

Sport Hunting

Decision Document Package

**Wahlake Unit Of The
Hanford Reach National Monument**

Sport Hunting

Decision Document Package

Hanford Reach National Monument

May 2007

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May 2007

Hanford Reach National Monument • Sport Hunting Opening Package

Reader's Guide

This important background information needs to first be understood in order to comprehend the timing, content and need for this document.

The Fund For Animals et al. v. Dale Hall [FWS] et al.

As a result of a Fund For Animals lawsuit against the U.S. Fish and Wildlife Service (FWS) alleging noncompliance with the National Environmental Policy Act (NEPA) in opening thirty-seven national wildlife refuges to hunting, the U.S. District Court for the District of Columbia granted the plaintiff's motion for summary judgment (August 31, 2006), agreeing that the FWS did not adequately consider the cumulative impacts of opening those refuges to hunting. In October, the FWS asked the Court not to enjoin the hunt programs while the FWS proceeded to address the NEPA deficiencies in the original hunting packages. In addition, the FWS informed the court that by May 30, 2007, it would also correct NEPA deficiencies for the national wildlife refuges opened to hunting since the lawsuit was filed.

For the Hanford Reach National Monument (Monument), it was decided that a complete Sport Hunting Opening Package should be prepared for the existing hunt on the Wahluke Unit. Absent such a document, hunting for the 2007-2008 seasons could be foreclosed.

Through this Sport Hunting Package, the Monument is addressing the issues raised in the Court's order, issues arising from decisions made in 1999 to maintain the hunting programs established by the Washington Department of Fish and Wildlife (WDFW). Within, the reader will find a Sport Hunting Plan (Section 1), an Environmental Assessment (Section 2), a Hunting Compatibility Determination (Section 6), and a Endangered Species Act Section 7 Determination (appropriately, Section 7). Section 4 analyzes and responds to comments on the Draft Sport Hunting Plan. The other sections are supporting documentation.

Relationship with the Monument's Comprehensive Conservation Plan

Most of you reading this will be aware that the public comment period recently closed (March 10, 2007) on the *Draft Hanford Reach Comprehensive Conservation Plan and Environmental Impact Statement* (CCP). That document addressed hunting on the Monument, as well. However, the CCP addresses the long-term future of hunting; this Sport Hunting Package addresses the immediate future of hunting until such time as the CCP can be finalized and a Record of Decision (ROD) signed. This Sport Hunting Package addresses only two things—a continuation of hunting as it currently exists and a complete closure. (A third alternative—opening additional areas to hunting—was considered but rejected, at least until the CCP can be completed.) If the hunting alternative is chosen, few changes would be made until the CCP

is finalized. At that point, changes to the hunting program may—or may not—be implemented (dependent on the final alternative chosen, funding, staffing, etc.). This Sport Hunting Package is a bridge until the CCP is completed.

Next Steps

This Sport Hunting Package was released in draft for public review on April 9, 2007. The public review period closed on May 8. Over that time period, XX comment letters were received. Those letters, in turn, were used to modify the Draft Sport Hunting Package (see Section 4). As a result of the public comment period, the FWS has determined that this action will not constitute a significant impact to the “quality of the human environment” as per the NEPA. As such, an environmental impact statement (EIS) is not needed, the FWS is issuing a Finding of No Significant Impact (FONSI), and the agency will begin implementing the chosen alternative, continuation of the current hunting program. When the CCP is completed and a ROD signed, the hunting program may be modified.

Land Ownership and Jurisdiction

All lands included in the Monument (195,000 acres) are federal lands owned by, and under the primary jurisdiction of, the Department of Energy (DOE). The Monument was created from buffer lands that were no longer necessary for the mission of the DOE’s Hanford Site in eastern Washington. These buffer lands form a horseshoe around lands still needed by the DOE for its current missions. Being a buffer for the Hanford Site, the lands within the Monument have remained largely untouched, or at least undeveloped, for over six decades. It was this remnant of the vast shrub-steppe that once covered the interior Columbia Basin that lead to Presidential Proclamation 7319 on June 9, 2000, establishing a 195,000-acre national monument, managed by the FWS and DOE, superimposed over the outskirts of the 375,040-acre Hanford Site.

The FWS manages 165,000 acres of the Monument, including the Fitzner-Eberhardt Arid Lands Ecology Area (ALE) and most of the Monument lands north of the river, including the Wahluke and Saddle Mountain Units, under a Memorandum of Understanding (MOU) with the DOE and a permit originally issued to the FWS by the DOE in 1971 (since amended). The FWS administers the Monument as an overlay national wildlife refuge.¹

¹ The Secretary of the Interior has authority pursuant to the Fish and Wildlife Coordination Act of 1934, as amended (16 U.S.C. § 661-666c), and the Fish and Wildlife Act of 1956, as amended (16 U.S.C. § 742a-j), to enter into cooperative agreements to manage fish and wildlife resources on lands owned by, or under the jurisdiction of, another entity. The National Wildlife Refuge System Act of 1966, as amended (16 U.S.C. § 668dd-ee), consolidates all areas administered by the FWS for the management, conservation and protection of fish and wildlife (including those areas managed by the FWS under cooperative agreement with other federal departments or agencies) into the National Wildlife Refuge System.

The DOE manages the balance of the Monument, including the McGee-Riverlands/Vernita Units, the Benton County shore of the Columbia River, and the Hanford Dune Field. The DOE intends to manage its portion of the Monument consistent with existing regulatory agreements regarding cleanup of the Hanford Site (Hanford Federal Facility Agreement and Consent Order [Washington Department of Ecology, U.S. Environmental Protection Agency, and DOE 1989]), the Hanford Comprehensive Land-Use Plan (DOE 1999, 64 Federal Register [FR] 61615), and the Monument Proclamation (65 FR 37253).

Each agency has several missions they fulfill at the Hanford Site. The FWS is responsible for the protection and management of Monument resources and the management of people and their access to Monument lands under FWS control. The FWS currently manages established permitted activities through the MOU. The FWS also has the responsibility to protect and recover threatened and endangered species; administer the Migratory Bird Treaty Act; and protect fish, wildlife and Native American and other trust resources within and beyond the boundaries of the Monument. The DOE is responsible for protecting the resources of the Monument, managing energy research, and remediating wastes remaining from weapons material production. The DOE also administers land use agreements and permits with the Washington Department of Transportation, United States Bureau of Reclamation, South Columbia Basin Irrigation District, Bonneville Power Administration, Energy Northwest, adjacent counties, and others to enable these entities to fulfill their missions in energy production, energy distribution, communications, transportation and irrigation. Because the DOE is currently the underlying land holder, it retains final approval authority over certain management aspects of the Monument.

The Presidential Proclamation establishing the Monument (Presidential Proclamation 7319) directs that it be jointly managed by the DOE and FWS. However, the development of a Sport Hunt Opening Package—and the accompanying Hunting Management Plan, Hunting Compatibility Determination, and associated NE PA documentation—is solely a requirement of the FWS under the National Wildlife Refuge System Administration Act, as amended. As such, this plan is being written to guide the FWS in its management of hunting on the Monument. As this is a FWS document and directs its management of the Monument, throughout the document references are made to “FWS management of the Monument” or other similar phrases. It should be understood that this is meant to mean ‘FWS management of the Monument through permits or agreements with the DOE.’ Further, whatever the context of any particular portion of this plan, it should be kept in mind that the FWS and DOE are joint managers of the Monument. Although the DOE is a joint manager of the Monument, this document is the FWS’s, and as such, although the differences may not be expressly stated in the text, the document may not in all instances reflect the DOE’s views.

New Refuge Complex

In some places within this Sport Hunting Package, references are made to the Mid-Columbia River National Wildlife Refuge Complex. In order to consolidate administration, create economies of scale, etc., several national wildlife refuges, including the Monument, have been combined into an administrative complex. The other national wildlife refuges in the new complex are Cold Springs, Columbia, Conboy, McKay Creek, McNary, Toppenish, and Umatilla National Wildlife Refuges.

Creation of this administrative complex has been done since the release of the Draft CCP.

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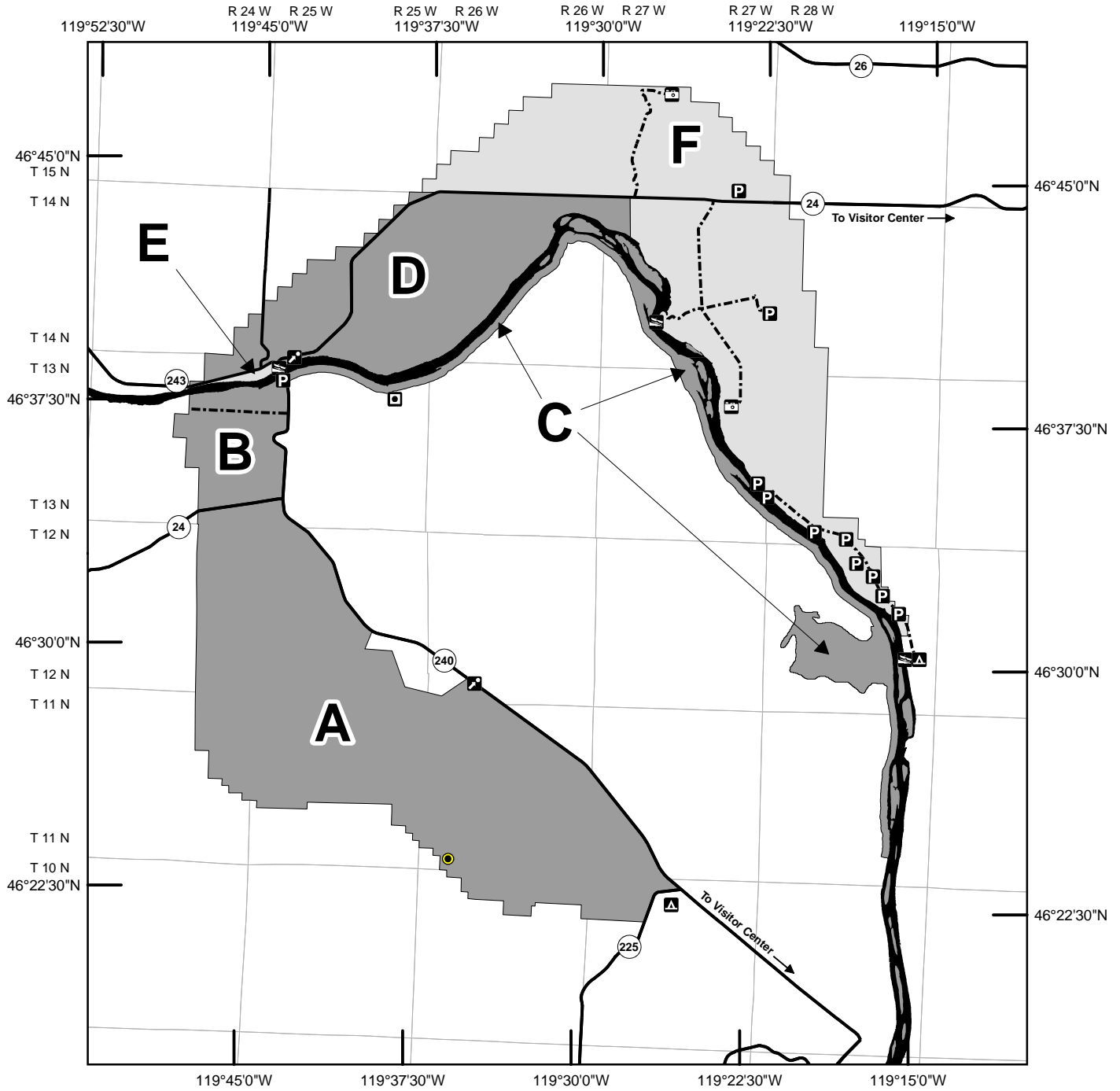
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Hanford Reach National Monument

Adams, Benton, Franklin, and Grant Counties, Washington

Alternative A



Administrative Unit

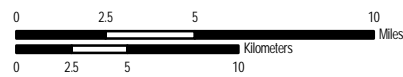
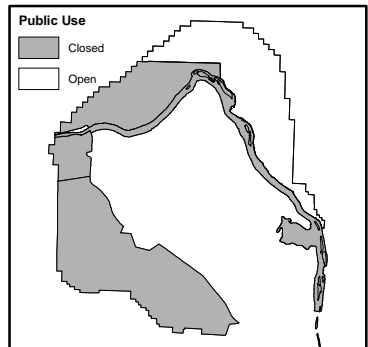
- (A) Arid Lands Ecology Reserve
- (B) McGee Ranch / Riverlands
- (C) River Corridor
- (D) Saddle Mountain
- (E) Vernita Bridge
- (F) Wahluke

Nodes of Activity

- B Reactor
- Boat Launch
- Campground
- Interpretation
- Overlook
- Parking

Road Access

- Primary
- Secondary
- Observatory
- Columbia River



Note: All islands are closed to the public

Section 1

Hunting Plan

May 2007

Hanford Reach National Monument • Sport Hunting Opening Package

1.0 Introduction

The Hanford Reach National Monument (Monument), located near the Tri-Cities (Kennewick, Pasco and Richland) in south-central Washington State, is one of the newest additions to the National Wildlife Refuge System (NWRS) and is managed by the U.S. Fish and Wildlife Service (FWS) and the Department of Energy (DOE). Its national monument status is the result of a long series of events, culminating in numerous overlying current designations, including the national monument designation.

The land comprising the Monument has an unusual and colorful history. The entry of the United States into World War II and the race to develop an atomic bomb led to a search for a suitable place to locate plutonium production and purification facilities. In 1943, the War Department (later to become the Department of Defense) went in search of a remote, easily defensible, geologically stable site, with plenty of cool water, abundant energy (from hydropower dams on the Columbia River), and a moderate climate, on which to build secret plutonium production reactors. The U.S. Army Corps of Engineers (ACOE) selected a site in Washington State near the isolated desert towns of White Bluffs and Hanford. The War Department acquired land through condemnation and purchase of private lands and withdrawal of public lands within the basin formed by Rattlesnake Mountain and the Saddle Mountains. The Atomic Energy Commission, a precursor to the DOE, then established and ran the Hanford Site (then known as the Hanford Engineering Works).

For more than forty years, the primary mission at the Hanford Site was the production of nuclear materials for national defense. During that time, management activities and development practices at the Hanford Site were driven by needs related to nuclear production, chemical processing, waste management, and research and development. The DOE developed infrastructure and facility complexes to accomplish this work in the central portion of the site, but large tracts of surrounding land were used as protective buffer zones for safety and security purposes and remained undisturbed. These buffer zones preserved a nationally significant biological and cultural resource setting in the Columbia Basin region, unique in that similar resources elsewhere in the Columbia Basin have been destroyed or replaced by development.

In the early 1970s, there was a reduced need for large safety and security buffer zones around the Hanford Site, and the DOE transferred management of portions of the “North” or “Wahluke Slope” (the area north of the Columbia River) to the FWS—through the creation of the Saddle Mountain National Wildlife Refuge—and to the Washington State Department of Fish and Wildlife (WDFW). By the late 1980s, the primary DOE mission had changed from defense materials production to environmental restoration, waste management, and science and technology research, further decreasing the need for a large land base. In 1997, the DOE transferred the administration of the Fitzner-Eberhardt Arid Lands Ecology Reserve (ALE) to the FWS. In 1999, the Wahluke Slope lands managed by the WDFW, then known as the Wahluke Wildlife and Recreation Area, were transferred to the FWS to be managed under DOE

permit as part of the NWRS. The WDFW retained administration of the area around the Vernita Bridge under DOE permit to provide access for sport fishing on the Columbia River.

In the 1980s, concerns for protection of the Hanford Site’s natural and cultural resource values grew, as did interest in consolidating management under one natural resource agency. In 1988, Congress directed the Secretary of the Interior and the Secretary of Energy to identify and evaluate the outstanding features of the Hanford Reach and its immediate environment—including fish, wildlife, geology, scenery, recreation, historic and cultural values—and recommend alternatives for their preservation. The resulting Department of the Interior (DOI) report, the *Hanford Reach of the Columbia River Comprehensive River Conservation Study and Environmental Impact Statement* (National Park Service 1994), identified the FWS as best suited to protect those values and the lands necessary to support them. After years of discussion and controversy, the question of protection was settled when President Clinton created the Monument through the American Antiquities Act (Presidential Proclamation 7319).

The Monument is also unique in its complexity and its management; it is the only national monument managed by the DOE and one of only two managed by the FWS.² The Monument is superimposed over approximately 195,000 acres of the 586-square-mile DOE Hanford Site. The DOE currently administers approximately 29,000 acres of land within the Monument and retains land surface ownership or control on all acreage.³ Approximately 165,000 acres are currently managed by the FWS through its authorities under the National Wildlife Refuge System Administration Act (16 USC § 668dd–ee) and through agreements with the DOE.⁴ The WDFW administers approximately 800 acres of the Monument through a permit with the DOE. Other state and federal agencies and utility districts maintain rights-of-way or manage small tracts of land within the Monument boundaries.

Presidential Proclamation 7319 directs that the “. . . monument shall be managed by the U.S. Fish and Wildlife Service under existing agreements with the Department of Energy, except that the Department of Energy shall manage the lands within the monument that are not subject to management agreements with the [FWS], and in developing any management plans and rules and regulations governing the portions of the monument for which the Department of Energy has management responsibility, the Secretary of Energy shall consult with the Secretary of the Interior.” Thus, the FWS and DOE have joint management responsibility of the Monument.

² On June 15, 2006, President Bush established the nearly 140,000-square-mile Northwestern Hawaiian Islands Marine National Monument. The FWS co-manages this newest national monument with the National Oceanic and Atmospheric Administration and the state of Hawaii.

³ The DOE retains administrative control pursuant to the Atomic Energy Act of 1954, as amended, and applicable public land orders.

⁴ These Monument lands are administered as an “overlay refuge.” Overlay national wildlife refuges exist where the FWS manages lands for the benefit of fish and wildlife resources, but where it is not the primary holder in fee title of lands forming the refuge.

However, only the FWS is required to prepare a Sport Hunt Opening Package, and this document is solely the province of the FWS.

1.0.1 Species Covered By This Plan

The species listed below have populations sufficient enough to allow for a consumptive, recreational harvest. No commercial harvesting of non-fish species is allowed on the Monument in order to assure continued healthy populations. The use of hunting guides is allowed.

Species That Can Be Hunted On The Monument

- California Quail (*Callipepla californica*)
- Chukar (*Alectoris chukar*)
- Gray (Hungarian) Partridge (*Perdix perdix*)
- Ring-necked Pheasant (*Phasianus colchicus*)
- Mourning Dove (*Zenaida macroura*)
- Wilson's Snipe (*Gallinago delicata*)
- Coot (*Fulica americana*)
- Ducks (All Species)
- Geese (Canada, Snow) (*Branta canadensis*, *Chen caerulescens*)
- Deer (White-tailed and Mule) (*Odocoileus virginianus*, *O. hemionus*)
- Rocky Mountain Elk (*Cervus elaphus nelsoni*)

Within the state of Washington, other wildlife species can be legally hunted. However, due to localized population sizes, the potential for mis-identification with species of concern, and/or a decision that hunting should not be wasteful,⁵ the hunting of these other species is not allowed.

Species That Cannot Be Hunted On The Monument

- Bobcat (*Felis rufus*)
- Cougar (*Felis concolor*)
- Coyote (*Canis latrans*)
- Crow (*Corvus brachyrhynchos*)
- Rabbits & Hares (All Species)
- Raccoon (*Procyon lotor*)
- Squirrels (All Species, Including Ground Squirrels)

No recreational or commercial trapping is allowed on the Monument.

⁵ For example, varmint hunting is not allowed. After the FWS assumed management of wildlife under the Memorandum of Understanding with the DOE, coyote hunting was banned.

1.1 Conformance With Statutory Objectives

Any use of the Monument must be compatible with resource protection and conform to applicable laws, regulations and FWS policies. Recreational use, in this case hunting, is allowed under the Refuge Recreation Act of 1962 (16 U.S.C. 460K, amended), which authorizes the Secretary of the Interior to administer national wildlife refuges, hatcheries and other conservation areas for recreational use. The Refuge Recreation Act requires: 1) that any recreational use permitted will not interfere with the primary purpose for which the national wildlife refuge (i.e., Monument) was established; and 2) that funds are available for the development, operation and maintenance of the permitted forms of recreation.

Likewise, statutory authority for FWS management and associated habitat/wildlife management planning on units of the NWRS is derived from the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd-668ee). The National Wildlife Refuge System Improvement Act provided a mission for the NWRS and clear standards for its management, use, planning and growth.⁶ The National Wildlife Refuge Improvement Act recognizes that wildlife-dependent recreational uses—including hunting, fishing, wildlife observation and photography, and environmental education and interpretation—when determined to be compatible with the mission of the NWRS and the purposes of the refuge—are legitimate and appropriate public uses of national wildlife refuges. Sections 5(c) and (d) of the National Wildlife Refuge Improvement Act states “compatible wildlife-dependent recreational uses are the priority general public uses of the NWRS and shall receive priority consideration in planning and management; and when the Secretary [of the Interior] determines that a proposed wildlife-dependent recreational use is a compatible use within a refuge, that activity should be facilitated, subject to such restrictions or regulations as may be necessary, reasonable, and appropriate.”

1.1.1 Monument Purposes

The Monument Proclamation specifically lays out the purpose of the Monument—to protect a special landscape and the specific resources mentioned in the Monument Proclamation.

The Hanford Reach National Monument is a unique and biologically diverse landscape, encompassing an array of scientific and historic objects. This magnificent area contains an irreplaceable natural and historic legacy, preserved by unusual circumstances.

⁶ The National Wildlife Refuge Improvement Act’s passage followed the promulgation of Executive Order 12996, Management of Public Uses on National Wildlife Refuges (April 1996), which reflected the importance of conserving natural resources for the benefit of present and future generations of people.

Because the Monument is administered as a component of the NWRS, the legal mandates and policies that apply to any national wildlife refuge also apply to the Monument. The purposes of any national wildlife refuge are “specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit” (National Wildlife Refuge System Administration Act). In this case, those would be the American Antiquities Act, the Monument Proclamation, and the permit establishing the Saddle Mountain National Wildlife Refuge.⁷

National monuments are established to protect “antiquities” or to set aside lands for scientific purposes. Most presidential proclamations specifically define the reason(s) the particular national monument was established and the purposes for which it is to be managed. However, the Hanford Reach National Monument Proclamation is unusual in its level of detail. Rather than noting only one or two significant resources, as most monument proclamations have historically done, this particular proclamation specifically notes the various resources President Clinton deemed nationally significant. The Monument Proclamation specifically mentions:

- The shrub-steppe ecosystem.
- The fifty-one-mile Hanford Reach of the Columbia River.
- Fall Chinook salmon spawning areas.
- Sturgeon.
- A diversity of native plant and animal species.
- Rare and sensitive plant species, including Umtanum desert buckwheat and White Bluffs bladderpod, which are unique to the Monument.
- Microbiotic crusts.
- Breeding populations of steppe and shrub-steppe dependent birds, including loggerhead shrikes, sage sparrows, sage thrashers, and ferruginous hawks.
- Habitat for migratory birds, as well as resident species, including wintering habitat for bald eagles, white pelicans, and ducks.

⁷ The Saddle Mountain Wildlife Refuge was created on November 30, 1971, through a permit issued to the FWS by the DOE. This approximately 31,000 acre area is located in the northwest corner of the Monument and is currently called the Saddle Mountain Unit. When the Monument was created, the Saddle Mountain National Wildlife Refuge was incorporated into the new national monument. Following completion of the Hanford Reach National Monument Comprehensive Conservation Plan, this land base will be part of a new Wahluke Unit.

- Nesting sites and habitat for rare bird species, including prairie falcons, and important perch sites for raptors such as peregrine falcons.
- Insect species new to science or not previously identified in the state of Washington.
- Significant geological and paleontological resources, such as the White Bluffs and Hanford Dune Field.
- Mammalian fossils of rhinoceros, camel, mastodon and others.
- Important archaeological and historic artifacts from more than 10,000 years of human activity, including prehistoric pit houses, graves, spirit quest monuments, hunting camps, game drive complexes, quarries, and hunting and kill sites, as well as more recent human activity, such as homesteads and early towns.

The Monument Proclamation also goes further than most proclamations have historically gone in establishing specific management actions that are to be followed. It establishes a basis for management of the Monument, as well as several of the mechanisms for protection of the significant resources found in the Monument. The following mechanisms are specifically outlined in the Monument Proclamation.

- Federal lands are withdrawn from disposition under public land laws. This includes all interests in these lands, such as future mining claims.
- Off-road vehicle use is prohibited.
- The ability to apply for water rights is established.
- Grazing is prohibited.
- The FWS, under permits and agreements with the DOE, and the DOE are established as the managers of the Monument.
- Clean-up and restoration activities are assured.
- Existing rights, including tribal rights, are protected.

1.1.2 Conformance Finding

While very specific in protecting the nationally significant natural, cultural and educational resources of the Monument, the Presidential Proclamation was also very specific in its

preservation of existing rights and compatible uses. In a white paper issued by the White House accompanying the Monument Proclamation, hunting and other recreational uses were specifically identified as being desirable, subject to regulations necessary to protect resources.

Much of the monument has been off limits to recreation and public access. However, wildlife dependent recreation (hunting, fishing, environmental education, wildlife observation, interpretation, and photography) does occur on the Wahluke Wildlife Recreation Unit on the Wahluke Slope. Such recreation would generally not be affected except where (1) the land managing agency, through processes required by existing law, identifies places where such uses ought to be restricted or prohibited as necessary to protect the federal lands and resources, including the objects protected by the monument designation; or (2) where the agency finds a clear threat from such a use to the federal lands and resources, including the objects protected by the monument designation, and the circumstances call for swift protective action. Such uses remain subject to applicable laws and regulations, and therefore remain subject to regulation and limitation under such provisions for reasons other than establishment of the monument.

Apart from the White House paper, compatible hunting is identified as a priority public use in the National Wildlife Refuge System Improvement Act, as noted earlier; this Sport Hunt Opening Package supports that priority use. Hunting, as specified here, is a compatible wildlife-dependent recreational use, and the National Wildlife Refuge System Improvement Act states that as such, it “shall receive priority consideration in national wildlife refuge planning and management.” The hunting program described here would not materially interfere with, or detract from, the fulfillment of the purposes of the Monument or the mission of the NWRS (603 FW).

Likewise, the Secretary of the Interior may permit hunting on a national wildlife refuge if he/she determines that such use is compatible with the purpose for which it was established. The proposed public hunting program was evaluated in a compatibility determination (Section 6), and it was determined to be compatible with Monument purposes.

1.2 Statement of Objectives

As noted in the Reader’s Guide, the Monument is currently developing a long-term overall management plan, which is currently in draft and with a comment period that ended on March 10, 2007. The *Draft Hanford Reach National Monument Comprehensive Conservation Plan and Environmental Impact Statement (CCP)* outlines ten management goals, dozens of objectives, and scores of implementation strategies. This Sport Hunt Opening Package is examined here for its consistency with those goals and objectives that pertain to recreational hunting. For a complete review of all management goals and objectives, as well as the environmental impact statement (EIS) associated with the draft CCP, please visit hanfordreach.fws.gov/planning.html.

In the Draft CCP, public use is a top priority. Management Goal 7 is to “Provide access and opportunities for high-quality recreation compatible with resource protection.” Within that goal, Objective 7-4 (Section 2.10.8.4) calls for development of a Hunting Plan.⁸

Within one year of the CCP being adopted, develop a Hunting Plan that provides for high-quality hunting opportunities on the Monument in accordance with—to the extent practicable—WDFW laws, regulations and management plans.

In addition to the objective of providing a quality recreational hunting experience, hunting also is a factor in wildlife and habitat management. Common to all alternatives within the Draft CCP is Objective C-9, Wildlife Population Control (Section 2.10.1.5).

Within the life of the CCP, manage, control, or remove populations that threaten or affect Monument resources, public safety, or private property.

As such, an objective of the Draft CCP is to identify a compatible hunting program that will facilitate cooperative management with the WDFW in order to achieve/maintain game population objectives. For example, currently the growing elk herd exceeds the social/political tolerance of the local area. Elk population management is addressed in Objective 1-13 (Section 1.10.2.13).

Over the life of the CCP, where feasible and compatible with Monument purposes, coordinate with the DOE, WDFW and area tribes to implement management actions that will assist in achieving and maintaining herd objectives and population goals for the Rattlesnake Hills Elk Herd.

Control of wildlife populations is consistent with the objectives under Goals 1⁹ and 2¹⁰ which seek to protect specific habitats and plant populations—high-quality/sensitive shrub-steppe communities; native tall and short grasslands; unique/rare habitats (e.g., dune fields); rare plants; microbiotic crusts; lithosol habitats; islands; springs, seeps and vernal pools; riverine/riparian habitats; and seasonal wetlands.

⁸ Obviously, this objective will now have to be re-written in the Final CCP to reflect this Hunting Plan. However, depending on the final alternative identified in the Record of Decision for the CCP, this Hunting Plan may need to be modified to include strategies consistent with the chosen alternative.

⁹ Goal 1 is to “Conserve and restore the plants, animals and shrub-steppe and other upland habitats native to the Columbia Basin.”

¹⁰ Goal 2 is to “Conserve and restore the communities of fish and other aquatic and riparian-dependent plant and animal species native to the Hanford Reach National Monument.”

1.3 Assessment

The Sport Hunting Plan must be consistent with the purposes of the Monument, sound wildlife management, and compatibility with other Monument programs.

1.3.1 Compatibility with Monument and Other Objectives

The hunting program would be conducted to assist the WDFW with achieving/maintaining their game population objectives. The FWS believes these objectives will maintain healthy game populations at levels that will protect the native fish, wildlife, plants and habitats identified in the Monument Proclamation (i.e., “refuge purpose”), thereby maintaining the biological integrity, diversity and environmental health of the Monument. This hunting program also supports the mandate of the National Wildlife Refuge System Improvement Act that refuges provide for priority public uses, including hunting, where compatible.

1.3.1.1 Biological Soundness

Hunting programs need to be based on healthy, sustainable populations of the species hunted. On the Monument, several species of big game, upland game birds, and waterfowl are hunted. Following are descriptions of the hunting, harvest and status of these species on the Monument.

1.3.1.1.1 Mule and White-tailed Deer

The deer herd on the Wahluke Unit is managed by the WDFW within their larger Game Management Unit (GMU) 381, and it sets harvest restrictions. This deer herd is comprised primarily of mule deer, although some white-tailed deer are present. Deer tend to be more common in and near dense vegetation (cattails, Russian olive trees) associated with various Columbia Basin Irrigation Project canals and ponds on the Wahluke. Mule deer on the Wahluke use steep draws and canyons as escape routes and, where suitable, bedding, resting and feeding sites. Per DOE and Monument regulations, only archery, muzzleloaders and shotguns are permitted. Currently only three-point or better mule or white-tailed deer may be harvested during the regular season, and permitted muzzle loaders may take any deer in a late season hunt.

Surveys to estimate population size on the Wahluke and in GMU 381 have not been conducted. Additionally, population survey data is absent. However, harvest data for the last six years and composition data over the past two years for the entire GMU indicate that harvest has remained at a constant, arguably sustainable rate; hunter numbers and success rate have been gradually increasing since 2000.

A wildfire on the Wahluke in 2005 burned approximately 6,000 acres and reduced the amount of Russian olives, other woody riparian vegetation surrounding the WB-10 Ponds and irrigation canals, and native shrub-steppe habitat. This loss of cover may in the short term make deer more vulnerable to hunters and predators. In the long term, restoration of native vegetation, including bunchgrasses, antelope bitterbrush and sagebrush, will likely improve conditions for deer.

1.3.1.1.2 Rocky Mountain Elk

There is not an established elk herd on the Wahluke Unit, but small, scattered herds in Franklin County may use the area infrequently. A large, well-established herd, the Rattlesnake Hills Elk Herd, occurs to the west and makes frequent use of the ALE. Animals from this herd probably also use the Wahluke, but on an irregular basis. Hunting for elk on the Wahluke Unit is used primarily as a tool to physically keep the populations numbers low there and to deter elk from using the area on a regular basis. This is to preclude crop damage claims by adjacent private landowners from becoming an issue as it is on the ALE.¹¹

Hunting elk on the Wahluke is permitted in accordance with DOE and Monument-specific regulations (archery, muzzle loader, shotgun—10 and 12 gauge loaded with slugs—only); the WDFW sets harvest restrictions.

1.3.1.1.3 California Quail, Chukar and Hungarian Partridge

No population or trend data is available for these game birds specific to the Wahluke Unit. The WDFW only monitor quail and chukar, and the population numbers available are on a state-wide basis. However, the WDFW does monitor hunter success on a more localized basis, and the data for the Yakima and Lower Mid-Columbia River Basins indicate that hunter success for both quail and chukar have increased since 2004 and that it is above the ten-year mean. The WDFW has noted that some of the highest quail densities in this area are associated with Russian olive trees and riparian vegetation. This type of habitat occurs on the Wahluke Unit in association with Columbia Basin Irrigation Project canals and the WB-10 Ponds. Conversely, chukar habitat on the Monument is limited and composed of isolated steep slopes, deep valleys, and rock outcrops.

It should be noted that these game birds were all introduced specifically for the purpose of hunting. Introduced species are not typically supported by the FWS, although there is no desire to remove them.

¹¹ Large elk populations and related crop damage claims are a persistent issue for the WDFW, especially along the Monument's western boundary on the ALE.

1.3.1.1.4 Mourning Dove and Snipe

No population or trend data are available for these game birds on the Wahluke Unit, and only limited data is available from the WDFW statewide. Likewise, no data is available for hunter participation or success rate on a local basis; hunter participation for both on the Monument is expected to be low, especially for snipe. Mourning dove hunting on the Wahluke Unit occurs primarily in the Ringold area along the Columbia River, and snipe hunting occurs in wetlands associated with Columbia Basin Irrigation Projects canals and along the shoreline of the Columbia River.

Mourning dove data for the ten-year period (1996-2005) shows no significant change in both call count surveys (FWS) or Breeding Bird Surveys (U.S. Geological Survey (USGS)) statewide. Washington's five-year average (2001-2005) harvest was 73,108 birds. Field observations support the existence of a healthy population on the Monument.

Data on snipe populations is limited. Both the Christmas Bird Count (National Audubon Society) and the Breeding Bird Survey in Washington have indicated that Washington's snipe population is in decline. This species is difficult to survey, however, and these numbers may not reflect the actual population. The Canadian Wildlife Service estimates the current population at 26,750,000 worldwide and 2,000,000 in North America, although the North American form is often considered to be a separate species. Annual harvest rates vary considerably throughout the state and have ranged from 879 to 164,595 birds taken statewide within the past ten years.

The Monument adopts the season and bag limits set by the WDFW within the FWS's Migratory Bird Hunting Framework. The harvest of migratory birds on the Monument is minimal and is estimated to represent <1% of the statewide harvest.

1.3.1.1.5 Ring-necked Pheasant

No population or trend data is available for pheasants on the Wahluke Unit, but the population and hunter success is monitored by the WDFW in the Yakima and Lower Mid-Columbia River Basins. Data from this monitoring effort indicate that hunter participation was down 40% from the ten-year average and that harvest was 42% below the ten-year average; however, hunter success has remained relatively constant. While participation has declined, the WDFW, through the Eastern Washington Pheasant Enhancement Program established in the late 1990's, has continued to release birds at selected sites. One of the sites is on the southeastern end of the Monument near the WDFW Ringold Fish Hatchery.¹² Hunter participation for pheasant hunting

¹² Due to FWS policy concerning the release of non-native species, the pheasant release on the Monument may be phased out. The CCP is addressing this issue.

in this area coincides with the release date. Wooded and brushy habitat associated with Columbia Basin Irrigation Project canals and ponds on the Wahluke provide suitable habitat for both wild and pen-raised pheasants.

1.3.1.1.6 Waterfowl (Coots; Ducks – All Species; Geese – Canada, Snow)

Waterfowl (duck, goose, coot) hunting occurs on the Wahluke Unit in wetlands associated with Columbia Basin Irrigation Projects canals and along the shoreline of the Columbia River. Most hunting is for ducks; goose hunting is limited on the Monument (anecdotal field observations). Participation in coot hunting is unknown but is expected to be very low.

No data is available for hunter participation or success rate. However, Washington's five-year average (2001-2005) harvest of ducks and geese was 394,821 and 48,140 birds, respectively. Harvest of migratory birds on the Monument is minimal and is estimated to represent <1% of the statewide harvest. The Monument adopts the season and bag limits set by the WDFW within the FWS's Migratory Bird Hunting Framework.

1.3.1.2 Economic Feasibility

The Wahluke Unit was open to public hunting by the state of Washington from 1971-1999. Since that time, per agreements between the DOE and FWS (see Section 2.0), the area has continued to be open to hunting. Annual hunt administration costs—including salary, equipment, sign maintenance, fuel, roads and parking lots, etc.—total \$95,000 annually. Approximately 1.25 full-time staff (equivalent) is expended in conducting hunt-related activities.

The Monument is operating with the minimum staff and funding needed to maintain the current hunting program, including enforcing regulations and maintaining facilities. Considered separately, the capacity of the Monument to administer the hunting program would be stretched. However, this is somewhat offset by the fact that the Monument was recently combined with seven other national wildlife refuges in order to pool staff and conserve funds (collectively known as the Mid-Columbia River National Wildlife Refuge Complex). As such, the Monument has the staff to administer the current hunting program; additional resources would be needed to expand recreational hunting and to fully implement all the desired components of a hunting program (e.g., hunter check stations, monitoring programs). Access trails, parking lots, signs and other facilities are adequate to maintain hunting at the current level; funding associated with facilities (roads, parking areas, signs, etc.) maintenance are included in other Monument programs requiring the same support. It is anticipated that additional funding would be required to implement changes to the recreational hunting program in the future (i.e., to implement changes from the Final CCP and its Record of Decision (ROD)).

1.3.1.3 Relationship with Other Monument Programs

None of the proposed hunts (i.e., species- and/or season-specific) offer major conflicts with other hunts or with non-consumptive users. The popular fall Chinook salmon sportfishing season does overlap with the big game archery season. However, primary access points for the two activities are spatially separate, and little, if any, interaction is known to occur between hunters and anglers. All organized environmental education, and most wildlife observation and photography activities, currently take place outside of hunting seasons.

1.3.1.4 Recreational Opportunity

The Monument provides regionally significant waterfowl hunting opportunities (National Park Service 1994). Large populations of resident and migratory waterfowl, coupled with good conditions for hunting, make the Hanford Reach and the Monument an excellent location for waterfowl hunting. Waterfowl populations are enhanced by a longstanding waterfowl sanctuary, which includes the Columbia River and lands within 1/4-mile of the river between the wooden power lines (old Hanford Townsite) to the Vernita Bridge.¹³ Most waterfowl hunting occurs downstream of the sanctuary near the many sloughs and islands in the Hanford Reach and along the shorelines west of the Ringold River Road. Some hunters pursue pass shooting along the White Bluffs in the Wahluke Unit; approximately twenty waterfowl hunting pits currently exist in the vicinity, but the digging of new pits is not allowed. Waterfowl hunting also occurs on the WB-10 Ponds. Vehicles can access a parking area located approximately one mile from the WB-10 Ponds; from the parking area, non-motorized means (hiking, horses) are required to access the ponds.

The Wahluke Unit provides good opportunities for upland game hunting, including deer, pheasant, chukar, gray partridge, and California quail. Most deer hunting occurs in the Wahluke Unit south of State Route 24, while most upland bird hunting occurs in the Ringold River Road area. The WDFW has historically operated a pheasant release program from the Ringold River Road and along the Saddle Mountain slopes north of State Route 24. The Wahluke Unit is also open to elk hunting, although elk from the nearby Yakima/Rattlesnake Hills Herd enter the Wahluke Unit infrequently at this time.

¹³ This area is closed to all waterfowl hunting, and the White Bluffs Boat Launch is closed to motorboats during the winter to reduce waterfowl disturbance from watercraft.

1.4 Description of Hunting Program

Alternative A proposes to allow continued recreational hunting of resident game and migratory waterfowl on the Wahluke Unit within WDFW-established seasons, bag limits, and species sanctuaries. Hunting on these areas for specific species generally begins September 1st and ends on the third weekend in January. The longest continuous species-specific hunting seasons during this time are waterfowl (second weekend in October to the third weekend in January) and upland birds (October-January); the shortest seasons are dove (first two weeks of September) and deer and elk (selected seven- to thirty-day periods in September, October and November/December, depending on the area and weapon used). Please see Section 1.6 for additional details on details associated with recreational hunting on the Monument under Alternative A.

1.5 Avoiding Conflicts

The primary purpose of the Monument is the preservation and protection of the nationally significant biological, natural, scenic, geological, paleontological and cultural resources identified in the Presidential Proclamation. Those identified resources all represent potential conflicts with any proposed use of the Monument. In addition, the Monument is used extensively by the public for a variety of recreational pursuits other than hunting (see Section 2.3.7); these, too, represent potential conflicts with recreational hunting. Fortunately, there are numerous measures that can be taken within the hunting program—and through other management actions—that can alleviate or eliminate those potential conflicts.

1.5.1 Biological Conflicts

Even though there is the potential of having hunters on the Wahluke Unit and along the Columbia River shoreline every day of the week from September through January, they are dispersed across the landscape (e.g., upland bird and big game hunting), more concentrated where target species are more likely to occur (e.g., waterfowl hunting), and/or more numerous on weekends and opening and closing days of specific seasons (e.g., deer hunting). Additionally, access into the majority of this unit is from one main road and defined parking areas, with access to more remote areas by foot only. While hunting in these units may affect non-target species through disturbance and shooting, there will be areas where little or no disturbance occurs. In addition, disturbance will be further minimized by implementing strategies such as closures or special restrictions at sites with seasonal protection needs or sites vulnerable to or experiencing biological or physical resource damage.

The following federally listed or federal candidate species have been documented on the Monument or its surrounding landscape—spring-run Chinook salmon (endangered), steelhead (endangered), bull trout (threatened), bald eagle (threatened), Ute ladies' tresses (threatened), Washington ground squirrel (candidate), Umtanum desert-buckwheat (candidate), and White Bluffs bladderpod (candidate). In addition, pygmy rabbit (endangered) may be present, although it is unlikely. In accordance with the FWS's Endangered Species Management Policy (7 RM 2), an analysis was conducted of the impacts, resulting in "no effect," "is not likely to adversely affect," or "is not likely to jeopardize" determinations for these species from recreational hunting. (Please refer to Section 7, Section 7 Evaluation, for additional biological information on these species.)

1.5.2 Public Use Conflicts

There are no known significant conflicts between hunters and other visitors due to management practices and the nature of recreational activities on the Monument. Potential conflicts are avoided or reduced by separating major access points and providing visitors with information, such as low-impact techniques, hunter success rates, typical visitor use patterns, existing rules and regulations, annual and seasonal changes, access locations, health warnings, and other relevant communications. Such information allows users to plan their visits accordingly to avoid conflicts. In addition, hunters use the Monument at times and seasons when other visitors are generally either not present or few in number.

1.5.3 Administrative Conflicts

The manpower (biological, law enforcement, and visitor services) and funding available to administer the current hunt are adequate. Presently, no data is collected on the Monument during the hunts that would help us better manage game, non-game species and habitats. In addition, outreach about hunting on the Monument could be improved with additional resources.

1.6 Conduct of the Hunting Program

Like any use of public lands, location-specific regulations allow for the safety of visitors and the accommodation of many uses. Hunting on the Monument is no exception.

1.6.1 Monument-Specific Hunting Regulations

Both the FWS and the DOE have implemented specific measures to ensure resource protection, conflict avoidance, public safety, and non-interference with Hanford Site cleanup and remediation. These measures are outlined below.

1.6.1.1 Common To All Species

These regulations apply to any recreational hunting activity on the Monument.

- Modern (center-fire) rifles, airguns and all handguns are not allowed on the Monument.
- Only those firearms used for that particular hunting season are allowed, although muzzle loaders may be used during the modern firearm season.
- During hunting season, those firearms that are allowed must be cased and/or dismantled when not in use.
- Public access to the Monument is allowed from two hours before sunrise to two hours after sunset.
- No hunting is allowed on the Columbia River, the Benton County shoreline below the high water mark, and river peninsulas in Benton County from the Vernita Bridge Unit to the old Hanford Townsite power line crossing (wooden power line towers).
- All islands are closed to all public uses, including hunting.
- The ALE, McGee Ranch/Riverlands and Saddle Mountain Units are closed to public entry. Retrievals are not allowed.
- Camping, overnight use, and fires are prohibited.
- Vehicles must use existing open roads and parking areas to access hunting sites.
- The use of ATVS and other vehicles off-road is prohibited.
- All hunting will be conducted on foot or horseback.
- All hunters must possess a valid Washington State hunting license and/or permit specific for the game they are hunting.

- No trapping or falconry is allowed.
- All applicable state and federal regulations apply. Hunters must fulfill all WDFW reporting requirements.
- No permanent blinds may be constructed, and vegetation cannot be cut, collected, or disturbed for use as blind materials.

1.6.1.2 Migratory Waterfowl

In addition to the general regulations that apply to all recreational hunting activities, these apply specifically to waterfowl.

- Only non-toxic shot is allowed for migratory waterfowl.
- The river corridor in the Wahluke Unit is closed to waterfowl hunting from the river to 1/4-mile inland from the Saddle Mountain Unit to the old Hanford Townsite power line crossing (wooden power line towers). Waterfowl hunting is allowed along the shoreline of the Columbia River between Parking Lot 1 and old Hanford Townsite power line crossing.
- Waterfowl hunting is currently allowed at the WB-10 Ponds. The primary jurisdiction for public activities within the easement associated with the WB-10 Ponds is administered by the U.S. Bureau of Reclamation (BOR). The BOR currently allows waterfowl hunting; the BOR could, however, restrict this activity in the future for safety and/or continuity of operations.
- The construction of pit blinds and the cutting, collection, or disturbance of vegetation are not allowed. All blind materials, decoys and other equipment, including spent casings, must be removed following each day's hunt.

1.6.1.3 Upland Birds

In addition to the general regulations that apply to all recreational hunting activities, these apply specifically to upland gamebirds.

- Only non-toxic shot is allowed for upland birds.

1.6.1.4 Big Game

In addition to the general regulations that apply to all recreational hunting activities, these apply specifically to big game.

- Only shotguns, muzzle loaders and archery are allowed for taking big game; center-fire rifles are not allowed.
- Shotgun use for elk is restricted to 10 and 12 gauge barrels loaded with slugs.

1.6.2 Anticipated Public Reaction to the Hunt

The hunting program on the lands within the Wahluke Unit has been in place for more than three decades and is favorably viewed by local and regional hunters. While there may or may not be a significant portion of the local populace (unknown) that opposes hunting in principle, the existing hunting program is generally accepted and does not generate anti-hunting controversy. Nationally, there is a component of the population that is opposed to hunting, and some organizations are opposed to hunting, or at least expansion of hunting, on national wildlife refuges and other public lands. Thus, it is expected that some objections may be voiced to some or all of the hunts within this plan. Closing the existing hunting program would certainly generate significant controversy.

1.6.3 Hunter Application Procedures

There are no application procedures for hunting on the Monument, apart from those of the state of Washington hunting program.

1.6.4 Description of Hunter Selection Process

There is no selection process for hunting on the Monument, apart from any required by the state of Washington in fulfillment of their regulations.

1.6.5 Media Selection for Publicizing the Hunt

Information regarding the hunting program will be published in the appropriate WDFW hunting pamphlets. Press releases will be issued by the Monument staff, when appropriate, to local and

regional media outlets, including newspapers, radio and television stations, interested organizations, and government leaders.

1.6.6 Description of Hunter Orientation

There is no hunter orientation specific to the Monument at this time, apart from any required by the state of Washington.

1.6.7 Hunter Requirements

There are no special requirements, other than following the regulations outlined above, for hunters using the Monument, apart from any required under state of Washington regulations/laws (e.g., minimum age requirements).

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Section 2

Environmental Assessment

2.0 Purpose Of and Need For Action

While the primary purposes of the Monument are to preserve and protect nationally significant natural, cultural, historic, aesthetic, geological and paleontological resources, President Clinton made it clear that recreation was an acceptable use of the Monument, albeit one that was secondary to resource protection.

*Much of the monument has been off limits to recreation and public access. However, wildlife-dependent recreation (**hunting**, fishing, environmental education, wildlife observation, interpretation, and photography) does occur on the Wahluke Wildlife Recreation Unit on the Wahluke Slope. Such recreation would generally not be affected except where (1) the land managing agency, through processes required by existing law, identifies places where such uses ought to be restricted or prohibited as necessary to protect the federal lands and resources, including the objects protected by the monument designation; or (2) where the agency finds a clear threat from such a use to the federal lands and resources, including the objects protected by the monument designation, and the circumstances call for swift protective action. [Emphasis added; White House Background Paper, submitted with Presidential Proclamation 7319, June 2000]*

President Clinton also took the step of assigning at least some management responsibilities for the Monument to the FWS. As such, it became part of the NWRS and subject to the laws, regulations and policies controlling both the FWS and the NWRS. The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. § 668dd et seq.), provides authority for the FWS to manage national wildlife refuges and their wildlife populations. In addition, it declared that compatible wildlife-dependent public uses are legitimate and appropriate uses of the NWRS and are to receive priority consideration in planning and management. Six wildlife-dependent public uses were specifically identified—hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation—and when determined compatible are considered ‘priority uses.’ The law directs the FWS to increase these recreational opportunities, including hunting, on national wildlife refuges when they are compatible with the purposes for which the refuge (i.e., Monument) was established and with the mission of the NWRS.

In the 1971 *Permit for Management and Recreational Use of the Wahluke Slope between DOE and the Fish and Wildlife Service and the Washington State Department of Fish and Wildlife* (1971 Permit), recreational hunting was established by the landowner (DOE) as an allowable activity.

Public fishing, hunting (with shotguns and bows and arrows only) and other recreational activities, to the extent approved and controlled by the [WDFW], may be permitted on the eastern portion of the Area.

At the time—before creation of the Monument—this permit established the FWS as the manager of the Saddle Mountain National Wildlife Refuge (Saddle Mountain Unit) and the WDFW as the manager of the Wahluke Unit. Following establishment of the Monument, the 2001 *Memorandum of Understanding Between the U.S. Department of the Interior, Fish and Wildlife Service, and the U.S. Department of Energy, Richland Operations Office, for the Operation of the Wahluke Slope* (MOU), redefined the area identified in the 1971 Permit as being managed by the FWS to include the Wahluke Unit.

1.11 *The terms “Saddle Mountain National Wildlife Refuge” or “Refuge” means:*

The 32,000 acre area of the Hanford Site administered by FWS . . . except for those areas within the Wahluke Slope that remain under DOE management . . . the approximately 57,000 acres of the former Wahluke Wildlife and Recreational Area formerly managed by the Washington Department of Fish and Wildlife . . . except for those areas within the Wahluke Slope that remain under DOE management . . . and the 77,000-acre Fitzner-Eberhardt Arid Lands Ecology Reserve . . . except for those areas that remain under DOE management . . .;

The MOU went on to establish that FWS management should be similar to that of the 1971 Permit and that recreational access should be provided.

3.2 *The primary objective of the FWS in entering into this agreement is to ensure that the parts of the Monument managed by FWS are managed in accordance with Presidential Proclamation 7319 of June 9, 2000, under the:*

1971 Permit for Management and Recreational Use of the Wahluke Slope between DOE and the Fish and Wildlife Service (FWS) and the Washington State Department of Fish and Wildlife as amended;

3.3.c *To ensure that access to the Refuge is available for the educational, scientific, and recreational benefit of the public to the extent this access and use is consistent with the foregoing objectives and compatible with Refuge purposes;*

So, the underlying landowner, the DOE, has, in the transfer of authorities, indicated that hunting should occur on the Monument, which is consistent with the Monument Proclamation (i.e., White House background paper).

Under FWS policy, hunting is allowed when the national wildlife refuge completes a “hunt opening package.” This consists of a Sport Hunting Plan, the associated NEPA documentation, and a compatibility determination that decides whether or not the use (hunting) is “compatible” with resource protection and the purposes for which the national wildlife refuge was established.

The purpose of this environmental assessment is to evaluate the feasibility and impacts of maintaining the existing public hunting program on the Wahluke Unit of the Monument¹⁴ or closing it to hunting. The Wahluke Unit, encompassing 57,000 acres, would be open to big game, upland bird, and migratory bird hunting, subject to regulations necessary to protect Monument resources.

2.1 Alternatives Considered

Until such time as the CCP can be completed, it is prudent to think of the overall management of the Monument's land base. In other words, it was impractical to make adjustments to the hunting program until a final management alternative is chosen through the CCP process. That point, with management direction set, would be the appropriate time to make adjustments. In the meantime, the appropriate use of this Sport Hunting Plan is to consider the desirability and need of recreational hunting for the Monument. As such, three alternatives were considered.

2.1.1 *Alternative A – No Action*

Alternative A assumes little change from existing management and thus provides a baseline for evaluating impacts of the other alternatives. Most current management/hunting practices would be continued in accordance with Monument Proclamation mandates and agreements to conserve and protect biological, geological, aesthetic, paleontological and cultural resources (see Section 1.4). Inland areas within the Monument currently open to hunting would remain open, and the species currently hunted would continue to be available for hunting (Section 1.0.1). All current federal and state regulations would continue as before (Section 1.6).

The one exception to current operations would be the closure of the McNary Islands for hunting above the ordinary high water mark.¹⁵ The Draft CCP identifies the desirability and need to re-

¹⁴ This area was previously opened to hunting under DOE and WDFW management authority prior to FWS co-management with the DOE.

¹⁵ There are nineteen islands located in the Columbia River upstream of Richland, Washington, that are managed by the FWS and included within the scope of this plan. Six islands are currently managed by the McNary National Wildlife Refuge (McNary Islands); the three islands furthest upstream are actually within the Monument's boundaries). The remaining thirteen are managed by the Monument (Hanford Islands). The McNary Islands are located from river mile 341, just north of the Snyder Street Boat Launch in Richland, upstream to the first power line crossing at river mile 351. Upstream of river mile 351 are the thirteen Hanford Islands, which are held in fee title by a mixture of the ACOE, Bureau of Land Management, DOE, FWS and Washington Department of Natural Resources. One island (Homestead) is a mixture of federal and private ownership; this Hunting Plan applies only to that portion owned by the federal government.

institute the closure in all alternatives (including Alternative A, No-Action) for those areas above the high water mark.¹⁶ Please refer to the Draft CCP at hanfordreach.fws.gov/planning.html for a full description of island resources.

A more complete description of the specifics of this Sport Hunting Plan can be found in Section 1 of this document.

2.1.2 Alternative B – No Hunting

Under Alternative B, the entire Monument would be closed to recreational hunting, at least until the CCP is completed and the impacts, desirability and need of/for hunting could be reexamined. Emergency measures for population control could be implemented, pending a show of need and the concurrence of the DOE.

2.1.3 Alternative Considered But Rejected

The option of opening the entire land base north of the river, including those areas currently closed to recreational hunting, was considered but rejected for several reasons:

- 1) This option was considered in development of the Draft CCP. However, it was determined that a portion of the area should remain closed to hunting to serve as a refuge to game and to provide the reservoir for harvestable populations.
- 2) The WDFW retains a closure of the area to waterfowl hunting as a sanctuary. Opening the area at this time, at least during the time frame of the waterfowl hunting closure, would not be in keeping with the spirit of the WDFW waterfowl plan. At the point where a final management plan is identified through the CCP process, the FWS and DOE will have to work closely with the WDFW to carefully implement any changes in the hunting program in the area currently closed.
- 3) The Saddle Mountain Unit will remain closed for several more years due to DOE safety concerns associated with Hanford Site cleanup and remediation. Certainly it will remain closed to all uses during the period until the final management alternative is chosen through the CCP process. As noted above, at that point, the possible implementation of hunting in the area will be addressed through a revision of this Sport Hunting Plan. The issue is moot for this version of the Sport Hunting Plan.

¹⁶ The riverbed and shorelines up to the ordinary high water mark are controlled by the Washington Department of Natural Resources and are open to public recreational uses as allowed by the state of Washington.

2.2 Preferred Alternative

The FWS has initially chosen Alternative A as its preferred alternative. Both alternatives, in some form, meet the primary purposes of the Monument Proclamation and the mission of the NWRS and therefore have the potential to be selected as a final Sport Hunting Plan. However, until such time as the CCP—now in draft—can be completed, the FWS believes it is in the best interest of resource protection—while still providing for public use—to continue operations as they are. When a final preferred alternative is chosen through the CCP process, incorporating all Monument programs and operations, then the appropriate changes to the hunting program, if any, can best be implemented.

2.3 Affected Environment

The area being considered in this Hunting Plan is located near the Tri-Cities (Kennewick, Pasco and Richland) in south-central Washington State.

The Monument lies along both sides of the Columbia River, approximately 30 miles north of the Oregon border, 200 miles east of the Pacific Ocean, 110 miles west of Idaho border, and 150 miles south of the Canadian border. Most of the Monument's 195,777 acres are located in Benton, Franklin and Grant Counties, although the northeast corner extends a short distance into Adams County.

The Monument lies between three major population centers: Portland, Oregon (230 miles by road); Seattle, Washington (225 miles); and Spokane, Washington (140 miles). The cities of Kennewick, Pasco, Richland (the Tri-Cities), and West Richland constitute the nearest population centers and are located just south of the Monument.

The Monument is about thirty miles north to south and twenty-four miles east to west. The Columbia River flows through the Monument and, turning south, forms part of the eastern boundary. The Rattlesnake Hills, of which Rattlesnake Mountain is a part, are the southwestern boundary of the Monument, Umtanum Ridge the western boundary, and the Saddle Mountains the northern boundary. The lands that border the Monument to the west, north and east are principally range and agricultural land.

The area within the Monument being considered under this action includes those lands north of the Columbia River and east of the Saddle Mountain Unit, subject to species-specific regulations (e.g., waterfowl cannot be hunted within 1/4-mile of the river from the wooden power lines at the old Hanford Townsite upstream to the Saddle Mountain Unit boundary). This is the only area currently open to hunting.

2.3.1 Introduction

The state of Washington is generally thought of as temperate or even wet; in reality, however, most of the state east of the Cascade Mountain Range is quite dry, to the point of meeting the definition of desert.

The Monument comprises lands originally acquired by the federal government in 1943 for the Manhattan Project. All the land within the Monument currently belongs to the DOE as part of the 375,000-acre Hanford Site. The Monument was created primarily from parts of the Hanford Site that were considered safety and security buffers during the weapons production period of the site's history. As such, the Monument forms a large horseshoe-shaped area around what is generally known as Central Hanford and, because use has been restricted in the area, the Monument provides a buffer for the smaller areas currently used for storage of nuclear materials, waste storage, waste disposal, and the Energy Northwest Power Plant.

When European settlers first arrived in the Pacific Northwest, they found a harsh, but surprisingly productive arid landscape that today is identified as the Columbia Basin Ecoregion. This area historically included over 14.8 million acres of steppe and shrub-steppe vegetation across most of central and southeastern Washington State (Franklin and Dyrness 1973), as well as portions of north-central Oregon.

Today, much of the Columbia Basin Ecoregion has been converted into farms and urban centers. However, the protected status of the Hanford Site since 1943 resulted in its becoming a refuge for native plants, animals and biological communities that were once far more common in the surrounding landscape. Equally important, the portion of the Columbia River within the Hanford Site is unique within the post-dam Columbia River system in the United States. Within the Hanford Site, the river is essentially free flowing through an approximately 51-mile (46.5 miles within the Monument) segment. This segment is called the Hanford Reach. The Hanford Reach extends from the upper end of the McNary Dam Reservoir to Priest Rapids Dam and contains significant riparian habitat that is otherwise rare within the Columbia River system (National Park Service 1994). It is because of this dual juxtaposition of increasingly rare habitats—the only free-flowing, non-tidal stretch of the Columbia River remaining in the United States and the largest remnant of the shrub-steppe ecosystem that dominated the Columbia Basin prior to European settlement—that President Clinton established the Hanford Reach National Monument through Presidential Proclamation in June 2000.

The Monument is characterized as a shrub-steppe ecosystem. Such ecosystems are typically dominated by a shrub overstory with a grass understory. In the early 1800s, the dominant plants in the area were big sagebrush underlain by perennial Sandberg's bluegrass and bluebunch wheatgrass. With the advent of settlement, livestock grazing and agricultural production contributed to colonization by non-native plant species that currently dominate large portions of the landscape. Although agriculture and livestock production were the primary subsistence

activities in the area at the turn of the century, these activities ceased when the Hanford Site was designated in 1943. Remnants of past agricultural practices are still evident, however.

At 195,777 acres, the Monument, along with the Department of Defense's (DOD) Yakima Training Center, retain the largest remaining blocks of relatively undisturbed shrub-steppe in the Columbia Basin Ecoregion (Smith 1994, Soll et al. 1999). When settlers arrived, the vegetation in the ecoregion consisted primarily of shrubs, perennial bunchgrasses, and a variety of forbs. An estimated 60% of shrub-steppe in Washington has been converted to agriculture or other uses. Much of what remains is in small parcels in shallow rocky soils or has been degraded by historic land uses (mostly livestock grazing). This conversion of land extends even into the Monument; the Monument encompasses undeveloped land interspersed with industrial development along the southern shoreline of the Columbia River, and human-made intrusions—such as roads, power lines, irrigation canals, communications structures, and remnant domestic plants—are evident throughout the Monument.

The Monument contains some of the best remaining large-scale examples of the shrub-steppe vegetation type in the Pacific Northwest, supporting habitat for many species of native wildlife (including shrub-steppe obligate species), a diverse array of native plant communities (including many threatened and endangered taxa), microbiotic crusts, and a unique invertebrate fauna that is still being catalogued (Soll et al. 1999, Evans et al. 2003). Many places in the Monument are relatively free of non-native species and are extensive enough to retain characteristic populations of shrub-steppe plants and animals that are absent or scarce in other areas.

The Monument's importance as a refuge for the shrub-steppe ecosystem is not solely related to size, however. The presence of a large diversity of physical features and examples of rare, undeveloped deep and sandy soil has led to a corresponding diversity of plant and animal communities. Because it is located within the hottest and driest part of the ecoregion, the Monument also retains some of its own uniqueness and fragility.

The Monument's other key feature—the Hanford Reach—is home to the most important salmonid spawning grounds remaining on the Columbia River. The Hanford Reach and associated riparian zones provide habitat for numerous wildlife and plant species, including remnant habitat for aquatic organisms that were widespread before the remainder of the Columbia River system was converted to reservoirs. Surveys have identified several rare plant associations along the shoreline and islands of the reach (Salstrom and Easterly 1995, Soll and Soper 1996), further defining the Monument's importance to the nation.

It was due to the Monument's—and the Hanford Reach's—singular importance to the nation that the National Park Service (NPS), in a ROD issued on July 16, 1996, recommended that the Hanford Reach and its surrounding lands be designated a recreational river in the National Wild and Scenic Rivers System (NWSRS) and that other lands in the area be designated a national wildlife refuge. While the NWSRS designation has yet to be realized, on June 9, 2000, portions of the Hanford Site, including the Hanford Reach and associated islands, wildlife management

areas to the north, White Bluffs, Hanford Dunes, ALE, and the McGee Ranch/Riverlands area, were designated as the Hanford Reach National Monument to be administered as part of the NWRS. Although the DOE currently owns the entire Monument, the FWS exercises management over 165,000 acres of the Monument, and the WDFW manages a small recreational access area.

2.3.2 Physical Environment

The Draft CCP includes a very detailed description of the Monument's physical environment. Here, that information is summarized and limited to those factors that would influence, or be influenced by, recreational hunting.

2.3.2.1 Climate

The Monument lies in the semi-arid shrub-steppe Pasco Basin of the Columbia Plateau in southeastern Washington State. The region's climate is greatly influenced by the Pacific Ocean and the Cascade Mountain Range to the west and other mountain ranges to the north and east. The Pacific Ocean moderates temperatures throughout the Pacific Northwest,¹⁷ and the Cascade Range generates a rain shadow that limits rain and snowfall in the eastern half of Washington State.¹⁸ The Cascade Range also serves as a cold air drainage, which has a considerable effect on the wind regime on the Hanford Site.¹⁹ Mountain ranges to the north and east of the region shield the area from severe winter storms and frigid air masses that move south across Canada.

¹⁷ The average monthly temperatures on the Monument's lower levels range from a low of 31°F in January to a high of 76°F in July. Daily maximum temperatures in the Monument vary from an average of 35°F in late December and early January to 96°F in late July. From mid-November through early March, the average daily minimum temperature is below freezing; the daily minimum in late December and early January is 21°F. There are, on average, fifty-two days during the summer months with maximum temperatures of 90°F and twelve days with temperatures greater than or equal to 100°F. On average, the daily minimum temperature drops to 0°F or below only three days per year; however, only about one winter in two experiences such low temperatures.

¹⁸ Average annual precipitation in the Monument's lower levels is 6.8 inches. In 1995, the wettest year on record, the precipitation measured was 12.3 inches; in 1976, the driest year, only 3.0 inches were measured. Most precipitation occurs during the late autumn and winter, with more than half of the annual amount occurring from November through February.

¹⁹ Prevailing wind directions near the surface in most of the Monument are from the northwest all months of the year, although winds from the northwest occur most frequently during the winter and summer. Winds from the southwest also occur frequently in the Monument, especially in the southeastern quadrant. The fastest wind speeds in the Monument are usually associated with flow from the southwest. However, the summertime drainage winds from the northwest out of the Cascade Mountains frequently exceed thirty mph.

2.3.2.2 Geologic Features

Geologic history, with spectacular landscapes exhibiting the power of nature, was a significant contributing element in the establishment of the Monument. The Monument lies within the geologic area known as the Columbia Basin and contains all its main geologic elements.

2.3.2.2.1 Ancestral Columbia River

The ancestral Columbia River repeatedly changed its course over the past fifteen million years and left deposits of gravel, sand, silt and clay. The deposits were the result of the ancestral river's growing restriction in the low areas of the Pasco Basin and lower Yakima Valley as the rising ridges of basalt grew, which caused a change in the direction of the river's flow, leaving behind the Ringold Formation. Later, regional uplifting in the western United States caused the river to cut through its own earlier deposits (the Ringold Formation), exposing the Monument's signature White Bluffs.

2.3.2.2.2 Missoula Floods

The last major geologic event to shape the Monument was the Missoula Floods. During the freezes and thaws that occurred in the last Ice Age—the Wisconsin—an ice dam across the Clark Fork River in Montana formed and failed many times, each time releasing a wall of water that surged southwest through the Columbia Basin, inundating most of the Monument several hundred feet deep.²⁰ The largest and most frequent floods came from glacial Lake Missoula in northwestern Montana. However, smaller floods may have escaped down-valley from glacial Lakes Clark and Columbia along the northern margin of the Columbia Basin (Waitt 1980) or down the Snake River from glacial Lake Bonneville (Malde 1968).

When the floodwaters entered the Pasco Basin, they quickly became impounded behind solid basalt in the Wallula Gap, which was too restrictive for the volume of water involved. This temporary, reoccurring glacial lake, known as Lake Lewis, is estimated to have reached an elevation of 1,200 feet on the Monument. (The lake itself was approximately 900 feet deep.)

The Missoula Floods contributed several geologic features to the Monument. Glacial erratics are non-indigenous rocks, such as granitics, gneiss, quartzite, argillite and schist, carried on ice rafts by the raging flood waters from as far away as Montana and Idaho. These rocks, often reaching boulder size, are scattered around the Monument. Other unique features connected to

²⁰ The Missoula Floods inundated the Monument several times, beginning as early as one million years ago, with the last major flood dated at about 13,000 years ago.

the floods are bergmounds,²¹ giant ripple marks, and gravel bars.²² Of particular note within the area of this Sport Hunting Plan are sand dunes, the result of reworked Pleistocene flood deposits being driven by high winds in the Columbia Basin. The top of the White Bluffs have a well-known field with both migrating dunes on the bluff edge and stabilized dunes to the east. Movement and stability varies depending on natural factors (fire, wind, vegetation) and human intervention (surface disturbance).

2.3.2.3 Paleontologic Resources

One of the major landmarks within the Monument, the White Bluffs, is the middle component of the Ringold Formation, which dates to between three and eight million years ago. The formation is composed of a 1,000-foot-thick deposit of interbedded lacustrine and fluvial silts, sands and conglomerate, with some paleosol remnants. Regional uplifting about three million years ago resulted in the present upper Columbia River cutting down through approximately 600 feet of the Ringold Formation to its present elevation of 300 feet. This last erosional event has exposed a multitude of vertebrate and some invertebrate fossils in the Ringold Formation. Of particular note are rhinoceros and anadromous salmonid fossils from the late Miocene.

The subsequent White Bluffs component of the formation contains even more fossils, including twenty-seven species of mammals alone. Among the fauna found are rodents, lizards, frogs, turtles, fish, rabbits, bears, canids, cats, ground sloths, peccaries, deer, mastodons, camels, horses and zebras.

In addition to the fossils found in the White Bluffs, petrified wood can be found in the Saddle Mountains, Umtanum Ridge, and Yakima Ridge.

2.3.3 Plants and Plant Communities

The term *plant communities* refers to plant species that coexist in generally recognizable groups. Plant communities are important indicators of biodiversity because they form the biotic component of the habitat used by other organisms. Plant communities are classified at one or more of three levels—potential plant community type, vegetation mapping unit, and cover type.

²¹ Bergmounds were left when icebergs rafted lithic material from other areas. It is believed that bergmounds were formed when larger icebergs grounded themselves at the shallow edges of the lake as the flood waters withdrew. Being larger and deeper, they hit bottom sooner than those carrying the erratic boulders. Once grounded, the ice melted, depositing the iceberg's load of sand and gravel in place.

²² All of these features are considered slack water deposits that occur when turbulent water action subsides.

Potential plant community types reflect the plant species that are projected to dominate an undisturbed site over time, based on climate and other abiotic factors present at the site. A potential plant community type generally is identified by both its dominant shrub (when present) and dominant grass (or grasses when shrubs are absent).

Vegetation mapping units identify the existing vegetation of an area. Vegetation mapping unit types are grouped into more generalized cover types. The conservation significance of each area mapped is determined, using criteria developed by the Washington Natural Heritage Program (WNHP), by an assessment (ranking) of ecological condition, size and the surrounding landscape. Vegetation mapping units that meet minimum biodiversity standards are designated “element occurrences” and are entered into the WNHP tracking system for significant state- and region-wide elements of biodiversity. (As used here, an *element* is an entire biological system, such as a plant community or a wetland ecosystem.)

Cover types are the plant communities that currently exist on site.

The diversity and vast size of native plant communities found in the Monument and Central Hanford is unmatched in the ecoregion. Biodiversity inventory personnel and the WNHP identified a total of seventeen terrestrial potential plant community types (or elements) that occur as forty-eight separate element occurrences on the Monument. The terrestrial element occurrences cover approximately 90,000 acres of the Monument and, to a lesser extent, Central Hanford.

The condition and size of the antelope bitterbrush (*Purshia tridentata*)/Indian ricegrass (*Oryzopsis hymenoides*) and big sagebrush (*Artemisia tridentata*)/needle-and-thread (*Stipa comata*) dune complex occurrences on the Wahluke Slope are extensive and of particular regional importance. Additionally, the inventory identified six riparian wetland communities along the shore of the Hanford Reach as element occurrences. Such communities are rare elsewhere along a river system that is otherwise a series of lakes.

Although Daubenmire (1970) placed the Hanford Site within the big sagebrush/bluebunch wheatgrass (*Agropyron spicata*) vegetation zone, the site spans a wide climatic and edaphic (soil) range, resulting in equally diverse vegetation. Much of the Wahluke Slope is drier than typical big sagebrush/bluebunch areas, receiving six to eight inches or less of precipitation per year and having sandy or coarse textured soils. Under these conditions, bluebunch wheatgrass grows poorly or not at all.²³ This range of climatic variation, combined with equally diverse geologic and soil conditions, has produced a remarkable diversity of potential plant community types. Thus, while the big sagebrush/bluebunch wheatgrass community represents the climatic

²³ At the other extreme, the more cool and moist (mesic) conditions with loamy soil at high elevation on Rattlesnake Ridge are typical of the three-tip sagebrush (*Artemisia tripartita*)/Idaho fescue (*Festuca idahoensis*) zone (Daubenmire 1970).

climax plant community expected to occur in the area (i.e., the plant community predicted to occur on deep loamy soils in areas with a gentle slope, moderate drainage, and average chemical characteristics), other community types dominate over much of the Wahluke Slope. For the most part these are edaphic (soil-related) climax communities, dominated in the grass layer by needle-and-thread, Indian ricegrass, and Sandberg's bluegrass (*Poa sandbergii*) (more the result of low precipitation than soil type in some cases).

TNC (Soll et al. 1999) conducted plant surveys in the ALE, Wahluke Slope, Central Hanford, and riparian communities along the Columbia River shoreline from 1994 through 1997. These surveys tentatively identified thirty potential terrestrial plant communities. Designation as a potential community indicates the type of community that would exist in an area if it were free of disturbance. In addition to characterizing potential plant communities, TNC found 112 populations/occurrences of twenty-eight rare plant taxa in the Hanford Site (Soll et al. 1999). When combined with observations preceding the 1994–1999 inventory, a total of 127 populations of thirty rare plant species have been documented in the Hanford Site.

Before settlement, the Hanford Site landscape lacked trees, although the Columbia River shoreline and natural springs supported a few scattered cottonwoods and willows. Homesteaders planted trees in association with agricultural areas. Shade and ornamental trees were also planted around former military installations and industrial areas in the Hanford Site. Currently, approximately twenty-three species of trees occur in the Monument. The most common species are black locust (*Robinia pseudoacacia*), Russian olive (*Elaeagnus angustifolia*), cottonwood (*Populus trichocarpa*), willow (*Salix* spp.), mulberry (*Morus alba*), sycamore (*Platanus occidentalis*) and poplar (*Populus* spp.). Many of these non-native species are aggressive colonizers and have become established along the Columbia River (e.g., mulberry, cottonwood, poplar, Russian olive), serving as a functional component of the riparian zone. For example, trees provide nesting habitat and cover for many species of mammals and birds.

Natural plant communities have been altered by Euro-American activities, resulting in the proliferation of non-native species. A total of 727 species, representing 90 families of vascular plants, have been recorded for the Hanford Site (Sackschewsky and Downs 2001). Of this total, 179 are non-native species. Cheatgrass (*Bromus tectorum*) is the dominant non-native species. It is an aggressive colonizer and has become well-established across the Hanford Site (Rickard and Rogers 1983).²⁴

Range fires that historically burned through the area during the summers eliminate fire intolerant species (e.g., big sagebrush) and allow more opportunistic and fire-resistant species a chance to become established. Recovery of burned areas is a slow process, and it will be many years before areas will reestablish the natural component of vegetation and associated animal life.

²⁴ Hanford Site plants are adapted to low annual precipitation (6.8 inches), low water-holding capacity of the rooting substrate (sand), dry summers, and cold winters—situations that are ideal for cheatgrass.

2.3.3.1 Upland Community Types

Most of the upland community types identified on the Hanford Site occur on the Wahluke Unit, albeit some are limited in their extent.

2.3.3.1.1 *Big Sagebrush/Bluebunch Wheatgrass*

This potential community type is characterized by big sagebrush, bluebunch wheatgrass, Sandberg's bluegrass, diverse forbs, and where relatively undisturbed, a robust microbiotic crust. As the climatic climax community, it is widespread in many (loamy) soil types, although frequently with a high cheatgrass cover. Where fire has recently burned, sagebrush is generally absent. Under more mesic conditions, Cusick's bluegrass (*Poa cusickii*) can be a common component.

The Wahluke Slope supports only small occurrences, mostly at high elevation on the Saddle Mountains or in other, mostly small, areas with loamy (versus sandy) soil. Over much of the Wahluke Slope, precipitation is too low and soils are too sandy for bluebunch wheatgrass. In some large areas with apparently appropriate soils and climate, this community type may have been replaced by the big sagebrush/cheatgrass type or big sagebrush/Sandberg's bluegrass type as a result of over-grazing and fire.

2.3.3.1.2 *Big Sagebrush/Sandberg's Bluegrass*

It seems likely that in Washington, this plant community type is confined to locations too dry for bluebunch wheatgrass to become established and on soil that is finer textured than is typical for needle-and-thread types. It may also occur as a so-called *zootic* (literally, *from animals*) climax where grazing has eliminated larger, later-growing bunchgrasses. In general on the Hanford Site, a high cover of big sagebrush and low forb diversity is characteristic of this type. Spiny hopsage (*Grayia spinosa*) may occur, especially at drier sites, with cover ranging from widely scattered individuals to a few locations at which it was co-dominant with big sagebrush.

Although vegetation resembling this type exists over a large area, it is difficult to distinguish from degraded occurrences of other types in which the larger bunchgrass taxa have been eliminated by historic use and/or fire. Therefore, the extent of its occurrence on the Wahluke Slope is unknown, although it is certainly limited, especially in comparison with the ALE and Central Hanford.

2.3.3.1.3 Big Sagebrush/Needle-and-Thread

This community is present in a range of soils, from those with a significant component of sand (sandy loam) to stabilized dunes. Big sagebrush is the dominant shrub, although bitterbrush commonly occurs at varying levels. Thickspike wheatgrass (*Agropyron dasystachyum*) may occur in the understory with the needle-and-thread. Where it is intermixed with bluebunch wheatgrass, needle-and-thread grass is thought to increase with disturbance.

Big sagebrush/needle-and-thread grass communities occur in several areas on the Wahluke Slope. The most prominent of these areas are: a large area along the eastern boundary, south of State Route 24, where much of the shrub cover has been eliminated by a recent fire; along the crest of the Saddle Mountains where it intergrades with big sagebrush/bluebunch wheatgrass; and above the White Bluffs in the southeastern corner of the site. Much of the now-degraded lower elevations on the Wahluke Slope probably supported this type before being converted to cheatgrass by grazing and fire. Although much of this community type has been degraded by grazing and fire, some areas retain significant native character. These include some of the area south of State Route 24 and the southeastern portion of the Hanford Site; that large examples of these communities exist at all is due to the protection afforded by the Hanford Site. Nearby sites that once supported this community have been converted to irrigated agriculture as part of the Columbia Basin Project.

2.3.3.1.4 Bitterbrush/Indian Ricegrass Dune Complex

This community type occurs on active dunes and other extremely sandy soils. As opposed to relatively cool and moist western and northern portions of the ecoregion where it grows in loamy soils, bitterbrush is only found in nearly pure sand within the hotter and drier central Columbia Basin. Plant composition is highly variable, changing with subtle shifts in substrate and presumably time as an active dune becomes stable (or vice versa), but sagebrush is generally absent. As such, the boundaries of this type are fluid and difficult to map. Succession and stabilization of a dune site apparently leads to the development of other potential plant community types (probably most often the big sagebrush/needle-and-thread type). As a result, the dune complex encompasses several related successional cover types, each composed of taxa adapted to different degrees of sand accumulation, loss and stability. On the Wahluke Slope, the antelope bitterbrush/Indian ricegrass dune complex covers large areas directly above the White Bluffs.

2.3.3.1.5 Big Sagebrush/Cheatgrass

This designation represents areas with extensive cheatgrass and other exotic species cover with or without big sagebrush in which the original/native potential plant community type could not

be determined, or where it has likely been permanently replaced. This is the situation over much of Central Hanford (and indeed in highly degraded or sandy soil areas throughout Hanford, including the Wahluke Unit) where identification of potential plant community types is difficult. Particular difficulties are faced in identifying plant community types where historic disturbances are the most intense (especially on historically farmed locations). Much of the documented, unexplained big sagebrush die-off is located in this area. Vegetation within this designation has highly variable shrub cover, a high cover of cheatgrass, frequently a significant cover of Sandberg's bluegrass, and usually a low cover of microbial crust. This designation represents vegetation in a degraded condition; however, there is considerable variability in the amount and rate of successional changes of areas mapped as this designation. Some areas appear to be recovering towards native vegetation, whereas other areas appear to be permanently modified.

2.3.3.1.6 Sand Dropseed/Sandberg's Bluegrass

This plant community type is characterized by a lack of shrubs and dominance by the two grass species for which it is named. Areas mapped as this type are located within the lowest elevation upland plant communities near the Columbia River and in similar locations scattered throughout the Wahluke Slope. Sand dropseed (*Sporobolus cryptandrus*) is found along roadways and other highly disturbed areas scattered throughout the area. It is difficult to determine whether the species is present because of disturbance, or if its presence represents a potential plant community type. It is only mapped as a possible potential plant community type adjacent to the river, usually within the river's probable maximum flood area (Cushing 1995). The cover of Sandberg's bluegrass is often sparse and that of cheatgrass high. Overall plant diversity within the type is low, and many components are weedy. The climax status of the type is uncertain. When sand dropseed occurs without Sandberg's bluegrass, it probably represents a climax riparian community type (Johnson and Simon 1987) that occurred historically in a zone disturbed by floods frequent enough to exclude other bunchgrasses and shrubs.²⁵

2.3.3.1.7 Spiny Hopsage/Sandberg's Bluegrass

The spiny hopsage/Sandberg's bluegrass community occurs on dry sites with fine-textured soils and likely represents an unusual variant of the big sagebrush/Sandberg's bluegrass community. (One possible explanation for the absence of sagebrush is intermittent pooling of water [Downs et al. 1993].) Sandberg's bluegrass is the dominant grass, although cheatgrass is a major or dominant component in most areas of the Hanford Site. Forb diversity and crust cover are generally low. This type occurs as pure stands of spiny hopsage on the Wahluke Slope. On the

²⁵ It should be noted that there have been no floods since at least 1948 that approach the probable 100-year flood event.

Wahluke Slope, it occurs mostly in the central portion of the White Bluffs, but it can also be found in scattered locations in the southwest portion.

2.3.3.1.8 Winterfat/Sandberg's Bluegrass

This unusual community has winterfat (*Eurotia lanata*) as the dominant shrub and Sandberg's bluegrass as the major grass. It occurs on Warden or Kennewick silt loam soils (notably calcareous) around 800 feet in elevation on the Wahluke Slope. Overall species diversity is low in this community, although Piper's daisy (*Erigeron piperianus*), a rare plant, frequently occurs. A small occurrence can be found on the Wahluke Slope near the northwest site boundary north of State Route 24.

2.3.3.1.9 Stiff Sagebrush/Sandberg's Bluegrass

Stiff sagebrush (*Artemisia rigida*) grows on thin soils over fractured basalt. This plant community type occurs on the crest of the Saddle Mountains, in a tiny occurrence on ridge crests in the Cold Creek Valley, and intermittently on shallow soils over basalt on Umtanum Ridge. The cover of soil mosses and lichens is consistently high. The ecological condition of the type is generally marginal.

2.3.3.2 Riverine, Riparian and Island Community Types

Eight riparian and three island upland community/cover types are identified in the Hanford Reach, including six occurrences of significant low-elevation wetlands. The assemblage of plant species changes from the river edge upward through the shoreline profile. The communities are clearly defined in some areas. In others, ecotones may be blurred due to hydrology, topography, overlapping habitat requirements, and susceptibility to invasion by weedy species. These factors combine to create shifting mosaics of species, most pronounced low in the riparian profile. Plant communities are identified to the degree practicable. Where dominant species are not confined to a specific zone, each zone is characterized by its physical features.

Although the Hanford Reach is free-flowing, changes in its hydrology from upstream dams have likely altered some riparian communities and substrates. For example, much of the substrate previously mapped as sand by the ACOE is now cobble. Thus, some communities may reflect a transient state. Because data is lacking to describe successional pathways, only the existing vegetation is described.

Six areas along the south shore and islands of the river are identified as significant occurrences of Columbia Basin low-elevation riparian wetlands—China Bar, Islands 2–5, Locke Island,

White Bluffs Slough, 100-F Area Slough, and the Hanford Town Sites Slough. Although not all of these sites are pristine, such wetlands are of statewide conservation importance because most comparable sites have been permanently flooded by the reservoir system.

Only the summaries of the major plant communities of the wetlands, springs and riparian areas in the Hanford Site and within the Hanford Reach are described here. Descriptions of all the identified communities are available in Wilderman (1994) and Salstrom and Easterly (2004).

2.3.3.2.1 Willow Riparian Complex

This riparian community is characterized by diverse shrubs and trees that include a substantial component of, or dominance by, willows. Because of its association with water and its value as wildlife habitat, this type is a very important component of the Monument. Small groves of narrowleaf willow (*Salix exigua*) occur sporadically above the high waterline throughout the Hanford Reach. Within these groves, the willows usually form thickets averaging five feet in height, and the understory is commonly dominated by reed canarygrass (*Phalaris arundinacea*).

2.3.3.2.2 Non-Persistent Riverine Emergent Wetland

Backwater areas and sloughs often form in the lee of cobble bars where silt has been deposited; this silt provides for wetland communities. The largest wetland systems are associated with the most developed cobble bars, such as on the lee side of Locke Island. Others are scattered throughout the north shore. This habitat system is thought to be rare elsewhere along the Columbia River, but may have been common before the extensive construction of hydroelectric dams (Downs et al. 1993). These systems are rich in species diversity, both within and between sites. Dominant species include common spikerush (*Eleocharis palustris*), needle spikerush (*Eleocharis acicularis*), alkali bulrush (*Scirpus maritimus*), western lilaopsis (*Lilaeopsis occidentalis*), broadleaf cattail (*Typha latifolia*), and various rushes (*Juncus* spp.). Three species that occur abundantly and consistently within these wetlands are currently considered sensitive in Washington—slender flatsedge (*Cyperus bipartitus*), false pimpnel (*Lindernia anagallidea*), and Owyhee mudwort (*Limosella acaulis*) (WDNR 1994). On the Monument, this plant community type is often relatively pristine.

2.3.3.2.3 Unconsolidated Shore, Cobble

A collar of mostly bare cobble occupies most of the lowest portion of the shoreline. This zone is heavily disturbed due to the almost daily inundation during the growing season from waterflow manipulation upriver at Priest Rapids Dam. A number of forbs, including the rare species persistentsepal yellowcress (*Rorippa columbiae*), occur in this zone. On flat profiles,

this zone intergrades into low shrub communities. Farther up the riparian profile, but below daily high water, the rhizomatous shrubs Indian hemp (*Apocynum cannabinum*) and western goldentop (*Solidago occidentalis*) commonly form a perimeter thicket. Indian hemp is confined to this zone but occurs irregularly. Western goldentop is omnipresent, but also occurs in adjacent zones. Occasionally, particularly on slopes of more than 15%, this zone is absent or replaced by a monoculture of reed canarygrass.

2.3.3.2.4 Irrigation Run-off Created Wetlands

This artificial community type includes lakeshores, riparian areas, and wetlands on the Wahluke Slope that have been converted from shrub-steppe due to accumulated run-off from irrigated agriculture. The largest examples are just south and five miles south of State Route 24 in the eastern end of the Monument and around Saddle Mountain Lake on the western end. Small examples occur periodically along the White Bluffs due to water seepage through the Bluffs. Communities in these wetlands are typically dominated by non-native species, such as tamarisk (*Tamarix parviflora*) and Russian olive, but also support native willows and cattails and black cottonwood. Although artificial, these areas can provide valuable wildlife habitat, especially for amphibians, birds and bats in an otherwise arid landscape.

2.3.3.2.5 Island Upland

Three communities are recognized on islands within the Hanford Reach: the northern wormwood (*Artemisia campestris* spp. *borealis*)/sand dropseed community occurs where upland areas are seasonally flooded but above frequent high water; the flatspine burr ragweed (*Ambrosia acanthicarpa*)/Indian ricegrass community occurs on a small dune system on an unnamed island at the head of Wahluke Bend; and a cheatgrass community (see discussion above on unknown potential communities) covers portions of Locke Island. Patches of thickspike wheatgrass and Great Basin wildrye (*Elymus cinereus*) occur within this zone.

2.3.3.3 Microbiotic Crusts

Throughout much of the shrub-steppe region, a living crust covers some or all of the soil between plants. This soil crust—referred to as microbiotic, cryptobiotic, or cryptogamic—is composed of algae, fungi, lichens and mosses. Microbiotic soil crusts are especially well developed in relatively undisturbed areas, such as occur in portions of the Monument. More than ten species of organisms can be present on as little as 0.8 square-inches of soil. As a unit, these assemblages are often compact and fragile. Although the ecological role of the microbiotic crust is not well understood, it clearly plays an important role in shrub-steppe ecosystem functions by reducing erosion, contributing nitrogen and organic carbon to the soil, and

increasing infiltration of precipitation into the soil. Intact crusts can also enhance native seedling establishment in arid ecosystems (St. Clair et al. 1984), and the presence of intact biological crusts may inhibit the establishment of cheatgrass and other invasive species (Belnap et al. 2001, Kaltenecker et al. 1999).

The presence of a biological soil crust can influence the surface hydrology of a site. In many sites, it appears that infiltration rates increase with the presence of a crust, although this depends on a number of factors, including soil type, crust composition, and climate.

Lichens, bryophytes, cyanobacteria and green algae in the crust fix atmospheric carbon, contributing to the overall productivity of a plant community. Free-living cyanobacteria and many lichens in the crust are capable of fixing atmospheric nitrogen, which is subsequently released into the soil and used by vascular plants and fungi, contributing to enhanced productivity (Belnap et al. 2001; Evans and Belnap 1999). In some cases, vascular plants that grow in areas of well-developed crust have higher accumulations of essential plant nutrients than in sites that lack a crust (Belnap et al. 2001; Ridenour and Calloway 1997).

Most biological soil crusts are fragile and readily disturbed, with susceptibility to disruption related in part to site factors such as soil type, local climate, and the vascular plant community (Belnap et al. 2001). Over the past century, most biological crusts in the Pacific Northwest have been heavily altered and sometimes destroyed by livestock, agricultural practices, wildfire, invasive species, and off-road vehicle use. There is evidence that the biological soil crusts in the Pacific Northwest, including those in the area of the Monument, evolved in low-disturbance environments, where impacts by large herbivores and fire were much less severe than at present.

An early study of microbiotic crust looked at seventeen sites representing a wide range of plant associations, ecological conditions, and soil types in the lower elevation portions of the Hanford Site. That study identified thirty soil lichen and eight moss species; three of the lichen species had not previously been described.

However, comparison with data from other studies conducted in shrub-steppe indicates that the Monument supports an even more diverse and unique crust flora. A recent study conducted in cooperation with TNC biological diversity inventories found fifty-four lichen taxa growing as part of the terrestrial soil crust community. Thirty-six of these taxa have been identified to species, while the identifications of the remainder are conditional at present. Of these, four taxa have tentative species identifications and fourteen have been identified to the genus only. Twenty-six lichens are common and widespread to locally common across the Monument, and the remaining taxa are uncommon to rare.

In addition to the terrestrial lichens, at least twenty-six taxa of saxicolous lichens were collected growing on rock outcrops, rocks, or stones. Most collections of saxicolous lichens have been identified to genus only; five taxa are still of unknown identity. Not enough information is available to assess the distributions of saxicolous lichens.

Eleven lichen taxa are epiphytic on the bark of shrubs and trees. Most have been identified to genus, with species identification pending. Most of the epiphytic lichens appear to be relatively widespread, at least where sagebrush is present. Four lichen species are found on two substrata. *Lecanora muralis* and an unknown, *Xanthoria*-like lichen are both primarily saxicolous, but are also found on soil. *Physconia enteroxantha* is found commonly on both bark and soil, and *Candelaria concolor*, primarily epiphytic, is occasionally found on soil.

2.3.4 Wildlife

The Monument blends a desert environment with one of the largest river complexes in the country, providing an exceptionally wide variety of habitats within a relatively small assemblage of public lands. Each of these two sharply contrasting environments—desert and river—has its own diverse wildlife populations.

2.3.4.1 Riparian Wildlife

Riparian areas provide nesting and foraging habitat and escape cover for many species of birds and mammals. Shoreline riparian communities are seasonally important for a variety of species. Willows trap food for waterfowl (e.g., Canada geese) and birds that use shoreline habitat (e.g., Forster's terns (*Sterna forsteri*)), as well as provide nesting habitat for passerines. Terrestrial and aquatic insects are abundant in emergent grasses and provide food for fish, waterfowl and shorebirds.

Numerous bird species occasionally use riparian areas, while other species are fully dependent on those areas—common species include American robins (*Turdus migratorius*), black-billed magpies (*Pica hudsonia*), song sparrows (*Melospiza melodia*), and dark-eyed juncos (*Junco hyemalis*). Upland gamebirds that use this habitat include ring-necked pheasants (*Phasianus colchicus*) and California quail (*Callipepla californica*). Predatory birds include common barn owls (*Tyto alba*) and great horned owls (*Bubo virginianus*). Species known or expected to nest in riparian habitat include Brewer's blackbirds (*Euphagus cyanocephalus*), mourning doves (*Zenaida macroura*), black-billed magpies, northern orioles (*Icterus galbula*), lazuli buntings (*Passerina amoena*), eastern and western kingbirds (*Tyrannus tyrannus*, *T. verticalis*), and western wood peewees (*Contopus sordidulus*). Bald eagles (*Haliaeetus leucocephalus*) have wintered in the Hanford Site since 1960 and use riparian trees for perching and roosting. Great blue herons (*Ardea herodias*) and black crowned night herons (*Nycticorax nycticorax*) are associated with trees in riparian habitat along the Columbia River and use groves or individual trees for perching and nesting. On occasion, great blue herons have constructed nests in the large metal power line towers that are present on the shores of the Columbia River.

The Monument is located in the Pacific Flyway, and the Hanford Reach serves as a resting area for neotropical migrant birds, migratory waterfowl, and shorebirds (Soll et al. 1999). During the fall and winter months, ducks (mallard [*Anas platyrhynchos*], pintail [*Anas acuta*], ring-necked [*Aythya collaris*], canvasback [*Aythya valisineria*], bufflehead [*Bucephala albeola*], goldeneye [*Bucephala clangula*]) and Canada geese rest on the shorelines and islands along the Hanford Reach. The area between the Hanford town sites and Vernita Bridge is closed to recreational hunting, and large numbers of migratory waterfowl find refuge in this portion of the river. Other species observed during this period include American white pelicans (*Pelecanus erythrorhynchos*), great egrets (*Ardea alba*), double-crested cormorants (*Phalacrocorax auritus*), coots (*Fulica americana*), and common loons (*Gavia immer*).

Mammals occurring in riparian areas of the Monument include rodents, bats, furbearers (e.g., mink [*Mustela vison*] and weasels [*Mustela frenata*]), porcupines (*Erithizon dorsatum*), raccoons (*Procyon lotor*), skunks (*Mephitis mephitis*) and mule deer (*Odocoileus hemionus*). River otters (*Lutra canadensis*) are occasionally observed in the Hanford Reach. Beavers (*Castor canadensis*) and muskrats (*Ondatra zibethica*) rely on shoreline habitat for dens and foraging. In the spring, mule deer use Columbia River islands for fawning and nursery areas. During the summer, mule deer rely on riparian vegetation for foraging. The Columbia River provides foraging habitat for many species of bats which feed on emergent aquatic insects, including myotis (*Myotis* spp.), silver-haired bats (*Lasionycteris noctivagans*), and pallid bats (*Antrozous pallidus*).

2.3.4.2 Terrestrial Wildlife

The shrub and grassland habitat of the Monument supports a variety and abundance of wildlife that is surprising given the harsh climate. For a discussion of terrestrial wildlife habitat(s), see Section 2.3.3, “Plant Communities.”

2.3.4.2.1 Terrestrial Invertebrates

Many species of insects occur throughout all habitats in the Monument. Butterflies, grasshoppers and darkling beetles are among the most conspicuous of the approximately 1,500 species of insects that have been identified from specimens collected (Soll et al. 1999). The actual number of insect species may reach as high as 15,500. Surveys performed by TNC included the collection of 40,000 specimens and have resulted in the identification of 43 new taxa and 142 new findings in the state of Washington (Soll et al. 1999). The high diversity of insect species reflects the size, complexity and relatively undisturbed quality of the shrub-steppe habitat.

Because of their extraordinary diversity and intimate interactions with vegetation, insects are one of the most sensitive measures of ecosystem quality and function; however, data is often lacking with which to make comparative judgments among sites. In 1994 and 1995, terrestrial invertebrate inventories were conducted, concentrating on particular insect groups, including leafhoppers and their relatives, true bugs, beetles, bees and wasps, true flies, and butterflies and moths. During 1996 and 1997, inventory efforts concentrated on moths and other night-active insects attracted to light traps and on butterflies. Surveys in 1998 broadened the sampling methods to include pitfall traps.

These five years of insect inventory work in the Hanford Site represent the most intensive survey of its kind of any large geographic region in Washington and one of the few studies of its type conducted in the Pacific Northwest. Almost 40,000 specimens have been collected and identified or made available for identification. Thus far, over 1,500 species-level identifications have been completed, and at least 500 more are expected.

Through the insect biodiversity inventory, a total of forty-one species and two subspecies new to science have been identified and designated by world-recognized authorities. Additionally, numerous other specimens that have been collected but not yet identified may represent species new to science. At least 142 species were not previously known to exist in Washington State. The key point about insect diversity in the Monument, however, is not that any single species is found here and no place else; rather, it is that so many species, including rare or rarely collected species, are found here. These findings indicate that the Monument still retains an assemblage of microhabitats large enough to support what at one time was a fauna typical of the arid interior West.

Of particular interest are the butterflies and moths. Forty-nine taxa of butterflies have been identified; eight of these taxa are identified as monitor species by the state of Washington (WDFW 1998). To date, a total of 318 species of moths have been collected; twenty of these species are new to science, and fourteen species represent new state records for Washington. Butterflies and moths (*Lepidoptera*) are one of the few groups of insects that are commonly included in biodiversity studies. Although other groups of insects offer as much potentially valuable information, butterflies and moths are indeed noteworthy for their use in estimating diversity. This is primarily because of their association with host plants. With few exceptions, butterflies and moths are plant feeders, and many are monophagous (i.e., one host plant used as food) or restricted to a limited number of related host plants. Thus, a diverse lepidopteran fauna often corresponds to a diverse flora.

Shrub-steppe habitat has a relatively distinctive arthropod fauna, which appears to vary with the amount of disturbance and degradation within the habitat. Based on invertebrate collections thus far, it appears that shrub-steppe habitats in the Wahluke and Saddle Mountain Units are more degraded than that of the ALE. Several arthropod species that were encountered in habitats south and west of the Columbia River (e.g., snow scorpionflies [*Mecoptera: Boreidae*] and a winter scarab [*Aphodius*] new species [*Coleoptera: Scarabaeidae*]) were not found north of the

river. The species richness of ground-dwelling beetles is also less in the Wahluke and Saddle Mountain Units. It should be noted that invertebrate collections on the ALE were made prior to the 2000 wildfire that severely altered some shrub-steppe habitats (Evans et al. 2002). Fire has been associated with reductions in total invertebrate family richness as well as in total taxa richness of predatory, detritus-feeding, and ground-dwelling invertebrates in shrub-steppe environments at Hanford (Karr 2000).

The Hanford Site likely represents the closest approximation to a pre-European colonization insect fauna as can be found in eastern Washington. The diverse insect fauna of the Monument was one of the resources called out in the Presidential Proclamation establishing the Monument. The source of the Monument's insect diversity and unique character can be attributed to the size, diversity and relatively undisturbed condition of its native vegetation and other natural habitat characteristics. Several groups of insects appear to be associated with areas of extensive microbiotic soil crusts; mite and *Collembola* (springtail) fauna are abundant where the crust is intact and are virtually nonexistent where the crust has been destroyed. The distribution of snow scorpionflies exhibits the same contrast: The larvae of these small insects feed on moss and are not found in areas where the crust has been degraded or destroyed.

Entomological studies of the site continue to indicate that the Hanford Site is unusual in its lack of introduced or pest species and in its abundance of native taxa. For example, wild bees are the most commonly encountered *Hymenopterans* in the Monument, an indication of the predominance of native vegetation on the site. In the surrounding urban and agricultural landscape, the introduced domesticated honeybee is most common. Agricultural pest species, such as corn earworm, alfalfa looper, celery looper, and numerous cutworms, make up the bulk of trap samples outside of the Hanford Site; these taxa are collected only in small numbers in the Hanford Site. The native arthropod fauna of the Hanford Site provides one of the few remaining areas where potentially beneficial native insects may be sought and, perhaps, found.

Despite extensive and fruitful entomological diversity studies, very little is known concerning the arthropod fauna of the Monument. Species new to Washington State and new to science continue to be found. Such discoveries are likely to continue and accelerate if longer-term studies can be conducted, especially if surveys are focused on less-studied taxa. Large numbers of specimens in some of the lesser-known groups (e.g., spiders) have been collected and processed, and it is hoped that the identification and evaluation of these organisms will add significantly to an understanding of the biological diversity of the Monument. For these reasons, it is important to maintain representative native plant communities and generalized habitats, such as the few springs and riparian zones present in the Monument.

2.3.4.2.2 Amphibians and Reptiles

Before 1995 no comprehensive surveys had been completed on the herpetofauna of major portions of the Hanford Site. In 1995 and 1998, inventory efforts focused on a preliminary site-wide inventory to document the amphibian and reptile species present and the habitats they are using, with follow-up surveys of promising areas. An emphasis was placed on locating species of conservation concern. A total of twelve species of reptiles and five species of amphibians have been documented in the Monument.

Four species of amphibians and nine species of reptiles were found during the 1995 inventory. Three species—Woodhouse's toad (*Bufo woodhousii*), tiger salamander (*Ambystoma tigrinum*), and night snake (*Hypsiglena torquata*)—are Washington State monitor species (WDFW 1998). One species—the northern sagebrush lizard (*Sceloporus graciosus graciosus*)—is a federal species of concern (FWS 1998). The tiger salamander was documented in the Hanford Site for the first time in 1998. Compared to other inventory research areas, few rare amphibian and reptile species were located by the inventory effort. Significantly, however, each of the typical shrub-steppe species was present in appropriate abundance, in sharp contrast to their absence or decline in other areas. Especially noteworthy was the linkage of sagebrush lizard with areas of mature sagebrush and sandy soils.

The side-blotched lizard (*Uta stansburiana*) is the most abundant reptile species occurring in the Monument. Short-horned (*Phrynosoma douglassii*) and sagebrush lizards are reportedly found in the Monument but occur infrequently. The most common snake species include gopher snake (*Pituophis melanoleucus [= catenifer]*), yellow-bellied racer (*Coluber constrictor*), and Pacific rattlesnake (*Crotalus viridis*). The Great Basin spadefoot toad (*Scaphiopus intermontanus*), Woodhouse's toad, Pacific tree frog (*Hyla regilla*), tiger salamander, and bullfrog (*Rana catesbeiana*) are the only amphibians found in the Hanford Site (Soll et al. 1999; Brandt et al. 1993).

2.3.4.2.3 Birds

Approximately 258 species of birds have been documented on or near the Monument, thirty-six of which are common and forty are accidental visitors. The Monument provides habitat for year-round residents, migratory species that breed on the site, winter residents, and migrants that are passing through to or from breeding grounds. The upland habitats of the Monument contain regionally significant breeding populations of steppe- and shrub-steppe-dependent birds and are important to bird conservation in the Columbia Basin Ecoregion. Additionally, riparian/wetland habitat areas (including springs and seeps) contain the highest diversity of bird species in the Monument. These areas provide important stopover habitat for migratory birds, as well as breeding and post-breeding habitat for many resident species. Finally, riverine habitat along the Hanford Reach, such as islands, bluffs and sandbars, are important for a variety of nesting birds,

including swallows, falcons, owls, geese, gulls, terns and waterbirds, as well as wintering habitat for a variety of species.

Mature sagebrush stands are perhaps the most important habitat in the Monument because large blocks of sagebrush in good condition are a dwindling resource in the Columbia Basin Ecoregion. Forty-one bird species on the Monument (Soll et al. 1999) depend on big sagebrush/bunchgrass or bunchgrass habitats and are considered sagebrush obligate species (Table 1). This means that they require sagebrush to complete some part their life cycle (i.e., breeding, nesting, successful reproduction). Many species rely on sagebrush as part of their diet or for nesting, resting or hiding cover. Some species, such as the western sage grouse (*Centrocercus urophasianus*), now a federal candidate species for listing as threatened, were commonly hunted in the recent past.²⁶ Non-game species, such as the state candidate loggerhead shrike (*Lanius ludovicianus*) and sage sparrow (*Amphispiza belli*), have fallen victim to habitat conversion and degradation.²⁷ The Monument provides a regional stronghold for several species of these migratory birds. Other examples of sagebrush obligate species that have significant populations in the Monument include Brewer's sparrows (*Spizella breweri*) and sage thrashers (*Oreoscoptes montanus*), which are more common in the three-tip sagebrush communities at higher elevations. Although not generally considered a sagebrush-obligate species, horned larks (*Eremophila alpestris*) and meadowlarks (*Sturnella neglecta*) are the most abundant breeding birds in the sagebrush/bunchgrass habitats.²⁸

Native grasslands of the Columbia Basin Ecoregion have declined more than 85% since European settlement and have been described as an endangered ecosystem (Noss 1995). The large expanses of native bunchgrass in the Monument are a unique habitat and provide hunting, nesting and resting areas for a number of bird species. Native bunchgrass habitat is used for foraging by a variety of raptors, including Swainson's hawks (*Buteo swainsoni*), golden eagles (*Aquila chrysaetos*), prairie falcons (*Falco mexicanus*), short-eared owls (*Asio flammeus*), red-tailed hawks (*Buteo jamaicensis*), ferruginous hawks (*Buteo regalis*), sharp-shinned hawks

²⁶ Greater sage grouse were historically abundant in the Hanford Site; however, populations have declined since the early 1800s because of the conversion of sagebrush-steppe habitat. Although surveys conducted by the WDFW and PNNL during late winter and early spring 1993, and biodiversity inventories conducted by TNC in 1997, did not observe greater sage grouse in sagebrush-steppe habitat at ALE, sage grouse have been observed in 1999, 2000 and 2002. The area around and including the Monument is identified as a unit for the recovery of sage grouse in the Washington State Sage Grouse Recovery Plan (WDFW 2004).

²⁷ The Saddle Mountain and Wahluke Units together provide the greatest contiguous tract of suitable, occupied habitat for breeding sage sparrows in the state of Washington (Stepniewski 1996).

²⁸ Surveys conducted during 1993 (Cadwell 1994) reported the occurrence of western meadowlarks and horned larks more frequently in shrubland habitats than in other habitats in the Hanford Site.

(*Accipiter striatus*), and rough-legged hawks (*Buteo lagopus*), among others.²⁹ Meadowlarks, horned larks, and grasshopper sparrows (*Ammodramus savannarum*), are some of the ground-nesting birds that are commonly found in bunchgrass habitat in the Monument. Burrowing owls (*Athene cunicularia*) and northern harriers (*Circus cyaneus*) have also been documented nesting and feeding in bunchgrass habitat. Long-billed curlews (*Numenius americanus*) also prefer grassland habitats for nesting and foraging. Common upland gamebird species that occur in shrub and grassland habitat include chukar (*Alectoris chukar*), gray partridge (*Perdix perdix*), California quail, and ring-necked pheasant. Chukars are most numerous in the higher elevations on the Hanford Site.

Riparian habitat is a scarce but important resource for birds in the Monument. The sharp contrast with the adjacent shrub-steppe habitat, the presence of trees, and the abundant cover make these areas focal points for predator and prey. Although the total area occupied by riparian habitat is small, the avian diversity there is higher than the surrounding shrub-steppe. Riparian habitats are used by neotropical migrants—such as western wood peewees, Say’s phoebes (*Sayornis saya*), and western kingbirds—and resident downy woodpeckers (*Picoides pubescens*) and northern flickers (*Colaptes auratus*). Trees are rare in the Monument landscape and therefore provide an important resource for a number of birds. Raptors will perch, hunt from, or nest in trees in the riparian zone, or they may be attracted by the presence of prey species. Barn owls, long-eared owls (*Asio otus*), great-horned owls, red-tailed hawks, sharp-shinned hawks, American kestrels (*Falco sparverius*), and Swainson’s hawks regularly use riparian zones. Chukar, California quail, and mourning doves find abundant cover from predators in the riparian zones. Red-winged and yellow-headed blackbirds (*Agelaius phoeniceus*, *Xanthocephalus xanthocephalus*) breed along watercourses. Songbirds documented using the Monument’s riparian zones include ruby-crowned and golden-crowned kinglets (*Regulus calendula*, *R. satrapa*); warbling vireos (*Vireo gilvus*); and orange-crowned, yellow-rumped, and MacGillivray’s warblers (*Vermivora celata*, *Dendroica coronata*, *Oporornis tolmiei*), among others. In the winter, riparian zones are used by dark-eyed juncos, white-crowned sparrows (*Zonotrichia leucophrys*), Townsend’s solitaires (*Myadestes townsendi*), and other species (LaFramboise and LaFramboise 1998).

Riverine habitat along the Hanford Reach is used extensively by mallards, Canada geese, and other waterfowl for wintering and the island habitats for nesting. Great blue herons, great egrets, black-crowned night-herons, and other water-related birds have been noted using the river corridor and islands. Double crested cormorants, American white pelicans, several species of gulls, and terns also use these areas. This riverine habitat provides essential wintering habitat for bald eagles (federally threatened), American white pelicans, and many species of waterfowl.

²⁹ In 1994, nesting by red-tailed, Swainson’s, and ferruginous hawks included forty-one nests located across the Hanford Site on high-voltage transmission towers, trees, cliffs and basalt outcrops. In recent years, the number of breeding ferruginous hawks (a Washington State threatened species) on the Hanford Site has increased, a result, in part, to their use of steel power line towers in the open grass and shrubland habitats for nesting.

Thirty-eight bird species recorded during recent surveys, including eighteen known to breed within the Monument, are considered species of conservation concern at a state or federal level, or are known or suspected to be declining. Several of these species are closely associated with sagebrush/grassland habitats. Further, many birds, especially migratory species, rely on riparian vegetation or other water-based habitats for some or all of their life cycle. These species have declined as the Columbia River has been converted into a series of reservoirs, and the vegetation along smaller creeks, springs and rivers has been degraded by agriculture and domestic livestock grazing. The remaining habitats offered by the Monument play an important role in preserving this species into the future.

Table 1. Steppe and Shrub-Steppe Obligate Species of the Columbia Basin Ecoregion.

Common Name	Scientific Name	Federal Status	State Status	Sagebrush Obligate	Hanford Abundance
Insects					
Sheridan's green hairstreak	<i>Callophrys sheridanii neoperplexa</i>		Monitor		Rare
Reptiles					
Striped whipsnake	<i>Masticophis taeniatus</i>		Candidate	Yes	Rare
Birds					
Brewer's sparrow	<i>Speizella breweri</i>			Yes	Common
Sage grouse	<i>Centrocercus urophasianus</i>	Former candidate	Candidate	Yes	Rare
Sage sparrow	<i>Amphispiza belli</i>		Candidate	Yes	Common
Sage thrasher	<i>Oreoscoptes montanus</i>		Candidate	Yes	Rare
Mammals					
Pygmy rabbit	<i>Brachylagus (Sylvilagus) idahoensis</i>	Former candidate	Endangered	Yes	Extirpated
Sagebrush vole	<i>Lagurus (Lemmyscus) curtatus</i>		Monitor	Yes	Uncommon
Washington ground squirrel	<i>Spermophilus (Citellus) washingtoni</i>		Monitor		Uncommon

2.3.4.2.4 Mammals

The Monument provides for an abundance of mammals, although the number of species (species diversity) is limited as compared to more temperate habitats. A total of forty-four species of mammals have been conclusively documented in the Monument; however, it is quite possible that others (such as additional bat species) use the refuge but have not yet been documented. There was a reported sighting of a cougar (*Felis concolor*) on the Monument by biologists

during an elk relocation effort in March 2000, supplementing other anecdotal accounts of cougar in the Hanford Site. Species present include large game animals such as Rocky Mountain elk (*Cervus elaphus*) and mule deer; predators such as coyotes (*Canis latrans*), bobcats (*Lynx rufus*) and badgers (*Taxidea taxus*); and small herbivores like deer mice (*Peromyscus maniculatus*), harvest mice (*Riethrodonomys megalotis*), ground squirrels, voles, black-tailed jackrabbits (*Lepus californicus*), and the Great Basin pocket mouse (*Perognathus parvus*), the most abundant mammal in the Monument.

There are twelve mammal species potentially present in the Hanford Site that are identified as species of conservation concern and several species that are important because of their status as game animals (elk, mule deer, and white-tailed deer [*Odocoileus virginianus*]) or their significance to local Native American tribes. Inventories by TNC (1995–1999) specifically targeted searches for species that had not been previously documented in the Hanford Site, as well as federal and state species of concern.

Small mammals present in the Hanford Site have been well documented (Soll et al. 1999; Downs et al. 1993; Fitzner and Gray 1991; Rickard and Poole 1989). Fourteen native, non-bat, small mammal species were documented during biodiversity inventories (Soll et al. 1999). Surveys for Ord's kangaroo rat (*Dipodomys ordii*), Merriam's shrew (*Sorex merriami*), and pygmy rabbit (*Brachylagus (Sylvilagus) idahoensis*) have, to date, been negative. However, potential habitat for these species exists in the Monument. In 1998, for example, inventory work confirmed the presence of the state candidate Washington ground squirrel (*Spermophilus washingtoni*) just north of the crest of the Saddle Mountains and along State Route 24 on the Wahluke Slope. This was the first time this species has been documented to occur in the Monument. Still, even previously documented species (i.e., Merriam's shrew, sagebrush vole [*Lemmyscus curtatus*], and Townsend's ground squirrel [*Spermophilus townsendii*]) seem to be limited in their distribution in the Monument. The limited distribution of Merriam's shrew and sagebrush vole demonstrates the importance of the ALE, Umtanum Ridge, and other remnant high-quality big sagebrush/bluebunch wheatgrass and three-tip sagebrush plant communities.

Despite the limited results regarding the number of species observed, many findings from the small mammal inventory are noteworthy. By habitat area/plant community type, capture rates and biodiversity were highest in native shrub-steppe, in particular the bitterbrush/Indian ricegrass dune complex and big sagebrush/needle-and-thread communities. Both of these community types have received the highest protection priority ranking assigned by the WNHP. The capture rates within these two community types were eight to twelve times higher than the rate observed in disturbed communities dominated by cheatgrass. Native habitats provide greater structure for thermal and hiding cover, as well as greater forage availability and nutrition (foliage and seed crops), to mammals than disturbed communities.

A total of nine bat species are documented in the Hanford Site. It is possible that one other species also occurs; the California myotis (*Myotis californicus*) has been noted as possibly occurring in the Hanford Site. The western pipistrelle (*Pipistrellus hesperus*), pallid bat, and

western small-footed myotis (*Myotis ciliolabrum*) are identified as species of conservation concern by the FWS and the WDFW (1998). The White Bluffs, Columbia River, open water, mature trees, and all cliff structures are important for bats at in the Monument.

Deer and elk are important for recreational hunting opportunities and are culturally important to Native American tribes. Other tribally important species include, but are not limited to, American beaver, muskrat, common porcupine, and coyote. These larger mammal species also depend on mature shrub habitats for thermal cover in both winter and summer (shade), and many use mature shrub for forage (browse). Grasslands are critical for grazing animals, such as elk, and natural springs are an extremely important habitat for providing fresh water to the majority of mammal species in the Monument.

2.3.4.3 Unique/Rare Habitats and Associated Wildlife

One of the greatest values of the Monument is its blend of a wide variety of habitats within its desert environment. Unique/rare habitats in the Monument include bluffs, dunes and islands. In addition, while not rare within the Columbia Basin, the White Bluffs, Umtanum Ridge, and Gable Mountain include rock outcrops that occur infrequently on the Hanford Site. Plant communities dominated by buckwheat (*Eriogonum* spp.) and Sandberg's bluegrass most often occupy these basalt outcrops.

Bluffs provide perching, nesting and escape habitat for several bird species on the Monument. The White Bluffs provide nesting habitat for prairie falcons, red-tailed hawks, cliff swallows (*Petrochelidon pyrrhonota*), bank swallows (*Riparia riparia*), and rough-winged swallows (*Stelgidopteryx serripennis*). In the past, Canada geese used the lower elevations of the White Bluffs for nesting and brooding. Bald eagles use the White Bluffs for roosting. Bluff areas provide habitat for sensitive species (i.e., peregrine falcons [*Falco peregrinus*]) that otherwise may be subject to impact from frequent or repeated disturbance. Trees that do not normally occur in arid habitats supply nesting, perching and roosting sites for bird species; raptors like ferruginous and Swainson's hawks use trees for breeding in areas that previously did not support breeding populations. Ferruginous hawks also nest on electrical transmission line towers.

Dune habitat in the Monument is unique in its association with the surrounding shrub-steppe vegetation type. The uniqueness of the dunes is noted in its vegetation component as well as the geologic formation. Dunes are vegetated by bitterbrush, scurfpea (*Psoralidium lanceolatum*), thickspike wheatgrass, and snow buckwheat (*Eriogonum niveum*). Dune fields provide habitat for mule deer, burrowing owls, and coyotes, as well as many transient species, and are very important for maintaining large populations of sagebrush lizard in the Monument.

Islands afford an additional arrangement of upland and shoreline habitat for avian and terrestrial species. Island habitat accounts for approximately 1.8-square-miles and 39.9 miles of river

shoreline within the main channel of the Hanford Reach. Islands vary in soil type and vegetation and range from narrow cobble beaches to extensive dune habitats, further increasing habitat complexity. Characteristic shoreline vegetation on the islands includes willow, poplar, Russian olive, and mulberry.³⁰ Species occurring on the island interior include buckwheat, lupine (*Lupinus* spp.), mugwort (*Artemisia lindleyana*), thickspike wheatgrass, giant wildrye, yarrow (*Achillea millefolium*) and cheatgrass.

Except for several plant species, the islands accommodate many of the same wildlife species that occur in mainland habitats. Islands provide resting, nesting and escape habitat for waterfowl and shorebirds. Use of islands for nesting by Canada geese has been monitored since 1950. While fluctuating annually, the nesting success of Canada geese is quite high and is attributed to restricted human use of islands during the nesting season, suitable substrate, and adequate forage and cover for broods (Eberhardt et al. 1989). In recent years, geese have used the downstream islands in the Hanford Reach for nesting as a result of coyote predation in the upper islands. Island areas ranging from 0.05 to 0.08 square miles accommodate colonial nesting species that may range in population size of upward of 2,000 individuals, including California gulls (*Larus californicus*), ring-billed gulls (*Larus delawarensis*), and Forster's terns. Mule and white-tailed deer also use the islands during calving as protection from coyotes. Unfortunately, operation of the Priest Rapids Dam upstream of the Hanford Reach creates daily and seasonal river level fluctuations that may limit community structure and overall shoreline species viability along the shoreline interface.

2.3.5 Threatened & Endangered Species

Plants and animals listed as threatened or endangered (T&E) under the federal Endangered Species Act (ESA) require special consideration and protection in all activities. Likewise, those listed by the state of Washington under its own state-level Endangered Species Act also require consideration. Those Monument plants and animals identified as T&E, as listed by the federal government (50 CFR 17) and/or Washington State (WDFW 2006), are shown in Table 2.

2.3.5.1 Federally Listed or of Concern

The bald eagle (threatened),³¹ upper Columbia River steelhead (*Oncorhynchus mykiss*] endangered), and spring-run Chinook salmon (*Oncorhynchus tshawytscha*] endangered) are

³⁰ Before regulation of river flows by dams, trees were infrequent in river shoreline habitat, with the exception of small willows and scattered cottonwoods.

³¹ At this time, bald eagles are under consideration for de-listing; however, the species will require five years of post de-listing monitoring (50 CFR 17).

currently the only species found on the federal list of threatened and endangered species that are regularly present in the Monument. Other federally listed species have been reported in very rare instances on or near the Hanford Site. The bull trout (*Salvelinus malma*), a state candidate species and federal threatened species, has been reported in the Hanford Reach, but its natural habitat is mountain streams; anecdotal accounts of bull trout in the Hanford Reach are likely individuals moved downstream during the spring freshet. The Columbia Basin pygmy rabbit was emergency listed as federally endangered in November 2001; however, they are likely extirpated from the Monument.³²

The bald eagle is a regular winter resident and forages primarily on waterfowl and spawned salmon along the Columbia River; an average of forty eagles use the Hanford Reach each winter. Bald eagles have not nested along the Hanford Reach, although for the last several years unsuccessful nesting attempts have been documented. Access controls are in place along the river while eagles are present to prevent their disturbance. The DOE developed a site management plan to mitigate eagle disturbance.³³

Steelhead and salmon are regulated as Evolutionary Significant Units (ESU) by the National Oceanic and Atmospheric Administration (NOAA)-Fisheries based on their historical geographic spawning areas. The upper Columbia River ESU steelhead was listed as endangered in August 1997, and the Mid-Columbia ESU steelhead was listed as threatened on March 25, 1999. The upper Columbia River ESU spring-run Chinook salmon was listed as endangered in March 1999. These adult steelhead and Chinook salmon migrate upstream through the Hanford Reach to spawn in upriver tributaries, and juveniles pass through the Hanford Reach on their outward migration to the sea. A salmon and steelhead management plan for Hanford Reach steelhead and upriver Columbia River ESU spring-run Chinook was developed as required by Section 7(a)(2) of the ESA.

No other federally listed threatened or endangered species are known to occur regularly in the Monument.³⁴ However, several additional species of both plants and animals are under consideration for formal listing by the federal government (Washington ground squirrel, Western sage grouse, Umtanum desert buckwheat, and White Bluffs bladderpod) or are species of

³² Although the current distribution of pygmy rabbit in Washington does not include the Hanford area, it has been reported as residing on the ALE (Fitzner and Gray 1991). However, this observation is based on only one reported sighting in 1979; this species has been searched for on the Hanford Site but has never been conclusively observed.

³³ This document constitutes a biological assessment for those activities implemented in accordance with the plan and, unless there are extenuating circumstances associated with a given project, the document fulfills the requirements of Section 7(a)(2) of the ESA for bald eagles and peregrine falcons. Section 7(a) also requires consultation with the DOI when any action is taken that may destroy, adversely modify, or jeopardize the existence of bald eagle' or other endangered species' critical habitat.

³⁴ Peregrine falcons are occasionally seen in the Hanford Site during migration; however, they are no longer listed as a state or federal endangered species.

concern (ferruginous hawk and persistent-sepal yellowcress).^{35,36} The Washington ground squirrel, listed as a candidate species by both the state and federal governments, was recently documented just north of the crest of the Saddle Mountains.

2.3.5.2 Washington State Listed or of Concern

The state of Washington (Washington Department of Natural Resources[WDNR]) also maintains a list of species endangered, threatened, candidates for listing, or sensitive at the state level.³⁷

2.3.5.2.1 Endangered, Threatened or Candidate Wildlife

Washington State lists the American white pelican and sandhill crane (*Grus canadensis*) as endangered and lists the ferruginous hawk, greater sage grouse, and bald eagle as threatened. Sage grouse were sighted on ALE in 1999 and 2000 but have been observed only once since then. Pelicans have become residents but are not known to nest here, and sandhill cranes have

³⁵ **This footnote applies to both plants and animals.** Federal candidate species are those that may warrant listing as endangered or threatened. The FWS defines a candidate species as a species for which there is sufficient information on file relative to status and threats to support issuance of a proposed listing. The NOAA-Fisheries (formerly the National Marine Fisheries Service) defines a candidate species as a species for which concerns remain regarding their status, but for which more information is needed before it can be proposed for listing. On February 28, 1996, the FWS redefined the federal candidate species category (61 FR 7595). As a result, several former categories of candidate species were eliminated; the previous Candidate 1 category is now the only remaining category. Many species previously included in the now eliminated categories are presently tracked as species of concern by state and local offices of the FWS. Thus, the conservation standing of these species is still of concern to the FWS; however, their identification as such is no longer being published in the *Federal Register*, and they do not receive any formal recognition or protection under the ESA. Lists of species of concern are generated and maintained through partnerships between the FWS and appropriate federal and state agencies and private organizations. Plant species identified herein as federal species of concern are based on a list provided by the Spokane Office of the FWS (1998).

³⁶ Although not found on the Monument, northern wormwood is a federal candidate for listing. The WDNR believes islands within the Monument could support its introduction/reintroduction.

³⁷ The status categories are listed and described below.

- **Endangered.** The taxon is in danger of becoming extinct or extirpated (i.e., locally extinct) in Washington within the near future if factors contributing to its decline continue.
- **Threatened.** The taxon is likely to become endangered in Washington within the near future if factors contributing to its population decline or habitat degradation or loss continue.
- **Sensitive.** The taxon is vulnerable or declining in numbers and could become endangered or threatened in Washington without active management or removal of threats.

been occasionally observed in the Hanford Reach during spring migrations. Ferruginous hawks are known to nest and maintain breeding territories in several areas, including rock outcroppings, cliffs and metal transmission towers; the nesting population at Hanford represents roughly 20% to 25% of the breeding population in Washington State (Downs et al. 1993).

There are several Washington State candidate species that have been reported in the Hanford Site. Decline of shrub-steppe habitat statewide has resulted in the designation of black-tailed and white-tailed jackrabbits (*Lepus townsendii*), Townsend's and Washington ground squirrels, and Merriam's shrew as state candidate species.

Table 2. Federal or Washington State Threatened and Endangered Species on the Monument.

Common Name	Scientific Name	Federal ^(a)	State ^(a)
Plants			
Awned halfchaff sedge	<i>Lipocarpha aristulata</i>		T
Desert dodder	<i>Cuscuta denticulata</i>		T
Geyer's milkvetch	<i>Astragalus geyeri</i>		T
Great Basin gilia	<i>Gilia leptomeria</i>		T
Scarlet ammannia	<i>Ammannia robusta</i>		T
Loeflingia	<i>Loeflingia squarrosa</i> var. <i>squarrosa</i>		T
Lowland toothcup	<i>Rotala ramosior</i>		T
Persistentsepal yellowcress	<i>Rorippa columbiana</i>	SC	E
Rosy calyptidium	<i>Calyptidium roseum</i>		T
Umtanum desert buckwheat	<i>Eriogonum codium</i>	C	E
White Bluffs bladderpod	<i>Physaria tuplashensis</i>	C	T
White eatonella	<i>Eatonella nivea</i>		T
Fish			
Bull trout	<i>Salvelinus confluentus</i>	T	C
Spring-run Chinook	<i>Oncorhynchus tshawytscha</i>	E	C
Steelhead	<i>Oncorhynchus mykiss</i>	E	C
Birds			
American white pelican	<i>Pelecanus erythrorhynchos</i>		E
Bald eagle ^(b)	<i>Haliaeetus leucocephalus</i>	T	T
Ferruginous hawk	<i>Buteo regalis</i>	SC	T
Sandhill crane	<i>Grus canadensis</i>		E
Western sage grouse	<i>Centrocercus urophasianus phaios</i>	C	T
Mammals			
Pygmy rabbit ^(c)	<i>Brachylagus idahoensis</i>	E	E
Washington ground squirrel	<i>Spermophilus washingtoni</i>	C	C

Notes:

- (a) E = Endangered (species in danger of extinction within all or a significant portion of its range).
 T = Threatened (species likely to become endangered in the foreseeable future).
 C = Candidate (species that are believed to qualify for threatened or endangered species status but for which listing proposals have not been prepared).
 SC = Species of concern (species that are not currently listed or candidates under the ESA but are of conservation concern within specific FWS regions).
- (b) Currently under review for change in status.
- (c) Probably extirpated.

2.3.5.2.2 *Rare Plants—Endangered, Threatened or Sensitive*

Rare plant species refers to any vascular plant species listed by the WNHP as endangered, threatened, or sensitive in the state of Washington. None of the species potentially present on the Hanford Site that are on the rare plant species list are presently federally listed. Several, however, are identified as federal candidates for listing or species of concern (see Table 4).

Because these definitions apply to vascular plant taxa, they can be applied at the taxonomic rank of either subspecies or variety, as well as to species. In the remainder of this section, the term *taxon* (or the plural *taxa*) is used when not otherwise referring specifically to a species.

Twelve species of Monument plants (not all found on the Wahluke Unit) are listed in Washington State as threatened or endangered. Many of the listed threatened plants are limited in range and dependent on protection of specific habitat types and associations. Several are perennial plants that exist in discrete locations, while others are annual plants that require specific climatic conditions, disturbance patterns, and habitat features in order for populations to be maintained. The White Bluffs bladderpod, which occurs on the White Bluffs, is found only in the Hanford Site and nowhere else in the world (Soll et al. 1999).³⁸ This species is a candidate for listing as endangered or threatened under the federal ESA. Persistent-sepal yellowcress occurs in the wetted zone of the water's edge along the Hanford Reach and in Washington is limited to this portion of the Columbia River and one other site below Bonneville Dam. Several other of the state-listed threatened and endangered plant species (awned halfchaff sedge [*Lipocarpa aristulata*], scarlet ammannia [*Ammannia robusta*], and lowland toothcup [*Rotala ramosior*]) are restricted to wetlands in the riparian zone of the Columbia River. Four of the state-listed plant species (desert dodder [*Cuscuta denticulata*], Geyer's milkvetch [*Astragalus geyeri*], Great Basin gilia [*Gilia leptomeria*], and white eatonella [*Eatonella nivea*]) have been found at upland sites on the Wahluke Slope.

³⁸ This species was first described on the Hanford Site in 1994 biodiversity surveys. It is listed as threatened by the state of Washington (WDNR 1997) and identified as a candidate for listing by the FWS (1998). The total count of adult plants in 1997 was estimated to be 50,000 plants spread across an eight-mile-long occurrence. Several other rare plant populations exist in the immediate area, including dwarf evening primrose (*Camissonia pygmaea*), Piper's daisy, Snake River cryptantha (*Cryptantha spiculifera*), and desert dodder (*Cuscuta denticulata*).

The White Bluffs are a unique exposure of the Ringold Formation; the bluffs are made of soft Pliocene lacustrine deposits of clay, sand and silt (1958). The top is capped in many places by a harder calcium carbonate (caliche) layer (Lindsey 1994). White Bluffs bladderpod appears to be restricted to this caliche layer. Most of the population is outside the Hanford Reach corridor (technically 0.25 mile on either side of the river).

The primary threats to the bladderpod population are erosion, conversion of habitat, weed invasions, or slumping of the bluffs due to illegal off-road vehicle use or irrigation. Infestations of yellow starthistle (*Centaurea solstitialis*), a noxious weed, are located within the middle portion of the bladderpod population. The protection of this population, and thus the species, requires that these issues be addressed in any management action. Long-term demographic monitoring was initiated on this species in 1997.

Table 3. Washington State Candidate and Sensitive Animal Species on the Monument.

Common Name	Scientific Name
Molluscs	
Giant Columbia River limpet (aka Shortface lanx)	<i>Fisherola (Lanx) nuttalli</i>
Giant Columbia River spire snail ^(a)	<i>Fluminicola (Lithoglyphus) columbiana</i>
Fish	
Bull trout ^(c,f)	<i>Salvelinus confluentus</i>
Mountain sucker ^(f)	<i>Catostomus platyrhynchus</i>
Leopard dace ^(f)	<i>Rhinichthys flacatus</i>
River lamprey ^(f)	<i>Lampetra ayresi</i>
Spring-run Chinook ^(b)	<i>Oncorhynchus tshawytscha</i>
Steelhead ^(b)	<i>Oncorhynchus mykiss</i>
Insects	
Columbia River tiger beetle	<i>Cicindela columbica</i>
Birds	
Burrowing owl ^(a)	<i>Athene cunicularia</i>
Common loon ^(g)	<i>Gavia immer</i>
Flammulated owl ^(f)	<i>Otus flammeolus</i>
Golden eagle	<i>Aquila chrysaetos</i>
Lewis' woodpecker ^(f)	<i>Melanerpes lewisii</i>
Loggerhead shrike ^(a)	<i>Lanius ludovicianus</i>
Peregrine falcon ^(a,g)	<i>Falco peregrinus</i>
Merlin	<i>Falco columbarius</i>
Northern goshawk ^(a,f)	<i>Accipiter gentilis</i>
Sage sparrow	<i>Amphispiza belli</i>
Sage thrasher	<i>Oreoscoptes montanus</i>
Western grebe	<i>Aechmorus occidentalis</i>
Reptiles	
Sagebrush lizard ^(a)	<i>Sceloporus graciosus</i>
Striped whipsnake	<i>Masticophis taeniatus</i>
Mammals	
Black-tailed jackrabbit	<i>Lepus californicus</i>
Merriam's shrew	<i>Sorex merriami</i>
Townsend's ground squirrel	<i>Spermophilus townsendii</i>
Washington ground squirrel ^(d,f)	<i>Spermophilus washingtoni</i>
White-tailed jackrabbit	<i>Lepus townsendii</i>

Notes:

- (a) Federal species of concern.
- (b) Federal endangered.
- (c) Federal threatened.
- (d) Federal candidate for listing.
- (e) Probable, but not observed, in the Monument.
- (f) Reported, but seldom observed, in the Monument.
- (g) State Sensitive (i.e., taxa vulnerable or declining) and could become endangered or threatened without active management or removal of threats.

Table 4. Washington State Plant Species of Concern on the Monument.

Common Name	Scientific Name	State Listing ^(a)
Annual paintbrush	<i>Castilleja exilis</i>	W
Annual sandwort	<i>Minuartia pusilla</i> var. <i>pusilla</i>	R1
Basalt milk-vetch	<i>Astragalus conjunctus</i> var. <i>rickardii</i>	W
Beaked spike-rush	<i>Eleocharis rostellata</i>	S
Bristly combseed	<i>Pectocarya setosa</i>	W
Canadian St. John's wort	<i>Hypericum majus</i>	S
Chaffweed	<i>Centunculus minimus</i>	R1
Columbia milkvetch	<i>Astragalus columbianus</i>	S ^(b)
Columbia River mugwort	<i>Artemesia lindleyana</i>	W
Coyote tobacco	<i>Nicotiana attenuata</i>	S
Crouching milkvetch	<i>Astragalus succumbens</i>	W
Desert evening-primrose	<i>Oenothera caespitosa</i> ssp. <i>caespitosa</i>	S
Dwarf evening primrose	<i>Camissonia (Oenothera) pygmaea</i>	S
False pimpernel	<i>Lindernia dubia anagallidea</i>	W
Fuzzytongue penstemon	<i>Penstemon eriantherus whitedii</i>	S
Giant helleborine	<i>Epipactis gigantea</i>	W
Gray cryptantha	<i>Cryptantha leucophaea</i>	S ^(b)
Hedge hog cactus	<i>Pediocactus simpsonii</i> var. <i>robustior</i>	R1
Hoover's desert parsley	<i>Lomatium tuberosum</i>	S ^(b)
Medic milkvetch	<i>Astragalus speirocarpus</i>	W
Desert cryptantha (miner's candle)	<i>Cryptantha scoparia</i>	S
Mousetail	<i>Myosurus clavicaulis</i>	S
Piper's daisy	<i>Erigeron piperianus</i>	S
Porcupine sedge	<i>Carex hystericina</i>	W
Robinson's onion	<i>Allium robinsonii</i>	W
Rosy balsamroot	<i>Balsamorhiza rosea</i>	W
Scilla onion	<i>Allium scilloides</i>	W
Shining flatsedge	<i>Cyperus bipartitus (rivularis)</i>	S
Small-flowered evening-primrose	<i>Camissonia (Oenothera) minor</i>	S
Small-flowered nama	<i>Nama densum</i> var. <i>parviflorum</i>	W
Small-flowered hemicarpha	<i>Lipocarpa (Hemicarpha) aristulata</i>	T
Smooth cliffbrake	<i>Pellaea glabella simplex</i>	T
Snake River cryptantha	<i>Cryptantha spiculifera (C. interrupta)</i>	S
Southern mudwort	<i>Limosella acaulis</i>	W
Stalked-pod milkvetch	<i>Astragalus sclerocarpus</i>	W
Suksdorf's monkey flower	<i>Mimulus suksdorfii</i>	S
Thompson's sandwort	<i>Arenaria franklinii thompsonii</i>	R2
Winged combseed	<i>Pectocarya penicillata</i>	W

Notes:

- (a) S = Sensitive (i.e., taxa vulnerable or declining) and could become endangered or threatened without active management or removal of threats.
R1 = Review List 1, taxa for which there are insufficient data available to support listing as threatened, endangered, or sensitive.
R2 = Review List 2, taxa with unresolved taxonomic questions.
W = Watch List, taxa that are more abundant and/or less threatened than previously assumed.
- (b) FWS Columbia Basin federal species of concern.

Two additional species of listed plants are considered as possible inhabitants of the Monument. Northern wormwood is a federal candidate for listing and is a Washington State endangered species. It is known to occur near Beverly; however, surveys by TNC (Soll et al. 1999) did not find any occurrences along the northern shoreline of the Columbia River. TNC believes the only remaining portions of the Hanford Site that could support northern wormwood are islands in the Hanford Reach. Similarly, Wanapum crazyweed (*Oxytropis campestris* var. *wanapum*) is only found near the western end of the Saddle Mountains and could also be found on the Monument. This plant is a federal species of concern and is listed as endangered by the state of Washington.

Legal protections for species of concern differ between plant and animals. Although legal protections for federally listed or proposed (for listing) plant species, insofar as they address plants found on federal property, are similar to that for animals, protection is limited on non-federal lands (i.e., state and private) to situations in which either federal funding or the requirement for a federal permit is involved. Legal protection for state-listed species in Washington is even more limited. There are no Washington State laws that specifically recognize endangered or threatened plants or afford them any protection on any lands; however, the WNHP does identify and track the status of species deserving of such status (WDNR 1994).

2.3.6 Cultural Resources

The Monument Proclamation states:

This magnificent area contains an irreplaceable natural and cultural legacy . . . one of the few remaining archaeologically rich areas in the western Columbia Plateau, containing well-preserved remnants of human history spanning more than 10,000 years.

The establishment of the Hanford Nuclear Reservation in 1943 preserved a set of cultural resources with contextual integrity that may no longer exist anywhere else in the region. These remnants of past human culture and activity are invaluable and irreplaceable keys to former life ways and behavior patterns. Unfortunately, some of the resources, such as the historic town sites, homesteads and other structures, as well as Native American traditional use areas and aboriginal occupation areas, were destroyed before and during establishment and operation of the Hanford Nuclear Reservation. Most cultural resource inventory field work that has been undertaken on the Hanford Site is the result of government projects, such as ACOE dam proposals, Hanford Site development, or clean-up activities. As a result, only 24% of the Hanford Site has been surveyed for archeological resources, with a total of 1,447 documented cultural resource sites and isolated finds, and 530 historic buildings and structures (Neitzel 2005). Of these documented sites, 575 sites lie within Monument boundaries, and just over half (367) of these are located along the Hanford Reach. Only 127 sites have been evaluated for listing in the National Register; 49 have been listed. Most of the National Register sites are part of seven National Register Archaeological Districts. At least a portion, if not all, of these

districts fall within the Monument. In addition, two archaeological districts within the Monument—Wahluke and Coyote Rapids—are listed on the Washington Heritage Register.

2.3.6.1 Prehistoric Resources

In general, recorded archaeological sites on the Monument tend to be on the alluvial flats and lower terraces near the shorelines and islands of the Columbia River. Due to the unique geomorphology of the area, there are no known rock shelters or mesa top sites, which are typically found both upriver and down river from the Hanford Site.³⁹ The archaeological record indicates that the south bank of the Columbia River contains greater concentrations of sites than the north bank.⁴⁰ The geography of the area may be the primary determinant as the northern bank of the Columbia River is dominated by the vertically imposing White Bluffs, with over 200 feet of vertical rise directly from the river. As a result, fewer terraces and suitable village areas exist on the north side in comparison to the south side. The south bank also contains greater numbers of ephemeral drainage channels with more food resources and desirable areas for storage, shelter, water and travel (Marceau 2002). The south bank is logistically closer to a more diverse supply of upland resources. Water may also have been a consideration for the upland sites; upland sites on the south side of the Columbia River contain more inland springs and ephemeral streams than the upland areas that are located north of the river.

The majority of the total site inventory represents a wide range of Native American site types, including pit house villages, campsites, fishing stations, root gathering and resource processing camps, caches, hunting blinds, rock cairns, talus pits, hearth features, sacred locations, quarries and lithic tool production sites.

Limited archaeological excavation has occurred outside of the river corridor, and radiocarbon dating of the sites that have been studied tends to cluster in the later periods covering the past 3,000 years. This correlates with the more intensive riverine use associated with salmon fishing that was common through out the region during this time period. It is likely that numerous earlier sites do exist but have not been located yet. They are likely associated with higher elevation spring areas and possibly rock shelters within the ridge systems and older terraces along the ancestral meander channels of the Columbia. Much of this topography lies either in Central Hanford, away from project work which centers near the reactors, or within the buffer zones now within the Monument.

³⁹ No such sites have been recorded, although a few isolated areas of exposed basalt have the potential to yield these types of sites.

⁴⁰ The south bank or shore is frequently called the west bank due to bends in the river. Likewise, the north bank or shore is frequently considered the east bank.

2.3.6.2 Historic Resources

Few structures associated with Euro-American settlement remain in the Monument due to Manhattan Project/Cold War operations. Due to security and other reasons, many structures were razed from 1943 into the 1970s. The only known structure in the Wahluke Unit is the White Bluffs log cabin. Built in 1894 and potentially eligible for the National Register, the White Bluffs log cabin was stabilized in 2001 to avoid potential collapse; vandals had removed a wall log causing the sod roof to sag. Numerous farms and ranches, such as Wiehl and Foster on the Wahluke Unit, existed prior to 1943, and various elements remain. However, no structures exist for any of these homesteads.

Military operations in various forms took place on the Hanford Site from WWII to the early 1960s. Evidence of resources associated with military operations, including foxholes, roads, graffiti and debris scatters, is mainly archaeological in nature. Historic military sites are scattered mostly in Central Hanford, but also include several anti-aircraft artillery sites within the Monument, including three Nike missile installations in the Wahluke Unit. The Nike sites were strategic components in defense of the Hanford Site's plutonium production facilities during the 1950s and early 1960s. Potential archeological resources at these sites include former gun emplacements, launch and radar sites, concrete foundations and pads, pathways/sidewalks, and debris scatters.

2.3.6.3 Tribal Uses

The historic uses of the Monument by Native Americans are described in great detail in the Draft CCP (hanfordreach.fws.gov/planning.html), Section 3.14.1, "Pre-Contact Native American Traditions;" Section 3.14.4, "Pre-Contact Archeological Investigations;" and Section 3.14.5, "Pre-Contact Resources." Many of these uses continue on to this day and into the future. At present, tribal use of the Monument is limited and involves only a few activities, in part due to past closures by the DOE and concerns over contaminants. Current use primarily focuses on the gathering of medicinal and food plants, while certain areas of the Monument are also used for spiritual and ceremonial practices. It is likely that other tribal uses will be reestablished in the future as contaminant concerns are addressed, treaty issues are resolved, and resource protection plans are developed and implemented.

2.3.6.4 Traditional Cultural Property

Saddle Mountain may be a Traditional Cultural Property (TCP), although it is not designated at this time, nor is the process underway to do so as it is with Rattlesnake Mountain. However, as described in the Draft CCP, the FWS should take care in planning so as to protect the potential TCP to the extent reasonable and to be respectful of Native American values. (TCPs are fully

described in the Draft CCP, Section 3.20.5.) This is, of course, difficult on the Monument as the exact value of the Saddle Mountain to Native American tribes is not known.⁴¹

On the Monument, the significance of the environmental setting is integral to the Native American heritage connectivity or cultural traditions. Native people tie traditional, continuous use and occupation patterns to this land. Spiritual beliefs link plants, animals and sacred areas within the cultural landscape. Utilization of traditional hunting, gathering and collecting territory has been uninterrupted for generations.

The descendants of aboriginal people in the Columbia Basin practice cultural traditions and follow belief systems that may be recognized as being indigenous or traditional. Many of these cultural elements are expressed even today in collection and use of traditional resources, such as foods, medicinal plants, and fibers. This cultural continuum expressed in the region within and surrounding the Monument is an important element of the ethnographic pattern of Native American expression within the cultural landscape. It represents an unusual and significant connection for Native American presence and land use patterns in the Columbia Plateau. This could form the basis for a TCP.

2.3.7 Visitor Use and Experience

The Monument provides a variety of recreation opportunities and experiences across an unusual landscape characterized by the Hanford Reach, the White Bluffs, active dune fields, rolling hills of shrub-steppe, and basalt mountains. Beginning in 1943, security protocols for the Hanford Site placed most of the now-Monument lands in a protective buffer zone, resulting in an unparalleled preservation of the Columbia Basin's natural and cultural resources. The Hanford Reach, being never dammed nor dredged, provides the only remaining example of what the Columbia River looked like before the massive public works projects of the 20th century. The Monument's wealth of natural features attract diverse recreation interests, with the most sought-after pursuits being fishing for salmon, steelhead, sturgeon and smallmouth bass (*Micropterus dolomieu*); hunting for waterfowl, upland birds, and deer; non-motorized and motorized boating; wildlife observation; and environmental education. The Monument offers excellent seasonal opportunities to pursue these activities, either in complete solitude or with very low encounter rates with other people; however, such experiences are limited during popular fishing and hunting seasons.

⁴¹ The need to reveal information about something that one's cultural system demands be kept secret can present agonizing problems for traditional groups and individuals. It is one reason that information on traditional cultural properties is not readily shared with federal agencies and others during the planning and environmental review of construction and land use projects. However concerned one may be about the impacts of such a project on a traditional cultural property, it may be extremely difficult to express these concerns to an outsider if one's cultural system provides no acceptable mechanism for doing so. TCPs may be kept confidential under the authority of Section 304 of the National Historic Preservation Act.

2.3.7.1 Public Use Acreages

Currently, 74,392 acres of the Monument are open for some form of public use from two hours before sunrise to two hours after sunset, including the 46.5-mile stretch of the Hanford Reach within the Monument. Of this, 56,437 acres are open to hunting, although not all legally taken species can be hunted everywhere.

2.3.7.2 Visitor Facilities

Visitor facilities are limited, as are access points. Visitors primarily access the Monument by automobile or by boat. Visitor facilities consist of gravel and dirt access roads, parking areas, several primitive boat launches, and one concrete boat launch. Amenities such as vault toilets, garbage pick-up, and water are not provided, although portable toilets are provided seasonally at the White Bluffs Boat Launch. There are no visitation fees.

2.3.7.2.1 Public Access Roads

Access to the Monument is provided by state highways and county roads traversing adjacent to and sometimes through the Monument. On the Wahluke Unit, there are three main roads providing public access—Ringold, White Bluffs, and Saddle Mountain Roads. The graveled Ringold Road runs northwest from the Wahluke Unit's southern boundary for approximately eight miles, at which point the road is closed to motorized vehicles due to public safety concerns related to erosion. Eight small parking areas are maintained along the Ringold Road to provide access to the Columbia River and adjacent upland areas. The graveled White Bluffs Road provides access from State Route 24 to the White Bluffs Boat Launch, to a dirt road accessing the WB-10 Ponds, and to an undeveloped scenic overlook with vistas of the Columbia River, White Bluffs, and Hanford Site. The graveled Saddle Mountain Road provides access from State Route 24 to the Saddle Mountain crest and adjacent public lands administered by the Bureau of Land Management (BLM).

2.3.7.2.2 Boat Launches

Within the Monument, three primary boat-launching areas provide public access to the Columbia River. The undeveloped Vernita Bridge area consists of approximately one mile of shoreline west of the bridge on the north side of the river where people launch their boats in several locations. The White Bluffs Boat Launch consists of two narrow concrete lanes. Parking Lot 7 along the Ringold River Road provides a gravel boat launch suitable for four-wheel-drive vehicles. A fourth, seldom-used, primitive launch also exists in the Riverlands Unit; this area is technically closed to public access.

Other boat launching areas can be found adjacent to the Monument. Up-river, several user-defined boat launches just downstream of Priest Rapids Dam provide access to the Monument. Immediately downstream of the Wahluke Unit, a primitive launch can be found at the Ringold Fish Hatchery managed by the WDFW. Parks in the Tri-Cities area include thirteen developed boat launches, which provide access more than ten river miles downstream of the Monument.

The Monument also has two boat launches controlled by the DOE and used for administrative purposes. One is a concrete launch located on the south river shore across from the White Bluffs Boat Launch. The other is a primitive launch located at the historic Hanford Townsite. Public access is not allowed at either of these launches.

2.3.7.3 Recreation Use

Total annual recreation use in the Monument is estimated at 49,000 visits, or 30,000 visitor days.⁴² Existing visitor use is described in Table 5. Anecdotal information indicates a trend of increased visitation since the June 9, 2000, Monument designation. Many of the recreation activities that occur in the Monument are projected to increase over the next twenty years. Table 6 details current and future participation in certain recreation activities currently occurring in the Monument (Cordell 1999). These activity participation trends are based on estimated changes in population, changes in the supply of recreational opportunities, and changes in demographic variables such as age, race and income.

In addition to increases in activity participation rates, population changes will also likely affect future use of the Monument. Traditionally, most visitor use of the Monument is from Washington State residents, mainly from the eastern portion of the state. It is estimated that over 80% of current visitors to the Columbia River are from counties in proximity to the study area (Benton, Franklin, Grant, Umatilla and Walla Walla) (Anderson et al. 2002). Table 7 details population projections for the counties adjacent to the Monument, eastern and western Washington, nearby states, and the Pacific Region. This table indicates that rapid growth is projected to continue at least until the year 2020. This growth in population will likely increase the number of visitors and recreation demand in the Monument. Another factor that will likely contribute to increased visitation in the Monument is the construction of the Hanford Reach National Monument Heritage and Visitor Center (The Reach), scheduled to be open for visitors in the spring of 2009.⁴³

⁴² Recreation use is based on best professional judgement. The FWS, through the University of Idaho, conducted a visitor use and satisfaction survey, which has provided a more accurate picture of visitor use patterns and helped form this estimate. One visitor day is equivalent to twelve visitor hours.

⁴³ The Reach is being planned and developed near the confluence of the Yakima and Columbia Rivers in the city of Richland through a partnership between the Richland Public Facilities District; Columbia River Exhibition of History, Science, and Technology Museum; Friends of the Hanford Reach National Monument; Tri-Cities Visitor

Table 5. Approximated Hanford Reach National Monument Visitation, 2004.¹

Public Use Activity	Visitor Days ² (Approximation)
Big Game Hunting	200
Upland Game Hunting	400
Migratory Bird Hunting	1,000
Fishing	20,000
Wildlife Observation	500
Wildlife Photography	70
Education and Interpretation	250
Hiking	330
Non-Motorized Boating	670
Motorized Boating	2,000
Commercial River Trips	1,880
Stargazing	200
Equestrian Use	330
Beach Use	1,670
Driving for Pleasure	330
Total Visitor Use	30,000
Notes:	
¹ Best professional judgement.	
² One visitor day is equivalent to twelve visitor hours.	

2.3.7.4 Recreation Opportunities

The Monument provides for a wide variety of outdoor recreation activities. Use is currently low, but this is expected to increase as the Monument becomes better known and additional visitor facilities are provided.

2.3.7.4.1 Fishing

The Hanford Reach attracts anglers from around the Northwest, providing excellent opportunities to catch fall Chinook salmon, steelhead, sturgeon, whitefish (*Prosopium williamsoni*) and smallmouth bass. While bank and float-tube fishing is pursued by some anglers, most fishing occurs from motorboats. Jetboats are preferred by many anglers, with their

and Convention Bureau; regional Native American tribes; and the FWS. The Reach will provide interpretation and education programs about the Monument and other regional interests and destinations.

low draft well-suited to conditions on the Hanford Reach’s shallow water sections and frequent water level fluctuations from upriver dam operations. During the fall Chinook salmon season, boat launches in the Monument and at the Ringold Fish Hatchery are at capacity, with many anglers choosing to avoid crowds by launching from Tri-Cities area parks. The Vernita Bridge Unit, currently administered by the WDFW under a permit agreement with the DOE, attracts heavy use from anglers willing to trailer over rocky terrain and launch from unimproved shoreline areas. Although the DOE lease prohibits camping, visitors camp in this area year-round, with particularly heavy use during the northern pike minnow (*Ptychocheilus oregonensis*) and fall Chinook salmon seasons.⁴⁴ The Vernita Bridge area has been the focus of WDFW efforts to replace the existing primitive launch areas with a developed boat launch.

Table 6. Pacific Region and National Outdoor Recreation Participation Trends (2000-2020).

Activity	Pacific Region ^{1,2}			National ²		
	2000	2020	Percent Change ³	2000	2020	Percent Change ³
Non-consumptive Wildlife Activities	18.036	22.879	27	121.368	150.543	24
Sightseeing	20.165	26.270	30	119.07	149.688	26
Hiking	11.772	14.606	24	49.234	58.794	19
Walking	22.788	28.274	24	137.711	161.777	17
Motorboating	6.741	8.316	23	48.410	56.870	17
Visiting A Beach/Water	22.356	27.531	23	130.620	154.256	18
Horseback riding	2.520	3.096	23	14.586	17.589	21
Canoeing	1.272	1.560	23	14.382	16.215	13
Visiting Historic Places	14.904	18.354	23	93.704	116.688	25
Nonpool Swimming	12.296	14.964	22	80.443	94.501	17
Biking	10.388	12.642	22	59.696	73.472	23
Picnicking	16.906	20.698	22	102.232	122.875	20
Family Gathering	20.651	20.090	21	128.752	153.512	19
Primitive Camping	5.880	6.888	17	28.000	29.120	4
Fishing	7.875	9.000	14	59.637	71.217	19
Hunting	1.598	1.343	-16	18.042	16.926	-6

Notes:
¹ The Pacific Region is defined as Alaska, California, Hawaii, Oregon and Washington.
² Millions of participants.
³ The percent change in activity participation was not tested for statistical significance.

⁴⁴ Area tribes have expressed concern that recreation use occurring in this area is harming cultural resources.

Table 7. County, State, and Regional Population Estimates and Forecasts Through 2020.

Area	2000 Population	Projected 2020 Population	2000-2020 Percent Change ¹
<i>Washington Counties Near the Monument</i>			
Adams	16,428	20,919	0.27
Benton	142,475	177,388	0.25
Douglas	32,603	44,920	0.38
Franklin	49,347	64,687	0.31
Grant	74,698	95,715	0.28
Kittitas	33,362	41,776	0.25
Walla Walla	55,180	64,856	0.18
Yakima	222,581	269,401	0.21
<i>Washington State</i>			
Eastern	1,306,948	1,638,199	0.25
Western	4,587,173	5,907,070	0.29
Statewide	5,894,121	7,545,269	0.28
<i>Other Areas</i>			
Oregon	3,397,000	4,177,000	0.23
Idaho	1,347,000	1,683,000	0.25
Alaska	653,000	838,000	0.28
Pacific Region	43,687,000	59,416,000	0.36
Note: ¹ The percent change in population was not tested for statistical significance. (Source: Washington Office of Financial Management 2002, U.S. Bureau of the Census 1997.)			

The WDFW authorizes fishing tournaments for game fish on the Wallula Pool section of the Columbia River, which includes the Hanford Reach. A typical year will see approximately ten fishing tournaments within the Hanford Reach or in the nearby vicinity, all involving bass fishing. In addition, a salmon fishing contest, not associated with the WDFW, has traditionally been held during the fall Chinook season. To date, all tournament operations have been run from Tri-Cities area parks.

The land base of the Monument contains one body of water that is fished regularly (for bass). The WB-10 Ponds, irrigation settling ponds for the SCBID Project, are located in the Wahluke Unit and impound irrigation water before its return to the Columbia River. Fishermen must walk to the ponds, where shoreline and non-motorized boat fishing is permitted.

Fishing seasons and catch limits in the Monument are regulated by the WDFW.

2.3.7.4.2 Hunting and Trapping

The Monument provides regionally significant waterfowl hunting opportunities (NPS 1994). Large populations of resident waterfowl and migratory ducks and geese, coupled with good conditions for hunting, make the Hanford Reach a good location for waterfowl hunting, although success rates are generally low. Waterfowl populations are enhanced by a longstanding waterfowl sanctuary, which includes the Columbia River and lands within 1/4-mile of the river between the wooden power lines to the Vernita Bridge. This area is closed to all waterfowl hunting, and the White Bluffs Boat Launch is closed to motorboats, during the winter to reduce waterfowl disturbance from watercraft. Most waterfowl hunting occurs downstream of the sanctuary near the many sloughs and islands in the Hanford Reach and along the shorelines west of the Ringold River Road. Some hunters pursue pass shooting along the White Bluffs in the Wahluke Unit; approximately twenty waterfowl hunting pits currently exist in the vicinity, but the digging of new pits is not allowed. Waterfowl hunting also occurs on the WB-10 Ponds. Vehicles can access a parking area located approximately one mile from the WB-10 Ponds; from the parking area, non-motorized means are required to access the ponds.

The Wahluke Unit provides good opportunities for upland game hunting, including deer, pheasant, chukar and California quail. Most deer hunting occurs in the Wahluke Unit south of State Route 24, while most upland bird hunting occurs in the Ringold River Road area. The WDFW has historically operated a pheasant release program from the Ringold River Road. The Wahluke Unit is also open to elk hunting, although elk from the nearby Yakima/Rattlesnake Hills herd enter the Wahluke Unit infrequently. All hunting seasons and limits are set by the WDFW; however, the FWS enforces special firearm restrictions, allowing only shotguns, muzzle loaders and archery, subject to species-specific regulations.

No commercial or recreational trapping is allowed anywhere on the Monument.

2.3.7.4.3 Wildlife Observation and Photography

The Monument offers excellent opportunities for wildlife and wildflower observation. Although these activities are possible year-round, the best time to see wildflowers is in the spring, while the best times to view wildlife are fall, winter and spring, with the summer less attractive due to high temperatures. More than 240 bird species and 40 mammal species spend all or part of their live cycles in the Monument. Many waterfowl inhabit the Hanford Reach, including mallard, teal (*Anus crecca*, *A. discors*), gadwall (*Anas strepera*), white pelican, Canada geese, and American merganser (*Mergus merganser*). Colonial nesting birds include the Forster's tern, California gull, ring-billed gull, and great blue and night-crowned heron. Raptors seen include bald and golden eagle, peregrine falcon, northern goshawk (*Accipiter gentilis*), prairie falcon, American kestrel, and Swainson's, ferruginous and red-tailed hawks. Other migratory birds viewed include sage sparrow, vesper sparrow (*Pooecetes gramineus*), grasshopper sparrow,

loggerhead shrike, sage thrasher, Brewer's sparrow, Say's phoebe, horned lark, meadowlark, cliff swallow, kingbird, long-billed curlew, and burrowing owl. Mammals that can be viewed include elk, mule and white-tailed deer, coyote, black-tailed jackrabbit, porcupine, beaver, badger, Great Basin pocket mouse, and ground squirrel. Reptile and amphibians seen include the side-blotched lizard, northern Pacific rattlesnake, short-horned lizard, and Great Basin spadefoot toad.

2.3.7.4.4 Environmental Education

With the relatively recent addition of the Monument to the NWRs, FWS-sponsored environmental education programs have been limited due to staffing constraints and a focus on Monument planning efforts. The FWS has worked with a local high school and the national Hands-On-The-Land program to provide field and classroom education programs; students are assigned to create multilingual web pages showcasing the Monument's natural resources. The FWS assists the Mattawa School District with an annual Memorial Day visit and education program to the old Wahluke townsite. Many schools, universities and nature-appreciation groups use the Monument for educational field trips and activities, such as wildlife observation, native plant identification, and studies pertaining to natural history, geology, paleontology, archeology, history, astronomy and riverine, riparian and shrub-steppe habitats.

The Partners for Arid Land Ecology Stewardship (PALS) is a local environmental science education program designed to improve understanding and appreciation of the arid lands of the Columbia Basin. The PALS hosts an annual teacher's institute, often using the Monument as an outdoor classroom, to help teachers learn effective ways to educate students about local ecology.

2.3.7.4.5 Interpretation

Interpretation of natural and cultural resources on the Monument is currently expanding to meet increasing visitor demands. A full-color informational brochure for the Monument was published and widely distributed in 2003. In 2004, Monument boundary signs were installed at four locations along State Routes 240, 243 and 24, and orientation kiosks featuring large format maps and interpretive information were installed at all major Monument entrances and at a State Route 240 pullout. Temporary information and interpretation posters are maintained on reader boards at main public use sites throughout the Monument. When opened, The Reach will provide interpretation and education programs about the Monument and other regional tourism interests and destinations.

2.3.7.4.6 Boating

Boating on the Hanford Reach has been strongly linked with angling activities; however, the scenery, abundance of wildlife, and seasonal opportunities for solitude are attracting growing numbers of visitors. Both motorized and non-motorized recreational boating occurs along the entire Hanford Reach. Non-motorized boating (e.g., canoeing, kayaking) is currently constrained due to the distance between access points and restrictions on overnight use in the Monument. The majority of motorized boaters access the river from one of the boat launches within or adjacent to the Monument, while non-motorized boaters typically launch at the Vernita Bridge and take out at either the White Bluffs Boat Launch or the Ringold Fish Hatchery. There are currently no special surface water regulations (e.g., boat speed limits, no wake zones, seasonal closures) on the Hanford Reach.

Other activities related to boating within the Monument include water-skiing, personal watercraft use, and commercial sightseeing boat tours. Most water-skiing and personal watercraft use occurs during the summer in the downstream areas of the Hanford Reach in the Ringold area. There are currently no special regulations on personal watercraft or water-skiing on the Hanford Reach.

2.3.7.4.7 Equestrian Use

Horseback riding occurs on all areas of the Wahluke Unit and is not confined to designated trails at this time. There are no designated horse trails or developed facilities for horses in the Monument.

2.3.7.4.8 Bicycling

Bicycling is allowed on roads that are open to vehicles, with two additional road segments open to bicycles—the closed road between Parking Lot 8 and the scenic overlook area, and the road between the WB-10 Ponds parking lot and the ponds themselves. Similar to other types of off-road vehicle use, bicycling off-road is prohibited.

2.3.7.4.9 Hiking

Hiking occurs on the Wahluke Unit and is not confined to trails. There are no specifically designated hiking trails or other developed trail features (e.g., trail heads, signboards) on the Monument. Some short, user-defined trails provide access from parking areas to popular use areas.

2.3.7.4.10 Commercial Uses

Commercial sightseeing tours and fishing and hunting guide services occur on the Hanford Reach and the Wahluke Unit. Currently, the number of commercial operators and the number of clientele they serve is unknown; however, anecdotal information indicates a steadily increasing demand for these services.

2.3.7.5 Aesthetics

The Monument is a land of stark beauty. To visitors from more temperate climates, the Monument can seem quite barren, and it is often only through time that this perception is changed. Once the visitor learns what is hidden in the Monument and what it takes to survive in this arid land, the Monument comes alive, and the appeal of the Columbia Plateau's shrub-steppe becomes manifest.

There are many things to catch the eye in the Monument, including the topography of the landscape. On one side of the Monument, Rattlesnake Mountain rises almost 3,600 feet above sea level; on the other side, the Saddle Mountains rise to 2,181 feet in the Monument. Wahatis Peak, although on BLM lands, reaches 2,621 feet above sea level and is visible from the Monument. In between, Gable Mountain and Gable Butte rise into the sky in Central Hanford. Large rolling hills are located to the west and far north. The 200-foot White Bluffs, steep whitish-brown bluffs adjacent to the Columbia River and above the northern boundary of the river, are a strong feature of the landscape. Elsewhere, berg mounds, arroyos and sand dunes provide additional relief to the landscape.

The view toward Rattlesnake Mountain is visually pleasing, especially in the springtime when wildflowers are in bloom. The Columbia River, flowing across the northern part of the Hanford Site and forming part of the eastern boundary, is generally considered scenic, with its contrasting blue against a background of brown basaltic rocks and sagebrush.

One would imagine that the Monument's aesthetic resources have been severely affected by previous human activities. In some instances, this is indeed true. However, it is important to remember that the Monument covers almost 200,000 acres and has a varied terrain. Standing on a knoll, the visitor may be able to see facilities in Central Hanford, the steam plume from Energy Northwest's nuclear power plant, transmission lines, irrigation canals, and other man-made influences. Moving 100 yards, though, may drop the visitor into canyons where no readily apparent human impacts mar the scenery. Mule deer, coyotes, songbirds of all descriptions, and other wildlife complete the appearance of a natural landscape. The Monument is a land of contrast between the natural world and that of human creation.

2.3.8 Infrastructure

The operation of a Sport Hunting Program requires an investment of management resources such as buildings, roads, equipment and personnel. The sections that follow describe the current collection of resources used in management of the Monument and by the public in accessing the Monument. Only those resources necessary to the Sport Hunting Program are described; additional descriptions of all infrastructure/resources can be found in the Draft CCP.

2.3.8.1 Personnel

The following staff are readily available to assist in operation of a Sport Hunting Program. Other staff could be brought in if necessary, although that would cut into operations elsewhere or on other national wildlife refuges within the Mid-Columbia River National Wildlife Refuge Complex.

- Project Leader
- Supervisory Wildlife Refuge Mgr. (2)
- Refuge Operations Specialist
- Natural Resource Planner
- Outdoor Recreation Planner
- Education Specialist (To Be Hired)
- GIS Specialist
- Wildlife Biologists (3)
- Biological Technician
- Law Enforcement Officer (To Be Hired)
- Equipment Engineer
- Maintenance Workers (5)
- Administration Officer
- Administration Assistant

2.3.8.2 Communications

The FWS utilizes an integrated, interagency communication system to maintain contact with field personnel, provide timely information concerning weather and operational conditions, and respond to emergencies. The Monument uses a mix of hand-held radios, base stations, and cellular phones that are integrated with local state, county and city emergency response systems.

The FWS uses radios that are multi-band, multi-channel, and operating off of a repeater system to transmit and receive messages throughout the fifty-six-square-mile Monument. Repeaters located on Wahitas Peak and Jump-off Joe Peak relay radio signals throughout the Columbia Basin for the BLM, DOE, FWS, U.S. Forest Service (USFS), Washington State Patrol, WDFW, WDNR and Adams, Benton, Franklin and Grant County Sheriff Offices. These radios are also capable of communicating with Benton County Emergency Services during a local emergency; providing direct communication between users and vehicles without transmission through the repeaters; and providing air-to-ground communication to aircraft responding to emergencies.

Cellular phones are utilized by many emergency response agencies when radio frequencies become crowded during an incident, or to maintain privacy during sensitive situations. Cellular phones and hand-held radios do have areas where they will not work in the Monument because of topographic or geologic interference. However, it is rare that both will not work in the same area.

2.3.8.3 Columbia River Boat Access

The Columbia River is the focal point of the Monument and is the most heavily used area. There are numerous ways to access the river, both on and off the Monument.

2.3.8.3.1 Monument Access

There are three sites within the Monument providing public boat access—Vernita, White Bluffs, and Parking Lot 7.

The Vernita launch area, administered by the WDFW under DOE permit, is located on the north shore of the river west of the Vernita Bridge on State Route 243. Open year-round, this primitive launch area consists of several user-defined sites along the shoreline where motorized and non-motorized boats can be launched. While overnight use is not officially allowed here, it has occurred historically, especially during salmon sport-fishing and northern pike minnow reward seasons.

The White Bluffs Boat Launch is located on the north shore of the river south of State Route 24. Open from June 30 to September 30 each year, this site provides a concrete launch with two narrow lanes. The launch is used primarily by motorboats. The launching area also serves as a non-motorized boat take-out for paddling the upper Hanford Reach float and the put-in for the lower Hanford Reach.

Parking Lot 7 is located on the north shore of the river along the Ringold River road. Open year-round, this site consists of a primitive gravel and earthen ramp which requires four-wheel drive vehicles to negotiate.

2.3.8.3.2 Administrative Access Boat Launches

The DOE controls two boat launches on the south shore of the river—a narrow, two-lane concrete launch located across the river from the White Bluffs Boat Launch and a gravel/earthen launch at the old Hanford Town sites. The launches are within the Hanford Site's secure access zone and are not open for public use.

2.3.8.3.2 Off-Monument Access

Located immediately adjacent to the Monument, the WDFW Ringold Fish Hatchery provides a primitive launching area on the north shore. Open year-round, this area also allows overnight use, although no improvements are provided. This site serves as a motorboat launch and is also used by non-motorized boaters, primarily as a take-out for floating the Hanford Reach.

Improved public boat launch options are plentiful in the Tri-Cities area, down-river of the Monument. The Priest Rapids Dam, located about four miles from the Monument boundary, limits boat access upstream of the Monument, although there are several unimproved spots to launch a boat just downstream of the dam.

2.3.8.4 Other Facilities

The Monument is open to the public two hours before sunrise and two hours after sunset. In 2002, two automated gate systems were installed at the main entrances to the Wahluke Unit north of Pasco and south of State Route 24, approximately twenty-two west of Othello. These two solar-powered gate systems are automatically timed to open and close to regulate visitor access to the area. However, the gates have never been used; they may not be put into service until such time as the CCP is finalized and the public has been adequately notified.

Other facilities on the Monument that assist in controlling access, protecting resources, and facilitating recreation include roads, signs, kiosks, fences and the well house, pump house, and reservoir on the ALE.

2.3.8.5 Adjacent Areas

Two areas adjacent to the Monument could be used by hunters, both as access points and for overnight use.

2.3.8.5.1 Horn Rapids County Park

Benton County's Horn Rapids Park consists of 784 acres along the Yakima River near the Monument's southwestern border. The park currently provides a day use area, interpretive kiosks, restrooms, camping and RV camping with electricity. The park's approved master plan envisions the site as a key access point for recreational activities associated with the Yakima and Columbia Rivers and the Monument.

2.3.8.5.2 Ringold Spring Fish Hatchery

The 110-acre hatchery (warm and coldwater species) is located about seventeen miles west of Mesa, Washington, on the north shore of the Columbia River and sits just outside the Monument's eastern-most entry point. In addition to the primitive boat launching area, the hatchery allows overnight use year-round, although conditions are primitive.

2.3.8.6 Transportation

The Monument is readily accessed through state highways, county and city roads, and by boat. Additional transportation infrastructure on or directly related to recreational hunting includes parking facilities.

2.3.8.6.1 Public Access Roads

Two state routes run through the Monument that access the Wahluke Unit—State Route 24 and State Route 240. State Route 24 traverses the northwest corner of Benton County (12.8 miles) and provides access to the west gate of the Hanford Site at the junction of State Route 24 and State Route 240. State Route 240 extends forty miles between State Route 24 at the Hanford West Gate and the cities of Richland and Kennewick. This route traverses the western portion of the Hanford Site and provides access from the Tri-Cities to the Vernita Bridge area.

An additional state route provides direct access to the southwest area of the Monument. State Route 225 is an eleven-mile major collector extending from I-82 at Kiona, through Benton City, to State Route 240 at Horn Rapids. DOE Route 10 extends on into Central Hanford. Hanford Site commuters dominate peak volumes on this two-lane roadway.

Four federal interstates and U.S. highways constitute the east-west and north-south backbones of the regional highway system, providing access to the Monument from regional population centers. I-82 is an interstate freeway extending from I-90 near Ellensburg, Washington, to I-84 near Hermiston, Oregon. I-182 is a 15-mile interstate spur route from I-82 west of the Tri-Cities to U.S. 395, State Route 397, and U.S. 12 at Pasco. U.S. 12 is a cross-state route extending from the Washington Coast at Aberdeen, over the Cascades via White Pass, down the Yakima River Valley via I-82 and I-182 to Pasco, then on through southeastern Washington to Lewiston, Idaho, and over Lolo Pass to Missoula, Montana. U.S. 395 is a highway of national significance that runs between Mexico and Canada. From Umatilla, Oregon, to south Kennewick, the highway is shared as I-82.

2.3.8.6.2 Refuge Roads

The Monument is crossed by a large number of non-public roads. Some are, of course, roads constructed by the DOE for Hanford Site operations. Some are remaining from military use of the land in protection of the Hanford Site. Others are roads within transmission line and irrigation ditch easements, granted to the Bonneville Power Administration (BPA) and to local irrigation districts, respectively. Many of these roads are open to public use.⁴⁵ Most use occurs on these roads in the spring and fall and is associated with salmon fishing, hunting and wildflower observation.

All public use roads occur on the north side of the Monument (sixty-eight miles) and are former DOE and military roads associated with access to Nike missile sites and anti-aircraft gun emplacements. All of these roads were once paved and well maintained, although they are currently in various stages of disrepair. A TEA-21 project, administered by the U.S. Department of Transportation/Federal Highways Administration reconditioned approximately twenty miles of one public use road last summer, transforming a deteriorating asphalt and river cobble road into a uniformly graveled road. This road serves as the main south artery from State Route 24 to access the White Bluffs Boat Launch and the WB-10 Ponds and is the main artery from the Ringold Fish Hatchery to parking lots on the eastern side of the Monument and a primitive boat launch in the Ringold area.

In addition to the public use roads, there are approximately 250 miles of administrative roads in the Monument; the Wahluke Unit has approximately 65 miles. Administrative roads are used to carry out day-to-day management of the Monument. However, many of the administrative roads are also used by other entities, such as public utility districts, irrigation districts, BPA, DOE and many contractors to maintain their equipment or fulfill their respective missions. These roads are closed to public use, as are the roads specifically associated with utilities. Most of these roads are maintained as gravel or two-tracks over native materials. Access to most of these roads is through locked gates off State Routes 225, 240, and 24.⁴⁶

⁴⁵ The roads associated with utilities are closed to public use.

⁴⁶ Since establishment of the Monument, many two-tracks over native material have been closed to protect resources, and the BPA and irrigation districts have closed access along their respective easements.

2.3.8.6.3 Parking

Existing public parking lots within the Monument boundaries are primarily located along the Columbia River within the Wahluke Unit. The existing parking lots, and their approximate capacities, are summarized in Table 8.

Table 8. Existing Monument Parking Areas.

Parking Lot	Approximate Capacity (Parking Spaces)
1	15
2	20
3	4
4	4
5	4
6	4
7	15
8	4
WB-10 Pond	8
White Bluffs Boat Ramp	20

2.3.9 Socio-Economic Setting

Demographic information obtained from the U.S. Bureau of Census was used to identify the total population near the Monument, as well as its composition. The four counties immediately surrounding the Monument—Adams, Benton, Franklin and Grant—and other counties within a sixty-mile radius—Kittitas, Walla Walla and Yakima—are considered the populations most impacted by the Monument and were chosen as the basis for all socio-economic analysis. Native American tribes that have treaty rights in the Monument are also considered as they exercise those treaty rights.

2.3.9.1 Population Demographics

This section provides a general overview of the existing population in the region surrounding the Monument. Additional demographic composition can be found below in Section 2.3.9.2, where minority and low-income populations are described in order to analyze environmental justice.

The Monument is located in the counties of Adams, Benton, Franklin and Grant. A perimeter that projects sixty miles in all directions of the Monument includes the counties of Kittitas, Walla Walla and Yakima. These seven counties are considered to comprise the affected demographic and economic region.

2.3.9.1.1 General Population

Table 9 presents population in the state and in the counties that comprise the study area. The table shows that the greatest share of the regional population resides in Benton and Yakima County, and that Benton County has by far the highest population density in the region. A total population of approximately 589,300 people resides in the study area.

Table 9. Population in Economic Study Area.

Jurisdiction	Population	State Population (%), County Ranking ¹	Population Density (Persons/Square Mile)
Adams County	16,000	31	8.6
Benton County	140,700	10	83.7
Franklin County	45,900	21	39.7
Grant County	75,900	13	28.4
Kittitas County	34,000	25	14.8
Walla Walla County	54,200	19	42.0
Yakima County	222,600	7	49.0

¹ There are thirty-nine counties in the state of Washington. Source: Washington State Employment Security Department, 2000–2002.

While the largest percentage of residents within the study area considers itself white (497,900 people), the minority population within the area of impact consists of approximately 91,400 people and represents approximately 16% of the population in the assessment area. The ethnic composition of the minority population is primarily of Hispanic origin (approximately 22%), which can be of any race. The Hispanic population varies greatly across the study area, both in total population (from a high of 23,500 in Benton County to a low of 900 in Kittitas County) and in percentage of the population (48% in Adams County to 3% in Kittitas County).

2.3.9.1.2 Native American Populations Near the Monument

Substantial Native American populations are located within the sixty-mile assessment area (approximately 13,000 people). Census block groups within the assessment area and composed primarily of Native American populations are primarily located on the Yakama Indian Reservation in Yakima County, Washington. However, other Native American populations located outside of the assessment area also have an interest in the Monument based on treaty rights.

2.3.9.2 Environmental Justice Setting

On February 11, 1994, President Clinton signed Executive Order 12898, requiring federal agencies that administer and implement programs, policies and activities that affect human health or the environment to identify and avoid “disproportionately high and adverse” effects on minority and low-income populations.

The FWS’s environmental justice guidelines state that environmental justice is one of the factors considered when developing an environmental analysis. These guidelines stipulate that environmental justice should be addressed similar to other environmental concerns and should include identification, avoidance, minimization and finally, mitigation. The intent is to ensure that projects are developed in a manner that avoids disproportionately high and adverse effects on minority and low-income populations.

The FWS is required to undertake activities in support of the Environmental Justice Program and ensure compliance with Executive Order 12898 in all FWS programs and activities. Incorporation of environmental justice principles is an implementation of the NEPA, Title VI of the Civil Rights Act, Uniform Relocation Act, and other regulations and guidance that affect social, economic and environmental factors; public health; and public involvement.

2.3.9.2.1 Area of Consideration

Data for five communities—Richland, Pasco, Mattawa, Othello and Prosser—and three counties—Benton, Franklin and Grant—in the state of Washington were evaluated as part of this environmental justice analysis. The communities were chosen due to their proximity to the Monument and for their differing social and economic backgrounds. The counties are those in which the Monument is primarily located. Following is a discussion of minority—including Native American populations—and low-income data for these communities and counties.

2.3.9.2.2 Minority and Low-Income Populations

A minority is defined as a person who has any of the following traits.

- Black (having origins in any of the black racial groups of Africa).
- Asian (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands).

- Native American and Alaskan Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).
- Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race).⁴⁷

Detailed minority data for the five communities, three counties, and the state of Washington are included in the tables below.⁴⁸ In 2000, Washington State’s minority population was 18.2%, higher than the community of Richland (10%), but lower than in the communities of Mattawa (97%), Pasco (47%), Othello (46%) and Prosser (20%). In 2000, Franklin and Grant Counties had higher minority populations (38.1% and 23.5%) than the state of Washington (18.2%); Benton County’s minority population (13.8%) was lower than the state’s minority population.

Hispanic and Latino Populations

Hispanics may identify with any race and are counted according to their answers on the 2000 census. However, the U.S. Census Bureau asked respondents to provide an Hispanic origin response, as well as responding to the question of racial origin. As such, the U.S. Census Bureau was able to identify the Hispanic/Latino population. The Hispanic or Latino populations in the sample communities, surrounding counties, and state of Washington are:

- | | |
|-----------------------------------|------------------------------|
| • Adams County—7,732 (47.1%). | • Othello—3,728 (63.8%). |
| • Benton County—17,806 (12.5%). | • Pasco—18,041 (56.3%). |
| • Franklin County—23,032 (46.7%). | • Prosser—1,421 (29.4%). |
| • Grant County—22,476 (30.1%). | • Richland—1,826 (4.7%). |
| • Mattawa—2,343 (89.8%). | • Washington—441,509 (7.5%). |

⁴⁷ Origin can be viewed as the heritage, nationality group, lineage, or country of birth of the person or the person’s parents or ancestors before their arrival in the United States. As such, people who identify their origin as Spanish, Hispanic, or Latino may be of any race. According to the U.S. Census Bureau: The data on the Hispanic or Latino population were derived from answers to a question that was asked of all people. The terms “Spanish,” “Hispanic Origin,” and “Latino” are used interchangeably. Some respondents identify with all three terms, while others may identify with only one of these three specific terms. People who identify with the terms “Spanish,” “Hispanic,” or “Latino” are those who classify themselves in one of the specific Spanish, Hispanic, or Latino categories listed on the [census] questionnaire—Mexican, Mexican American, Chicano, Puerto Rican, or Cuban—as well as those who indicate that they are “Other Spanish/Hispanic/Latino.” Hispanics or Latinos who do not identify with one of the specific origins listed on the questionnaire but indicated that they are “Other Spanish/Hispanic/Latino” are those whose origins are from Spain, the Spanish-speaking countries of Central or South America, the Dominican Republic, or people identifying themselves generally as Spanish, Spanish-American, Hispanic, Hispano, Latino, and so on.

⁴⁸ The category of “two or more races” in the 2000 census data addresses the issue of avoiding double-counting individuals who might be of two different races (e.g., Hispanic and Native American).

Table 10. Race Distribution, Nearby Sample Communities and the State of Washington, 2000.

Race	Representative Communities					State
	Richland	Pasco	Mattawa	Othello	Prosser	
White	34,662 (89.5%)	16,919 (52.8%)	772 (29.6%)	3,168 (54.2%)	3,865 (79.9%)	4,821,823 (81.8%)
Black or African American	530 (1.4%)	1,033 (3.2%)	5 (0.2%)	31 (0.5%)	26 (0.5%)	190,267 (3.2%)
Native American and Alaska Native	293 (0.8%)	248 (0.8%)	14 (0.5%)	59 (1.0%)	44 (0.9%)	93,301 (1.6%)
Asian	1,571 (4.1%)	567 (1.8%)	24 (0.9%)	59 (1.0%)	37 (0.8%)	322,335 (5.5%)
Native Hawaiian/ Other Pacific Islander	41 (0.1%)	46 (0.1%)	0 (0.0%)	5 (0.1%)	14 (0.3%)	23,953 (0.4%)
Other Single Race	718 (1.9%)	12,004 (37.4%)	1,718 (65.8%)	2,312 (39.5%)	731 (15.1%)	228,923 (3.9%)
Two or More Races	893 (2.3%)	1,249 (3.9%)	76 (2.9%)	213 (3.6%)	121 (2.5%)	213,519 (3.6%)
Total Population	38,708	32,066	2,609	5,847	4,838	5,894,121

Notes: Percentages may not exactly equal 100 due to rounding. Source: U.S. Census Bureau 2000.

Table 11. Race Distribution in Counties Around the Monument and Washington State, 2000.

Race	Surrounding Counties				Washington
	Adams	Benton	Franklin	Grant	
White	10,672 (65.0%)	122,879 (86.2%)	30,553 (61.9%)	57,174 (76.5%)	4,821,823 (81.8%)
Black or African American	46 (0.3%)	1,319 (0.9%)	1,230 (2.5%)	742 (1.0%)	190,267 (3.2%)
Native American and Alaska Native	112 (0.7%)	1,165 (0.8%)	362 (0.7%)	863 (1.2%)	93,301 (1.6%)
Asian	99 (0.6%)	3,134 (2.2%)	800 (1.6%)	652 (0.9%)	322,335 (5.5%)
Native Hawaiian/Other Pacific Islander	6 (0.0%)	163 (0.1%)	57 (0.1%)	53 (0.1%)	23,953 (0.4%)
Other Single Race	5,042 (30.7%)	9,983 (7.0%)	14,300 (29.0%)	12,967 (17.4%)	228,923 (3.9%)
Two or More Races	451 (2.7%)	3,829 (2.7%)	2,045 (4.1%)	2,247 (3.0%)	213,519 (3.6%)
Total Population	16,428	142,475	49,347	74,698	5,894,121

Notes: Percentages may not exactly equal 100 due to rounding. Source: U.S. Census Bureau 2000.

Except for Richland, all the sample communities and surrounding counties have Hispanic populations well above the Washington State average, as a percentage of the population. This is a prevalent minority population in the area around the Monument and must be considered. To date, there has been no special outreach to Hispanic populations, although the FWS tried to facilitate their involvement in the CCP process by having a Spanish translation available for scoping meetings. The FWS has been producing Spanish language versions of some signs and informational publications. Additional outreach, more Spanish language signs, and other measures to facilitate the involvement of Hispanic populations in the Monument will occur with implementation of the CCP, regardless of the alternative chosen.

Native American Populations

The Yakama Indian Reservation, located in Klickitat and Yakima Counties, Washington, is approximately fifty miles to the west of the Monument. As noted elsewhere, the Monument and the entire Hanford Site has cultural significance to the members of the Confederated Tribes of the Colville Reservation (CCT), Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Nez Perce Tribe, Wanapum and Yakama Indian Nation (Yakama Nation). The FWS is keenly aware and highly supportive of tribal interest in the Monument and has made multiple effort—within the CCP development time frame—to involve, listen to, and accommodate area tribes and Native American peoples. This included substantial discussions of all hunting programs.

Future opportunities of tribal members to exercise treaty rights are dependent upon the health of the ecosystems. The tribes assert that a treaty right to hunt, fish, or gather plants is diminished (if not voided) if the fish, wildlife, or plants have vanished or are contaminated to the extent that they threaten human health. These resources, particularly the resources with cultural and religious connotations, do not have equivalent value for the general population. Treaty reserved tribal fishing rights have been recognized as being effective within the Hanford Reach. The tribes also have an interest in continuing/renewing traditional uses, such as religious practices, the gathering of foods and medicines, hunting, and pasturing horses and cattle on Monument lands.

Low Income Populations

The U.S. Census Bureau follows the Office of Management and Budget's Statistical Policy Directive 14 to determine poverty status based on income level. To determine poverty, the U.S. Census Bureau uses a set of monetary income thresholds that vary by family size and composition. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being below the poverty level. Poverty status can be used as a measure of low income for environmental justice analyses. Poverty thresholds do not vary geographically, but do vary according to size of family unit.

In 1999, 7.3% of the population of Washington consisted of families with incomes below the poverty level. With the exception of Richland, all of the jurisdictions looked at have a higher percentage of their families at or below the poverty level than the state average. Also, all communities except Richland have median family income lower than that of Washington.⁴⁹ All of the counties except Benton have poverty rates equal to or higher than the state of Washington; Adams, Franklin and Grant Counties had median incomes lower than that of Washington.⁵⁰ There may be a correlation between lower incomes and higher minority populations, factors for which are beyond the scope of this plan.

Table 12. Low Income Statistics for Area Surrounding the Monument.

Community	Median Household Income	Median Family Income	Population Below Poverty Level	Families Below Poverty Level
Adams County	\$33,888	\$37,057	18.2%	13.6%
Benton County	\$47,044	\$54,146	10.3%	7.8%
Franklin County	\$38,991	\$41,967	19.2%	15.5%
Grant County	\$35,276	\$38,938	17.4%	13.1%
Mattawa	\$31,964	\$25,921	34.4%	30.6%
Othello	\$30,291	\$31,282	24.0%	18.4%
Pasco	\$34,540	\$37,342	23.3%	19.5%
Prosser	\$39,185	\$45,162	13.5%	11.5%
Richland	\$53,092	\$61,482	8.2%	5.7%
Washington	\$45,776	\$53,760	10.6%	7.3%
Source: U.S. Census Bureau				

2.3.9.3 Fiscal Environment

The fiscal environment is described by the industrial makeup, employment levels, and average wages in the area.

2.3.9.3.1 Industrial Makeup

One way to measure the industrial makeup of an area, and thereby its relative economic strength, is to compare it to other areas. In the state of Washington, location quotients are calculated for

⁴⁹ The state of Washington's median income for families was \$53,760.

⁵⁰ Richland, in Benton County, helps to raise the county's average income and lower its percentage of families below the poverty line.

the major industrial sectors using employment data. The idea of the location quotient is to compare a given industry’s share of total local employment versus its share statewide. Dividing the statewide industry employment share into the local industry share derives the quotient. Therefore, a quotient of 1.0 denotes an industry in which the local area is typical to the state as a whole. A value greater than 1.0 indicates an industry with higher concentration of employment than in the state as a whole, and a value less than 1.0 indicates the industry has a lower employment concentration than the state as a whole. Table 13 presents location quotients for major industrial sectors in the counties that comprise the economic study area.

The table shows that agriculture is the strongest sector in the region and that government employment is also stronger in the region than the statewide average. Manufacturing and trade quotients vary from county to county, with some counties in the region stronger than the statewide figures and some not. The other major industrial sectors are generally shown to be weaker in the region.

Table 13. Location Quotients in Economic Study Area.

Industrial Sector	Adams	Benton	Franklin	Grant	Kittitas	Walla Walla	Yakima
Agriculture	9.0	2.8	7.2	6.8	2.0	3.4	6.3
Government	1.3	0.9	1.1	1.2	1.9	1.2	0.9
Manufacturing	1.2	0.6	0.5	2.8	0.5	1.3	1.0
Trade	1.3	0.3	1.2	0.8	1.2	0.8	1.3
Construction/Mining	0.4	0.8	0.9	1.5	0.7	0.5	0.5
Transportation & Utilities	0.7	2.6	0.8	0.6	0.7	N/A	0.5
Services	0.4	1.0	0.8	0.5	0.7	0.9	0.8
Fire, Insurance, Real Estate	0.2	0.6	0.3	0.3	N/A	0.7	0.5
N/A = information not available.							
Source: Washington State Employment Security Department, 2000–2002							

2.3.9.3.2 Unemployment

Table 14. Average Unemployment in Economic Study Area.

Jurisdiction	Average (%) Unemployment Rate
Adams County	9.4
Benton County	6.2
Franklin County	9.0
Grant County	9.5
Kittitas County	5.3
Walla Walla County	5.8
Yakima County	9.1
State of Washington	4.7
Source: Washington State Employment Security Department, December 2005	

The unemployment rate is the percentage of the total labor force that has been unable to secure jobs but is actively looking. Table 14 summarizes the average unemployment in the counties in the economic study area. The table shows that most of the counties have average unemployment that exceeds the state average, and for many of the counties the difference is substantial.

2.3.9.3.3 Average Wages

Annual average covered wages are derived by dividing the total wages paid in an area by the annual average employment in that area. The number reflects actual wages and does not include benefits such as insurance or retirement plans. Jobs not covered by the unemployment insurance program are not covered. However, the program does cover approximately 85% of all employment in the state. Table 15 summarizes the average annual wages for the counties within the economic study area.

The table shows that all counties within the study area have average wages lower than the statewide average. However, it is important to note that only two counties within the state (King County and San Juan County) have average wages higher than the statewide average. The table also shows that the average wage in Benton County is considerably higher than the wages of other counties in the region. This is primarily caused by the substantial concentration of high-paying jobs related to Hanford Site operations in Benton County and the high concentration of lower-paying agricultural jobs in the other counties.

Table 15. Average Wages in Economic Study Area.

Jurisdiction	Average Wage In 2000
Adams County	\$23,900
Benton County	\$32,700
Franklin County	\$21,700
Grant County	\$24,000
Kittitas County	\$22,400
Walla Walla County	\$25,300
Yakima County	\$23,300
State of Washington	\$35,400
Source: Washington State Employment Security Department 2002	

2.3.9.4 Recreational Use at the Monument

The primary impact of the Monument on the local economy will be through tourism and recreational use of the Monument. Table 16 summarizes the estimated annual recreational use in the Monument under existing conditions.

2.3.9.4 Emergency Services

The Monument and its surrounding area has a high per capita share of law enforcement and firefighting personnel and equipment, as well as a host of emergency notification systems, primarily due to Hanford Site security needs. These resources are briefly described in the sections that follow.

Table 16. Annual Estimates of Recreational Users.

Activity	Estimated Annual Visitor Days (2004)
Hunting: Big Game	200
Hunting: Upland Game	400
Hunting: Waterfowl	1,000
Fishing	20,000
Wildlife Observation	500
Wildlife Photography	70
Education & Interpretation	250
Hiking	330
Non-Motorized Boating	670
Motorized Boating	2,000
Commercial River Trips	1,880
Equestrian Use	330
Driving For Pleasure	330
Other	1,870
Total	29,830

2.3.9.4.1 Police

Police protection for the Hanford Site is provided by the Hanford Patrol, which is operated by DOE contractors and supported by county sheriff departments, local municipal police departments, and the Washington State Patrol headquartered in Kennewick.

Table 17. Police Personnel in the Tri-Cities.

Area	Commissioned Officers	Reserve Officers	Patrol Cars
Kennewick Municipal	73	15	45
Pasco Municipal	44	33	15
Richland Municipal	50	13	13
West Richland Municipal	12	10	11
Benton County Sheriff	47	15	55
Franklin County Sheriff	19	17	22

Police protection in Benton and Franklin Counties is provided by county sheriff departments, local municipal police departments, and the Washington State Patrol headquartered in Kennewick. Table 17 shows the number of commissioned officers and patrol cars in each department. The Kennewick, Richland and Pasco departments maintain the largest staffs of commissioned officers with seventy-three, fifty and forty-four, respectively.

2.3.9.4.2 Monument Law Enforcement

The FWS law enforcement officers perform police protection and enforcement services in the Monument. Currently, the Monument has one law enforcement officer directly assigned to the Monument (vacant), one zone (i.e., regional) officer, and one special agent. The nearby Columbia and Mid-Columbia National Wildlife Refuges each have one law enforcement officer who can be called on for assistance.

Unlike the fire department (see below), Monument law enforcement currently have no mutual-aid agreements with local police departments, but does receive assistance from county sheriffs and the Hanford Patrol. Likewise, Monument personnel provide assistance to Hanford Patrol, Washington State Patrol, WDFW officers, county sheriffs, and city law enforcement.

2.3.9.4.3 Area Fire Fighting

Fire protection for the Hanford Site is provided by the Hanford Fire Department, which, like the Hanford Patrol, is operated by Hanford Site contractors. The Hanford Fire Department has ninety-three firefighters who are trained to dispose of hazardous waste and to fight chemical fires, in addition to their regular firefighting duties. During a twenty-four-hour duty period, the 1100 and 300 Areas have seven firefighters; the 200 East and 200 West Areas have eight firefighters; the 100 Areas have five firefighters; and the 400 Area, which includes Energy Northwest, has six firefighters. To perform their responsibilities, each station has access to a hazardous material response vehicle equipped with chemical fire-extinguishing equipment, an attack truck that carries foam and Purple-K dry chemical, a mobile air truck that provides air for respirators, and a transport tanker that supplies water to six brushfire trucks. The Hanford Fire Department owns five ambulances and maintains contact with local hospitals.

In addition to the Hanford Fire Department, the FWS has its own firefighting staff and equipment (described below), and the FWS can be assisted by numerous area fire districts. Table 18 indicates the number of firefighting personnel, both paid and unpaid, on the staffs of fire districts in the area.

Table 18. Fire Protection in the Tri-Cities.

Station	Personnel	Volunteers	Total	Service Area
Kennewick	63	0	63	City of Kennewick
Pasco	30	0	30	City of Pasco
Richland	48	0	48	City of Richland
Benton County Rural Fire Department 1	9	94	103	Kennewick Area
Benton County Rural Fire Department 2	3	37	40	Benton City
Benton County Rural Fire Department 4	5	30	35	West Richland

2.3.9.4.4 Monument/FWS Firefighting Capacity

Fully staffed, the FWS would have fifteen full-time and nine temporary (seasonal) firefighting staff within the area. Additionally, ten to fifteen refuge staff have completed basic firefighting training and serve as collateral firefighters.

FWS fire staff primarily perform fuels management, fuels hazard reduction, wildland fire suppression, and prescribed fire activities on lands administered by the FWS. The FWS fire team relies on mutual-aid and cooperative working agreements with ten county rural fire protection districts and the Hanford Fire Department for initial and extended attack of fires. Likewise, through these agreements, fire protection services are provided for off-refuge lands as resources and fire protection staffing levels will allow. The mutual aid agreements provide for the first twelve hours of services at no charge to the requesting department.

2.3.9.4.5 Other Emergency Systems

The Hanford Site Emergency Alerting System was established to provide notification to all site workers (including the Monument) of public health and safety issues that require immediate response. Generally, this system is centered around radiological concerns, but it could also be used to notify site workers of imminent law enforcement and fire concerns. This system uses crash alarm telephones, sirens and an AM radio station; however, the system is outdated and out of compliance. A new system is being developed that will integrate the old system with new technologies not in the current system. Pagers, cell phones, all local area networks, and two-way radios are some of the new technologies that will be directly connected to the new system.

Energy Northwest, as a working nuclear power-production reactor, is required to have a siren warning system to alert personnel and other nearby people in the event of an emergency. Its warning sirens must reach each area where there are people at a minimum decibel level.

2.4 Environmental Consequences

In the sections that follow, the two alternatives are evaluated for their impacts to the physical and social environment. The scale of the analysis is significantly less than that of the Draft CCP as that document considered all management actions. Here, the analysis is limited just to those resources impacted by a recreational hunting program. Likewise, the extent of the impacts is significantly less than that of the CCP for the same reason.

2.4.1 Effects and Assumptions Common to All Alternatives

As the two alternatives considered here are radically different, there are very few effects common to both alternatives.

2.4.1.1 Environmental Justice

Sections 2.3.9.1 and 2.3.9.2 outline the populations normally considered in addressing the environmental justice of an action. While the area surrounding the Monument has substantial minority and low-income populations, the impacts to those demographics from either alternative are negligible. While both minority and low-income populations around the Monument do hunt, there is no subsistence hunting. The closure of the Monument to hunting would not substantially impact any particular population of people, especially in light of the ready availability of substitute locations for hunting within the area. Migrant workers—the area does host a substantial population of migrant workers, who do rely somewhat on subsistence gathering—would not be affected by a reduction/closure of hunting as the seasons they are here do not coincide with hunting seasons. Migrant workers would be more affected by a fishing closure.

2.4.1.2 Impact Analysis Assumptions – Harvestable Populations

In general, most hunting management programs assume that hunting mortality to wildlife is compensatory mortality, rather than additive mortality. Compensatory mortality is defined as mortality within a population that would have taken place via some other source of mortality, therefore total mortality remains equal at the population level. Additive mortality is defined as mortality that is additional to other sources of mortality at a population level, therefore mortality caused by additive sources would add to total mortality at the population level. Hunting programs assume that at a population level there is a “harvestable surplus” of individual animals that can be harvested as compensatory mortality rather than additive mortality.

In many cases, human harvest via a hunting program substitutes for historical sources of natural predation that have been modified or reduced by humans. The removal/elimination of large predators in many areas has allowed populations of some prey species to increase. Hunting programs can mimic the ecological role that large predators once served, in both removing a segment of the population and also causing disturbance and animal movement. Hunting is not a direct ecological substitute for predators, however, as predators would naturally remove the sick, weak, or injured animals, whereas hunters often target the healthiest, largest animals for removal. Yet, in the absence of many large predators, hunting may provide some population-level regulation, as well as a source of disturbance that modifies animal use patterns and behavior within certain sites or areas.

2.4.2 Impacts to Physical Environment

Geological and paleontological resources are important components of the Monument, as defined by the Monument Proclamation. In addition to considering potential impacts to the unique resources present, it is also important to consider the more mundane erosional potential from activities; this directly impacts wildlife and their habitats.

2.4.2.1 Alternative A

Visitors pursuing big and upland game hunting activities in the Monument typically walk cross-country or follow game trails, with a very small percentage of deer hunters traveling by horseback. These activities are dispersed across the large areas that are open to hunting. Due to the seasonal and dispersed nature of hunting activities, adverse effects—such as soil erosion, degradation of geologic or paleontologic resources, and impacts to air quality from dust—are anticipated to be negligible at this time (Cole 2004). Effects could increase in severity over time if hunting use grows on the Monument.

Visitors hunting waterfowl on the Monument typically walk from a parking area to a desirable location, set up a blind, and remain stationary. In the past, hunters dug waterfowl pass-shooting depressions along bluffs in the Wahluke Unit; however, this activity is no longer allowed. Most waterfowl hunters tend to use common footpaths between parking areas and hunting locations, resulting in localized soil compaction along the Columbia River and associated bluffs and around the WB-10 Ponds. However, in light of the localized nature of the impacts, and the lack of sensitive physical resources in these areas, negligible effects are anticipated.

The Washington Department of Ecology (WDOE) classifies the water quality of the Columbia River from Grand Coulee Dam to the Washington-Oregon border, which includes the Monument, as Class A (Excellent). With relatively low hunter numbers, vehicle use limitations

(vehicles are limited surfaced roads), and the sheer volume of the river, impacts to water quality would be negligible.

2.4.2.2 Alternative B

As the hunting program is believed to have negligible impacts to the physical environment on the Monument, there would be negligible impacts from discontinuing it.

2.4.3 Impacts to Vegetation & Habitats

Although the Monument is a desert, the presence of the Columbia River, sands deposited by the Missoula Floods, artificial and natural wetlands, and varied terrain, have created a broad mosaic of habitat types, each filled with an amazing array of plant species. At least two plants—Umtanum desert buckwheat and White Bluffs bladderpod—are found nowhere else in the world.

2.4.3.1 Alternative A

Effects of a recreational hunting program on vegetation and habitat vary depending on soil type, vegetation cover type, topography, and use intensity. Effects on vegetation and habitats resulting from foot and horse traffic include a combination of several factors influencing vegetation, soils, microbiotic crusts, and the potential for non-native species invasion. Such activities can increase compaction, remove microbiotic crusts, reduce water infiltration, increase runoff and erosion potential, inhibit seed germination and plant growth, increase the potential for non-native species invasion, and trample underground burrows and surface runways of small animals (Alessa and Earnhart 2000; British Columbia Ministry of Water 2004; Cole 1995; Cole 2004; McClaran and Cole 1993; Pickering 2003).

Direct effects on vegetation occur primarily through trampling. Trampling of vegetation bends, weakens and breaks leaves and branches and damages photosynthetic surfaces, seed production, and carbohydrate reserves, eventually killing some species (Cole 1995). Other direct effects from trampling include the disruption of microbiotic crust, which can result in decreased crust organism diversity (i.e., lichens, mosses, etc.), soil nutrients, stability and organic matter (Belnap et al. 2001).

Indirect effects of vegetation trampling and resultant soil compaction and erosion can include the exposure of roots, leading to plant mortality (Cole 2004; Cole 1995). Other indirect effects include disturbance to soil crust—when soil crust is broken, soil is more susceptible to wind and water erosion—and non-native plant species invasion. Further, hunting activities can spread

invasive species by varied mechanisms—such as transport on recreational equipment, clothing, footwear and hunting dogs—and through equestrian uses, either in fecal material or in feed. Vehicle undercarriages can rapidly collect and distribute weed seeds (Sheley et al. 2002; Sheley and Petroff 1999). Additional indirect effects to vegetation and habitats include the increased risk from human-caused wildfires.

The invasion of non-native invasive plant species can alter ecosystem structure and function; disrupt food chains and other ecosystem characteristics vital to wildlife; and dramatically modify key ecosystem processes, such as hydrology, productivity, nutrient cycling, and fire regime (Mack et al. 2000; Brooks and Pyke 2001; Randall 1996). Such species can displace native species; reduce forage and cover for wildlife; and increase the rate, intensity and severity of wildfires.

Visitors pursuing big and upland game hunting activities in the Monument typically walk cross-country, travel by horseback, or follow game trails. The extent of adverse effects to vegetation and habitat from hunters is unknown, but it is anticipated to be negligible to minor due to the seasonal and dispersed nature of hunting activities, as well as the level of current use and use anticipated into the foreseeable future.

Visitors hunting waterfowl in the Monument typically walk from a parking area to a desirable location, set up a blind, and remain stationary. Along the White Bluffs, a relatively small number of hunters have created pit-blinds by digging depressions for pass-shooting geese; however, digging of blinds or pits is no longer allowed. Existing pits are still used to pass-shoot geese. Most waterfowl hunters tend to use common footpaths between parking areas and hunting locations, resulting in localized trampling and soil compaction along the Columbia River and associated bluffs, and around the WB-10 Ponds. In view of the localized nature of effects, and because waterfowl hunting takes place primarily in riparian or wetland habitats or sandy soils, negligible to minor effects are anticipated. Microbiotic crusts do not generally occur within these types of habitats, so impacts to crust are not anticipated.

Because hunting season takes place in the autumn/winter months, typically the months in which the Monument receives most of its precipitation for the year, fire danger is generally low. During the winter, humidity is higher, temperatures are cooler, and fire risk is typically lower than during the spring and summer months. It is anticipated that best management practices and current regulations which prohibit campfires, open fires, fireworks, and other sources of fire ignition on the Monument will be adequate to prevent human-caused wildfires due to hunting activity.

If visitor use patterns change in the future, or visitor facility improvements are made within hunting areas, there may be a need for implementing strategies—such as increased outreach and establishing specific access points and routes—to minimize impacts to vegetation and habitats.

2.4.3.2 Alternative B

The hunting program itself is believed to have negligible to minor impacts to the vegetation and habitats on the Monument, which would be eliminated under Alternative B. However, if populations of hunted species increase dramatically on the Monument due to the absence of hunting, there could potentially be impacts to habitat. Populations of hunted species could increase to the point that they degrade the habitat through excessive grazing, browsing, or through physical damage (trampling/digging/mucking). Habitat disturbance from an overabundance of certain species (e.g., deer and elk) could cause the invasion of non-native plant species that would further degrade the habitat. This could permanently decrease the carrying capacity of the Monument for certain species and would potentially cause some wildlife die-offs. Indirect effects would be the need to conduct habitat restoration to mitigate damage from overabundant wildlife populations. Habitat restoration is often very labor intensive and expensive and would be an added expense for management of habitat resources.

2.4.4 Impacts to Hunted Wildlife

Three broad categories of wildlife can be hunted on the Monument—migratory birds (primarily waterfowl), big game (deer and elk), and upland game birds (see Section 1.0.1 for the full list).

2.4.4.1 Alternative A

Human activities can affect animals through four primary mechanisms—exploitation or harvest, disturbance, habitat modification, and pollution (Knight and Cole 1995a). It is assumed that effects specific to hunted species on the Monument would occur primarily through harvest, disturbance and habitat modification, with additional effects anticipated from nonpoint source pollution such as litter, car exhaust, and marine engine emission.

Hunting activity in the Monument results in mortality of individual game animals, including deer, elk, waterfowl and upland game birds; however, based upon annual game population and harvest surveys conducted by the FWS and the WDFW, effects are anticipated to be negligible at a population level (see Sections 2.4.11.1 and 2.4.11.2 for harvest statistics). Hunting mortality to wildlife is compensatory mortality, rather than additive mortality.

In the absence of large predators, removal of individual animals through the hunting program may help to control the population of hunted species. Controlling population expansion may sometimes be needed for the general health of the population by reducing inter- and intra-specific competition for resources, such as food and shelter, and reducing the probability of the spread of diseases.

During hunting seasons, activities such as game stalking and firearm discharge result in wildlife disturbance of both game and non-game species. However, because of the limited hunting seasons and the dispersed nature of disturbance, minor adverse effects to individual animals and negligible effects on wildlife populations are anticipated.

Hunters occasionally leave behind litter, shell casings or other refuse; however, these items seldom reach a level that would interfere with the life cycle or productivity of wildlife on the Monument. Because of the limited hunting seasons, the dispersed nature of pollution, and its general lack of toxicity, minor adverse effects to individual animals and negligible effects on wildlife populations are anticipated.

Many of the hunted species on the Monument (including ring-necked pheasants, California quail, chukar partridge, gray (Hungarian) partridge) were introduced to the area solely to establish and provide for huntable populations;⁵¹ ring-necked pheasant populations are supplemented every season through WDFW release programs to enhance the harvestable population. These species are not native to the Monument area, would not have historically been present on the Monument, and have populations that are currently self-sustaining on Monument lands. The impact from hunting to these species is negligible, because populations of these species were established within this area solely for the purpose of recreational harvest.

The Monument area has several large areas that serve as sanctuaries for animals during the hunting season. Adjacent to the Wahluke Unit, where hunting occurs, is the Saddle Mountain Unit, which is closed to hunting. The ALE is also closed to hunting, as well as most of the Columbia River corridor, and the McGee Ranch/Riverlands Unit. The juxtaposition of the non-hunted lands with the hunted area allows for the majority of the Monument area to serve as a sanctuary for hunted wildlife species, mitigating whatever minor impacts that do occur.

Hunting activities may indirectly benefit wildlife through fostering increased appreciation and support for conservation of wildlife habitat.

2.4.4.2 Alternative B

Discontinuing the hunting program would eliminate any direct impact to individual animals that are harvested during hunting seasons. Because hunting is considered to be a “compensatory” form of mortality, meaning that hunting substitutes for other forms of mortality, more individuals would die from natural causes. Individuals could be taken by predators, be killed by vehicles, succumb to disease or illness, or starve.

⁵¹ At the time that these populations were established, no monitoring studies were conducted to determine if these species had an effect on native wildlife populations in the area.

If populations of hunted species increased on the Monument, because other forms of mortality are absent (i.e., the absence of some types of predators), there could potentially be impacts to habitat. Populations of hunted species could increase to the point that they degrade the habitat through excessive grazing, browsing, or through physical damage (trampling/digging/mucking). Habitat disturbance from an overabundance of certain species could cause the invasion of non-native plant species that would further degrade the habitat. This could permanently decrease the carrying capacity of the Monument for certain species, including those that are hunted, and would potentially cause some wildlife die-offs. With increasing populations of certain species, competition for resources may also occur, in which case rarer species might be overcrowded or outcompeted by more abundant and commonly occurring species. Other effects could be the spread of disease among expanded populations of hunted species.

Human disturbance to wildlife during the hunting season would also be reduced since this recreational activity would not occur. This may increase the overwinter survival of some species, leading to expanding populations, and could potentially lead to impacts to habitat from an overabundance of certain species, as described above. For migratory species, such as waterfowl, these impacts could occur on wintering grounds further south and/or breeding grounds further north. Further, if disturbance is reduced, there may be areas of use by certain species that experience greater wildlife residence times and thus greater impacts to habitat (e.g., natural springs might be a place where animals congregate and cause damage if they are not periodically disturbed and forced to move to other areas).

2.4.5 Impacts to Other Wildlife

The Monument is home to an amazing variety and number of non-game species. In fact, the species proposed for continued hunting make up a tiny fraction of the number of species present.

2.4.5.1 Alternative A

Human activities can affect animals through four primary mechanisms—exploitation or harvest, disturbance, habitat modification, and pollution (Knight and Cole 1995a). It is assumed that effects specific to other non-hunted wildlife on the Monument would occur primarily through disturbance and habitat modification, with additional effects anticipated from nonpoint source pollution, such as litter, car exhaust, and marine engine emission.

A variety of animal behavior responses could result from human activity, depending on a range of variables associated with the activity. Examples of such variables include type, distance, direction of movement, speed, predictability, frequency, magnitude and location of the activity (Knight and Cole 1995b). Wildlife disturbance can precipitate behavioral changes such as avoidance, habituation, or attraction (Knight and Temple 1995). Disturbance of wildlife species

that habituate to human use tends to be greater when recreational activities occur away from established use areas, such as parking areas and trails (Gutzwiller et al. 1994; Riffell et al. 1996; Gutzwiller et al. 1997; MacArthur et al. 1982). Physiological responses can include the “fight or flight” response, with elevated heart and respiratory rates, or the “freeze” response, with inhibition of activity and reduced heart and respiratory rates. The implications of disturbance are heightened during sensitive life stages, such as breeding, overwintering and rearing of dependent young. Depending on the disturbance variables listed above, the long-term effects on individual animals can be altered behavior, reduced vigor, lower reproductive success, and death (Knight and Cole 1995a & b).

The hunting program on the Monument takes place during the autumn/winter months. Many species of resident animals are not as active during this season as they are during spring/summer breeding seasons. Small mammals, including bats, have reduced activity periods, and many hibernate or experience torpor during fall and winter months. These species are also primarily nocturnal. Both of these qualities make hunter interactions with small mammals very rare. Amphibians and reptiles on the Monument are dormant or hibernating during these months, which limits their surface presence during the hunting season when temperatures are low. Hunters would rarely encounter reptiles and amphibians during most of the hunting season. Invertebrates are also not active during cold weather and would have few interactions with hunters during the hunting season. Migratory bird nesting is completed for the year, and neotropical migrant birds have migrated to their wintering grounds for the season.

Overwinter survival is a critical component of healthy resident wildlife populations. The Monument area has several large areas that serve as refuges for resident animals during the winter months. Adjacent to the Wahluke Unit, where hunting occurs, is the Saddle Mountain Unit, which is closed to hunting. The ALE is also closed to hunting, as well as most of the Columbia River corridor, and the McGee Ranch/Riverlands Unit. The juxtaposition of the non-hunted lands with the hunted area allows for the majority of the Monument to serve as a sanctuary for a broad diversity and abundance of native wintering wildlife species.

Due to the seasonality and timing of the hunting program, as well as the availability of other non-hunted areas throughout the Monument, any impacts from hunting to other wildlife are considered to be minor.

2.4.5.2 Alternative B

No disturbance to other wildlife due to hunting would occur under Alternative B. Any disturbance effects to other wildlife from hunting would be eliminated. However, since the disturbance due to hunting was determined to be minor, this would only alleviate a minor form of disturbance. Other activities, such as hiking, wildlife observation, driving, picnicking and

fishing, would all still occur during this seasonal time frame, and so disturbance of wildlife would not be eliminated, although it would be lessened.

2.4.6 Impacts to Threatened & Endangered Species

Compared to many national wildlife refuges, the Monument has few endangered plant or wildlife species, and several of those are anadromous fish, which would not be impacted by a recreational hunting program.

2.4.6.1 Alternative A

Adverse effects of hunting activities on T&E species would result primarily from loss or modification of habitat, including changes in vegetation community structure and composition, soil compaction, and establishment of invasive species; disturbance and modification of diurnal and seasonal wildlife behavioral patterns caused by the visible and audible presence of people, vehicles, watercraft and domestic animals, such as horses and dogs; and/or habitat fragmentation associated with trails, roads and recreation site development. In addition, adverse effects could result from human-caused wildfire.

As stated above, impacts to vegetation and habitat from hunting were determined to be minor; any impacts to T&E species from habitat modification would also be considered to be minor. The impact to wildlife from disturbance related to hunting was also identified above as localized and minor; any impact to T&E animal species from disturbance would also be considered minor.

Because hunting season takes place in the autumn/winter months, typically the months in which the Monument receives most of its precipitation for the year, fire danger is generally low. As such, the risk of fire that would modify vegetation or habitat that would subsequently affect T&E species on the Monument is considered to be a very low probability.

Hunting activities could result in the take of T&E species through mistaken identity or illegal poaching. Species that may be susceptible include American white pelican (state endangered), bald eagle (federal and state threatened), ferruginous hawk (federal species of concern, state threatened), sandhill crane (state endangered), and western sage grouse (federal candidate, state threatened). Of these, sage grouse would be the most likely to be misidentified as one of the legally taken upland game birds; however, there are no known sage grouse present at this time. Other species, such as pygmy rabbits, are unlikely to be shot through misidentification as the Monument is closed to all rabbit hunting. The same is true of Washington ground squirrels as there is no varmint hunting of any type allowed. This does not preclude these species take through poaching. However, based on discussions with Monument staff, state wildlife personnel, and local law enforcement officers, such incidents—poaching and misidentification

of species—are believed to be rare and isolated, thus the effects at the population level are anticipated to be negligible.

Hunting would not have any effect on listed fish species—spring Chinook, steelhead, or bull trout.

Hunting would have little direct effect on bald eagles, even though they may be present during hunting seasons, as hunting is not permitted within 1/4-mile of the Columbia River shoreline in the area most frequently used by bald eagles, which are generally found within 100 yards of the shoreline. There could be some minor disturbance impacts or a slight reduction of the prey base (i.e., waterfowl). Inversely, hunting of waterfowl species may serve to move ducks and geese within the Monument area, which could benefit bald eagles which rely on waterfowl for their primary prey during the winter months.

Hunting on the Wahluke Unit would have no effect on pygmy rabbits. Pygmy rabbits had been extirpated from Washington State, and the only known population in the wild is a recently introduced/experimental population on state land north of the Monument in Grant and Douglas Counties. In addition, the Wahluke Unit is closed to rabbit hunting of any kind.

Washington ground squirrels are a candidate species, and a small population of these squirrels occur on the Wahluke Unit near the crest of the Saddle Mountains. However, Washington ground squirrels are fossorial animals that are only above ground generally from mid-February through June each year. The rest of the year, they are estivating/hibernating inside burrows underground. During hunting season, these squirrels are not active and are underground. In addition, the Wahluke Unit is not open for hunting of squirrels of any kind. Except for the rare trampling of burrows by hunters or horses, hunting activity is unlikely to impact Washington ground squirrels in any way.

The population of sage grouse in Washington is considered to be a candidate for listing as a distinct population segment of greater sage grouse. Hunting on the Wahluke Unit would not likely jeopardize sage grouse as currently sage grouse have not been documented on this area of the Monument. Further, no hunting of grouse is allowed on the Monument.

Listed plant species are not likely to be affected by hunting on the Wahluke Unit. The majority of these plants are desert adapted forbs (broadleaved wildflowers); many of these plants actively grow and flower during the spring and summer and are dormant during the autumn and winter months when hunting occurs. Some of the plants are annuals and only appear in the spring under the right conditions and would not be affected by autumn/winter hunting seasons.

The White Bluffs bladderpod is a biannual plant that occurs along the river bluffs within the Wahluke Unit. During the hunting season, this plant will have already flowered and seeded for the season. Small rosette plants would be apparent, but these plants tend to grow in a small band

on steep slopes of the White Bluffs. The few hunters that may walk through the area of the White Bluffs bladderpod populations would have negligible impact on the population.

In general, due to the seasonality and relatively low-level of hunting use currently on the Monument, impacts to listed T&E species are considered to be negligible to minor. A Section 7 (ESA) Evaluation, associated with this assessment, was conducted (see Section 7), and it has been determined that the proposed action creates either no effect, or is not likely to jeopardize, listed species.

2.4.6.2 Alternative B

Discontinuing hunting would have little impact to T&E species. As stated above, most T&E species are separated from impacts from hunting, either by seasonality or spatial relationship to hunted areas. Discontinuing hunting would not likely change conditions for these species.

2.4.7 Impacts to Cultural Resources

Numerous cultural resources are identified by the Monument Proclamation as being of national significance. Of possible greater significance, though, is the importance of these resources to area Native Americans.

2.4.7.1 Alternative A

Visitors pursuing big and upland game hunting activities in the Monument typically walk cross-country or follow game trails, with a very small percentage of deer hunters traveling by horseback (likely less than 1%). These activities are dispersed across areas open to hunting, the extent of which varies by alternative. Physical effects on cultural resources and their use by Native Americans resulting from big and upland game hunting activities are anticipated to be negligible due to the seasonal use and dispersed nature of travel.

In the past, hunters dug waterfowl pass-shooting depressions along bluffs in the Wahluke Unit, which could displace or uncover artifacts, leading to their possible theft; however, this activity is no longer allowed.

In general, visitor use would likely entail some degree of effect through illegal collection, vandalism, and crushing and scattering of cultural artifacts (Des Jean 2000; Hartley and Vawser 2004; British Columbia Ministry of Water, Land and Air Protection 2004), with increased visitation implying an increase in effects (Ison et al. 1981). However, this potential damage

exists regardless of a recreational hunting program; hunters are no more or less likely to create a problem than any other user group. With due diligence, educational materials (e.g., pamphlets and signs), and enforcement, impacts from vandalism and theft are anticipated to be negligible to minor.

Native Americans do use the Monument and Central Hanford for religious and cultural purposes. However, such use is typically in areas closed to hunting, occurs at times other than hunting season (e.g., root gathering), or is of such a nature as to not be impacted by recreational hunting activities. There would be negligible impacts to traditional use of the Monument by Native Americans from recreational hunting.

2.4.7.2 Alternative B

As recreational hunting is believed to have negligible to minor impacts to cultural resources on the Monument, there would be negligible impacts by discontinuing it.

2.4.8 Impacts to Recreation

Hunting is a recreational activity in its own right. Here, the analysis looks at both the impacts of hunting as a recreational activity, as well as its impact on other recreational activities.

2.4.8.1 Alternative A

Continuation of compatible hunting programs on the Wahluke Unit would provide for one of the priority public uses identified by the National Wildlife Refuge System Improvement Act. The public would have the opportunity to harvest a renewable resource in a traditional manner, which is culturally important to some components of the local community. This alternative would allow the public to enjoy hunting at no or little cost in a region where private land is the norm and where it is frequently leased for hunting, often costing \$300-\$2,000/year for hunting membership or access.

It is believed that hunting programs can enhance user appreciation for, and understanding of, wildlife, its habitats, and the environment, and they may promote a strong land ethic and sense of environmental awareness. By allowing hunting, the FWS realizes an opportunity to increase the public's awareness of the Monument, its resources, and the NWRS.

Wildlife disturbance resulting from hunting activities would have an adverse effect on wildlife observation and photography opportunities in hunt areas during hunting seasons. However,

because of the seasonal nature of disturbance and the relatively large sanctuary areas in the Monument, such adverse effects are anticipated to be minor.

As public use levels expand across time, unanticipated conflicts between user groups may occur, and there may be a need to implement strategies, such as time and space zoning, to eliminate or minimize conflicts and maintain quality wildlife-dependent recreational opportunities. However, in light of current hunter numbers, it is not anticipated that this would be needed within the foreseeable future.

Hunting activities and the presence and noise of weaponry in public use areas would have varying effects on the Monument's aesthetic environment; responses to hunting are highly subjective. As such, hunting could adversely affect visitors pursuing recreational activities such as boating, equestrian use, hiking and bicycling. Hunting activities—especially the sound of weapons—would result in seasonal, minor adverse effects on solitude within the Monument.

Non-hunters, especially, could experience adverse effects associated with hunting activities. The sight of orange safety garments typically worn by hunters would stand out on the landscape in some areas of the Monument. The sight of animals being killed and/or dead animals could be a major adverse effect for some visitors. Hunting-related litter, such as empty bullet casings, would also contribute to adverse effects. Adverse effects would be minor to major for some visitors and negligible for others.

However, these adverse effects can be reduced, eliminated, or mitigated by providing information on year-round recreational opportunities and typical use patterns to visitors. Such information allows visitors to know what activities to expect at different times of the year so that they can better prepare for their visit. Seasonal closures of some areas to certain uses and other segregation of users would also eliminate, or at least lessen, potential adverse effects. Also, full and careful implementation of the hunting measures/regulations outlined in Section 1 would lessen any impacts to non-hunters.

2.4.8.2 Alternative B

In hunting was discontinued, the hunting public would not have the opportunity to harvest a renewable resource while participating in compatible wildlife-dependent recreation; nor would the FWS be meeting public use demand in the area. The FWS would also lose an important wildlife management tool if the hunting program were closed. Public relations would be severely, negatively impacted within the local hunting community. Opportunities to participate in partnership programs with hunting interest groups to promote wildlife-dependant recreation and education could be missed. Likewise, direct opportunities to educate the public on the value of wildlife and national wildlife refuges would be foregone, as well as opportunities for more indirect environmental education.

Overall, benefits to other recreation opportunities, such as wildlife observation and photography, would likely occur from discontinuing hunting-related impacts (e.g., wildlife disturbance, noise, visual impacts). However, these gains would be minor.

2.4.9 Effects Analysis—Economics

Environmental consequences related to economics comprise the direct, indirect and induced economic effects from changes incurred under the project alternatives.

2.4.9.1 Economic Analysis Study Area

The Monument is located in Adams, Benton, Franklin and Grant Counties. A perimeter of sixty miles surrounding the Monument encompasses portions of Kittitas, Walla Walla, and Yakima Counties. These seven counties are considered to comprise the affected economic region and were accordingly included in the economic impact analysis.

2.4.9.2 Economic Impact Analysis

Economic impact analysis is an assessment of the change in overall economic activity as a result of some change in one or more economic activities (Minnesota IMPLAN Group 2004). For the Monument, analysis involves determining the overall change in economic activity in the seven-county study area expected to result from changes in economic activities associated with the Monument (i.e., implementation of a change in the hunting program).

2.4.9.1.1 Description of Input-Output Model

An input-output model was developed for the Draft CCP utilizing IMPLAN (Impact Analysis for Planning) software. Input-output models measure the direct and indirect economic relationships within a regional economy in terms of additional industry output, jobs and income. An input-output model also measures the economy by compiling and tracking the transactions of businesses and industries in more than 500 sectors. It is considered a secondary system in that it does not employ survey-based data. Instead, IMPLAN is based on national average relationships between industries to which regional relationships are added.

The IMPLAN model developed was used to estimate the effects on the local economy of spending by recreational visitors to the Monument and of the employment, capital expenditures, and operating expenditures of the Monument. The potential regional economic impacts of these

expenditures were evaluated for changes in management, as well as for existing conditions. The change of economic activity from existing conditions is considered the economic impact.

2.4.9.1.2 Inputs to Economic Analysis

The following sections describe the data that were developed for the project alternatives; this is the input into the economic model.

Usage Forecasts for Alternatives. The number of annual visitors to each potential hunting type is summarized in Table 19. The projections are based on existing visitor counts and visitation of other national wildlife refuges with similar uses.

For purposes of economic analysis, visitor counts are measured according to recreational visitor-days, which is defined as an eight-hour day (Caudill and Henderson 2003). Thus, a person participating in an activity for four hours would be counted as spending one-half of a visitor-day. This prevents over-estimation of spending attributable to the Monument that would result if brief visits were counted the same as extended stays.

In a given day, a visitor may engage in more than one recreational activity. To count that person once under each activity would result in an over-estimation of the total number of visitors and, in turn, an over-estimation of spending attributed to those visitors. Thus, for purposes of economic analysis, visitors are counted once according to their primary activity.

Table 19. Projected Annual Monument Visitation by Alternative.

Primary Activity	Annual Visitor Days by Alternative	
	Alt A	Alt B ¹
Big game hunting	200	0
Upland bird hunting	400	0
Migratory bird hunting	1,000	333
Totals	1,600	333
1 - Some waterfowl hunting would still occur on the river and/or below the ordinary high water mark, which are not within the jurisdiction of the FWS. It was assumed that 1/3 of the waterfowl hunting is on the WB-10 Ponds, 1/3 on the Monument other than the WB-10 Ponds, and 1/3 on the river (1,000 total visitor days).		

Resident and Non-Resident Visitors. The estimated visitors summarized in Table 19 were further categorized as resident or non-resident. Residents are defined as visitors who live within thirty miles of the Monument, and non-residents are visitors who live beyond the thirty-mile radius. Making the distinction between resident and non-resident visitors is important in

economic analysis because each group has different spending characteristics. Non-residents typically spend more than residents, as is shown in the following section.

Table 20 summarizes the estimated percentages of residents versus non-residents. Most values are based on data that were recorded for similar activities at the Umatilla National Wildlife Refuge, located in Morrow County, Oregon, and Benton and Franklin Counties, Washington (Caudill and Henderson 2003).

Table 20. Projected Annual Visitation by Alternative.

Primary Activity	Resident	Non-Resident	Source
Big game hunting	25%	75%	1
Upland bird hunting	75%	25%	1
Migratory bird hunting	50%	50%	1
1 - Based on observed percentages for same activity at the Umatilla National Wildlife Refuge.			

Average Annual Visitor Expenditures. Table 21 summarizes the estimated average daily expenditures for hunting as defined by the alternatives. Expenditures were developed for both resident and non-resident visitor-days. Expenditure information was developed according to the following four categories.

Lodging. Overnight lodging at hotels and motels.

Food and drink. Purchases from grocery stores as well as restaurants.

Transportation. Gas and oil purchase, automobile maintenance and repair, and air transportation.

Other. All other miscellaneous purchases associated with recreational use, such as clothing, sporting goods, and photographic services.

Table 21. Average Expenditure Per Person Per Visitor-Day (2005 \$).

Primary Activity	Lodging		Food/Drink		Transportation		Other		Source
	R	NR	R	NR	R	NR	R	NR	
Big game hunting	\$1.78	\$3.05	\$16.00	\$18.99	\$14.14	\$37.36	\$4.23	\$29.04	1
Upland bird hunting	\$3.52	\$6.85	\$9.19	\$18.99	\$10.25	\$46.44	\$2.84	\$5.17	1
Migratory bird hunting	\$0.45	\$9.80	\$7.80	\$38.56	\$6.74	\$91.71	\$13.35	\$14.06	1
1 - Obtained directly from Caudill and Henderson (2003) for the specified activity for the region of the United States that includes Washington, Oregon, Idaho, Nevada and California.									

The primary source of spending information used for this analysis was obtained from *Banking on Nature 2002* (Caudill and Henderson 2003), which is based on compiled data from the FWS National Survey of Fishing, Hunting and Wildlife-Associated Recreation and the FWS Refuge

Management Information System. These data were further refined with information from refuge staff, regional tourism agencies, and other recreation providers (Caudill 2003). Data from these sources were combined to develop profiles of refuge spending in local communities.

The other primary source of expenditure data that was used for this analysis is *Spending Profiles of National Forest Visitors, 2002 Update* (Stynes and White 2004). This report presents national forest visitor spending profiles developed from National Visitor Use Monitoring Project surveys collected between 2000 and 2002. This report provided more explicit information on some non-consumptive activities, such as hiking and driving for pleasure, that were not covered in the *Banking on Nature* report.

Values obtained from these two sources were based on 2001 dollars and adjusted using the Consumer Price Index (CPI). The CPI is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services; it can be used as a means of adjusting dollar values. Based on the CPI, the 2001 values were adjusted to reflect 2005 dollars by applying a multiplier of 1.08 (U.S. Department of Labor 2005).

The average expenditures per person per resident and non-resident visitor day were applied to the visitor projections summarized in Table 21, resulting in estimates of average annual expenditures in each of the four categories—lodging, food/drink, transportation and other.

2.4.9.3 Summary

Table 22 summarizes the direct economic expenditures of the two alternatives. This was derived by taking the percentage of hunters who are resident for each activity, determining how many visitor days can be attributed to resident hunters, and multiplying that by the total visitor day expenditure for the particular activity.

Table 22. Projected Annual Expenditure—Monument Only.

Primary Activity	Total Expenditure by Alternative					
	Alt A			Alt B ¹		
	Resident	Non-Resident	Totals	Resident	Non-Resident	Total
Big game hunting	\$1,807.50	\$13,266.00	\$15,073.50	\$0.00	\$0.00	\$0.00
Upland game hunting	\$7,740.00	\$7,745.00	\$15,485.00	\$0.00	\$0.00	\$0.00
Waterfowl hunting	\$14,170.00	\$77,065.00	\$91,235.00	\$4,718.61	\$25,662.65	\$30,381.26
<i>Totals</i>	<i>\$23,717.50</i>	<i>\$98,076.00</i>	<i>\$121,793.50</i>	<i>\$4,718.61</i>	<i>\$25,662.65</i>	<i>\$30,381.26</i>

1 - Some waterfowl hunting would still occur on the river and/or below the ordinary high water mark, which are not within the jurisdiction of the FWS. It was assumed that 1/3 of the waterfowl hunting is on the WB-10 Ponds, 1/3 on the Monument other than the WB-10 Ponds, and 1/3 on the river (1,000 total visitor days).

2.4.10 Public Health and Safety

Public health and safety are of primary concern in the establishment and operations of any FWS program.

2.4.10.1 Alternative A

As noted, none of the proposed hunts offer major conflicts with other hunts or activities. With the current use patterns, impacts to public health and safety from the hunting program would be negligible. However, if visitor use patterns change in the future, or visitor facility improvements such as trails and auto tour routes are established within hunting areas, there may be a need for implementing strategies, such as increased outreach and establishing no-shooting zones, to minimize impacts to public health and safety.

FWS-led management actions, such as non-native species control, fire suppression, or fire restoration efforts which involve use of aircraft and herbicide treatments, may occur during hunting seasons. When such efforts intersect with hunting activities and therefore could potentially impact human health and safety, the FWS may implement temporary area closures to minimize such impacts.

2.4.10.2 Alternative B

As the recreational hunting program is believed to have negligible impacts to public health and safety on the Monument, there would be negligible impacts to public health and safety by discontinuing it.

2.4.11 Adjacent and Nearby Land Owners

Hunting of any type, and its associated outcomes (e.g., changes in species population levels), has the potential to impact adjacent and nearby landowners.

2.4.11.1 Alternative A

Lands adjacent to the hunting area are under a mixture of federal, state and private ownership/management and are used primarily for irrigated farming, grazing, wildlife protection, and recreation. There are no known issues or impacts to adjacent land owners and/or residents from the existing hunting programs. While elk depredation is an issue adjacent to the ALE, at this

time elk rarely cross the Columbia River, and there are no known depredation issues on lands adjacent to the hunting area from elk or any of the other hunted wildlife species. Incidents of vehicle collisions with big game in the area are rare (Washington Department of Transportation 2007). The potential for hunters to trespass onto adjacent lands does exist; however, this is minimized by restricting access to the hunting area to three main entrance points, maintaining fencing and posting along Monument boundaries, and providing regular law enforcement patrols. Potential adverse effects to adjacent lands and residents are further minimized by other provisions of the hunting programs, including prohibiting camping, open fires, and high-powered firearms. Monument staff would work closely with federal, state and private partners to minimize impacts to adjacent lands and its associated natural resources. Thus, no indirect or direct impacts are anticipated.

2.4.11.2 Alternative B

Because of the relatively low number of deer (estimated ten animals per year) taken from the Monument, discontinuation of the hunting program is not anticipated to result in depredation issues or to change the rate of vehicle collisions with big game in the area. If deer populations grow, and/or if elk do become established on the Wahluke Unit, the potential for depredation and traffic safety issues would increase, and discontinuation of the hunting program would remove a management tool for population control. As there are no significant issues associated with trespass and/or human safety from the hunting program, no significant impacts from discontinuing it would be anticipated.

2.4.12 Cumulative, Indirect and Irreversible Effects

As part of the environmental analysis under the NEPA, the FWS needs to address cumulative and long-term impacts, as well as those that are irreversible once implemented. *Cumulative effects* are those that are the result of incremental impacts of an action when added to other past, present and reasonably foreseeable actions, regardless of who undertakes the actions. *Indirect effects* are those that are caused by an action and occur later in time, or at another location, yet are reasonably foreseeable in the future. *Irreversible commitments* of resources occurs when an action so alters the resource that it cannot be restored or returned to its original or pre-disturbance condition.

The next three sections address the cumulative impacts of hunting on the Monument with those of hunting within a larger context.

2.4.12.1 Indirect and Cumulative Effects – Migratory Birds

Migratory game birds are those bird species so designated in conventions between the United States and several foreign nations for the protection and management of these birds. Under the Migratory Bird Treaty Act (16 U.S.C. 703-712), the Secretary of the Interior is authorized to determine when “hunting, taking, capture, killing, possession, sale, purchase, shipment, transportation, carriage, or export of any . . . bird, or any part, nest, or egg” of migratory game birds can take place and to adopt regulations for this purpose. These regulations are: 1) written after giving due regard to “the zones of temperature and to the distribution, abundance, economic value, breeding habits, and times and lines of migratory flight of such birds;” and 2) updated annually (16 U.S.C. 704(a)). This responsibility has been delegated to the FWS as the lead federal agency for managing and conserving migratory birds in the United States.

Acknowledging regional differences in hunting conditions, the FWS has administratively divided the nation into four flyways for the primary purpose of managing migratory game birds. Each flyway (Atlantic, Mississippi, Central and Pacific) has a Flyway Council, a formal organization generally composed of one member from each state and province in that flyway. The Monument is within the Pacific Flyway and allows hunting for ducks, geese, coots, snipe and mourning doves.

The FWS annually prescribes frameworks, or outer limits, for dates and times when hunting of migratory birds may occur and the number of birds that may be taken and possessed. These frameworks are necessary to: 1) allow state selections of seasons and limits for recreation and sustenance; 2) aid federal, state and tribal governments in the management of migratory game birds; and 3) permit harvests at levels compatible with population status and habitat conditions. Because the Migratory Bird Treaty Act stipulates that all hunting seasons for migratory game birds are closed unless specifically opened by the Secretary of the Interior, the FWS annually promulgates regulations (50 CFR Part 20) establishing the frameworks from which states may select season dates, bag limits, shooting hours, and other options for each migratory bird hunting season. The frameworks are essentially permissive in that hunting of migratory birds would not be allowed without them. Thus, in effect, federal annual regulations both allow and limit the hunting of migratory birds.

The process for adopting migratory game bird hunting regulations, located in 50 CFR Part 20, is constrained by three primary factors. Legal and administrative considerations dictate how long the rulemaking process will last. Most importantly, however, the biological cycle of migratory game birds controls the timing of data-gathering activities and thus the dates on which these results are available for consideration and deliberation. The process of adopting migratory game bird hunting regulations includes two separate regulations-development schedules, based on “early” and “late” hunting season regulations. Early hunting seasons pertain to all migratory game bird species in Alaska, Hawaii, Puerto Rico, and the Virgin Islands; migratory game birds other than waterfowl (e.g., dove, woodcock); and special early waterfowl seasons, such as teal

or resident Canada geese. Early hunting seasons generally begin prior to October 1. Late hunting seasons generally start on or after October 1 and include most waterfowl seasons not already established. There are basically no differences in the processes for establishing either early or late hunting seasons. For each cycle, FWS biologists and others gather, analyze and interpret biological survey data and provide this information to all those involved in the process through a series of published status reports and presentations to Flyway Councils and other interested parties.

Because the FWS is required to take the abundance of migratory birds and other factors into consideration, it undertakes a number of surveys throughout the year in conjunction with the Canadian Wildlife Service, state and provincial wildlife-management agencies, and others. To determine the appropriate frameworks for each species, the FWS considers factors such as population size and trend, geographical distribution, annual breeding effort, the condition of breeding and wintering habitat, the number of hunters, and the anticipated harvest. After frameworks are established for season lengths, bag limits, and areas for migratory game bird hunting, migratory game bird management becomes a cooperative effort of federal and state governments. After FWS establishment of final frameworks for hunting seasons, the states may select season dates, bag limits, and other regulatory options for the hunting seasons. States may always be more conservative in their selections than the federal frameworks but never more liberal. Season dates and bag limits for national wildlife refuges open to hunting, including the Monument, are never longer or larger than the state regulations.

NEPA considerations by the FWS for hunted migratory game bird species are addressed by the programmatic document, *Final Supplemental Environmental Impact Statement: Issuance of Annual Regulations Permitting the Sport Hunting of Migratory Birds (FSES 88-14)*, filed with the U.S. Environmental Protection Agency (EPA) on June 9, 1988. A Notice of Availability was published in the *Federal Register* on June 16, 1988 (53 FR 22582), and a ROD was signed on August 18, 1988 (53 FR 31341). Current year NEPA considerations for waterfowl hunting frameworks are covered under a separate Environmental Assessment, *Duck Hunting Regulations for 2006-07*, and an August 24, 2006, Finding of No Significant Impact (FONSI). Further, in a notice published in the September 8, 2005, *Federal Register* (70 FR 53376), the FWS announced its intent to develop a new supplemental environmental impact statement for the migratory bird hunting program. Public scoping meetings were held in the spring of 2006, as announced in a March 9, 2006, *Federal Register* notice (71 FR 12216).⁵²

With regard to the effects of the Monument's current harvest of migratory birds, the impacts of continuing the recreational hunting program (Alternative A) would be negligible. There are an estimated 1,000 visitor days devoted to migratory bird hunting. This translates into 1,500 individual visits. Of this, the greatest majority of hunting is for ducks, with an estimated 95%

⁵² More information may be obtained from: Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, Department of the Interior, MS MBSP-4107-ARLSQ, 1849 C Street, NW, Washington, DC 20240.

of visits devoted to duck hunting (1,425 visits). As hunting conditions for ducks are less than ideal on the Monument, with many hunts having no harvest, the estimated daily harvest is approximately 1-3/4 ducks per hunt, (2,494 ducks total per year). Approximately 2% of hunting visits are devoted to geese (30 visits), with a success ratio of 0.5 geese per visit due to the poor success rate of pass-shooting more than 1/4-mile removed from the river (15 geese total). Mourning dove hunting success is also extremely variable on the Monument, with a success ratio of approximately 2.0 doves per visit, again with approximately 2% of visits aimed at mourning dove hunting (60 doves total per year). Snipe hunting is virtually non-existent on the Monument, with less than 1% of visits devoted to snipe hunting and under poor conditions; at a 0.3 success rate per visit, that would be approximately 10 snipe taken per year. The total annual take of migratory birds on the Monument would be 2,579 birds. Considering the national trends in hunting participation, these numbers are not likely to increase and may, in fact, decrease.

The state of Washington's five-year average (2001-2005) harvest of ducks, geese and doves was 394,821, 48,140 and 73,108 birds, respectively (516,069 total). This includes harvest on other national wildlife refuges, other public lands and waters, and private lands. Annual snipe harvest rates vary considerably throughout the state and have ranged from 879 to 164,595 birds taken statewide within the past ten years. In comparison with statewide harvests, the harvest of migratory birds on the Monument is minimal and represents <1% of the statewide harvest. The Monument's role in the cumulative impact of migratory bird harvest, even solely on a statewide basis, is insignificant.

Likewise, the indirect effects of harvesting migratory birds on the Monument is negligible, as there are no known significant correlations between the population sizes of these species and other Monument resources. Some birds are taken by coyotes, bald eagles and other raptors; however, the slight fluctuations in population sizes from hunting would have no effect on predatory species. Further, the areas frequented by eagles (the upper Hanford Reach and Saddle Mountain Lakes) are waterfowl sanctuaries closed to hunting. Eagles foraging for waterfowl in these areas would not be impacted by hunting due to the spatial separation from hunting areas. This, added to the hunting regulations described earlier (e.g., non-toxic shot requirement), would protect eagles.

Discontinuing recreational hunting under Alternative B would, likewise, have no significant cumulative physical effects, although the social impacts could be significant (Section 1.6.2).

2.4.12.2 Indirect and Cumulative Effects – Resident Wildlife

Resident wildlife refers not just to those species hunted, but also the other, non-hunted species on the Monument. It is possible that non-hunted species could be directly or indirectly impacted by hunting programs, which is addressed in Sections 2.4.12.2.3 and 2.4.12.2.4.

2.4.12.2.1 Deer and Elk

The WDFW establishes annual seasons and bag limits for all (hunted) deer species within the state. They do this through subdivisions within the state; distinct populations are broken into Population Management Units (PMUs), and hunting regulations are set through further subdivisions (GMUs). The Monument (Wahlake Unit) is within PMU 31 and GMUs 278 and 379. The deer herd is primarily comprised of mule deer, but a few white-tailed deer are present.

Since 2000, the deer harvest in PMU 31 has averaged 273 animals, which was <1% of the total statewide harvest of 40,000 animals. On the Monument, an estimated ten deer are harvested annually, which is 4% of the PMU 31 total. Population surveys have not been conducted in PMU 31, but harvest and post-hunt composition data have been used to evaluate population status and trend (WDFW 2006). Based on the best available data, the population appears stable and harvest rates on the Monument have not had significant cumulative impacts on the PMU 31 deer herd. There are no known indirect effects associated with the harvest of deer on the Monument (Alternative A), although it is possible that ending hunting could lead to an overpopulation of deer with the related habitat damage; this, in turn, could impact other wildlife. So, while maintaining hunting as a population control measure is an important management tool, the effectiveness on the Monument's deer population is not known.

As there is virtually no harvest of elk on the Wahlake Unit,⁵³ there are no significant cumulative or indirect effects associated with a hunting season. If elk do become a viable hunting option on the Wahlake Unit, the impacts of hunting may need to be revisited. However, as the Rattlesnake Hills Elk Herd population is currently considered by the WDFW and many area residents to be at a socially unacceptable level (i.e., too great a population), additional hunting pressure would likely have a positive impact in reaching Washington State management goals.⁵⁴

2.4.12.2.2 Upland Game Birds

The WDFW establishes annual seasons and bag limits for all small game. On the Monument, only pheasants, chukar and quail are open to hunting. All three species are introduced, and the WDFW manages populations specifically to maximize recreational opportunities. Upland bird hunters accounted for an estimated 400 visitor days (600 individual hunting visits) on the Monument during 2004. Although no population estimates are available for upland game birds, hunting likely has no negative cumulative impacts. Upland game birds characteristically have short life spans and high reproductive output. Populations fluctuate annually and are most

⁵³ Monument staff are unaware of any elk being harvested on the Wahlake Unit.

⁵⁴ It must be noted that a great many residents do not share this view and believe the herd population levels are fine.

influenced by climatic and habitat conditions. There are no known indirect effects associated with hunting or not hunting (either alternative) these species on the Monument.

2.4.12.2.3 Non-hunted Wildlife on the Monument

Non-hunted wildlife includes all species or groupings of species not specifically addressed in Sections 2.4.11.1 (migratory birds), 2.4.11.2.1 (deer), and 2.4.11.2.2 (small game). The cumulative (and long-term) effects of disturbance to non-hunted wildlife are negligible. Hunting seasons do not coincide with the breeding season, when excessive disturbance could cause reduced reproductive success. In addition, many species (i.e., small mammals, bats, reptiles) are inactive during winter, are nocturnal, or have migrated out of the area, and hunter interactions are unlikely. Although some wildlife may be accidentally and/or illegally shot, such incidents are believed to be rare and isolated; the cumulative effects of such take would be negligible.

Disturbance to daily wintering activities (e.g., feeding and resting) for some non-hunted wildlife species is possible, but significant negative cumulative effects would be unlikely. The area open to hunting consists of 58,000 acres, and access is primarily by foot traffic only; Monument regulations restrict vehicle use to designated open roads and parking areas. Hence, there are many areas that provide refuge for both hunted and non-hunted wildlife. In addition, hunters represent only 5% of the 30,000 annual visitor use days on the Monument, and they visit the Monument when other uses are few. So, while there would be localized disturbance to individual animals on a short-term basis, the long-term, cumulative effects would be negligible or minimal.

There are no known significant indirect effects associated with either alternative.

2.4.12.2.4 Non-hunted Wildlife and Land Conservation

The cumulative effect of closing the Monument and other national wildlife refuges to hunting may result in a decline in one form of financial support for wildlife conservation. Hunters have provided, through the purchase of hunting licenses and migratory bird conservation stamps and taxes levied on purchases of hunting equipment, a consistent and significant stream of revenue to purchase lands for wildlife and other conservation purposes. This same source of revenue has restored upland and wetland habitats on millions of acres of public and private lands across the country (USFWS 2000). Of course, this is one manner in which to ensure huntable populations of wildlife, but the habitat projects also directly, significantly benefit migratory songbirds and other wildlife. Closing national wildlife refuges to hunting may result in a decline in duck stamp and hunting license sales, leading to a decline in funds for conservation. The cumulative effect on closing national wildlife refuges to hunting may be reduced conservation of wildlife habitats if the above revenues are not replaced by another source, although the exact extent of this effect

is unknowable as the extent that hunters will move to substitute lands versus ‘giving up’ hunting is unknown.

2.4.12.3 Indirect and Cumulative Effects – Endangered Species

Bald eagles, pygmy rabbits, Washington ground squirrels, greater sage grouse, and White Bluffs bladder-pod are the endangered, threatened and candidate species that could potentially be found on the Wahluke Unit of the Monument. A Section 7 evaluation was conducted in association with this assessment for hunting on the Monument. It was determined that the proposed action would have no effect on T&E species and would not likely jeopardize any candidate species. This includes cumulative and indirect effects as hunting seasons and the seasons of use/growth/reproduction of these species have little overlap. In addition, hunting would not be in significant direct competition for life cycle needs of any of these species.⁵⁵

2.4.12.4 Indirect and Cumulative Effects – Other Actions/Resources

This section addresses both the impacts of actions being undertaken outside the Monument cumulative to the recreational hunting program and the cumulative impacts of hunting on other Monument resources.

2.4.12.4.1 Increased Visitation

Three projects that are currently in planning and/or study phases, if completed, could result in cumulative impacts, along with that of hunting-related visits, on the Monument’s visitation level.

Hanford Reach National Monument Heritage and Visitor Center

The Reach is a non-FWS facility being constructed through the city of Richland’s Public Facilities District. Located along the Columbia River downstream from the Monument, this project has been designed, partially funded, and is currently undergoing environmental review. The Reach is intended to serve as the primary contact station for visitors seeking information, education and interpretation opportunities related to the Monument and would also promote

⁵⁵ Bald eagles do occasionally eat waterfowl on the Monument. However, the very slight fluctuations in waterfowl populations associated with hunting are insignificant to the bald eagles’ diet on the Monument. Further, the areas frequented by eagles (the upper Hanford Reach and Saddle Mountain Lakes) are waterfowl sanctuaries closed to hunting.

heritage tourism for the Tri-Cities and surrounding communities. The Reach is expected to attract from 85,000 to 135,000 visitors per year.

B Reactor

The NPS was directed by Public Law 108-340 to study sites across the nation related to the Manhattan Project and America's development and construction of the atomic bomb. The B Reactor and Chemical Separations Building (T-Plant) sites at Hanford are being studied to determine whether they meet suitability and feasibility requirements for addition to the National Park System. If they meet the criteria, the NPS will recommend the best manner in which to preserve them, such as designating a National Historic Site or Historical Park. The B Reactor is located within the Hanford Site immediately adjacent to the Monument near the Vernita Bridge and could become available for public visitation in the future. Besides additional visitation to the Monument, this project would likely result in increased congestion in the Vernita Bridge vicinity.

Ice Age Floods Trail

Legislation to designate the Ice Age Floods National Geologic Trail has been introduced in Congress. The Monument falls within the central pathway of the floods and contains many associated features that would attract floods-related visitation.

Summary

The by-products of developing The Reach, designation of B-Reactor as a National Historic Site, and/or the establishment of the Ice Age Floods National Geologic Trail would be increased public use in and around the Monument. This would be additive to the public use that would result from implementing the preferred alternative, which would continue to provide hunting opportunities on the Monument. Increased public use could lead to increased degradation of natural and cultural resources through spread of invasive species, fire, vandalism, theft and disturbance, as well as other impacts associated with visitor use described in previous sections. In addition, private commercial enterprises, such as guided tours and outfitting services, may emerge from the increased visitor awareness of the Monument. Such services would further contribute to increased public use and amplification of impacts.

Increased visitation and traffic through the Monument could increase the need for maintenance of roads and visitor facilities in addition to the standard maintenance and integrated pest management programs already being implemented on the Monument. Additional public use would likely require both onsite and adjacent land managers to increase use of chemical and other controls for invasive species. Additional chemical use for maintaining facilities and roads

would have an additive effect with nearby agricultural chemical use. These maintenance activities could potentially result in bioaccumulation of toxins in fish and wildlife species and Native American food plants.

However, although the visitation by hunters would be cumulative with that of other visitors, the overall cumulative contribution of impacts from hunters would be minor, at best. There are three reasons for this. First, the time that hunters use the Monument does not overlap with the peak times of use by the visitors described above. Second, the regulations described to control the hunting program would eliminate and/or mitigate most of the impacts from hunters. Third, and of greatest importance, the number of hunters is a small fraction (approximately 5%) of the overall current and projected use of the Monument.

In addition, many other FWS actions will likely be undertaken on the Monument, such as an enhanced fire prevention program, additional invasive species control, and increased law enforcement, which will help to minimize and mitigate any adverse effects cumulative to the hunting program. Increased visitation, and the associated interpretation and education programs, could increase visitor knowledge and appreciation of the Monument's natural and cultural resources. These programs, along with likely increases in volunteering, should reduce impacts.

2.4.12.4.2 Hanford Site Remediation Activities

Past and current development activities—agricultural, industrial and residential—have contributed to the loss of natural and cultural resources in the Columbia Basin region, elevating the importance of resources preserved within the Monument. Ongoing DOE remediation activities—such as the decommissioning of production reactors; development of new waste facilities or expansion of existing facilities; and excavation of basalt, sand, gravel and silt/loam for use as fill and capping materials—would result in impacts to geologic, cultural, wildlife, habitat and aesthetic resources that are located adjacent to the Monument. The further loss or decline of such resources within the Columbia Basin region would amplify the impacts of the selection of Alternative A as the Preferred Alternative. However, as noted, the direct impacts from hunting would be negligible to minor, and the cumulative effects of these impacts with that of Hanford Site remediation activities is likewise expected to be of minor impact.

2.4.12.4.3 White Bluffs Landslides

Continuing landslides within the White Bluffs (Ringold Formation) are resulting in the loss of cultural, paleontologic and geologic resources and salmon spawning habitat, as well as having an adverse impacts to aesthetic resources. These impacts will likely continue into the foreseeable future and would be additive to impacts from implementing Alternative A. However, as noted, these direct impacts from hunting would be negligible to minor, and the

cumulative effects of these impacts with that of landslides is likewise expected to be of minor impact.

2.4.12.5 Potential Irretrievable and Irreversible Commitments

As hunting could be implemented or halted fairly quickly, and the limited impacts of any direct effects of hunting (e.g., habitat degradation from overpopulation) could be reversed either naturally or through direct restoration, there are no irreversible commitments of resources under either alternative.

2.5 Conclusions

As noted in Section 2.2, the Preferred Alternative is Alternative A (No Action). Hunting would be continued on the Wahluke Unit much as it has been since the FWS assumed management from the DOE/WDFW (see Section 1.6 for complete details). The FWS believes this is the best course of action until such time as the CCP is completed, an ROD signed, and a final management direction set. That point would be the appropriate time to change the hunting program. Continuing hunting on the Wahluke will allow realization of Monument purposes and NWRS missions while allowing for public use and enjoyment of the Monument until the CCP is completed.

The environmental assessment (Section 2) supports selection of Alternative A. Under Alternative A, there are no significant effects, or any that cannot be mitigated by the included hunting program restrictions/requirements. Additionally, nothing related to the hunting program is irretrievable or irreversible. If legally conducted by hunters, there would be no significant effects to any sensitive cultural, paleontologic, geologic, plant or wildlife resource. T&E species would not be effected or jeopardized by continuing recreational hunting. Individual aesthetic ideals could be impacted, although these impacts can and will be mitigated, and impacts to the public as a whole are insignificant or minor. Economic effects from continuing the hunt are minor given the five county area of impact. Cumulative impacts associated with hunting and other foreseeable actions would be insignificant or minor.⁵⁶ There are no known environmental reasons to discontinue the current recreational hunting program with minor adjustments.

⁵⁶ This could change with implementation of other programs and increased visitor use under implementation of the final CCP. However, the point in time when the CCP is completed would be the appropriate time to assess those impacts.

Discontinuing recreational hunting under Alternative B would also likely have few effects, and these would be minor, with three possible exceptions:

- 1) Discontinuing the hunt could possibly create overpopulation problems with big game and would remove an important management tool from the FWS, although there is no indication this would, in fact, happen.
- 2) The public reaction to discontinuing the hunt would be substantial. Recreational hunting on the Monument has a long tradition and is largely accepted within the area.
- 3) The economic effects from continuing the hunt would be minor given the five county area of impact; however, at an individual merchant level, they could be significant, although the exact impact to any one merchant is unknown. That is, some businesses are (more) dependent on hunting purchases, and those businesses could be impacted (e.g., retailers selling hunting equipment, rural motels catering to hunters).

The FWS has adequate resources to administer the existing hunting programs and associated infrastructure, based upon current staffing and funding levels.

As noted above, recreational hunting is consistent with Monument purposes and NWRS missions. It is also consistent with legislation directing uses of national wildlife refuges and operations of the FWS. Selection of the No Action Alternative until the CCP is completed would allow the FWS to provide for one of the priority public uses identified by the National Wildlife Refuge Improvement Act.

Finally, the FWS finds that selection of Alternative A as the Preferred Alternative will have no significant impacts to the quality of the human and natural environments and will not generate undue controversy. Thus, an EIS not be required, and a FONSI will likely be signed. The initial selection of Alternative A as the Preferred Alternative in the Draft Sport Hunting Plan was validated and justified as a result of the public comments received.

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Section 3

Consultation, Coordination With Others

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3.0 Introduction

As outlined by FWS policy, the NEPA, and Council on Environmental Quality (CEQ) regulations for implementation (40 CFR 1500-1508), the development of a NEPA document should be a collaborative process. Likewise, the FWS makes extensive efforts to involve the public; other agencies; and local, state and tribal governments in planning and NEPA processes.

This Sport Hunting Plan and Environmental Assessment is unique in that it was developed following the release of a Draft CCP for the Monument, the comment period for which recently closed (March 10, 2007). That Draft CCP set forth a range of management alternatives, goals, objectives and strategies for the Monument's public use programs, including recreational hunting. It also included a draft compatibility determination for recreational hunting. This Draft CCP then went out for extensive public review.

The input received during the CCP development process (see below for a partial review), as well as specific documentation (e.g., effected environment, draft compatibility determination), were instrumental in development of this draft plan and NEPA analysis. While the Final CCP is yet to be completed, the preliminary analysis of input received on the Draft CCP has played an important role in the development of this Sport Hunting Plan and Environmental Assessment.

3.1 Agency Consultation and Coordination—CCP

In the course of developing the draft CCP and completing the NEPA analysis, the FWS contacted a number of federal, state and local agencies to gather information, solicit input on the issues of concern, and invite their continued involvement as a 'cooperating agency.' Due to the high level of interest by area tribal governments, the FWS provided for tribal participation on the cooperating agency team as 'consulting governments.'⁵⁷ Fifteen agencies and/or governments elected to become cooperating agencies or consulting governments—the city of Richland, Adams County, Benton County, Grant County, WDOE, WDFW, WDNR, ACOE, BOR, BPA, DOE, Federal Highway Administration, CTUIR, Nez Perce Tribe, and Yakama Nation. All of these entities provided input on the recreational components of the Draft CCP, including hunting.

⁵⁷ This is in addition to, not a substitute for, agency-to-agency consultation.

3.2 Monument Federal Advisory Committee—CCP

In January of 2001, the Secretary of the Interior chartered the Hanford Reach National Monument Federal Advisory Committee (FAC), subject to the guidelines and provisions of the Federal Advisory Committee Act (41 CFR Parts 101-6 and 102-3). The FAC was created to provide local advice to the FWS and DOE on development of the CCP/EIS for the Monument. The FAC held twenty meetings between June 2001 and January 2005. The FAC used the meetings to formulate advice for the FWS and DOE about CCP/EIS-related topics, such as public involvement strategies, planning issues, vision, goals, objectives, alternatives and special issues including White Bluffs slumping and elk population management. The FAC addressed hunting several times, although not this particular action.

3.3 Elk Summit

One of the biggest challenges facing the Monument is the management of the Rattlesnake Hills Elk Herd. Multiple jurisdictions and intermingled land ownerships have contributed to complex management challenges related to the herd. The WDFW and FWS hosted a workshop on April 5-6, 2004, in Prosser, Washington, to address these challenges. The two-day “Elk Summit” was attended by tribal representatives, county commissioners, the DOE, environmental groups, fish and wildlife professionals, and local farmers and ranchers.

The goals of the workshop were three-fold: 1) establish open lines of communication among all parties interested in management of the elk herd; 2) share updated facts, such as elk population numbers, habitat quality, and agricultural losses; and 3) identify potential herd management actions that could be taken to reduce losses. There was no expectation that all issues would be resolved during this meeting; however, the WDFW and FWS believed that accomplishing the above goals would be of great value in the cooperative management of the elk herd. These results, and a complete summary of the meeting, are available on the Monument’s web site.

3.4 Consultation Specific To This Plan

Due to the extremely tight time frame associated with the need for this action, consultation has been somewhat limited. Instead, as recreational hunting was extensively addressed in the development of the Draft CCP, the FWS is relying on that process to provide the initial input. (In addition to the assistance outlined above, the CCP process included full public scoping, four scoping meetings, five planning newsletters, almost fifty meetings with area Native American

tribes, and over fifty presentations to area organizations (environmental, economic development, tourism, local governments, community improvement, etc.).

Direct review of this proposed action has come from FWS Regional Office review and consultation with the DOE (the underlying landowner) on the proposed action. The FWS has also been coordinating closely with the WDFW regarding this draft plan through telephone conversations with the WDFW's Regional Office in Yakima (Region 3). The WDFW was fully briefed on the need for this action and the rationale as to why the Sport Hunting Plan was being developed during the CCP process. The WDFW was also made aware of the alternatives being considered. The WDFW concurs with the actions proposed in this plan (see the attached Letter of Concurrence) and is extremely interested in seeing a continuation of the hunting program in its current configuration until such time as a Final CCP can be completed to indicate the future direction of recreational hunting on the Monument.

Following the comment period on this Sport Hunting Package, which closed on May 8, 2007, the Sport Hunting Plan and associated documents were revised as per public comments (see Section 4).

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Section 4

Comments, Responses

4.0 Introduction

During the thirty-day public/agency/tribal comment period, the FWS received eighty-seven letters, with the overwhelming majority (eighty-four letters) supporting the current level of public hunting on the Monument, if not increasing it.⁵⁸ Two letters disagreed with the alternatives considered in the Draft Sport Hunting Package, or were opposed to hunting on the Monument. One letter offered no opinion either way.

Very few direct comments were received on the factual content of the draft. Most comments were directed at hunters' rights, access to public lands, wildlife management, etc.; in fact, many letters had little, if anything, to do with the draft or the Monument. These comments were grouped together to be addressed below.

Each comment on content is also addressed below. Due to the uniformity of comments and the lack of specific factual comments, copies of the actual letters are not reprinted here.

4.1 Comments Received, Responses

The comments below are grouped into related categories. FWS responses immediately follow the comment(s).

4.1.1 Hunter's Rights and Contributions

Comment: One letter stated that the Monument (Presidential) Proclamation specifically mentioned that hunting would not be affected by creation of the Monument.

Response: This is not accurate. The Monument Proclamation made no mention of present-day hunting. The accompanying White House background paper did mention it; however, it only went so far as to say it should "generally not be affected." The White House paper went on to say that resource protection would take precedence if: "(1) the land managing agency, through

⁵⁸ The term 'letters' is defined as an written correspondence received during the comment period related to the Draft Sport Hunting Package, hunting in general, or public use of the Monument. Most "letters" were actually in the form of email (sixty-three). Eleven comments were submitted through the Monument's web site. Only thirteen letters were actually sent via United States Postal Service mail or through other carriers.

One problem related to the use of email, and especially the web, is that many pieces of correspondence were anonymous. As such, there is no way to verify the validity of the comment/commenter, or to clarify points made. Likewise, there is no way to distribute the final version of the plan back to those providing comments anonymously.

processes required by existing law, identifies places where [hunting] ought to be restricted or prohibited as necessary to protect the federal lands and resources, including the objects protected by the monument designation; or (2) where the agency finds a clear threat from such a use to the federal lands and resources, including the objects protected by the monument designation, and the circumstances call for swift protective action.”

Comment: One letter suggested that curtailing hunting on the Monument and other national wildlife refuges could lead to a decrease in conservation funding associated with hunting licenses, duck stamp purchases, and Pittman-Robertson assessments.⁵⁹

Response: This is a valid point, and a new section—Section 2.4.12.2.4—has been added.

Comment: Numerous letters stated that the funds that maintain national wildlife refuges and other public areas comes from fees collected from hunters, or that national wildlife refuges were paid for by duck stamp money. Several letters then went on to say or imply that hunters therefore merit priority in use and access of the Monument.

Response: The idea that national wildlife refuges and other public lands are purchased and maintained through fees/taxes collected from hunters is generally incorrect, and although some public lands are purchased/ maintained through fees and taxes associated with hunting, this does not convey any special rights or privileges to one group over another. None of the Monument lands were purchased with fees or taxes collected from any recreational or other user groups.

Comment: Numerous letters stated that hunters care more for the Monument and other lands than those opposed to hunting and/or that anti-hunters do not understand wildlife management.

Response: This is an opinion rather than a comment and is incorrect.

Comment: Numerous letters suggested that hunters have a greater right to determine the use of national wildlife refuges than those who oppose hunting.

Response: This is incorrect. National wildlife refuges are public lands that belong to all residents of the United States. Each person has a right to ask that these public lands be managed as they believe appropriate, but the FWS has the ultimate responsibility to balance those interests

⁵⁹ The Federal Aid in Wildlife Restoration Act, popularly know as the Pittman-Robertson Act, was approved by Congress on September 2, 1937, and begin functioning July 1, 1938. The purpose of the act was to provide funding for the selection, restoration, rehabilitation and improvement of wildlife habitat, wildlife management research, and the distribution of information produced by the projects. The act was amended October 23, 1970, to include funding for hunter training programs and the development, operation and maintenance of public target ranges. Funds are derived from an 11% federal excise tax on sporting arms, ammunition and archery equipment and a 10% tax on handguns. These funds are collected from the manufacturers by the Department of the Treasury and are apportioned each year to the states and territories (except Puerto Rico) by the DOI on the basis of formulas set forth in the Act.

in the manner that best protects the resources and purposes of the Monument and fulfills the mission of the NWRS.

4.1.2 Expanded Hunting Opportunities

Comment: A few letters wanted additional acres opened to hunting—including the ALE, south shore of the Columbia River, and Saddle Mountain Unit—or believed this plan was opening additional areas. One letter wanted the alternative considered but rejected (opening the entire area north of the Columbia River to hunting) reconsidered.

Response: This Sport Hunting Plan is an interim measure to consider the current recreational hunting program until the CCP can be completed. The final CCP and its ROD will address whether additional acres on the Monument should be open to hunting.

Comment: A couple of letters asked that “the area” be opened rather than using government agents to kill animals and accepting the cost of relocation programs.

Response: The FWS assumes this is reference to the 2006 Draft Elk Management Plan that considered options for population management of the Rattlesnake Hills Elk Herd on the ALE. This plan was put on hold by the DOE and is not part of this Sport Hunt Opening Package.

Comment: One letter suggested creating additional ponds on the Wahluke Unit for waterfowl hunting.

Response: A primary purpose of the Monument is to manage for native habitats. The creation of additional artificial habitats is not in keeping with the purposes and goals of the Monument. The existing ponds were created by the Columbia Basin Irrigation Project, and management responsibility lies with the BOR.

Comment: Several letters requested that hunting for all species allowed by Washington State regulations be allowed.

Response: As stated throughout the Sport Hunt Opening Package, it is the decision of the FWS on the Monument that only hunting for human consumption would be allowed on the Monument. In addition, and as noted, the possibility of hunters accidentally taking species that look similar to threatened, endangered, or of interest species is too great.

4.1.3 Access

Comment: Many letters stated that the McNary Islands should be open to hunting above the high water mark.

Response: In the Draft CCP and EIS, it was identified that the islands should be closed for cultural and environmental reasons under all alternatives, including the “No-Action Alternative.” Based on comments received during the public review period for the Draft CCP, that action will be reexamined. However, until such time as the closure can be reviewed under the full EIS process of the CCP to assess the environmental impacts of activities on the islands, the islands above the ordinary high water mark will remain closed.

Comment: A couple of letters suggested that limiting island access would limit hunters’ ability to obtain or ‘scrounge’ for blind materials.

Response: Natural, native materials should not be collected on the Monument to construct blinds. The cutting, uprooting or disturbance of any vegetation on the Monument is prohibited (50 CFR § 27.61). Blind materials should be brought in with the hunter and removed after their use.

Comment: One letter suggested limiting the number of hunters if need be by implementing a permit (lottery) system with a minimal processing fee.

Response: At the current time, there is no need to limit the number of hunters using the area currently open to hunting; hunting is not significantly impacting wildlife populations, other Monument resources, or public safety. Imposing a permit system will certainly not be necessary in the time period this hunting plan will cover (i.e., until the CCP is completed). However, if in the future, hunting does begin to impact the Monument or the people using it, or if there is a need for management of a specific species (e.g., management of elk on the ALE), the implementation of a permit and/or lottery system would be one of the options considered.

Comment: A couple of letters noted that other areas are available for hunting, and the Monument is not needed to provide for hunting opportunities in the area. Conversely, a couple of letters noted that closing the Monument to hunting could push hunters onto other lands, thereby overcrowding these areas or unduly impacting them.

Response: True, there are other areas nearby open to hunting. However, the FWS agrees that displacing hunters onto nearby lands has the potential to unduly impact those areas. In addition, hunting compatible with a national wildlife refuge’s purposes (i.e., the Monument’s purposes) is encouraged by law and FWS policies. It is the responsibility of the FWS to ensure that the use is indeed compatible with Monument purposes and sound wildlife management.

Comment: Two commenters thought the proposal only dealt with muzzleloader hunts and did not want to see muzzleloader hunts curtailed.

Response: This was a mistaken assumption.

4.1.4 Facilities, Infrastructure and Management Resources

Comment: One letter stated that boat launching facilities should be improved for hunting and fishing access.

Response: Improvement/disposition of boat launches is being addressed in the CCP.

Comment: One letter suggested that the FWS may not have sufficient staff and monetary resources to properly protect natural and cultural resources. The letter went on to suggest that, should Alternative A be chosen, the hunting program at least be scaled back to ensure resource protection until funding levels increase.

Response: Monument staff agree that current budget constraints may not allow for ‘extras,’ such as staffed hunter checkpoints. However, as outlined in the Compatibility Determination (Section 6), the FWS believes it has sufficient resources to properly protect the Monument and enforce necessary regulations under the current hunting program.

4.1.5 Regulations

Comment: One letter stated that rules for hunting should not be made more restrictive.

Response: The FWS continues, and will continue, to constantly reassess rules and regulations related to all Monument activities, and adjustments will be made in order to protect Monument resources; address changes in laws and policies; and ensure public safety. The goal is not to unreasonably restrict appropriate and compatible activities; however, public safety and protection of Monument resources are the top priorities.

Comment: One letter stated that, although the Sport Hunting Plan allows for hunting of elk with a shotgun, this is not allowed under Washington State regulations.

Response: This is correct, in part. Shotguns in the 10 and 12 gauge range loaded with slugs are allowed under Washington State regulations (WAC 232-12-047). The Sport Hunting Plan has been amended in the appropriate places to reflect this clarification (e.g., Section 1.6.1.4).

4.1.6 Hunting and Recreation

Comment: A couple of letters stated that empirical evidence indicates that hunting does not interfere with other recreational activities on the Monument.

Response: The quality of a recreational experience is unique to the individual. It would be impossible to know, based on observation of a static situation, whether or not hunting activities caused other recreational users to avoid the Monument. Absent a survey of users, it would be impossible to determine if others' experiences are being degraded, even though they might still continue to use the area. However, for the reasons noted in the EA, the FWS does not believe hunting has a substantial impact on the experiences of other recreational users as a whole, although any specific individual could be substantially affected.

Comment: A couple of letters stated that hunting “is consistent with Monument objectives to maximize recreational opportunities.”

Response: The FWS is not required, and the Monument has no such plans, to maximize recreation on the Monument. The top priority is the protection and sound management of Monument Proclamation, trust and other important natural, cultural and aesthetic resources. Everything else, including hunting and other public uses, are secondary and must be compatible with the protection and management of those resources.

4.1.7 Wildlife Management

Comment: A few letters suggested that hunting was needed to guard against inbreeding from overpopulation.

Response: Hunting rarely, if ever, is needed to control inbreeding. In fact, just the opposite is generally true—an over-reduction in a population can lead to a genetic ‘bottleneck,’ resulting in inbreeding.⁶⁰

Comment: Several letters suggested hunting was needed to guard against the spread of disease from overpopulation.

Response: This is a possibility, although unlikely on the Monument, and is covered in the draft EA (e.g., Section 2.4.4.1).

⁶⁰ This is what is thought to have happened to cheetahs in Africa (O'Brien et al. 1987).

Comment: Several letters noted that hunting can help to control population numbers, which in turn, can protect habitats.

Response: This point was well-established within the Draft Sport Hunting Package.

Comment: A few letters requested that coyote hunting be re-established to control depredation on neighboring lands, one even suggesting litigation. (One letter hinted that coyotes were harming cattle operations, and one suggested pets were being harmed, although no specific numbers or examples were offered. None of the letters was specific as to any native species being harmed.)

Response: It has been the Monument's policy that any harvest of animals be for (human) consumptive use and that animals not be killed solely for sport. There is also some research that indicates controlling coyote populations through shooting is ineffective (Knowlton 1972). If the need for controlling coyote populations arises to address a specific issue, then the use of lethal removal and other methods will be reexamined. It is unlikely, however, that a recreational hunt would be used.

Comment: A couple of letters suggested that closing the Wahluke Unit could create a new refuge for elk, leading to damage to Monument resources and further crop damage in the area.

Response: Although this is an unproven theory, the FWS agrees that recreational hunting should remain a viable wildlife population management technique.

Comment: One letter suggested the FWS should “add to its cumulative analysis an explanation of how the control and/or reduction of hunted populations, considered collectively with similar wildlife management efforts on numerous refuges throughout the [NWRS], conserves the cumulative health of the habitat of the flyway in which the Monument is located and the migratory birds that utilize that flyway.”

Response: For most species, there is little, if any research, to support this assertion. Hunting is, for the most part, not needed to control migratory bird populations, and most bag limits are based on a harvestable ‘surplus,’ not a need to control numbers. In those instances where there may be over-populations (e.g., snow geese), those seasons and bag limits will be addressed at a flyway level. The EA is accurate in its factual detail as known at this time.

4.1.8 Other Comments

Comment: One letter suggested that hunting on the Monument should be turned over to the state of Washington.

Response: The Monument Proclamation specifically identifies the DOE and DOI as managers of the Monument. The FWS has no intention of abdicating its responsibilities.

Comment: One writer suggested that expanding hunting and other recreational activities would increase public support for the Monument.

Response: While the FWS appreciates and tries to garner public support—and has taken extraordinary steps on the Monument to keep the public involved and informed—decisions on hunting will be made based on the best available science and management techniques, the law, and agency policies.

Comment: A couple of letters suggested that enforcing a hunting ban (e.g., posting, enforcement patrols) would be greater than the costs of administering a hunting program.

Response: As noted above, protection of resources is paramount, and management decisions will be made on resource needs, not which is the least expensive option. Besides, the FWS prefers to believe in the inherent honesty of sportsmen, that all rules and regulations would be followed, including closures, and that additional patrols would not be needed beyond those needed to implement a hunting program.

Comment: One letter stated that the island closure was based, in part, on the Draft CCP, which was itself based, in part, on the advice of the FAC. Hunters were under-represented on the FAC.

Response: The FWS disagrees that hunters and hunting were under-represented on the FAC. Several interests on the FAC were directly related to hunting, and no members voted against hunting on the Monument.⁶¹

Comment: One letter suggested that the EA should “[feature] more prominently the Monument’s consultation with the [WDFW].”

Response: This is a valid point, and Section 3.4 has been amended to accurately reflect Monument staff’s interaction with the WDFW specific to this EA. The full extent of WDFW/FWS interaction on Monument planning, including hunting, is provided in the Draft CCP (hanfordreach.fws.gov/planning.html).

Comment: One letter suggested the EA should “add more of the [WDFW’s] input on how hunting on the Monument assists with and/or is an element of the state’s efforts to manage state wildlife populations.”

⁶¹ Some members did vote against hunting in specific areas, such as the ALE.

Response: The EA accurately reflects the WDFW’s input on the interaction of this Sport Hunting Plan with Washington State wildlife management goals. For this specific EA, that input is limited to the attached letter of concurrence from the WDFW. However, the WDFW’s input into the CCP process, including wildlife management and hunting, was/is extensive and is outlined in the Draft CCP (hanfordreach.fws.gov/planning.html).

Comment: One letter objected to the sweeping phrase “socially unacceptable” in describing the size of the Rattlesnake Hills Elk Herd. The point was made that many in the community do not believe the herd size is too large.

Response: The sentence (Section 2.4.12.2.1) has been clarified to include just a portion of the residents in the area and the WDFW in considering the elk herd too large. The sentence now also clarifies that the WDFW’s position is based on their *Yakima Elk Herd Plan* (WDFW 2002) and the more specific *Rattlesnake Hills (Hanford) Elk Strategic Management Plan* (WDFW 2000).⁶²

4.2 Other Letters Received

On April 30, 2007, the Monument Office received a letter from the Humane Society of the United States. This same letter was sent to all national wildlife refuges accepting comments on hunt opening packages in April and May of 2007. The letter contained comments related to hunting on the NWRS as a whole and reiterated elements related to litigation filed in 2003 by the Fund for Animals against the FWS. As such, none of the comments were specific to the Hanford Reach National Monument Sport Hunt Opening Package, and although noted by the FWS and Monument staff, these generic comments are not responded to here.

⁶² Within the WDFW plans, the target size of the Rattlesnake Hills Elk Herd is set at ≤ 350 animals.

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Section 5

Acronyms, Glossary

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1971 Permit: Permit for Management and Recreational Use of the Wahluke Slope between Department of Energy and the Fish and Wildlife Service and the Washington State Department of Fish and Wildlife.

Affected Environment: In an environmental impact statement, a description of the existing environment covering information that directly relates to the scope of the proposed action and alternatives that are analyzed. (Source: CLUP)

ALE: Fitzner-Eberhardt Arid Lands Ecology Reserve.

Alternative: A set of objectives and strategies or means of achieving refuge purposes and goals, helping fulfill the National Wildlife Refuge System mission, and resolving issues. (Source: Draft FWS Manual 601 FW 4)

Anadromous Fish: Fish that normally migrate to salt water as juveniles and return to freshwater as adults to spawn. (Source: Draft FWS Manual 601 FW 4)

Biological Diversity (Biodiversity): The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and communities and ecosystems in which they occur. (Source: Draft FWS Manual 601 FW 4) It also defines the interrelationships within and among various levels of ecological organization. Conservation, protection and restoration of biological species and genetic diversity are needed to sustain the health of existing biological systems. Federal resource management agencies must examine the implications of management actions and development decisions on regional and local biodiversity.

Biological Integrity: Biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms and communities. (Source: Draft FWS Manual 601 FW 4)

BLM: (United States) Bureau of Land Management.

BOR: (United States) Bureau of Reclamation.

BPA: (United States) Bonneville Power Administration.

Candidate Species (Federal): A species for which there is sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list it as endangered or threatened but issuance of the proposed rule is precluded (i.e., by other listing activity or lack of funding).

Candidate Species (State): Wildlife species that are under review by the Washington Department of Wildlife for possible listing as endangered, threatened, or sensitive.

Central Hanford: That portion of the entire Hanford Nuclear Reservation (i.e., Hanford Site) that was not included within the Hanford Reach National Monument.

CEQ: Council on Environmental Quality.

CCP: Comprehensive Conservation Plan. The master land planning document used by the U.S. Fish and Wildlife Service to administer the agency's lands (i.e., national bison ranges, national game preserves, national monuments, national wildlife refuges, waterfowl production areas, wetland management districts, and wildlife management areas).

CCT: Confederated Tribes of the Colville Reservation.

CFR: Code of Federal Regulations.

CLUP: Comprehensive Land Use Plan.

Compatibility Determination: A written determination, usually signed by the Refuge Manager and Regional Chief, signifying that a proposed or existing use of a national wildlife refuge is a compatible use or is not a compatible use. (Source: Draft FWS Manual 601 FW 4)

Compatible Use: A proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgement, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose(s) of the national wildlife refuge. (Source: Draft FWS Manual 601 FW 4)

CPI: Consumer Price Index. The Consumer Price Index is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services.

Cryptobiotic Crust: See Microbiotic Crust.

CTUIR: Confederated Tribes of the Umatilla Indian Reservation.

Cultural Resources: The physical remains, objects, historic records, and traditional lifeways that connect us to our nations's past. (Source: Considering Cultural Resources)

DOD: (United States) Department of Defense.

DOE: (United States) Department of Energy.

DOI: (United States) Department of the Interior.

Ecosystem: A biological community together with its associated non-living environment, functioning as a unit. (Source: Draft FWS Manual 601 FW 4/LPO) A system made up of a community of animals, plants, and bacteria and its interrelated physical and chemical environment.

EIS: Environmental Impact Statement. A detailed written statement required by section 102(2)(c) of the National Environmental Policy Act, analyzing the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, and any irreversible and irretrievable commitment of resources. (Source: 40 CFR 1508.11/LPO)

Endangered Species (Federal): A species that is likely to become extinct throughout all or a significant portion of its range. These species are listed by the United States Fish and Wildlife Service.

Endangered Species (State Plants): A species that is likely to become extinct throughout all or a significant portion of its range within the state of Washington.

Endangered Species (State Wildlife): Wildlife species native to the state of Washington that are seriously threatened with extinction throughout all or a significant portion of its range within the state.

Environmental Justice: The fair treatment of people of all races, cultures, and income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Executive Order 12898 requires federal agencies to identify and address and potentially disproportionate high and adverse human health and environmental effects of agency policies, programs and activities on minority and low-income populations. (Source: CLUP)

EPA: (United States) Environmental Protection Agency.

ESA: Endangered Species Act.

ESU: Evolutionary Significant Unit.

FAA: (United States) Federal Aviation Administration.

FAC: Hanford Reach National Monument Federal Advisory Committee.

FONSI: Finding Of No Significant Impact.

FR: Federal Register.

FTE: Full Time Equivalent.

FWS: (United States) Fish and Wildlife Service.

GMU: Game Management Unit.

Goal: A descriptive, open-ended, often broad statement of desired future conditions that conveys a purpose but does not define measurable units. (Source: Draft FWS Manual 601 FW 4)

Habitat: A specific set of physical conditions in a geographic area that surrounds an organism, a single species, a group of species, or a large community and are required by an organism for survival and reproduction. The place where and organism typically lives. In wildlife management, the major components of habitat are food, water, cover, and living space.

Hanford Islands: Hanford Reach National Monument Islands. The 13 islands in the Columbia River that are part of the Hanford Reach National Monument.

Hanford Reach: A reach is a portion or stretch of a river. The 51-mile Hanford Reach is the last free-flowing non-tidal stretch of the Columbia River in the U.S. Most of it, 46.5 miles, is contained in the Monument.

Hanford Site: The entire area, from the top of the Saddle Mountains to the top of Rattlesnake Mountain, originally acquired for the Hanford Nuclear Reservation.

Impact: Synonymous with effects and includes ecological, aesthetic, historic, cultural, economic, social, or health whether direct, indirect or cumulative. Impacts may also include those resulting from actions which may have both beneficial and detrimental (adverse) effects. Impacts may be considered as direct, indirect or cumulative.

Impact Severity Rating: Thresholds used in this Comprehensive Conservation Plan for analyzing the scope, scale and intensity of effects on natural, cultural, and recreational resources. The four levels of impacts include:

Negligible: Resources would not be affected, or the effects would be at or near the lowest level of detection. Resource conditions would not change or would be so slight that there would not be of any measurable or perceptible consequence to a population, plant community, cultural resource, recreation opportunity or visitor experience.

Minor: Effects would be detectable but localized, small, and of little consequence to a population, plant community, cultural resource, recreation opportunity or

visitor experience. Mitigation, if needed to offset adverse effects, would be easily implemented and successful.

Moderate: Effects would be readily detectable and localized, with consequences to a cultural resource, population, plant community level or specific recreation opportunity or visitor experience. Mitigation measures would be needed to offset adverse effects, would be extensive in nature and moderately complicated to implement; and probably would be successful.

Major: Effects would be obvious and would result in substantial consequences to cultural resources, populations, plant communities within the local area and region, or recreation opportunities and visitor experiences within the Monument. Extensive mitigating measures would be needed to offset adverse effects; would be large-scale in nature and very complicated to implement; and the probability of success would not be guaranteed. In some instances, major effects would include the irretrievable loss of the resource.

Time and duration of impacts have been defined as:

Short-term: An effect that generally would last less than a single year or season.

Long-term: A change in a resource or its condition that would last longer than a single year or season.

IMPLAN: Impact Analysis for Planning.

Invasive Species: Plant or animal species that tend to spread rapidly and harmfully. For example, cheatgrass invasion of native shrub-steppe displaces native species and alter natural fire regimes. Many invasive species are also noxious weeds.

Long-term Impact: A change in a resource or its condition that would last longer than a single year or season.

Major Impact: Effects would be obvious and would result in substantial consequences to cultural resources, populations, plant communities within the local area and region, or recreation opportunities and visitor experiences within the Monument. Extensive mitigating measures would be needed to offset adverse effects; would be large-scale in nature and very complicated to implement; and the probability of success would not be guaranteed. In some instances, major effects would include the irretrievable loss of the resource.

McNary Islands: McNary National Wildlife Refuge Islands. McNary manages six islands in the Columbia River; three are within the Monument boundary and three are adjacent; jurisdiction will be transferred to the Monument.

Microbiotic Crust: A diminutive collection of mosses, lichens, liverworts, algae, and bacteria that form a soil stabilizing crust. Microbiotic crusts are formed by living organisms and their by-products, creating a crust of soil particles bound together by organic materials on the surface of many soil types which fills the spaces between bunchgrass clumps within shrub-steppe habitats. Also known as cryptogamic, cryptobiotic, and microphytic, these organisms serve important functions in soil stability, moisture retention, nutrient transport, and plant community stability. The names are all meant to indicate common features of the organisms that compose soil crusts.

Migratory Birds: Those species of birds that migrate from place to place, either within the United States or between countries, to complete different stages of their life cycle. These species are listed under §10.13 of 50 CFR Chapter 1 - United States Fish and Wildlife Service, Department of Interior. (Source: Draft FWS Manual 601 FW 4)

Minor Impact: Effects would be detectable but localized, small, and of little consequence to a population, plant community, cultural resource, recreation opportunity or visitor experience. Mitigation, if needed to offset adverse effects, would be easily implemented and successful.

Mitigation: Avoiding, minimizing, rectifying, reducing, eliminating, or compensating for impacts. (Source: Draft FWS Manual 601 FW 4, paraphrased)

Moderate Impact: Effects would be readily detectable and localized, with consequences to a cultural resource, population, plant community level or specific recreation opportunity or visitor experience. Mitigation measures would be needed to offset adverse effects, would be extensive in nature and moderately complicated to implement; and probably would be successful.

Monument: Hanford Reach National Monument.

MOU: Memorandum of Understanding. *Also* Memorandum of Understanding Between the U.S. Department of the Interior, Fish and Wildlife Service, and the U.S. Department of Energy, Richland Operations Office, for the Operation of the Wahluke Slope.

mph: Miles Per Hour.

Negligible Impact: Resources would not be affected, or the effects would be at or near the lowest level of detection. Resource conditions would not change or would be so slight that there would not be of any measurable or perceptible consequence to a population, plant community, cultural resource, recreation opportunity or visitor experience.

NEPA: National Environmental Policy Act.

NOAA: (United States) National Oceanic and Atmospheric Administration.

NOAA-Fisheries: (United States) National Oceanic and Atmospheric Administration Fisheries. This agency was formerly known as the National Marine Fisheries Service.

NPS: (United States) National Park Service.

NWRS: National Wildlife Refuge System.

NWSRS: National Wild and Scenic Rivers System.

Objective: A concise statement of what we want to achieve, how much we want to achieve, when and where we want to achieve it, and who is responsible for the work. Objectives derive from goals and provide the basis for determining strategies, monitoring refuge accomplishments, and evaluating the success of strategies. Objectives should be attainable, time-specific, and measurable. ((Source: Draft FWS Manual 601 FW 4)

Ordinary High Water Mark: The line that water impresses on land by covering it for sufficient periods to cause physical characteristics that distinguish the area below the line from the area above it. Characteristics of the area below the line include, when appropriate, but are not limited to, deprivation of the soil and substantially all terrestrial vegetation.

Overlay Wildlife Refuge: A wildlife refuge on land which is owned by one or more federal agencies but managed by the United States Fish and Wildlife Service. (Source: CLUP)

PALS: Partners for Arid Lands Stewardship.

PMU: Population Management Unit.

Preferred Alternative: The alternative which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors. The concept of the “agency’s preferred alternative” is different from the “environmentally preferable alternative,” although in some cases one alternative may be both. (Source: Council on Environmental Quality, 40 Questions)

Proclamation or Monument Proclamation: Hanford Reach National Monument Proclamation, Presidential Proclamation 7319.

ROD: Record of Decision.

Short-term Impact: An effect that generally would last less than a single year or season.

T&E Species: Threatened and Endangered Species.

TCP: Traditional Cultural Property. A historic property whose eligibility for inclusion to the National Register of Historic Places is derived from its significant role in the traditional but often continuing lifeways of a community. (Source: Considering Cultural Resources.

TEA-21: Transportation Equity Act for the 21st Century.

Threatened Species (Federal): A species that is likely to become endangered in the foreseeable future.

Threatened Species (State Plants): A species that is likely to become endangered in the foreseeable future.

Threatened Species (State Wildlife): Wildlife species native to the state of Washington that are likely to become endangered in the foreseeable future throughout significant portions of their ranges within Washington without cooperative management or the removal of threats.

TNC: The Nature Conservancy.

USC: United States Code.

USFS: United States Forest Service.

USGS: United States Geological Survey.

Visitor Day: Twelve visitor hours which may be aggregated by one or more persons in single or multiple visits.

WDFW: Washington Department of Fish and Wildlife.

WDNR: Washington Department of Natural Resources.

WNHP: Washington Natural Heritage Program.

Yakama Nation: Confederated Tribes and Bands of the Yakama Nation.

Section 6

Compatibility Determination For Sport Hunting

May 2007

Hanford Reach National Monument • Sport Hunting Opening Package

6.0 Introduction

Compatibility determinations must be completed for all recreational uses, or other uses of the Monument by the public or other non-FWS entity. This includes actions the FWS might take associated with a particular recreational use or other general public use, including any economic activity (e.g., commercial guiding) proposed for the Monument. The Monument Project Leader and the FWS's Refuge Supervisor and Regional Chief for the NWRs must determine that the activity is a "compatible use." That is, it is a wildlife-dependent recreational use, or other use of the Monument that, based on sound professional judgment, will not materially interfere with, or detract from, the mission of the NWRs or the purposes of the Monument. The compatibility determination itself is the written determination by the Monument Project Leader, Refuge Supervisor and Regional Chief signifying that the use is a compatible use or is not a compatible use.

In determining what is a compatible use, the National Wildlife Refuge System Administration Act relies on the "sound professional judgment" of the person authorized to make the decision.⁶³ Compatibility determinations are inherently complex and require the Monument Project Leader to consider his field experiences and knowledge of the Monument's resources, particularly its biological resources, and make conclusions that are consistent with principles of sound fish and wildlife management and administration, available scientific information, and applicable laws.

The Monument Project Leader must also consider the extent to which available resources (funding, personnel and facilities) are adequate to develop, manage and maintain the proposed use so as to ensure compatibility. The Monument Project Leader must make reasonable efforts to ensure that the lack of resources is not an obstacle to permitting otherwise compatible wildlife-dependent recreational uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation). If reasonable efforts do not yield adequate resources to develop, manage and maintain the wildlife-dependent recreational use, the use will not be allowed because the FWS will lack the administrative means to ensure proper management of the public activity on the Monument.

Since permitting uses of the Monument is a determination vested by law in the FWS, under no circumstances (except emergency provisions necessary to protect the health and safety of the public or any fish or wildlife population) may a use be authorized which is not determined to be compatible with the purposes of the Monument and the NWRs mission.

⁶³ The Refuge Administration Act designates the Director of the FWS as the ultimate decision maker. The Director, in turn, delegates authority to make compatibility determinations through the Regional Director to the Monument Project Leader. Therefore, it is the Monument Project Leader who is required and authorized to exercise sound professional judgment.

6.1 Compatibility Determination — Hunting

Use

Hunting (Big Game, Waterfowl, and Upland Game Birds)

Refuge Name

Hanford Reach National Monument/Saddle Mountain National Wildlife Refuge⁶⁴ (Monument)

Establishing and Acquisition Authorities

The Saddle Mountain National Wildlife Refuge (24,000 acres) was established on November 30, 1971, through a permit with the Department of Energy and under the authority of the Fish and Wildlife Act of 1956, as amended (16 U.S.C. 742(a)-754).

The Hanford Reach National Monument (195,000 acres), which includes the Saddle Mountain National Wildlife Refuge, was established on June 9, 2000, through Presidential Proclamation 7319 under the authority of the American Antiquities Act of 1906.

Refuge Purposes

National wildlife refuges are established “. . . for the development, advancement, management, conservation, and protection of fish and wildlife resources . . .” (16 U.S.C. § 742f(a)(4)) and also “. . . for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude . . .” (16 U.S.C. § 42f(b)(1); Fish and Wildlife Act of 1956, 16 U.S.C. § 742(a)-754, as amended).

The Monument was established “. . . for the purpose of protecting the objects identified above [riparian, aquatic and upland shrub-steppe habitats; native plant and animal species; free-flowing, non-tidal stretch of the Columbia River; shrub-steppe ecosystems; breeding populations of birds; habitat for migratory birds; mammals; insect populations; geological and paleontological objects; archaeological and historic information] . . .” (Monument Proclamation 7319, dated June 9, 2000).

⁶⁴ The Saddle Mountain National Wildlife Refuge was established prior to the Monument; it was subsequently included within the Monument’s boundaries. It does, however, still exist as part of the Monument.

National Wildlife Refuge System Mission

“The mission of the [National Wildlife Refuge] System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. § 668dd-ee]).

Description of Use

Hunting on the current Wahluke Unit, including shorelines of the Columbia River between river miles 343-351

The U.S. Fish and Wildlife Service (FWS) proposes to allow hunting of resident game and migratory waterfowl within Washington Department of Fish and Wildlife (WDFW) established seasons, bag limits, and species sanctuaries. Hunting on these areas for specific species generally begins September 1st and ends on the third weekend in January. The longest continuous species-specific hunting seasons during this time are waterfowl (second weekend in October to the third weekend in January) and upland birds (October-January); the shortest seasons are dove (first two weeks of September) and deer and elk (selected seven- to thirty-day periods in September, October and November/December, depending on the area and weapon used).

All or portions of the Wahluke Unit have been open to hunting (by the state of Washington) from 1971-1999; these areas have remained open to hunting since the Monument was established. A more complete description of the current and proposed recreational hunting program can be found in Section 1 of the Sport Hunting Plan.

*Species That Can Be Hunted On The Monument*⁶⁵

- California Quail
- Chukar
- Gray (Hungarian) Partridge
- Mourning Dove
- Ring-necked Pheasant
- Snipe
- Coot
- Ducks (All Species)
- Geese (Canada, Snow)
- Deer (White-tailed, Mule)
- Elk

⁶⁵ In accordance with Washington State hunting regulations and subject to certain restrictions as noted elsewhere. For example, waterfowl hunting is not allowed within 1/4-mile of the Columbia River between the Vernita Bridge and the old Hanford town site wooden (tower) power line crossing. Please refer to the WDFW hunting regulations for full details. Species not identified here cannot be hunted.

Availability of Resources

The Monument is operating with the minimum staff and funding needed to maintain the current hunting program, including enforcing regulations and maintaining facilities. Considered separately, the capacity of the Monument to administer the hunting program would be stretched. However, this is somewhat offset by the fact that the Monument was recently combined with seven other national wildlife refuges in order to pool staff and conserve funds (collectively known as the Mid-Columbia River National Wildlife Refuge Complex).⁶⁶ As such, the Monument has the staff to administer the current hunting program; additional resources would be needed to expand recreational hunting and to fully implement all the desired components of a hunting program (e.g., hunter check stations, monitoring programs). Access trails, parking lots, signs and other facilities are adequate to maintain hunting at the current level; funding associated with maintenance or joint-use facilities (roads, parking areas, signs, etc.) is included in other Monument programs requiring the same support.

Position & GS Level	Involvement	FTE	Recurring Expense
Project Leader/Deputy Project Leader (GS 13/14)	Oversight Coordination with the WDFW; Program Management	0.05	\$9,000
Wildlife Biologist (GS-11)	Elk Monitoring; Reporting; Hunt Plan Updates; Coordination; Program Management	0.47	\$35,500
Law Enforcement (GS-09)	Coordination with WDFW Law Enforcement; Field Monitoring of Hunters	0.44	\$31,000
Recreation Planner (GS-11)	Outreach; Briefings	0.27	\$19,600
Total Annual FTEs and Cost		1.23	\$95,100

Anticipated Impacts of the Use

Hunting has given many people a deeper appreciation of wildlife and a better understanding of the importance of wildlife and habitat conservation, which ultimately contributes to the NWRS mission. Furthermore, a goal of the Monument is to provide opportunities for quality wildlife-dependent recreation. By law, when compatible, hunting is one of the six priority public uses of the NWRS.

⁶⁶ The new Mid-Columbia River National Wildlife Refuge Complex is comprised of the existing Cold Springs, Columbia, Conboy, McKay Creek, McNary, Toppenish, and Umatilla National Wildlife Refuges, as well as the Monument.

Hunting, by its nature, results in the intentional take of individual animals, as well as wounding and disturbance (DeLong 2002). It can also alter behavior (e.g., foraging time), population structure, and distribution patterns of wildlife (Owens 1977, Raveling 1979, White-Robinson 1982, Thomas 1983, Bartelt 1987, Madsen 1985, and Cole and Knight 1990).

Harvest data are reported by hunters to the WDFW and season and bag limits are adjusted accordingly to ensure that overall populations of game species remain healthy into the future. While hunter use of these areas has not been closely monitored, the FWS would expect hunter numbers to increase slightly or not at all—and based on national trends, may decrease—over the next fifteen years. Impacts will be monitored, and, if necessary, measures would be considered in coordination with the WDFW to protect Monument resources.

Wahluke Unit

There is currently a total of 56,437 acres available for hunting. Even though there is the potential of having hunters on the Wahluke Units every day of the week from September through January, they are dispersed across the landscape (upland bird and big game hunting), more concentrated where target species are more likely to occur (waterfowl hunting), and/or more numerous on weekends (any species) and opening and closing days of specific seasons (deer hunting). Additionally, access into the majority of the area is from peripheral roads and parking areas, with access to more remote areas by foot only. While hunting may affect non-target species through disturbance and shooting, there will be areas where little or no disturbance occurs.

Shorelines of the Columbia River Between River Miles 343-351

All activities below the mean high water level are regulated by the state of Washington; the FWS has no management authority over hunting and other activities below this demarcation.

Shoreline hunting allows hunters direct access to the river, bays and sloughs. Access to Columbia River shorelines would be by foot or boat. Land access would be from parking lots 1-7, and hunters would either hike cross-country or on established trails to the shoreline. Waterbird and waterfowl use of these areas varies seasonally, as does hunter presence. Waterfowl are prevalent on the river in the winter, especially when surrounding wetlands freeze. Bald eagle roost sites occur within the hunting area, with eagles more common in winter months. The nesting period identified in the Bald Eagle Recovery Plan identifies January 1 as the beginning of the nesting season when special protective measures should begin (FWS 1986). However, with a waterfowl hunting sanctuary located upstream of the wooden power line crossing at the old Hanford Townsite, hunting areas along the Hanford Reach have very little overlap with bald eagle nesting habitat. Heron rookeries occur along the river corridor. Based on the literature there may be some disturbance to rookeries during the early part of the hunting season as young birds could still be in the vicinity, although no mortality is expected. In the middle to later part of the hunting season, no disturbance is anticipated.

Islands within the Hanford Reach are characterized by significant cultural resources. Access to islands has the potential to adversely impact cultural resources. No access will be permitted above the mean (ordinary) high water mark; below the mean high water mark, the FWS does not have jurisdiction over use.

Please refer to Section 2.4 (Environmental Consequences) of the Sport Hunting Package for a more complete evaluation of the effects of hunting.

Public Review and Comment

This Compatibility Determination was prepared concurrent with the Monument’s Draft CCP/EIS. Open houses were held and written comments were solicited from the public during the scoping period for the Monument’s CCP/EIS, leading to the Draft Compatibility Determination. Then, public review and comment was solicited during the draft CCP/EIS comment period. The public was then provided an additional thirty-day period to review this Compatibility Determination as part of the review and comment period for the entire Sport Hunting Package.

Determination

- The use is not compatible.
- The use is compatible with the following stipulations.

Stipulations Necessary to Ensure Compatibility

Monument hunting programs will be designed to provide high-quality experiences. A quality hunt experience means that: 1) hunters are safe; 2) hunters exhibit high standards of ethical behavior; 3) hunters are provided with uncrowded conditions; 4) hunters have reasonable harvest opportunities; 5) hunters are clear on which areas are open and closed to hunting; and 6) minimal conflicts occur between hunters and other visitors, especially those engaging in other wildlife-dependent priority public uses. The seven-day-per-week recreational hunting program proposed on the Wahluke Unit would include the following management actions and/or restrictions to reduce impacts:

- The existing WDFW waterfowl sanctuary on the Columbia River (from the Vernita Bridge downstream to the wooden power lines, a locally known landscape feature) will be maintained.
- A sanctuary from hunting on the Saddle Mountain Unit (north of the Columbia River) will be maintained.

- Sufficient escape, feeding and resting habitat for wildlife will be provided in both open and closed areas.
- Periodic biological and social monitoring—and evaluation of hunting programs, including feedback from users—may be conducted to determine if objectives are being met.
- All hunting on the Monument will require the appropriate state license and tag and will occur consistent with applicable state regulations.
- Waterfowl hunting will be allowed at the WB-10 Ponds, along the shoreline of the Columbia River between Parking Lots 1 and 7, and below the mean high water level on islands between river miles 343-351.⁶⁷
- Only non-toxic shot is allowed for upland birds and migratory waterfowl.
- Per Department of Energy (DOE) restrictions, no centerfire rifles are allowed for big game hunting, and only shotguns (only 10 and 12 gauge shotguns loaded with slugs for elk hunting), muzzle loaders, and archery are allowed for taking elk or deer.
- Hunters will use existing open roads and parking areas to access hunting sites, and all hunting will be conducted on foot.
- Hunter compliance with current migratory bird, upland and big game hunting and Monument regulations would be achieved through a combination of printed information (WDFW and Monument), signs, outreach efforts, and enforcement of regulations by FWS, WDFW, or other law enforcement officers.
- Camping, overnight use, and fires are prohibited.
- Construction of pit blinds is not permitted, and the cutting, collecting and/or disturbance of vegetation and other native materials is not allowed.

Justification

When determined compatible, hunting is one of the six priority public uses of the NWRS. National wildlife refuge hunting programs are designed to provide high-quality experiences. In

⁶⁷ As noted, primary jurisdiction below the mean high water mark along Columbia River shorelines within the Monument lies with the state of Washington. Primary jurisdiction within the easement associated with the WB-10 Ponds, Saddle Mountain Lakes, and irrigation return wasteways is administered by the Bureau of Reclamation.

general, hunting on national wildlife refuges should be superior to that available on other private or public lands, which may require special restrictions (Refuge Manual 8RM5). For example, measures are often used to ensure quality, including limited hunt days, shell limits, and using buffers for public use trails, eliminating the need for seasonal trail closures.

Providing a quality hunting program contributes to achieving one of the Monument’s goals. This program, as described, was determined to be compatible, in view of the potential impacts that hunting can have on the FWS’s ability to achieve Monument purposes and goals. The limited hunt program is proposed on the Monument to provide a quality hunting experience that meets Monument guidelines and policies.

It is anticipated that an adequate amount of quality, non-hunted and closed habitat would be available to both hunted and non-hunted wildlife because: 1) some high-wildlife-use areas will remain closed; and 2) some high-wildlife-use areas open to hunting will be hunted infrequently or not at all due to the walking distance required. A program may be implemented to monitor wildlife populations numbers and habitats in both open and closed areas.

As proposed, the Monument hunting program would not materially interfere with or detract from achievement of the Monument’s purpose or the NWRS mission.

Mandatory 10- or 15-year Re-evaluation Date

Provide month and year for “allowed” uses only.

- Mandatory 15-year re-evaluation date (for wildlife-dependent public uses).
- Mandatory 10-year re-evaluation date (for all uses other than wildlife-dependent public uses).

NEPA Compliance for Refuge Use Decision

- Categorical Exclusion without Environmental Action Statement.
- Categorical Exclusion and Environmental Action Statement.
- Environmental Assessment and Finding of No Significant Impact.
- Environmental Impact Statement and Record of Decision.

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Signatures

Signed - Gregory M. Hughes
Monument Project Leader

May 14, 2007
Date

Signed - Forrest W. Cameron
Refuge Supervisor

May 14, 2007
Date

Signed - Carolyn Bohan
Regional Chief, National Wildlife Refuge System

May 14, 2007
Date

Section 7

Endangered Species Act Section 7 Determination

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Michael Ritter
Telephone Number: (509) 371-1801
Date: May 10, 2007

- I. Region:** 1, Pacific
- II. Service Activity:** Public Hunting Program (Big Game, Waterfowl, Upland Game Birds)
- III. A. Listed species and/or their designated critical habitat within the action area:**

Endangered

Spring-run Chinook (*Oncorhynchus tshawytscha*)
Steelhead (*Oncorhynchus mykiss*)
Pygmy Rabbit (*Brachylagus idahoensis*)

Threatened

Bald Eagle (*Haliaeetus leucocephalus*)
Ute Ladies' Tresses (*Spiranthes diluvialis*)
Bull Trout (*Salvelinus confluenus*)

- B. Proposed species and/or proposed critical habitat within the action area:**

None

- C. Candidate species within the action area:**

Washington Ground Squirrel (*Spermophilus washingtoni*)
Umtanum Desert Buckwheat (*Erigonum codium*)
White Bluffs Bladderpod (*Lesquerella tuplashensis*)
Western Sage Grouse (*Cenrocercus urophasianus phaios*)

- IV. Geographic area or station name and action:**

Wahluke Unit, Hanford Reach National Monument/Saddle Mountain National Wildlife Refuge

Per the 2001 *Memorandum of Understanding Between the U.S. Department of the Interior, Fish and Wildlife Service, and the U.S. Department of Energy, Richland Operations Office, for the Operation of the Wahluke Slope (MOU)* and the 1971 *Permit for Management and Recreational Use of the Wahluke Slope between Department of Energy and the Fish and Wildlife Service and the Washington State Department of Fish and Wildlife (1971 Permit)* issued by the Department of Energy (DOE) to the U.S. Fish and Wildlife Service (FWS) for the management of the Hanford Reach National Monument (Monument), the Monument is proposing to maintain the existing public hunting program on the Wahluke Unit, formerly administered by the Washington Department of Fish and Wildlife (WDFW) from 1971-1999.

V. Location:

A. County and State:

Franklin, Grant and Adams Counties, Washington

B. Section, Township and Range:

T15N R26E

Sections 13,14,15,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36

T15N R27E

Sections 15,16,18,19,20,21,22,23,25,26,27,28,29,30,31,32,33,34,35,36

T15N R28E

Sections 31

T14N R27E

Sections 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,21,22,23,24,25,26,27,28,35,36

T14N R28E

Sections 6,7,18,19,29,30,31,32

T13N R27E

Sections 1,2,11,12,14,24

T13N R28E

Sections 5,6,7,8,17,18,19,20,31,32,33,34

T12N R28E

Sections 3,4,9,10,11,14,23

C. Distance (miles) and direction to nearest town:

The city of Richland, Washington, lies approximately twenty miles south of T12N R28E, Section 23.

The town of Mattawa, Washington, lies approximately twelve miles west of T15N R26E, Section 31.

The town of Othello, Washington, lies approximately ten miles northeast of T15N R28E, Section 31.

D. Include species/habitat occurrence on a map, if possible.

VI. Description of proposed action (attach additional pages as needed):

In the 1971 Permit, recreational hunting was established by the landowner (DOE) as an allowable activity.

“Public fishing, hunting (with shotguns and bows and arrows only) and other recreational activities, to the extent approved and controlled by the [WDFW], may be permitted on the eastern portion [Wahluke] of the Area.”

At the time—before establishment of the Monument—this permit established the FWS as the manager of the Saddle Mountain National Wildlife Refuge and the WDFW as the manager of the Wahluke Unit. Following establishment of the Monument, the 2001 MOU redefined the area identified in the 1971 Permit as being managed by the FWS to include the Wahluke Unit.

“1.11 The terms “Saddle Mountain National Wildlife Refuge” or “Refuge” means:

The 32,000 acre area of the Hanford Site administered by FWS . . . except for those areas within the Wahluke Slope that remain under DOE management . . . the approximately 57,000 acres of the former Wahluke Wildlife and Recreational Area formerly managed by the Washington Department of Fish and Wildlife . . . except for those areas within the Wahluke Slope that remain under DOE management . . . and the 77,000-acre Fitzner-Eberhardt Arid Lands Ecology Reserve . . . except for those areas that remain under DOE management . . . ;”

The MOU went on to establish that FWS management should be similar to that of the 1971 Permit and that recreational access should be provided.

“3.2 *The primary objective of the FWS in entering into this agreement is to ensure that the parts of the Monument managed by FWS are managed in accordance with Presidential Proclamation 7319 of June 9, 2000, under the:*

1971 Permit for Management and Recreational Use of the Wahluke Slope between DOE and the Fish and Wildlife Service (FWS) and the Washington State Department of Fish and Wildlife as amended;

3.3.c *To ensure that access to the Refuge is available for the educational, scientific, and recreational benefit of the public to the extent this access and use is consistent with the foregoing objectives and compatible with Refuge purposes;”*

So, the underlying landowner, the DOE, has, in the transfer of authorities, indicated that hunting should occur on the Monument, which is consistent with a background paper issued by the White House accompanying the Monument Proclamation.

VII. Determination of effects:

Explanation of effects of the action on species and critical habitats in items III.

Endangered

Spring-run Chinook (*Oncorhynchus tshawytscha*)

Spring-run Chinook migrate through the Columbia River segment adjacent to the Wahluke Unit. Public hunting will have no effect on Spring-run Chinook.

Steelhead (*Oncorhynchus mykiss*)

Steelhead migrate through the Columbia River segment adjacent to the Wahluke Unit. Public hunting will have no effect on Steelhead.

Pygmy Rabbit (*Brachylagus idahoensis*)

The current distribution of the pygmy rabbit in Washington does not include the Monument. However, there has been one reported sighting in 1979 on the Fitzner-Eberhardt Arid Lands Ecology Area (ALE; Fitzner and Gray 1991). The

area in which this sighting occurred is across the Columbia River and more than twenty miles distant from the public hunting area. As an added precaution, the current hunting program on the Wahluke Unit does not include rabbit hunting of any kind. Public hunting on the Wahluke will have no effect on pygmy rabbits.

Threatened

Bald Eagle (*Haliaeetus leucocephalus*)

Wintering bald eagles are known to use perching and roosting sites along the Hanford Reach of the Columbia River and inland areas within a few miles of the river. The majority of the perching and roosting areas are provided by sparse patches of trees located along the banks of the Saddle Mountain Lakes and the Columbia River to within 100 yards of the shoreline. However, no hunting is allowed around the Saddle Mountain lakes or within 1/4-mile of the river shore most used by eagles. There is a small likelihood of bald eagles on the Hanford Reach being disturbed from hunting. However, there will be no adverse effect upon the bald eagle as a result of the proposed action.

Bull Trout (*Salvelinus confluenus*)

Bull trout occur in the Columbia River adjacent to the Wahluke Unit as accidentals from upstream tributary habitats. Public hunting will have no effect on bull trout.

Proposed species and/or proposed critical habitat within the action area:

None

Candidate species within the action area:

Washington Ground Squirrel (*Spermophilus washingtoni*)

The most recent survey of small mammals on the Hanford Site was conducted by The Nature Conservancy (TNC) in 1997. This survey also focused on detection of Washington ground squirrels throughout the Hanford Site. Evidence of the presence of Washington ground squirrels was not detected in areas surveyed during 1997 (TNC 1998). Additionally, recent species accounts for this species indicate that the historic range of this squirrel was restricted to areas east and south of the Columbia River (Verts and Carroway 1998). Recently, a small population of Washington ground squirrels was documented to occur on the slopes of the Saddle Mountains within the Monument. However, none of the Wahluke Unit is currently open to hunting for squirrels of any kind. Further,

during the hunting season, Washington ground squirrels are estivating/hibernating within their burrows and would not be encountered by hunters. Other than the rare crushing of burrows by hunters or horses, there will be no adverse effects on the Washington ground squirrel as a result of the proposed action.

Umtanum Desert Buckwheat (*Erigonum codium*)

The most recent rare plant survey on the Hanford Site was conducted by TNC in 1997. During this survey, no new populations of *Erigonum codium* were documented. The existing population on the Hanford Site is restricted to Umtanum Ridge and numbers approximately 5,000 plants. This population of *E. codium* is the only population known to science. The habitat is a mile long strip less than 100 feet wide that extends along a high elevation rocky slope. The area in which these plants occur is on the McGee/Riverlands Unit of the Monument and not within the public hunting area. There will be no effect to Umtanum desert buckwheat from the proposed activity.

White Bluffs Bladderpod (*Lesquerella tuplashensis*)

Information from the most recent rare plant survey on the Hanford Site, conducted by TNC in 1997, indicates that this plant has a range restricted to along the White Bluffs on the north slope of the Columbia River in Grant and Franklin Counties. The population is estimated at 50,000 plants that grow in the “caliche” layer of soil, a calcium carbonate rich deposit of the Ringold Formation on both the Monument and private property.

The primary threats to this species are erosion, conversion of habitat, weed invasions, and/or slumping of the bluffs. While some hunters may venture into bluff habitat for deer and upland bird hunting and pass shooting geese and thus could impact individual plants, there will be no adverse effects on the population of White Bluffs bladderpod from this action.

Western sage grouse (*Cenrocercus urophasianus phaios*)

Information from the WDFW’s *Greater Sage Grouse Recovery Plan* (Stinson et. al 2004) identifies the Rattlesnake Hills, Saddle Mountain, and Hanford Units (which includes the Wahluke) as Grouse Management Units for potential population expansion and recovery sites. Both the Rattlesnake Hills Unit and the Saddle Mountain Unit are adjacent to currently occupied sage grouse habitat, and the Hanford Unit is less than ten miles from the occupied U.S. Army Yakima Training Center. Sage grouse are absent from these units, but all have been used by sage grouse in the past (Schroeder et al. 2000).

Since a large percentage of each of these units has been under DOE ownership since 1943, and under FWS management since 2000 when the Monument was created, shrub-steppe habitat has largely remained untouched. Several decades of grazing occurred on lands within both the Saddle Mountain and Wahluke Units prior to the establishment of the Monument, and large wild fires continue to reduce the remaining native habitats. As a result of fires, restoration of native habitats is occurring on Monument lands (ALE, Wahluke) within the Rattlesnake Hills Unit and Hanford Unit and on Monument lands within the Saddle Mountain Unit. Public hunting occurs within other Grouse Management Units across the state and occurs on the Wahluke within the Hanford Grouse Management Unit. However, hunting for grouse of any kind is not permitted on the Monument. There will be no adverse effects on sage grouse from this action.

VIII. Effect determination(s) and response(s) requested:

A. Listed species/designated critical habitat:

<u>Determination</u>	<u>Response Requested</u>
NO EFFECT	
Species: Spring-run Chinook Summer Steelhead Bull Trout Pygmy Rabbit	<u> X </u> Concurrence
Critical habitat: None	<u> </u> Concurrence
IS NOT LIKELY TO ADVERSELY AFFECT	
Species: Bald Eagle	<u> X </u> Concurrence
Critical habitat: None	<u> </u> Formal Consultation

B. Proposed species/designated critical habitat:

<u>Determination</u>	<u>Response Requested</u>
NO EFFECT	
Species: None	<u> </u> Concurrence
Critical habitat: None	<u> </u> Concurrence

IS NOT LIKELY TO JEOPARDIZE PROPOSED SPECIES

Species: None _____ Conference

IS NOT LIKELY TO ADVERSELY MODIFY PROPOSED CRITICAL HABITAT

Critical habitat: None _____ Conference

IS LIKELY TO JEOPARDIZE PROPOSED SPECIES

Species: None _____ Conference

IS LIKELY TO ADVERSELY MODIFY PROPOSED CRITICAL HABITAT

Critical habitat: None _____ Conference

C. Candidate species:

<u>Determination</u>	<u>Response Requested</u>
----------------------	---------------------------

NO EFFECT

Species: Umtanum Desert Buckwheat X Concurrence

IS NOT LIKELY TO JEOPARDIZE

Species: Washington Ground Squirrel X Concurrence
White Bluffs Bladderpod
Western Sage Grouse

IS LIKELY TO JEOPARDIZE

Species: None _____ Conference

IX. Signature Page

Signed - David Linehan
Initiating Officer

May 11, 2007
Date

Concur Do Not Concur

Comments:

N/A
Endangered Species Supervisor

Date

Concur Do Not Concur

Comments:

Signed - Gregory M. Hughes
Monument Project Leader

May 14, 2007
Date

Concur Do Not Concur

Comments:

May 2007

Hanford Reach National Monument • Sport Hunting Opening Package

Section 8

List of Preparers

8.0 Introduction

Many people assisted in the writing of the *Hanford Reach National Monument Sport Hunting Package*. Many more were part of writing the Draft CCP, from which much of the information in this EA was ‘borrowed;’ please refer to the Draft CCP for that complete list.

8.1 Core Team

- Paula Call, Visitor Service’s Manager, U.S. Fish and Wildlife Service, Mid-Columbia River National Wildlife Refuge Complex, Richland, Washington
- Mike Gregg, Biologist, U.S. Fish and Wildlife Service, Mid-Columbia River National Wildlife Refuge Complex, Richland, Washington
- Dan Haas, Natural Resource Planner, U.S. Fish and Wildlife Service, Mid-Columbia River National Wildlife Refuge Complex, Richland, Washington
- Heidi Newsome, Biologist, U.S. Fish and Wildlife Service, Mid-Columbia River National Wildlife Refuge Complex, Richland, Washington
- Mike Ritter, Supervisory Wildlife Refuge Manager, U.S. Fish and Wildlife Service, Mid-Columbia River National Wildlife Refuge Complex, Richland, Washington

8.2 Additional Preparers

- Jack Heisler, Refuge Operations Specialist, U.S. Fish and Wildlife Service, Mid-Columbia River National Wildlife Refuge Complex, Richland, Washington

8.3 GIS and Mapping

- Lindsey Hayes, GIS Specialist, U.S. Fish and Wildlife Service, Mid-Columbia River National Wildlife Refuge Complex, Richland, Washington

8.4 Additional Review, Consultation, Etc.

- Howard Browsers, Lead Biologist, U.S. Fish and Wildlife Service, Mid-Columbia River National Wildlife Refuge Complex, Richland, Washington
- Greg Hughes, Project Leader, U.S. Fish and Wildlife Service, Mid-Columbia River National Wildlife Refuge Complex, Richland, Washington

8.5 Mid-Columbia River National Wildlife Refuge Complex Management

- Greg Hughes, Project Leader
- Dave Linehan, Supervisory Wildlife Refuge Manager
- Mike Ritter, Supervisory Wildlife Refuge Manager

Section 9

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