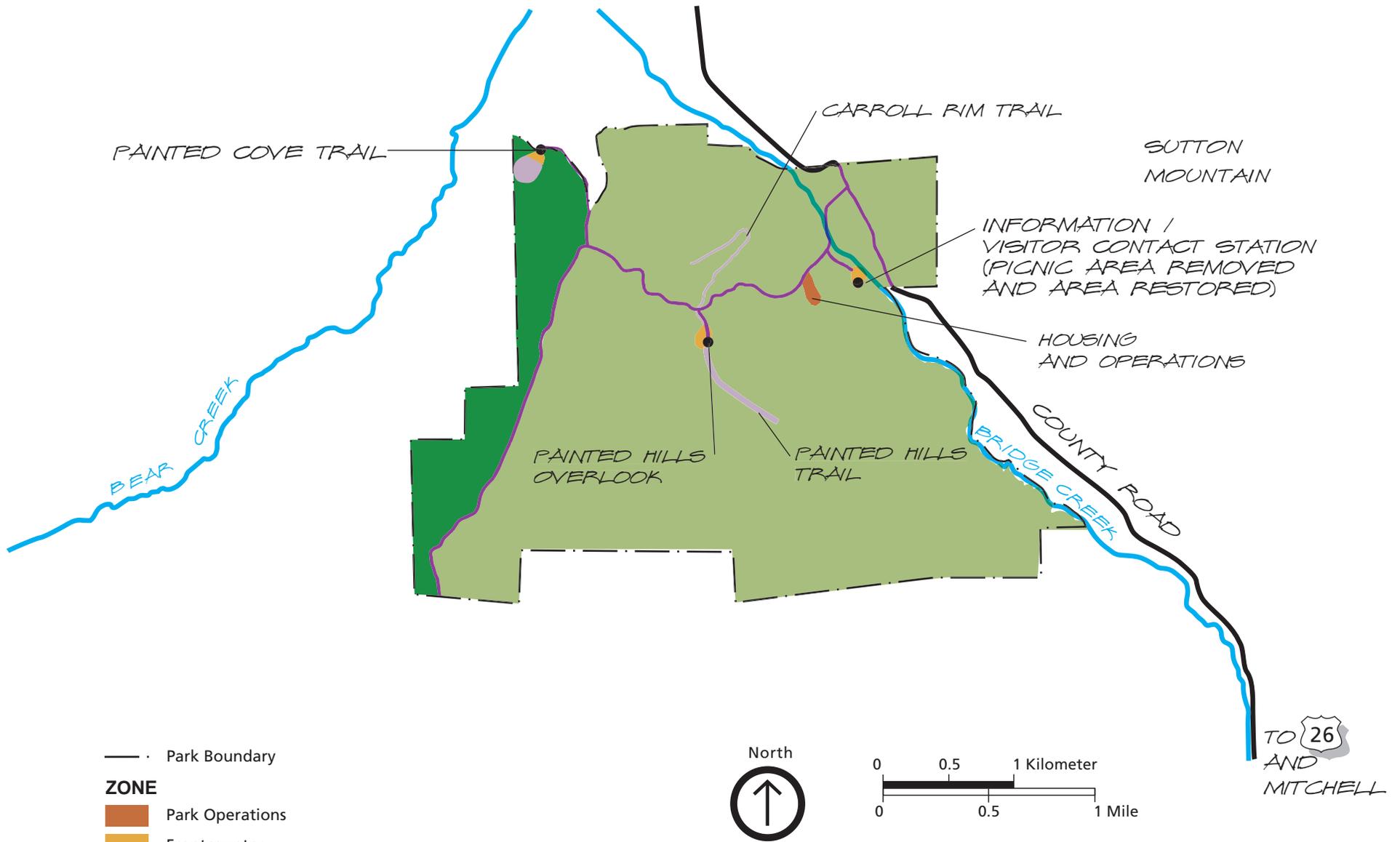


Figure 9 Alternative C Painted Hills Unit

John Day Fossil Beds National Monument
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DSC • Dec 07 • 177 • 20051

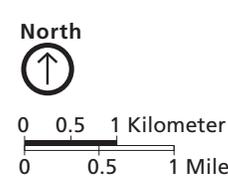
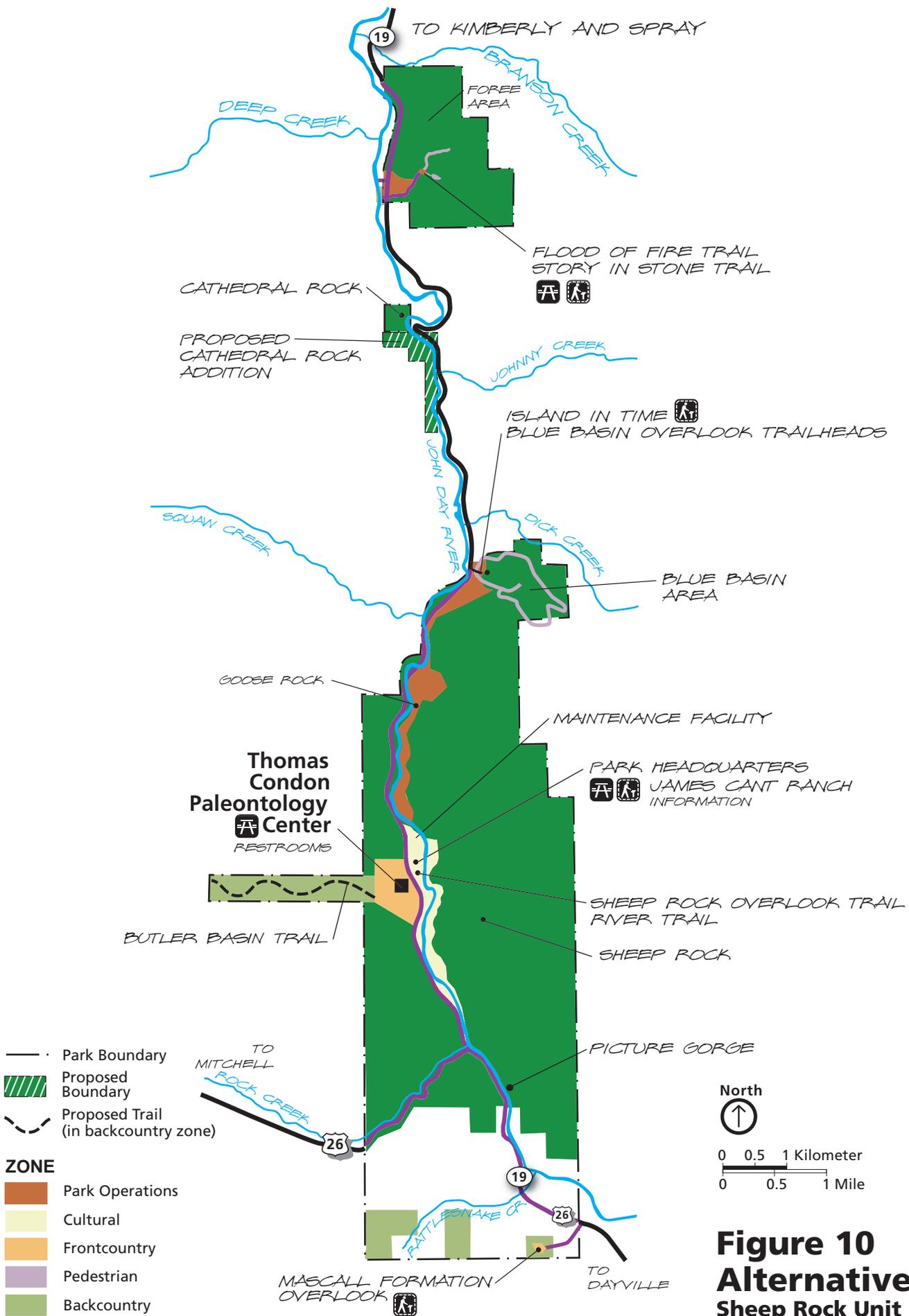


Figure 10
Alternative C
Sheep Rock Unit
 John Day Fossil Beds National Monument
 U.S. Department of the Interior / National Park Service
 DSC • July 07 • 177 • 20048

DEVELOPMENT OF COST ESTIMATES

National Park Service decision makers and the public must consider an overall picture of the complete costs and advantages of various alternatives, including the no-action alternative, to make wise planning and management decisions for John Day Fossil Beds National Monument.

In estimating costs of the alternatives, different types of costs need to be taken into account, including one-time costs, and annual operating cost.

Initial one-time costs include

- new development (including NPS infrastructure costs)
- major rehabilitation or restoration of existing facilities
- interpretive media (e.g., audiovisual materials, exhibits, waysides, and publications)
- resource management and visitor service costs (e.g., resource and visitor inventories, implementation planning, and compliance)

Recurring or replacement costs are significant anticipated costs that recur at intervals (other than annually) within the 25-year period considered in calculating life-cycle costs. Examples might be a situation when the National Park Service is supplying interpretive displays or utility systems that would be replaced every 8 to 15 years or repaving parking areas every 10 years.

Other examples of recurring annual costs include

- annual monument operating costs (e.g., staff salary and benefits, maintenance, utilities, monitoring, and contract services)
- ongoing repair and rehabilitation of facilities (i.e., the projection of past trends and known future needs into an annual estimate)

The following cost estimates are intended to provide a relative comparison of the costs of the alternatives. These figures are not intended to be used for budgetary purposes or to implement funding requests.

The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan* could be many years in the future.

Table 8: Cost Comparison of the Alternatives

Cost Category	Alternative A (No Action)	Alternative B (Preferred)	Alternative C
Initial one-time costs*	0	\$770,000	\$1,640,000
Annual costs	\$1,300,000	\$2,000,000	\$2,000,000
Total FTEs	23	29.5	29.5

* Total costs of the alternatives' development actions; see specific alternatives for the cost breakdown

MITIGATION MEASURES COMMON TO ALL ACTION ALTERNATIVES

Congress charged the National Park Service with managing the lands under its stewardship "...in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." (NPS Organic Act, 16 USC 1) As a result, NPS staff routinely evaluates and implements mitigation measures whenever conditions occur that could adversely affect the sustainability of national park system resources.

To ensure that implementation of the action alternatives protects unimpaired natural and cultural resources and the quality of the visitor experience, a consistent set of mitigation measures would be applied to actions proposed in this plan. The National Park Service would prepare appropriate environmental review (i.e., those required by the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and other relevant legislation) for these future actions. As part of the environmental review, the National Park Service would avoid, minimize, and mitigate adverse impacts when practicable. The implementation of a compliance-monitoring program would be within the parameters of NEPA and NHPA compliance documents, U.S. Army Corps of Engineers Section 404 permits, etc. The compliance-monitoring program would oversee these mitigation measures and would include reporting protocols.

The following mitigation measures and best management practices would be applied to avoid or minimize potential impacts from implementation of the action alternatives.

NATURAL RESOURCES

General

John Day Fossil Beds National Monument's resources, including air, water, soils, vegetation, and wildlife, would be periodically inventoried and monitored to provide

information needed to avoid or minimize impacts of future development. Any museum collections generated by such activities would be managed according to NPS policies.

Whenever possible, new facilities would be built in previously disturbed areas or in carefully selected sites with as small a construction footprint as possible. During design and construction periods, NPS natural resource staff would identify areas to be avoided.

Fencing or other means would be used to protect sensitive resources adjacent to construction areas.

Construction activities would be monitored by resource specialists as needed. Construction materials would be kept in work areas, especially if the construction takes place near streams, springs, natural drainages, or other water bodies.

Visitors would be informed of the importance of protecting the monument's natural resources (including paleontological resources) and leaving these undisturbed for the enjoyment of future generations.

Air Quality

A dust abatement program would be implemented. Standard dust abatement measures could include watering or otherwise stabilizing soils, covering haul trucks, employing speed limits on unpaved roads, minimizing vegetation clearing, and revegetating after construction.

Soils

New facilities would be built on soils suitable for development. Soil erosion would be minimized by limiting the time soil is left exposed and by applying other erosion-control measures such as erosion matting, silt fencing, and sedimentation basins in construction areas to reduce erosion, surface

scouring, and discharge to water bodies. Once work was completed, construction areas would be revegetated with native plants in a timely period.

To minimize soil erosion on new trails, best management practices for trail construction would be used. Examples of best management practices could include installing water bars, check dams and retaining walls; contouring to avoid erosion; and minimizing soil disturbance.

Paleontological Resources

Site-specific surveys would be undertaken before any ground disturbance occurs in areas believed likely to contain fossils. If important paleontological resources were identified, the National Park Service would attempt to avoid, relocate, or otherwise mitigate impacts from the actions being taken. Any specimens found and collected during construction activities would be managed according to NPS museum collection policies.

Efforts would be undertaken to inform and educate visitors, students, teachers, and the public about the monument's paleontological resources, the reasons for protecting these resources, and the laws regarding the collection of fossils from NPS lands.

Water Resources

To prevent water pollution during construction, erosion control measures would be used, discharges to water bodies would be minimized, and construction equipment would be regularly inspected for leaks of petroleum and other chemicals.

Best management practices, such as the use of silt fences, would be followed to ensure that construction-related effects were minimal and to prevent long-term impacts on water quality, wetlands, and aquatic species.

Caution would be exercised to protect water resources from activities with the potential to damage water resources, including damage caused by construction equipment, erosion, and siltation. Measures would be taken to

keep fill material from escaping work areas, especially near streams, springs, natural drainages, and wetlands.

For new facilities, and to the extent practicable for existing facilities, stormwater management measures would be implemented to reduce nonpoint source pollution discharge from parking lots and other impervious surfaces. Such actions could include use of oil/sediment separators, street sweeping, infiltration beds, permeable surfaces, and vegetated or natural filters to trap or filter stormwater runoff.

The monument's spill prevention and pollution control program for hazardous materials would be followed and updated on a regular basis. Standard measures could include procedures for hazardous materials storage and handling, spill containment, cleanup, and reporting; and limitation of refueling and other hazardous activities in upland/nonsensitive sites.

Vegetation

Areas used by visitors (e.g., trails) would be monitored for signs of native vegetation disturbance. Public education, revegetation of disturbed areas with native plants, erosion control measures, and barriers would be used to control potential impacts on plants from trail erosion or social trailing.

Proposed sites for new trails and other facilities would be surveyed for sensitive species before construction. If sensitive species were present, new developments would be relocated to avoid impacts.

Revegetation plans would be developed for disturbed areas. Revegetation plans should specify such features as seed/plant source, seed/plant mixes, soil preparation, fertilizers, and mulching. Salvage vegetation, rather than new planting or seeding, would be used to any extent possible. To maintain genetic integrity, native plants that grow in the project area or the region would be used in restoration efforts, whenever possible. Use of nonnative species or genetic materials would be

considered only where deemed necessary to maintain a cultural landscape or to prevent severe resource damage, and would be approved by the monument's natural resource specialist. Restoration activities would be instituted immediately after construction was completed. Monitoring would occur to ensure that revegetation was successful, plantings were maintained, and unsuccessful plant materials were replaced.

Nonnative Species

Special attention would be devoted to preventing the spread of noxious weeds and other nonnative plants. Standard measures could include the following elements: ensure construction-related equipment arrives on-site free of mud or seed-bearing material, certify all seeds and straw material as weed-free, identify areas of noxious weeds before construction, treat noxious weeds or noxious weed topsoil before construction (e.g., topsoil segregation, storage, herbicide treatment), and revegetate with appropriate native species.

Wildlife

To the extent possible, new or rehabilitated facilities would be sited to avoid sensitive wildlife habitats, including feeding and resting areas, major travel corridors, nesting areas, and other sensitive habitats.

Construction activities would be timed to avoid sensitive periods, such as nesting or spawning seasons. Ongoing visitor use and NPS operational activities could be restricted if their potential level of damage or disturbance warranted doing so.

Measures would be taken to reduce the potential for wildlife to get food from humans. Wildlife-proof garbage containers would be required in developed areas (including visitor centers, picnic areas, trails, and interpretive waysides). Signs would continue to educate visitors about the need to refrain from feeding wildlife.

Other visitor impacts on wildlife would be addressed through such techniques as visitor education programs, restrictions on visitor activities, and ranger patrols.

Threatened and Endangered Species and Species of Concern

Conservation measures would occur during normal operations as well as before, during, and after construction to minimize long-term, immediate impacts on rare species, and threatened and endangered species if they are identified in the monument. These measures would vary by specific project and the affected area of John Day Fossil Beds National Monument. Many of the measures listed above for vegetation and wildlife would also benefit rare, threatened, and endangered species by helping to preserve habitat. Conservation measures specific to rare, threatened, and endangered species would include the following actions:

- Surveys would be conducted for special status species, including rare, threatened, and endangered species, before deciding to take any action that might cause harm. In consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Oregon Department of Fish and Wildlife, appropriate measures would be taken to protect any sensitive species whether identified through surveys or presumed to occur.
- If breeding or nesting areas for threatened and endangered species were observed in the monument, these areas would be protected from human disturbance.
- New facilities and management actions would be located and designed to avoid adverse effects on rare, threatened, and endangered species. If avoidance of adverse effects on rare, threatened, and endangered species is infeasible, appropriate conservation measures would be taken in consultation with the appropriate resource agencies.
- Restoration or monitoring plans would be developed as warranted. Plans should include methods for implementation, performance standards, monitoring criteria, and adaptive management techniques.
- Measures would be taken to reduce adverse effects of nonnative plants and

wildlife on rare, threatened, and endangered species.

Noise Abatement

Standard noise abatement measures would be followed during construction. Standard noise abatement measures could include the following elements: a schedule that minimizes impacts on adjacent noise-sensitive resources, the use of the best available noise control techniques wherever feasible, the use of hydraulically or electrically powered impact tools when feasible, and the location of stationary noise sources as far from sensitive resources as possible.

Facilities would be located and designed to minimize objectionable noise.

Scenic Resources

Mitigation measures are designed to minimize visual intrusions. These measures could include the following:

- Where appropriate, facilities such as boardwalks and fences would be used to route people away from sensitive natural and cultural resources while still permitting access to important viewpoints.
- Facilities would be designed, sited, and constructed to avoid or minimize visual intrusion into the natural environment or landscape.
- Vegetative screening would be provided, where appropriate.

CULTURAL RESOURCES

All projects with the potential to affect historic properties and cultural landscapes would be carried out in compliance with Section 106 of the National Historic Preservation Act to ensure that the effects are adequately addressed. All reasonable measures would be taken to avoid, minimize, or mitigate adverse effects in consultation with the Oregon State Historic Preservation Officer and, as necessary, the Advisory Council on Historic Preservation and other concerned parties

including American Indian tribes. In addition to adhering to the legal and policy requirements for cultural resources protection and preservation, the National Park Service would also undertake the measures listed below to further protect the monument's resources.

All areas selected for construction would be surveyed to ensure that cultural resources (i.e., archeological, historic, ethnographic, and cultural landscape resources) in the area of potential effects are adequately identified and protected by avoidance or, if necessary, mitigation.

Compliance with the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) would apply in the unlikely event that human remains believed to be Native American would be discovered inadvertently during construction. Prompt notification and consultation with the tribes traditionally associated with John Day Fossil Beds National Monument would occur in accordance with NAGPRA. If such human remains were believed to be non-Indian, standard reporting procedures to the proper authorities would be followed, as would all applicable federal, state, and local laws.

Archeological documentation would be done in accordance with the *Secretary of the Interior's Standards for Archeological Documentation*.

Should construction unearth previously unknown archeological resources, work would stop in the area of discovery until the resources were properly recorded by the National Park Service and evaluated under the eligibility criteria of the National Register of Historic Places in accordance with Section 106 procedures. Data recovery excavations or other mitigating measures would be carried out where site avoidance is not possible.

New construction or alterations and rehabilitation of historic structures would be sensitively carried out in accordance with the *Secretary of the Interior's Standards and*

Guidelines for Archeology and Historic Preservation to ensure that character-defining features are protected. Vegetation screening and sensitive topographic or other site selection criteria would be used to minimize the visual intrusion of new construction on historic viewsheds or in historic areas.

Ethnographic resources would be protected and mitigated by such means as identifying and maintaining access for recognized and affiliated groups to traditional, spiritual/ceremonial, resource gathering, and other activity areas. As practical, new developments would be screened from these areas, and conflicting uses would be relocated or timed to minimize disruptions.

Cultural landscapes would be protected and any alterations and changes affecting cultural landscapes and designated National Register Districts would follow the *Secretary of the Interior's Standards for the Treatment of Historic Properties, with Guidelines for the Treatment of Cultural Landscapes* (1996). All potential actions, such as thinning of vegetation to reduce fuel loads, removal of exotic species, modification of historic circulation patterns, removal of noncontributing or nonhistoric structures and landscape features, or adaptive use of a cultural landscape, would incorporate compatible design guidelines to retain essential historic character and mitigate potential adverse effects.

Further background research, resource inventories, and National Register of Historic Places evaluation of historic properties would be carried out where management information is lacking. The results of these efforts would be incorporated into site-specific planning and compliance documents. All options for preserving historic properties would be considered and evaluated. However, if historic buildings, structures, or landscapes could not be reasonably preserved, historical and architectural documentation would be completed in accordance with the standards of the Historic American Buildings Survey (HABS), the Historic American Engineering

Record (HAER), or the Historic American Landscapes Survey (HALS). The nature and scope of these mitigation measures would be developed in consultation with the Oregon State Historic Preservation Officer, Advisory Council on Historic Preservation, and other concerned parties.

Visitors would be educated on the importance of protecting the monument's historic properties and leaving these undisturbed for the enjoyment of future visitors.

Museum collections would be accessioned, catalogued, protected, and preserved in accordance with NPS standards and guidelines.

VISITOR SAFETY AND EXPERIENCES

Measures to reduce adverse effects of construction on visitor safety and experience would be implemented, including project scheduling and the use of best management practices (BMPs).

Visitor safety concerns would be integrated into interpretive and educational programs. Directional signs to orient visitors and education programs to promote understanding among visitors would continue.

SOCIOECONOMIC ENVIRONMENT

During the future planning and implementation of the approved management plan for John Day Fossil Beds National Monument, NPS staff would work with local communities and county governments to further identify potential impacts and mitigation measures that would best serve the interests and concerns of both the National Park Service and the local communities. Partnerships would be pursued to improve the quality and diversity of community amenities and services.

FUTURE STUDIES AND IMPLEMENTATION PLANS NEEDED

After the completion and approval of this *General Management Plan* for the monument, other more detailed studies and plans will be needed before specific actions can be implemented.

As required, additional environmental compliance (National Environmental Policy Act, National Historic Preservation Act, and other relevant laws and policies) and public involvement would be conducted. These additional studies include the following:

- an implementation plan for opening the mammal quarry to research and interpretation
- a long-range interpretation plan that focuses on conveying the significance of the monument's fundamental resources and values through the primary interpretive themes
- a historic preservation and use plan for the Cant Ranch barn and outbuildings
- a land protection plan that focuses on evaluating important viewsheds and other significant features that affect the integrity of the monument's fundamental resources and values
- a river recreation management plan (should this activity increase to a level that warrants such planning)
- a resource stewardship strategy that provides comprehensive, long-range direction for natural and cultural resource management
- a trails management plan that sets forth direction for the development and maintenance of official trails and for restoration of unofficial, human-created trails in the monument
- an accessibility study that focuses on barriers to monument programs and facilities, which would provide the basis for developing a strategy to improve accessibility for people with disabilities

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferable alternative is defined as “the alternative that will promote national environmental policy as expressed in Section 101 of the National Environmental Policy Act.” Section 101 states that it is the continuing responsibility of the federal government to . . .

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural, and natural aspects of our national heritage; and maintain, wherever possible, an environment which supports diversity, and a variety of individual choices;
5. achieve a balance between population and resource use which would permit high standards of living and a wide sharing of life’s amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The environmentally preferable alternative is alternative B, the NPS preferred alternative for John Day Fossil Beds National Monument. This alternative best satisfies the national environmental goals—it provides the highest level of protection of natural and cultural

resources while concurrently providing for a wide range of neutral and beneficial uses of the environment. The preferred alternative maintains an environment that supports a diversity and variety of individual choices, and it integrates resource protection with an appropriate range of visitor uses and understanding.

The preferred alternative (alternative B) surpasses the other alternatives in realizing the full range of the Section 101 national environmental policy goals. The no-action alternative does not provide as much resource protection as the preferred alternative. In addition, the preferred alternative would provide more opportunities for public enjoyment and understanding of the monument than the no-action alternative, and thus better fulfills criteria 3, 4, and 5.

Alternative C would provide for more visitor use opportunities, but there also would be a higher potential for more impacts to natural resources in comparison with the preferred alternative. In addition, in alternative C the restoration of the Cant Ranch fields to native vegetation would be an adverse effect on the cultural landscape of a national historic district; however, it would provide a more natural landscape. Thus, alternative C would not satisfy criterion 3 (attain the widest range of beneficial uses of the environment without degradation) and criterion 4 (preserve important aspects of our national heritage) as well as the preferred alternative satisfies these criteria.

ALTERNATIVES AND MANAGEMENT ACTIONS CONSIDERED BUT DISMISSED

The planning team considered including the following actions in the management alternatives, but decided not to include these actions in the alternatives.

In the Clarno Unit, the team considered the following:

- **Opening the mammal quarry for research only.** Opening the site for research purposes only was dismissed because the cost of accommodating public interpretation was minor relative to the total cost of opening the site.
- **Locating the Geo-Loop trailhead north of the Hancock Field Station.** This site was considered but dismissed because it would result in more impacts to natural and cultural resources, compromise scenic values, and require more maintenance compared to a trailhead site located east of the field station.

In the Painted Hills Unit, the team considered the following:

- **Eliminating the Painted Hills picnic area and restoring the site.** This option was dismissed because it eliminated a

well-used visitor site. Visitors have used this picnic area for many years and it is one of the few such sites available for picnicking in this unit. The picnic area is at the edge of the unit, and the cost of maintaining the area is not high.

In the Sheep Rock Unit, the team considered the following:

- **Constructing a Cant Ranch River Trail.** Construction of this 1.5-mile-long trail paralleling the west side of the John Day River was dismissed because of potential impacts to riparian resources. There also would be no way to build a loop trail without placing it along the highway.
- **Constructing trails east of the John Day River.** This option for a 4-mile-long loop trail on the east side of the John Day River was dismissed for three reasons: it would require a substantial bridge, it would potentially impact riparian resources, and it would increase the potential for impacts on paleontological resources by visitors hiking in this part of the monument.

SUMMARY TABLES COMPARING THE ALTERNATIVES

Table 9: Comparison of the Alternatives

Topic	Alternative A (No Action)	Alternative B (Preferred)	Alternative C
CONCEPT	Continue current management, guided by current planning documents. Current management would provide for existing interpretive, educational, and visitor opportunities	Management would focus on Improving natural resources through site restoration Increasing visitor opportunities with new trails and limited, but enhanced, new facilities	Management would focus on Further expanding visitor opportunities with additional visitor facilities and trails Improving natural resources through site restoration
RESOURCE MANAGEMENT, MONUMENT-WIDE	Continue current management of natural and cultural resources with guidance of approved documents Continue to conduct NPS education/ interpretive activities concerning the environment, paleontology, and geology Maintain existing research program and facilities Maintain existing designated trails; visitors may go off trails in areas that are vegetated	Conduct more NPS education/interpretive activities concerning the environment, paleontology, and geology Maintain existing research program and facilities Maintain all existing designated trails; visitors may go off trails in areas that are vegetated	Conduct more NPS education/interpretive activities concerning the environment, paleontology, and geology Maintain existing research program and facilities Maintain existing designated trails with the exception of the Leaf Hill Trail, which would be closed and the area restored; visitors may go off trails in areas that are vegetated.
CLARNO UNIT			
Mammal Quarry	Remains closed	Opened for research and interpretation	Same as alternative B
Geo-Loop Trail and Parking Area	Remains as social trail in backcountry with no formal access	Formalized and designated as an official trail with a new parking area developed to the east of the Hancock Field Station	Same as alternative B
Indian Canyon Trail	No trail exists	Same as alternative A	Construct new 3-mile-long trail up Indian Canyon

Topic	Alternative A (No Action)	Alternative B (Preferred)	Alternative C
Mimulus Trail	Remains as human-created trail in backcountry with no formal access	Formalized and designated as an official trail	Same as alternative B
Stegamonsler Trail	Remains as human-created trail in backcountry with no formal access	Formalized and designated as an official trail	Same as alternative B
Visitor Contact Station/Office	No administrative facility exists	Same as alternative A	Construct a new 200-square-foot visitor contact station/office
PAINTED HILLS UNIT			
Painted Hills Overlook	Existing overlook would remain	Overlook would be redesigned to improve visitor access and aesthetics and accommodate parking for the Carroll Rim trailhead; shade structures would be added	Same as alternative B
Road to Painted Cove	Existing gravel road would continue to be maintained	Work with Wheeler County to pursue road paving that meets NPS standards and incorporates a design approach that preserves the rural character of the area	Same as alternative B
Painted Hills Picnic Area	Existing picnic area and arboretum would continue to be maintained	Same as alternative A, plus add new shade structures	Restore natural landscape but maintain picnic area; eliminate arboretum; add new shade structures
Leaf Hill Trail	Existing trail would continue to be maintained	Same as alternative A	Close trail to public access and restore the area
Bridge Creek Restoration	Continue tree plantings and invasive vegetation removal	Same as alternative A, plus seek cooperative agreement with adjacent landowner for expanded restoration	Same as alternative B
SHEEP ROCK UNIT			
Cant Ranch Agricultural Fields	Maintain fields through traditional agricultural practices	Maintain fields and improve sustainability of agricultural operations by focusing on actions such as leveling land and installing sprinklers	Restore fields to native vegetation
John Day River Restoration	Continue tree plantings and invasive vegetation removal	Same as alternative A, plus remove dikes and rock barbs to improve hydrologic functions	Same as alternative B

CHAPTER 2: ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

Topic	Alternative A (No Action)	Alternative B (Preferred)	Alternative C
Restrooms at Cant Ranch	Public restrooms available only inside headquarters building	Same as alternative A	Construct new stand-alone restrooms that are available for use after monument hours
Butler Basin Trail	No trail exists	Same as alternative A	Construct new 2.5-mile-long trail
Picnic Area at Thomas Condon Paleontology Center	No picnic facilities exist (nearest facility is across the highway at Cant Ranch complex)	Same as alternative A	Construct new picnic area at the paleontology center
Research Natural Area	Continue to protect its important natural qualities	Same as alternative A	Same as alternative A
Boundary Adjustment	No new boundary adjustments would be pursued	Pursue a land exchange with an adjacent landowner and the Bureau of Land Management to protect about 100 acres around Cathedral Rock	Same as alternative B

Table 10: Summary of Key Impacts of Implementing the Alternatives

	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B (PREFERRED)	ALTERNATIVE C
	Natural Resources		
Paleontological Resources	<p>Long-term, minor, adverse impact on the monument’s paleontological resources would be expected, potentially due to some visitors illegally collecting fossils and to natural erosion.</p> <p>There could be a long-term, adverse cumulative impact of unknown magnitude on area fossils.</p> <p>The level of impact due to alternative A would not be expected to constitute an impairment of the monument’s resources or values.</p>	<p>Compared to alternative A, alternative B would be expected to have a beneficial impact on paleontological resources, primarily due to the opening of the mammal quarry, and the removal of the human-created unofficial trails and restoration of those areas.</p> <p>There also would be a long-term, negligible to minor, adverse impact on the monument’s paleontological resources due to increased potential for illegal fossil collecting.</p> <p>There could be a long-term, adverse cumulative impact of unknown magnitude on area fossils, although alternative B would add small beneficial and adverse increments to the overall area cumulative impact.</p> <p>The level of impact due to alternative B would not be expected to constitute an impairment of the monument’s resources or values.</p>	<p>Compared to alternative A, alternative C would be expected to have a beneficial impact on paleontological resources, primarily due to the opening of the mammal quarry, the removal of the human-created unofficial trails and restoration of those areas, and the closure of the Leaf Hill Trail in the Painted Hills Unit.</p> <p>There also would be a long-term, negligible to minor, adverse impact on the monument’s paleontological resources due to increased potential for illegal fossil collecting.</p> <p>There could be a long-term, adverse cumulative impact of unknown magnitude on fossils in the region, although alternative C would add small beneficial and adverse increments to the overall area cumulative impact.</p> <p>This level of impact would not be anticipated to constitute an impairment of the monument’s resources or values.</p>

	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B (PREFERRED)	ALTERNATIVE C
Soils	<p>Most of the monument’s soils would not be affected by the actions in alternative A. However, some soils would be eroded and lost, and some soil properties would be altered due to increased visitor use in localized areas such as along trails. These adverse impacts would likely be minor and long-term in extent.</p>	<p>Most of the monument’s soils would not be affected by the actions in alternative B. However, some soils would be eroded and lost, and some soil properties would be altered due to increased visitor use in localized areas such as along trails, and due to several construction projects. Overall, these adverse impacts would likely be minor and long-term in extent.</p>	<p>Most of the monument’s soils would not be affected by the actions in alternative C. However, some soils would be eroded and lost, and some soil properties would be altered due to new developments and increased visitor use in localized areas such as along trails. These adverse impacts would likely be minor and long-term in extent.</p>
		<p>Establishing and monitoring user capacity indicators and standards should help prevent the establishment of new human-created trails and the resulting soil erosion; this would have a moderate, long-term, beneficial impact.</p>	<p>Establishing and monitoring user capacity indicators and standards should help prevent the establishment of new human-created trails, and prevent resulting soil erosion; this would have a moderate, long-term, beneficial impact.</p>
	<p>When the impacts inside the monument in alternative A are added to past and foreseeable future impacts from land uses, and future agricultural uses and developments outside the monument, there would be the potential for a long-term, minor to moderate, adverse cumulative impact on area soils — although the actions in alternative A would add a very small increment to this overall impact.</p>	<p>When the impacts in alternative B are added to other impacts from past and foreseeable future actions, there would be the potential for a long-term, minor to moderate, adverse cumulative impact on area soils — although the actions in alternative B would add a very small increment to this overall cumulative impact.</p>	<p>When the impacts in alternative C are added to impacts from other past and foreseeable future actions, there would be the potential for a long-term, minor to moderate, adverse cumulative impact on area soils—although the actions in alternative C would add a very small increment to this overall cumulative impact.</p>
	<p>No impairment to the monument’s resources and values would result from soil impacts in this alternative.</p>	<p>No impairment to the monument’s resources and values would result from soil impacts in this alternative.</p>	<p>No impairment to the monument’s resources and values would result from soil impacts in this alternative.</p>

	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B (PREFERRED)	ALTERNATIVE C
Prime Farmlands	There would be no effect on prime farmlands.	There would be no effect on prime farmlands with regard to acreage and use of the monument's fields.	There would be a negligible, long-term, adverse impact on prime farmlands.
Vegetation	Alternative A would result in both beneficial and adverse impacts on the monument's native vegetation. Some long-term, negligible to minor, adverse impacts would occur in local areas due to increased visitor use levels. Nonnative plants would continue to have minor to moderate, long-term, adverse impacts on native vegetation. Continuing efforts to control nonnative species would likely have a long-term, moderate, beneficial impact in local areas.	Alternative B would result in both beneficial and adverse impacts on the monument's native vegetation. Most of the proposed new actions in alternative B would occur in the footprint of areas that have already been disturbed and would have a negligible impact on native vegetation. Some long-term, negligible to minor, adverse impacts would occur in local areas due to proposed new developments and increased visitor use levels. As in alternative A, nonnative plants would continue to have minor to moderate, long-term, adverse impacts on native vegetation. Efforts to restore riparian vegetation, remove unofficial trails, add the Cathedral Rock area to the monument, and establish and monitor user capacity indicators and standards would likely have long-term, minor to moderate, beneficial impacts to native vegetation in localized areas.	Alternative C would result in both beneficial and adverse impacts on the monument's native vegetation. Many of the proposed new developments would occur in the footprint of areas that have already been disturbed and would have a negligible impact on native vegetation. Some long-term, negligible to minor, adverse impacts would occur to native vegetation in localized areas due to proposed new developments and increased visitor use levels. As in the other alternatives, nonnative plants would continue to have minor to moderate, long-term, adverse impacts on native vegetation. Efforts to restore riparian vegetation, remove unofficial trails, plant native vegetation in the Painted Hills picnic area and in the four fields in the Sheep Rock Unit, add lands in the Cathedral Rock area to the monument, and establish and monitor user capacity indicators and standards would likely have long-term, minor to moderate, beneficial impacts to native vegetation in localized areas.

	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B (PREFERRED)	ALTERNATIVE C
Vegetation (continued)	<p>When the effects of this alternative are added to the effects of other past, present, and foreseeable future actions, there would be a minor to moderate, long-term, adverse cumulative impact on native vegetation. However, the actions in alternative A would add only a small beneficial and a small adverse increment to this overall impact.</p> <p>None of the vegetation impacts that would occur in this alternative would be sufficient to result in an impairment of the monument’s resources and values.</p>	<p>When the effects of alternative B are added to the effects of other past, present, and foreseeable future actions there would be a minor to moderate, long-term, adverse cumulative impact on native vegetation. However, the actions in alternative B would add both small beneficial and adverse increments to this overall cumulative impact.</p> <p>None of the vegetation impacts that would occur in alternative B would be sufficient to result in an impairment of the monument’s resources and values.</p>	<p>When the effects of this alternative are added to the effects of other past, present, and foreseeable future actions, there would be a minor to moderate, long-term, adverse cumulative impact on native vegetation. However, the actions in alternative C would add both small beneficial and adverse increments to this overall cumulative impact</p> <p>None of the vegetation impacts that would occur in this alternative would be sufficient to result in an impairment of the monument’s resources and values.</p>
Wildlife	<p>Alternative A would have some adverse and beneficial impacts on the monument’s wildlife populations and habitats. Most wildlife in the monument would not change as a result of the actions in this alternative. No actions would affect areas known to be important for breeding, nesting, foraging, or key migration routes. No actions would interfere with feeding, reproduction, or other activities necessary for the survival of wildlife species.</p>	<p>Alternative B would have both adverse and beneficial impacts on the monument’s wildlife populations and habitats. Most wildlife populations and habitats in the monument would not change as a result of the actions in this alternative. No actions would affect areas known to be important for breeding, nesting, foraging, or key migration routes. No actions would interfere with feeding, reproduction, or other activities necessary for the survival of wildlife species.</p>	<p>Alternative C would have both adverse and beneficial impacts on the monument’s wildlife populations and habitats. Most wildlife populations and habitats in the monument would not change as a result of the actions in this alternative. No actions would affect areas known to be important for breeding, nesting, foraging, or key migration routes. No actions would interfere with feeding, reproduction, or other activities necessary for the survival of wildlife species.</p>

	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B (PREFERRED)	ALTERNATIVE C
Wildlife (continued)	<p>Long-term, negligible, adverse impacts would continue to occur in localized areas due to continuing visitor use of the monument. Continuing efforts to prevent the spread of juniper and control the spread of nonnative species would result in a minor to moderate, long-term, beneficial impacts on some wildlife populations.</p>	<p>Long-term, negligible, adverse impacts would continue to occur in localized areas due to continuing visitor use of the monument. On the other hand, there would be long-term, beneficial impacts on some wildlife populations due to vegetation restoration efforts, the addition of lands in the Cathedral Rock area to the monument, and the closure and restoration of unofficial trails in the Clarno Unit.</p>	<p>Negligible to minor, long-term, adverse impacts would continue to occur in localized areas due to continuing visitor use of the monument and to the loss of some habitat due to new development. The development of the Butler Basin Trail could have a minor, long-term, adverse impact on wildlife populations in this area. On the other hand, there would be long-term, beneficial impacts on some wildlife populations due to vegetation restoration efforts, the addition of the Cathedral Rock area to the monument, the closure and restoration of unofficial trails in the Clarno Unit and the Leaf Hill Trail in the Painted Hills Unit.</p>
	<p>When the beneficial and adverse impacts of alternative A are added to the impacts that have occurred in the vicinity of John Day Fossil Beds National Monument, there would be a long-term, minor to moderate, adverse cumulative impact on the area's wildlife populations and habitats. However, the actions in alternative A would contribute only a small beneficial increment and a very small adverse increment to this impact.</p>	<p>When the beneficial and adverse impacts of alternative B are added to the impacts that have occurred in the vicinity of John Day Fossil Beds National Monument, there would be a long-term, minor to moderate, adverse cumulative impact on the area's wildlife populations and habitats. However, the actions in alternative B would contribute only a small beneficial increment and a very small adverse increment to this impact.</p>	<p>When the beneficial and adverse impacts of alternative C are added to the past, present, and future impacts in the vicinity of John Day Fossil Beds National Monument, there would be a long-term, minor to moderate, adverse cumulative impact on the area's wildlife populations and habitats. However, the actions in alternative C would contribute only a small beneficial increment and a very small adverse increment to this impact.</p>
	<p>None of the wildlife impacts resulting from alternative A would constitute an impairment of the monument's resources and values.</p>	<p>None of the wildlife impacts resulting from alternative B would constitute an impairment of the monument's resources and values.</p>	<p>None of the wildlife impacts resulting from alternative C would constitute an impairment of the monument's resources and values.</p>

	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B (PREFERRED)	ALTERNATIVE C
Cultural Resources			
Archeological Resources	<p>Continued management actions in alternative A, the no-action alternative, would include no new construction, so no adverse impacts to archeological resources are anticipated. Any adverse impacts to archeological resources resulting from implementation of alternative A would be a very small component of the adverse cumulative impact.</p> <p>In the unlikely event that impacts to national register-eligible archeological resources could not be avoided, a memorandum of agreement, in accordance with 36 CFR Part 800.6, <i>Resolution of Adverse Effects</i>, would be negotiated. It would be between or among John Day Fossil Beds National Monument, the Oregon State Historic Preservation Officer, the traditionally associated tribes, if appropriate, and the Advisory Council on Historic Preservation, if necessary. The memorandum of agreement would stipulate how the adverse effects would be mitigated.</p>	<p>Management actions in alternative B, the preferred alternative, would involve new construction, but no adverse impacts to archeological resources would be anticipated. Any adverse impacts to archeological resources resulting from implementation of alternative B would be a very small component of the adverse cumulative impact.</p> <p>In the unlikely event that impacts to national register-eligible archeological resources could not be avoided, a memorandum of agreement, in accordance with 36 CFR Part 800.6, <i>Resolution of Adverse Effects</i>, would be negotiated. It would be between or among John Day Fossil Beds National Monument, the Oregon State Historic Preservation Officer, the traditionally associated tribes, if appropriate, and the Advisory Council on Historic Preservation, if necessary. The memorandum of agreement would stipulate how the adverse effects would be mitigated.</p>	<p>Management actions in alternative C would involve new construction, but no adverse impacts to archeological resources would be anticipated.</p> <p>In the unlikely event that impacts to national register-eligible archeological resources could not be avoided, a memorandum of agreement, in accordance with 36 CFR Part 800.6, <i>Resolution of Adverse Effects</i>, would be negotiated. It would be between or among John Day Fossil Beds National Monument, the Oregon State Historic Preservation Officer, the traditionally associated tribes, if appropriate, and the Advisory Council on Historic Preservation, if necessary. The memorandum of agreement would stipulate how the adverse effects would be mitigated.</p> <p>However, the continued level of management actions in alternative C would be expected to contribute no adverse impacts to the adverse impacts of other past, present, and reasonably foreseeable actions occurring both within and outside the national monument. The overall cumulative impact would remain adverse at a moderate intensity level.</p>

	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B (PREFERRED)	ALTERNATIVE C
Archeological Resources (continued)		There would be no impairment of the national monument's resources or values because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of John Day Fossil Beds National Monument; (2) key to the natural or cultural integrity of the national monument or to opportunities for enjoyment of the national monument; or (3) identified as a goal in the national monument's <i>General Management Plan</i> or other relevant National Park Service planning documents.	There would be no impairment of the national monument's resources or values because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of John Day Fossil Beds National Monument; (2) key to the natural or cultural integrity of the national monument or to opportunities for enjoyment of the national monument; or (3) identified as a goal in the national monument's <i>General Management Plan</i> or other relevant National Park Service planning documents, there would be no impairment of the national monument's resources or values.
Historic Structures and Cultural Landscapes	All actions would follow the <i>Secretary of the Interior's Standards for the Treatment of Archeology and Historic Preservation</i> , and the <i>Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes</i> which would result in no adverse effects to historic structures and cultural landscapes. Alternative A would not contribute to the adverse cumulative impact of other past, present, and reasonably foreseeable actions.	Implementation of alternative B would result in no adverse effects to historic structures and cultural landscapes. Alternative B would also contribute no adverse effects to the overall adverse cumulative impact of other past, present, and reasonably foreseeable actions. Actions would follow approved standards and guidelines and would enhance NPS preservation objectives for the James Cant Ranch Historic District and other potential cultural landscapes.	After applying the Advisory Council on Historic Preservation's criteria of adverse effect (36 CFR Part 800.5, <i>Assessment of Adverse Effects</i>), the National Park Service concludes that implementation of alternative C would result in a significant adverse effect that would compromise the integrity of the existing national register historic district. However, because the adverse effect would not impact a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of John Day Fossil Beds National Monument; (2) key to the overall natural

	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B (PREFERRED)	ALTERNATIVE C
Historic Structures and Cultural Landscapes (continued)	There would be no impairment of John Day Fossil Beds National Monument’s resources or values because there would be no adverse effects to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of John Day Fossil Beds National Monument; (2) key to the natural or cultural integrity of John Day Fossil Beds National Monument or to opportunities for enjoyment of John Day Fossil Beds National Monument; or (3) identified as a goal in the <i>John Day Fossil Beds National Monument General Management Plan</i> or other relevant NPS planning documents.	There would be no impairment of John Day Fossil Beds National Monument’s resources or values because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of John Day Fossil Beds National Monument; (2) key to the natural or cultural integrity of John Day Fossil Beds National Monument or to opportunities for enjoyment of John Day Fossil Beds National Monument; or (3) identified as a goal in the <i>John Day Fossil Beds National Monument General Management Plan</i> or other relevant NPS planning documents.	or cultural integrity of John Day Fossil Beds National Monument or to opportunities for enjoyment of John Day Fossil Beds National Monument; or (3) identified as a goal in the <i>John Day Fossil Beds National Monument General Management Plan</i> or other relevant NPS planning documents, there would be no impairment of John Day Fossil Beds National Monument’s resources or values.
Visitor Use and Experience			
Visitor Use and Experience	Alternative A would be expected to have a long-term, minor, adverse impact on crowding and opportunities for solitude and on opportunities for people with disabilities in the monument; it would be expected to have a long-term, moderate, adverse impact on visitor understanding, education, and interpretation, and on opportunities for recreational activities in the monument.	Alternative B would be expected to have a long-term, minor, beneficial impact on visitor use patterns and opportunities for people with disabilities. Impacts on crowding and opportunities for solitude; impacts on opportunities for recreational activities; and impacts on visitor understanding, education, and interpretation from this alternative would be long-term, beneficial, and of moderate intensity.	Alternative C would be expected to have a long-term, minor, beneficial impact on visitor use patterns. Impacts on crowding and opportunities for solitude; opportunities for recreational activities; visitor understanding, education, and interpretation; and opportunities for people with disabilities would be long-term, beneficial, and of moderate intensity.

	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B (PREFERRED)	ALTERNATIVE C
Visitor Use and Experience (continued)	<p>There could be a long-term, moderate, beneficial cumulative impact on visitor understanding, education, and interpretation; and a long-term, minor, adverse cumulative impact on visitor experience, primarily due to increased crowding and visitor conflict. The actions proposed in Alternative A would contribute only a relatively small part of the overall cumulative impact.</p> <p>The cumulative impact on visitor use patterns, opportunities for recreational activities, and opportunities for people with disabilities would be negligible.</p>	<p>The cumulative impact on visitor understanding, education, and interpretation would be long-term, beneficial, and of major intensity. The actions proposed in Alternative B would contribute an appreciable amount to this cumulative impact.</p> <p>The cumulative impact on visitor use patterns, opportunities for recreational activities, and opportunities for people with disabilities would be long-term, beneficial, and of minor intensity. The actions proposed in Alternative B would contribute a large part to this cumulative impact.</p>	<p>The cumulative impact on visitor understanding, education, and interpretation would be long-term, beneficial, and of major intensity. The actions proposed in Alternative C would contribute an appreciable increment to this cumulative impact.</p> <p>There could be long-term, minor, beneficial cumulative impacts on visitor use patterns, crowding and opportunities for solitude, and opportunities for recreational activities. The actions proposed in Alternative C would contribute an appreciable increment to this cumulative impact.</p> <p>The cumulative impact on opportunities for people with disabilities would be long-term, beneficial, and of moderate intensity. The actions proposed in Alternative C would represent all contributions to this cumulative impact.</p>

	ALTERNATIVE A (NO ACTION)	ALTERNATIVE B (PREFERRED)	ALTERNATIVE C
National Monument Operations			
National Monument Operations	Alternative A would be expected to have a long-term, minor, adverse impact on monument operations. There could be a long-term, minor, adverse cumulative impact on monument operations (staffing, maintenance, and operational needs) resulting primarily from increased visitation. The actions proposed in Alternative A would contribute an appreciable increment to the overall cumulative impact.	Alternative B would be expected to have a long-term, moderate, adverse impact on monument operations. There could be a long-term, moderate, adverse cumulative impact on monument operations (staffing, maintenance, and operational needs) resulting primarily from additional facilities and programs, and increased visitation. The actions proposed in Alternative B would contribute a large part to this overall cumulative impact.	Alternative C would be expected to have a long-term, moderate, adverse impact on monument operations. There would be a long-term, moderate, adverse cumulative impact on monument operations (staffing, maintenance, and operational needs) resulting primarily from additional facilities and programs, and increased visitation. The actions proposed in Alternative C would contribute a large part to this overall cumulative impact.



Sheep Rock, Sheep Rock Unit



Clarno Unit



Clarno Unit



CHAPTER 3
Affected Environment

Blue Basin, Sheep Rock Unit

INTRODUCTION

This chapter is not a complete description of the monument's environment. Rather, it provides an overview of resource conditions and trends; the key monument resources, uses, and facilities; and the socioeconomic characteristics that might be affected by

implementing any of the alternatives. For additional information on the area's natural and human environment, see the John Day Fossil Beds National Monument home page (<http://www.nps.gov/joda>).

NATURAL RESOURCES

PALEONTOLOGICAL RESOURCES

John Day Fossil Beds National Monument was set aside because of its world-class fossil beds, some of the richest beds in the world. The monument lies within the John Day River Basin, an area where thousands of feet of sediment were deposited from approximately 50 million years ago to about 6 million years ago. These sediments make up four major groups with fossil-bearing geologic formations, spanning almost 50 million years of the Tertiary Period: the Clarno Group (formed 54 to 37 million years ago), John Day Group (39 to 18 million years ago), Mascall Formation (15 to 12 million years ago), and Rattlesnake group (8 to 6 million years ago). Exposures of layers (strata) of these formations throughout the basin and the monument reveal one of the finest fossil records of Tertiary Period plants and vertebrates in the world (Fremd 1992a). A noted paleobotanist, Ralph Chaney, stated “No region in the world shows more complete sequences of Tertiary land populations, both plant and animal, than the John Day formations” (Fremd and Bestland 1997). The monument’s fossils have expanded paleontologists’ knowledge of the earth during this period of time, including a record of long-term climatic and biotic change.

The John Day Basin was first recognized as an important paleontological area in the 1860s by Thomas Condon. Condon’s extensive fieldwork led other scientists from Yale, University of Pennsylvania, Princeton, the Smithsonian Institution, and the University of California to visit the area in the late 1800s. The collections from these expeditions resulted in the bulk of the fossils documented in the basin until the early 1980s. Unfortunately, most of these collections (including key representatives of many of the species, or “holotypes”) contain little or no locality data, resulting in many “orphaned” specimens. Beginning in 1899 and continuing through the 1930s, John C. Merriam and staff

from the University of California became the major collectors in the area. Merriam’s research provided a much clearer picture of the region’s prehistory and the geological, chronological, and paleoecological context of the John Day fossils. During the 1920s, 1930s and 1940s, Ralph W. Chaney led additional expeditions that expanded the scientific community’s interest, understanding, and knowledge of the fossil beds. In addition to his discovery of new species of plant fossils in the John Day Basin, Chaney was the first scientist to describe various prehistoric plant environments based on data collected on plant fossil populations. Since that time, through today, the exploration and study of the John Day fossil beds has continued, yielding additional fossils each year. The collection currently curated at the monument is the largest collection of fossils with associated data from the John Day Basin in the world.

The monument’s fossil beds are significant for several reasons. Although other areas may better represent any one of the following qualities, few places in the nation or world contain all of these qualities in combination in such a relatively small area.

Duration

The formations exposed in the monument contain a fossil record of roughly 50 million years of the earth’s history, comprising most of the Tertiary Period. Continuous sequences of fossil beds that span even 5 million years are rare.

Continuity

Fossil records are often incomplete or represent a point in time. But the John Day fossil beds contain a record of remarkable continuity, with few notable gaps.

Time of Deposition

The fossils are arranged in an unusually orderly sequence, during a time when

mammals and flowering plants were undergoing dramatic changes in response to environmental changes. As a result, the fossil beds record information on evolutionary activities that reveal mammalian adaptive radiation, shifting climates, and other glimpses of earth's history, only sparsely hinted at in other sites. In addition, fossils discovered in the area delineate "first" or "last" points in time. For instance, the earliest known rhinoceroses and some of the last known primates (excluding humans) to have lived in North America are part of the John Day Fossil Beds record (Fiedor, n.d; T. Fremd, NPS paleontologist, pers. comm., January 18, 2005.).

Abundance

Many fossils have been, and continue to be, collected from rocks in the John Day Fossil Beds. There is documentation of tons of fossil containing matrix being collected and shipped to East Coast universities and museums in the late 1800s and early 1900s. Some 22,000 specimens were collected at one time just from the Bridge Creek site (leaf fossil locality) in the Painted Hills. Ongoing collection efforts in the monument add two to three hundred additional specimens to the NPS museum collection annually. By mid-2004, the national monument collection had grown in size to almost 40,000 specimens (NPS n.d.2).

Diversity of Specimens

A high diversity of fossil materials is in the monument's fossil beds: invertebrates, vertebrates, pollens, seeds, nuts, leaves, and paleosols (remnants of ancient soils) are all found in direct or close association with one another. Over 2,200 species of prehistoric plants and animals have been identified in the fossil beds (NPS, n.d.2). More than 120 types of mammals have been found just in the John Day Group, and hundreds of species of plants have been found in the Clarno Group (NPS n.d.2, NPS 1991). The Clarno Nut Beds includes more species of petrified wood than any other locality, of any age, in the world. The Bridge Creek Flora is one of the most speciose (high in number of species) paleobotanical sites in North America. Most

of these fossils, including rhinoceroses, camels, oreodonts (a mammal described as looking like a cross between a sheep and a pig), hypertragulids (small, deer-like animals), horses, bear-dogs and other canids, saber-toothed carnivores, rodents, and some of the last primates to live in North America, are of considerable scientific interest. The fossil beds also contain other vestiges of the ancient landscapes, including mudslides, ashfalls, floodplains, trackways, middens, prairies, and forests. The rocks are rich with the evidence of ancient habitats and the dynamic processes that shaped them. As a result, the materials in the fossil beds allow examination of ecosystem diversity and entire paleocommunities.

Quality of Preservation

The quality of preservation of many of the monument's fossils ranges from very good to outstanding. The vertebrate fossils of the John Day Formation, for example, are among the best preserved Tertiary Period fossils found anywhere (NPS 1999b). Many of the plant fossils are among the finest to be found in North America and some mammalian skeletal material is superbly preserved (NPS n.d.1). The Clarno Nut Beds yields material with cellular structure clearly visible under the microscope.

Dateable Markers

Unlike many fossil sites in the world, the fossils of the John Day Fossil Beds are found in association with volcanic rocks (volcaniclastics), which serve as markers that can be reliably dated in the laboratory. These time indexes permit tracking of changes in the environment, as well as individual plant and animal groups, and allow correlations with other formations throughout the world. The volcanic layers also are easily identified in the field, which greatly facilitates mapping of fossil localities, estimating ages of fossils, and illustrating sequences of geologic time.

In summary, the real values of the area are the combination of quality and diversity of fossils, coupled with the span of time when the fossils were deposited (NPS n.d.1).

The fossils found in the John Day Basin have been grouped into 19 key assemblages of fossil plants and animals, within or next to the boundaries of the monument. These assemblages represent a broad array of environments, time periods, and depositional processes within the monument. Eight of these assemblages are considered to be of relatively high significance (NPS n.d.1). The eight highly significant assemblages are found in all three units of the monument (see table 11). In general, the oldest geologic formations and fossils are in the Clarno Unit, intermediate aged in the Painted Hills Unit, and youngest in the south end of the Sheep Rock Unit.

Hundreds of thousand of acres in the John Day Basin presently expose fossiliferous rocks (NPS n.d.1). Many more of these rocks have been eroded away through time, or are buried under thousands of feet of basalt. Aerial photography has enabled the additional mapping of areas where concentrations of fossils have been discovered.

Several sites in the John Day Fossil Beds National Monument are particularly noteworthy. The Blue Basin in the Sheep Rock Unit contains one of the finest paleontological deposits in the monument. Thousands of important specimens have been collected from strata in this badlands area. Thousands of specimens also have been collected from the Foree Exposure (another badlands-type area) and from Sheep Rock (a towering exposure of the John Day Group) in the Sheep Rock Unit.

Leaf Fossil Hill in the Painted Hills Unit is one of two sites in this area that preserves a rich assemblage of fossils from the Bridge Creek flora, a nationally renowned paleobotanical assemblage (NPS 1991). Two low hills composed of shales contain the fossils. Over 100 species have been identified from the Bridge Creek flora locality, including 87 genera and 107 species of leaves, and 57

genera and 64 species of cones, flowers, fruits, or seeds (Fremd et al 1997). This site is one of the most species-rich floras from the Oligocene Epoch (34 to 23 million years ago) found in North America. This was the first site to be systematically studied in an effort to determine the area's paleoclimate (Bestland et al 1994). The Bridge Creek flora is also one of the important Tertiary leaf assemblages of the Pacific Coast because of its similarity to the modern redwood assemblage that occurs in more humid areas by the Pacific Ocean and its importance to regional correlations of ancient climatic changes along the Pacific Coast (NPS n.d.2).

The 44-million-year-old Clarno Nut Beds in the Clarno Unit are a world-class paleontological resource. This is one of the finest known fossil plant localities on the planet, containing many species new to science (NPS 1999b).

Over 145 genera and 173 species have been identified from fossil fruits, seeds, leaves, and wood (Fremd et al 1997). In particular, about 100 genera of fruits and seeds, 80 of leaves, and 40 permineralized (tissue replaced by silicates) woods have been identified in the nut beds (Bestland et al 1994). Extraordinarily well-preserved flowers and pollen also have been found here in association with stems, roots, and other vegetative tissues. The Clarno Nut Beds are important because the plant remains include permineralized seeds and nuts—most fossil floras yield only or mainly impressions of leaves. It is the most species-rich petrified wood locality of any age on Earth (T. Fremd, pers. comm., January 18, 2005). The site also is significant because this was one of the first areas for which radiometrically derived ages were determined for terrestrial fossils. The site provides an important reference in regional reconstructions and in worldwide correlations of paleoclimatology and paleoecology (NPS 1991, NPS n.d.2).

Table 11: Eight Fossil Assemblages of Relatively High Significance within or next to the Boundaries of John Day Fossil Beds National Monument.

Formation/Group	Assemblage Name	Found in Unit
Rattlesnake	Rattlesnake Fauna	Sheep Rock
Mascall	Type Mascall Fauna	Sheep Rock
John Day	Haystack Member Fauna	Sheep Rock
John Day	Kimberly Member Fauna	Sheep Rock
John Day	Turtle Cove Fauna	Sheep Rock, Painted Hills, Clarno
John Day	Bridge Creek Flora	Sheep Rock, Painted Hills, Clarno
Upper Clarno	Hancock Mammal Quarry	Clarno
Lower Clarno	Nut Beds Flora	Clarno

The mammal quarry, also in the Clarno Unit, contains the most complete vertebrate remains that have been found to date in the Clarno Group. This site contains one of the most important early Oligocene vertebrate fauna in North America. A thorough biostratigraphic study of this fauna has not yet been published. Because the site is the only source of abundant vertebrate fossils from this period of time, it is of great importance to scientific knowledge of the early Tertiary Period (NPS 1991).

Research continues today on the fossil beds. A high potential exists for significant paleontological discoveries to occur where there are exposed strata in the monument. In many of the beds, the fossils are widely scattered and their occurrence cannot be predicted. Because fossils deteriorate rapidly once they are exposed, the fossil beds are continuously canvassed according to cyclic prospecting schedules. Sites that weather rapidly are revisited more frequently. Every year hundreds of specimens are collected. Although many of the items are just fragments, a wealth of field data is collected with each specimen, including coordinates on its geographical location and stratigraphic position, descriptions of other features where it was deposited, and data about its recovery. This information, and additional data gained as the fossils are stabilized, prepared, and studied, is entered into the monument’s museum files.

It is important to note that it is the entire fossil record present in the John Day Basin that is of national and international significance, not just the fossil record within the boundaries of John Day Fossil Beds National Monument. The overall size of the known fossil beds has expanded as new areas have been investigated. In 1998, over 640 fossil localities were identified as part of the John Day fossil beds (T. Fremd, NPS paleontologist, pers. comm.). These localities are spread out over a 10,000-square-mile area, compared to the three units of the monument which only cover about 20 square miles of this area (Fiedor n.d.). The three units of the monument contain only a representative portion of the fossil beds found in the John Day Basin. Indeed, much more of the fossil record is preserved in sediments exposed outside the monument than inside it (Zancanella and Fremd 1997). Hundreds of different fossil localities lie between the monument’s units. In particular, numerous scientifically significant vertebrate fossils lie on lands adjacent to the monument—lands administered by the BLM Prineville District (Fremd 1992b). To completely study the John Day fossil record it is necessary to study exposures on BLM lands and other lands in the basin.

Paleosols, which are related to fossils, are found throughout the monument. A paleosol is defined as a soil that formed on a landscape in the past with distinctive morphological features resulting from a soil-forming environment that no longer exists. Paleosols

have been referred to as “trace fossils of ancient ecosystems.” Almost all of the monument’s mammalian fossils are found directly in paleosols. The paleosols of the Painted Hills Unit are of particular interest to visitors, due to their brilliant reds, oranges, and grays, and are frequently photographed.

Threats to Fossils

Many of the fossils in John Day Fossil Beds National Monument do not face threats because they are so abundant or durable, or are very difficult to access by the general public. In other cases, the monument’s fossils face threats that have resulted in measurable deterioration and loss of the resource. It is difficult, however, to document the precise extent of damage that has occurred in the monument due to natural and human causes — with little monitoring of the monument, and even less monitoring of the other federal lands in the John Day Basin, the extent and severity of the impact on the paleontological resource is unknown.

Probably the biggest threat to fossils in the monument is erosion. Erosion weathers away the hard rock that has encased and protected the fossils, exposing them to water, freezing and thawing. This can result in fossil damage and loss. Specimens that have endured over a great span of time can be reduced to unrecognizable splinters in a matter of four years or less if they are exposed at the surface. When a fossil is damaged or lost, the important scientific data associated with the specimen is lost, too.

People also can be the cause of fossil damage and destruction. Usually this damage is due to people walking over fossil-bearing rocks and unintentionally crushing or dislodging the fossils on or just beneath the surface. In particular, some visitors leave the Leaf Hill, Foree, and Island-in-Time trails and walk on exposed hills. Gradual destruction of in situ fossil localities has occurred due to this activity. Sometimes the loss of fossils has occurred due to purposeful, unauthorized collecting. Theft of fossils has occurred in the monument, and continues to occur, with

incidents ranging from people picking up small individual fragments of leaf fossils to the digging and removal of significant vertebrate fossil skulls (NPS 1999b). What portion of this loss is attributable to random, unrelated, spontaneous actions of individuals, and what portion is attributable to planned, purposeful actions of commercial or hobby collectors is unknown. However, the NPS staff believes that fossil theft is not as big a problem in the monument as in other areas because of the type of fossils found here, the difficulty in accessing and finding fossils, and the time needed to remove the fossils. Collectors no doubt try to remove specimens, but not knowing proper specialized techniques, they end up destroying the specimens rather than extracting them (T. Fremd, pers. comm., January 26, 2005).

It is also worth noting that although it is illegal to collect paleontological specimens of any kind on NPS lands, it is legal to collect fossil plants on other federal lands. As a result, several paleobotanical sites on BLM and national forest lands have been heavily exploited in the John Day Basin.

SOILS

A special soil survey for John Day Fossil Beds National Monument was completed by the USDA Natural Resources Conservation Service in 2000 (NRCS 2002). Soils in the three units were mapped. Thirty-seven different soil types and 84 soil map units are found in the monument. The soils in the monument generally are clayey in texture, well drained, and deep (40 to 60 inches) to very deep (over 60 inches) in bottomlands, but become variable, patchy, and shallow (20 to 40 inches) to very shallow (10 to 20 inches) on steep uplands and rocky bluffs. In most undisturbed areas, biological soil crusts composed of algae, lichens, mosses, microfungi, and bacteria are present. Soil formation is limited due to semi-arid conditions (9–16 inches of rainfall) and very steep slopes, which promote water and wind erosion.

Four dominant soil map units are present on the hillsides of the Clarno Unit, ranging in slope from 15% to 50%. These soils generally are moderately to very deep, well drained, and predominately clayey in texture. Another important soil map unit is found on alluvial fans in the Clarno Unit (and in the Sheep Rock Unit). These are also well-drained, very deep, clay soils, but have a high potential for shrink-swell.

Three dominant soil map units are present in the bottomlands of the Painted Hills Unit, and eight dominant soil map units are on the uplands. The soils on the bottomlands are found on alluvial fans and stream terraces, on slopes varying from 0% to 15%. They generally are very deep, well-drained soils, and range in texture from clayey to loamy to loamy-skeletal.

The dominant soil map units on Painted Hills' uplands are found on hillsides and ridgetopes, varying in slopes from 2% to 60%. Most of these soils are very deep and well drained, and are clayey in texture. However, one of the soil map units, found on 20% to 50% north slopes, varies in depth from very deep to shallow, and in texture from clayey to loamy. Another map unit, found on 30% to 60% slopes, varies in depth from shallow to very deep, and is clayey to loamy in texture.

The Sheep Rock Unit has six dominant soil map units on its bottomlands and ten dominant soil map units on its uplands. The soils on the bottomlands are found mostly on 0% to 3% slopes, on stream terraces and alluvial fans. They tend to be well drained, very deep, and have a variety of textures, including coarse-loamy, fine-loamy, and coarse-silty. The upland soils are found on hillsides that generally vary in slope from 20% to 90%. These soils also tend to be well drained, but they vary in depth from being very shallow to very deep. Their textures range from being loamy-skeletal to sandy-skeletal to clayey in nature.

The soils in John Day Fossil Beds National Monument have several management

limitations, although there are no major problems. Many of the monument's soils have claypans that limit the soils' permeability. Some soils also have low waterholding capacity and high shrink-swell potential. Water and wind erosion is a problem in places. The monument has very steep slopes, deep ravines and canyons, all of which are subject to erosion, particularly after storms. Sheet, rill, and gully erosion can occur anywhere in the monument. Gully erosion from stream down cutting is occurring along Bridge Creek, probably due to the loss of riparian and upland vegetation both within and outside the monument, and the resultant changes in water flows and geomorphological processes. There are many social trails in the Clarno Unit, which have the potential to contribute to soil erosion.

PRIME AND UNIQUE FARMLANDS

One prime farmland soil is in the Painted Hills Unit, and six prime farmland soils exist in the Sheep Rock Unit, primarily on the floodplains, stream terraces, and alluvial fans (NRCS 2002). The six prime farmland soils, if irrigated, are

- Kimberly-Dryck complex (0% – 2% slopes; map unit 2A)
- Monroe clay loam (0% – 3% slopes; map unit 3A)
- Legler loam (0% – 3% slopes; map unit 9A)
- Legler loam (3% – 8% slopes; map unit 9B)
- Kimberly loam (0% – 2% slopes; map unit 302A)
- Powder silt loam (0% – 2% slopes; map unit 303A)

However, all the above soils can only be considered prime farmland if they are irrigated. Most of the areas are not being irrigated, except for about 72 acres that are being farmed to maintain the James Cant Ranch Historic District cultural landscape. These irrigated prime farmlands are divided into four fields and are used for hay production.

VEGETATION

The vegetation of John Day Fossil Beds National Monument is typical of central Oregon. With a semi-arid environment, the vegetation in John Day Fossil Beds is generally characterized as a bunchgrass/sagebrush steppe environment. A mixture of dryland grasses, forbs, shrubs, and western juniper dominate the landscape. Most of the vegetation in the Painted Hills and Clarno Units has been considerably altered by people and livestock. The lowlands in the Sheep Rock Unit also are dominated by introduced plants. Native vegetation in the three units predominates in areas high on the ridges; on rocky, steep slopes; and in areas away from water sources where there was little or no livestock use (Youtie and Winward 1977, Hoh 2007). Remnant stands of predominantly native grasses exist on the upper slopes away from the river and creeks.

Based on an analysis of GIS land cover data, the largest vegetation type found in the monument is shrubland (68%), followed by evergreen forest (21%), grassland/herbaceous (5%), and agriculture (5%) (NPS 2005c). The three units of the monument support similar plant communities, although specific species in these communities vary from unit to unit.

As noted above, most of the monument is covered with a sagebrush steppe. Moist alkaline flats support alkali-tolerant greasewood. Vegetation growing along the John Day River and its tributaries consists of willows, cottonwoods, and a variety of sedges and forbs. Juniper woodland also is an important vegetative community in the monument, occurring both in savannah-like woodlands and in dense stands (NPS 2005b).

Youtie and Winward (1972) first inventoried and described the plant communities in the monument. The dominant plant communities in the monument include greasewood (*Sarcobatus vermiculatus*)/cheatgrass (*Bromus tectorum*); shadscale (*Attriplex confertifolia*)/Sandberg's bluegrass (*Poa Sandbergii*); big sagebrush (*Artemisia*

tridentata)/Sandberg's bluegrass; big sagebrush (*Artemisia tridentata*)/bluebunch wheatgrass (*Agropyron spicatum*); and western juniper (*Juniperus occidentalis*)/big sagebrush. However, juniper woodlands are encroaching on many of these communities. The greasewood/cheatgrass community occurs on alkali soils at lower elevations in both the Sheep Rock and Painted Hills Units. The shadscale/Sandberg's bluegrass and big sagebrush/Sandberg's bluegrass communities occur as a mosaic in all three monument units on heavily alkali clay soils. The big sagebrush/bluebunch wheatgrass generally occurs at relatively higher elevations in the Painted Hills and Sheep Rock Units. The western juniper/big sagebrush community also occurs at higher elevations in these two units, and in drainages and ravines in the Clarno Unit.

Several other small plant communities occur along the higher elevation outcroppings, along riparian areas, and on shallow paleosol soils around the exposed fossil-bearing strata. A unique wooded riparian habitat, consisting of mountain alder (*Alnus tenuifolia*), occurs along Rock Creek (NPS 2005b).

Portions of the three units with badlands and other severe environmental conditions have little or no vegetation. In particular, parts of the Painted Hills Unit (approximately 1,000 acres) and the Blue Basin badlands in the Sheep Rock Unit have little or no vegetation.

A total of 293 species of plants have been recorded in the John Day Fossil Beds, of which 91 species are nonnatives (NPS 2005a; Ordway 2005; S. Hoh, John Day Fossil Beds National Monument, pers. comm., August 28, 2006). Common native bunchgrasses include basin wildrye (*Elymus cinereus*), bluebunch wheatgrass, Idaho fescue (*Festuca idahoensis*), and Thurber's needlegrass (*Stipa thurberiana*). Other bunchgrasses that mix in with these major grasses include needle & thread grass (*Stipa comata*), Indian ricegrass (*Oryzopsis hymenoides*), sand dropseed (*Sporobolus cryptandrus*), and bottlebrush squirreltail (*Sitanion hystrix*). Two important native sod-

forming grasses include Sandberg's bluegrass and big bluegrass (*Poa sp.*).

The absence of water has limited the locations where shrubs and trees grow in the monument. With the suppression of fire and livestock grazing in the past, western juniper is the most common tree and big sagebrush the most common shrub found in John Day Fossil Beds National Monument. Cottonwoods (*Populus trichocarpa*), willows (*Salix sp.*), alder (*Alnus rhombifolia*), and hawthorn (*Crataegus columbiana*) grow only in a very restricted riparian zone along the John Day River and its tributary creeks. A few ponderosa pines (*Pinus ponderosa*) grow in areas where they can find moisture. Serviceberry (*Amelanchier alnifolia*) and currant (*Ribes cereum*) bushes can be found around rock slides. High up along the rocky escarpments surrounding the valleys is curl-leaf mountain mahogany (*Cercocarpus ledifolius*). Greasewood, rabbitbrush (*Chrysothamnus nauseosus*), sagebrush, shadscale, broom snakeweed (*Gutierrezia sarothrae*), antelope bitterbrush (*Purshia tridentate*), and purple sage (*Salvia dorrii*) are found on xeric sites.

The Painted Hills area is widely known for its wildflower displays in the spring and summer. Most years the peak wildflower season runs from late April to early May. These plants grow only on or near the paleosols of the unit.

The U.S. Fish and Wildlife Service identified seven plant species of concern that may occur within the area of John Day Fossil Beds National Monument (see appendix B); however, not all of these species have been actually documented occurring within the monument. Several other rare plant species also occur in the monument. In the Painted Hills Unit, hedgehog cactus (*Pediocactus simpsonii*) and Nevius chaenactis (*Chaenactis nevii*) are listed as rare by the Oregon Natural Heritage Program. A 1991 survey (Wright 1992) for sensitive plant species in the monument found Nevius chaenactis in all three units. It was common and widespread on clay outcrops in the Painted Hills Unit. A healthy population of hedgehog cactus was

found in the Painted Hills and Sheep Rock units. More recently, Ordway (2005) identified another plant of concern on the Oregon Natural Heritage List: scapose catchfly (*Silene scaposa*).

Nonnative Plants

The nonnative species in the monument affect sites ranging in size from less than an acre to thousands of acres. Most of these nonnative plants are not overly aggressive and are limited to very small areas, such as disturbed areas, parking lot edges, and trails. Altogether, it is estimated that 14,000 acres of the monument have been affected by nonnative plants (NPS 2005a). These species were brought in by people, or were spread by water along the river and stream corridors, by wind, or by rodents and birds from surrounding agricultural lands. They first took hold on areas that were disturbed by past grazing and agricultural activities. Cheatgrass (*Bromus tectorum*) was one of the first invaders, spreading into areas that were grazed. Since the early to middle 1900s, cheatgrass has been joined by a host of other weeds.

Thirteen nonnative species are of particular concern in the monument: cheat grass, Dalmation toadflax (*Linaria dalmatica*), Russian knapweed, diffuse knapweed, spotted knapweed, whitetop (*Cardaria draba*), medusahead rye (*Taeniatherum caput-medusa*), musk thistle (*Carduus nutans*), poison hemlock (*Conium maculatum*), yellow star thistle (*Centaurea solstitialis*), scotch thistle (*Onopordum acanthium*), perennial pepperweed (*Lepidum latifolium*), and Russian olive (*Eleagnus angustifolia*) (NPS 2005a). These noxious invaders are of high concern because of their adverse effects on native plant and animal communities and their high potential to spread throughout the monument. Many of these nonnative species are also among the most established and toughest weeds to keep under control. They can completely displace a native grass stand if not kept under control. Table 12 shows the status of these species in the three units as of 2004. Of particular note, cheatgrass is well established and widespread in all three units.

The majority of the area around the paleosols (uplands) of the Painted Hills has been invaded by cheatgrass and medusahead. Russian knapweed, whitetop, and Russian olive also have spread along long stretches of the floodplain of Bridge Creek in the Painted Hills Unit. In the Clarno Unit, knapweeds are of concern along the roads and Pine Creek, while medusahead rye is widespread in the northern portion of the unit. In the Sheep Rock Unit, the valleys and low areas above the John Day River have well-established populations of Dalmation toadflax, whitetop, Scotch thistle, and cheat grass. In the Cant Ranch the understory of much of the riparian area, especially in sites with deep, loamy soils and high water tables, is covered nearly 100% by invasive weed species, often 4 to 7 feet high, including whitetop, scotch thistle, poison hemlock, reed canarygrass, and flixweed mustard. Integrated Pest Management measures are now being taken by the Park Service to control the spread of

these high priority noxious weeds in the monument.

Several other nonnative species are of concern due to their widespread existence in the monument and their potential for adversely affecting native ecosystems. These include bouncingbet (*Saponaria officinalis*), found in small patches along the John Day River in the Sheep Rock Unit; Canada thistle (*Cirsium arvense*), currently in the Painted Hills lawn and the Sheep Rock/Painted Hills riparian area; chickory (*Cichorium intybus*), well established in the Sheep Rock agricultural fields and riparian areas; houndstongue (*Cynoglossum officinale*), of which a few scattered plants have been treated; puncture vine (*Tribulus terrestris*), found in parking lots, along trails, and in historic field #1; St. John's wort (*Hypericum perforatum*), scattered in small patches along waterways; and teasel (*Dipsacus sylvestris*), present in wetlands, riparian areas, springs, and seeps in all three units (NPS 2005a).

Table 12: Status of "High Urgency" Noxious Weeds in the Monument

Weed Species	Status in Sheep Rock Unit	Status in Clarno Unit	Status in Painted Hills Unit
Dalmation toadflax	Well established & spreading	Not present	Not present
Whitetop	Well established & spreading	Not present	Well established & spreading
Russian knapweed	Scattered small patches	Scattered small patches	Well established & spreading
Spotted knapweed	Scattered small patches	Scattered small patches	Scattered small patches
Diffuse knapweed	Scattered small patches	Scattered small patches	Scattered small patches
Yellow star thistle	Scattered small patches	Scattered small patches	Scattered small patches
Musk thistle	Scattered small patches	Not present	Scattered small patches
Scotch thistle	Well established & spreading	Scattered small patches	Well established & spreading
Medusahead	Scattered small patches	Well established & spreading	Well established & spreading
Perennial pepperweed	Scattered small patches	Not present	Not present
Poison hemlock	Well established & spreading	Not present	Scattered along the creek
Russian olive	Scattered small patches	Not present	Well established & spreading
Cheatgrass	Well established & spreading	Well established & spreading	Well established & spreading

Source: NPS 2005a.

Reed canary-grass (*Phalaris arundinacea*), which can form dense monocultures and adversely affect riparian biodiversity, also occurs along the John Day River in the Sheep Rock Unit (NPS 2005b).

People and Vegetation

Beginning in the late 1860s, several human activities have significantly altered John Day Fossil Bed's native vegetation, reducing the distribution and abundance of many native plants, including grasses, and affecting plant diversity (NPS 2005b). Livestock grazing and agriculture were two of the activities that brought major changes to the lowland plant communities. Beginning in the late 1800s, much of the monument, predominantly the lowlands, was subjected to prolonged periods of grazing by livestock, including sheep, cattle, and horses (Youtie and Winward 1977). Sheep and cattle grazing resulted in the loss of native species and encouraged the spread of invasive nonnative species such as cheatgrass. With the establishment of the monument, livestock grazing and the potential for overgrazing stopped. Although some riparian areas have subsequently shown signs of recovery, many areas in the monument would likely continue to be covered by nonnative species for the foreseeable future.

In addition to serving as pastures, the lowlands along the John Day River were converted to dryland and irrigated hay fields, which also resulted in the loss of native plant communities, such as cottonwood galleries. Approximately 72 acres of irrigated river bottomlands continue to be maintained as hay land in the James Cant Ranch Historic District. Other fields that were abandoned have reverted to stands of nonnative, invasive plants or noxious weeds. A 3-acre remnant of a "homestead orchard" still exists in the historic district. However, the fruit trees in the orchard are old and weakening from age, disease, and insects. The trees are pruned and sprayed annually.

In the Clarno Unit there are many human-created unofficial trails (social trails) scattered throughout the unit. A total of 75,676 linear

feet (24,212 meters) of social trails were inventoried and mapped in the spring of 2006. This constitutes a social trail density of about 41 linear feet per acre. Vegetation along these social trails has been denuded, trampled, and crushed to varying degrees. The loss of vegetation is most apparent along the more popular social trails, such as the trail to the Hancock Tree, and the trails that make up the Geo-loop.

Up until recently, fire was excluded from the monument. Prior to Anglo-American settlement, these lands would typically burn every 5 to 15 years, either from lightning-caused fires or from fires ignited by native tribes. From the early 1900s until recent times when the National Park Service began prescribed burns, fire suppression was the norm for the region, and only a limited number of wildfires actually burned onto the monument. Suppression of fires in and around the monument for some 100 years has resulted in the proliferation of woody plants and annual grasses. This has increased fuel loads and further exacerbated the condition of native grasses and flora. The absence of fire has resulted in overgrowth of competing over-story vegetation and a loss in the vigor of many native plants (NPS 1999b, NPS 2005b). In the absence of fire, many bunchgrasses lose their vigor over time and have difficulty germinating.

Fire suppression also has led to a very large increase in the number of western juniper trees in the monument. Historic photos showed that scattered junipers were only found along the rocky ridges and in protected hollows. Junipers now can be found throughout all three units of John Day Fossil Beds National Monument, from the edges of the river valley up into the highest elevations of the monument. Juniper is now a threat to many of the native plant communities that were historically grasslands or grass-shrub steppes (NPS 2005a; NPS 2005b). If not treated, the juniper forms dense canopies with little or no understory vegetation. Prescribed fire and selective cutting are being used to

reduce juniper numbers and to reinvigorate brush and grass stands in the monument.

Finally, there are numerous areas upstream of the monument that have well-established noxious weeds. These areas are a constant seed source; seeds are transported down the river and by vehicles on the highways, affecting vegetation in the monument.

WILDLIFE

Species Found in the Monument

John Day Fossil Beds National Monument supports a variety of wildlife species due to its diversity of habitats. In addition, many species from the mountains migrate into the sagebrush semi-desert in the winter. Available information suggests that the wildlife populations in the monument are stable and face no immediate threats (NPS 2005b). During 2002 to 2003, inventories were completed for mammals, birds, amphibians, and reptiles in the three units of the monument (Univ. of Idaho and NPS 2004a). Initial lists of moths also have been compiled. Forty-six mammal species were documented in or near the monument in 2002 and 2003, and four additional species were believed to be present.

Common mammal species in all three units include mule deer (*Odocoileus hemioinus*), elk (*Cervus elaphus*), coyote (*Canis latrans*), mountain cottontail (*Sylvilagus nuttallii*), northern pocket gopher (*Thomomys talpoides*), Belding's ground squirrel (*Spermophilus beldingi*), montane vole (*Microtus montanus*), bushy-tailed woodrat (*Neotoma cinerea*), and several species of mice. A year-round resident deer population is present in the monument, which is supplemented by a migratory wintering population from November through April. Elk also occur throughout the monument, although their abundance varies seasonally; larger herds are frequently encountered along the John Day River and its tributaries in the winter. Beaver (*Castor canadensis*) are common along the John Day River and its

tributaries. Less common species that occur in the area include American badger (*Taxidea taxus*), bobcat (*Lynx rufus*), cougar (*Puma concolor*), mink (*Mustela vison*), river otter (*Lutra canadensis*), pronghorn (*Antilocapra americana*), raccoon (*Procyon lotor*), porcupine (*Erethizon dorsatum*), and muskrat (*Ondatra zibethicus*).

The authors of the vertebrate inventory note that the area of John Day Fossil Beds National Monument is an important area for bats (Univ. of Idaho and NPS 2004a and b). Fourteen of 15 known bat species in Oregon are found in the monument. Most of these species appear to breed in the monument, including at least five of the eight species of concern listed by state and federal agencies. The bats most commonly found in the monument include little brown myotis (*Myotis lucifugus*); Yuman myotis (*M. yumanensis*), the most common bat species recorded; western pipistrelle (*Pipistrellus hesperus*); big brown bat (*Eptesicus fuscus*); and pallid bat (*Antrozous pallidus*). Of special note, in 2002 spotted bats (*Euderma maculatum*) were found in the monument. This species is virtually unknown in Oregon, with only two published records of its existence prior to the inventory. Multiple observations of the species in the monument indicate that a breeding population may exist in the state (Univ. of Idaho and NPS 2004a and b).

The monument's bats roost in buildings, cracks, and caves. Several important roosting areas have been identified, including the Palisades (Clarno Unit), Goose Rock (Sheep Rock Unit), and the ignimbrite rimrock overlooking Bridge Creek (Painted Hills Unit). These areas were repeatedly used by large maternity colonies of pallid bats and by several other bat species. Other good areas for finding bats include the lower reach of Rock Creek and the reach of Pine Creek adjacent to the Palisades.

Birds are the most visible animals seen in the monument. John Day Fossil Beds harbors a variety of resident and migratory birds. A total of 155 bird species were documented in the

2002–2003 inventory; of these, 13 species were not expected to occur. Eighty-four species were recorded as breeding in the area and 40 species were migrants (Univ. of Idaho and NPS 2004a). Ten other species were believed to be probably present, but were not recorded during the inventory. Species commonly seen in the area at different times of the year include mallard (*Anas platyrhynchos*), California quail (*Callipepla californica*), rock dove (*Columba livia*), common nighthawk (*Chordeiles minor*), white-throated swift (*Aeronautes saxatalis*), Say's phoebe (*Sayornis saya*), western kingbird (*Tyrannus verticalis*), violet-green swallow (*Tachycineta thalassina*), cliff swallow (*Petrochelidon pyrrhonata*), Townsend's solitaire (*Catharus ustulatus*), American robin (*Turdus migratorius*), song sparrow (*Melospiza melodia*), red-winged blackbird (*Agelaius phoeniceus*), western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), and American goldfinch (*Carduelis tristis*). Twenty species of waterfowl were documented or were believed to be probably present in the monument area, primarily during the spring and fall migrations, although many of these species use the Painted Hills reservoir adjacent to the monument. The John Day River in particular is regularly used by wintering and migrating waterfowl. Nesting Canada geese (*Branta canadensis*) are commonly seen in the summer around Picture Gorge.

The monument also provides habitat for both breeding and wintering raptors. Seventeen raptor species were identified as being present in the 2002–2003 inventory, of which eight were identified as breeding species: red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), barn owl (*Tyto alba*), great-horned owl (*Bubo virginianus*), long-eared owl (*Asio otus*), and screech owl (*Otus kennicottii*) (Univ. of Idaho and NPS 2004). Two other species, rough-legged hawk (*Buteo lagopus*) and short-eared owl (*Asio flammeus*), were believed to be probably present. Most of these species occur in low numbers in the monument. In 2002 and

2003, a total of 33 active and inactive raptor nests were found. Adult peregrine falcons (*Falco peregrinus*) were spotted near Cathedral Rock and the Johnny Creek Ranch, suggesting that a pair of falcons may have nested in the area. This species has been largely absent from the lower John Day valley since the mid-20th century (Univ. of Idaho and NPS 2004, NPS 2005b).

John Day Fossil Beds National Monument provides good habitat for many reptiles because of its semi-arid climate and interspersed riparian areas, grass/sagebrush, and rocky basalt outcroppings. Twelve species of lizards and snakes were documented to be present and two species were believed to be probably present in the 2002 and 2003 inventory (Univ. of Idaho and NPS 2004a). The most common and widespread reptile found in the monument is the western fence lizard (*Sceloporus occidentalis*). The western skink (*Eumeces skiltonianus*) is another common lizard. The gopher snake (*Pituophis catenifer*) is the most commonly encountered snake in the monument. Other common snakes include the racer (*Colubar constrictor*) and the western terrestrial garter snake (*Thamnophis elegans*). The western rattlesnake (*Crotalus viridis*) is also a common snake in the monument.

The riparian areas along the John Day River, Rock Creek, and Bridge Creek are important habitat areas for wildlife. The springs and seeps in the monument also provide important habitat for species, particularly amphibians. Five amphibian species were found in the 2002–2003 inventory: western toad (*Bufo boreas*), Great Basin spadefoot toad (*Spea intermontana*), Pacific tree frog (*Hyla regilla*), long-toed salamander (*Ambystoma macrodactylum*), and the nonnative bullfrog (*Rana catesbeiana*) (Univ. of Idaho and NPS 2004a).

The monument also has a diverse butterfly population, largely due to the diversity of plant species and habitats. A butterfly survey conducted during the summer of 2003 and the spring of 2004 identified 55 butterfly species

(Anderson 2004). However, many more species likely occur in the monument. (Anderson identified another 40 species that potentially occur in the monument.)

Several rare or sensitive wildlife species occur in the monument. The U.S. Fish and Wildlife Service lists 22 species of concern that may occur within the area of John Day Fossil Beds National Monument (see appendix C); however, not all of these species actually have been found in the monument. Likewise, the Oregon Department of Fish and Wildlife has identified nearly 50 sensitive species that occur in the two counties where the monument is located, of which 17 species are known to occur in the monument (NPS 2004b). For more information, see the Oregon Natural Heritage Program Center's web site, <http://oregonstate.edu/ornhic>.

As of 2004, five terrestrial nonnative wildlife species were known to occur in the monument: Chukar partridge (*Alectoris chukar*), ring-necked pheasant (*Phasianus colchicus*), house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), and bullfrog (NPS 2004b). With the exception of the bullfrog, all of these species have become established in all of the monument's units. (The bullfrog is present along the John Day River and in Rock Creek in the Sheep Rock

Unit.) In addition, three nonnative fish—smallmouth bass (*Micropterus dolomieu*), bluegill (*Lepomis macrochirus*), and carp (*Cyprinus carpio*)—are known to occur in the monument.

People and Wildlife

Intensive settlement and agriculture have resulted in extensive wildlife habitat modifications and changes in the area's wildlife populations. Particularly obvious changes in wildlife populations and habitats have been caused by livestock grazing and farming (especially in riparian areas), erection of fence barriers, and stream channelization. Changes in the structure, composition, and distribution of the monument's sagebrush communities probably led to extirpation of sage grouse (*Centrocercus urophasianus*) from the monument (Sharp 1985 as cited in NPS 2005b). Fire suppression and efforts to control predators also have affected wildlife populations in the area. Some poaching of deer occurs in the monument during the hunting season. Moderate to intense efforts to control predators such as coyotes and cougars have been conducted on lands adjacent to the monument. Visitors may be affecting pallid bat (*Antrozous pallidus*) colonies when they hike along the bases and rims of some cliffs (NPS 2005b).

CULTURAL RESOURCES

OVERVIEW

Indigenous peoples “have been living on the land now called Oregon for more than 10,000 years” (Zucker, Hummel, and Hogfoss 1983:2). Artifactual evidence of human use of the Columbia Plateau and the Great Basin cultural areas goes back to at least circa 9000 BC and 8000 BC respectively (Chatters and Pokotylo 1998; Jennings 1986). Eastern Oregon was inhabited by American Indian peoples of the Columbia Plateau and Great Basin cultural areas (Walker 1998; D’Azevedo 1986; Zucker, Hummel, and Hogfoss 1983).

The Clarno and Sheep Rock units contain pictographs (generally recognized to be the earliest record of human presence) that are some 2,000 years old. Researchers suggest that these pictographs were created by American Indians traveling through the area. Long ago the basin north of Picture Gorge in the Sheep Rock Unit became a “transition zone” of territorial overlap between Columbia Plateau peoples and Great Basin peoples, who both used the area for traditional subsistence activities such as hunting, fishing, and gathering. They broadened the range of food available to them by exploiting a host of microenvironments in the area (National Park Service 2000a and 2000b).

Examples of peoples in these two culture areas are the Wasco of the Columbia Plateau and the Northern Paiute of the Great Basin. Today one of the Confederated Tribes of the Warm Springs Reservation is the Wasco Tribe (Tiller 1996:548). The tribes regarded as traditionally affiliated with John Day Fossil Beds National Monument are the Burns Paiute Tribe, Burns, Oregon; the Confederated Tribes of the Umatilla Indian Reservation, Pendleton, Oregon; and the Confederated Tribes of the Warm Springs Reservation Tribal Council, Warm Springs, Oregon. The three Indian reservations on which these tribes are located form a triangle. The southern point is marked by the Burns

Paiute Reservation; the northwestern point by the Warm Springs Reservation; and the northeastern point by the Umatilla Reservation. The location of these tribal governments relates to their 19th century treaty and reservation history in the face of the ever westward expansion of European American settlers.

Between 1862 and 1909, the Homestead Act allowed settlers to claim 160- to 640-acre tracts of land for free after working the land for a specified period of time. In 1881, Eli Casey Officer filed a homestead claim, apparently bringing the first flock of sheep to the John Day area. His son, Floyd Officer, homesteaded the land on which the Cant Ranch House is now located; he sometimes accompanied geologist and minister Thomas Condon (1822–1907) on his study expeditions.

Thomas Condon conducted field expeditions and greatly furthered paleontology for which he had a scientific passion. He was the first to recognize the John Day fossil basin as a world-class source of paleontological specimens and contextual geological data. Condon became the first Oregon state geologist in 1872 and subsequently a professor of geology at the University of Oregon, serving in that capacity until his death in 1907.

The name of the national monument is attributed to John Day and the John Day River, which was named for John Day. With Ramsey Crooks, John Day reached the mouth of the Mah-hah River along the Columbia, where some Indians took everything these two had, including their clothes. They were rescued, but the incident became memorialized when travelers along the Columbia River would point out the mouth of the Mah-hah River where John Day had been waylaid. By the 1850s, the Mah-hah River was being called the John Day River.

In 1910, Scottish immigrants James and Elizabeth Cant purchased approximately 700 acres of land from the Officer family and established their own ranch along the John Day River at Sheep Rock. The Cant Ranch, which expanded to nearly 6,000 acres, operated from 1910 into the 1970s. The operation started with sheep, and then moved to cattle around 1946.

Authorized by Congress on October 26, 1974, John Day Fossil Beds National Monument was established in 1975. Subsequently, the National Park Service acquired the Cant Ranch House and 849 acres of the property.

ARCHEOLOGICAL RESOURCES

More than 100 known archeological sites are contained within the three units of the national monument. More specifically to date, 123 archeological sites have been documented along with 53 isolated finds of artifacts (Burtchard 2006a). About 28% of the national monument has been archeologically surveyed, including work in 2005 and 2006 (Burtchard 2005, 2006a, 2006b, 2007).

The archeological sites range in time from about 550 BC into the historic period; they represent both American Indian and European American subsistence, habitation, and settlement patterns and activities.

Prehistoric sites include lithic scatters, isolated finds of projectile points and other bifacial stone tools, stacked rock cairns, rock overhangs and caves that appear to have been used for shelter and habitation, pictographs, and house-pit depressions.

Historic sites include evidence of a herder's cabin; stacked rock cairns; an oil well/oil exploration site with foundation and the remains of equipment; remnants of water diversion and irrigation ditches; and trash remains such as tin cans and beer bottles. Walled hunting blinds made up of stacked stones with pit features for wind protection are associated with both prehistoric and historic remains.

The James Cant Ranch Historic District is a likely place to conduct historical archeology because of the human habitation at the ranch house and the sheep and cattle ranching operations that took place there during much of the 20th century. Archeological surveys are being conducted within the Sheep Rock Unit, but so far there has been no systematic archeological focus on the Cant Ranch. Isolated finds of metal objects and fragments related to ranching equipment have been found. Potential archeological resources could include artifacts associated with the domestic life of the Cant family at the Cant Ranch House and those associated with the working life of raising sheep and cattle on the rest of the ranch.

In the Clarno Unit, archeological surveys have uncovered some 19th century buttons attributed to traders and travelers. In the Sheep Rock Unit, test excavations have been conducted around the incised boulder known as the 1872 Petroglyph Boulder. It bears the initials "TC" and the date 1872 and is attributed to Thomas Condon; no cultural materials were found during the test excavation (Burtchard 2005). In addition to new survey work, sites recorded in 1993 are being re-examined and re-documented (Burtchard, Cheung, and Gleason 1994).

HISTORIC STRUCTURES AND CULTURAL LANDSCAPES

James Cant Ranch Historic District

Named for the locally prominent rancher James Cant, Sr. (1879–1971), the James Cant Ranch Historic District (often called the Cant Ranch Historic District) was listed in the National Register of Historic Places on June 21, 1984. As stated in the national register nomination form, "The Cant Ranch is one of the best preserved examples of the early 20th century ranching operations in the John Day River Valley" (Toothman 1984). The national register listing was amended in 1996 to include the agricultural fields and additional cultural landscape resources.

The historic district is in the Sheep Rock Unit, encompassing approximately 200 acres where the activities of the ranching operation of the Cant family were focused. Eleven historic buildings, several structures, and a variety of cultural landscape resources are in the historic district. With its remaining main house, outbuildings, and surrounding irrigated fields, the Cant Ranch is one of the most intact, locally important examples of an early 20th century sheep and cattle ranch in Wheeler and Grant counties, Oregon.

The land on which the Cant Ranch was built was first homesteaded by Floyd Officer, a member of one of the first families to settle in the John Day River valley. James Cant, Sr., a Scottish immigrant, purchased the property in 1910 and became one of the leading ranchers in the valley during the peak of sheep ranching. He and his wife, Elizabeth, had four children—Charles, James Jr., Christina, and Lillian—and they started the area’s first school in 1919. Classes were held on the third floor of the main house. James Cant, Sr. founded or joined numerous community organizations and business associations, including the Oregon Wool Growers’ Association, the Grant County Stockgrowers’ Association, the Patrons of Husbandry, Grange No. 627, and the Cattle and Horse Raisers’ Association of Oregon. He also served as district clerk for the local school district (Toothman 1984). The ranch remained in the Cant family until it was purchased by the National Park Service in 1975, a few years after the death, at age 92, of James Cant, Sr.

Historic resources in the district include buildings, structures, and landscape features. Most of the historic buildings are in the ranch building complex, which is on the west bank of the John Day River. The complex includes a ranch house, barn and sheep shearing stalls, orchards, ornamental vegetation, log cabin, bunkhouse, privy, chicken coop, feed shed, workshop (or blacksmith shop), watchman’s hut, corrals, fences, and gates. The log cabin, behind the main house, and the feed shed were built by the Floyd Officer family prior to James Cant’s acquisition of the ranch. All

other historic buildings were constructed by the Cant family. The sheep shearing pens remain as perhaps the most intact example of their type remaining in the region (Toothman 1984). Eleven buildings and several structures still remain from the period of significance (1910–1975); some of them were built during Officer’s occupation before 1910.

In the domestic area of the ranch complex, the most prominent building is the main ranch house. Built circa 1915–1918, it is a 2½ story, wood-frame, hip-roofed building with drop siding. Each of the first two floors has a porch and six rooms with a central hallway. The additional half floor is one large room and functioned as the local school until the nearby Cant School was built in 1919. The house has been rehabilitated for administrative offices, an interpretive display, and collections storage. The log cabin behind the main house is a small, one-room, one-story structure. It is one of the oldest buildings within the complex, dating from the Floyd Officer period and used by the Cant family primarily for storage of supplies and food (Toothman 1983).

South of the main residence are the bunkhouse and privy. Both buildings are of wood-frame construction with a shingle roof. Northeast of the main house are a chicken coop and a feed shed, both of wood-frame, shingle-roof construction. The feed shed also dates to the Floyd Officer period (Taylor and Gilbert 1996).

In the working area of the ranch, the most prominent building is the barn and its attached sheep shearing stalls. Built circa 1920, the barn is a 120-foot-long, 1½ story, timber-framed structure with vertical board siding and a wood-shingle gable roof. Attached to the north elevation is a one-story, rectangular structure, approximately 60 feet long and 20 feet wide, which is divided into stalls for sheep shearing. The sheep shearing pens remain largely intact, and sections of the shearing equipment are still in place (Toothman 1984). East of the barn, the watchman’s hut is a small, one-room, wood-frame hut that housed

shepherders during lambing season. West of the barn, the workshop (or blacksmith shop) is a one-story, wood-frame, shingle-roofed structure, that has been rehabilitated for use as a meeting space. There is also a one-story, wood-frame, shingle-roofed privy.

The ranch's irrigated fields extend approximately 2.25 miles north from Picture Gorge, and vary in width (Taylor and Gilbert 1996). Associated with the fields are historic ditches that were used to irrigate the crops, and hand-pulled cable cars. The cable cars were used to cross the river to reach Christina's cabin and for other purposes. This cabin, named for one of the two Cant daughters, is on the east bank of the river at the edge of one of the fields northeast of the ranch complex. It is a small, one-story, wooden structure of frame construction with vertical board siding. Little is known about the cabin; it is likely that it was built to establish a homestead claim for Cant's older daughter, but was never occupied (Toothman 1984).

In visitor use areas around the structures, representative pieces of farm equipment from the historic period have been placed to serve as interpretive exhibits. Within the historic district boundaries and north of the historic ranch complex, there are two residences and a small maintenance building. The addition of new structures within the district was mitigated in consultation with the Oregon State Historic Preservation Office and the structures were carefully sited to reduce visual impacts to the historic district.

The Cant Ranch meets national register criteria at the local level of significance for the following reasons: (1) for its association with the early ranching operations and general settlement patterns of the John Day River valley that began in the late 19th century and continued into the 20th century; (2) for its association with the Cant family, who were prominent members of the valley community; and (3) as one of the best preserved examples of the early 20th century ranching operations in the John Day River valley (Toothman 1984). The district's period of significance is from

1910 to 1975, the period during which the Cant family owned and operated the ranch.

Details of a technical nature regarding the historic district can be found in the document, *Cultural Landscape Report: Cant Ranch Historic District* (Taylor and Gilbert 1996).

Cant Ranch Cultural Landscape

In 1996, a cultural landscape report assessed the Cant Ranch historic cultural landscape (Taylor and Gilbert 1996). Landscape characteristics found to contribute to the significance of the historic district are spatial organization, response to natural systems and features, land use, circulation, vegetation, buildings and structures, and small-scale features. The buildings and structures of the Cant Ranch are described above in the section titled "James Cant Ranch Historic District." The historic district includes both historic structures and cultural landscape resources.

The Cant Ranch cultural landscape is organized into two major areas: the ranch complex and the agricultural fields. The ranch complex, the most highly developed area with buildings, roads, orchards, gardens, and the yard around the house, is further organized into the domestic area to the south and the working area to the north. The agricultural area outside the ranch complex includes four agricultural fields, irrigation ditches, cable cars for crossing the river, and Christina's cabin.

Contributing landscape features include the circulation system of historic roads and walkways; historic vegetation such as the orchard trees, agricultural crops, shade trees, ornamental vegetation, and lawn in the front yard; buildings and structures in the complex; irrigation ditches in the fields; and small-scale features such as fences, gates, and cable cars used to cross the river. Water rights attached to the agricultural lands of Cant Ranch are a critical key to maintaining the historic character of the agricultural operations at the ranch. The deep green of the ranch's irrigated fields distinctly contrasts with the muted

tones of the desert vegetation of the surrounding hills (Taylor and Gilbert 1996).

Based on current documentation, the Cant Ranch Historic District is the only historic property within John Day Fossil Beds National Monument that meets national register criteria. If future research reveals new information, or if new properties are acquired by the monument, additional historic properties may be identified. The historic resource study (Beckham and Lentz 2000) identified several historic themes that are relevant to the development of Grant and

Wheeler counties:

- indigenous peoples and cultures
- early explorations and expeditions (fur trade and government exploration)
- missionaries
- settlement
- transportation (including the Oregon Trail, Dalles-Boise Military Road, railroads, and motorization)
- economic development (including mining, sheep ranching, cattle ranching, and lumbering)
- paleontological exploration
- tourism and recreation

VISITOR USE AND EXPERIENCE

INTRODUCTION

The sculpted badlands of the John Day River valley are home to some of the richest fossil beds in the world. The exposures of sedimentary rock that lie in the John Day Basin conceal forty million years of life. The remarkable scenery and world class paleontological resources in the area have long been the main visitor attraction of John Day Fossil Beds National Monument. Through hiking, interpretation, fossil viewing, and other activities, visitors can learn the story of ancient plant and animal habitats.

Other nearby recreation areas include BLM and U.S. Forest Service lands, including Newberry National Volcanic Monument. The Ochoco Mountains lie to the south of the John Day Basin and the Cascade Range lies to the west. Numerous streams, creeks, and rivers add to the visitor opportunities of the area.

VISITOR USE

Visitation Statistics

Visitation statistics have been collected since 1976 and are maintained by the NPS Public Use Statistics Office in Denver. Recreational visits are tallied through direct counts by monument staff at the visitor center, the Cant Ranch house museum (which also serves as the monument's headquarters), and at Camp Hancock. Nonrecreational visits (commuter and through traffic) are estimated by traffic counters located in the Painted Hills and Clarno units, and at the Mascall Formation Overlook. Visitation to the monument is relatively stable at about 110,000 recreational visitors per year (see table 13). Slight increases that have occurred in the last few years are predicted to continue into the near future (NPS 2006).

Table 13: Total Recreational Visits, 1976–2005

Year	Total Recreational Visits
1976	74,800
1977	106,300
1978	122,031
1979	90,547
1980	101,167
1981	111,410
1982	106,123
1983	109,694
1984	101,783
1985	101,566
1986	103,328
1987	117,346
1988	126,928
1989	134,710
1990	98,435
1991	103,941
1992	111,643
1993	131,850
1994	114,927
1995	128,032
1996	120,556
1997	113,057
1998	99,983
1999	99,274
2000	100,522
2001	98,489
2002	114,392
2003	108,181
2004	117,613
2005	124,937

The recently completed Thomas Condon Paleontology Center, which serves as the primary visitor center for the monument, would likely draw more visitors to the monument for the next several years as more people learn of the facility and its offerings.

Population growth in the region could influence visitation at the monument over the life of the plan. Growth in nearby

Deschutes County (Bend), as well as in Boise, Idaho, could increase visitation to the monument as more people move into these areas and seek recreation opportunities outside of urban areas.

Also, future monument use is likely to fluctuate from year to year, affected by a variety of factors including weather, publicity, the national and state economy, and the price of gas.

The Oregon Museum of Science and Industry owns and operates Camp Hancock, which is on private land inside the Clarno Unit. Camp Hancock provides earth science education to school-aged children and is open nine months of the year. During that time, approximately 3,000 students cycle through the facility. These students visit a variety of sites within the Clarno Unit.

The monument receives frequent visitation from school groups other than those associated with the museum. Over 2,000 students visited in 2005. Visitation from school groups occurs year round, peaking in May.

Visitor Profile

A visitor study was completed at John Day Fossil Beds National Monument in 2004 by the University of Idaho's Park Studies Unit. This study profiles monument visitors and includes information on demographics, visitation patterns and interests, and visitors' opinions on the quality of visitor services. The study was conducted from August 29 to September 4, 2004. A total of 310 visitor groups responded to a questionnaire during this week. Although the findings represent only one week of actual monument visitation, the data provide a wealth of information that can be used for monument planning.

During the study period, monument visitors consisted primarily of West Coast residents, with Oregon residents representing 61% of total visitation. International visitors accounted for 6% of total visitation. Most

visitor groups (76%) reported that it was their first trip to John Day Fossil Beds National Monument. The most common reasons for visiting the monument were viewing scenery (41%), seeing fossils (21%), and visiting the Thomas Condon Paleontology Center (14%) (University of Idaho 2004).

The most common group size was two (64%); 20% of the groups had three or four people. Two-thirds of all groups were considered family groups (University of Idaho 2004).

The study also revealed that most visitors (64%) spent between one to two hours in the monument; only 15% of visitors spent five or more hours in the monument. Sheep Rock Unit was the most heavily visited (68%) unit of the monument. Visitation to the Clarno Unit represented only 26% of visitation.

Seasonality and Time of Use

Visitor use varies seasonally in a predictable fashion. Recreational visitation is greatest during June, July, and August. Visitation in these months consistently accounts for 45% to 51% of the overall annual visitation. Visitation is lowest in December, January, and February but begins to pick up as the weather warms and school groups begin to visit in May. Table 14 presents the visitation statistics for 2005.

Since the monument provides no overnight accommodations and there is no backcountry camping allowed, monument use is limited to day use only. Visitation is greatest on weekends and holidays, peaking during summer holiday weekends (Memorial Day, 4th of July, and Labor Day).

Table 14: Visitation for 2005

Month	Recreational Visits
January	1,215
February	2,436
March	6,669
April	10,799
May	15,697
June	18,388
July	19,331
August	20,227
September	16,519
October	9,017
November	3,328
December	1,311
Total	124,937

VISITOR INFORMATION, ACCESS, AND CIRCULATION

Visitors to national park units obtain information through a variety of methods, including visitor centers, printed material, and radio stations. At John Day Fossil Beds National Monument, visitors get information through maps and brochures, word of mouth, and highway signs in the area (University of Idaho 2004). Almost all visitors arrive in their personal vehicles (80%) or in RVs (12%) (University of Idaho 2004).

Many visitors find their way to the Thomas Condon Paleontology Center in the Sheep Rock Unit, which serves as the monument's main visitor center, to obtain monument information. Others may go directly to their destination.

Since the monument is comprised of three geographically separated units—the Sheep Rock Unit, the Painted Hills Unit, and the Clarno Unit—visitor access and circulation is complicated. Three different highways serve the three units, which can make it difficult for visitors to find their way through the monument. Not all visitors find their way to the visitor center in the Sheep Rock Unit

as they begin their visit, which complicates visitor orientation. Visitors fan out into the monument depending upon their planned activities: hiking, viewing fossils, or touring in a vehicle.

The completion of the Thomas Condon Paleontology Center has allowed monument staff to dramatically improve their ability to provide visitors with essential orientation and monument information, as well as interpretive and educational opportunities.

Although, in the visitor survey, the paleontology center was not identified as the primary motivation for visiting the monument, the study revealed that it was the most frequently visited (63%) site in the monument. In 2005, over 25,000 people visited the Thomas Condon Paleontology Center.

VISITOR ACTIVITIES AND OPPORTUNITIES

Available Activities

The most common activities reported in the monument were viewing scenery, taking photographs, and visiting the Thomas Condon Paleontology Center (University of Idaho 2004).

In the Sheep Rock Unit, visitors can enjoy hiking, scenic driving, river access, picnicking, photography, and cultural history, as well as the education and interpretation programs at the visitor center. Specific activities and destinations include hiking in the Blue Basin or to the Sheep Rock Overlook; driving through the Picture Gorge and into the John Day River valley; accessing the river at several points along State Highway 19 where some recreational fishing occurs; picnicking at Cant Ranch and the Foree area; learning about the cultural history of the Cant Ranch Historic District; and visiting the Thomas Condon Paleontology Center where visitors can learn about the natural history of the John Day Basin, view fossils, and see paleontologists at

work. Restrooms and water are available at Cant Ranch and at the Thomas Condon Paleontology Center.

Goose Rock and Cathedral Rock, two prominent geologic features, can also be found alongside the river in the Sheep Rock Unit. Activities offered in this unit are more structured and visitors can expect more encounters with other visitors in popular areas. At the same time, the Sheep Rock Unit (to the east of the John Day River) also contains some of the most remote areas of the entire monument. These areas offer backcountry hiking experiences where few other visitors would be seen.

In the Painted Hills Unit, visitors can enjoy hiking, viewing scenery, photography, creek access, and picnicking. An information kiosk is located near the entrance to the unit. Specific activities and destinations include hiking the Carroll Rim Trail, Painted Cove Trail, and Leaf Hill Trail; and visiting the Painted Hills Overlook, which provides striking views of the area's amazing visual resources. The Painted Hills are made up of color-splashed hummocks and hills that were produced from eroded volcanic ash. A picnic area offers restrooms, water, and access to Bridge Creek. Visitors can expect to see other visitors on designated trails and at popular areas such as the Painted Hills Overlook, but this unit also offers a backcountry hiking experience to those visitors who travel off-trail.

In the Clarno Unit, visitors can enjoy hiking, picnicking, and viewing scenery and fossils. Specific activities and destinations include hiking and picnicking in the Palisades area, where ash-laden mudflows (lahars) can be seen and water is available; and driving through colorful scenery and interesting geological features. The Clarno Unit is also home to Camp Hancock, which is owned and operated by the Oregon Museum of Science and Industry. Camp Hancock offers several programs for school-aged children that focus on the geology, paleontology, and ecology of central Oregon. Camp Hancock's

instructor-led programs often include the three main paleontological features of the Clarno Unit: the Clarno Nut Beds, the Hancock Tree, and the Hancock Mammal Quarry. Visitors can expect to see large groups in and around these destinations. The Clarno Unit also offers a backcountry hiking experience to those visitors who travel off-trail.

Most trails in the monument are multi-use, allowing both hikers and horse riders, although there are a few pedestrian-only trails near developed facilities. Mountain bikes are restricted to roads.

Currently there are no concession operations or active incidental business permits at John Day Fossil Beds National Monument.

Opportunities for Persons with Disabilities

In the Sheep Rock Unit, opportunities for persons with disabilities can be found on the River Trail at Cant Ranch and the Story in Stone Trail at the Foree picnic area. Both of these trails are accessible to those in wheelchairs and have wayside exhibits that are accessible to the hearing impaired. The Mascall Overlook Trail is not accessible to wheelchairs, but has wayside exhibits that are accessible to the hearing impaired. The Story in Stone Trail offers the only accessible trail opportunity for the visually impaired.

The Thomas Condon Paleontology Center is the primary educational and interpretive attraction in the monument and is fully accessible to those in wheelchairs. The Center has accessible exhibits and orientation films with open caption for the hearing impaired. Ranger programs are not accessible unless sign language translation is provided. A few of the exhibits have "touch" features that are accessible to the visually impaired.

The Cant Ranch house and museum (the public area on the first floor) are accessible to those in wheelchairs. Exhibits and

handouts are accessible to the hearing impaired, but are not accessible to the visually impaired.

In the Painted Hills Unit, opportunities for persons with disabilities can be found on the Leaf Hill and Painted Cove trails. Both of these trails are accessible to those in wheelchairs and have wayside exhibits that are accessible to the hearing impaired.

In the Clarno Unit, no wheelchair-accessible trails exist. Picnic area walkways are accessible to wheelchairs, with some wayside exhibits that are accessible to the hearing impaired.

VISITOR EXPERIENCE

A number of factors can affect the quality of visitor experience within the monument, including the condition of natural and cultural resources; a visitor's understanding of monument information and opportunities; and the level of crowding, noise, and opportunities for solitude in the monument. Each of these topics is described below.

Condition of Resources

The condition of resources, both natural and cultural, can affect the quality of visitor experience. Throughout most of the monument, visitors experience a natural landscape modified by human intervention.

In general, years of fire suppression have changed the natural vegetation around the monument, reducing the native grasses and increasing the density of woody plants such as juniper and big sagebrush. The presence of noxious weeds is also a noticeable change. Visitors do not experience the landscape in its natural condition, but most visitors do not know this. The NPS staff is currently implementing some landscape restoration and prescribed fire activities in targeted areas throughout the monument, providing visitors with an opportunity to see a more natural landscape. These management

activities are not generally interpreted. The existence of user-created social trails, particularly in the Clarno Unit, is another factor that could affect visitor experience. Modified water courses and reduced quantities of water in the streams due to agricultural use may affect visitors' opportunities to enjoy these natural features and natural processes.

Visitors have an opportunity to witness cultural resources and landscapes at Cant Ranch in the Sheep Rock Unit. The integrity of these cultural landscapes varies, but the visitor generally has an excellent opportunity to view pastoral landscapes and historic structures while learning about the sheep ranching history of the John Day River valley. Many historic structures have been or are being rehabilitated, which could affect visitors' opportunities to view and interpret these cultural resources.

Visitor Understanding, Education, and Interpretation

Visitor understanding relates to a visitor's ability to adequately orient themselves in the monument in order to learn and experience the purpose and significance of the monument. Because the monument has three geographically separated units, there are some challenges to ensuring that visitors receive orientation and fundamental understanding of the monument. Trailside interpretive signs are scattered throughout the monument, but cannot adequately cover the primary interpretive themes. Ranger-led activities occur mostly during the summer, or by appointment for special groups, and reach only a small percentage of visitors.

Prior to the completion of the new paleontology center, NPS teaching opportunities were minimal. The new facility provides the National Park Service with a premier venue for education and interpretation of the monument's fundamental resources. In 2005, the visitor center hosted over 25,000 visitors. Since the opening of the visitor center, visitors have remarked that the facility has changed the

way they experience the monument and has increased the quality of their experience. However, some visitors never make it to the visitor center, and the opportunities to assist with their understanding are reduced. Monument staff conduct programs at the monument for school groups and also conduct outreach by providing fossil kits and films to area schools. Overall, the opportunities for education, interpretation, and information are moderate to high.

Crowding, Noise, and Solitude

Most of the time, the monument is relatively uncrowded, except during busy summer weekends or when school groups visit.

Conflicts in visitor use are infrequent and tend to occur most often at places that are visited by large groups, such as the paleontology center and areas within the Clarno Unit.

Noise levels can be high when large groups are present; this can affect some visitors' ability to enjoy the natural sounds and quiet. Likewise, opportunities for solitude in and around developed areas are minimal. However, the monument offers excellent opportunities for quiet and solitude in the remote and less-developed areas of the monument, which make up a large percentage of the monument's total acreage.

NATIONAL MONUMENT OPERATIONS

INTRODUCTION

John Day Fossil Beds National Monument consists of three geographically separated units: Clarno, Painted Hills, and Sheep Rock. To administer and operate the monument, the NPS staff is organized into five divisions. Each of these divisions is briefly addressed below; the discussions include a description of staffing and major responsibilities.

As of 2006, the monument's staff consisted of 19 permanent employees; with the addition of seasonal staff, the number of employees grew to 40 in the summer. Nearly all monument staff are based out of offices in the Sheep Rock Unit, which is where the headquarters, paleontology center, and maintenance facilities are located. A few rangers work out of field offices in the other two units. Three park housing units exist in the monument.

OFFICE OF THE SUPERINTENDENT

The office of the superintendent provides the leadership and management direction for the overall operations of the monument. Partnerships, community involvement, and public information activities originate from the office of the superintendent. The management team for the monument consists of the superintendent and division chiefs, who, through collaborative efforts, provide direction and set goals for the monument. The administrative staff provides information technology services, technical and administrative support for management and operations, and ensures that supplies and materials are available so other divisions can accomplish their work. The administrative staff also provides many other services, such as finance management, contract services, and human resources management. The Superintendent's office is located in the historic Cant Ranch House.

INTERPRETATION DIVISION

The monument's interpretation staff consists of year-round permanent employees who are supplemented by a few temporary employees and volunteers during the summer months. NPS rangers make up the bulk of the interpretation staff, and some of them are based at field stations in different units of the monument.

Interpretation staff offices are located in the Thomas Condon Paleontology Center where the monument's interpretation, information, and education efforts are based. Nearby Cant Ranch is also used for interpretive activities. The Thomas Condon Paleontology Center contains an information desk, interpretive displays and exhibits, and numerous fossil specimens. Cant Ranch has a variety of facilities and structures that are used for education and interpretation, including the Cant Ranch House that contains museum collections and displays. Evening programs and interpretive driving tours of the monument are offered during the summer months. Programs are presented by rangers based at the monument's different units, as well. The interpretation staff also educates school-aged children by leading programs at the monument and providing fossil kits and films to area schools.

Informational signs, maps, and bulletin boards, as well as wayside exhibits, are found throughout the monument.

RESOURCE PROTECTION DIVISION

Visitor and resource protection rangers conduct patrols throughout the monument. Most rangers are permanent employees, although their numbers are typically supplemented by a few temporary employees each summer. Division employees perform visitor education, law enforcement, building security, emergency medical services, and

search-and-rescue operations. Ranger posts and offices are located in the Sheep Rock, Clarno, and Painted Hills units, and these field-based employees generally divide their time between resource protection and interpretation activities.

PALEONTOLOGY DIVISION

The monument's paleontology staff consists of a base of year-round permanent employees who are supplemented by a few temporary employees and volunteers during the summer months. The lead paleontologist at the monument also serves as the NPS Pacific West Region's paleontology science advisor.

The monument's paleontological efforts include research, curation, education, and interpretation activities. The Thomas Condon Paleontology Center is the home for much of this work, although paleontology staff continue to perform field work on the monument's rich fossil resources. Paleontology staff offices are located in the Thomas Condon Paleontology Center.

RESOURCE MANAGEMENT DIVISION

The resource management staff consists of an integrated resource manager supplemented by a small number of temporary employees and volunteers.

Resource management division employees work in conjunction with the Upper Columbia Basin Inventory and Monitoring Network, other agencies, academic

institutions, and individuals to inventory and monitor the monument's wildlife, vegetation, wetlands, and surface water quality. This information is then applied to various restoration projects such as improving riparian areas, controlling nonnative plant species, and rehabilitating former agricultural fields. Division employees assess historic assets and make recommendations for their preservation.

Division employees educate other monument staff on current issues affecting monument resources and complete compliance requirements related to the National Environmental Policy Act and the National Historic Preservation Act.

The resource management staff office is located in the Cant Ranch House.

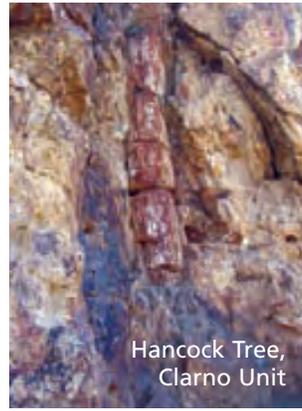
MAINTENANCE DIVISION

The maintenance division cares for an enormous variety of facilities and cultural resources within the monument. Maintenance crews build and maintain hiking trails, and maintain a wide variety of grounds, utility systems, roads, and other visitor facilities throughout the monument.

Skilled in a variety of crafts and trades, the maintenance staff consists of permanent employees supplemented by temporary laborers and equipment operators in the summer. Maintenance staff offices are located at the main maintenance facility north of the visitor center on State Highway 19.



Blue Basin, Sheep Rock Unit



Hancock Tree,
Clarno Unit



Clarno Unit



CHAPTER 4 Environmental Consequences

Cant Ranch Outbuildings, Sheep Rock Unit

INTRODUCTION

The National Environmental Policy Act requires that environmental documents discuss the environmental impacts of a proposed federal action, feasible alternatives to that action, and any adverse environmental effects that cannot be avoided. In this case, the proposed federal action would be the adoption of a new general management plan for John Day Fossil Beds National Monument. This chapter analyzes the environmental impacts of implementing the three alternatives on natural resources, cultural resources, visitor experience, and monument operations. The analysis is the basis for comparing the beneficial and adverse effects of implementing the alternatives.

Because of the general, conceptual nature of the actions described in the alternatives, the impacts of these actions are analyzed in general qualitative terms. Thus, this environmental assessment should be considered a programmatic analysis. For the purposes of analysis, it is assumed that all of the specific actions proposed in the alternatives would occur during the life of the plan.

This environmental assessment generally analyzes several actions, such as the development of restrooms, the development of new trails or the improvement of trails, and the construction of a visitor contact station. If and when proposed site-specific developments or other actions are ready for implementation following the approval of the general management plan, appropriate detailed environmental and cultural compliance documentation would be prepared. This compliance would be in accordance with the National Environmental Policy Act of 1969 and the National Historic

Preservation Act of 1966, both as amended, and would meet requirements to identify and analyze each possible impact for the resources affected.

This chapter begins with a description of the methods and assumptions used for each impact topic. Impact analysis discussions are organized by alternative and then by impact topic under each alternative. The existing conditions for all of the impact topics that are analyzed were identified in the “Affected Environment” chapter. All of the impact topics are assessed for each alternative.

The analysis of the no-action alternative (continue current management) identifies the future conditions in the monument if no major changes to facilities or NPS management occurred. The two action alternatives are then compared to the no-action alternative to identify the incremental changes that would occur as a result of changes in monument facilities, uses, and management. Impacts of recent decisions and approved plans, such as the 2005 *Integrated Pest Management Plan*, are not evaluated as part of this environmental analysis. Although these actions would occur during the life of the general management plan, they have been (or would be) evaluated in other environmental documents.

Each alternative discusses cumulative impacts; these are identified when this project is considered in conjunction with other actions occurring in the region. The discussion of cumulative impacts is followed by a conclusion statement. The impacts of each alternative are briefly summarized at the end of the “Alternatives, Including the Preferred Alternative” chapter.

METHODS AND ASSUMPTIONS FOR ANALYZING IMPACTS

The planning team based the impact analysis and the conclusions in this chapter mostly on the review of existing literature and studies, information provided by experts in the National Park Service and in other agencies, and staff insights and professional judgment. The team's method of analyzing impacts is further explained below. It is important to remember that all the impacts have been assessed assuming that mitigating measures will be implemented to minimize or avoid impacts. If mitigating measures described in the "Alternatives, Including the Preferred Alternative" chapter were not applied, the potential for resource impacts and the magnitude of those impacts would increase.

The environmental consequences for each impact topic were identified and characterized based on impact type, intensity, context, and duration. Cumulative effects also were identified, but are discussed later in this section.

Impact intensity refers to the degree or magnitude to which a resource would be beneficially or adversely affected. Each impact was identified as negligible, minor, moderate, or major, in conformance with the definitions for these classifications provided for each impact topic (see table 15). Because this is a programmatic document, the intensities were expressed qualitatively.

Context refers to the setting within which an impact may occur, such as the affected region or locality. In this document most impacts are either localized (site-specific) or monument-wide. Cumulative impacts are either monument-wide or regional.

Impact duration refers to how long an impact would last. The planning horizon for this plan is approximately 20 years. Unless otherwise specified, in this document the following terms are used to describe the duration of the impacts:

Short-term: The impact would be temporary in nature, lasting one year or less, such as the impacts associated with construction.

Long-term: The impact would last more than one year and could be permanent in nature, such as the loss of soil due to the construction of a new facility. Although an impact may only occur for a short duration at one time, if it occurs regularly over a longer period of time the impact may be considered to be a long-term impact. For example, the noise from a vehicle driving on a road would be heard for a short time and intermittently, but because vehicles would be driving the same road throughout the 20-year life of the plan, the impact on the natural soundscape would be considered to be long term.

Effects also can be direct or indirect. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away, but are still reasonably foreseeable. This document discloses and analyzes both direct and indirect effects, but does not differentiate between them in the discussions.

The impacts of the action alternatives describe the *difference between* implementing the no-action alternative and implementing the action alternatives. To understand a complete "picture" of the impacts of implementing any of the action alternatives, the reader must also take into consideration the impacts that would occur in the no-action alternative.

NATURAL RESOURCES

Analysis of natural resources (soils, prime and unique farmlands, paleontological resources, vegetation and wildlife) was based on research, knowledge of the area's resources, and the best professional judgment of planners, paleontologists, and biologists who have experience with similar types of projects.

Information on the area's natural resources was gathered from several sources. As appropriate, additional sources of data are identified under each topic heading.

CULTURAL RESOURCES

Potential impacts to those resources listed in or eligible for listing in the National Register of Historic Places were identified and evaluated. The categories considered include archeological resources, cultural landscapes, ethnographic resources such as traditional cultural properties, and historic properties. Museum collections were not included because, as a category, they are ineligible for listing in the national register. Evaluation was done in accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act of 1966, as amended (36 Code of Federal Regulations 800, Protection of Historic Properties). This evaluation was done by (1) determining the area of potential effects; (2) identifying cultural resources in the area of potential effects that are listed in or eligible for listing in the national register; (3) applying the criteria of adverse effect to affected resources; and (4) considering ways to avoid, minimize or mitigate adverse effects.

Under the regulations of the Advisory Council on Historic Preservation, a determination of *adverse effect* or *no adverse effect* must be made for affected national register – listed or national register – eligible cultural resources. An adverse effect occurs whenever an action alters, directly or indirectly, any of the characteristics of a cultural resource that qualify it for inclusion in the national register; that is, the action diminishes the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternatives that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5(a)(1)). A determination of no adverse effect means there is an effect, but the effect

would not meet the criteria of adverse effect (36 CFR 800.5(b)).

In this *General Management Plan* the criteria for characterizing the severity or intensity of impacts to national register – listed or national register – eligible archeological resources, historic structures, and cultural landscapes are the §106 determinations of effect: *adverse effect* or *no adverse effect*.

VISITOR USE AND EXPERIENCE

This impact analysis considers various aspects of visitor use and experience at John Day Fossil Beds National Monument, including the following factors: crowding and opportunities for solitude; visitor understanding, education, and interpretation; opportunities for recreational activities; and opportunities for people with disabilities. The analysis is based on how visitor use and experiences would change with changes in the application of management zones in the alternatives. The analysis is primarily qualitative rather than quantitative due to the conceptual nature of the alternatives.

Impacts were determined using existing and projected visitor use data, information on recreational trends, and the professional judgment of NPS staff.

MONUMENT OPERATIONS

The impact analysis evaluated the effects of the alternatives on monument operations, including staffing, infrastructure, maintenance, visitor facilities, and services.

The analysis focused on how monument operations and facilities might vary with the different management alternatives. The analysis is qualitative rather than quantitative because of the conceptual nature of the alternatives. Consequently, professional judgment was used to reach reasonable conclusions as to the intensity, duration, and type of potential impact.

Table 15: Impact Threshold Definitions

Impact Topic and Duration	Negligible	Minor	Moderate	Major
<p>Natural Resources – Paleontological Resources</p> <p><i>Short-term:</i> The effect would be temporary, lasting a year or less, such as effects associated with construction.</p> <p><i>Long-term:</i> The effect would last more than one year and could be permanent.</p>	<p>The effects to fossils would be below or at lower levels of detection.</p>	<p>Fossils might be lost through illegal collecting, or there would be a low probability of effects from a ground-disturbing activity because (a) the activity would be in a geologic layer not known to contain extensive fossils but the volume of bedrock disturbance would be low, or (b) the activity would be in a fossil-rich geologic layer, but the volume of bedrock disturbed would be nearly indiscernible. Monitoring would be likely to detect fossils and the loss of fossils or associated contextual information would be minimal.</p>	<p>Fossils might be lost through illegal collecting, or there would be a possibility of effects from a ground-disturbing activity because (a) the activity would be in a geologic layer not known to contain extensive fossils, but the volume of bedrock disturbance would be large, or (b) the activity would be in a fossil-rich area, and the area of bedrock disturbance would be small. Most fossils uncovered probably would be found by monitoring, but some fossils or associated contextual information could be lost.</p>	<p>Many fossils could be lost through illegal collecting, or there would be a high probability of effects from a ground-disturbing activity because the activity would be in a geologic layer of high fossil richness and the volume of bedrock disturbance would be large. Even with monitoring, many fossils or associated contextual information likely would be lost.</p>
<p>Natural Resources – Soils</p> <p><i>Short-term:</i> The effect would be temporary, lasting a year or less, such as effects associated with construction.</p> <p><i>Long-term:</i> The effect would last more than one year and could be permanent.</p>	<p>The action would result in a change in a soil, but the change would be at the lowest level of detection, or not measurable.</p>	<p>The action would result in a detectable change, but the change would be slight and local. There could be changes in a soil’s profile in a relatively small area, but the change would not increase the potential for erosion.</p>	<p>The action would result in a clearly detectable change in a soil. There could be a loss or alteration of the topsoil in a small area, or the potential for erosion to remove small quantities of additional soil would increase.</p>	<p>The action would result in the permanent loss or alteration of soils in a relatively large area, or there would be a strong likelihood for erosion to remove large quantities of additional soil as a result of the action.</p>

Impact Topic and Duration	Negligible	Minor	Moderate	Major
<p>Natural Resources – Prime and Unique Farmlands</p> <p><i>Short-term:</i> The effect would be temporary, lasting a year or less</p> <p><i>Long-term:</i> The effect would last more than one year and could be permanent.</p>	<p>The action would result in the loss of between 0% and 1% of the prime farmland within Grant County.</p>	<p>The action would result in the loss of between 1% and 5% of the prime farmland within Grant County.</p>	<p>The action would result in the loss of between 5% and 10% of the prime farmland within Grant County.</p>	<p>The action would result in the loss of more than 10% of the prime farmland within Grant County.</p>
<p>Natural Resources – Vegetation and Wildlife (threshold definitions are the same for both vegetation and wildlife)</p> <p><i>Short-term:</i> The effect would be temporary, lasting a year or less, such as effects associated with construction.</p> <p><i>Long-term:</i> The effect would last more than one year and could be permanent.</p>	<p>The action might result in a change in vegetation or wildlife, but the change would not be measurable or would be at the lowest level of detection.</p>	<p>The action might result in a detectable change, but the change would be slight and have a local effect on a population. This could include changes in the abundance or distribution of individuals in a local area, but not changes that would affect the viability of local populations. Changes to local ecological processes would be minimal.</p>	<p>The action would result in a clearly detectable change in a population and could have an appreciable effect. This could include changes in the abundance or distribution of local populations, but not changes that would affect the viability of regional populations. Changes to local ecological processes would be of limited extent.</p>	<p>The action would be severely adverse or exceptionally beneficial to a population. The effects would be substantial and highly noticeable, and they could result in widespread change and be permanent. This could include changes in the abundance or distribution of a local or regional population to the extent that the population would not be likely to recover (adverse) or return to a sustainable level (beneficial). Significant ecological processes would be altered, and “landscape-level” (regional) changes would be expected.</p>
<p>Cultural Resources</p>	<p>The cultural resources determined to be potentially affected by actions in this plan are listed in or eligible for listing in the National Register of Historic Places. Therefore, affects were identified using the criteria in Section 106 of the National Historic Preservation Act of 1966, as amended: <i>adverse effect</i> or <i>no adverse effect</i>.</p>			

Impact Topic and Duration	Negligible	Minor	Moderate	Major
<p>Visitor Use and Experience</p> <p>A short-term impact would last less than one year and would affect only one season's use by visitors.</p> <p>A long-term impact would last more than one year and would be more permanent in nature.</p>	<p>The changes in visitor use and experience would be below or at the lowest level of detection. The visitor would not likely be aware of the effects.</p>	<p>Changes in visitor use and experience would be detectable, although the changes would be slight. The visitor would be aware of the effects, but the effects would be slight.</p>	<p>Changes in visitor use and experience would be readily apparent. The visitor would be aware of the effects and would be able to express an opinion about the changes.</p>	<p>Changes in visitor use and experience would be readily apparent and have important consequences. The visitor would be aware of the effects and likely would express a strong opinion about the changes.</p>
<p>Monument Operations</p> <p>A short-term impact would last less than one year and would affect only one season of visitor use.</p> <p>A long-term impact would last more than one year and would be more permanent in nature.</p>	<p>The effect would be at or below the lower levels of detection, and would not have an appreciable effect on monument operations.</p>	<p>The effects would be detectable, but would be of a magnitude that would not have an appreciable effect on monument operations.</p>	<p>The effects would be readily apparent and would result in a change in monument operations in a manner noticeable to staff and the public.</p>	<p>The effects would be readily apparent and would result in a substantial change in monument operations in a manner noticeable to staff and the public and be markedly different from existing operations.</p>

CUMULATIVE IMPACT ANALYSIS

A cumulative impact is described in the Council on Environmental Quality's regulation 1508.7 as follows:

Cumulative impacts are the impacts that result from incremental impacts of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency (federal or nonfederal) or person undertakes such other action.

Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time.

To determine potential cumulative impacts, other projects within and surrounding John Day Fossil Beds National Monument were identified. The area included Grant and Wheeler counties, Oregon. Projects were identified by discussions with NPS staff, federal land managers, and representatives of county and town governments. Potential projects identified as possible contributors to a cumulative impact included any planning or development activity that was currently being implemented, or would be implemented in the future. Impacts of past actions were also considered in the analysis.

These actions were evaluated in conjunction with the impacts of each alternative to determine if they would result in any cumulative impacts on a particular natural, cultural, or socioeconomic resource or visitor use. Because most of these actions are in the early planning stages, the qualitative evaluation of cumulative impacts was based on a general description of the project.

With the exception of paleontological resources, potential cumulative impacts were considered in about a 10-mile area surrounding John Day Fossil Beds National Monument in the John Day River watershed. This area includes the communities of Mitchell and Dayville. (For paleontological resources the geographic boundary for

cumulative impacts included the entire John Day Basin.) Projects and actions that could contribute to cumulative impacts include ongoing and planned actions and projects in the following areas: in the monument, on adjacent public and private lands, in communities, and in Wheeler and Grant counties. These actions and projects are listed below.

ACTIONS AND PROJECTS INSIDE JOHN DAY FOSSIL BEDS NATIONAL MONUMENT

Independent of this general management plan, NPS activities would continue over the next 15 to 20 years to repair or rehabilitate existing facilities, and to recover fossils throughout the monument for paleontological research. In addition, prescribed burning, thinning, and herbicide spraying would continue in the effort to control the spread of nonnative species and western juniper.

ACTIONS AND PROJECTS OUTSIDE JOHN DAY FOSSIL BEDS NATIONAL MONUMENT

Listed below are ongoing and planned actions and projects on adjoining or nearby federal and private lands, and other actions that could affect the monument, independent of this general management plan.

Bureau of Land Management (BLM)

BLM lands are near or adjacent to all of the monument's units. These lands are used primarily for cattle grazing. There are currently thirteen active grazing allotments on BLM lands adjacent to the monument, including nine adjacent to the Sheep Rock Unit, three next to the Painted Hills Unit, and one next to the Clarno Unit. The Bureau

of Land Management also sprays herbicides on lands adjacent to the monument to control weeds, and conducts prescribed burns. In addition, the Bureau of Land Management administers a major access point for people floating the John Day River near the Clarno Unit.

The Bureau of Land Management is in the process of updating its 1985 *John Day Basin Resource Management Plan*. This plan is expected to be completed in 2008, and will cover a variety of topics, including grazing allotments, prescribed fire, nonnative plant control, facility development, off-highway vehicle use, and land exchanges.

Oregon Department of Transportation

The state is not planning any major changes to the state highways in the vicinity of the monument. The state will continue to maintain the highways, resurfacing them and replacing old bridges.

Grant Soil and Water Conservation District

The district will continue to spray herbicides to control weeds in the vicinity of the monument.

Oregon Paleo Lands Institute

The institute is establishing a facility in Fossil, which is scheduled to open in September 2007. It will focus on paleontology education and research, with possible field trips to the Clarno Unit.

Private Lands

Agriculture, including grazing and crop (hay) production, is expected to continue to be the primary use of private lands adjacent to and nearby the monument. Private landowners upstream of the monument will continue to withdraw water from the John Day River, Rock Creek, and Bridge Creek to irrigate their lands. Some private landowners also will continue to spray herbicides to control weeds in the vicinity of the monument.

IMPAIRMENT OF MONUMENT RESOURCES

In addition to determining the environmental consequences of implementing the alternatives, NPS *Management Policies 2006* (§1.4) requires analysis of potential effects to determine whether alternatives would impair John Day Fossil Beds National Monument's resources and values.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on resources and values. However, the laws give the National Park Service the management discretion to allow impacts on resources and values when necessary and appropriate to fulfill the purposes of the area, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within a unit, that discretion is limited by the statutory requirement that the National Park Service must leave resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of resources and values, including the opportunities that otherwise would be present for the enjoyment of those resources or values (NPS *Management Policies 2006* §1.4.5). An impact on any resource or value may

constitute impairment. An impact would be more likely to constitute impairment if it results in a moderate or major adverse effect on a resource or value whose conservation is

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

Impairment may result from NPS activities in managing the area, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the monument. A determination on impairment is made in the "Conclusion" section for each required impact topic related to the monument's resources and values. An evaluation of impairment is not required for topics related to visitor use and experience (unless the impact is resource based), NPS operations, or the socioeconomic environment. When it is determined that an action or actions would have a moderate to major adverse effect, an explanation is presented of why this would not constitute impairment. Impacts of only negligible or minor intensity would, by definition, not result in impairment. The impairment analysis, later in this chapter, for each of the impact topics has determined that none of the alternatives presented in this plan would result in impairment of monument resources.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE A

NATURAL RESOURCES

Paleontological Resources

Analysis. In this alternative, no new developments or ground-disturbing activities would occur in areas known to have paleontological resources. NPS staff and researchers would continue to protect and collect paleontological resources.

Some fossils would likely be lost due to natural erosion because NPS managers and researchers would not know of the fossils or would be unable to find and collect them. Some fossils might be lost due to people unintentionally walking over and crushing them, and due to fossils being illegally collected by visitors in the monument. Although Hancock Field Station groups would be in areas of the monument that have fossils, it is expected that these groups would be controlled by their teachers and they would not cause a loss of or disturbance to fossils. Students and instructors on college field trips may occasionally remove fossils from the monument. It is not known if or how many fossils are being taken, or the significance of the resources being taken. However, as noted in the “Affected Environment” chapter of this document, illegal collecting is not believed to be a major problem in the monument—the type of fossils found here, the difficulty in accessing and finding fossils, and the time needed to remove the fossils all tend to limit collectors. If use levels increase in the future as expected, there is the potential for some additional illegal fossil collecting to occur. But there is no reason to expect that there would be a noticeable increase in the numbers of fossils being illegally collected—most visitors would stay on trails or in developed areas and would not be in areas known to have fossils.

Cumulative Impacts. Paleontological resources are scattered in rock formations throughout the John Day Basin. Fossils are likely being collected on BLM and private

lands near the monument. Fossils are likely being lost to natural erosion, too, although the extent of that loss is unknown. When the likely effects of continued public use of the monument in this alternative are added to the effects of actions outside the monument, there could be a long-term, adverse cumulative impact of unknown magnitude on area fossils. However, visitors illegally collecting fossils in the monument would likely be a relatively small part of the cumulative impacts on the area’s paleontological resources.

Conclusion. Alternative A would be expected to have a long-term, minor, adverse impact on the monument’s paleontological resources, potentially due to some visitors illegally collecting fossils, and to natural erosion. There could be a long-term, adverse cumulative impact of unknown magnitude on area fossils. The level of impact due to alternative A would not be expected to constitute an impairment of the monument’s resources or values.

Soils

Analysis. No soils would be altered due to construction because no construction of new facilities is included in alternative A. Maintenance of existing facilities would probably result in some erosion or alteration of soil properties, resulting in a negligible to minor, long-term, adverse impact in localized areas.

Soils in the monument would likely continue to be compacted and eroded by hikers in local areas, particularly along existing unofficial trails. Hancock Field Station students would likely continue to use existing trails and unofficial trails in the Clarno Unit, and thus would have a negligible to minor impact on additional erosion in the monument.

In some areas, new human-created, unofficial trails may be created with increased visitation, particularly in areas with high visitor numbers. In sloped areas, unofficial trails would result

in increased soil erosion from stormwater runoff. These long-term, adverse visitor impacts would likely be minor and limited in extent.

Cumulative Impacts. Soils in most of the area surrounding the monument have been altered by past agricultural practices and developments. In the future, some soils would likely be eroded and lost, and soil properties would likely continue to be altered by agricultural practices and by new developments in the area. The loss and alteration of soils due to past land uses and future external actions likely would result in a minor to moderate, adverse impact on area soils. When the potential minor effects from increased visitation in the monument in alternative A are added to the past and future impacts external to the monument, there would be a long-term, minor to moderate, adverse cumulative impact on area soils. However, the actions in alternative A would contribute a very small increment to the overall impact.

Conclusion. Most of the monument's soils would not be affected by the actions in alternative A. However, some soils would be eroded and lost, and soil properties would be altered due to increased visitor use in localized areas such as along trails. These adverse impacts would likely be minor and long-term in extent. When the impacts inside the monument in alternative A are added to past and foreseeable future impacts from land uses, and future agricultural uses and developments outside the monument, there would be the potential for a long-term, minor to moderate, adverse cumulative impact on area soil —although the actions in alternative A would add a very small increment to this overall impact. No impairment to the monument's resources and values would result from soil impacts in this alternative.

Prime and Unique Farmlands

Analysis. In alternative A, 72 acres of prime farmland in the monument would continue to be maintained for agricultural production.

Thus there would be no changes to prime farmland in this alternative.

Cumulative Impacts. Approximately 2% of Grant County (about 58,000 acres out of 2.9 million acres) is irrigated (Lorraine Vogt, NRCS District Conservationist, pers. comm., May 14, 2007). It is estimated that roughly one-quarter of this irrigated land (~14,500 acres) is likely designated as prime farmland (Jamie Kienzle, NRCS Soil Survey Project Leader, pers. comm., May 24, 2007). Given the county's distance from urban areas and the relatively low level of new development that has occurred and is expected to occur, it is expected that the vast majority of prime farmlands in the county would continue in their current condition for the foreseeable future. A few actions outside the monument, such as the development of roads and homes, may result in a negligible loss in the acreage of prime farmland lands. Because alternative A would have no effect on prime farmlands within the monument, there would be no additive cumulative impact in alternative A.

Conclusion. Alternative A would have no effect on and there would be no cumulative impact on prime farmlands. No impairment to the monument's resources and values would result from this alternative.

Vegetation

Analysis. No impacts on vegetation would occur due to development or improvement of facilities, because alternative A does not include such actions.

Most monument visitors would stay on trails and would not affect native vegetation. Hancock Field Station groups probably would largely stay on trails, but would still trample and crush some plants, resulting in the loss of some native vegetation in the Clarno Unit. In addition, with increased use levels in the monument in the future, some vegetation may be lost due to the formation of human-created, unofficial trails in or near popular use areas in the monument. As a result, more native vegetation might be adversely affected

in local areas. None of these impacts would affect the integrity, distribution, or presence of native plant communities in the monument. Thus, visitor use would likely continue to have a long-term, negligible to minor, adverse impact on the monument's native vegetation in localized areas.

Four fields in the Sheep Rock Unit would continue to be irrigated and used for hay production. However, this would have no effect on native vegetation as native plants have been largely absent from these areas for many years.

As noted in the "Affected Environment" chapter, the spread of nonnative plants is a problem in the monument. Areas upstream of the monument with well-established noxious weeds would continue to be a seed source, and seeds would continue to be transported down the John Day River. Vehicles driving through the monument also would continue to be a potential source of nonnative plant seeds. Increased visitor use in the monument would increase the potential for the spread of nonnative species. Even with education efforts, some nonnative plants could be introduced or spread by visitors in the monument. Continued use of integrated pest management techniques should help contain the spread of some nonnative species in limited areas. Thus, pockets of nonnative species would continue to be present during the life of this plan. Although it is difficult to determine the impact on native species due to the uncertainties about the type of species that might be introduced in the future, and the locations and frequencies of introductions, it is expected even with continuing monitoring and weed control efforts, that these adverse impacts would be minor to moderate.

Continuing efforts to conduct prescribed burns and selective cutting would reduce juniper numbers and reinvigorate brush and grass stands in the monument. Over time this would be expected to restore the monument's vegetation to a fire-dependent vegetative community that is not dominated by juniper; instead there would be a mosaic of

woodlands, grasslands, and intermediate successional vegetative communities. However, in cases where the understory is lacking native grasses such as blue bunch wheat grass and Idaho fescue, nonnative cheat grass could substantially expand. Care would need to be taken in determining where and under what conditions prescribed burning would occur in order to avoid this potentially adverse impact. These continuing efforts would result in a moderate, long-term, beneficial impact on the monument's vegetation in local areas.

Cumulative Impacts. Actions outside the monument would likely continue to affect the area's native vegetation. Over time, most native bunchgrass/sagebrush steppe communities have been affected by human activities such as agricultural operations, construction, and other developments. New developments would likely result in the loss of some additional native vegetation. Thus, in the area around the monument's three units, there have been minor to moderate, adverse impacts to native vegetation.

When the adverse and beneficial impacts of alternative A are added to actions that have occurred and are likely to occur in the area surrounding the monument, there would be a minor to moderate, long-term, adverse cumulative impact on the area's native vegetation. However, the actions in this alternative would add both a relatively modest beneficial and small adverse increment to this overall impact, given how much change has already occurred to the vegetative communities once present.

Conclusion. In alternative A there would be both beneficial and adverse impacts on the monument's native vegetation. Some long-term, negligible to minor, adverse impacts would occur in local areas due to increased visitor use levels. Nonnative plants would continue to have minor to moderate, long-term, adverse impacts on native vegetation. On the other hand, continuing efforts to control nonnative species would likely have a long-term, moderate, beneficial impact in

local areas. When the effects of this alternative are added to the effects of other past, present, and foreseeable future actions, there would be a minor to moderate, long-term, adverse cumulative impact on native vegetation. However, the actions in alternative A would add only a small beneficial and small adverse increment to this overall impact. None of the vegetation impacts that would occur in this alternative would be sufficient to result in an impairment of the monument's resources and values.

Wildlife

Analysis. Few actions in this alternative would affect the monument's wildlife populations or habitats. Wildlife populations and habitats already have been altered by visitors and NPS employees, as have wildlife habits and movements. The human use of the monument is concentrated in developed areas such as the Cant Ranch, and along trails. Animals sensitive to human activities already avoid these areas when people are present. Wildlife that occupy these developed areas, such as ground squirrels, rabbits, mice, and mule deer, are mostly adapted to the presence of people and would not be noticeably affected by the actions being taken in alternative A.

Some animals would continue to occasionally be injured or killed by motor vehicles on roads. Some animals also probably would continue to be attracted to food offered by visitors or to areas where food and trash receptacles are present, such as at picnic areas. In addition, Hancock Field Station students probably affect wildlife populations by their presence in the Clarno Unit, affecting the behavior of some animals. Overall, the impacts of visitor use on wildlife populations in alternative A would be localized and negligible, resulting in no measurable changes to the monument's wildlife populations.

Continued efforts to restore native bunchgrass/sagebrush steppe communities would have both beneficial and adverse impacts on different wildlife populations. In particular, efforts to control the spread of

juniper would benefit species that are found in open areas or an open understory, such as a wide variety of lizards, snakes, gophers, ground squirrels, mice, western meadowlark, and loggerhead shrike. This would have a minor to moderate, long-term, beneficial impact on these species. On the other hand, species commonly found in juniper woodlands, such as northern flicker, western wood pewee, and dusky flycatcher, would likely decline in numbers over time.

Cumulative Impacts. Like vegetation, most wildlife populations surrounding the monument have been substantially altered by human activities, such as farming and ranching, resulting in fewer numbers of some native wildlife species such as sage grouse and American badger. Fire suppression, efforts to control predators, and hunting also have affected and continue to affect wildlife populations in the area. Thus, actions outside the monument have had a minor to moderate, adverse impact on native wildlife populations surrounding John Day Fossil Beds National Monument. No current or reasonably foreseeable actions are likely to change this. When the beneficial and adverse impacts of alternative A are added to the impacts that have occurred and are likely to occur in the vicinity of the monument, there would be a long-term, minor to moderate, adverse cumulative impact on the area's wildlife populations and habitats. However, alternative A would contribute a very small adverse increment to this overall cumulative impact, as well as a small beneficial increment by continuing to provide an area where wildlife habitat continues to be managed and protected.

Conclusion. Alternative A would have some adverse and beneficial impacts on the monument's wildlife populations and habitats. Most wildlife in the monument would not change as a result of the actions in this alternative. No actions would affect key migration routes or areas known to be important for breeding, nesting, or foraging. No actions would interfere with feeding, reproduction, or other activities necessary for

the survival of wildlife species. Long-term, negligible, adverse impacts would continue to occur in localized areas due to continuing visitor use of the monument. Continuing efforts to prevent the spread of juniper and control the spread of nonnative species would result in a minor to moderate, long-term, beneficial impacts on some wildlife populations. When the beneficial and adverse impacts of alternative A are added to the impacts that have occurred in the vicinity of John Day Fossil Beds National Monument, there would be a long-term, minor to moderate, adverse cumulative impact on the area's wildlife populations and habitats. However, the actions in alternative A would contribute only a small beneficial increment and a very small adverse increment to this impact. None of the wildlife impacts resulting from alternative A would constitute an impairment of the monument's resources and values.

CULTURAL RESOURCES

Archeological Resources

Analysis. Archeological resources easily accessible to visitors from trails, roads, picnic areas, and permitted off-trail hiking areas could be vulnerable to surface disturbance, inadvertent damage, and vandalism. Deterioration of cultural remains could result from loss of surface archeological materials, alteration of artifact distribution, or a reduction of contextual evidence. However, continued ranger patrols and visitor education efforts would discourage vandalism and inadvertent destruction of cultural remains; any adverse impacts would be expected to be minimal.

There would be no new construction in this alternative—no new trails or facilities. As appropriate, archeological surveys and/or monitoring would precede any ground disturbance associated with trail maintenance and the closure and revegetation of social trails, such as those around the Hancock Field Station in the Clarno Unit. Important archeological resources would be avoided to

the greatest extent possible, and no adverse effects would be anticipated. In the unlikely event that such resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the Oregon State Historic Preservation Officer and, if appropriate, with the traditionally associated tribes.

Cumulative Impacts. Past development in the monument such as trails, roads, and visitor and research facilities may have resulted in the disturbance and loss of some archeological resources during excavation and construction activities. In addition, agricultural activities, ranching, gold mining, and the development of area towns, such as John Day, Mount Vernon, Dayville, Kimberly, Mitchell, Fossil, and Prineville, may also have adversely disturbed archeological resources. Some of these types of activities continue, such as the fast growth and expansion of urban areas like Bend, Oregon and Boise, Idaho; population increases in these areas could result in future adverse impacts to archeological resources in the greater region. As described above, implementation of alternative A could potentially disturb archeological resources at the national monument, resulting in adverse effects. Any adverse impacts associated with the implementation of the no action alternative, in combination with the impacts of other past, present, and reasonably foreseeable future actions, would result in adverse cumulative impacts. However, alternative A would be expected to contribute only minimally, if at all, to the adverse cumulative impacts. Thus, any adverse impacts to archeological resources resulting from implementation of alternative A would be a very small component of the adverse cumulative impact.

Conclusion. Since continued management actions in alternative A, the no-action alternative, would result in no new construction, no adverse impacts to archeological resources are anticipated. Any adverse impacts to archeological resources resulting from implementation of alternative A would be a very small component of the

adverse cumulative impact. In the unlikely event that impacts to national register-eligible archeological resources could not be avoided, a memorandum of agreement, in accordance with 36 CFR Part 800.6, *Resolution of Adverse Effects*, would be negotiated. It would be between or among John Day Fossil Beds National Monument and the Oregon State Historic Preservation Officer, the traditionally associated tribes, if appropriate, and/or the Advisory Council on Historic Preservation, if necessary. The memorandum of agreement would stipulate how the adverse effects would be mitigated.

There would be no impairment of the national monument's resources or values because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of John Day Fossil Beds National Monument; (2) key to the natural or cultural integrity of the national monument or to opportunities for enjoyment of the national monument; or (3) identified as a goal in the national monument's *General Management Plan* or other relevant National Park Service planning documents.

Cultural Landscapes and Historic Structures

Analysis. In alternative A, the no-action alternative, the National Park Service would continue to follow current management objectives at the Cant Ranch Historic District, preserving the cultural resources associated with the historic district. Resource managers would continue to follow the general guidance and proposed treatments provided in the *Cultural Landscape Report: Cant Ranch Historic District* (Taylor and Gilbert 1996). Many of the recommendations in the cultural landscape report have already been implemented; some have not.

No new construction would be undertaken in this alternative. The agricultural fields, the largest character-defining elements of the historic district, would continue to be irrigated with sprinklers and flood irrigation techniques. The *Cultural Landscape Report*

would be updated to reflect the work that has been accomplished since 1996 and to provide guidance for the remaining recommendations that have yet to be implemented.

To appropriately preserve and protect historic structures and cultural landscapes that are listed or eligible for listing on the National Register of Historic Places, all stabilization, preservation, and rehabilitation efforts—as well as daily, cyclical, and seasonal maintenance—would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995). Any materials removed from structures during rehabilitation efforts would be evaluated to determine their value to the monument's museum collections or their value for comparative use in future preservation work at the sites. Stabilization, preservation, and rehabilitation would have no adverse effects upon historic structures or cultural landscapes.

The ranch house could suffer wear and tear from increased visitation, but monitoring the carrying capacity of the historic structure could result in the imposition of visitation limits or constraints that would contribute to the stability or integrity of the resource without unduly hindering interpretation for visitors. Unstaffed or minimally staffed structures could be more susceptible to vandalism, but continued ranger patrols and visitor education efforts would discourage vandalism. Few, if any, adverse impacts would be anticipated.

Cumulative Impacts. Although the Cant Ranch Historic District retains an overall high level of historic integrity, some alterations have occurred since the 1910 – 1946 period of significance. Some structures have lost original historic fabric due to weathering and other factors, but historic materials have been replaced with compatible, in-kind materials whenever possible. Fences have been reconstructed and, in some cases, realigned, but are constructed in a style that is compatible with the historic character of the district. Several shade trees around the Cant

residence have died or have been removed; they have been replaced with nonhistoric tree species. Historically, the shade trees were pollarded (an intensive pruning technique used historically at the Cant Ranch, possibly for firewood or aesthetic reasons). This practice has been discontinued, thus changing the historic shape and size of the tree canopy. Historic fruit trees in the lower orchard have been lost and the replacement of the trees does not reflect historic orchard practices.

Several areas of the historic district have been altered to improve visitor experience, visitor safety, and monument operations. The historic driveway was expanded in a compatible manner to create parking spaces for visitors. The lawn that was historically maintained immediately around the house has been extended throughout the orchard to provide green picnic space for monument visitors. Several sections of the irrigation ditches have been filled in to improve the irrigation system. A maintenance area has been constructed within the historic district; this was carefully placed in a location that is not visible from the main complex, thus reducing its impact on the visual qualities of the historic district.

These cumulative impacts have adversely affected the integrity of the cultural landscape and historic structures of the Cant Ranch Historic District. However, despite these adverse effects to landscape features, the *Cultural Landscape Report* found that the landscape and associated features “remain largely intact and retain a high level of integrity” (Taylor and Gilbert 1996:81). Construction of the new Thomas Condon Paleontology Center across the highway from the Cant Ranch Historic District has had a visual impact on the cultural landscape. The center can be seen by visitors approaching the Cant Ranch along State Highway 19. However, the center is not located within the boundaries of the Cant Ranch Historic District and has no adverse effects on the landscape’s overall integrity.

As described above, implementation of Alternative A would result in no adverse effects to either historic structures or cultural landscapes. The no adverse impacts of the no action alternative, in combination with both the adverse and no adverse impacts of other past, present, and reasonably foreseeable future actions, would result in an adverse cumulative impact. However, alternative A would not contribute to the adverse cumulative impact.

Conclusion. Any actions would follow the *Secretary of the Interior’s Standards for the Treatment of Archeology and Historic Preservation*, and the *Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*; this would result in no adverse effects to historic structures and cultural landscapes. Alternative A would not contribute to the adverse cumulative impact of other past, present, and reasonably foreseeable actions.

There would be no impairment of John Day Fossil Beds National Monument’s resources or values because there would be no adverse effects to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of John Day Fossil Beds National Monument; (2) key to the natural or cultural integrity of John Day Fossil Beds National Monument or to opportunities for enjoyment of John Day Fossil Beds National Monument; or (3) identified as a goal in the *John Day Fossil Beds National Monument General Management Plan* or other relevant NPS planning documents.

VISITOR USE AND EXPERIENCE

Analysis

Visitor Use Patterns. Monument visitation is slightly up and is expected to increase over the next several years due to the recent opening of the new Thomas Condon Paleontology Center and to population growth in nearby metropolitan areas. Visitation would continue

to fluctuate seasonally, rising in the summer and on weekends, and peaking on summer holiday weekends. Visitation would likely continue to be dominated by West Coast residents, especially those from Oregon. As visitation increases, monument visitation could peak on more weekends or increase in the shoulder seasons. Increased visitation in and of itself is not expected to have an impact on visitor use patterns because current visitation levels are not high and there is plenty of capacity for more visitors. There would be no impact on visitor use patterns from current management.

Crowding and Opportunities for Solitude. Some crowding and visitor conflict would continue to occur, especially at popular destinations in the monument. Encounters with large groups near Camp Hancock in the Clarno Unit would continue, as would occasional encounters with large school groups at the Thomas Condon Paleontology Center and Cant Ranch. There would continue to be opportunities for solitude in the remote and less developed areas of the monument. Impacts to crowding and solitude from current management are long-term, adverse, and of minor intensity. Population growth in the area over the next 20 years could have an adverse impact on future crowding and opportunities for solitude. The intensity of this future impact is anticipated to be minor.

Visitor Understanding, Education, and Interpretation. Visitors would continue to get most of their information at the Thomas Condon Paleontology Center, which serves as the monument's visitor center. Many visitors, particularly repeat visitors, would continue to go directly to other destinations in the monument. Most educational and interpretive opportunities would continue to be based at the visitor center and at Cant Ranch in the Sheep Rock Unit. Fewer programs would continue to be offered in the other two units. Visitor contact with monument staff in the Painted Hills and Clarno units would continue to be minimal. Monument staff would continue to conduct programs at the

monument for school groups and would continue to conduct outreach by providing fossil kits and films to area schools. Collectively, the current management direction would continue to result in long-term, moderate, adverse impacts to visitor understanding, education, and interpretation due to the issues and deficiencies identified above.

Opportunities for Recreational Activities. Visitors would continue to have opportunities for scenic driving, hiking, picnicking, photography, fishing, and viewing fossils. Opportunities for scenic driving are excellent, with relatively uncongested roadways, adequate signs, and outstanding scenery. Convenience and access for scenic driving in RVs would continue to be limited to paved roads. Hiking opportunities abound, with a variety of designated trails in all three units of the monument; however, opportunities for longer distance hiking on formal, designated trails would continue to be limited or nonexistent. Picnicking facilities exist in all three units; however, a few of the sites are in need of visitor amenities to improve the visitor experience. No picnic facilities exist at the visitor center. Fishing in the monument is permitted, but access is informal.

Opportunities for viewing fossils are abundant, both in the field and at the Thomas Condon Paleontology Center. Collectively, the current management direction would continue to result in long-term, moderate, adverse impacts on opportunities for recreational activities due to the issues and deficiencies identified above.

Opportunities for People with Disabilities. Opportunities for people with disabilities would continue to be available in all three units of the monument. Although not all facilities and programs in the monument are fully accessible, a range of opportunities does exist. All units offer recreational, educational, and interpretive opportunities through accessible trails with wayside exhibits. The Thomas Condon Paleontology Center and Cant Ranch house and museum provide

additional opportunities for education and interpretation. Opportunities for the hearing impaired are currently limited to exhibits and handouts; opportunities for the visually impaired are limited to a few “touch” exhibits located in the visitor center. Overall, opportunities for people with disabilities in the monument are good, especially now that the Thomas Condon Paleontology Center is open. Because of the issues and limitations described above, the current management direction would continue to result in long-term, minor, adverse impacts on opportunities for people with disabilities.

Cumulative Impacts

An important factor in the discussion of cumulative impacts is the Oregon Paleo Lands Institute scheduled to open in Fossil, Oregon in 2007. The institute will focus on paleontological research and education, with the possibility of field trips into the Clarno Unit of the monument. This may result in increased visitation to the Clarno Unit as well as to the Thomas Condon Paleontology Center, and could result in long-term, minor, adverse impacts on visitor experience, primarily due to increased crowding and the potential for visitor conflict.

The establishment of the institute and related visitor use of the monument could lead to increased visitor understanding of the monument’s resources. It could also improve opportunities for education and interpretation at the monument and in the region.

Therefore, the institute would have a long-term, moderate, beneficial impact on visitor understanding, education, and interpretation. Overall, the impact on visitor use patterns, opportunities for recreational activities, and opportunities for people with disabilities would be negligible.

When the likely effects of current management are added to the effects of other past, present, and reasonably foreseeable actions outside the monument as described above, the cumulative effect would be a long-

term, minor, beneficial impact on visitor understanding, education, and interpretation. Some long-term, minor, adverse impacts to visitor use and experience, in the forms of crowding and visitor conflict, could be realized from the effects of increased visitation, particularly when combined with background population growth in the region. The actions proposed in the no-action alternative would contribute only a relatively small part of the overall cumulative impact.

Conclusion

Alternative A would be expected to have a long-term, minor, adverse impact on crowding and opportunities for solitude as well as on opportunities for people with disabilities in the monument. Alternative A also would be expected to have a long-term, moderate, adverse impact on visitor understanding, education, and interpretation and on opportunities for recreational activities in the monument.

There could be a long-term, moderate, beneficial cumulative impact on visitor understanding, education, and interpretation; and a long-term, minor, adverse cumulative impact on visitor experience, primarily due to increased crowding and visitor conflict. The actions proposed in Alternative A would contribute only a relatively small part of the overall cumulative impact. The cumulative impact on visitor use patterns, opportunities for recreational activities, and opportunities for people with disabilities would be negligible.

NATIONAL MONUMENT OPERATIONS

Analysis

The physical separation of the monument’s three units poses operational challenges. The Sheep Rock and Painted Hills units are separated by approximately 35 miles, while a distance of about 70 miles separates the Sheep Rock and Clarno units. Monument operations would continue to be based out of the Sheep Rock Unit, with a satellite ranger office

located in the Painted Hills Unit. This physical separation of the three units results in inefficiencies for construction and maintenance management, including staff and equipment mobilization and travel. It also decreases the productivity and increases expenses associated with resource protection and other programmatic activities. Emergency management response time is also affected by the geographical separation of the monument units.

The current organizational structure, with staffing and operations generally centralized, would continue to function with some inefficiency; however, it seems to be the most sensible organization for NPS management and operations due to the geographic limitations described above.

Current funding levels have caused some positions to remain vacant, which has had an effect on the monument's organizational capacity. Several of the divisions have identified staffing shortages through business planning models, and the impact of staffing deficiencies would likely continue.

Because of the issues and limitations described above, the current management direction would continue to result in long-term, minor, adverse impacts on monument operations.

Cumulative Impacts

The establishment of the Oregon Paleo Lands Institute could result in increased visitor use of the monument, particularly at the Clarno Unit and the Thomas Condon Paleontology Center. This could result in the need for increased trail and facility maintenance, which could have minor adverse impacts to staffing and funding.

When the likely effects of current management are added to the effects of other past, present, and reasonably foreseeable actions outside the monument as described above, the cumulative effect would be a long-term, minor, adverse impact on monument operations. The actions proposed in the no-action alternative would contribute an appreciable increment to the overall cumulative impact.

Conclusion

Alternative A would be expected to have a long-term, minor, adverse impact on monument operations. There could be a long-term, minor, adverse cumulative impact on monument operations (staffing, maintenance, and operational needs) resulting primarily from increased visitation. The actions proposed in Alternative A would contribute an appreciable increment to the overall cumulative impact.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE B

NATURAL RESOURCES

Paleontological Resources

Analysis. Most of the new developments or ground-disturbing activities in alternative B, including construction of new shade structures in the Painted Hills picnic area, the redesign of the Painted Hills Overlook, the development of the Geo-loop trailhead / parking area, and work in the Cant Ranch area, would not occur in areas known to be major areas for paleontological resources. To ensure that impacts would be avoided, site-specific surveys would be undertaken before any ground disturbance occurs in areas thought likely to contain fossils. The formalization of the unofficial Geo-loop, Mimulus and Stegamonster trails would result in minimal disturbance to the surrounding soils, since the trails already largely exist. With the application of appropriate mitigation measures (e.g., construction activities being monitored by a paleontologist), impacts to paleontological resources would be negligible. Thus, the construction of new facilities in alternative B would be expected to have a negligible, long-term, adverse impact on the monument's paleontological resources.

As in alternative A, in alternative B some fossils might be illegally collected by visitors in the monument. Although Hancock Field Station groups would be in areas in the monument with fossils, it is expected that these groups would be controlled by their teachers and their presence would not result in the loss or disturbance of fossils. Students or instructors on college field trips may occasionally remove fossils from the monument. With monument use levels expected to increase in the future, there would be the potential that some illegal fossil collecting could occur. But there is no reason to expect that there would be a noticeable increase in the numbers of fossils being illegally collected—most visitors would stay in developed areas or on trails and would not know where to look for fossils and would not

have equipment to extract fossils. The formalization of the Geo-loop, Mimulus, and Stegamonster trails would likely result in more people walking in areas that have fossils, but is not expected to noticeably increase fossil theft since the trails already exist. (Indeed, having more people in the area may reduce the likelihood of illegal collecting.) Thus, compared to alternative A, visitor use in alternative B would have the potential for a negligible to minor, long-term, adverse impact on the monument's paleontological resources. (Commercial collectors could have a much bigger impact, but this has not been a problem in the past and there is no reason to expect it would increase in this alternative.)

Alternative B would have several beneficial impacts on paleontological resources. The opening of the Hancock Mammal Quarry would likely produce new fossils, adding new information to the body of paleontological knowledge, which would be a long-term, beneficial impact of unknown magnitude. The closure and restoration of human-created unofficial trails in the Clarno Unit also would reduce the potential for visitors wandering through the area and collecting fossils, resulting in a long-term, beneficial impact.

Cumulative Impacts. Paleontological resources are scattered in rock formations throughout the John Day Basin. Fossils are likely collected on BLM and private lands near the monument, and are likely being lost to natural erosion, although the extent of this loss is unknown. When the likely effects of public use of the monument in this alternative and the beneficial impacts of opening the mammal quarry and closing unofficial trails are added to the effects outside the monument, there could be a long-term, adverse cumulative impact of unknown magnitude on area fossils. However, the beneficial and adverse effects of alternative B in the monument would likely be a very small part of the cumulative impacts on the area's paleontological resources.

Conclusion. Compared to alternative A, alternative B would be expected to have a beneficial impact of unknown intensity on paleontological resources, primarily due to the opening of the mammal quarry and the removal of most of the human-created unofficial trails. There also would be a long-term, negligible to minor, adverse impact on the monument's paleontological resources due to the increased potential for illegal fossil collecting. There could be a long-term, adverse cumulative impact of unknown magnitude on area fossils, although alternative B would add small beneficial and adverse increments to the overall area cumulative impact. The level of impact due to alternative B would not be expected to constitute an impairment of the monument's resources or values.

Soils

Analysis. In alternative B, some soils would be lost to erosion or substantially altered in local areas where ground disturbance would occur due to the development of the Geo-loop trailhead / parking area. Site preparation and landscaping work would disturb soils in this area, and soils would be modified in the footprint. Construction equipment also would likely disturb and compact soils in the project area, which would include about an acre of land. Mitigation efforts, such as installing erosion matting and silt fences, would help reduce the impact on the soils in the area. The adverse impact on soils would likely be moderate in the area, but the adverse impact on the monument's overall soils, due to new developments, would be minor and long-term.

Several actions would occur in areas that have already been disturbed by people. These actions include the opening of the mammal quarry, the redesign of the Painted Hills Overlook, construction of three shade structures in the Painted Hills picnic area, the formalizing of several existing unofficial trails, and various actions in the Cant Ranch area. Little additional soil disturbance would be required and thus these actions would have a

negligible, adverse, long-term impact on soils in these areas.

As in alternative A, maintenance of existing facilities would probably result in some erosion of soils or alteration of soil properties, resulting in a negligible to minor, long-term, adverse impact on soils in localized areas.

Due to hikers, soils in the monument would likely continue to be compacted and eroded in specific areas, such as along the sides of trails. Hancock Field Station students would likely continue to use existing trails and unofficial trails in the Clarno Unit, creating a negligible to minor impact on soils by contributing to additional erosion in the monument. In some areas in the monument, new unofficial trails may be created as visitation increases. In sloped areas, human-caused, unofficial trails would result in increased soil erosion from stormwater runoff. These long-term, adverse impacts would likely be minor and limited in extent.

Efforts to remove unofficial trails would help reduce erosion and result in a long-term, beneficial impact on soils. The new formal trail to the Hancock Tree and mammal quarry, which would follow a well-traveled unofficial trail, would be built with erosion control measures. This should reduce erosion in this area compared to the present conditions, and would result in a minor to moderate, long-term, beneficial impact.

Instituting and monitoring user capacity indicators and standards also should help ensure that an unacceptable increase in the number of human-created trails (and resulting increased soil erosion) does not occur in the pedestrian, backcountry, and primitive zones. Compared to the no-action alternative, this alternative would result in a moderate, long-term, beneficial impact.

Cumulative Impacts. Soils in most of the area surrounding the monument have been altered by past agricultural practices and developments. In the future, some soils in the area would likely be eroded and lost, and soil

properties would likely be altered by agricultural practices and new private developments in the area. The loss and alteration of soils due to past land uses, and future external actions, likely would result in a minor to moderate, adverse impact on area soils. When these past and future impacts are added to the potential adverse and beneficial effects of alternative B in the monument there would be a long-term, minor to moderate, adverse cumulative impact on area soils. However, the actions in alternative B would contribute a very small increment to the overall impact.

Conclusion. Most of the monument's soils would not be affected by the actions in alternative B. However, some soils would be eroded and lost and some soil properties would be altered. This would be due to construction projects and increased visitor use in localized areas such as along trails. Overall, these adverse impacts would likely be minor and long-term in extent. On the other hand, establishing and monitoring user capacity indicators and standards should help prevent the establishment of new human-created trails, and prevent resulting soil erosion; this would have a moderate, long-term, beneficial impact.

When the impacts in alternative B are added to other impacts from past and foreseeable future actions, there would be the potential for a long-term, minor to moderate, adverse cumulative impact on area soils—although the actions in alternative B would add a very small increment to this overall cumulative impact. No impairment to the monument's resources and values would result from soil impacts in this alternative.

Prime and Unique Farmlands

Analysis. In alternative B, 72 acres of prime farmland in the monument would continue to be maintained for agricultural production. Although actions would be taken to improve the efficiency and sustainability of the agricultural operations, no changes would occur in the amount of prime farmland in the monument and no changes would occur to

soil function. Thus, alternative B would have no effect on prime farmlands with regard to acreage or use of the monument's fields.

Cumulative Impacts. Approximately 2% of Grant County (about 58,000 acres out of 2.9 million acres) is irrigated (Lorraine Vogt, NRCS District Conservationist, pers. comm., May 14, 2007). It is estimated that roughly one-quarter of this irrigated land (~14,500 acres) is likely designated as prime farmland (Jamie Kienzle, NRCS Soil Survey Project Leader, pers. comm., May 24, 2007). Given Grant County's distance from urban areas and the relatively low level of new development that has occurred and is expected to occur in the area, it is expected that the vast majority of prime farmlands in the county would continue into the foreseeable future in about the same condition as they are now. As noted in alternative A, a few actions outside the monument, such as the development of roads and homes, may result in a negligible loss in the acreage of prime farmland. Because alternative B would have no effect on the acreage of prime farmland within the monument, there would be no additive cumulative impact in alternative B.

Conclusion. Alternative B would have no effect on prime farmland with regard to acreage and use of the monument's fields, and would result in no cumulative effect. No impairment to the monument's resources and values would result from this alternative.

Vegetation

Analysis. Vegetation in most areas of the monument would not be affected by alternative B. Most of the new facilities and other actions in alternative B, including the redesign of the Painted Hills Overlook, the addition of three shade structures to the picnic area, the construction of the Geo-loop trailhead / parking area, the formalizing of several unofficial trails, and improvements in the Cant Ranch agricultural fields, would occur within disturbed areas where native vegetation already has been substantially altered—little native vegetation would be affected by these actions. The opening of the

mammal quarry also would occur in an area that has relatively sparse native vegetation. Therefore, little additional native vegetation would be affected from construction of the facilities in alternative B.

Given previous vegetation disturbance and the use of appropriate mitigation measures (e.g., ensuring that equipment stays within project area boundaries, revegetating disturbed areas, and taking steps to avoid the spread of nonnative plants), the long-term, adverse effects on native vegetation from the new developments would be negligible to minor in localized areas.

As in alternative A, most monument visitors would stay on trails and would not affect native vegetation. Hancock Field Station groups probably would largely stay on trails, but would still trample and crush some plants, resulting in the loss of some additional native vegetation in the Clarno Unit. In addition, with increased use levels over time in the monument, more native vegetation might be adversely affected in local areas due to people wandering off the trails. None of these impacts would affect the integrity, distribution, or presence of native plant communities in the monument. Thus, visitor use would likely have a long-term, negligible to minor, adverse impact on the monument's native vegetation in local areas.

Four fields in the Sheep Rock Unit would continue to be irrigated and used for hay production. However, this would have no effect on native vegetation, because native plants have been largely absent from these areas for many years.

As in alternative A, the spread of nonnative plants would continue to be a problem in the monument in alternative B. Areas upstream of the monument with well-established noxious weeds would continue to be a seed source, and seeds would continue to be transported down the John Day River. Vehicles traveling through the monument also would continue to be a potential source of nonnative plant seeds. Increased visitor use in the monument

would increase the potential for the spread of nonnative species.

Continued use of integrated pest measures should help contain the spread of some nonnative species in limited areas. But even with these measures and visitor education efforts, some nonnative plants might be introduced or spread by visitors (as well as by wind and the river) in the monument. Thus, pockets of nonnative species would continue to be present during the life of this plan. It is difficult to determine the impact this would have on native species, due to uncertainties about the type of species that might be introduced and the locations and frequencies of such introductions. However, it is expected that even with continuing monitoring and weed control efforts the impacts would be long-term, adverse, and minor to moderate.

Alternative B would have several beneficial impacts on vegetation. Continuing efforts to conduct prescribed burns and selective cutting would have the same effects as described in alternative A—restoration of the monument's vegetation to a fire-dependent community that is not dominated by juniper. In addition, in alternative B, the removal of unofficial trails in the Clarno Unit, and the restoration of riparian vegetation along Bridge Creek and the John Day River would have long-term, beneficial impacts. The addition of the Cathedral Rock lands to the monument also would have long-term, beneficial impacts, protecting more native riparian vegetation. Finally, the establishment of user capacity indicators and standards would help prevent the spread of additional unofficial trails, and thus prevent the loss and disturbance of vegetation in the monument. Taken together, these actions would have a minor to moderate, long-term, beneficial impact on native vegetation in localized areas.

Cumulative Impacts. Actions outside the monument would likely continue to affect the area's native vegetation. Over time, most native bunchgrass/sagebrush steppe communities have been affected by human activities such as agricultural operations,

housing construction, and other developments. New developments would likely result in the loss of some additional native vegetation. Thus, generally in the area around the monument's three units, there have been minor to moderate, adverse impacts to native vegetation.

When the adverse and beneficial impacts of alternative B are added to actions that have occurred and are likely to occur in the area surrounding the monument, there would be a minor to moderate, long-term, adverse cumulative impact on the area's native vegetation. Given how much change has already occurred to the vegetative communities once present, the actions in alternative B would add both a relatively modest beneficial and a small adverse increment to this overall impact.

Conclusion. Alternative B would result in both beneficial and adverse impacts on the monument's native vegetation. Most of the proposed new actions in alternative B would occur in the footprint of areas that have already been disturbed and would have a negligible impact on native vegetation. Some long-term, negligible to minor, adverse impacts would occur in local areas due to proposed new developments and increased visitor use levels. As in alternative A, nonnative plants would continue to have minor to moderate, long-term, adverse impacts on native vegetation. On the other hand, efforts to restore riparian vegetation, remove unofficial trails, add the Cathedral Rock area to the monument, and establish and monitor user capacity indicators and standards would likely have long-term, minor to moderate, beneficial impacts to native vegetation in localized areas. When the effects of alternative B are added to the effects of other past, present, and foreseeable future actions there would be a minor to moderate, long-term, adverse cumulative impact on native vegetation. The actions in alternative B would add both small beneficial and small adverse increments to this overall cumulative impact. None of the vegetation impacts that would occur in alternative B would be

sufficient to result in an impairment of the monument's resources and values.

Wildlife

Analysis. As noted in the "Affected Environment" chapter, the monument's wildlife populations and habitats have been altered by people over time. The human use of the monument is concentrated in developed areas such as picnic areas, on trails and roads, and in the Cant Ranch. Animals sensitive to human activities already avoid these areas when people are present. The wildlife that occupies these developed areas, such as ground squirrels, rabbits, and mice, are mostly adapted to the presence of people and would not be noticeably affected by the actions in alternative B.

As in all of the alternatives, some animals would continue to occasionally be injured or killed by motor vehicles on the monument's roads. Some animals probably would continue to be attracted to food and trash receptacles and to food being offered by visitors. In addition, Hancock Field Station students also probably affect wildlife populations by their presence in the monument, affecting the behavior of some animals in the Clarno Unit. But the overall adverse effects on wildlife from visitor activities in alternative B would be the same as those in alternative A: localized and negligible, resulting in no measurable changes to the monument's wildlife populations.

The formalization of several existing unofficial trails, development of the Geo-loop trailhead / parking area, redesign of the Painted Hills Overlook, and facility development in Cant Ranch, would occur in areas that have already been disturbed. Wildlife remaining in these areas has adapted to the presence of people. Although increased noise and human activity during the construction periods could temporarily displace some animals, the impact on wildlife populations and habitats in these areas would be short-term and negligible.

The opening of the mammal quarry in alternative B would result in the presence of

people and equipment in this area for long periods of time. Some wildlife, such as ground squirrels, mice, and rabbits would be displaced from the area. As a result, there would likely be a negligible to minor, long-term, adverse impact on wildlife populations in this localized area.

Continued efforts to restore native bunchgrass/sagebrush steppe communities in alternative B would have the same beneficial and adverse impacts on wildlife populations as described in alternative A. In addition, in alternative B, efforts would be undertaken to restore the riparian vegetation along Bridge Creek and the John Day River. Depending on the extent and nature of the restoration efforts, this effort could expand habitat for native wildlife and have a long-term, beneficial impact on wildlife populations found in riparian areas, such as raccoon, beaver, belted kingfisher, violet-green swallow, and yellow warbler. Likewise, the closure of unofficial trails and the restoration of these areas in the Clarno Unit would result in more habitat and fewer people in these areas, which in turn would benefit native wildlife populations that are sensitive to the presence of people.

Adding lands in the Cathedral Rock area to the monument would eliminate grazing in the area and provide additional protection to wildlife riparian habitat, benefiting species such as river otter, salmon, mink, and osprey. Thus there would be a long-term, beneficial impact on wildlife populations in this area.

Cumulative Impacts. Like vegetation, most wildlife populations surrounding the monument have been substantially altered by human activities, including farming and ranching. As a result, fewer numbers of some native wildlife such as sage grouse and American badger are present. Fire suppression activities, efforts to control predators, and hunting also have affected and continue to affect wildlife populations in the area. Thus, actions outside the monument have had a minor to moderate, adverse impact on native wildlife surrounding John Day Fossil Beds

National Monument. No current or reasonably foreseeable actions are likely to change this.

When the beneficial and adverse impacts of alternative B are added to the impacts that have occurred in the vicinity of the monument, there would be a long-term, minor to moderate, adverse cumulative impact on the area's wildlife populations and habitats. However, alternative B would contribute a very small adverse increment to this overall cumulative impact, as well as a small beneficial increment by continuing to provide an area where wildlife habitat continues to be managed and protected.

Conclusion. Alternative B would have both adverse and beneficial impacts on the monument's wildlife populations and habitats. Most wildlife populations and habitats in the monument would not change as a result of the actions in this alternative. No actions would affect areas known to be important for breeding, nesting, foraging, or key migration routes. No actions would interfere with feeding, reproduction, or other activities necessary for the survival of wildlife species. Long-term, negligible, adverse impacts would continue to occur in localized areas due to continuing visitor use of the monument. On the other hand, there would be long-term, beneficial impacts on some wildlife populations due to vegetation restoration efforts, the addition of lands in the Cathedral Rock area to the monument, and the closure and restoration of unofficial trails in the Clarno Unit.

When the beneficial and adverse impacts of alternative B are added to the impacts that have occurred in the vicinity of John Day Fossil Beds National Monument, there would be a long-term, minor to moderate, adverse cumulative impact on the area's wildlife populations and habitats. However, the actions in alternative B would contribute only a small beneficial increment and a very small adverse increment to this impact. None of the wildlife impacts resulting from alternative B

would constitute an impairment of the monument's resources and values.

CULTURAL RESOURCES

Archeological Resources

Analysis. Archeological resources adjacent to or easily accessible from trails, roads, picnic areas, and permitted off-trail hiking areas could be vulnerable to surface disturbance, inadvertent damage, and vandalism. Deterioration of cultural remains could result from a loss of surface archeological materials, alteration of artifact distribution, or a reduction of contextual evidence. However, continued ranger patrols and visitor education efforts would discourage vandalism and inadvertent destruction of cultural remains, and any adverse impacts would be expected to be minimal.

As appropriate, archeological surveys and/or monitoring would precede any ground disturbance associated with trail maintenance and the closure and revegetation of social trails. Archeological surveys would also precede new construction associated with the development of new trails, interpretive waysides, and parking areas, and the installation of shade structures. Important archeological resources would be avoided to the greatest extent possible. If such resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the Oregon State Historic Preservation Officer and, if appropriate, the traditionally associated tribes.

Cumulative Impacts. Past development in the monument, such as the construction of trails, roads, and visitor and research facilities, may have resulted in the disturbance and loss of some archeological resources during excavation and construction activities. In addition, agricultural, ranching, and gold-mining practices, and the development of towns in the area, such as John Day, Mount Vernon, Dayville, Kimberly, Mitchell, Fossil, and Prineville, may also have adversely disturbed archeological resources. Some of

these types of activities continue, such as the fast growth and expansion of urban areas like Bend, Oregon, and Boise, Idaho. Population increases in these areas could result in future adverse impacts to archeological resources in the greater region. As described above, implementation of alternative B could potentially disturb archeological resources at the national monument—resulting in adverse effects. Any adverse impacts associated with the implementation of the preferred alternative, in combination with the impacts of other past, present, and reasonably foreseeable future actions, would result in adverse cumulative impacts. However, alternative B would be expected to contribute only minimally, if at all, to the adverse cumulative impacts. Thus, any adverse impacts to archeological resources resulting from implementation of alternative B would be a very small component of the adverse cumulative impact.

Conclusion. Management actions in alternative B, the preferred alternative, would involve new construction, but no adverse impacts to archeological resources would be anticipated. Any adverse impacts to archeological resources resulting from implementation of alternative B would be a very small component of the adverse cumulative impact. In the unlikely event that impacts to national register-eligible archeological resources could not be avoided, a memorandum of agreement, in accordance with 36 CFR Part 800.6, *Resolution of Adverse Effects*, would be negotiated. It would be between or among John Day Fossil Beds National Monument, the Oregon State Historic Preservation Officer, traditionally associated tribes, if appropriate, and/or the Advisory Council on Historic Preservation, if necessary. The memorandum of agreement would stipulate how the adverse effects would be mitigated.

There would be no impairment of the national monument's resources or values because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the

establishing legislation of John Day Fossil Beds National Monument; (2) key to the natural or cultural integrity of the national monument or to opportunities for enjoyment of the national monument; or (3) identified as a goal in the national monument's *General Management Plan* or other relevant National Park Service planning documents.

Cultural Landscapes and Historic Structures

Analysis. In alternative B, the preferred alternative, the National Park Service would continue to follow current management objectives at the Cant Ranch Historic District, preserving the cultural resources associated with the historic district. Resource managers would continue to follow the general guidance for proposed treatments provided in the *Cultural Landscape Report: Cant Ranch Historic District* (Taylor and Gilbert 1996). Many of the recommendations in the cultural landscape report have already been implemented. Recommendations that have not yet been implemented include the reconstruction of the sun sheds that were historically used to protect livestock from the sun. Actions in alternative B would be implemented to increase the visitor experience and interpretation of the historic structures and cultural landscape of the Cant Ranch.

The agricultural fields, the largest character-defining elements of the historic district, would continue to be irrigated. And, in the preferred alternative, sustainable irrigation practices would be considered, such as laser leveling the fields in conjunction with various sustainable methods of irrigation. Such new irrigation methods would be considered as long as these actions would not have an adverse effect on the visual character of the fields. The riparian vegetation along the John Day River would be restored to native vegetation; this would be done in a manner that would not create a visual barrier between the core of the Cant Ranch and the agricultural fields across the river. The *Cultural Landscape Report* would be updated to reflect the work that has been accomplished since 1996 and in order to

provide guidance for the remaining recommendations that have yet to be implemented.

To appropriately preserve and protect national register-listed or national register-eligible historic structures and cultural landscapes, all stabilization, preservation and rehabilitation efforts, as well as daily, cyclical, and seasonal maintenance, would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995). Any materials removed from structures during rehabilitation efforts would be evaluated to determine their value to the monument's museum collections or their value for comparative use in future preservation work at the sites. Stabilization, preservation, and rehabilitation would have no adverse effects upon historic structures or cultural landscapes.

The ranch house could suffer wear and tear from increased visitation. Unstaffed or minimally staffed structures could be more susceptible to vandalism, but continued ranger patrols and visitor education efforts would discourage vandalism. Few, if any, adverse impacts would be anticipated.

Cumulative Impacts. Although the Cant Ranch Historic District retains an overall high level of historic integrity, some alterations have occurred since the 1910 – 1946 period of significance. Some structures have lost original historic fabric due to weathering and other factors, but historic materials have been replaced with compatible in-kind materials whenever possible. Fences have been reconstructed and, in some cases, realigned, but are constructed in a style that is compatible with the historic character of the district.

Several shade trees around the Cant residence have died or have been removed; they have been replaced with nonhistoric tree species. Historically, the shade trees were pollarded (an intensive pruning technique used historically at the Cant Ranch, possibly for firewood or aesthetic reasons). This practice has been discontinued, thus changing the

historic shape and size of the tree canopy. Historic fruit trees in the lower orchard have been lost and the replacement of the trees does not reflect historic orchard practices.

Several areas of the historic district have been altered to improve visitor experience, visitor safety, and monument operations. The historic driveway was expanded in a compatible manner to create parking spaces for visitors. The lawn that was historically maintained immediately around the house has been extended throughout the orchard to provide green picnic spaces for monument visitors. Several sections of the irrigation ditches have been filled in to improve the irrigation system. A maintenance area has been constructed within the historic district; this was carefully placed so it is not visible from the main complex, thus reducing its impact on the visual qualities of the historic district.

These cumulative impacts have adversely affected the integrity of the cultural landscape and historic structures of the Cant Ranch Historic District. However, despite these adverse effects to landscape features, the *Cultural Landscape Report* found that the landscape and associated features “remain largely intact and retain a high level of integrity” (Taylor and Gilbert 1996).

Construction of the new Thomas Condon Paleontology Center across the highway from the Cant Ranch Historic District has had a visual impact on the cultural landscape. The center can be seen by visitors approaching the Cant Ranch along State Highway 19. However, the center is not located within the boundaries of the historic district and has no adverse effects on the landscape’s overall integrity as determined in previous environmental analysis.

As described above, implementation of alternative B would result in no adverse effects to either historic structures or cultural landscapes. This determination in combination with both the adverse and no adverse impacts of other past, present, and reasonably foreseeable future actions, would

result in an adverse cumulative impact. However, alternative B would not contribute to the adverse cumulative impact.

Conclusion. Implementation of alternative B would result in no adverse effects to historic structures and cultural landscapes. Alternative B would also contribute no adverse effects to the overall adverse cumulative impact of other past, present, and reasonably foreseeable actions. Any actions would follow approved standards and guidelines and would enhance NPS preservation objectives for the Cant Ranch Historic District and other potential cultural landscapes.

There would be no impairment of the national monument’s resources or values because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of John Day Fossil Beds National Monument; (2) key to the natural or cultural integrity of John Day Fossil Beds National Monument or to opportunities for enjoyment of John Day Fossil Beds National Monument; or (3) identified as a goal in the *John Day Fossil Beds National Monument General Management Plan* or other relevant NPS planning documents.

VISITOR USE AND EXPERIENCE

Analysis

Visitor Use Patterns. Overall monument visitation would likely increase in this alternative, primarily due to the addition of new recreational and interpretive activities and facilities. Although there are no overnight accommodations proposed within the monument in any of the alternatives, the increase in visitor opportunities and the opening of the mammal quarry would likely draw more visitors; many of these visitors would likely come from farther away. In particular, the opening of the mammal quarry could draw visitors and researchers from outside the region and the country, and would increase visitation at the Clarno Unit.

Visitation to the monument would continue to fluctuate seasonally, rising in the summer and on weekends, and could peak on more weekends or increase in the shoulder seasons. Visitors would likely continue to be primarily residents of the West Coast and especially Oregon.

The addition of new visitor opportunities could disperse visitors and change visitor use patterns in the monument. Altering and redesigning the Painted Hills Overlook, which would accommodate parking for the Carroll Rim Trail, could change visitor use patterns by improving the availability of parking and direct trail access. Visitor access and convenience, especially for RVs, could be improved by Wheeler County's paving of the road to Painted Cove in the Painted Hills Unit; however, this paving could adversely affect some visitors' experience by generating short-term noise and visual intrusions during construction, as well as long-term impacts to visitors who desire a more rural landscape. Collectively, the actions proposed in Alternative B would result in long-term, minor, beneficial impacts to visitor use patterns.

Crowding and Opportunities for Solitude. Some crowding and visitor conflict would continue to occur, especially at popular destinations in the monument; however, crowding and conflict would be reduced through the implementation of a user capacity framework that would enhance visitor experience and protect monument resources.

A high density of visitors and frequent visitor encounters would continue to occur at popular frontcountry destinations, including the Thomas Condon Paleontology Center and the Cant Ranch. The impacts on crowding and opportunities for solitude from future population growth would be managed and mitigated through the user capacity framework.

The formalization of the Geo-Loop Trail could adversely affect opportunities for solitude in the Clarno Unit since it could

increase visitation to the area. However, the addition of new visitor opportunities throughout the monument would help minimize crowding and visitor conflict by dispersing visitors. There would continue to be opportunities for solitude in the remote and less developed areas of the monument, and there would be improvements to visitor experience in the backcountry zone of the Clarno Unit, due to limiting and managing visitor encounters and improving the visual elements of the landscape through trail closure and restoration.

Overall, impacts to crowding and solitude from actions in this alternative would be long-term, beneficial, and of moderate intensity.

Visitor Understanding, Education, and Interpretation. Visitors would continue to get most of their information at the Thomas Condon Paleontology Center, which serves as the monument's visitor center. Many visitors, particularly repeat visitors, would continue to go directly to other destinations in the monument, which could affect their understanding of the monument's primary interpretive themes.

Most educational and interpretive opportunities would continue to be based at the visitor center and at Cant Ranch in the Sheep Rock Unit; however, the opening of the mammal quarry would provide a new and unique educational and interpretive opportunity where visitors could witness and experience an active paleontological excavation site. Providing improved visitor access to the Cant Ranch barn would increase education and interpretive opportunities and improve visitor understanding of the Cant Ranch Historic District.

The monument's program and activities would be better distributed among the other units; this would provide increased opportunities for visitors to come into deeper contact with monument resources. Monument staff would increase programs at the monument for school groups and would continue to conduct outreach by providing

fossil kits and films to area schools. The addition of new trails in the monument would also provide additional opportunities for visitor education and interpretation through wayside exhibits. All of these activities would lead to increased exposure to monument resources and educational programs, which would likely increase visitor enjoyment of and appreciation for these resources.

Collectively, the actions proposed in Alternative B would result in long-term, moderate, beneficial impacts to visitor understanding, education, and interpretation.

Opportunities for Recreational Activities.

Visitors would continue to have the same opportunities as described in Alternative A; however, opportunities for hiking and picnicking would be increased or enhanced. Construction or formalization of the Geo-Loop, Mimulus, and Stegamonster trails would provide new trail opportunities in the Clarno Unit. These new facilities would have a positive impact on visitors that desire longer trails and greater access to the monument's remote areas. New shade structures would be added to the Painted Hills Overlook and the picnic area; these would improve the visitor experience. Scenic driving opportunities would be improved by Wheeler County's paving of the road to Painted Cove, since this would improve convenience and access for RVs. The adverse impacts to visitor experience that would be caused by this road paving are addressed in the visitor use patterns section above. Collectively, the actions proposed in Alternative B would result in long-term, moderate, beneficial impacts on opportunities for recreational activities.

Opportunities for People with Disabilities.

Opportunities for people with disabilities would be greater in alternative B than in Alternative A. New accessible trails and interpretive signs would be added at Cant Ranch, and the monument would construct an accessible trail to the Hancock Tree in the Clarno Unit, if feasible. These actions would increase interpretive and recreational opportunities for people with disabilities.

Limitations and deficiencies of accessible opportunities would still exist, but the actions proposed in Alternative B would result in long-term, minor, beneficial impacts on opportunities for people with disabilities.

Cumulative Impacts

As in Alternative A, the establishment of the Oregon Paleo Lands Institute may result in increased visitation to the Clarno Unit and the Thomas Condon Paleontology Center. This increased visitation could result in long-term, minor, adverse impacts on visitor experience, primarily due to increased crowding and the potential for visitor conflict.

The establishment of the Institute and related visitor use of the monument also could lead to increased visitor understanding of the monument's resources. It could also improve opportunities for education and interpretation at the monument and in the region through collaborative research and programming efforts. Therefore, the institute would have a long-term, moderate, beneficial impact on visitor understanding, education, and interpretation. The impact on visitor use patterns and opportunities for recreational activities would be long-term, beneficial, and of minor intensity.

When the likely effects of implementing the actions in Alternative B are added to the effects of other past, present, and reasonably foreseeable actions outside the monument as described above, there would be a long-term, major, beneficial cumulative impact on visitor understanding, education, and interpretation. Educational and interpretive partnerships forged with the Oregon Paleo Lands Institute would be a factor in this scenario, as would the existence of the Thomas Condon Paleontology Center. Opening and operating the mammal quarry would contribute an appreciable increment to this cumulative impact.

Some long-term, minor, adverse cumulative impacts to crowding and opportunities for solitude could be realized from the effects of increased visitation resulting from the

establishment of the Oregon Paleo Lands Institute, particularly when combined with population growth in the region. Visitor conflict could result in certain areas; however, the effects would be managed through the user capacity framework. The actions proposed in Alternative B would contribute an appreciable increment to this cumulative impact.

The cumulative impact on visitor use patterns and opportunities for recreational activities in the monument would be long-term, beneficial, and of minor intensity because visitors would be better dispersed and visitor opportunities would be increased. The actions proposed in Alternative B would contribute a large part to this cumulative impact.

There would be a long-term, minor, beneficial cumulative impact on opportunities for people with disabilities due to increases in interpretive and visitor opportunities. The actions proposed in Alternative B would contribute a large part to this cumulative impact.

Conclusion

Alternative B would be expected to have a long-term, minor, beneficial impact on visitor use patterns and opportunities for people with disabilities. Impacts on crowding and opportunities for solitude, as well as impacts on opportunities for recreational activities, would be long-term, beneficial, and of moderate intensity. Impacts on visitor understanding, education, and interpretation in this alternative would be long-term, beneficial, and of moderate intensity.

The cumulative impact on visitor understanding, education, and interpretation would be long-term, beneficial, and of major intensity. The actions proposed in Alternative B would contribute an appreciable amount to this cumulative impact. The cumulative impact on visitor use patterns, opportunities for recreational activities, and opportunities for people with disabilities would be long-term, beneficial, and of minor intensity. The actions proposed in Alternative B would

contribute a large part to this cumulative impact.

NATIONAL MONUMENT OPERATIONS

Analysis

As in Alternative A, the physical separation of the monument's three units would continue to pose operational challenges. Monument operations would continue to be based out of the Sheep Rock Unit, with a satellite ranger office located in the Painted Hills Unit. The physical separation of the three units results in inefficiencies for construction and maintenance project management, including staff and equipment mobilization and travel. It also decreases the productivity and increases expenses associated with resource protection and other programmatic activities. Emergency management response time would also continue to be affected.

The current organizational structure, with staffing and operations generally centralized, would continue to function with some inefficiency; however, it seems to be the most sensible organization for NPS management and operations due to the geographic limitations described above.

Different from in Alternative A, the construction and maintenance of new trails and other recreational facilities in this alternative would require additional resources for operations and maintenance, including additional staff. Restoring trails in the Clarno Unit would also require efforts from maintenance and resource management staff, in addition to coordination with Oregon Museum of Science and Industry and other volunteers. Resource improvement efforts, including restoring riparian areas of Bridge Creek and the John Day River, improving the sustainability of the Cant Ranch agricultural fields, and rehabilitating and modifying the Cant Ranch barn, would require additional funding and staff resources.

Opening the mammal quarry would require additional funding for capital construction. Operating the quarry would likely require additional staff time from all divisions. If funding would remain at current levels, this would continue to cause some positions to remain vacant, which would adversely affect the staff's ability to function adequately.

Because of the impacts associated with the actions described above, Alternative B would result in a long-term, moderate, adverse impact on monument operations.

Cumulative Impacts

As in Alternative A, the establishment of the Oregon Paleo Lands Institute could result in increased visitor use of the monument, particularly at the Clarno Unit and the Thomas Condon Paleontology Center. This could result in a need for increased trail and

facility maintenance, which could have both staffing and funding implications.

When the likely effects of Alternative B are added to the effects of other past, present, and reasonably foreseeable actions outside the monument as described above, there would be a long-term, moderate, adverse cumulative impact on monument operations. The actions proposed in Alternative B would contribute a large part to this overall cumulative impact.

Conclusion

Alternative B would be expected to have a long-term, moderate, adverse impact on monument operations. There could be a long-term, moderate, adverse cumulative impact on monument operations (staffing, maintenance, and operational needs) resulting primarily from increased visitation. The actions proposed in Alternative B would contribute a large part to this overall cumulative impact.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE C

NATURAL RESOURCES

Paleontological Resources

Analysis. Many of the new developments or ground-disturbing activities in alternative C—including construction of new shade structures in the Painted Hills picnic area; the redesign of the Painted Hills Overlook; the addition of the picnic area by the paleontology center; construction of a new office/visitor contact station, the Geo-loop trailhead / parking area, and the Indian Canyon Trail in the Clarno Unit; and the development of a restroom and other actions in the Cant Ranch area—would not occur in areas known to be major areas for paleontological resources. To ensure that paleontological resources would not be adversely affected, site-specific surveys would be undertaken before any ground disturbance occurs in areas thought likely to contain fossils.

The actions needed to formalize the existing unofficial Geo-loop, Mimulus, and Stegamonster trails would result in minimal disturbance to the surrounding soils, since the trails already largely exist. With the application of appropriate mitigation measures (e.g., construction activities being monitored by a paleontologist), impacts to paleontological resources would be negligible. Thus, the construction of new facilities in alternative C would be expected to have a negligible, long-term, adverse impact on the monument's paleontological resources.

As in alternative A, in alternative C some fossils might be illegally collected by visitors in the monument. Although Hancock Field Station groups would be in areas with fossils, it is expected that these groups would be controlled by their teachers and their presence would not result in the loss or disturbance of fossils. Students or instructors on college field trips may occasionally remove fossils from the monument. With monument use levels expected to increase in the future, there would be the potential that some illegal

fossil collecting could occur. But there is no reason to expect there would be a noticeable increase in the numbers of fossils being illegally collected—most visitors would stay in developed areas or on trails and would not know where to look for fossils and would not have equipment to extract fossils. Formalizing the Geo-loop, Mimulus and Stegamonster trails would likely result in more people walking in areas that have fossils, but is not expected to noticeably increase fossil theft since the trails already exist. (Indeed, having more people in the area may reduce the likelihood of illegal collecting.) Thus, compared to alternative A, visitor use in alternative C would have the potential for a negligible to minor, long-term, adverse impact on monument's paleontological resources. (Commercial collectors could have a much bigger impact, but this has not been a problem in the past and there is no reason to expect it would increase in this alternative.)

Alternative C would have several beneficial impacts on the monument's paleontological resources. The opening of the Hancock Mammal Quarry would likely produce new fossils and add new information to the body of paleontological knowledge, and thus would result in a long-term, beneficial impact of unknown magnitude. The closure and restoration of human-created unofficial trails in the Clarno Unit, and the closure of the Leaf Hill Trail in the Painted Hills Unit would also reduce the potential for visitors wandering through the areas and collecting fossils, thus resulting in a long-term, beneficial impact.

Cumulative Impacts. Paleontological resources are scattered in rock formations throughout the John Day Basin. Fossils are likely collected on BLM and private lands near the monument, and are likely being lost to natural erosion, although the extent of this loss is unknown. When the likely effects of public use of the monument in this alternative and the beneficial impacts of opening the mammal quarry and closing unofficial trails

are added to the effects outside the monument, there could be a long-term, adverse cumulative impact of unknown magnitude on area fossils. However, the beneficial and adverse effects of alternative C in the monument would likely be a small part of the cumulative impacts on the area's paleontological resources.

Conclusion. Compared to alternative A, alternative C would be expected to have a beneficial impact on paleontological resources, primarily due to opening of the mammal quarry, the restoration of human-caused unofficial trails, and the closure of the Leaf Hill Trail in the Painted Hills Unit. There also would be a long-term, negligible to minor, adverse impact on the monument's paleontological resources due to an increased potential for illegal fossil collecting. There could be a long-term, adverse cumulative impact of unknown magnitude on fossils in the region, although alternative C would add small beneficial and adverse increments to the overall area cumulative impact. This level of impact would not be anticipated to constitute an impairment of the monument's resources or values.

Soils

Analysis. Some soils would be lost to erosion or substantially altered in local areas where ground disturbance occurs due to the development of the Geo-loop trailhead / parking area and Clarno visitor contact station /office. Site preparation and landscaping work would disturb soils in these areas, and soils would be paved over and lost in the footprint of the facilities. Construction equipment also would likely disturb and compact soils in the project areas. No more than a couple acres in the Clarno Unit would be affected by these new facilities. Mitigation efforts, such as installing erosion matting and silt fences, would help reduce the impact on the soils in the areas. The adverse impact on soils would likely be moderate in the localized areas, but the adverse impact due to new developments on the monument's overall soils would be minor and long-term.

Several other actions would occur in areas that have already been disturbed by people; these include the construction of the new Indian Canyon Trail, a new restroom in the Cant Ranch, and a new picnic area by the paleontology center; the redesign of the Painted Hills Overlook and the construction of three shade structures in the picnic area; and the formalizing of several existing unofficial trails. Little additional soil disturbance would be required in these areas, and thus these actions would have a negligible, long-term, adverse impact on soils.

The Cant Ranch agricultural fields would be restored to native grass. Some soil may be lost during the conversion from agricultural use to native vegetation. The adverse impacts of conversion and restoration on the monument's soils would likely be minor and long-term. Over time, the soil resource would be expected to improve, resulting in a beneficial impact.

As in alternative A, maintenance of existing facilities would probably result in some erosion or alteration of soil properties, resulting in a negligible to minor, long-term, adverse impact in localized areas.

Soils in the monument would likely continue to be compacted and eroded by hikers in local areas, such as along the sides of trails. Hancock Field Station students would likely continue to use existing trails and unofficial trails in the Clarno Unit, and would have a negligible to minor impact on soils by causing additional erosion in the monument. In some areas in the monument, new unofficial trails may form with increased visitation, particularly in areas with high visitor numbers. In sloped areas, human-caused, unofficial trails would result in increased soil erosion from stormwater runoff. These long-term, adverse visitor impacts would likely be minor and limited in extent.

Efforts to restore unofficial trails, such as in the Clarno Unit, would help reduce erosion and would result in a long-term, beneficial impact on soils. The new formal trail to the

Hancock Tree and mammal quarry, which would follow a well-traveled unofficial trail, would be built with erosion control measures. This should reduce erosion in this area compared to the present, resulting in a minor to moderate, long-term, beneficial impact.

Instituting and monitoring user capacity indicators and standards also should help ensure that an unacceptable increase in the creation of human-created trails does not occur in the pedestrian, backcountry, and primitive zones. Compared to the no-action alternative, this would result in a moderate, long-term, beneficial impact.

Cumulative Impacts. Soils in most of the area surrounding the monument have been altered by past agricultural practices and developments. In the future, some soils in the area would likely be eroded and lost and some soil properties would likely be altered by agricultural practices and by new private developments in the area. The loss and alteration of soils, due to past land uses and future external actions, likely would result in a minor to moderate, adverse impact on area soils. When these past and future impacts are added to the potential adverse and beneficial effects of alternative C in the monument there would be a long-term, minor to moderate, adverse cumulative impact on area soils. However, the actions in alternative C would contribute a very small increment to the overall impact.

Conclusion. Most of the monument's soils would not be affected by the actions in alternative C. However, some soils would be eroded and lost and some soil properties would be altered due to new developments and increased visitor use in localized areas such as along trails. These adverse impacts would likely be minor and long-term in extent. On the other hand, establishing and monitoring user capacity indicators and standards should help prevent the establishment of new human-created trails and prevent resulting soil erosion: this would have a moderate, long-term, beneficial impact. When the impacts in alternative C are added

to impacts from other past and foreseeable future actions, there would be the potential for a long-term, minor to moderate, adverse cumulative impact on area soils—although the actions in alternative C would add a very small increment to this overall cumulative impact. No impairment to the monument's resources and values would result from soil impacts in this alternative.

Prime and Unique Farmlands

Analysis. In alternative C, the National Park Service would cease irrigating and restore 72 acres of prime farmland in the monument to native vegetation. With the drying of the fields, the National Park Service would lose its water right and would likely never again be able to irrigate the fields—these lands would likely be permanently removed from agricultural production. Given the relatively small amount of prime farmland that would be taken out of production compared to the estimated amount of prime farmland in Grant County (less than 1% of the approximately 14,500 acres of prime farmland that is estimated to be irrigated), this action would result in a negligible, long-term, adverse impact on prime farmlands. It should be pointed out that even though 100% of the prime farmland in the monument would change designation in this alternative, the prime farmlands are not a resource that is fundamental to or part of the monument's purpose and significance.

Although these lands would lose their status as prime farmland if this alternative were implemented, it is important to note that there would be no change to the soil characteristics or properties—if the soils were to be irrigated again, they would once again be classified as prime farmland. It also should be noted that this action would not be considered an unnecessary, irreversible, conversion of prime farmlands to nonagricultural use.

Cumulative Impacts. Approximately 2% of Grant County (about 58,000 acres out of 2.9 million acres) is irrigated (Lorraine Vogt, NRCS District Conservationist, pers. comm., May 14, 2007). It is estimated that roughly

one-quarter of this irrigated land (~14,500 acres) is likely designated as prime farmland (Jamie Kienzle, NRCS Soil Survey Project Leader, pers. comm., May 24, 2007). Given Grant County's distance from urban areas and the relatively low level of new development that has occurred and is expected to occur in the area, it is expected that the prime farmlands in the county would continue in about the same condition as they are now for the foreseeable future. As noted in alternative A, a few actions outside the monument, such as the development of roads and homes, may result in a negligible loss in the acreage of prime farmland. When the negligible adverse effect of alternative C on prime farmlands is added to the likely negligible loss in prime farmlands outside the monument, there would be a very small adverse cumulative impact on prime farmlands in the county in alternative C.

Conclusion. Alternative C would have a negligible, long-term, adverse effect on prime farmlands. When the impacts of alternative C are added to other impacts from past and foreseeable future actions in the county there would be the potential for a very small adverse cumulative impact on prime farmlands. This negligible adverse impact on prime farmlands would not constitute an impairment of the monument's resources and values.

Vegetation

Analysis. As in the other alternatives, vegetation in most areas of the monument would not be affected in alternative C. Some of the new facilities and actions in alternative C would be built within disturbed areas in which the vegetation already has been substantially altered; these actions include the development of the Indian Canyon Trail and Geo-loop trailhead / parking area, redesign of the Painted Hills Overlook and the addition of three shade structures to the picnic area, the formalizing of several unofficial trails, the development of a new picnic area by the paleontology center, the construction of a new restroom in the Cant Ranch, and improvements in the Cant Ranch fields. The opening of the mammal quarry also would

occur in an area that has relatively sparse native vegetation. Therefore, little additional native vegetation would be affected from construction of the facilities in alternative C.

Given previous vegetation disturbance and the use of appropriate mitigation measures (e.g., ensuring that equipment stays within project area boundaries, revegetating disturbed areas, and taking steps to avoid the spread of nonnative plants), the long-term, adverse effects on native vegetation from the new developments would be negligible to minor in localized areas.

Several developments in alternative C would occur in areas that have been relatively undisturbed and have native vegetation. These would include the development of the Butler Basin Trails and the Clarno Unit office/visitor contact station. Construction of these facilities would result in the loss or damage to native vegetation. In addition, visitors using the new picnic area may wander off the site and trample or crush nearby vegetation that is sensitive to disturbance. No more than about 5 acres of vegetation in the Clarno and Sheep Rock Units would be affected by alternative C. Thus, these developments would likely have a minor, adverse, long-term, localized impact on the monument's vegetation.

As in alternatives A and B, most visitors would stay on trails and not affect the monument's native vegetation. Hancock Field Station groups probably would largely stay on trails, but would still trample and crush some plants, resulting in the loss of some additional native vegetation. In addition, with increased use levels over time in the monument, more native vegetation might be adversely affected in local areas due to people wandering off the trails. None of these impacts would affect the integrity, distribution, or presence of native plant communities in the monument. Thus, visitor use would likely continue to have a long-term, negligible to minor, adverse impact on the monument's native vegetation in local areas.

The spread of nonnative plants would continue to be a problem in the monument in alternative C. Areas upstream of the monument with well-established noxious weeds would continue to be a seed source. Seeds would continue to be transported by the John Day River. Vehicles traveling through the monument also would continue to be a potential source of nonnative plant seeds. Increased visitor use in the monument would increase the potential for the spread of nonnative species. Even with education efforts, some nonnative plants could be introduced or spread by visitors (as well as by wind and the river) in the monument. Thus, pockets of nonnative species would continue to be present during the life of this plan.

Continued use of integrated pest measures should help contain the spread of some nonnative species in limited areas. However, it is difficult to determine the impact on native species due to the uncertainties about the type of species that might be introduced in the future, and the locations and frequencies of such introductions. It is likely that, even with continuing monitoring and weed control efforts, these long-term, adverse impacts would be expected to be minor to moderate.

Alternative C would have several beneficial impacts on vegetation. Continuing efforts to conduct prescribed burns and selective cutting would have the same effects as described in alternative A—restoring the monument's vegetation to a fire-dependent vegetative community that is not dominated by juniper. In addition, in alternative C the restoration of unofficial trails in the Clarno Unit, the closure and restoration of the Leaf Hill Trail in the Painted Hills Unit, the restoration of riparian vegetation along Bridge Creek and the John Day River, and the planting of native vegetation in the Painted Hills picnic area would have long-term, beneficial impacts. The addition of lands in the Cathedral Rock area to the monument also would have long-term, beneficial impacts, protecting more native riparian vegetation. Finally, the establishment of user capacity indicators and standards would help prevent

the creation of additional unofficial trails, and thus prevent the loss and disturbance of vegetation in the monument. Taken together, these actions would have a minor to moderate, long-term, beneficial impact on the native vegetation in localized areas.

The restoration of the four fields in the Sheep Rock Unit to native vegetation would be difficult, but would have a long-term, beneficial impact, if in fact native plants can be successfully reestablished. There likely would be additional weeds that would become established and grow in the fields, which would compete with the native vegetation. It is not certain that the native vegetation would be able to out-compete these nonnative plants, even with intensive management efforts to control the spread of the nonnative plants.

Cumulative Impacts. Actions outside the monument would likely continue to affect the area's native vegetation. Over time, most native bunchgrass/sagebrush steppe communities have disappeared or been substantially altered by human activities such as agricultural operations, housing construction, and other developments. New private developments might result in the loss of some additional native vegetation. Thus, in the area around the monument, there have been minor to moderate, adverse impacts to native vegetation.

When the adverse and beneficial impacts of alternative C are added to actions that have occurred and are likely to occur in the area surrounding the monument, there would be a minor to moderate, long-term, adverse cumulative impact on the area's native vegetation. The actions in alternative C would add both a relatively modest beneficial and small adverse increment to this overall impact, given how much change has already occurred to the vegetative communities once present.

Conclusion. Alternative C would result in both beneficial and adverse impacts on the monument's native vegetation. Many of the proposed new developments would occur in

the footprint of areas that have already been disturbed and therefore would have a negligible impact on native vegetation. Some long-term, negligible to minor, adverse impacts would occur to native vegetation in localized areas due to proposed new developments and increased visitor use levels. As in the other alternatives, nonnative plants would continue to have minor to moderate, long-term, adverse impacts on native vegetation. However, efforts to restore riparian vegetation, remove unofficial trails and restore the vegetation, plant native vegetation in the Painted Hills picnic area and in the four fields in the Sheep Rock Unit, add lands in the Cathedral Rock area to the monument, and establish and monitor user capacity indicators and standards would likely have long-term, minor to moderate, beneficial impacts to native vegetation in localized areas.

When the effects of this alternative are added to the effects of other past, present, and foreseeable future actions, there would be a minor to moderate, long-term, adverse cumulative impact on native vegetation. The actions in alternative C would add both small beneficial and adverse increments to this overall cumulative impact. None of the vegetation impacts that would occur in this alternative would be sufficient to result in an impairment of the monument's resources and values.

Wildlife

Analysis. As noted in the "Affected Environment" chapter, the monument's wildlife populations and habitats have been altered over time by people. The human use of the monument is concentrated in developed areas such as picnic areas, on trails and roads, and in the Cant Ranch. Animals sensitive to human activities already avoid these areas when people are present. Wildlife that occupies these developed areas, such as ground squirrels, rabbits, and mice, are mostly adapted to the presence of people and would not be noticeably affected by the actions in alternative C.

As in all of the alternatives, some animals would continue to occasionally be injured or killed by motor vehicles on the monument's roads. Some animals also probably would continue to be attracted to food being offered by people or to areas where food and trash receptacles are present, such as the new picnic area in the Sheep Rock Unit. In addition, Hancock Field Station students also probably affect wildlife populations by their presence in the monument, affecting the behavior of some animals in the Clarno Unit. But the overall adverse effects on wildlife from these activities in alternative C would be the same as those in alternative A: localized and negligible, resulting in no measurable changes to the monument's wildlife populations.

The formalization of several existing unofficial trails, the redesign of the Painted Hills Overlook, the addition of the picnic area by the paleontology center, the construction of the Clarno Unit office/visitor contact station, and facility development within Cant Ranch would occur in areas that have already been disturbed. The new Geo-loop trailhead / parking area also would be near an area with many people (i.e., the Hancock Field Station). Wildlife remaining in these areas have adapted to the presence of people. Although increased noise and human activity during the construction periods could temporarily displace some animals, the impact on wildlife populations and habitats in these areas would be short-term and negligible.

The construction of a trail to Butler Basin in the Sheep Rock Unit would increase the presence of people in this area, both during the construction period and once it is opened to visitors. Relatively few people go into this area now. Some wildlife that is sensitive to people, including cougar and bobcat, may be displaced from this area, at least during the construction period. However, it is expected that there would not be a large increase in the number of people going into this area and most people would stay on the trail. Most animals that are displaced would return to the area or would find other habitat nearby. Overall, the construction and use of the trail

would be expected to have a minor, long-term, adverse impact on wildlife populations in the Butler Basin area.

The opening of the mammal quarry in alternative C would result in the presence of people and equipment in this area for long periods of time. Some wildlife, such as ground squirrels, mice and rabbits, would be displaced from this area. As a result, there would likely be a negligible to minor, long-term, adverse impact on wildlife populations in this localized area.

Continued efforts to restore native bunchgrass/sagebrush steppe communities in alternative C would have the same beneficial and adverse impacts on wildlife populations as described in alternative A. In addition, in alternative C, efforts would be undertaken to restore the riparian vegetation along Bridge Creek and the John Day River, and restore native vegetation in the four fields in the Cant Ranch. Depending upon the extent and nature of the restoration efforts, these actions could expand habitat for native wildlife and have a long-term, beneficial impact on wildlife populations, such as raccoon, beaver, belted kingfisher, violet-green swallow, and yellow warbler. Likewise, the closure and restoration of unofficial trails in the Clarno Unit and the Leaf Hill Trail in the Painted Hills Unit would mean more habitat and fewer people in these areas; these changes in turn would benefit native wildlife populations that are sensitive to the presence of people.

The addition of lands in the Cathedral Rock area to the monument would eliminate grazing and would provide additional protection to wildlife riparian habitat in this area, benefiting species such as river otter, salmon, mink, and osprey. Thus there would be a long-term, beneficial impact on wildlife populations in this area.

Cumulative Impacts. Like vegetation, most wildlife populations surrounding the monument have been substantially altered by human activities, including farming and ranching; this has resulted in fewer numbers

of some native species such as sage grouse and American badger. Fire suppression activities, efforts to control predators, and hunting also have affected and continue to affect wildlife populations in the area. Thus, actions outside John Day Fossil Beds National Monument have had a minor to moderate, adverse impact on native wildlife. No current or reasonably foreseeable actions are likely to change this.

When the beneficial and adverse impacts of alternative C are added to the impacts that have occurred and are likely to occur in the vicinity of the monument, there would be a long-term, minor to moderate, adverse cumulative impact on the area's wildlife populations and habitats. However, alternative C would contribute a very small adverse increment to this overall cumulative impact, as well as a small beneficial increment by continuing to provide an area where wildlife habitat continues to be managed and protected.

Conclusion. Alternative C would have both adverse and beneficial impacts on the monument's wildlife populations and habitats. Most wildlife populations and habitats in the monument would not change as a result of the actions in this alternative. No actions would affect areas known to be key migration routes or important for breeding, nesting, or foraging. No actions would interfere with feeding, reproduction, or other activities necessary for the survival of wildlife species. Negligible to minor, long-term, adverse impacts would continue to occur in localized areas due to continuing visitor use of the monument and to the loss of some habitat due to new development. The development of the Butler Basin Trail could have a minor, long-term, adverse impact on wildlife populations in this area. On the other hand, there would be long-term, beneficial impacts on some wildlife populations due to vegetation restoration efforts, the addition of the Cathedral Rock area to the monument, and the closure of unofficial trails in the Clarno Unit and the Leaf Hill Trail in the Painted Hills Unit. When the beneficial and adverse impacts of alternative C are added to the past, present,

and future impacts in the vicinity of John Day Fossil Beds National Monument, there would be a long-term, minor to moderate, adverse cumulative impact on the area's wildlife populations and habitats. However, the actions in alternative C would contribute only a small beneficial increment and a very small adverse increment to this impact. None of the wildlife impacts resulting from alternative C would constitute an impairment of the monument's resources and values.

CULTURAL RESOURCES

Archeological Resources

Analysis. Archeological resources adjacent to or easily accessible from trails, roads, picnic areas, and permitted off-trail hiking areas, could be vulnerable to surface disturbance, inadvertent damage, and vandalism.

Deterioration of cultural remains could result from a loss of surface archeological materials, alteration of artifact distribution, or a reduction of contextual evidence. However, continued ranger patrols and visitor education efforts would discourage vandalism and inadvertent destruction of cultural remains; any adverse impacts would be expected to be minimal.

As appropriate, archeological surveys and/or monitoring would precede any ground disturbance associated with trail maintenance and the closure and revegetation of social trails. Archeological surveys would also precede new construction. That construction would include a new trail up Indian Canyon in the Clarno Unit and a new trail in the Sheep Rock Unit—the Butler Basin Trail—that would go from the Thomas Condon Paleontology Center westward to an overlook. Other construction would include new structures for shade, new parking accommodations, a new picnic area at the Thomas Condon Paleontology Center, possibly paving the road to Painted Cove in the Painted Hills Unit, and a trail that would be made accessible for people with disabilities at the mammal quarry in the Clarno Unit. The opening of the mammal quarry would include

constructing a perimeter fence for resource security. New public restrooms would be constructed outside of the Cant Ranch house.

Important archeological resources would be avoided to the greatest extent possible, and no adverse effects would be anticipated. In the unlikely event that such resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the Oregon State Historic Preservation Officer and, if appropriate, with the traditionally associated tribes.

Cumulative Impacts. Past development in the monument, such as trails, roads, and visitor and research facilities, may have resulted in the disturbance and loss of some archeological resources during excavation and construction activities. In addition, agricultural, ranching, and gold-mining practices, as well as the development of towns in the area, such as John Day, Mount Vernon, Dayville, Kimberly, Mitchell, Fossil, and Prineville, may also have adversely disturbed archeological resources. Some of these types of activities continue, such as the fast growth and expansion of urban areas like Bend, Oregon, and Boise, Idaho. These population increases could result in future adverse impacts to archeological resources in the greater region. As described above, implementation of alternative C could potentially disturb archeological resources at the national monument—resulting in adverse effects. Any adverse impacts associated with the implementation of the alternative, in combination with the impacts of other past, present, and reasonably foreseeable future actions, would result in adverse cumulative impacts. However, alternative C would be expected to contribute only minimally, if at all, to the adverse cumulative impacts. Thus, any adverse impacts to archeological resources resulting from implementation of alternative C would be a very small component of the adverse cumulative impact.

Conclusion. Management actions in alternative C would involve new construction, but no adverse impacts to archeological

resources would be anticipated. In the unlikely event that impacts to national register-eligible archeological resources could not be avoided, a memorandum of agreement, in accordance with 36 CFR Part 800.6, *Resolution of Adverse Effects*, would be negotiated. It would be between or among John Day Fossil Beds National Monument, the Oregon State Historic Preservation Officer, traditionally associated tribes, if appropriate, and/or the Advisory Council on Historic Preservation, if necessary. The memorandum of agreement would stipulate how the adverse effects would be mitigated.

However, the level of management actions in alternative C would be expected to contribute no adverse impacts to the adverse impacts of other past, present, and reasonably foreseeable actions occurring both within and outside the national monument. The overall cumulative impact would remain adverse.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of John Day Fossil Beds National Monument; (2) key to the natural or cultural integrity of the national monument or to opportunities for enjoyment of the national monument; or (3) identified as a goal in the national monument's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of the national monument's resources or values.

Cultural Landscapes and Historic Structures

Analysis. In alternative C, resource managers would continue to follow the general guidance for proposed treatments provided in the *Cultural Landscape Report: Cant Ranch Historic District* (Taylor and Gilbert 1996). Many of the recommendations in the cultural landscape report have already been implemented. The cultural landscape report would be updated to reflect the work that has been accomplished since 1996 and to provide guidance for the remaining recommendations that have yet to be implemented.

In this alternative, the agricultural fields would no longer be irrigated and crops would be replaced with native vegetation. Replacement of the crops with native vegetation would result in some losses: the loss of the agricultural setting of the Cant Ranch; the loss of the contrast of the green, irrigated fields against the muted backdrop of the surrounding arid hillsides; the loss of the ability to interpret the scale of the Cant Ranch operation; and the loss of a prominent historic land use associated with the Cant Ranch. Ending irrigation of the agricultural fields and replacing the crops with native vegetation would result in a loss of integrity of approximately 75 acres of the 200-acre historic district, which would adversely affect the Cant Ranch Historic District.

New construction would include new stand-alone restroom facilities within the historic district. Following appropriate compliance, the new restrooms and trail would be expected to have no adverse effect to the historic district. Careful design would ensure that the restroom facilities would minimally affect the scale and visual relationships among landscape features. In addition, the topography, vegetation, and land use patterns of the historic district would remain largely unaltered by the construction. No adverse impacts would be anticipated.

To appropriately preserve and protect national register-listed or national register-eligible historic structures and cultural landscapes, all stabilization, preservation, and rehabilitation efforts, as well as daily, cyclical, and seasonal maintenance, would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995). Any materials removed from structures during rehabilitation efforts would be evaluated to determine their value to the monument's museum collections and their value for comparative use in future preservation work at the sites. Stabilization, preservation, and rehabilitation would have no adverse effects upon historic structures or cultural landscapes.

The ranch house could suffer wear and tear from increased visitation, but monitoring the carrying capacity of the historic structure could result in the imposition of visitation levels or constraints that would contribute to the stability or integrity of the resource without unduly hindering interpretation for visitors. Unstaffed or minimally staffed structures could be more susceptible to vandalism, but continued ranger patrols and visitor education efforts would discourage vandalism. Few, if any, adverse impacts would be anticipated.

Cumulative Impacts. Although the Cant Ranch Historic District retains an overall high level of historic integrity, some alterations have occurred since the 1910–1946 period of significance. Some structures have lost original historic fabric due to weathering and other factors, but historic materials have been replaced with compatible in-kind materials whenever possible. Fences have been reconstructed and in some cases realigned, but have been constructed in a style that is compatible with the historic character of the district. Several shade trees around the Cant residence have died or have been removed; they have been replaced with nonhistoric tree species. Historically, the shade trees were pollarded (an intensive pruning technique used historically at the Cant Ranch, possibly for firewood or aesthetic reasons), a practice that has been discontinued, thus changing the historic shape and size of the tree canopy. Historic fruit trees in the lower orchard have been lost and the replacement of the trees does not reflect historic orchard practices.

Several areas of the historic district have been altered to improve visitor experience, visitor safety, and monument operations. The historic driveway was expanded in a compatible manner to create parking spaces for visitors. The lawn that was historically maintained immediately around the house has been extended throughout the orchard to provide green picnic spaces for monument visitors. Several sections of the irrigation ditches have been filled in to improve the irrigation system. A maintenance area has

been constructed within the historic district; this was carefully placed so it is not visible from the main complex, thus reducing its impact on the visual qualities of the historic district.

These cumulative impacts have adversely affected the integrity of the cultural landscape and historic structures of the Cant Ranch Historic District. However, despite these adverse effects to landscape features, the cultural landscape report found that the landscape and associated features “remain largely intact and retain a high level of integrity” (Taylor and Gilbert 1996).

Construction of the new Thomas Condon Paleontology Center across the highway from the Cant Ranch Historic District has had a visual impact on the cultural landscape. The center can be seen by visitors approaching Cant Ranch along State Highway 19. However, the center is not located within the boundaries of the Cant Ranch Historic District and has no adverse effects on the landscape’s overall integrity.

As described above, the potential impacts associated with implementation of alternative C would result in both no adverse effects and adverse effects to the monument’s historic structures and cultural landscapes. The adverse impacts of alternative C, in combination with the adverse impacts of other past, present, and reasonably foreseeable future actions, would result in an adverse cumulative impact. The adverse impacts of alternative C would be a large component of the adverse cumulative impact.

Conclusion. After applying the Advisory Council on Historic Preservation’s criteria of adverse effect (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative C would result in an a significant adverse effect that would compromise the integrity of the existing national register historic district. However, because the adverse effect would not impact a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing

legislation of John Day Fossil Beds National Monument; (2) key to the overall natural or cultural integrity of John Day Fossil Beds National Monument or to opportunities for enjoyment of John Day Fossil Beds National Monument; or (3) identified as a goal in the *John Day Fossil Beds National Monument General Management Plan* or other relevant NPS planning documents, there would be no impairment of John Day Fossil Beds National Monument's resources or values.

VISITOR USE AND EXPERIENCE

Analysis

Visitor Use Patterns. As in Alternative B, overall monument visitation would likely increase in this alternative, primarily due to the addition of new recreational and interpretive activities and facilities. The increase would likely be greater in this alternative than in Alternative B. As in Alternative B, the opening of the mammal quarry would have an impact on visitor use patterns in the monument. Alternative C also includes the addition of new restrooms at Cant Ranch and the creation of a new picnic area at the Thomas Condon Paleontology Center, both of which could change visitor use patterns by dispersing visitors and influencing their time and activities.

Altering and redesigning the Painted Hills Overlook, which would accommodate parking for the Carroll Rim trailhead, could change visitor use patterns by improving the availability of parking and direct trail access. Visitor access and convenience, especially for RVs, could be improved by Wheeler County's paving of the road to Painted Cove in the Painted Hills unit; however, it could adversely affect some visitors' experience by generating short-term noise and visual intrusions during construction, as well as long-term impacts to visitors who desire a more rural landscape character. Collectively, the actions proposed in Alternative C would result in long-term, minor, beneficial impacts to visitor use patterns.

Crowding and Opportunities for Solitude.

As in Alternative B, crowding and visitor conflict would be managed and mitigated through the implementation of a user capacity framework that would enhance visitor experience and protect monument resources. Some crowding and visitor conflict would continue to occur at popular frontcountry destinations. The creation of new trail opportunities in areas that previously would have been more remote and less visited would reduce opportunities for those visitors who seek out solitude; however, these new trails would provide experiences consistent with that of a backcountry setting. The addition of new visitor opportunities throughout the monument would help minimize crowding and visitor conflict by dispersing visitors. There would continue to be opportunities for solitude in the remote and less developed areas of the monument. Overall, impacts on crowding and solitude from actions in this alternative would be long-term, beneficial, and of moderate intensity.

Visitor Understanding, Education, and Interpretation. Visitors would continue to get most of their information at the Thomas Condon Paleontology Center, which serves as the monument's visitor center; however, the addition of a new office/visitor contact station in the Clarno Unit would improve the availability of information and opportunities for visitors to access monument staff. Many visitors, particularly repeat visitors, would continue to go directly to other destinations in the monument, which could affect their understanding of the monument's primary interpretive themes.

As in Alternative B, opening the mammal quarry, adding new interpretive trails, and enhancing visitor access to the Cant Ranch barn would all increase the monument's ability to inform and educate visitors. However, this alternative contains more opportunities to inform visitors and engage them in interpretation through additional trails and wayside exhibits, a new visitor contact station in the Clarno Unit, and special educational opportunities associated with

restoring natural landscapes (Painted Hills picnic area and the Cant Ranch agricultural fields). Overall, the monument's educational and interpretive programs and activities would be better distributed among the other units in this alternative. Collectively, the actions proposed in Alternative C would result in long-term, moderate, beneficial impacts to visitor understanding, education, and interpretation.

Opportunities for Recreational Activities.

Visitors would continue to have the same opportunities as described in Alternatives A and B; however, opportunities for hiking and picnicking would be increased or enhanced in this alternative. Opportunities for long distance hiking would be even greater than in Alternative B due to the addition of the Indian Canyon and Butler Basin Trails. These changes would have a positive impact on visitors who desire longer trails and greater access to the monument's remote areas. Closure of the Leaf Hill Trail in the Painted Hills unit in Alternative C would reduce hiking and fossil viewing opportunities in that unit, although the overall impact would be minor.

New facilities would be constructed to improve visitor comfort and convenience. In Alternative C, a new restroom facility would be added at Cant Ranch in order to provide visitors with access to restrooms outside of normal business hours. A new picnic area would also be added at the visitor center. Both of these actions would improve the visitor experience associated with these locations.

As in Alternative B, scenic driving opportunities would be improved by Wheeler County's paving of the road to Painted Cove, due to improved convenience and access for RVs. The adverse impacts to visitor experience that would be caused by this road paving are addressed in the visitor use patterns section above.

Collectively, the actions proposed in Alternative C would result in long-term,

moderate, beneficial impacts on opportunities for recreational activities.

Opportunities for People with Disabilities.

Opportunities for people with disabilities would be greater in alternative C than in alternatives A and B. New accessible restrooms would be added to Cant Ranch and an accessible picnic area would be added at the visitor center. These additional actions would increase recreational opportunities and visitor amenities for people with disabilities. Overall, this alternative contains the greatest increase in opportunities for people with disabilities. Limitations and deficiencies of accessible opportunities would still exist in the monument, but the actions proposed in Alternative C would result in long-term, moderate, beneficial impacts on opportunities for people with disabilities.

Cumulative Impacts

As in alternatives A and B, the establishment of the Oregon Paleo Lands Institute may result in increased visitation to the Clarno Unit and the Thomas Condon Paleontology Center. This increased visitation could result in adverse impacts on visitor experience, primarily due to increased crowding and the potential for visitor conflict.

The establishment of the Institute, and related visitor use of the monument, also could lead to increased visitor understanding of the monument's resources. It could also improve opportunities for education and interpretation at the monument and in the region through collaborative research and programming efforts. Therefore, the Institute would have a long-term, moderate, beneficial impact on visitor understanding, education, and interpretation. The impact on visitor use patterns and opportunities for recreational activities would be long-term, beneficial, and of minor intensity. There would be no impact on opportunities for people with disabilities.

When the likely effects of implementing the actions contained in Alternative C are added to the effects of other past, present, and reasonably foreseeable actions outside the

monument as described above, there would be a long-term, major, beneficial cumulative impact on visitor understanding, education, and interpretation. Educational and interpretive partnerships forged with the Oregon Paleo Lands Institute would be a factor in this scenario, as would the existence of the Thomas Condon Paleontology Center. Opening and operating the mammal quarry would contribute an appreciable increment to this cumulative impact.

Some long-term, minor, adverse cumulative impacts to crowding and opportunities for solitude could be realized from the effects of increased visitation resulting from the establishment of the Oregon Paleo Lands Institute, particularly when combined with population growth in the region. Visitor conflict could occur in certain areas; however, the effects would be managed through the user capacity framework. When combined with other actions contained in Alternative C, the overall cumulative impact on crowding and opportunities for solitude would be long-term, beneficial, and of minor intensity. The actions proposed in Alternative C would contribute an appreciable increment to this cumulative impact.

The cumulative impact on visitor use patterns and opportunities for recreational activities in the monument would be long-term, beneficial, and of minor intensity because visitor use would be better dispersed and visitor opportunities would be increased. The actions proposed in Alternative C would contribute a large part to this cumulative impact.

There would be a long-term, moderate, beneficial cumulative impact on opportunities for people with disabilities due to increases in interpretive and visitor opportunities. The actions proposed in Alternative C would represent all contributions to this cumulative impact.

Conclusion

Alternative C would be expected to have a long-term, minor, beneficial impact on visitor

use patterns. Impacts on crowding and opportunities for solitude; opportunities for recreational activities; visitor understanding, education, and interpretation; and opportunities for people with disabilities would be long-term, beneficial, and of moderate intensity.

There could be long-term, minor, beneficial cumulative impacts on visitor use patterns, crowding and opportunities for solitude, and opportunities for recreational activities. The actions proposed in Alternative C would contribute an appreciable increment to this cumulative impact. The cumulative impact on visitor understanding, education, and interpretation would be long-term, beneficial, and of major intensity. The actions proposed in Alternative C would contribute an appreciable increment to this cumulative impact. The cumulative impact on opportunities for people with disabilities would be long-term, beneficial, and of moderate intensity. The actions proposed in Alternative C would represent all contributions to this cumulative impact.

NATIONAL MONUMENT OPERATIONS

Analysis

As in Alternatives A and B, the physical separation of the monument's three units would continue to pose operational challenges. Monument operations would continue to be based out of the Sheep Rock Unit, with a satellite ranger office located in the Painted Hills Unit. The physical separation of the three units results in inefficiencies for construction and maintenance project management, including staff and equipment mobilization and travel. It also decreases the productivity and increases expenses associated with resource protection and other programmatic activities. Emergency management response time would also continue to be affected.

Different from the two other alternatives, Alternative C would establish a new ranger

office/visitor contact station in the Clarno Unit. This would improve operational efficiency and response time for emergencies and resource protection activities, but it would require staff time for construction management and would add new facility maintenance requirements.

As in Alternative B, the construction and maintenance of new trails and other recreational facilities would require additional resources for operations and maintenance, including additional staff. In addition to all of the new facilities proposed in Alternative B, Alternative C would add an additional five miles of hiking trails, a new restroom facility, a new picnic area, and would restore a small picnic area and many acres of agricultural fields to native vegetation. In comparison to Alternative B, these actions would have a greater adverse impact on monument operations (staffing, funding, equipment, maintenance, etc.). By discontinuing irrigation of the agricultural fields at Cant Ranch, the National Park Service would lose its associated water rights, a permanent and irreversible impact with legal implications.

As in Alternative B, opening the mammal quarry would likely require additional funding and staff increases for all divisions. If funding would remain at current levels, this would continue to cause some positions to remain vacant, which would adversely affect the staff's ability to function adequately.

Because of the impacts associated with the actions described above, alternative C would result in a long-term, moderate, adverse impact on monument operations.

Cumulative Impacts

As in Alternatives A and B, the establishment of the Oregon Paleo Lands Institute could result in increased visitor use of the monument, particularly at the Clarno Unit and the Thomas Condon Paleontology Center. This could result in increased trail and facility maintenance, which could have both staffing and funding implications.

When the likely effects of Alternative C are added to the effects of other past, present, and reasonably foreseeable actions outside the monument as described above, there would be a long-term, moderate, adverse cumulative impact on monument operations. The actions proposed in Alternative C would contribute a large part to this overall cumulative impact.

Conclusion

Alternative C would be expected to have a long-term, moderate, adverse impact on monument operations. There would be a long-term, moderate, adverse cumulative impact on monument operations (staffing, maintenance, and operational needs) resulting primarily from increased visitation. The actions proposed in Alternative C would contribute a large part to this overall cumulative impact.



Blue Basin, Sheep Rock Unit



Painted Hills Unit



Clarno Arch, Clarno Unit



CHAPTER 5 Consultation / Coordination

PUBLIC AND AGENCY INVOLVEMENT

The *Draft General Management Plan / Environmental Assessment for John Day Fossil Beds National Monument* represents the thoughts and professional judgment of NPS staff and the public. Consultation and coordination among the agencies and the public were vitally important throughout the planning process. The public had three primary avenues for participation in the development of the plan: participate in public meetings, respond to newsletters, and review and comment on the draft plan.

PUBLIC MEETINGS AND NEWSLETTERS

Public meetings and newsletters were used to keep the public informed and involved in the planning process. A mailing list was compiled that consisted of members of government agencies, organizations, businesses, legislators, local governments, and interested citizens.

The notice of intent to prepare an environmental impact statement was published in the *Federal Register* on September 24, 2004. The notice that the project had received a waiver for preparing an environmental impact assessment and approval to prepare an environmental assessment was published in the *Federal Register* on April 6, 2007.

The first newsletter, issued in December 2004, described the planning effort. Public meetings were held during December 2004 in John Day (December 6) and Fossil (December 7); total attendance was about 30 people. The National Park Service received comments in the meetings and through other venues in response to the first newsletter. A total of nine written comments were received in response to the December 2004 newsletter. These comments were considered and incorporated into the issues for the plan.

A second newsletter, distributed in February 2006, described preliminary alternatives for managing John Day Fossil Beds National Monument. Public meetings were held during March 2006 in Fossil (March 6), Dayville (March 7), and John Day (March 8); total attendance was about 30 people. The planning team also met with representatives from the Bureau of Land Management (Prineville District) on March 7, 2006. The National Park Service received comments during the meetings and received 37 written comments in response to the February 2006 newsletter. The majority of respondents stated that the range of alternatives was appropriate. Most people and organizations did not identify a preference for one alternative. Of those who did, alternative B received the most support. Numerous individuals and organizations expressed a preference for a combination of the alternatives.

CONSULTATION WITH OTHER AGENCIES, OFFICIALS, AND ORGANIZATIONS (TO DATE)

Section 7 Consultation

During the preparation of this plan, NPS staff consulted informally with the U.S. Fish and Wildlife Service's (USFWS) Oregon Field Office. A list of threatened and endangered species for Grant and Wheeler counties was received from the U.S. Fish and Wildlife Service and is included in Appendix C. The NPS planning team also consulted informally with the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service.

In accordance with the Endangered Species Act and relevant regulations in 50 CFR Part 402, the National Park Service determined that the management plan is not likely to adversely affect any federally threatened or endangered species and sent a copy of the *Draft General Management Plan* to the U.S.

Fish and Wildlife Service with a request for written concurrence with that determination.

In addition, the National Park Service has committed to consult on future actions conducted under the framework described in this management plan to ensure that such actions are not likely to adversely affect threatened or endangered species.

Section 106 Consultation

Federal agencies that have direct or indirect jurisdiction over historic properties are required by Section 106 of the National Historic Preservation Act (NHPA), as amended (16 USC 270, et seq.), to take into account the effect of their undertakings on properties either listed in or eligible for listing in the National Register of Historic Places. To meet the requirements of 36 CFR 800 (regulations of the Advisory Council on Historic Preservation implementing Section 106), the National Park Service sent a letter to the Oregon State Historic Preservation Officer on December 13, 2004, inviting the office to participate in the planning process. This office also was sent both newsletters.

Under the terms of stipulation VI.E of the 1995 programmatic agreement among the National Park Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers, the National Park Service,

“...in consultation with the SHPO [state historic preservation office], will make a determination about which undertakings are programmatic exclusions under IV.A and B, and for all other undertakings, whether there is sufficient information about resources and potential effects on those resources to seek review and comment under 36 CFR 800.4-6 during the plan review process.”

Consultation with American Indians

The National Park Service recognizes that indigenous peoples may well have traditional and contemporary interests and ongoing

rights in lands now under National Park Service management, as well as concerns and contributions to make for the future via the scoping process for general management plans and other projects. Related to tribal sovereignty, the need for government-to-government Native American consultations stems from the historic power of Congress to make treaties with American Indian tribes as sovereign nations. Consultations with American Indians and other Native Americans, such as Alaska Natives and Native Hawaiians, are required by various federal laws, executive orders, regulations, and policies. For example, such consultations are needed to comply with Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended. Implementing regulations of the Council on Environmental Quality (CEQ) for the National Environmental Policy Act of 1969), as amended (NEPA), also call for Native American consultations.

On December 13, 2004, Jim Hammett, national monument superintendent, sent letters of invitation to the chairpersons of the governments of the American Indian tribes traditionally associated with John Day Fossil Beds National Monument: Barbara Sam of the Burns Paiute Tribe, Antone Minthorn of the Confederated Tribes of the Umatilla Indian Reservation, and Ron Suppah of Confederated Tribes of the Warm Springs Reservation Tribal Council (see appendix C). Each was invited to meet at his or her convenience, at a tribally selected place such as the headquarters of the tribe. The purpose of the meeting was to discuss the general management planning process underway and any concerns the tribal government, on behalf of the members of the tribe, might have about protecting, preserving, and managing John Day Fossil Beds National Monument’s cultural and natural resources. The superintendent has received no replies to this invitation, but that is not unusual. The solid relationship existing between the superintendent and his staff and the officers of each tribe includes the understanding that a tribe will contact

the national monument when there is a particular concern but normally not otherwise. The national monument respects tribal sovereignty and the fact that tribes decide their own priorities and ways of doing business. The national monument has worked well with the tribes in the past when issues of concern have materialized.

The rights, privileges, concerns, and interests of the national monument’s American Indian neighbors are very important to consider; it is equally important to work out mutually acceptable arrangements on particular issues. The tribes have been kept fully informed throughout the planning process and have been sent all newsletters and copies of the draft general management plan. Although the tribes have

not initiated further contact, the superintendent stands ready to respond now and in the future for consultation on any features of the plan or on any other possible issues that might be of tribal concern.

FUTURE COMPLIANCE REQUIREMENTS

In the following table the specific future compliance requirements of the preferred alternative are listed. Included are the NPS determinations of how those individual requirements relate to the 1995 programmatic agreement in relation to cultural resources.

Table 16: Future Compliance Required for Implementation of Specific Actions

Action	Compliance Requirement
<ul style="list-style-type: none"> • Routinely monitoring and stabilizing archeological sites. • Monitoring cultural landscapes and historic structures to protect, preserve, maintain, and research them. 	<p>These items are programmatically excluded from future Section 106 review and SHPO consultation in accordance with the 1995 Programmatic Agreement among the National Park Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers.</p>
<ul style="list-style-type: none"> • Ground disturbing activities for new trails, the formalization of existing social trails, for parking lot development, and for visitor facilities like new shade structures. • Rehabilitation of historic structures for adaptive reuse like the Cant Ranch barn. • If eligible for the National Register of Historic Places, discovery of archeological sites that cannot be avoided via survey of new trails or formalization of existing trails. 	<p>Future Section 106 review and SHPO consultation would likely be necessary and required before construction at the project implementation planning or design stages.</p>

**PUBLIC OFFICIALS, AGENCIES, ORGANIZATIONS, AND INDIVIDUALS
RECEIVING A COPY OF THIS DOCUMENT**

FEDERAL AGENCIES

Advisory Council on Historic Preservation
Agricultural Stabilization and Conservation
Service
Bureau of Land Management
 Blue Mountain District
 Burns District Office
 Prineville District Office
Coulee Dam NRA
National Marine Fisheries Service
National Park Service
 Columbia Cascades Support Office
 Fort Vancouver NHS
 Intermountain Support Office
 Pacific West Region
 Natural Resources Program, Wash., D.C.
 Oregon National Historic District
 Whitman Mission NHS
Natural Resources Conservation Service
Smithsonian Institution
U.S. Fish and Wildlife Service (Oregon Field
Office)
U.S. Forest Service
 Malheur National Forest
 Prairie City District
 Ochoco National Forest
U.S. Geological Survey, Western District
Branch

**U.S. SENATORS AND
REPRESENTATIVES**

Honorable Gordon H. Smith, U.S. Senator
Honorable Ron Wyden, U.S. Senator
Honorable Greg Walden, U.S. Rep.

STATE ELECTED OFFICIALS

Honorable Ted Ferrioli, Oregon Senator
Honorable John H. Dallum, Oregon Rep.

STATE AGENCIES

Office of the Governor
Oregon Department of Environmental
Quality
Oregon Department of Fish & Wildlife
Oregon Department of Agriculture, Natural
Resources Division
Oregon Department of State Lands
Oregon Parks and Recreation Department
Oregon State Historic Preservation Office
Oregon State Parks
Oregon Tourism Commission
Oregon Water Resource Division

**AMERICAN INDIAN TRIBES AND
ORGANIZATIONS**

Burns Paiute Tribe, General Council
Confederated Tribes of the Umatilla Indian
Reservation
Confederated Tribes of the Warm Springs
Reservation, Tribal Council
Pine Creek Conservation Area

**LOCAL AND REGIONAL
GOVERNMENTS**

Dayville School
District 4 Watermaster
District 21 Watermaster
Education Service District of Grant County
Grant County Judge
Mitchell School
Monument School
Monument Soil & Water Conservation
District

COLLEGES & UNIVERSITIES

Kenyon College
Lewis & Clark College
Loma Linda University

South Dakota School of Mines &
Technology, Museum of Geology
University of California, Berkeley
University of California, Riverside
University of Florida, Florida Museum
of Natural History
University of Florida, Dept. of Natural
Sciences
University of Oregon, Dept. of Geology
University of South Carolina, Dept. of
Natural Sciences
University of Washington, Burke Museum
Western Oregon University, Dept. of Earth
and Planetary Sciences

ORGANIZATIONS AND BUSINESSES

Audubon Society of Portland
Blue Mountain Biodiversity Project
Bridge Creek / Cherry Creek Ranch
Central Oregon Audubon
Columbia Power Co-Op
Crater Lake Institute
Earth Share of Oregon
Fossil Mercantile
Friends of Rudio Mountain, Inc.
Geological Society of America
Grant County Chamber of Commerce
Grant County Historical Museum
High Desert Museum
Humphreys Ranch
Idaho Museum of Natural History
John Day Senior Citizen's Community
Center
Johnny Creek
Kimberly Center
Longview Ranch
Mt. Bachelor Educational Center
National Wildlife Federation
Native Plant Society
Natural History Museum, Los Angeles
County
North Central Tourism Council
Northwest Environmental Defense Center
ODE – Public Service Building
Oregon Environmental Council
Oregon Hunters' Association
Oregon Museum of Science & Industry
Hancock Field Station
Oregon Natural Desert Association

Oregon Natural Resources Council
Oregon Paleo Lands Institute
Pacific Rivers Council
Rattlesnake Creek Ranch
S Bar S Ranch
Sierra Club
Juniper Group
Portland
Silver Ranch
Society of Vertebrate Paleontology
South Fork Mini Mart
Sumpter Merchant's Committee
The Nature Conservancy, Oregon
Tri-Creek Ranch
Trout Unlimited, Blue Mountain Chapter
Water Watch of Oregon
Wheeler County Farm Bureau

LIBRARIES

Central Oregon Community College Library
Fossil Public Library
Grant County Library
Oregon State University Valley Library
University of Oregon Knight Library

MEDIA

Baker City Herald
Blue Mountain Eagle
Burns Time Herald
Central Oregonian
East Oregonian
KJDY Radio Station
Record-Courier
The Bulletin
The Times Journal

INDIVIDUALS

Barry Albright
Mel Ashwell
Jim Baichtal
Jim & Charlotte Barker
Tony & Liz Barnosky
Kerma Berry
Erick Bestland
Ellen Morris Bishop

CHAPTER 5: CONSULTATION AND COORDINATION

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