

McNary and Umatilla National Wildlife Refuges

Draft Comprehensive Conservation Plan and Environmental Assessment

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Chapter 1. Introduction and Background

1.1 Introduction

When first encountered by Lewis and Clark and early settlers, the Columbia River of the Pacific Northwest was enormous, wild, and seemingly uncontrollable. Yet for all its enormous flows, the river was nearly unusable in its native state as a source of irrigation water. Early settlers found that agriculture was nearly impossible in most of the hot, arid Columbia Plateau (Dietrich 1995).

A grassroots effort to provide water for struggling small farmers culminated in the construction of Grand Coulee Dam, finished in 1941, it was—at that time—the largest concrete structure ever built anywhere in the world. Successful construction of the initial Columbia River dams led to increased confidence and enhanced expectations for development of the water and hydroelectric resources in the basin. Within a few decades, more than 400 dams—11 run-of-the-river dams on the mainstem—and hundreds of major and modest structures on tributaries had been constructed, tapping a large portion of the Columbia's generating capacity, more than 21 million kilowatts. The Columbia River is now considered the most hydroelectrically developed river system in the world (Dietrich 1995).

McNary and Umatilla National Wildlife Refuges were both established subsequent to the construction of two large dams on the mainstem of the middle Columbia River, as part of the Federal Columbia River Power System. McNary Refuge is located near the cities of Pasco, Kennewick, and Richland (together known as the Tri-Cities) upstream of the McNary Lock and Dam on waters of Lake Wallula and adjoining uplands. Umatilla Refuge is situated upstream of the John Day Lock and Dam on Lake Umatilla and on adjoining uplands about an hour's drive southwest of the Tri-Cities. Map 1, the Vicinity Map, shows the major features within the vicinity of both Refuges. Maps 2a and 2b show key features for each Refuge.

Dam structures fundamentally alter riverine systems. Rivers are transformed by large dams from a seasonally fluctuating, dynamic flow of water, into deep lakes, with slow-moving waters. In recognition of this, the U.S. Congress passed the Fish and Wildlife Coordination Act, which requires consultation with the U.S. Fish and Wildlife Service (Service) and state fish and wildlife agencies for federally-licensed dams and diversions. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources." In addition, the Fish and Wildlife Coordination Act authorizes land to be made available to the Secretary of the Interior for wildlife protection purposes. McNary and Umatilla Refuges were each established directly as a consequence of the Coordination Act requirements for dams and as such are often spoken of as "mitigation" refuges. However, there is no direct language in any establishing documents referencing mitigation.

1.2 Proposed Action

The Service is proposing to adopt and implement a Comprehensive Conservation Plan for McNary National Wildlife Refuge and Umatilla National Wildlife Refuge. This document is a Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA) for the two

Refuges. The CCP sets forth management guidance for the Refuges over the next 15 years, as required by the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 688 dd-688 ee, as amended by the National Wildlife Refuge System Improvement Act of 1997). The Improvement Act mandated that CCPs be developed for all Refuges in the National Wildlife Refuge System.

The proposed action in the Draft CCP/EA is to implement Alternative 2, which has been identified as the Service's Preferred Alternative. This Draft CCP/EA explores three other options (alternatives) for the CCP and discloses anticipated effects for each alternative, pursuant to the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321-4347). Alternatives are presented in Chapter 2, and effects are analyzed in Chapter 7. Appendices provide supporting information.

The actions under Alternative 2 best achieve the purpose and need for the CCP while maintaining balance amongst the varied management needs and programs. Alternative 2 addresses the issues and relevant mandates, and is consistent with principles of sound fish and wildlife management.

1.3 Purpose and Need for Action

The purpose of the CCP is to provide reasonable, scientifically grounded guidance for improving the Refuges' shrub-steppe, riparian, wetland, and cliff-talus habitats, for the long-term conservation of native plants and animals and migratory birds. The CCP will identify appropriate actions for protecting and sustaining the cultural and biological features of the river islands, the Refuges' wintering waterfowl populations and habitats, the growing migratory shorebird populations that use the Refuges, and threatened, endangered, or rare species. A final purpose of the CCP is to provide guidance for providing high quality public use programs in hunting, fishing, wildlife observation, photography, environmental education, and interpretation.

The CCP is needed for a variety of reasons. Primary among these are the need to establish improved habitat conditions on the Refuges' shrub-steppe, riparian, wetland, and cliff/talus habitats, many of which are highly degraded by invasive plants and animals, and to identify and deal with key threats to these habitats, including altered fire regimes and altered hydrological regimes. There is a need to address the Refuges' contributions to listed salmon species that migrate through McNary and Umatilla waters and use certain Refuge habitats for rearing. There is a need to address public concern about colonial waterbird populations that consume listed fish.

There is a need to analyze public use programs for the Refuge System's "Big Six" uses and to determine what improvements or alterations should be made in the pursuit of higher quality programs. The Big Six wildlife dependent uses are hunting, fishing, wildlife observation, photography, environmental education, and interpretation (See Section 1.5A for more on the Big Six uses.)

There is also a need to determine whether and how the Refuges should continue to offer camping and other nonwildlife dependent uses, including horseback riding, beach use, and boating. There is a need to address strategies to better prevent use of Refuge lands and waters for illegal uses including off road use and trash dumping. Finally, there is a need to describe the steps that should be taken to better protect cultural resources.

1.4 Content and Scope of Plan

This CCP provides guidance for management of Refuge habitats and wildlife and administration of public uses on Refuge lands and waters. An outline of the key information in the CCP follows.

- An overall vision for the Refuges and their role in the local ecosystem (Chapter 1).
- Goals and objectives for specific conservation targets and public use programs, as well as strategies for achieving the objectives (Chapter 2).
- A description of the conservation targets, their condition and trends on the Refuges and within the local ecosystem, a presentation of the key desired ecological conditions for sustaining the targets, and a short analysis of the threats to each conservation target (Chapter 4).
- An overview of the Refuges' public use programs and facilities, a list of desired future conditions for each program, and other management considerations (Chapter 5).
- Evaluations of existing and proposed public and economic uses for compatibility with each Refuge's purposes (Appendix C), and appropriate use evaluations (Appendix K).
- An outline of the projects, staff and facilities needed to support the alternatives considered (Appendix D).
- A list of vertebrate species known or suspected to occur on the Refuges, with information about their State and Federal listing status, and identifications under relevant ecosystem plans (Appendix B).

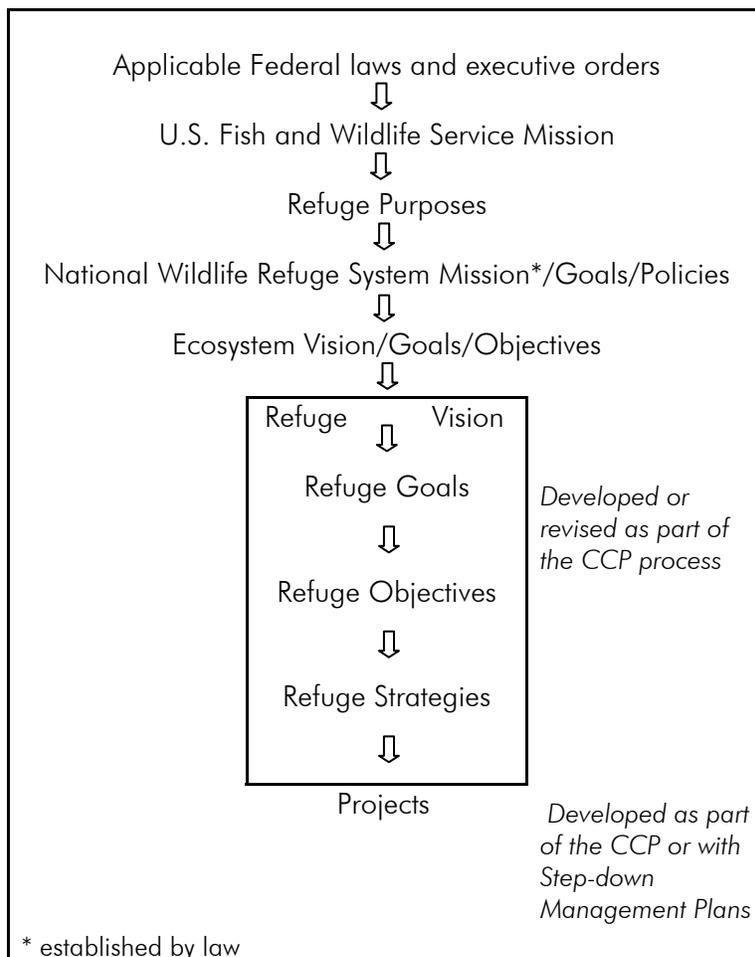
1.5 National Wildlife Refuge System Laws and Directives

The U.S. Fish and Wildlife Service, an agency within the Department of the Interior, is the principal Federal agency responsible for conserving, protecting and enhancing fish, wildlife and plants and their habitats for the continuing benefit of the American people. The Service manages the 95 million acre Refuge System, which encompasses 545 national wildlife Refuges, thousands of small wetlands and other special management areas.

Refuges are guided by various Federal laws and executive orders, Service policies, and international treaties. Fundamental are the mission and goals of the National Wildlife Refuge System (NWRS or Refuge System) and the designated purposes of the refuge unit as described in establishing legislation, executive orders, or other documents establishing, authorizing, or expanding a refuge. The hierarchical relationship of these documents in regards to refuge-specific planning and management are, illustrated in Figure 1.

Key concepts and guidance of the Refuge System were derived from the National Wildlife Refuge System Administration Act of 1966 as amended (16 U.S.C. 668dd-668ee), the Refuge Recreation Act of 1962 (16 U.S.C. 460k-460k-4) as amended, Title 50 of the Code of Federal Regulations, and the Fish and Wildlife Service Manual. The National Wildlife Refuge System Administration Act is implemented through regulations covering the Refuge System, published in Title 50, subchapter C of the *Code of Federal Regulations*. These regulations govern general administration of units of the Refuge System.

Figure 1. Hierarchy of Guidance within the National Wildlife Refuge System



A. Improvement Act

Of all the laws governing activities on National Wildlife Refuges, the National Wildlife Refuge System Improvement Act (Improvement Act) undoubtedly exerts the greatest influence. The Improvement Act amended the Refuge System Administration Act of 1966, by including a unifying mission for all National Wildlife Refuges to be managed as a System, a new process for determining compatible uses on refuges, and a requirement that each refuge will be managed under a Comprehensive Conservation Plan, developed in an open public process.

The Improvement Act states that the Secretary shall provide for the conservation of fish, wildlife and plants, and their habitats within the Refuge System as well as ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained. House Report 105–106 accompanying the Improvement Act states “...the fundamental mission of our System is wildlife conservation: wildlife and wildlife conservation must come first.” Biological integrity, diversity, and environmental health are critical components of wildlife conservation. As later explained in the Biological Integrity, Diversity and Environmental Health Policy (see section 1.5B), “the highest measure of biological integrity, diversity, and environmental health is viewed as those intact and self-sustaining habitats and wildlife populations that existed during historic conditions.”

Under the Improvement Act, each refuge must be managed to fulfill the Refuge System mission as well as the specific purposes for which it was established. The Act requires the Service to monitor the status and trends of fish, wildlife, and plants in each refuge.

Additionally, the Act identifies six priority wildlife-dependent recreational uses (“Big Six”). These uses are hunting, fishing, wildlife observation and photography, environmental education and interpretation. Through the Improvement Act, the U.S. Congress directed the Service to grant these six wildlife-dependent public uses special consideration in the planning for, management of, and establishment and expansion of units of the Refuge System. In addition, when determined compatible on a refuge-specific basis these six uses assume priority status over any other uses proposed or occurring on a refuge. The Service is to make extra efforts to facilitate priority wildlife-dependent public use opportunities.

“Big Six”

The six priority wildlife-dependent recreational uses identified under the Refuge System Improvement Act are hunting, fishing, wildlife observation and photography, environmental education and interpretation. These uses are to receive enhanced consideration over other uses in planning and management.

When preparing a CCP, Refuge Managers must reevaluate the compatibility of all general public, recreational, and economic uses (even those occurring to further refuge habitat management goals) proposed or occurring on a refuge. No refuge use may be allowed or continued unless it is determined to be compatible. A compatible use is a use that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge. No refuge use may be allowed or continued unless it is determined to be compatible. A compatible use is a use that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge. The authority to make the determination is delegated to the Refuge Manager. Updated compatibility determinations for existing and proposed uses for McNary and Umatilla Refuges are in Appendix C of this Draft CCP/EA.

The Improvement Act also required that, in addition to formally established guidance, the CCP must be developed with the participation of the public. Issues and concerns articulated by the public play a role in guiding alternatives considered during the development of the CCP, and with the formal guidance, can play a role in selection of the preferred alternative.

B. Other Laws, Policies, and Orders

Many other laws govern the U.S. Fish and Wildlife Service and Refuge System lands. A list and brief description of each can be found at <http://laws.fws.gov>. In addition, over the last few years, the Service has developed or revised numerous policies and Director's Orders to reflect the mandates and intent of the Improvement Act. Some of these key policies include the Biological Integrity, Diversity, and Environmental Health Policy (601 FW3); the Compatibility Policy; the Refuge Planning Policy; Mission, Goals, and Purposes (601 FW 1), Appropriate Refuge Uses (603 FW 1); Wildlife-Dependent Public Uses (605 FW 1); and the Director's Order for Coordination and Cooperative Work with State Fish and Wildlife Agency Representatives on Management of the National Wildlife Refuge System. These policies and others in draft or under development can be found at: <http://refuges.fws.gov/policymakers/nwrpolicies.html>.

In developing a CCP, refuges must consider these broader laws and policies as well as Refuge System and ecosystem goals and visions. The CCP must be consistent with these and also with the Refuge purpose. Figure 1 illustrates the hierarchy of planning guidance in the Fish and Wildlife Service.

C. National Wildlife Refuge System Mission and Goals

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 Improvement Act of 1997)

The goals of the National Wildlife Refuge System, as articulated in the Mission Goals and Purposes Policy (601 FW1), are:

- Conserve a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered.
- Develop and maintain a network of habitats for migratory birds, anadromous and interjurisdictional fish, and marine mammal populations that is strategically distributed and carefully managed to meet important life history needs of these species across their ranges.
- Conserve those ecosystems, plant communities, wetlands of national or international significance and landscapes and seascapes that are unique, rare, declining, or underrepresented in existing protection efforts.
- Provide and enhance opportunities to participate in compatible wildlife-dependent recreation (hunting, fishing, wildlife observation and photography, and environmental education and interpretation).
- Foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

D. Legal Significance of the Refuge Purpose

The purpose for which a refuge was established or acquired is of key importance in refuge planning. Purposes must form the foundation for management decisions. The purposes of a 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.

Unless the establishing law, order, or other document indicates otherwise, purposes dealing with the conservation, management, and restoration of fish, wildlife, and plants, and the habitats on which they depend take precedence over other purposes in the management and administration of any unit. Where a refuge has multiple purposes related to fish, wildlife, and plant conservation, the more specific purpose will take precedence in instances of conflict. When an additional unit is acquired under an authority different from the authority used to establish the original unit, the addition takes on the purpose(s) of the original unit, but the original unit does not take on the purpose(s) of the addition.

By law, refuges are to be managed to achieve their purposes. When a conflict exists between the Refuge System mission and the purpose of an individual refuge, the refuge purpose may supersede the Refuge System mission.

1.6 Establishment History and Purposes of McNary and Umatilla Refuges

A. Fish and Wildlife Coordination Act

Both McNary and Umatilla Refuges were originally established under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. §§ 661-667e, March 10, 1934, as amended 1946, 1958, 1978 and 1995). This Act requires consultation with the Service and the States' fish and wildlife agencies where the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified" by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources." In addition, the Fish and Wildlife Coordination Act authorizes land to be made available to the Secretary of Interior for wildlife protection purposes.

Section 664 of the Act specifies that areas made available for the purposes of the wildlife conservation and development as outlined in sections 661 to 666c, must be administered by the Secretary directly or in accordance with cooperative agreements, and "in accordance with rules and regulations adopted by the Secretary for the conservation, maintenance and management of wildlife resources thereof, and habitat thereon, under plans" approved jointly by the Secretary and the head of the agency exercising primary administration of the areas. General plans may also include the transfer of project lands to a state for management. Lands having value to the National Migratory Bird Management Program may be made available without cost directly to the state agency having control over wildlife resources.

Wildlife and wildlife resources are defined under section 666 as “birds, fish, mammals and all other classes of wild animals and all types of aquatic and land vegetation upon which wildlife is dependent.”

The Cooperative Agreement/General Plan associated with each Refuge provided more detail about the resource values.

B. McNary National Wildlife Refuge Purposes

Dam Authorization: The United States Congress authorized the construction of McNary Dam at River Mile 292 in 1946, under Public Law 14, 79th Congress, 59 Statute 10, for the primary purposes of navigation, power development, and irrigation. The purpose of “conservation of wildlife” was added to McNary’s project purposes by Public Law 732, 79th Congress, 60 Stat. 1080, 16 USC 661 et seq).

The 1953 General Plan identified seven areas of land “for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon.”

General Plan: The McNary Dam flooded about 39,000 acres of river bottomlands for 61 miles upstream of the dam. As part of the responsibilities under the Coordination Act, the Secretary of the Army, with the Secretary of the Interior, and the Directors of the Fish and Game Departments for the States of Oregon and Washington, signed a General Plan in 1953 which set aside various wildlife lands as encouraged

under the Coordination Act, including the original McNary National Wildlife Refuge, as well as other lands that became State wildlife areas (US DOA et al. 1953).

The 1953 General Plan identified seven areas of land “for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon.” With the exception of the current Stateline and Juniper Canyon Units, all areas currently managed as part of the Refuge are referenced in this document. Specific language relative to wildlife management and public uses was included for each of the seven areas. With a few exceptions, the language is open-ended enough to be interpreted as recommended strategies to be pursued in perpetuity, but not mandated. The specifics are detailed below.

Two of the seven areas were termed the Burbank National Wildlife Refuge and the Hanford National Wildlife Refuge. These two sites, now named the McNary Headquarters, Strawberry Island, and Hanford Islands Units, formed the original McNary National Wildlife Refuge. The plan noted that both areas “have particular value in carrying out the National Migratory Bird Management Program.”

McNary Headquarters and Strawberry Island Units. Specific language from the General Plan includes the statements:

- The slough will provide area for waterfowl nesting, resting and feeding.
- Extensive stands of aquatic vegetation will develop in the shallow areas.
- Food and cover crops can be grown on adjacent tillable lands.
- Inland sections can be isolated, providing water surface control for fish production and enhancing waterfowl habitat.
- Fishing may be permitted consistent with sound waterfowl management practices and in accordance with state laws and regulations.

The other five areas described in the General Plan were identified by the Secretary of the Army to be “made available for development, conservation and management of wildlife resources.” These areas were particularly singled out for their “multiple use value relating to the conservation of fishlife, waterfowl and upland game birds” and were initially placed under the State of Washington’s management through a cooperative agreement. It is important to note the “multiple use” term was used for describing different fish and wildlife values and was not used in the now common parlance relating to recreation. Two of these five areas are now managed by the Service as part of McNary Refuge.

Wallula Unit. This unit, originally identified in the General Plan as Area Number 3–Walla Walla River Wildlife Area–was noted for having extensive shallow water areas well adapted for waterfowl habitat development. Specific statements from the General Plan are listed below.

- Some present river bottom agricultural lands will be infrequently flooded and are well suited for the production of cereal and cover crops. These will enhance the area for waterfowl production and stimulate production of upland game birds.
- Public shooting may be desirable on all or part of the area.
- A substantial fish population may be developed in the waters of the area, thus providing excellent angling opportunities. The area is also a migratory route for anadromous fish.
- Peculiar value as a wildlife demonstration and educational area.

Two Rivers, Peninsula, and Burbank Sloughs Units. These units were identified as Area Number 4–Columbia River Wildlife Area–in the General Plan. Specific language from the General Plan includes the following statements.

- Emergent aquatic vegetation may develop
- There are several excellent locations for creation of subimpounded or isolated water areas suitable for fish production
- Water areas will be utilized by waterfowl and the shore areas will be used by upland birds
- Production of food crops and establishment of other vegetative cover will further attract both waterfowl and upland game birds and stimulate an increase in their population.
- Public hunting for both will be highly desirable on all or part of this unit.
- Public hunting and fishing is permitted consistent with sound management practices.

Cooperative Agreement: After the General Plan was finalized, a cooperative agreement among the same parties was signed in July of 1955. The cooperative agreement transferred administrative control of 2,849 acres of land to the Service under the terms of the General Plan. Minor supplements and modifications were made to the cooperative agreement in August 1963 and May 1965. In 1969, the cooperative agreement was rewritten, replacing and superseding the previous version of the agreement (US DOA and US DOI, 1969a). An additional minor modification of the agreement was made in 1975. The cooperative agreement gave little further mandatory guidance for habitat or public use management.

McNary Master Plan: As mentioned above, the Stateline and Juniper Canyon Units were not included in the General Plan. These lands were withdrawn for dam project purposes, which are navigation, power development, irrigation, and conservation of wildlife, as detailed under the dam authorization section above.

The only other details available for these lands are found in the U.S. Army Corps of Engineer's (Corps) Reservoir Master Plan for dam project areas. The Reservoir Master Plan was first published in July 1952, revised in 1964, with a comprehensive revision published in 1982. Although this plan is not an original establishing or authorizing document and cannot be interpreted as being at the level of a "purpose" as defined under Refuge System policy, the 1982 plan did provide land use allocations which help provide some insight into the intent for the various project lands. The Stateline, Juniper Canyon, and Wallula Unit lands lying west of Highway 12 were designated as "Moderate Wildlife Management," defined as "lands that are valued for fish and wildlife management, but will not sustain intensive management practices . . . Moderate management lands should be continuously available for low-density recreation activities such as hiking, primitive camping, hunting, fishing, nature study, nature photography, bird watching, and other related activities." (McNary Master Plan 1982).

2000 Cooperative Agreement: In 2000, the Service assumed management, by cooperative agreement, of 14,739 acres (GIS estimate) of the Burbank Sloughs, Peninsula, Two Rivers, Wallula, Juniper Canyon, and Stateline Units (US DOA and US DOI, 2000). The Walla Walla River Unit—now known as the Wallula Unit; and Columbia River Unit—now known as the Two Rivers and Peninsula Units) had been originally set aside under the General Plan of 1953 and were managed by the State of Washington until 1987, at which time the State relinquished its management control over the areas. The Corps managed the areas over the next thirteen years. In 2000, the Service and the Corps signed a cooperative agreement which permitted the Service to assume management authority. Items of particular interest in the 2000 cooperative agreement include the following clauses:

- "The Department hereby makes available to the Service the land and water areas...hereinafter referred to as the Premises, for the purpose of development, conservation and management of recreation and wildlife resources thereon in accordance with the General Plan and under the authority of the Refuge Administration Act of 1966 as amended."
- "The Service shall manage, operate, and maintain the Premises included in the Cooperative Agreement in accordance with its Comprehensive Conservation Plan....which shall be prepared by the Service and submitted to the District Engineer for review and approval...The Service shall complete the CCP within 5 years of the effective date of this Cooperative Agreement."
- "The Service shall continue to manage the parcel of land known as the Cummins Property in the Wallula Habitat Management Unit to meet or exceed the habitat goals identified in 'Design Memorandum No. 6, Lower Snake River Fish and Wildlife Compensation Plan, Wildlife Compensation and Fishing Access Site Selection, Letter supplement No. 15, SITE Development Plan for the Wallula HMU,' Exhibit C. The remainder of the lands shall continue to be managed to help meet the wildlife losses identified in the 'Wildlife Impact Assessment, McNary Project, Oregon and Washington...Prepared for the Bonneville Power Administration' (BPA), dated October 1990."
- "The Service shall ensure that Madame Dorion Park and all facilities thereon shall continue to be operated and maintained as a day-use and overnight camping recreation area at the same level of service or better than currently provided. The Service shall be responsible for all costs associated with...the Madame Dorion Park...Reasonable fees may be charged for entrance to or use of facilities."

The cooperative agreement was intended to be temporary. Both agencies envisioned an eventual full transfer of these lands in fee title to the Service, as evident from the following clause in the agreement:

- “The Department and the Service intend to recommend to their higher headquarters that legislation be sought to authorize transfer of these Premises to the Service by fiscal Year 2002, or as soon thereafter as reasonably possible. The District, subject to the approval of the Departments of Fish and Wildlife in Oregon and Washington, will provide the Service all assistance allowed by law and policy regarding such transfer . . . This interim agreement will terminate when primary ownership is transferred to the Service.” [Note: An amendment was later signed extending the original agreement to January 13, 2007.]

Language has been drafted and added to the Water Resources and Development Act (WRDA) bill authorizing the transfer but the bill has not yet cleared Congress. Because the cooperative agreement was intended to be a temporary set of management guidelines until a CCP was developed and/or the land was transferred in fee to the Service, none of the clauses in the cooperative agreement have been interpreted to be equivalent to “purposes” for McNary Refuge.

Other parcels: Small pieces of McNary Refuge were also added by purchase under the Migratory Bird Treaty Act. The Refuge also manages a small tract under a 10 year lease with the Washington Department of Natural Resources. And, according to Realty files, approximately 300 acres in four tracts were acquired under authority of the Land and Water Conservation Fund.

Unit Sizes: As depicted on Map 2A, McNary Refuge includes 7 separate units (not including the Hanford Islands Unit, which is being evaluated under the Hanford Monument CCP). These units, their land status and their acreages are shown in Table 1-1.

Table 1-1. McNary Refuge Units – Status and Acreage*

Unit Name	Management Authority	Unit Acres
McNary Headquarters	Fee title/Lease	2,960.40
Burbank Sloughs	Fee title/Coop Agreement	430.63
Juniper Canyon/Stateline	Coop Agreement	1,692.38
Peninsula original (all land and water, includes Badger, Foundation, and Crescent islands)	Coop Agreement	7,838.80
Strawberry Island	Fee title	135.74
Two Rivers	Coop Agreement	344.01
Wallula	Coop Agreement	2,264.04
Total Acreage (excluding Hanford Islands Unit)		15,666.00

*Acreages calculated from GIS analysis of the mcn_bnd coverage, modified as necessary to divide units.

C. Umatilla National Wildlife Refuge Purposes

The Umatilla National Wildlife Refuge was created under Coordination Act obligations due to the construction of the John Day Dam at River Mile 215. The Dam impounded waters along a 76-mile stretch of the mainstem Columbia River, with about 48,000 acres flooded (Rasmussen 1989). The General Plan, signed in 1968, designated various lands and waters to be set aside for the

“conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon” including most of the lands located in the present day boundaries of the Umatilla Refuge. Like McNary Refuge, the Umatilla Refuge is administered by the Service and much of the underlying land and water are under ownership of the Corps.

Initial Consultation: Consultation with the Secretary of the Interior as part of the process for water resources development for the John Day Lock and Dam Project was completed with a report by the Service titled *A Detailed Report on Fish and Wildlife Resources Affected by the John Day Lock and Dam Project* (US FWS 1961). Information in this report as well as correspondence between the Service and the Department of Army focused on Refuge creation for proposed management areas as compensation for waterfowl losses. Additional correspondence continued to focus on waterfowl resources for the proposed management area.

General Plan: A General Plan for the project (US DOA et al. 1968) was written in accordance with the Coordination Act. The General Plan states that “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service for administration and management.”

Rivers and Harbors Act of 1965 (Public Law 89-298): Public Law 89-298 authorized the Secretary of Army to acquire additional lands to be part of the management area “for waterfowl management.” These lands are referred to as ‘special law lands’ (Exhibit A described as Exhibit C) and are the original lands held in fee by the Service.

1969 Cooperative Agreement: This agreement transferred administrative control of the nonfee lands to the Service for management “for the purpose of development, conservation, and management of wildlife resources thereon in accordance with said General Plan” (US DOA and US DOI, 1969b).

Specific language relative to wildlife management and public uses was included in the agreement. The language is open-ended enough to be interpreted as recommended, but not mandated, strategies to be pursued in perpetuity. The specifics are detailed below.

- The Bureau...may enter into special use permits with local ranchers to graze and pasture land for the purpose of maintaining optimum food and habitat conditions for wildlife.
- The Bureau may also plant and harvest crops...to provide: (a) food for wildlife; and (b) necessary compensation to farmers under any sharecrop agreement...the lands will not be used by the Bureau for the production of crops or any purpose solely to produce revenue to defray costs of management of the wildlife area.
- Lands within the wildlife area which are not needed for the production of wildlife food and the maintenance of wildlife habitat...will be leased by the District Engineer.
- The Bureau shall administer and maintain the area included in this Agreement in accordance with its Master Plan for wildlife development...there shall be included within this plan those areas that are designated for public hunting; for wildlife sanctuaries, and for the production of food for wildlife or other purposes.

1995 Amendment to the 1969 Cooperative Agreement: The cooperative agreement was modified to provide Service authority to manage portions of Blalock and Sand Dune Islands, which had formerly been under Corps management. The agreement stated that these lands were “originally excepted from management by the Service because they were classified for recreation use.” The amendment stated that “All remaining terms and conditions of the Cooperative Agreement remain unchanged.”

Additional Land Acquisitions: Additional land tracts were added to the Refuge as shown in Table 1-2.

Table 1-2. Umatilla Refuge Land Acquisitions Subsequent to Original Refuge Establishment.

Tract	Acres	Acquisition Authority	Purpose
10M	670	Fish and Wildlife Act of 1956	“development, management, advancement, conservation and protection of fish and wildlife resources”
1121, 1122	136.45	Migratory Bird Conservation Act	“for migratory bird Refuges, both for inviolate sanctuaries and for other management purposes”
2a	27.6	Fish and Wildlife Act of 1956 and Emergency Wetland Resources Act	See above. Also, authorizes the purchase of wetlands or interests in wetlands, which are not acquired under the authority of the Migratory Bird Conservation Act, consistent with the wetlands priority conservation plan using LWCF monies.
3015	27.1	Fish and Wildlife Act of 1956	See above

Umatilla Refuge: Map 3 shows the units of Umatilla Refuge. Acreages for each unit are shown in Table 1-3. The Columbia River Navigation Channel acres are shown for informational purposes only, therefore, the Refuge does not have any management authority over these waters, and they are not considered further in the analysis.

Table 1-3. Umatilla Refuge Units Sizes.

Unit Name	Management Authority	Unit Acres
Boardman	Partially fee title, coop agreement	2,174.49
Columbia River Unit (includes some islands)	Cooperative agreement	5,954.09
McCormack (includes some islands)	Partially fee title; remainder coop agreement	6,886.79
Paterson	Partially fee title, coop agreement	4,665.27
Ridge	Coop agreement	985.21
Whitcomb	Partially fee title, coop agreement	4,463.26
Total Acreage		25,129.11

*Acreages calculated from GIS analysis of the umt_bnd coverage.

1.7 Relationship to Previous and Future Refuge Plans

Planning has been a part of Refuge operations since their beginning. Although not all were done in a comprehensive fashion, or with public participation considered adequate today, a considerable number of plans were completed over the years to guide managers.

A. Previous plans

Following the inception of McNary Refuge in 1955, a “Master Plan” was published in 1969. The document included the then 3,215-acre McNary Refuge plus the 4,000-acre Ringold Division being managed at that time for the Atomic Energy Commission. The Master Plan summarized project history, Refuge purposes, and provided developmental plans for the Refuge which included estimated cost and benefits. Management responsibilities for the Ringold Division were later transferred to the Washington State Department of Fish and Wildlife (WDFW).

The next large planning effort was the “Station Refuge Management Plan, Parts I and II” completed for both Umatilla and McNary Refuges in 1987. Part I was a detailed and valuable plan covering location, history, environment, resources, administration, land status, agreements and permits, and management direction. Part II set detailed wildlife and public use objectives and strategies.

In addition, several smaller “step-down” plans (plans addressing one program or resource) have been developed for both Refuges including:

- Fire Management Plans- 2001
- Station Safety Plans- 2005
- Hunting Plans-1986
- Sport Fishing Plans-1987
- Fire Dispatch Plans-2006 (Updated annually)
- Fisheries Management Plan-1988
- Cropland Management Plan – Umatilla-1996
- Cropland Management Plan – McNary-1999
- Umatilla Public Use Plan-1996
- Wildlife Inventory Plan Umatilla Refuge-1984
- Highly Pathogenic Avian Influenza Disease Contingency Plan-2006
- West Nile

B. Future planning

The CCP will be revised every 15 years or earlier if monitoring and evaluation determine that changes are needed to achieve the Refuge purposes, vision, goals, or objectives. The CCP provides guidance in the form of goals, objectives, and strategies for Refuge program areas but may lack some of the specifics needed for implementation. Step-down management plans will therefore be developed for individual program areas, as needed, following completion of the CCP. Step-down plans require appropriate NEPA compliance. Several step-down plans (Habitat Management Plan, Public Use Management Plan, Inventory and Monitoring Plan, and Integrated Pest Management Plan) are appropriate to develop and/or update following the CCP completion; all of these should be founded on the management goals, objectives and strategies outlined in the CCP, and should be scheduled to be completed by 2009. The Integrated Pest Management plan should address coordination with all other Federal, state, tribal, and local agencies as well as neighboring private landowners in order to effectively combat the spread of invasive species.

1.8 Relationship to Other Ecosystem Planning Efforts

When developing a CCP, the Service considers the goals and objectives of existing national, regional and ecosystem plans, state fish and wildlife conservation plans, and other landscape-scale plans developed for the same watershed or ecosystem in which the refuge is located. To the extent possible, the CCP is expected to be consistent with the existing plans and assist in meeting their conservation goals and objectives (Part 602 FW 3.3). This section summarizes some of the key plans reviewed by members of the core team while developing the CCP.

A. Columbia River Region

Columbia River Fisheries Management Plans: The art and science of Columbia River fisheries management continues to evolve. There is no formally recognized "umbrella" plan that governs fisheries management, and litigation continues over key aspects of fisheries management. Key documents that were reviewed include the document known as the "All H Paper" (Federal Caucus 2000) and the 2004 National Marine Fisheries Service Biological Opinion.

Wintering Waterfowl Redistribution Plan (Lloyd et al. 1983): This plan, a partnership effort between WDFW, Oregon Department of Wildlife (ODFW), and the Service, modified hunting areas and regulations in the Columbia Plateau area with the purpose of "redistributing" waterfowl (mainly from the Umatilla/Boardman area to the Yakima subbasin area). Because basin-wide numbers of wintering waterfowl have dropped sharply since the plan was first implemented, possibly due to area-wide cropping changes, climate change, and habitat improvements in California, the Columbia Basin Wintering Waterfowl Plan is currently in the process of being updated with the same partner organizations that originally authored the plan.

Subbasin Plans: The Northwest Power and Conservation Council (Council) has overseen the development of plans for each of the 60 interior tributary subbasins of the Columbia River. Subbasin plans are expected to assess the biological potential of the subbasin and to describe opportunities for restoration. Plans also describe the amount of habitat change that has occurred within the subbasin and limiting factors (analogous to stresses/sources in this plan). The plans will be the basis for review of proposals for Bonneville Power Administration (BPA) each year by the fish and wildlife agencies and tribes, the Independent Scientific Review Panel, and the Council. All of Umatilla Refuge and much of McNary Refuge is situated within the Lower Mid-Columbia Mainstem Subbasin (Yakama Nation et al. 2004). Focal habitats included in the subbasin plan also occurring on McNary and Umatilla Refuges include interior riparian wetlands and shrub-steppe/interior grasslands. These habitats include a set of focal species selected for the subbasin plan. Part of the McNary Refuge falls within the Walla Walla Subbasin (Walla Walla Watershed Planning Unit et al. 2004). Focal habitats for the plan include interior grasslands, shrub-steppe, and interior riparian-wetlands. Quantitative objectives were written for each focal habitat, based on the needs of selected focal species. The Refuges will have the opportunity every five years to submit project proposals for BPA funding that are consistent with the subbasin plan.

Caspian Tern Management in the Columbia River Estuary (U.S. FWS 2005): This plan focuses on the tern colony located in the Columbia River Estuary and recommends management of alternate sites in

Western Oregon and Washington to redistribute terns away from the Columbia River estuary, so as to reduce consumption of juvenile listed salmonids on their way to the ocean. The mid-Columbia River area is not specifically covered under the plan.

The Nature Conservancy Columbia Plateau Ecoregional Assessment (The Nature Conservancy's Columbia Plateau Ecoregional Planning Team 1999): This assessment identified a portfolio of sites that, collectively and with appropriate conservation action, could maintain all viable native species and communities within the analysis area. In addition, it provides an assessment of threats to the sites and develops multi-site strategies to conserve the biodiversity of the ecoregion. The document and assessment are in the process of being updated.

Interior Columbia Basin Ecosystem Management Plan: This project was an ambitious effort covering the majority of the Inland Northwest and is one of the best sources of broad scale ecosystem analysis for the region. The scientific assessment which underlies the plan identified numerous threats to the ecological integrity of the basin (Quigley et al. 1997). Within the vicinity of the Mid-Columbia Refuges, report authors listed the primary opportunities to address the risks to ecological integrity as: (1) maintenance or restoration of riparian condition; (2) restoration of productive aquatic areas; and (3) conservation of fish strongholds and unique aquatic areas.

B. Migratory Bird Plans

Birds of Conservation Concern (US FWS 2002): Based on the efforts and assessment scores of three major bird conservation efforts (Partners In Flight, the U.S. Shorebird Conservation Plan, and the North American Waterbird Conservation Plan), this report identifies, by Service region and by Bird Conservation Region (BCR), the bird species most in need of conservation attention. The Mid-Columbia Refuges are located within BCR Region 9, for which 29 species are listed.

Partners in Flight (PIF), Columbia Plateau Plan: The primary goal of the *Conservation Strategy for Landbirds in the Columbia Plateau of Eastern Oregon and Washington* (Altman and Holmes 2000) is to ensure long-term maintenance of healthy populations of native landbirds. Specific management activities and strategies are recommended.

North American Waterfowl Management Plan: The North American Waterfowl Management Plan, signed by the United States and Canada in 1986 and by Mexico in 1994, provides a strategy to protect North America's remaining wetlands and to conserve waterfowl populations through habitat protection, restoration, and enhancement. The plan contains population goals for several species and groups of species by season or life stage. The plan was updated in 2004 with an emphasis on strengthening the biological foundation, using a landscape approach and expanding partnerships. Additional strategic guidance was provided in a 2004 update, with specific population objectives by species. Implementation of this plan is accomplished at the regional level by partnership, within 11 Joint Venture areas. The Mid-Columbia Refuges are located within the area of the Intermountain West Joint Venture. The document 2004 Strategic Guidance (North American Waterfowl Management Plan, 2004), a 15 year plan, does contain species-specific population objectives as a stepdown from the North American Waterfowl Plan and evaluations of whether the continental population is currently short or over the target. There are also flyway goals for production by species. The Columbia Basin is recognized as one of 67 areas of continental significance to waterfowl, but the

plan did not target population objectives for wintering or migratory waterfowl by area.

Pacific Flyway Plans: Flyway management plans are the products of Flyway Councils, developed to help state and Federal agencies cooperatively manage migratory game birds. These plans typically focus on populations. The Pacific Flyway Council has prepared 26 management plans to date in either draft or final form available at <http://pacificflyway.gov/Abstracts.asp#rmts>. The following flyway management plans pertain to the McNary and Umatilla Refuges and the CCP:

- **Canada Geese:** Lesser and Taverner's, Pacific Western, Rocky Mountain, Western, Depredation Control
- **Greater White-fronted Geese:** Pacific, Tule
- **Snow Geese:** Wrangel Island Lesser, Western Canadian Arctic Lesser
- **Ross' Geese**
- **Swans:** Pacific Trumpeter, Rocky Mountain Trumpeter, Western Tundra, Eastern Tundra
- **Sandhill Cranes:** Pacific Coast, Central Valley
- **Mourning Dove:** National Mourning Dove Plan

Intermountain West Regional Shorebird Conservation Plan (Oring, Neel, and Oring, 2006):

According to this plan, the Intermountain West is North America's most important inland area for maintaining the continent's shorebird population. The plan identifies major shorebird issues in the region, and outlines Regional goals and objectives in the areas of habitat management, monitoring and assessment, research, outreach, and planning. Key issues identified in the plan include: water quality and quantity; maintenance and enhancement of populations of long-billed curlew, mountain plover and upland sandpiper; depredation of eggs and young; regional coordination, agriculture-shorebird interface; and wintering sites. Concern ranking scores are provided for each of the 34 shorebird species breeding or moving through the region. Species ranked as "critically important" include snowy plover, black-necked stilt, American avocet, long-billed curlew, long-billed dowitcher, and Wilson's phalarope.

Draft Intermountain West Region Waterbird Conservation Plan (Ivey and Herziger 2003):

This plan identifies the 41 waterbird species inhabiting the Intermountain West. The plan provides detailed background information for each species by BCR region, including population estimates, identification of important areas, and an itemization of threats. For each BCR region, species were categorized as high, moderate, or low concern or as "not currently at risk." Specific objectives are provided, usually framed in terms of overall population goals. Some habitat objectives are provided as well. The plan provides a useful section on research and education/outreach needs as well. A detailed species account is included for each of the 41 species.

C. State plans

State of Washington Natural Heritage Plan (Washington Department of Natural Resources 2003):

This plan describes Washington State programs, especially Natural Areas Program, for conservation of the State's biological diversity. Species and ecosystems types (habitat associations) are ranked in terms of conservation priority. Of approximately 800 plant and wetland communities located within the State, 250 are considered priorities for conservation. Lists of rare animals, rare plants, and priority communities are located at www.dnr.wa.gov/nhp/index.html.

State of Washington Comprehensive Wildlife Conservation Strategy (WDFW 2005) and State of Oregon Comprehensive Wildlife Conservation Strategy (ODFW 2005): These plans were written by each of the States to create a management framework for the protection of State species and habitats in greatest need of conservation. The plans outline species and habitats of concern (called “species of greatest conservation need” in the Washington plan and “Strategy species” in the Oregon plan). Specific conservation actions are identified for these species.

1.9 Issues, Concerns, and Opportunities

A. Issues to be Addressed in the CCP

The following issues are within the scope of the CCP/EA and are considered by the Service to be the major issues to address in the planning process.

Habitat and Species Management: What habitat conditions should be targeted and restored on the Refuges’ shrub-steppe, riparian, wetland, and cliff/talus habitats, many of which are highly degraded by invasive plants and animals? How can the Refuges best prevent wildfire, particularly those that arise regularly from trains that cross many miles of each Refuge numerous times each day? What are the best methods for maintaining productivity and diversity in wetlands, when natural hydrologic fluctuations no longer exist? What other actions should the Refuges take to sustain and restore priority species and habitats over the next 15 years?

Waterfowl Management: Where shall specific waterfowl management tools and techniques, including provision of cropping areas and sanctuary areas, be utilized at the Refuges? What role shall the Refuges play in providing wintering waterfowl habitat and hunting areas within the Mid-Columbia basin?

Shorebirds: How shall the Refuges best manage a thriving shorebird migration area?

Salmonids and Other Declining Species: What actions should the Refuge undertake to protect and enhance habitat for the migratory and rearing needs of seven stocks of listed salmon and steelhead? Should backwater areas be restored? What actions can be taken to protect and restore habitat values for other declining species?

Islands: To what extent should islands located in the Columbia River be maintained free from human disturbance? Are diverse suites of waterbird colonies that currently nest on the islands significant sources of mortality to listed salmonids? If so, should populations or habitats be managed to prevent their increase?

Wildlife Dependent Uses: Which “Big Six” programs should be offered at each Refuge and what kinds of improvements to these programs can be provided to enhance public enjoyment and ensure a quality experiences for Refuge visitors?

Camping and other Nonwildlife Dependent Uses: Shall the Refuges continue to offer additional various non-wildlife dependent recreational opportunities, including camping, dog trials, swimming and beach use, and horseback riding? What facilities and program support should be offered?

Cultural Resources: What steps should be taken to better protect and interpret cultural resources?

Effective Law Enforcement, Outreach, and Prevention of Illegal Uses: Between 2003 and 2006, the Complex lost 75% of its law enforcement capacity. How can the Refuges better prevent the use of Refuge lands for a variety of illegal uses, including dumping, ATVs, target shooting, and vandalism?

B. Issues outside the Scope of the CCP/EA

Hanford Islands: Many comments were received on this issue, with public opinion regarding summer beach use on the islands varying greatly. This issue and management of the Hanford Islands Unit will be addressed as part of the Hanford Reach National Monument CCP and not the McNary and Umatilla Refuges' CCP.

Columbia River Hydropower Operations: Operations of the Columbia River hydropower system are not within the scope of the CCP/EA. Minor changes in pool level may be recommended under some alternatives for limited periods of time, but analysis or proposals dealing with major modifications of operations at McNary or John Day Dam are outside the scope of this CCP/EA. Ongoing litigation over management of anadromous fish may result in major changes to hydropower operations, especially in the McNary Pool. If this occurs, many of the CCP actions included under Preferred Alternative 2 may require rework.

1.10 Refuge Vision

Encompassing the bend in the middle Columbia River where the waters of the Snake, Walla Walla, and Umatilla Rivers join the Columbia, the McNary and Umatilla National Wildlife Refuges link a network of diverse habitats stretching nearly 90 miles from Richland, Washington, to Boardman, Oregon. The two Refuges' 42,782 acres of shrub-steppe, basalt cliff, riparian, river islands and aquatic habitats will be managed to fulfill the needs of native fish, wildlife, and plants. By actively restoring habitat, controlling exotic species, and enhancing existing habitats and resources, the Refuges will serve as anchors for biodiversity and models for habitat restoration and land management.

Just as the Columbia River is an important corridor for the transportation of people and goods, it is also an important natural corridor for migratory birds and fish, including endangered salmon and steelhead stocks. Food, rest and sanctuary will be provided for large concentrations of migratory and wintering waterfowl and shorebirds using the Refuges each year. Extensive corridors of riparian and floodplain habitat will be restored and enhanced for nesting and migrating neo-tropical songbirds. Management and enhancement of the Refuges' waters, shorelines, channels and bays will contribute to the needs and recovery of endangered salmon and steelhead passing through and rearing in Refuge waters. By reaching out to neighbors and building strategic partnerships, the Refuges will seek new and innovative ways to conserve and protect fish and wildlife resources along the entire stretch of river.

Wildlife abundance and well planned and high quality interpretive facilities will attract thousands of visitors to the Refuges. We will work with partners and volunteers to provide a wide range of high quality recreational and environmental education programs, build Refuge support, and attract visitors. Encouraging an understanding of and appreciation for the Refuges and the mid-Columbia River environment will be a focus of the McNary and Umatilla Refuges for generations to come.

1.11 Refuge Goals

1. Manage high quality food and sanctuary to support large concentrations of migratory waterfowl.
2. Provide secure and productive foraging and nesting habitats for a diversity of shorebirds.
3. Contribute to the recovery of endangered, threatened, and sensitive species by protecting, maintaining, or increasing suitable habitats.
4. Provide a diversity of high-quality wetland habitats for the benefit of migratory birds and other wetland plants and animals.
5. Provide high quality riparian habitats for the benefit of nesting and migrating birds, fish, riparian plants, and other riparian wildlife.
6. Protect the integrity of the biological resources of the river islands.
7. Conserve and restore the plants, animals and shrub-steppe community representative of historic Columbia Basin habitats.
8. Protect and maintain the ecological integrity of talus, outcropping, and cliff habitats for natural levels of species diversity.
9. Visitors and local residents enjoy, value, learn about, and support the Refuges.
10. Hunters appreciate and experience a variety of quality hunting opportunities.
11. Anglers experience abundant opportunities to catch fish while appreciating the Refuges.
12. Students and teachers understand and value the Refuge System, and the ecology and management of McNary and Umatilla National Wildlife Refuges.
13. Manage cultural resources for their educational, scientific, and cultural benefits for the benefit of present and future generations of Refuge users and communities.

1.12 Planning Process

A core planning team, consisting of a project leader, deputy project leader, biologist, public use planner, the Refuge Managers for both Refuges, and a regional planner, began developing the CCP in 2003. An extended team assisted in development, particularly in providing comments at key milestones. The extended team consisted of various professionals from other agencies and within Service. A list of core and extended team members, and their experience is located in Appendix J.

Early in the planning process, the team cooperatively identified the top eight priority species, groups, and communities for these Refuges. These priorities were also called “conservation targets,” and most of the biological emphasis of the CCP is focused on maintaining and restoring these targets. The analytical framework for analyzing the targets and for devising appropriate conservation objectives and strategies for each target was loosely based on The Nature Conservancy’s Conservation Assessment Methodology (formerly known as Five-S) process (TNC 2000).

Public use planning centered on developing goals, objectives and strategies around the Big Six uses. Other nonwildlife dependent uses that currently occur were also addressed.

Public scoping began in spring and summer of 2004. Scoping meetings were held in Burbank and Boardman in June 2004. Public commentary was also solicited through distribution of a planning update to the Refuges’ mailing list. A complete summary of public involvement is in Appendix A.

An internal draft was distributed to Service Region 1 reviewers and members of the extended team, including States and Tribes, in May 2006. All changes requested by reviewers and extended team members and actual changes made were documented.

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Chapter 2. Alternatives, Goals, Objectives, and Strategies

2.1 Considerations in Alternative Design

In drafting the alternatives for this long term conservation plan, the Service reviewed and considered a variety of resource, social, economic, and organizational aspects important for managing the Refuge. These background conditions are described more fully in Chapters 3, 4, 5, and 6. As is appropriate for a National Wildlife Refuge, resource considerations were fundamental in designing alternatives. House Report 105-106 accompanying the National Wildlife Refuge System Improvement Act of 1997 states "...the fundamental mission of our System is wildlife conservation: wildlife and wildlife conservation must come first."

The team reviewed scientific reports and studies to better understand ecosystem trends and the latest scientific recommendations for species and habitats.

The Service met with staff from local, State, and Federal agencies and elected officials to ascertain priorities and problems as perceived by others. Refuge staff met with Refuge users, nonprofit groups, and community organizations to ensure that their comments and ideas were considered during CCP development. Details of public involvement can be found in Appendix A.

2.2 Alternatives Considered but Not Developed

Federal agencies have been at work since the fall of 2005 to revise a 2004 Federal Columbia River Power System biological opinion that U.S. District Court Judge James Redden declared invalid. Part of the new proposed action under that effort may involve "summer spill" to promote fish passage. In 2005, a court injunction directed the Corps to spill water at several Columbia and Snake River dams "in excess of that required for station service" June 20-August 31 at several Snake River dams and "all flow above 50,000 cubic feet per second" from July 1– August 31 at the McNary Dam. In practice, this meant that the reservoir level was dropped to near the minimum operating level of 335 msl (mean sea level) at McNary Dam, dramatically lowering flooded wetland acres on McNary Refuge.

The final biological opinion may contain a provision to make summer spill an annual event. This could dramatically change summer habitats and recreational opportunities on McNary Refuge. However, an alternative taking summer spill into account was not developed, because it is unknown at this time if such a strategy will become part of normal dam and fish management along the Columbia River.

The planning team considered the appropriateness of providing opportunities for various nonwildlife dependent recreational activities suggested during scoping including field dog trials, geocaching, hang gliding, paragliding, rock climbing, motorized and nonmotorized off-road use, waterskiing, camping, beach use, and personal watercraft. Based on policy guidance in the Service's Appropriate Refuge Uses Policy 603 FW 1 (2006), these uses were determined not appropriate, and are documented on FWS Form 3-2319 in Appendix K.

2.3 Alternative Descriptions

A summary table is presented on the following pages. This table summarizes the key differences between the alternatives. Following the summary table, detailed descriptions of the goals, objectives, and strategies for each alternative are presented. Maps 3, 4, 5, and 6, which follow the alternatives descriptions, display the four alternatives at McNary Refuge. Maps 7, 8, 9, and 10 display the four alternatives at Umatilla Refuge.

A. Features Common to all Alternatives

All alternatives contain some common features. These are presented below to reduce the length and redundancy of the individual alternative descriptions.

Implementation Subject to Funding Availability:

Under each alternative, actions will be implemented over a period of 15 years as funding becomes available. Project priorities are in Appendix D.

Actions will be implemented over a period of 15 years as funding becomes available. Implementation priorities are designated in Appendix D.

Refuge Fire Management: Fire Management Plans, and accompanying NEPA documents and Endangered Species Act consultations, were finalized for both Refuges in 2001. Fire management actions will continue to be guided by the direction set forth in the plans.

Tribal Coordination: Regular communication with Native American Tribes who have an interest in the Refuge will be common to all alternatives. The Confederated Tribes of the Umatilla Indian Reservation (consisting of the Cayuse, Umatilla, and Walla Tribes) are the major local Tribes the Refuges will coordinate and consult with on a regular basis regarding issues of shared interest. However, other Tribes with special interests, especially relating to the traditionally shared resource corridors along the Columbia River and near the confluence of the Columbia and Snake Rivers, will also be included in consultations affecting those resources. These traditionally local Tribes include the Yakama, Nez Perce, Colville (Palouse), and the Wanapum. Currently, the Service seeks assistance from Tribes in both Native American Graves Protection and Repatriation Act (NAGPRA) and National Historic Preservation Act (NHPA) related issues.

State Coordination: Similarly, under all alternatives, the Service will continue to maintain regular discussions with the Washington and Oregon Departments of Fish and Wildlife. Key topics for discussion will be the Columbia Basin Winter Waterfowl Management Plan, colonial nesting birds, wildlife monitoring, big game management, hunting and fishing seasons and regulations, and endangered species management.

Volunteer Opportunities and Partnerships: Volunteer opportunities and partnerships occur in all alternatives. These are recognized as key components of the successful management of public lands and vital to implementation of Refuge programs, plans, and projects, especially in times of declining budgets.

Refuge Revenue Sharing Payment: Annual payments to Counties under the Refuge Revenue Sharing Program will continue according to the established formula and subject to payments authorized by Congress. Total payments made to local Counties in 2005 are listed in Appendix D.

Maintenance and Updating of Existing Facilities: Periodic maintenance and updating of Refuge buildings and facilities will be necessary regardless of the alternative selected. Periodic updating of facilities is necessary for safety and accessibility and to support staff and management needs and is incorporated in the Service Asset Management System.

Management of Minor Recreational Uses: Minor recreational activities are occasionally pursued on the Refuge. Such recreational activities not specifically addressed in this document may be allowed on Refuge lands if the Refuge Manager first finds they do not conflict with wildlife or habitat objectives.

Participation in Planning and Review of Regional Development Activities: The Service will actively participate in planning and studies for ongoing and future industrial and urban development, contamination, and other potential concerns that may adversely affect Refuge and wildlife resources, and habitats. The Service will cultivate working relationships with pertinent county, State, and Federal agencies to stay abreast of current and potential developments; and will utilize outreach and education as needed to raise awareness of Refuge resources and dependence on the local environment.

Maintain Existing Waterfowl Sanctuary in Support of Mid-Columbia Basin Planning Efforts: Waterfowl sanctuary is an area that is closed to hunting and significant disturbance from other public uses to provide important resting and/or feeding areas for waterfowl during the hunting season. Security, indicated partly by the acres of sanctuary area provided during hunting season, was listed as a key ecological attribute supporting waterfowl. There is public support for maintaining “large concentrations” of waterfowl, as they have been important for hunting and viewing users. However, Refuge sanctuary must be considered within the wider scope of Pacific Flyway and/or Region-wide area closures and numbers of birds wintering in the Lower Columbia Basin. Defining the role and extent of such sanctuary areas is a major component of the Wintering Waterfowl Redistribution Plan for the Columbia Basin of Oregon and Washington (Lloyd 1983). It is presently being re-written and updated through a partnership that includes WADFW, ODFW, Yakama Nation, the Corps, and the Service. Therefore, except for very minor changes at McCormack Unit proposed in this CCP, McNary and Umatilla Refuges will continue to manage waterfowl sanctuary in accordance with open and closed areas called for in the 1983 Wintering Waterfowl Plan and existing Refuge closed/open zones, and will make adjustments as needed, in consultation with the partnership agencies.

Vegetation Inventory and Condition Ranking. By the summer of 2007, the Service will complete a vegetation inventory begun during the summer of 2005. Ground-truthing from randomly-selected sites will be used to complete an inventory map to the Alliance level for all vegetation polygons and to rank habitat conditions according to criteria outlined in Appendix F Condition Classes for Shrub Steppe and Riparian Habitats. Further refinement of the condition classes may occur.

Section 106 Compliance. All ground-disturbing projects will undergo a review under Section 106 of the National Historic Preservation Act.

B. Alternative Descriptions Summary

Alternative 1: Emphasize Migratory Waterfowl Management and Consumptive Public Uses

Under Alternative 1, the Refuges would focus on providing migratory waterfowl with high quality, easily accessible food, by expanding both crop production and wetland food plants. Secure and adequately sized resting areas will be provided to ensure the health of overwintering and migrating waterfowl. Hunting and fishing would be emphasized, with improvement to facilities and increased opportunities through habitat improvements. A Washington State pheasant augmentation/release program would be phased out and camping would be discontinued at Madame Dorion Park. Other public uses would continue at approximately their current levels of service.

Alternative 2: Emphasize Migratory Birds, Special Status Species, and Wildlife-Dependent Public Uses (Preferred Alternative)

Under Alternative 2, the Refuges would manage its resources for all migratory birds and to enhance populations of targeted special status species and their habitats. Habitats for migratory waterfowl, shorebirds, threatened and endangered species, and other native wildlife would be improved. The Refuges would emphasize control and reduction of weeds and improvement of riparian, shrub-steppe, island, and cliff habitats. Wildlife-dependent public use would be emphasized with opportunities for hunting, fishing, wildlife observation, photography, interpretation and environmental education maintained or improved from present conditions. A Washington State pheasant augmentation/release program would be phased out in two years and camping would be discontinued at Madame Dorion Park. Disturbance to island resources would be reduced through closure of all beach use and implementation of a no-wake zone within 100 feet of Refuge islands.

Alternative 3: Emphasize Native Species Diversity and Non-Consumptive Public Uses

Under Alternative 3 the Refuges would focus on allowing management that mimics natural processes to maintain or enhance native fish, wildlife and plant diversity. Improving existing island, riverine and shrub-steppe habitat and restoring degraded habitat to more native conditions would be emphasized. Fewer acres would be managed in croplands. The Refuges would contribute to recovery of threatened, endangered or rare species such as salmon, steelhead and long-billed curlews. Hunting and fishing opportunities would be available at most sites, however, pheasant and fish stocking would be eliminated and fewer acres would be managed to provide waterfowl food. Opportunities for wildlife-dependent nonconsumptive uses would be improved and expanded. Camping would be discontinued at Madame Dorion Park. All island areas would be closed to public access, including beach use, and a no-wake zone within 100 feet of Refuge islands would be implemented during summer.

Alternative 4: Continue Current Management

Alternative 4 is the no change alternative required by the National Environmental Policy Act (NEPA). The Refuges would continue programs at current levels as described in Chapters 3, 4, 5, and 6. Specifically, the Refuges would maintain, and where feasible, restore habitat for waterfowl, migratory birds, and State and federally-listed species. Existing public uses, including hunting, fishing, wildlife observation and photography, interpretation, environmental education, horseback riding, camping, boating, and limited beach use would continue.

Table 2-1. Summary of CCP Actions, By Alternative

Key Themes/Issues	Alternative 1 Emphasize Migratory Waterfowl and Consumptive Public Uses	Alternative 2 (Preferred Alternative) Emphasize Migratory Birds, Special Status Species, and Wildlife-Dependent Public Uses	Alternative 3 Emphasize Native Biodiversity and Non-Consumptive Public Uses	Alternative 4 Continue Current Management (No-action Alternative)
Waterfowl				
Croplands:				
Total Acreage Share to Refuges	2,400 acres 25%	2,100 acres 25%	1,850 acres 25%	2,100 acres 25%
Grain Availability over Season and During Emergency Weather Conditions	390 acres scheduled for mid winter (post-hunting season) knockdown. 70 acres for late season knockdown. Emergency knockdown under severe weather conditions.	30 acres flooded by 9/15	Most knockdown late Jan-mid Feb (no scheduled late season knockdown and no provisions for emergency knockdown)	
Moist Soil Management:				
Total Acreage Floodup for Early Migrants	406 acres 30 acres flooded by 9/15	366 acres 30 acres flooded by 9/15	Decrease acreage All flooded 10/25 or later	356 acres All flooded 10/25 or later
Shorebirds				
Foraging Area:				
Mudflats on Columbia River Alternate Foraging Sites	Same as Alt. 3 and 4	20 acre increase for migration. Alternate sites at moist soil units.	No change to existing mudflat acres. No alternate sites provided.	
Curlew Upland Habitats	Existing suitable habitat maintained	Existing habitat maintained and suitable nesting and foraging habitat increased by 25% on inactive former croplands.	Existing suitable habitat maintained	
Threatened, Endangered, and Sensitive Species				
Salmon Rearing Habitats	None	Protect and where feasible enhance backwaters and side-channel habitats.	Some backwater areas used for salmon rearing.	
Inventory for Rare Species not Monitored by Other Agencies	No inventory conducted	Undertake inventory. Specific habitat or population management strategies determined in step down plan.	Minimal inventory conducted	
Wetland and Deepwater Habitats				
Shallow Marsh Management:				
Open Water Areas Created	96 acres/year < 20%	67 acres/year < 20%	0 acres Reduced	33 acres/year Variable (30-50%)
Emergent Invasives Cover				
Elimination of Carp	Eliminated at 4 wetlands	Eliminated at 2 wetlands	No effort to reduce carp.	
Riparian Habitats				
Nesting Habitats Improved	0 acres/year	62 acres/year	5 acres/year improved	5 acres/year improved
Cottonwood Developed	0 acres/year	5 acres/year	0 acres/year	0 acres/year

		Alternative 1	Alternative 2	Alternative 3	Alternative 4
<i>Islands and Cliffs</i>					
Waterbird Populations and Coordination		Habitat maintained to support a diversity of island-nesting birds and colonies. Continued coordination with partners on research, monitoring, and management of the Refuge's colonies of salmonid-smolt eating birds.			
Reduce Disturbance to Island Wildlife to Protect Nesting and Breeding Areas	Same as Alt. 4	Existing island closures to be enforced. No beach use. No-wake zone within 100-feet of islands on Refuge waters.		Islands mostly closed in summer but some trespass issues. Crescent Island is open for waterfowl hunt.	
Protection of Rocky Habitats	No mining, collection or extractive activities permitted on any natural Refuge rocky features. Baseline inventory of plant and wildlife resources (Alts 1, 2, and 3 only). Protection for raptor nesting sites and limit public uses to Big Six uses.				
Shrub-Steppe Habitats					
Existing Habitats Improved	64 acres/year	192 acres/year	288 acres/year	64 acres/year	
Restoration of Roads, Mining Sites, and Inactive Croplands	100 acres	350 acres	600 acres	0 acres	
Protection from Fire and Ground Disturbance	No emphasis	Active measures taken with partners, public, and contractors to reduce fire damage and soil disturbances.		Frequent fires burn about 1,000 acres annually.	
Wildlife Observation, Photography, Interpretation, and Trails					
McNary Opportunities	No changes to current trails, viewing, and interpretive opportunities.	Trail/interpretive improvements at Headquarters and Wallula Units.		Existing trails, viewing and interpretive signs at McNary Headquarters Unit maintained.	
Umatilla Hwy 14 Interpretive Overlooks	No change	Improved and expanded		Interpretive signs at several overlooks on Hwy. 14	
Umatilla Heritage Trail	Consider Heritage trail realignment.	Add benches, blind, sun shades, and potential side trails to Heritage Trail; consider realignment.		County Heritage Trail traverses Refuge. Portions of trail unsafe during hunt season.	
Hunting					
Waterfowl Hunt Types	Reservation fee hunting, posts/free roam, and youth hunts.				
Waterfowl Hunt Areas	25,952 acres	25,739 acres	25,698 acres	25,905 acres	
Sanctuary Areas	Alt 4 minus Col. River shoreline at McCormack	Alt 1 plus East McCormack Slough	Alt 4 plus East McCormack Slough	Existing areas (44% of Umatilla, 24% of McNary)	
Upland Bird Areas	All open units. Hunting improved at Peninsula (eliminating mowing at former goose blinds).	Upland game bird hunting provided on all open units.			
Upland Bird Hunt Schedule	Hunt days and times standardized	Variety of days/start times			
Upland Permits (McCormack)	Permits reduced to 15 on opening two weekends.	25 daily permits, crowding issue on opening two weekends			
Pheasant Releases (McNary)	Pheasant augmentation phased out in 2 years (Service policy prohibits nonnative stocking).	State pheasant releases			
Deer Hunt (McCormack)	Doe hunting emphasis to reduce population and address vegetation impacts issue.	Hunt open at current level.			

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Fishing				
Diversity of Fishing Opportunities	Maintain diverse opportunities, including State seasonal stocking of rainbow trout at Quarry Pond for youth and family fishing. Improve parking facilities and access.	Same as Alt. 2	Same as Alt. 4 except Quarry Pond stocking ended.	Plentiful walk-in and boat fishing opportunities. Stocking for family fishing at one pond.
Tournament Fishing	Work in partnership with States and others to develop standard tournament permit conditions. No tournament access within 1/2 mile of pelican nest colonies.	Develop fishing brochure or tear sheets. Install kiosks at two on-Refuge and two off-Refuge boat launches.	Large numbers of anglers and boaters using Refuges but little Refuge information is disseminated to this user group.	Several tournaments on both Refuges
Fishing Outreach and Information				
Environmental Education				
Number of Students Served	McNary: 1,500-3,000 Umatilla: 0	McNary: 1,500 – 3,000 Umatilla: 100-500		McNary: 1,500-3,000 Umatilla: 50
Teacher Led Program	Some emphasis	At least 75% of the classes teacher-led.		Some emphasis.
EE Facilities at McNary	Continue EE program at McNary Environmental Education Center at Burbank Slough.			
EE Facilities at Umatilla	None	Field study sites integrated into East McCormack Slough		None
Non-Wildlife Dependent Uses				
Horseback Riding	Same as Alt. 4	Improve signing, outreach, and interpretive materials. Riders allowed on public roads and horseback designated trails.		Riding allowed on public roads and designated trails. Limited information/facilities.
Camping at Madame Dorion Park	Madame Dorion Park available for day use for Big Six uses. Eliminate camping.	Maintain existing rest area facilities.		Camping permitted under temporary coop agreement
Swimming and Beach Use	Same as Alt. 4.	Island beaches closed to all use.		Beach use permitted on designated portions of Umatilla Islands in summer. Heavy beach use on Strawberry Island.
Law Enforcement				
Illegal Shooting and Dumping		Reduce dumping at Burbank Sloughs Unit by 80%. Eliminate target shooting.		Illegal shooting and dumping occurs .
Cultural Resources				
Monitoring and Protection		Increased with greater survey effort, enforcement, training, and consultation with Tribes.		Enforcement, consultation and project review per NHPA.
Interpretation Programs		Develop interpretive materials in partnership with Tribes and historical societies.		No active interpretation
Bank Stabilization		Seek funding to stabilize eroding banks to protect buried cultural resources		No funding for bank stabilization sought.

2.4 Goals, Objectives, and Strategies

Goals and objectives are the unifying elements of successful refuge management. They identify and focus management priorities, resolve issues, and link to refuge purposes, Service policy, and the Refuge System Mission.

A CCP describes management actions that help bring a refuge closer to its vision. A vision broadly reflects the refuge purposes, the Refuge System mission and goals, other statutory requirements, and larger-scale plans as appropriate. Goals then define general targets in support of the vision, followed by objectives that direct effort into incremental and measurable steps toward achieving those goals. Finally, strategies identify specific tools and actions to accomplish objectives (USDI 2002).

In the development of this CCP, the Service has prepared an environmental assessment. The environmental assessment evaluates alternative sets of management actions derived from a variety of management goals, objectives and implementation strategies.

The goals for McNary and Umatilla Refuges over the next fifteen years under the CCP are presented on the following pages. Each goal is followed by the objectives that pertain to that goal. Some objectives pertain to multiple goals and have simply been placed in the most reasonable spot. Similarly, some strategies pertain to multiple objectives.

The goal order does **not** imply any priority in this CCP. Priority actions are assigned in Appendix D.

Readers, please note the following:

- The objective statement as written is the objective statement that applies to the Service is Preferred Alternative, Alternative 2.
- Bolded text in the objective statement indicates specific items that vary in the other alternatives. How those items vary is displayed in the short table under each objective statement; as applicable, each other alternative shows substitute text for the bolded item or items.
- If an objective is not in a particular alternative, a blank is used to indicate that this objective is not addressed in that alternative.

Finally, below each objective statement are the strategies that could be employed in order to accomplish the objectives. Again, note the following:

- Check marks alongside each strategy show which alternatives include that strategy.
- If a column for a particular alternative does not include a check mark for a listed strategy, it means that strategy will not be used in that alternative.



GOAL 1: Manage high quality food and sanctuary to support large concentrations of migratory waterfowl.

Objective 1a: Provide Crops for Waterfowl				
Maintain 600 acres at McNary and 1,500 at Umatilla (2,100 total acres of Refuge land) for the production of crops on both Refuges, with a minimum of 400 acres to a maximum of 580 acres to be grown as grain (corn preferred) and left standing to benefit trust species of waterfowl (mainly mallard, northern pintail, Canada geese, and greater white-fronted geese). In addition, provide a minimum of 1,000 acres in green feed for waterfowl use during winter.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective is modified by replacing bolded type above with the text in this row.</i>	Increase crop acreage to 2,400 acres	Maintain 2,100 acres	Reduce acreage to <1,850 acres	Maintain 2,100 acres
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Plant crops on an additional 300 acres of cropland at Umatilla (100 acres) and McNary (200 acres) Refuges; use inactive agricultural lands currently in fallow, weedy condition. (There will be no conversion of existing grassland/shrub-steppe).	✓			
Conduct cooperative farming in accordance with guidelines, best practices and acreages outlined in the existing McNary and Umatilla Cropland Management Plan; and maintain Organic Farming Program on Whitcomb Island and McCormack Units of Umatilla Refuge.	✓	✓	✓	✓
Consider force account farming to increase net food availability if and when appropriate. To do so, increase Refuge funding \$100,000 annually for force account equipment, supplies and staffing and submit funding requests (RONS) for \$300,000 to develop new irrigation circles.	✓	✓		
Develop partnership programs to provide incentives and funding to private landowners to provide standing corn and other grains off-Refuge.	✓	✓		
Rationale: Upland food availability, including the amount of land in corn and available as green feed, was identified as a key ecological attribute for waterfowl by the CCP team. Approximately 2,100 acres of Refuge lands are currently farmed under cooperative agreements. Under the Cropland Management Plans for Umatilla and McNary Refuges (USDI, 1996; USDI, 1999), croplands are managed for the benefit of waterfowl, but many other species benefit (i.e. bald eagles which rely on Refuge waterfowl concentrations). Refuge crop shares are generally 25% of what is grown and are limited to 1)				

cereal grains, preferably corn, to meet the high energy demands of migrating and wintering waterfowl, and 2) green winter forage and cover crops which provide for Canada goose populations. In addition, harvested areas provide foods for waterfowl, including waste grains and green forage such as alfalfa and grasses. Opportunities to provide natural foods on the Refuges are limited, especially for the large concentrations of waterfowl (peaks of nearly 250,000 to 500,000 birds for both Refuges combined). The 2003 Wildlife and Habitat Management Review of McNary and Umatilla Refuges recommended providing additional corn for wintering waterfowl. Increasing corn is limited by costs of installing irrigation systems, operation of the Organic Farming Program at Whitcomb Island, the need to rotate crops, and use of negotiated cooperative agreements with farming cooperators versus force account. Substantial increases in funding to both develop and maintain force account irrigation circles for corn would provide the best scenario for corn production. Partnerships and incentives to area farmers to grow grains is another possibility. In addition, 300 acres of fallow agricultural land could be redeveloped and cropped to meet the demand for standing corn for waterfowl. These 300 reactivated cropland acres could be developed as follows: a 40-acre new irrigation circle at McCormack Unit, and a 60-acre new irrigation circle at Paterson on Umatilla Refuge; and at McNary, 60 acres of dryland wheat at Peninsula, 77 acres of dryland or reactivation of irrigation at Field 9 on Humorist Road, 37 acres irrigation system reactivation at Kohler, and 72 acres of irrigation system reactivation on Field 4, and former irrigated cropland on the southside of Wallula.

Objective 1b: Extend Timeperiod Grain is Made Available to Birds.

Extend time period grain is made available to waterfowl and provide grains during emergency weather conditions. Provide for mid and extended late-season nutritional needs of migrating and wintering waterfowl, especially mallard, northern pintail and greater white-fronted geese, by scheduling “knockdown” of 460 acres of available agricultural grain crops.

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
Objective as written above applies to alternatives (✓)	✓	✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Expand knockdown dates both earlier and later in the season: <ul style="list-style-type: none"> • <u>Post-hunting season</u> (approximately January 18 – March 1): 390 acres total for both Refuges, staged knockdown over this time period, if possible. • <u>Late season</u> (week of March 1): 35 acres at Umatilla and 35 acres at McNary 	✓	✓		
Coordinate with cooperators and/or increase force account crop knockdowns to achieve the schedule listed above.	✓	✓		
Allow for emergency knockdown during the hunting season if severe weather causes a documented need. This action may require closure of hunting due to baiting regulations; therefore coordinate with law enforcement and the public. Severe weather is snow or ice covering of most local fields and or weather below 0 degrees F for an extended time leading to generally inaccessible food supply on surrounding farms and agricultural fields.	✓	✓		

Rationale: Traditionally, Refuges reserved the standing crop to be knocked down during severe winter weather and/or immediately after the close of hunting season in late January to mid February. McNary staff have noted that in years when they were “late” (February-March) in knocking down the corn crop, more white-fronted geese (early spring migrants) were attracted. White-fronted geese have increased significantly in recent years, presumably in response to this late food availability. Providing grain crops in a scheduled, staged way throughout the season will help provide for fall and spring migrants as well as the wintering population. However, under this schedule the majority (85%) of standing crop is still kept for late January–post hunting–knockdown. Refuge managers have documented extreme winter weather events leading to area fields being covered with ice and snow; in such times Refuge corn fields have been mowed to supply the nutritional need for a large percentage of Columbia Basin wintering waterfowl and have likely prevented die-off events.

Objective 1c: Increase Size and Availability of Moist Soil Areas

Add 10 acres to the existing 356 acres of managed moist soil units for both Refuges (5 acres each), and increase efforts to provide high production of natural foods favored by mallards and northern pintails, such as smartweed (*Polygonum* spp.), wild millet (*Echinochloa* spp.) and swamp timothy

(Crypsis schoenoides). Provide early flood-up, by September 15, on 30 acres of existing moist soil units (10 acres at Umatilla/5 acres at McNary) to support early migrants such as northern pintail.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
Alternative is modified by replacing bolded type above with the text in this row.	Add 40 acres to	Add 10 acres to	Subtract 8 acres from	Maintain current acreage of
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Flood units in fall and follow with a late spring drawdown, properly timed to maximize germination and growth of the desired species.	✓	✓	✓	✓
Utilize disking at Umatilla’s McCormack Slough to set back taller persistent wetland vegetation, and to provide a seed bed for preferred moist soil annual vegetation.	✓	✓		
Where water and precise water control is available, utilize summer irrigations to keep vegetation actively growing (timed to minimize standing water since mosquito larvae production period is 5-7 days).	✓	✓		
Develop 10-40 acres of new moist soil units from the following potential areas: McNary - Unit 3, Two Rivers, and Peninsula units; and Umatilla - Boardman, and Paterson units. Utilize irrigation water and manage piping/pumps as needed.	✓	✓		
Coordinate irrigations and new moist soil development with local mosquito control districts (see West Nile Virus Contingency Plans for both Refuges).	✓	✓	✓	✓
Annually provide water for early flood up (by September 15) of 30 acres of moist soil from the following units: McNary-Dudley wetlands, Wallula Units wetlands; Umatilla - Kathy’s Pond; and any new sites to be developed (see above objective 4a).	✓	✓		
Coordinate timing and treatment of early fall flood-ups with the mosquito control districts at both Refuges to reduce risks of mosquito-borne diseases (see West Nile Virus Contingency Plan).	✓	✓		
Terminate flood up at Dudley Ponds 1 and 2 and at Wallula South 1.			✓	
<p>Rationale: Wetland food availability was identified as a key ecological attribute supporting waterfowl. Moist soil wetlands use annual water control regimes to promote production of annual plants preferred by waterfowl, such as wild millet, smartweeds, swamp timothy and goosefoot. Typically this includes a spring drawdown, one to two summer irrigations, and a fall/winter flood-up. These wetlands also provide a variety of water depths that support a wide variety of waterbird species including shorebirds and wading birds and serve as important feeding areas for young waterfowl brood.</p> <p>Although not considered typical moist soil management units (due to a lack of direct water control), some Refuge areas are already being managed for moist soil plant production. These include several wetlands at McNary’s Wallula Unit, and shoreline areas at Umatilla’s McCormack Unit. Expanses within McCormack Slough of Umatilla Refuge have been excavated to elevations that fall between the annual minimum and maximum water levels of the slough, as dictated by John Day Dam forebay operations. Under the influence of this operation, these sites are inundated with shallow water from November through June and are exposed as saturated or moist soils from July to October, thus performing as a seasonal wetland that is highly suitable for moist soil plant production. Disking has been used at these sites to eliminate development of tall persistent vegetation such as bulrush, and to promote establishment of annuals as soon as the flats become exposed about early July. Managed moist soil areas on the slough are used heavily by waterfowl, particularly northern pintail, green-winged teal, and mallards. There has also been much use by shorebirds and wading birds in the spring season.</p> <p>New moist soil areas could be developed and/or managed for moist soil including: small wetlands associated with irrigation water at the Dudley wetlands at McNary and additional sites at Umatilla’s McCormack Unit near Hunt Blinds 1,</p>				

2, 5, 28, 31, 32, 33, 36, and 37, and shorelines at hunt blinds 7 and 30.

The North American Waterfowl Management Plan (2004) lists the long-term trend for northern pintail populations as declining. The Refuges could distribute the benefits of moist soil management to a greater diversity of waterfowl, including northern pintail, by providing earlier fall flood-up of units. Pintail generally arrive earliest of the waterfowl, with peak concentrations sometimes occurring in September. The Refuges have limited ability to control the timing of flood-up at some of the moist soil units. McNary's Dudley wetlands and other irrigation-dependent wetlands generally have irrigation water through mid-October, and could provide excellent smartweed beds to early migrants if managed and flooded early. In the past, mosquito breeding and the potential for mosquito-borne diseases (such as West Nile Virus) has limited the use of early flood ups. With close coordination and cooperation with the local mosquito control districts, early flood-up of moist soil wetlands could be accomplished.

Objective 1d: Relocate Sanctuary Area within McCormack Unit

Improve resting and feeding opportunities for migratory birds and wintering waterfowl and increase opportunities for wildlife observation on the eastern portion of McCormack Slough at Umatilla Refuge by closing the area to hunting, eliminating foot traffic and access to the wetlands, and restricting public use and access to the auto tour route and selected public viewing or overlook sites. Move the current waterfowl and upland game bird hunting opportunity on the eastern portion of McCormack Slough to a new area within current sanctuary along river shoreline on the north side of the unit.

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Close all public access to the east portion of McCormack Slough except at designated viewing and interpretive sites, and designated trails and roads (see Objective 9d and 9e).		✓	✓	
Sign perimeter of new sanctuary area to inform public of area closure and make changes to Refuge brochures and hunting tear sheets.		✓	✓	
Open new designated site along river shoreline for waterfowl and upland bird hunting and sign as needed (see Objective 10a)	✓	✓		

Rationale: The East McCormack Slough is an ideal area for sanctuary and use by waterfowl away from the buffeting winds on the river. Its high quality wetlands and intensively managed foraging areas are used by large numbers of waterfowl and other wildlife. The area is also currently heavily used, both as a hunt area and also (and at the same time) by birdwatchers, photographers and general wildlife observation. Managing the East McCormack Slough with fewer disturbances would help to greatly improve the quality of Objectives 9d and 9e, and better separate hunting from the visiting public using the tour route and Heritage Trail. All three of these objectives, if implemented together, would complement and benefit one another. If any one of them was implemented alone, it would be less valuable as a resource to the public. The loss of waterfowl and upland bird hunting in the East McCormack Slough would be replaced with a new hunt area located along the river shoreline with nearly an equal amount of hunting opportunities and overall land area. Hunting quality at the new site would likely be the same or better than that provided in the east slough since an interior sanctuary wetland could be expected to increase overall bird distribution and hunting success (similar to the situation at McNary Refuge with Units 3 (sanctuary) and 2 (hunted). Intensively managed sites in the east slough would also provide opportunity to expand desired habitats for various species other than waterfowl, such as shorebirds, wading birds, and other water birds. Hikers, birders, and photographers would lose direct and close access to the wetlands; but the auto tour route and carefully placed designated observation sites and decks would still provide for quality wildlife observation visits.

GOAL 2: Provide secure and productive foraging and nesting habitats for a diversity of shorebirds.



Objective 2a: Increase Available Delta Mudflat				
Increase the acres of mudflat available for migratory shorebird foraging by 20 acres during peak migration periods at McNary Refuge’s Walla Walla Delta to benefit shorebird species such as black-necked stilt, American avocet, long-billed dowitcher, dunlin, and Wilson’s phalarope.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Coordinate with the Corps for draw downs of McNary Reservoir to 336–337 mean sea level (msl) mid-July to October and mid-March to late April migration peaks, to expose an additional 20 acres of mudflats for shorebirds at the Walla Walla Delta		✓		
Monitor and control expansion of invasives and other upland plants onto mudflats: increase chemical and mechanical treatments to maintain and/or increase mudflat habitat.		✓		
Increase use of signing, education, and law enforcement to eliminate illegal trespass onto Delta.		✓		
<p>Rationale: Foraging habitat and security were both identified as key ecological attributes for shorebirds by the CCP team. The Intermountain West Regional Shorebird Conservation Plan (Oring 2004) lists black-necked stilt, American avocet, dunlin, long-billed dowitcher, and Wilson’s phalarope as “critically important” species. The Walla Walla Delta is a major shorebird migration feeding area for these and other shorebird species, with documented annual populations numbering up to 8,600, representing nearly 40 species (International Shorebird Surveys, Manomet Center for Conservation Sciences). Careful management of this area would help enhance and increase the habitat value of this site, supporting goals of the U.S. Shorebird Conservation Plan (Brown et al. 2001). Spring and fall drawdowns of the McNary Pool would create more exposed mudflat during the shorebird migration. Vegetation, including purple loosestrife, phragmites, and false indigo, is encroaching onto Delta mudflats. Available biocontrols for purple loosestrife may be limited by reservoir fluctuations and wintertime inundation. Public use planning can help eliminate illegal uses and trespass.</p>				

Objective 2b: Provide Alternate Shorebird Foraging Areas				
Annually provide 10 acres of alternative shorebird foraging areas within moist soil units at McNary (Wallula Unit 8 acres) and Umatilla (McCormack Unit 2 acres) during the peak of the migration period (August/September) and/or when the Walla Walla Delta is unavailable to shorebirds due to high reservoir levels (e.g., during boat race week). Objective will benefit up to 40 species of shorebirds documented to use the Delta, including species identified as “critically important” such as black-necked stilt, American avocet, long-billed dowitcher, and Wilson’s phalarope.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓		

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Determine best time periods for providing alternative foraging sites based on the Corps' projected reservoir levels and peak migration periods. Annually select and prepare 10 acres of moist soil units needing treatment (i.e., disking and invasive plant removal) and flood/drawdown these units just prior to projected periods of high reservoir levels. Potential sites at McNary include Wallula and Dudley ponds; and at Umatilla, McCormack Slough and Kathy's Pond.		✓		
After disking and where water control is available, flood to a maximum depth of one-to-three inches over the disked area for approximately one week; allowing water to drop naturally and provide habitat.		✓		
<p>Rationale: Large populations of migratory shorebirds often find themselves without adequate foraging habitat when the Corps suddenly increases and maintains reservoir levels for an extended period. Examples include boat race week and 2 to 4 day increases for special shipping/barging requests. Alternative foraging sites nearby could be valuable during these time periods. The availability of alternate sites was identified in a literature review as a key consideration for managing shorebird populations effectively (Prindle 2004). Properly timed draw downs, disking treatments, and/or irrigations of existing moist soil units would help provide more habitats for shorebirds on the Refuges if the Delta becomes unavailable. Potential locations for this include the Wallula moist soil units adjacent to Walla Walla Delta, and the McCormack Slough and Kathy's Pond area at Umatilla. These alternative mudflat-shorebird foraging sites will have the side benefit of providing irrigation for the surrounding moist soil vegetation that remains untreated. Weedy areas and canary grass portions needing a treatment (disking) will be chosen, not good moist soil sections. Remaining moist soil plants will be allowed to continue to grow productively, and could produce larger seed heads irrigated. Many shorebird experts have recognized the importance of providing alternate sites, especially along river systems (EDAW 2004). The timing will have to be precise to provide habitat during the projected high water periods, requiring close Corps dam reservoir coordination. Irrigations will also have to be conducted with shallow water and short time periods to prevent mosquito breeding. Under current operations, the Delta should continue to expand in area, and if properly managed, may someday qualify as a Western Hemisphere Shorebird Reserve Network Regional Site (supporting greater than 20,000 shorebirds per year).</p>				

Objective 2c: Maintain or Increase Long-billed Curlew Habitat				
Maintain long-billed curlew nesting and foraging habitat, and increase existing curlew nesting habitat by 25% on appropriate sites at each Refuge to benefit this species.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Alternative is modified by replacing bolded type above with the text in this row.</i>	Maintain	✓	✓ Increase by 25%	Maintain
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Continue to identify and quantify existing curlew nesting and foraging areas to determine location and amount of habitat on the Refuges.	✓	✓	✓	✓
After habitat has been identified and quantified; increase existing acreage at each Refuge by 25% by restoring inactive, formerly cultivated lands to curlew foraging and nesting habitat, specifically: McNary Fields #9 and #4; the Kohler Field; and at Umatilla, areas south of the Callow overlook and edges of field circle 5 and the surrounding grassland.		✓	✓	
Restore both formerly cultivated agricultural lands (above) and convert existing cropland in Umatilla field circle #5 to native shortgrass habitat favorable to curlews.			✓	
Focus management in curlew use areas toward maintaining and restoring native shortgrass habitats; use planting, burning, and mowing methods.		✓	✓	
Monitor populations and/or nest success using transects or other standardized techniques.	✓	✓	✓	✓

When conducting restoration efforts under objectives 7a and 7c, avoid planting shrubs in curlew focal areas.		✓	✓	
<p>Rationale: The U.S. Shorebird Conservation Plan’s list of High Priority Shorebirds (USFWS 2004) lists the long-billed curlew as a “globally highly imperiled” species in need off protection measures. Long-billed curlews have been assigned the highest score (5 on scale of 1-5) for conservation efforts under criteria established by the Intermountain West Regional Shorebird Plan (Oring et al. 2004). The Intermountain West Region is considered an area of critical importance (compared to other regions globally) for their conservation. The Umatilla Refuge and surrounding lands serve as a key breeding area for long-billed curlews. An accurate estimate of the curlew’s current population on the Refuges is not available, but range-wide survey efforts completed in 2004 showed populations on Umatilla Refuge to be higher than all other sites surveyed that year. There is likely an opportunity to expand the population. Areas that have been known to be used by curlews at Umatilla include: McCormack Slough, uplands south of McCormack Slough, Kathy’s Pond, Whitcomb Islands, and agricultural field #5 near the auto tour route on McCormack Unit. McNary has only limited curlew habitat with small numbers at the following locations: Dudley Wetlands, Kohler Unit, and Wallula South Unit. Because curlews tend to avoid habitats with dense vegetation cover (both vertical height and horizontal density), the Refuges could manage for short vegetation during the curlew nesting season (mid-March to mid-May). Curlews favor areas with a mosaic of shortgrass and downy brome, typically within one mile of a water source (Pampush 1980; Pampush and Anthony 1993).</p>				

Objective 2d: Conduct Shorebird Studies				
Conduct or facilitate completion of research studies to better understand shorebird ecology and management at both Refuges to benefit high priority species including the long-billed curlew, solitary sandpiper, western sandpiper, short-billed dowitcher, Wilson’s phalarope, Wilson’s plover, sanderling, and dunlin.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Evaluate existing literature and consult with experts regarding macroinvertebrate prey items for the shorebird species breeding and migrating at the Refuge. Conduct inventory of macroinvertebrates at the primary and alternate foraging sites to determine and compare species present, densities, etc.		✓		
Correlate 1990-present reservoir levels (Corps) with shorebird abundance data (Manomet Center for Conservation Sciences), with a focus on the peak migration periods and presence of high priority species.		✓		
Assess connectivity between known shorebird migration sites in the lower and mid-Columbia basins.		✓		
<p>Rationale: The U.S. Shorebird Conservation Plan’s list of High Priority Shorebirds (USFWS 2004) lists the American golden plover, solitary sandpiper, western sandpiper, short-billed dowitcher, Wilson’s phalarope, Wilson’s plover, sanderling, and dunlin as a “high concern” species in need off protection measures. All of these species use Walla Walla Delta and other Refuge sites during migration. More data is needed to document forage base underpinning the shorebird populations using Refuge habitats, especially the Walla Walla Delta. A greater understanding of the ecology of shorebirds there would help support goals in the Intermountain West Regional Shorebird Plan (Oring et al. 2004) and would help the Refuges to establish baseline information on shorebird use and ecology at these sites.</p>				



GOAL 3: Contribute to the recovery of endangered, threatened, and sensitive species by protecting, maintaining or increasing suitable habitats.

Objective 3a: Salmon Backwater Enhancements				
Protect, and where feasible restore or enhance backwater sloughs, side channel connections, shallow water marshes, or embayments that support juvenile salmon to benefit federally listed species/stocks, including Snake River Chinook, sockeye, and steelhead; Mid-Columbia steelhead; and Upper Columbia Chinook and steelhead.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective applies as written above to alternatives (✓)</i>		✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Assess the biological benefits (both waterfowl and fisheries) of restoring side-channel fish habitats at Burbank Sloughs and Casey Pond at McNary Refuge; and Patterson Unit of Umatilla Refuge; and coordinate with State/Federal/Tribal fishery biologists.		✓	✓	
If deemed likely to provide biological benefits to listed salmon, prepare technical feasibility report and funding requests for salmon backwater enhancement projects.		✓	✓	
Evaluate and develop strategies to maintain and/or enhance connectivity between Columbia River and backwater slough areas.		✓	✓	
<p>Rationale: Seven federally-listed species/stocks of anadromous fish, including Snake River Chinook, sockeye, and steelhead; Mid Columbia steelhead; Bull trout, and Upper Columbia Chinook and steelhead spend portions of their life history either on, or adjacent to, Refuge waters and shorelines on the Snake, Columbia, and Walla Walla Rivers. The Hanford Reach contains the last major mainstem spawning habitat in the Columbia River System for fall Chinook salmon, and up to 80% of the total run of adult fall Chinook salmon returning to the Columbia River spawn in the Hanford Reach (Dauble and Watson 1990). The Casey Pond area at McNary Refuges, and other shorelines and embayments on both Refuges, serve as nurseries for young developing fall Chinook (Easterbrooks, 200). Conserving and restoring salmon and steelhead populations is an important regional goal, not only for their own sake, but also because of their cultural, historical, and ecological value. Salmon are an important food source for numerous other wildlife species. Sixty-seven wildlife species of the Pacific Northwest, including many known to inhabit the Refuges, have been shown to have a “strong” or “recurrent” relationship with salmon (Cedarholm et al. 2000). Protection and/or restoration of these shallow habitats may also benefit waterfowl as embayments and backwater areas are less common now than historically. A previous project proposal to Bonneville Power Administration for a restoration project at Peninsula received high scores but went unfunded. Paterson Slough also constitutes one of the larger embayments on the Middle Columbia.</p>				

Objective 3b: Conduct Inventory and Establish Habitat/Population Management Strategies for Certain Rare Species
Identify potential habitat areas and conduct a targeted inventory (primarily focused on determining presence/absence and indication of breeding) for the following species or species groups. If species are present, document population information. After determining species status, determine which, if any, habitat or population management strategies should be undertaken for the benefit of rare species. This determination may be made in a step-down plan. <ul style="list-style-type: none"> • Washington ground squirrel (OR–Endangered. WA–candidate. Federal–Candidate). • Burrowing owl (WA–Candidate. Federal–Species of Concern).

<ul style="list-style-type: none"> • Peregrine falcon (OR–Endangered. Federal–Species of Concern). • Golden eagle (WA–Candidate. Federal–No Status). • Swainson’s hawk (OR–Sensitive. Federal–No Status) • Ferruginous hawk (WA–Threatened. Federal–No Status). • Native Amphibians and reptiles (Varied status). • Bats (Varied status). 				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective applies as written above to alternatives (✓)</i>		✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Follow established and current protocols for surveys of rare species/species groups. When and where possible, participate in regional partnership efforts and conform to recommended timeframes.		✓	✓	
Alert Heritage programs and key State biologists of any new or expanded locations as well as the results of any negative searches.		✓	✓	
<p>Rationale: Rare species were selected for inventory work primarily due to their sensitive status (threatened, endangered, etc) and because they may occur on either Refuge, thus possibly providing opportunities for habitat restoration or enhancement that could help to further their recovery. Specific information is summarized below.</p> <ul style="list-style-type: none"> • Washington ground squirrel. McNary Refuge and the Oregon portion of Umatilla Refuge lie within the historic range of the Washington ground squirrel. The species is likely extirpated from the Refuge and its historical occurrence is unknown, however, the Refuges could possibly provide habitat for any proposed future re-introductions. • Burrowing owl. This species has seen a dramatic loss of habitat in the local area due to conversion to agriculture or urban development. Burrowing owls are known to nest on Umatilla Refuge, but data on colony locations is limited and data on population size is non-existent. • Peregrine falcon. At least one pair is known to nest on or near McNary Refuge at the Stateline Unit. Both Refuges provide foraging habitat. • Golden eagle. Golden eagles are reported to have nested in the cliff habitat on the Stateline Unit of McNary Refuge. • Swainson’s hawk. This species nests in the local area and has historically nested at McNary Refuge, but current status on Refuges is unknown. • Ferruginous hawk. Nests locally, though status is unknown on Refuges. Basalt cliffs on McNary’s Stateline Unit may provide nesting habitat. • Native amphibians and reptiles. Little information exists on the occurrence and abundance of native amphibians and reptiles both historically and/or following creation of the Refuges. Paralleling a global decline by at least a third of the world’s amphibians (Stuart et al. 2004), many of the Refuges’ native amphibian populations thought to be present at Refuge establishment appear to be dwindling or absent. The causes of declines at the Refuges (and elsewhere for other amphibians) are not fully known but may be related to loss of habitat, changes in hydrology, habitat fragmentation, introduction of nonnative predatory fish and bullfrogs into historic habitats, drought, mortality on roads, environmental contaminants, disease, and other factors (McAllister et al. 1999). The Refuges need to improve their knowledge of potential and occupied habitats for native amphibians and may be able to play a role in reestablishment of declining populations. • Bats. Virtually no information exists on bats occurring on either Refuge. Further information would help to understand Refuge species richness and diversity. <p>We did not include here other species such as the bald eagle, American white pelican, and salmonids, for the following reasons. Bald eagle: the Corps already collects winter population information on bald eagles at McNary Refuge. The Refuges also tally bald eagles observed during aerial waterfowl surveys and contributes data to the annual Oregon Winter Eagle Survey. American white pelican: Population numbers are “rough” but data is collected by researchers as part of their work on the piscivorous fish research. American white pelican counts are estimated by researchers from aquatic and aerial counts. Once additional information is available on each of these species or groups population status on the Refuges, the staff can better determine appropriate habitat or population management objectives and strategies. Such detail may best be developed in a step down Habitat Management Plan. Salmonids: Endangered salmon stocks and other Columbia River System salmon are regularly monitored and/or studied by the WADFW, Corps, Tribes, Service, and NOAA Fisheries. Data is available for use by the Refuge.</p>				

Objective 3c: Conduct Baseline Inventory for Small Mammals				
Conduct a one-week long baseline inventory in approximately six shrub-steppe priority areas to collect initial data on the presence, abundance, and diversity of small mammals.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective applies as written above to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	minimal	✓	✓	minimal
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Map Quincy and Warden soil types, and an overlay with areas of less-disturbed vegetation cover likely to be suitable for the Washington ground squirrel, to prioritize search areas for this species.		✓	✓	
Select other areas for survey based on State records and historic reports.		✓	✓	
Alert Heritage programs and key State biologists of any new or expanded locations as well as the results of any negative searches.		✓	✓	
<p>Rationale: Small mammals are very important as a food source to higher level predators, including several migratory birds of interest, such as the golden eagle and Swainson’s hawk. In addition, structures made by some burrowing small mammals are important for use as nest sites for the burrowing owl. There is a need for the Refuges to have a greater understanding of the diversity of small mammal species inhabiting Refuge habitats, their relative abundances, and locations of highest habitat value, as Refuge data is lacking in this area. An abundance rating for certain small mammals was provided in the McNary Habitat Management Assessment baseline inventory (WADFG 1980). Some of the data presented in that report originated in the Columbia River System inventory. The Washington ground squirrel, listed as endangered by the State of Oregon, is currently thought to be restricted to three populations in Oregon and Washington. Suitable soil types may exist on the Refuges. Restoration of shrub-steppe and grassland habitats as described in shrub-steppe objectives should also aid in supporting native small mammals.</p>				

GOAL 4: Provide a diversity of high-quality wetland habitats for the benefit of migratory birds and other wetland plants and animals.



Objective 4a: Increase Amount of High Quality Shallow Marsh				
Conduct needed management on 350 acres at Umatilla Refuge and 650 acres at McNary Refuge, resulting in an increase in acreage of high quality shallow marsh available for use by waterfowl and other waterbirds. High quality marsh will consist of open shallow marsh habitat with less than a 50% cover of tall persistent emergent vegetation (bulrush, cattail) at full pool level, with persistent emergent vegetation patches smaller than 10 acres, and no unbroken shoreline patches longer than 300 yards. In addition, in managed areas, no more than 20% of plant cover in the wetland emergent plant zone shall be comprised of the following non-native invasive wetland plants: purple loosestrife, phragmites, cocklebur, Russian olive, and false indigo. Conduct needed management at the rate of about 67 acres per year over the life of the CCP.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	1,438 acres	1,000 acres		500 acres

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Mechanically re-open areas that have become vegetated with persistent emergent vegetation in order to set back succession and maintain open, shallow water areas. Mechanically remove longer term mineral and organic deposits that lead to filling and wetland loss.	✓ Up to 200 acres treated annually	✓		✓
Utilize mowing, disking and burning for elimination of vegetation mats and organic material.	✓	✓		✓
Utilize surface excavation and shoreline recontouring where appropriate to open marshes.	✓	✓		✓
Develop and implement an IPM plan (use mechanical, cultural, biological, hydro management and chemical methods) to aggressively reduce the presence of the five nonnative plants in the wetland emergent plant zone.	✓	✓	✓	
Inventory plant communities and annually monitor effectiveness of treatments. Control any reinvasion by nonnatives; and plant native emergents as needed.	✓	✓	✓	
Partner with counties for education/weed control along Refuge borders and reduce sources.	✓	✓	✓	
Increase annual funding by \$100,000 to address costs of monitoring, biological controls, equipment and chemicals used under an Integrated Pest Management Plan.	✓	✓	✓	

Rationale: Both Refuges were established to mitigate losses of habitat, including wetlands, caused by dam building in the Columbia River. Providing a diversity of wetlands is vital to the purposes of both Refuges. Yet because of the numerous dams along the length of the Columbia River, and the specific dam and lock operations encompassing river sections within the Refuges, the natural fluvial processes of a free-flowing riverine system have been eliminated. Refuge waters, which are now human-managed and relatively constant-elevation reservoirs, alternately support lacustrine and palustrine systems, but lack necessary disturbance mechanisms to provide and maintain the cyclical aging and renewal processes of wetlands over time. Non-persistent wetlands and mud flats, for example, are vital to a variety of migratory birds and other wetland animals. Both habitat types are mostly non-existent on the Refuges because of the absence of natural disturbance mechanisms. By increasing the number of acres of open shallow marsh through artificial means such as mechanical operations or prescribed fire, the Refuges will mimic natural processes and provide a diversity of successional stages that increase overall biodiversity and prevent wetland loss over time. Species benefiting by such actions could include shorebirds, wading birds, rails, waterfowl and muskrats. Invasive plants (primarily purple loosestrife, phragmites, cocklebur, Russian olive, and false indigo) are widespread in the emergent plant zone of most wetlands on both Refuges and may currently be as high as 30-50% of plant cover in certain areas. Altered plant and animal community composition was identified by the CCP team as a very high stress to wetland systems. Invasive plants limit native plant production and cause impacts to food, nesting, and cover for wildlife. Invasives in wetlands reduce waterfowl food availability during the migration and wintering periods. Limiting invasive species will help the Refuge to comply with county and state ordinances. However, the task is immense, and the Refuge currently does not have either the staff or funding to contain the expansion of invasives, let alone reduce infested acreage. In addition to the expense of new equipment, staff, biological controls, chemicals and monitoring, there would be the recurring expense of reestablishing native vegetation on controlled sites. In addition, within the 15 year timeframe of the CCP, new invasive plants may establish and become the next “problem plant.”

Objective 4b: Maintain and Improve Aquatic Bed Habitats.
 Manage wetlands to increase submerged aquatic vegetation cover by eliminating rough fish (carp and bullhead). By the end of 15 years maintain carp-free conditions in at least 2 of these wetlands- McNary Headquarters Wetland Units 2,3, or 4; and Umatilla’s McCormack Slough, Sasquatch, and Figure Eight-and determine the most effective control methods to reduce carp numbers from present levels in areas open to the Columbia River (Casey Pond, Burbank Sloughs and Paterson). Objective will benefit migratory waterfowl (mallard, pintail, lesser scaup, tundra swan) as well as waterbirds (pied-bill grebe) and other native aquatic species.

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	4 wetlands	✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Conduct initial inventory for submerged plants within two years after CCP is finalized; and monitor every five years after that.	✓	✓		
Obtain bathymetric data for Burbank Slough and Peninsula wetlands on McNary Refuge and Paterson and Whitcomb Sloughs on Umatilla Refuge.	✓	✓		
Eradicate carp and bullhead at one or more of the following wetland locations: McNary Headquarters Wetland Units 2, 3, or 4; and at Umatilla wetlands (McCormack Slough, Sasquatch and Figure Eight Ponds) by the end of 15 years. Draw down these wetland areas and if needed utilize rotenone to kill carp and bullhead populations. For effective use of rotenone, and facilitation of equipment needs, burn residual vegetation when appropriate. Coordinate with WDFW and ODFW on rotenone projects, funding initiatives, and partnerships.	✓	✓		
Experiment with water draw downs in advance (work with the Corps on schedule) to determine how low water can get, and make any needed changes in water control structures to facilitate carp removal and growth of submergent vegetation used by waterfowl.	✓	✓		
Consider permitting commercial carp and bullhead fishing in areas open to the Columbia River (Casey Pond, Burbank Sloughs, and Paterson).	✓	✓		
<p>Rationale: Umatilla and McNary Refuges have significant wetland resources that provide habitat for wildlife. However, outside of their extensive use by waterfowl and other migratory birds, little is known about submerged vegetation and other aquatic species inhabiting Refuge wetlands. Carp, which are widespread in permanently flooded wetland habitats on the Refuge, are thought to represent a high threat to the functioning of the wetland system, due to their impacts on submergent vegetation and water quality. Carp uproot and eliminate submerged vegetation, increase turbidity (see stress source analysis), and decrease the overall abundance and diversity of the invertebrate community (Miller 2006). Treatments using the natural plant chemical rotenone are expensive, but can be more effective if the amount of water to be treated is minimal and carp and bullhead are concentrated in a small area. Past rotenone treatments have generally been effective, but reintroduction and infestation have occurred at varying rates. This may have occurred because adequate water draw downs did not occur, and/or, all connected pools/sloughs were not treated at the same time. Partnering with experienced State fishery program managers should increase success rates.</p>				



GOAL 5: Provide high quality riparian habitats for the benefit of nesting and migrating birds, fish, riparian plants, and other riparian wildlife

Objective 5a: Improve Condition of Riparian Habitat for Nesting Native Passerines
 Conduct needed management on at least 30% (463 acres at each Refuge or 926 total acres) of the total 3,082 acres of priority riparian habitat on both Refuges over the next fifteen years to improve nesting success for native riparian passerines such as the Lazuli bunting, yellow warbler, and yellow breasted chat, and other riparian species identified as Partners In Flight focal species. Needed

management is defined as that combination of treatments and re-treatments which successfully improve the overall condition rating, resulting in a rise into the next highest condition class (poor, fair, good). Conduct needed management at the rate of about 62 new acres per year over the life of the CCP. See condition definition ratings in Appendix F.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>		62 acres /year	5 acres /year	5 acres /year
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Develop Integrated Pest Management Plan within 1 year of CCP completion and address control of invasives in riparian understory (reed canarygrass, poison hemlock, and false indigo).		✓	✓	
Enhance nesting opportunities within riparian areas by decreasing invasives using weed control techniques (chemical, mechanical, biocontrols) on 5-62 acres of riparian habitat per year.		✓	✓	✓
Enhance shrub and tree layers within existing blocks of habitat by selective planting of native shrubs and cuttings on 5-62 acres of per year.		✓	✓	✓
Monitor species richness, abundance, and productivity by expanding McNary's MAPS station (Monitoring Avian Productivity and Survival) to include the Walla Walla Delta, and adding point counts and nest searches. Track changes in species richness, abundance, and productivity over time, aiming for a 10% increase in species richness and; 20% increase in passerine productivity from 2005 levels.		✓		
Reduce browse damage to trees and shrubs by using fencing, the hunt program, and tree guards.		✓		
Construct one enclosure in each key riparian area and monitor effects on the herbivory.		✓		
Rationale: Refuge riparian habitats are threatened and/or degraded by the presence and dominance of invasive weeds; lack of native shrub components, herbivory by large deer herds (Umatilla), and altered hydrology. Restoration and enhancement efforts are needed to improve overall habitat conditions for migratory birds. Photographs dating from the early 1900s suggest that cottonwood dominated riparian was not common, and willow dominated riparian shrub communities were present along narrow corridors of the river. Therefore, under Alternative 3, there would be a more pronounced focus on restoration of the willow habitats of historic conditions. Ninety-seven native bird species are highly associated with riparian habitat (Altman and Holmes 2000) and six of these are "focal species." Data from the MAPS station at Wallula show the Lazuli bunting, yellow warbler, and yellow breasted chat (three of the focal species) present, but as uncommon nesters on McNary Refuge.				

Objective 5b: Enhanced Cottonwood Recruitment:				
Promote enhanced recruitment (at least 300 stems/acre) and development of cottonwood stands on 5 acres per year at each Refuge.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Select sites and use managed pool and wetland water levels in concert with soil disturbance (disking) to promote more favorable conditions to induce germination of available cottonwood seed source on exposed soils.		✓		
Request that dam operations make short duration increases in pool levels during the summer to irrigate and enhance young cottonwood survival and recruitment at sites.		✓		

Provide weed control in newly developing cottonwood riparian sites using techniques/treatments identified in the IPM Plan.		✓		
Undertake supplemental plantings of cottonwoods in riparian areas to increase tree diversity and density.		✓		
<p>Rationale: As the dominant native overstory tree species of mainstem and low elevation tributary riparian zones, cottonwood is recognized as a “keystone” species in riparian areas. These stands provide important nesting and migrating habitat for migratory birds. Reliable cottonwood recruitment is necessary for the perpetuation of cottonwood dominated riparian stands. The altered water regime of the Columbia River was identified by the CCP team as a high source of stress, leading to low or altered recruitment of native plants and an altered plant community composition in most Refuge riparian zones. Major losses to riparian vegetation and ecological function have occurred in response to regulated flows in river systems (Jamieson and Braatne 2001). Cottonwood recruitment may be improved, however, by using managed pool/wetland levels which mimic natural timing of cottonwood seed dispersal and germination (Jamieson and Braatne 2001). Managers have noted extensive cottonwood regeneration after soil disturbance in managed moist soil units at the Wallula Unit and within reservoir dominated embayments at Patterson and McCormack. Recruitment density of about 300 stems per acre would achieve approximately 12’ by 12’ spacing at the mature stage, assuming no mortality (Ashrein/ Clarrs). The cottonwood species that is currently regenerating most naturally in the system is the plains cottonwood (<i>Populus deltoides</i>). However, when constructing restoration and planting using cuttings/rootstock, the Refuges will try to use the native black cottonwood (<i>Populus balsamifera</i> spp. <i>tricarpa</i>).</p>				

GOAL 6: Protect the integrity of the biological resources of the river islands.



Objective 6a: Maintain Waterbird Populations				
Manage river island habitats at Umatilla and McNary Refuge’s to benefit a diversity of nesting birds (ducks, geese, songbirds and shorebirds) and waterbird colonies(gulls, terns, herons, and cormorants) at their current population levels.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
Objective as written above applies to alternatives (✓)	✓	✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Increase law enforcement patrols, news releases, and signage to protect island nesting birds from disturbance.	✓	✓	✓	✓
Manage island substrate and vegetation to ensure that a diversity of nesting habitats for colonial waterbirds are available.		✓	✓	
Monitor size of nesting and waterbird colonies, including Canada geese, mallard, American white pelican, Forster’s tern, Caspian tern, and great blue herons; and identify potential threats to production.		✓	✓	
Increase coordination with various agencies, scientists, and others studying island resources, and assist their efforts by seeking funding, issuing special use permits, helping design study protocols, and monitoring research progress.	✓	✓	✓	
In response to Endangered Species Act requirements for federally listed salmon stocks, consider a range of options to limit piscivorous waterbird depredation, if scientifically sound data demonstrate a critical need to limit depredation due to significant impacts on salmon survival. If controls are deemed appropriate, a written step-down plan and the National Environmental Policy Act documentation shall be developed with evaluation of the effects to fish and waterbird populations. Actions shall be planned and implemented using a multi-agency approach and multiple funding sources.	✓	✓	✓	

Continue to monitor, measure, and document rates of erosion of all islands.	✓	✓	✓	
<p>Rationale: Canada geese nest on all Refuge islands, as do lesser numbers of mallards and other migratory birds. The American white pelican colony (listed as endangered by the State of Washington) at McNary Refuge’s Badger Island is the only successful breeding colony in the State. Foundation Island provides nesting habitat for great blue heron, double-crested cormorant, and black-crowned night heron colonies. Piscivorous colonial nesting birds, especially Caspian terns, have been identified as having negative effects on salmon smolt survival (USFWS 2005). Double-crested cormorants can consume relatively large numbers of salmonids at certain times of the year. Caspian terns nesting on McNary’s Crescent Island number only about 500 pairs, however, as much as 70% of their diet consists of salmon or steelhead smolts (Antolos et al. 2005 and Collis et al. 2004). This colony inhabits only a small area of Crescent Island and will likely not grow larger as it is surrounded by a gull colony and vegetation. Nesting gull colonies, mainly ring-billed and California gulls have increased significantly in the last 20 years. Forster’s terns have declined as a nesting species, while great egrets have recently expanded into the area. As conditions continue to change in the larger Basin-wide area due to prey species, human recreation/disturbance, management of water/hydropower, and animal and human population changes, waterbird populations will continue to change and provide a good barometer of island integrity. Erosion of Refuge islands has been documented in the past; however, more recent changes in reservoir elevations and pool operations have likely reduced the rate. Any erosion that does occur means remaining island acreage becomes more important to wildlife. It is important to monitor measure and document changes in island erosion rates.</p>				

Objective 6b: Limit Island Disturbance				
<p>Limit disturbance to island habitats, wildlife, and other island resources by enforcing existing and new island closures as follows:</p> <ul style="list-style-type: none"> • Strawberry Islands: Existing total closure of Strawberry Islands to public use, including beach areas, will be enforced. • McNary Islands: Existing total closures of Foundation and Badger islands will be enforced. However, Crescent Island will continue to be open to waterfowl hunting. • Umatilla Islands: Total closure of all Umatilla Islands to all public use, including closing the islands to existing seasonal beach use and implementing a no-wake zone. 				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Increase public education and outreach to notify and inform public about the sensitivity of biological resources on the islands and the need for closures to protect birds.		✓	✓	
Improve and increase island signs as needed.	✓	✓	✓	
Implement a no-wake zone within 100 feet of islands on Refuge managed waters (Umatilla). Prohibit fishing tournament access within ½ mile of pelican nest colonies.		✓	✓	
Increase law enforcement patrols, enforce beach closures, and deter use in unauthorized areas.		✓	✓	
<p>Rationale: The river islands on McNary and Umatilla Refuges support breeding habitat for several groups of species, including colonial waterbirds, shorebirds, geese, ducks, swallows and deer. Wildlife seek out the islands for breeding habitat because of the islands’ relative isolation, security, and general lack of mammalian predators. Security was identified as a key ecological attribute supporting the islands’ wildlife communities. The islands also have important cultural resources; especially Strawberry Island which contains a site in the National Register of Historic Places. Because of these unique traits, recreational disturbance and recreation-induced habitat modification such as accidental fire, has long been a concern. Human use causes direct impact on the beaches themselves, including direct displacement of geese, shorebirds, and bank nesting swallows from potential foraging and nesting habitat. Garbage and human waste present ongoing problems. Island closures are necessary to protect biological and cultural resources from adverse modification. Umatilla Island previously open to seasonal beach use would be closed to protect archeological resources and habitat and wildlife resources. Of particular concern is the potential of human-induced fire on the islands, which would threaten the heron rookeries on Big Sand Dune Island, and important sagebrush habitat used by nesting geese on Blaylock Island.</p>				

GOAL 7: Conserve and restore the plants, animals and shrub-steppe community representative of historic Columbia Basin habitats.



Objective 7a: Improve Shrub-Steppe Condition				
<p>Conduct needed management on 30% of the 9,605 acres (2,000 acres at Umatilla and 881 acres at McNary for a total of 2,881 acres) encompassed by the fifteen priority shrub-steppe interest areas (see Appendix F). Needed management is defined as that combination of treatments and re-treatments which successfully improve the overall condition rating resulting in a rise into the next highest condition class (poor, fair, good). Conduct needed management at the rate of about 192 new acres per year over the life of the CCP. See the definitions and habitat condition class ratings in Appendix F.</p>				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
Objective as written above applies to alternatives (✓) <u>or</u> the alternative is modified by replacing bolded type above with the text in this row.	Improve conditions on 10 %	Improve conditions on 30%	Improve conditions on 45%	Improve conditions on 10%
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Each year, improve native plant cover and distribution within one of the fifteen blocks by active planting or seeding appropriate native species. Consider needs of long-billed curlew, burrowing owl and other shrub-steppe inhabitants.	✓	✓	✓	✓
Conduct follow up treatments for weeds and/or additional plantings on each managed block as needed.	✓	✓	✓	✓
Conduct chemical weed control to reduce cheatgrass and other targeted weeds annually.	✓	✓	✓	✓
Initiate integrated pest management by writing an IPM step-down plan by 2008.	✓	✓	✓	
<p>Rationale: An estimated 10.4 million acres of shrub-steppe habitat occurred in the state of Washington at the time of European settlement (Dobler et al. 1996). By the late 1980s only about 40% remained. Locally, Benton and Walla Walla Counties had 48% and 33% of the original shrub-steppe habitat remaining, respectively (Dobler et al. 1996). Both Refuges total more than 10,000 acres of shrub-steppe habitat in various conditions. Most shrub-steppe areas on the Refuges are threatened and/or remain in a degraded condition due to invasive plants, wildfire, and poor native plant recruitment/recovery. Fifteen of the larger blocks of shrub-steppe habitat totaling 9,605 acres were selected (Table 4-2) for the focus of shrub-steppe restoration and enhancement activities based on their size and connectivity on-and-off the Refuges. Though these acreages are relatively small, restoration efforts may provide valuable habitat for some shrub-steppe dependent species.</p>				

Objective 7b: Protect and Restore Burrowing Owls
<p>Pending the results of inventories listed above in 3b, protect and restore suitable habitats for the benefit of burrowing owls. At a minimum, we will maintain one viable colony at the McCormack Unit of Umatilla Refuge.</p>

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	Protect only	✓	✓	Protect only
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Investigate the possibility of transplanting ground squirrels in appropriate areas on both Refuges		✓	✓	
Experiment with the creation of artificial burrows adjacent to existing nesting areas		✓	✓	
Identify historic sites that may have been occupied by colonies on the Refuges.		✓	✓	
Restrict public access to known and historic breeding sites.		✓	✓	
Prepare materials and messages for public outreach and education efforts to raise awareness of burrowing owls and the threats posed by urban development, including shooting/poisoning/control of burrowing mammals.		✓	✓	
Rationale: Burrowing owls are declining within the states of Oregon and Washington and may be at risk on the Refuges. Small numbers have historically nested on the Refuges, but there has not been an extensive inventory.				

Objective 7c: Protect Shrub-Steppe Habitats				
Over the life of the CCP, protect and/or maintain the 9,605 acres (2,796 at McNary and 6,809 at Umatilla) encompassed by the fifteen priority shrub-steppe interest areas for both Refuges (see Appendix F), by minimizing ground disturbance, reducing fire starts , and implementing emergency stabilization and rehabilitation of wildfire impacts.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	Current fires starts and response time	✓	✓	Current fires starts and response time
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Incorporate standards and procedures for maintenance and management activities to minimize activities that disturb soil surfaces.		✓	✓	
Increase fire crew availability and readiness for initial attack by maintaining three fire engine crews at McNary and one at Umatilla.		✓	✓	
Reduce likelihood of fire ignitions from recreational activities in priority shrub-steppe areas through education, interpretation, and careful planning of recreational facilities.		✓	✓	
Increase coordination and cooperation with rural fire districts and expand mutual aide agreements. Provide education and assistance to rural fire district staffs.		✓	✓	
Coordinate with railroad companies to alter train operations, if possible, to reduce fire ignitions. Investigate and document fire starts and seek compensation from railroads for restoration needs where ignitions can be tied to train operations.		✓	✓	
Implement emergency stabilization and rehabilitation actions following wildfires; including soil stabilization, cultural resource protection, nonnative invasive species control, native grass/shrub seeding and planting, and effectiveness monitoring	✓	✓	✓	

Continue to inventory and control nonnative invasive plant species (cheatgrass, starthistle, knapweed) based on IPM plans and procedures.	✓	✓	✓	
<p>Rationale: Remaining shrub-steppe habitats are threatened and/or remain in a degraded condition due to an extensive history of wildfires, poor native plant recruitment/recovery following fires, and ground disturbance activities (roads, trails, heavy equipment). Limiting/eliminating ground disturbing activities and reducing fire starts and/or decreasing fire sizes by through fire suppression and aggressive initial attacks, would benefit habitats. Fire regime is one of the key ecological attributes affecting the viability of the shrub-steppe system. A less intense and less frequent fire regime was present historically. The current more intense and frequent fires create a cycle of habitat modification and degradation that needs to be reversed and better post-fire rehabilitation and stabilization project planning and on-the-ground success instituted.</p>				

Objective 7d. Bitterbrush Management				
Over the life of the CCP, maintain existing stands of shrub-steppe habitat containing bitterbrush as a key shrub component on the Umatilla Refuge; and increase acreage by planting bitterbrush in 50 acres of shrub-steppe to achieve at least a 30% bitterbrush component.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified with the text in this row.</i>	maintain as resources permit	50 acres	100 acres	maintain as resources permit
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Review, consult with experts, and if necessary, initiate research studies to explore local causes of bitterbrush decadence and death at Umatilla Refuge.		✓	✓	
Increase the rate of reduction of the deer herd at Umatilla Refuge, McCormack Unit (see Objective 10d).		✓	✓	
Over the life the CCP, plant 50-100 acres of bitterbrush in appropriate areas of shrub-steppe to obtain a minimum 30% bitterbrush shrub component at Umatilla; avoiding areas known or potentially inhabited by Long-billed curlew.		✓	✓	
<p>Rationale: Shrub-steppe habitats on Umatilla Refuge, and to a lesser extent on McNary Refuges, have historically contained areas of high density bitterbrush. Bitterbrush has been declining at an alarming rate in recent years; possibly from fires, altered hydrology, herbivory by deer, and/or all three. Herbivory was identified as a moderate stress on shrub-steppe habitats as a whole, but it disproportionately affects bitterbrush. Reductions in fire ignitions and fire damage can benefit bitterbrush and are covered in Objective 7c. At this time, the Refuge does not have a strategy for addressing altered hydrology. Restoring bitterbrush to these areas would increase the overall plant diversity and integrity that is characteristic of good quality Lower Columbia Basin shrub-steppe. Restoring bitterbrush as a natural component of the historical assemblage of plants present on the Refuges' shrub-steppe habitat, would also be consistent with the Service's 2001 policy on Biological Integrity, Diversity, and Environmental Health (601 FW 3). However, the Refuges will avoid concentrating bitterbrush plantings in curlew focal areas because curlews tend to avoid dense shrubs. Pampush (1981) found that nest density was negatively correlated with vegetation height and vertical density, and areas with bitterbrush and dense forbs were avoided by curlews.</p>				

Objective 7e. Restore Shrub-Steppe Habitats by Decreasing Roads and Development				
Restore native shrub-steppe habitats on suitable lands such as those occupied by unnecessary roads, waste sites, gravel pits and cropland no longer suitable or needed for crop production for waterfowl. Restore 350 acres total (175 acres for each Refuge) during the life of the CCP.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	100	350	600	

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Close all remaining unnecessary and unauthorized roads or trails in the Burbank Sloughs and the Peninsula Unit of McNary, and Paterson units at Umatilla, as well as other Refuge sites as needed. Restore 25 acres of shrub-steppe on these areas. Also see Objective 9i.	✓	✓	✓	
Restore to native shrub-steppe habitat 75 acres of former mining and gravel sites adjacent to Humorist Road at McNary, and other minor sites as needed. Remove large rock piles, level all areas, and restore native shrub-steppe habitat by controlling nonnative plants (i.e. cheatgrass and kochia) prior to seeding areas with site-appropriate native grass seed or planting native shrubs.	✓	✓	✓	
Restore native shrub-steppe plant communities on 250 acres of fallow croplands which are not needed or are unsuitable for crop production as identified on the vegetation map.		✓	✓	
Restore native shrub-steppe plant communities on up to 250 acres of existing cropland if agricultural acreage is reduced. Restoration of cropland should be completed in the same year that the land is taken out of production, in order to take advantage of weed free fields and the availability of fall irrigation.			✓	
Use chemical weed control treatments and fall native grass seed drilling when possible.	✓	✓	✓	
Use site monitoring, multiyear follow-up treatments, and selective planting of shrubs and forbs in all restoration treatments.		✓	✓	
Consider needs of high priority wildlife species including: burrowing owl, long-billed curlew, and ground squirrels in site plans.	✓	✓	✓	✓
<p>Rationale: Shrub-steppe habitats can be restored on many areas, including areas those occupied by unnecessary and unauthorized roads, especially in the Burbank Sloughs and Peninsula Units. The existing spider-like web of trails is the result of illegal and/or unfettered public access over many years of management with little enforcement presence. Once access is restricted to designated roads, all unnecessary roads can be restored to shrub-steppe habitat. It is estimated that 25 acres of roads, trails, and waste sites could be closed and restored. In addition, there are approximately 250 acres of abandoned former agricultural lands in a weedy condition are absent of native grasses or shrubs. These lands can also be restored using chemical weed control, fall native grass drilling, and selective plantings of shrubs and forbs. In addition, if agricultural land dedicated to production of crops for wildlife is reduced under Alternative 3 of this plan; an additional 250 acres of existing cropland will become available for restoration. Restoration of croplands should be completed the same year lands are taken out of production, to take advantage of weed free fields and the availability of fall irrigation. Former gravel and rock operations off of Hansen Loop Road at McNary account for another 75 acres of land for potential shrub-steppe restoration. Because much of the restoration will occur on smaller habitat fragments, it is important to carefully consider the needs of high priority wildlife species including: burrowing owl, long-billed curlew, and ground squirrels in all site plans prior to initiating restoration projects.</p>				

Objective 7f: Increase Shrub-Steppe Connectivity				
Increase connectivity of Refuge priority shrub-steppe areas to off-Refuge shrub-steppe lands adjacent to or near the State Line and Juniper Canyon Units on McNary Refuge.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓).</i>			✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Work with neighboring private landowners within the Wallula Gap area to pursue cooperative plans and/or incentive programs for maintaining or improving shrub-steppe habitats. Also see Objective 8c.			✓	
Explore use of cost share and volunteer agreements, projects, grants, easements and other innovative tools to encourage restoration and/or maintenance of surrounding lands. Also see Objective 8c.			✓	

Explore use of cooperative agreements/memorandums of understanding with the Bureau of Land Management, Lewis and Clark College and Oregon Department of Lands for projects and coordinated management efforts to improve habitat. Also see Objective 8c.			✓	
<p>Rationale: Habitat fragmentation was identified as a medium stress to the shrub-steppe system on the Refuge, which stems from a variety of threats, including transportation and development, agricultural conversion, and an altered fire regime. The most promising areas, in which greater connectivity could be achieved, are the shrub-steppe habitats within the Wallula Gap area, which represents one of the most extensive areas of good quality habitat in close proximity to the Refuge. This checkerboard pattern of ownership, however, will need a cooperative effort by various landowners and government entities to effectively protect and restore this area. Unique resources such as the peregrine falcon, prairie falcon, and golden eagle use areas extend over many ownerships. Large portions of land owned and managed by the Bureau of Land Management and Lewis and Clark College may lend itself to joint projects and coordinated management efforts to improve habitat. Cost share and volunteer agreements/projects, grants, easements and other innovative tools used to encourage restoration and/or maintenance of surrounding lands could be effective in protecting habitat on a larger landscape scale needed by several species. Also see Objective 7c.</p>				

GOAL 8: Protect and maintain the ecological integrity of talus, outcropping, and cliff habitats for natural levels of species diversity.

Objective 8a: Maintain Intact Rock Structures				
Protect and maintain all cliffs, talus slopes, and outcroppings in intact structural condition to benefit cliff nesting birds (peregrine falcon, prairie falcon, and white-throated swift) and other unique species (common night snake, and rattlesnake hibernacula).				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Prevent illegal mining or extractive activities on the Refuges' natural rocky features and basalt columns, including collection for home landscaping, through proper signing and education. Photograph/document significant areas most threatened by illegal activities.	✓	✓	✓	✓
Provide adequate sanctuary for raptor nesting sites, and limit public uses to the Big Six uses only, in areas without significant nesting bird populations.	✓	✓	✓	✓
<p>Rationale: Maintaining the size and composition of rocky habitats was identified as a key ecological attribute of the cliff/rimrock/talus and outcroppings target as indicated by cliff dominance (high cliffs), the variety of rock features and the amount of talus with larger rocks and deeper masses. The Refuges have received requests for rip-rap and basalt columns, increasingly being used in home landscaping, with at least one incidence of theft/vandalism occurring at a neighboring Refuge. Signing, law enforcement and education may help prevent illegal activities and theft. The rock outcroppings represent a small portion of Refuge lands, but they provide habitat for cliff nesting birds (peregrine and prairie falcons, white-throated swift, and golden eagle) and other unique species (common night snake, rattlesnake hibernacula, big-horned sheep, and mule deer).</p>				

Objective 8b: Conduct Baseline Inventory of Rocky Habitats				
Conduct baseline inventory of plant and wildlife resources inhabiting rocky habitats, with particular emphasis on Stateline and Juniper Canyon Units at McNary Refuge and Crow Butte and Ridge Units at Umatilla Refuge. Inventories should focus on determining the presence and abundance of birds, bats, reptiles, amphibians, rare plants of any key functional areas such as nest sites or hibernaculum.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Pursue cooperative funding and partner contributions for the inventory.	✓	✓	✓	

Survey and mark the boundary of the Stateline and Juniper Canyon Units at McNary and fence cattle out of protected areas.	✓	✓	✓	
<p>Rationale: The wildlife and plant resources utilizing the Refuges’ rocky habitats have not been systematically inventoried. Experts present during the wildlife and habitat management review stated that the Juniper Canyon/Stateline cliffs and talus areas are known to provide habitat for big herds of mule deer, prairie falcons, white-throated swift, common night snake, big-horned sheep, black-tailed jackrabbit, and golden eagle. In addition, there is a known peregrine falcon eyrie on McNary Refuge, as well as a rattlesnake hibernaculum at Paterson Unit (there may be a hibernaculum at Wallula too). There is the potential for several species of bats and various reptile, and amphibian species to be present as well. An inventory is needed. It is also important to mark the boundary since the zigzag ownership pattern makes it difficult to discern property lines, and to fence cattle out of protect resources.</p>				

Objective 8c: Develop Corridor Management Plan				
<p>In partnership with neighboring landowners and other partners, develop a management plan along the Stateline/Juniper Canyon corridor of McNary Refuge to protect resources and prevent the degradation of biological resources due to misuse or overuse. Plan should specifically focus on:</p> <ul style="list-style-type: none"> • Cooperative wildfire management • Coordination on public uses and access • Coordination on habitat management issues and opportunities • Coordination on wildlife protection 				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>			✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Invite the following partners to participate in the corridor plan: all adjacent landowners, Lewis and Clark College, the Ice Age Institute, Smith Farms, the Bureau of Land Management, ODFW, WDFW, Washington Department of Transportation (WDOT), and Union Pacific Railroad.			✓	
Seek funding from diverse sources (Partners for Fish and Wildlife Program, etc.) and add one term position to aid in the partnership planning effort.			✓	
Work with WDOT to encourage designating the Highway 730 corridor a scenic byway.			✓	
Identify types, magnitudes, and locations of existing public uses and their relation to wildlife resources.			✓	
Discourage the expansion or development of new recreational sites and facilities until more information is gathered about existing biological resources.			✓	
Increase cooperative law enforcement efforts aimed at illegal uses such as trespass grazing, All Terrain Vehicles, and target practice and increase signage and informational efforts			✓	
With partners, address recreational uses including hiking, rock climbing and other uses potentially detrimental to wildlife. As needed, enact use zoning, area closures and/or regulate seasons of use in response to wildlife and habitat data gained in Objective 7B.			✓	
<p>Rationale: The unique native wildlife and plant resources found on the Refuges’ rocky habitats will be best conserved and protected if a larger area-wide conservation plan can be adopted. A plan that involves all landowners in a corridor-wide conservation approach has the potential to restore the rich native diversity of plants and animals. Funding for projects will also benefit from involving a number of partners and publics. Since all the unique native wildlife and plant resources found on the Refuges’ rocky habitats have not been inventoried, it is appropriate to delay development or expansion of any public uses until the resources and sites are known. Currently, the Refuge managed area is open to the big six uses, but because of the severe terrain and lack of parking, access sites, and trails, public use is very light. However there is demand for more hiking trails for wildlife observation, so it is imperative to conduct baseline inventories soon.</p>				

GOAL 9: Visitors and local residents enjoy, value, learn about, and support the Refuges.



Objective 9a: Expand and Enhance Viewing Opportunities and Trail at McNary Headquarters Unit				
Enhance and improve wildlife viewing, interpretive, and trail opportunities and facilities at McNary Refuge’s Headquarters Unit.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above alternatives (✓)</i>		✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Improve the current wildlife viewing trail by developing a safe pathway or boardwalk parallel to Lake Road, or creating a new loop trail that allows visitors to begin and end their walk at the Education Center.		✓	✓	
Provide a spur off the north side of the Wetland 4 leading to a new overlook/interpretive point and continuing on to connect to the Walla Walla District Library.		✓	✓	
Develop a new kiosk/overlook on the north side of the Headquarters overlooking Wetland 4.		✓	✓	
Evaluate connection to Hood Park hiking trail via a proposed underpass at SR 124 if WDOT constructs a new cloverleaf access from State Highway 12		✓	✓	
Expand bird list to an all wildlife species list and make available at the Education Center.		✓	✓	
Enhance viewing opportunities along the south, west and northwest shorelines of Unit 4 by opening vegetation (i.e. reduce the density of emergent vegetation).		✓	✓	
<p>Rationale: The McNary Headquarters Unit is the most heavily used unit at McNary Refuge for wildlife viewing, photography, and interpretation, and is the center point of the Refuge’s Environmental Education program. The current wildlife viewing trail serves all these uses, providing a relatively flat two-mile nature walk through native shrub-steppe habitat, along the shores of two wetlands, and near the edge of Refuge agricultural fields. However, the trail could be much improved with certain modifications. Most pressing is the completion of a loop offering a safe return along Lake Road (currently users who wish to loop back to the headquarters must share the narrow Lake Road crossing with cars and trucks). A boardwalk could be constructed parallel to the roadway or through the east side of the slough. Users have also requested enhancement of viewing areas along the south side of the slough, which can be provided by opening the dense vegetation along the shoreline area. There is an intriguing potential to connect the McNary Headquarters trail directly to the Corp’s Hood Park nature trail and possibly a regional bike trail system through the creation of a SR-124 underpass as part of a WDOT highway 12 improvement project. Doing so could conceivably attract new visitors to the Refuge system; however, impacts need to be evaluated. Local connectivity of the Refuge with the town would be enhanced by connecting the north end of the trail to the library via a new spur.</p>				

Objective 9b: Promote Bird Watching at the Wallula Unit				
Provide new bird watching opportunities and facilities at the Wallula Unit of McNary Refuge with a focus on expanding visitors’ awareness of riparian passerine birds and their habitats.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓		

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Sign and develop the Wallula South Wetland 3 trail for bird watching use. Improve and expand trail from existing parking area using the old road bed and new dike; add foot bridge. The area currently has holes in the old roadbed and other obstacles making it user “unfriendly.”		✓		
Develop interpretive signs for the area focusing on passerine birds and riparian habitat.		✓		
Sign the Horse Trail on north side of Wallula Unit for use by birdwatchers.		✓		
Develop a brochure for a new “birding-canoe” trail along the Walla Walla River. Brochure should describe the birds that can be observed along the route. Partner for an off-Refuge canoe trail connection to either Pierce Campground or upstream to Nine Mile Ranch for canoe put-in, and to the existing boat launch at Madame Dorion for take-out.		✓		
<p>Rationale: The Wallula Unit is currently open for public use but is not promoted by the Refuge for one of its prime assets—riparian bird habitat. Encouraging existing Refuge wildlife viewers (who primarily utilize McNary Headquarters Unit) to use the trails in the Wallula Unit for birding, will expand Refuge visitor awareness of migratory passerine birds and their habitats and diversify visitor experiences. Similarly, defining and advertising a canoe trail along the lower Walla Walla River would expand visitor awareness of safe boating opportunities and enhance users’ ability to sight and enjoy riparian and aquatic birds and other wildlife.</p>				

Objective 9c: Expand Interpretive Overlooks along Highway 14				
Develop (expand upon) interpretive overlooks along Highway 14 overlooking the Columbia River Islands on Umatilla Refuge.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Identify sites and develop interpretive themes with assistance from the Service’s Branch of Visitor Services and Communications.		✓		
Improve Refuge boundary signage where it parallels or is adjacent to State Highway 14.		✓		
Work with the State of Washington and the railroads to plan and fund safe pull-offs with identification signs along State Highway 14.		✓		
Expand, improve, and pave parking lots at overlooks as necessary using Refuge Roads funding.		✓		
<p>Rationale: The drive along State Highway 14 on the Washington side of Umatilla Refuge affords the best overlook of Umatilla Refuge and one of the few broad vistas of shorelines and islands along the Mid-Columbia River. Much of the Refuge boundary along Highway 14 is an ideal location for emphasizing interpretation. Interpretive panels are currently installed at one overlook site but there are opportunities to designate additional sites, especially overlooking the picturesque Blalock Islands. Parking, highway turnoffs, and signing all need improvement.</p>				

Objective 9d: Enhance Viewing Opportunities at the McCormack Unit				
Enhance and expand wildlife viewing, interpretation, and trail opportunities on the McCormack Unit of Umatilla Refuge.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Add improvements such as benches and sun shades along the Morrow County Columbia River Heritage Trail.		✓	✓	
Establish a photography/wildlife viewing blind along the Heritage Trail at a site adjacent to the East McCormack Slough in consultation with professional wildlife photographers.		✓	✓	
Realign last ¼ mile of auto tour route and restore and open up adjacent wetland unit to provide more open water and close up views of wetland and wildlife.		✓		
<p>Improve Heritage Trail alignment and trailhead locations to minimize trail user conflicts between hunting and auto tour routes; and provide better access to trails from a centralized parking area. Trailhead parking would be located at current hunter check station parking lot with three possible realignments of the trail. Update Refuge brochure after any realignment.</p> <ul style="list-style-type: none"> • Shift Morrow County is Columbia River Heritage Trail south along the south ridge road and connect the trail to current hunter check parking area; eliminate crossing the wetlands. Under this proposal the fill material and bridge added to cross the wetland would be removed. • Combine 1 above, by shifting the Columbia River Heritage Trail south along the south ridge road, connecting the trail to the current hunter check-in parking areas and eliminating crossing the wetlands; plus construct a .2 mile loop trail on the north side of East McCormack Slough connecting the current hunter check-in parking area with the existing auto tour route. • Connect to the current Heritage Trail and auto tour route from the hunter check-in parking lot via a bridge and/or boardwalk area making a .2 -mile loop trail; but no realignment of current Heritage Trail or removal of the bridge. 	✓	✓	✓	
Explore potential for adding side trails off Heritage Trail; however not in the proposed closed area of east McCormack Slough.		✓	✓	
<p>Rationale: The McCormack Unit is the focal point for Umatilla Refuge wildlife viewing activities. The improvements listed above will enhance the visitor viewing experience, increase visitor access to interpretive and informational material, and provide better opportunities for wildlife photography and other nonconsumptive uses from designated sites. These activities will complement Objectives 9e (nearby facility consolidation and improvement) and Objective 1d (designation as sanctuary on the East McCormack Slough). To reduce waterfowl hunter/wildlife observer/auto tour route user conflicts, the Heritage Trail could be realigned to be adjacent to Ridge Road above the slough. Although this would limit user conflicts, it would lessen opportunities for viewing wetland birds at close proximity. The preferred option is to build a boardwalk along Patterson Ferry Road from the hunter check station parking lot to the current trailhead but have seasonal closures on the trail. This is the preferred alternative because it brings trail users closer to the sloughs and improves wildlife viewing and photography opportunities.</p>				

Objective 9e: Consolidate McCormack Unit Visitor Facilities				
Develop a consolidated visitor contact site that includes the hunter check station; trailhead facilities; visitor orientation; information interpretive panels; and a new Refuge manager's office at Umatilla Refuge's McCormack Unit.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
Objective as written above applies to alternatives (✓)	✓	✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Replace and move a new Refuge manager's office to the McCormack Slough check station site.	✓	✓		
Create small interpretive area at contact station at or near the new manager's office.	✓	✓		

Create outdoor visitor orientation/interpretive panels and/or kiosk; and have parking area serve as trailhead for Heritage Trail.		✓		
<p>Rationale: The Refuge manager’s office is currently located on the Columbia River shoreline on the McCormack Unit. The area is closed to public access and well away from McCormack Slough where most Refuge visitors spend time. Moving the manager’s office to the hunter check station location will provide the public with greater opportunities to ask questions of the manager, will provide the manager a better understanding of visitors and their use needs and patterns, would provide greater program visibility, and will promote visitor compliance with Refuge regulations.</p>				

Objective 9f: Improve Horseback Riders’ Awareness of Refuge Riding Areas and Policies				
Horseback riders should be aware of and understand the reasoning behind horseback riding restrictions at both Refuges.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Assess usage of trails by horseback riders		✓	✓	✓
Develop new signs and/or improve existing signs, brochures, or kiosks to inform users that horseback riding on the Refuges is limited to public roads and horseback riding trails and to explain the reasons for restricting riding to these areas (non-Big Six use, nonnative seeds are spread by hoof and through manure).		✓	✓	
Work with local horseback riding clubs to improve relationships, develop partnerships, and promote the “Adopt a Trail” program.		✓	✓	
Increase patrols and continue using law enforcement to educate and/or cite offenders.		✓	✓	✓
Use Friends Newsletters to get the message out to the riding public (Friends Group members have a large positive impact in spreading the Refuge message).		✓	✓	✓
<p>Rationale: Horseback riding is popular with local and surrounding riding clubs and horse owners. Currently, horseback riding is allowed on existing roads and two designated trails. Use is seasonal, mostly during the fall and spring. This contingency has historically been very supportive of the Refuge and has advocated an “Adopt a Trail” program. This objective should be attainable by implementing the stated strategies under the checked alternatives.</p>				

Objective 9g: Manage Madame Dorion Park as a Day-use Only Site.				
Limit public uses at McNary Refuge’s Madame Dorion Park to day use only with an emphasis on the Big Six uses and eliminate public camping.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified with the text in this row.</i>	✓	✓	✓	Continue to operate campsite
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
After publication of this CCP and in coordination with and review by the Corps, Walla Walla County, and owners of the campsite and park at the Pierce Happy Valley Campsite, close the campsite at Madame Dorion Park and change use to a day use area only.	✓	✓	✓	
<p>Rationale: The January 2000 Cooperative Agreement with the Corps specified that the Madame Dorion Park and campground were to be operated and maintained for the term of the agreement; it also included a provision that the Service should address future management and operation issues by completing a CCP within 5 years of the effective date of the Agreement. During the CCP review, the team focused on the presence of an alternative, privately-owned campground (Pierce Happy Valley) in close proximity to the Refuge, just 4 miles upstream. This well maintained fee camping site provides enhanced services over the government-operated campground. The team believes the public is better served by converting Madame Dorion Park to a day use only site, reducing law enforcement issues associated with camping, and</p>				

allowing the Refuge to promote Big Six uses such as wildlife viewing and photography at Madame Dorion Park site. Existing boat launch and rest area facilities would be maintained.

Objective 9h: Eliminate Illegal Shooting				
Eliminate illegal target shooting at gravel pits at McNary's Juniper Canyon and Peninsula Units.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Install Refuge unit entrance signs on each unit and clearly sign illegal target shooting areas with "No Target Shooting" signs.	✓	✓	✓	✓
Clean up debris in target shooting areas, especially at Juniper Canyon.	✓	✓	✓	✓
Increase patrols and use law enforcement to educate and deter illegal usage.	✓	✓	✓	✓
Coordinate with the Refuges' Friends Group, the Richland Rod and Gun Club, and other news outlets to get the message out to the public.	✓	✓	✓	✓
Rationale: As an illegal activity that causes disturbance, trash issues, and safety concerns, it needs to be eliminated.				

Objective 9i: Drastically Reduce Dumping at the Burbank Sloughs and Peninsula Units and Involve the Burbank Community and Other Refuge Users in Maintaining a Clean Environment				
Reduce the tonnage of dumped material at the Burbank Sloughs and Peninsula Units of McNary Refuge to <1 ton/year, within 5 years, to increase value of habitat and reduce pollutants at sites.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with the text in this row.</i>	✓	✓	✓	5 tons/year dumped currently
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Increase present efforts to involve and inform the Burbank community and other Refuge users about to reducing dumping. Begin outreach during initial cleanup project so the that area is less likely to revert to its former condition: consider workshops, posters, direct letters, contests, school and youth involvement.	✓	✓	✓	
Research title history to accurately establish boundary at the Burbank Sloughs and Peninsula Units. Survey and post the boundary.	✓	✓	✓	
Define and mark access points and routes, closing and restoring other unauthorized routes and access points. Develop one or two main entrance points and sign them appropriately as entrances of a National Wildlife Refuge unit. (Also see Objective 7e)	✓	✓	✓	
Increase law enforcement, signing, and education, to cut down on illegal activity, especially dumping.	✓	✓	✓	
Increase both law enforcement patrols and regular (scheduled) staff presence on the site by all Refuge staff and/or volunteer representatives.	✓	✓	✓	
Rationale: With its complex shoreline fronting the Columbia River behind the small community of Burbank, the Burbank Sloughs and Peninsula Units possess a great deal of wildlife habitat potential and represent the Refuge's finest potential bank fishing areas. Currently, the area is severely degraded and resources have not been available to improve the site. With its varied topography and dense riparian habitat, it has traditionally attracted a variety of illegal uses, including dumping, methamphetamine labs, illegal road cutting, off road vehicle usage, etc. Because of these illegal uses, many Refuge visitors and staff do not feel safe using these units. Eliminating illegal uses, defining access routes, restoring habitat, and creating a sense of community pride in the Refuge will all be necessary for this unit to serve as high quality habitat for wildlife, for the public to feel safe using the site, and for priority public uses to be the dominant uses on the site.				

GOAL 10: Hunters appreciate and experience a variety of quality hunting opportunities.



Objective 10a: Provide a Variety of Waterfowl Hunting Opportunities				
Provide a wide variety of waterfowl hunting opportunities at both McNary and Umatilla Refuges. (Also see Objective 1d).				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Maintain current fee reservation hunting at the McNary Headquarters Fee Area and McCormack Hunt Unit and evaluate the need for additional areas.	✓	✓	✓	✓
Establish a combination of designated hunting sites (posts) and designated parking on the north side of the Wallula Unit at McNary.	✓	✓	✓	
Close current waterfowl hunt area on east McCormack Slough (207 acres) Unit as described in Objective 1d.		✓	✓	
Open a new designated hunt site (48 acres) along river shoreline with a similar number of hunting posts/sites (opportunity) as east McCormack Slough Unit.	✓	✓		
Coordinate with law enforcement and the public through news releases and signing if an emergency knockdown of cornfields (see objective 1b) is needed during the hunting season due to severe weather. Knockdown may require closure of hunting due to baiting regulations. Severe weather is snow or ice covering most of local fields, and/or weather below 0 degrees F for an extended time, leading to an inaccessible food supply on surrounding farms and agricultural fields. See Objective 1b.	✓	✓	✓	✓
Eliminate goose pit blinds in the middle of McNary Refuge’s Peninsula Unit, and increase the availability and quality of this area for upland bird hunters (see Objective 10c).	✓	✓		
Eliminate fall mowing for geese browse and hunting opportunities for geese on the Peninsula Unit and manage for upland grasslands, nesting cover, and pheasant hunting opportunities.	✓	✓	✓	
<p>Rationale: The variety of waterfowl hunting opportunities that are currently offered at the Refuges are quite popular and allow people of all abilities to enjoy hunting that suits their needs. Fee hunting is very popular at both Refuges (the Refuges have more hunters using fee units than any of the other units); however, many hunters prefer less regulated opportunities. Fee hunts allow hunters to be guaranteed a spot in advance which provides hunters traveling from a long distance some security. Fee hunting can also reduce law enforcement needs. However, the administrative costs of fee hunts are relatively high, and despite the fee, fee hunts generally don’t pay for themselves. There’s also a certain loss of freedom for the user—there is a higher likelihood of encountering regulation, law enforcement etc. Fee hunts were considered but not adopted under any alternatives for the Peninsula area. At some point in the future, if competition for hunting gets more intense, other areas may need to be managed as fee hunt units. However, fee hunting is neither necessary nor desirable for all units, currently, or in the future. The combination of free roam and designated blind sites at the Peninsula Unit and proposed for the Wallula Unit is another method to reduce competition. Requiring hunters to park at designated posts corresponding to hunting posts will reduce conflict over hunt sites which have been a problem at Wallula Unit. Free roam</p>				

hunts are popular with many hunters and will be maintained at the Two Rivers and Burbank Sloughs Units at McNary Refuge, and at the Crow Butte, Ridge, Paterson, and Boardman Units at Umatilla Refuge. Lost waterfowl hunting sites in the East McCormack Slough would be replaced with one new hunt area located along the river shoreline with nearly an equal amount of hunting opportunity. Hunting quality at the new site would likely be better than that provided in the east slough because a sanctuary wetland could be expected to increase overall bird distribution and hunting success, similar to the situation at McNary Refuge with Headquarters Units 3 (sanctuary) and Headquarters Unit 2 (hunted). The goose pit blinds at the Peninsula Unit are seldom used and generally unproductive for goose hunters. Their elimination, together with habitat managed for upland grasslands and nest cover, will provide increased upland game habitat and hunting. Maintain free roam hunts at the Two Rivers and Burbank Slough Units at McNary and the Crow Butte, Ridge, Paterson, and Boardman Units at Umatilla.

Objective 10b: Improve Access for Disabled Hunters				
At the McNary and Umatilla fee hunt areas, improve existing access programs for disabled waterfowl hunters at designated blinds.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Bring blind sites #2 and #8 at the McNary Headquarters fee hunt area, and blind site #11 on the Peninsula Unit up to current Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities (ADAAG) standards for accessibility.	✓	✓		
Bring access and blind site #35 at the McCormack Unit up to current ADAAG standards.	✓	✓		
Add 2 additional ADAAG compliant blind sites: 1 at Wallula and 1 at Patterson, Ridge or Whitcomb.	✓	✓		
<p>Rationale: Currently, the number of blinds designated for disabled hunters is reasonable and meets the current needs. At least one more accessible site may be needed at each unit over the next 15 years to meet the needs of a growing and aging population. However, the current designated blinds and access routes are not up to ADAAG standards. Implementing this objective would further bring the Refuges' compliance with ADA and will provide better opportunities for hunters with disabilities.</p>				

Objective 10c: Enhance Upland Game Bird Hunt				
Enhance the quality of upland game bird hunts for both Refuges; promote consistency in hunting regulations among all Refuge units and increase hunt opportunities.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified with the text in this row.</i>	✓	✓	Maintain current program	Maintain current program
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Decrease permits for the fee based lottery system from 25 to 15 and extend the permit requirement over the first two weekends of the upland game bird season at Umatilla's McCormack Unit.	✓	✓		
Eliminate goose pit blinds in the middle of McNary Refuge's Peninsula Unit, and increase the availability and quality of this area to upland bird hunters.	✓	✓		
Eliminate fall mowing for geese browse on Peninsula and manage for upland grasslands and nesting.	✓	✓		
Within two years of CCP completion phase out current program that allows WDFW to augment pheasant populations for take by hunters at	✓	✓	✓	

traditional sites, during the upland bird hunting season at McNary Refuge.				
Standardize hunt times and hunt days where possible; continue noon start times on fee units only.	✓	✓		
Close current upland hunt area around east McCormack Unit as described in Objective 1d. <ul style="list-style-type: none"> Open new designated site with an approximately equal amount of hunting opportunity along river shoreline (see 1d). 	✓	✓	✓	

Rationale: Fees and permits are primarily used as a tool to limit space competition between hunters and to improve the quality of hunts. At this time, the only location where permits are thought to be necessary is at the McCormack Unit on Umatilla Refuge. Hunters are required to reserve opening weekend in advance through a fee based application process. The current limit of 25 permits per day results in a poor quality hunt because many hunters are constantly cutting each other off in competition for the best hunting spots. Although the number of hunters decreases as the season wears on, implementation of a lottery system and lowering the number of permits for both opening weekends will increase the safety and improve the quality of the hunts.

There is also inconsistency between the management of upland hunts on the former Corps lands and other McNary Units. Regulations (entry times, permits, fees, days open, etc.) should be consistent between units unless special conditions exist. Current inconsistencies make it difficult for hunters to abide by the regulations. In addition, upland bird hunts can conflict with waterfowl hunts partly through space issues (hunters competing for similar areas to shoot) and partly through creating disturbance for each other. Changing the start time to noon on all units except fee areas (after most of the best waterfowl hunting is usually over) would help hunters understand and remember the regulations and would also reduce bird disturbance and conflicts between the different hunting programs.

Goose blinds are unproductive on the Peninsula Unit; staff feels this area is better managed as an upland game site. Because operation of a put-and-take hunting program through stocking of a nonnative species such as ring-necked pheasant is a violation of NWRS policy (601 FW 3.14 F.), this program should be phased out.

Objective 10d: Provide Quality Deer Hunting Opportunities				
Provide quality deer hunting opportunities at McNary and Umatilla Refuges and increase opportunities and permits at Umatilla Refuge's McCormack Unit.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Increase the total number of hunting permits at Umatilla's McCormack Unit to provide more hunting opportunities while reducing the deer population to a target population of 80-100 animals within 5 years.	✓	✓	✓	
To safely accommodate increased hunting permits at Umatilla, extend the length of the season and the days hunted, but continue to limit access to no more than 5-10 hunters per day on the Refuge.				
Annually monitor deer population dynamics and their impacts to vegetation; conduct a post-hunting season November survey; adjust the number of hunt permits for upcoming seasons, considering vegetation conditions and other relevant factors.	✓	✓	✓	

Rationale: Despite five years of deer hunting, little visible improvement has occurred in upland shrub condition on the McCormack Unit. Wildland fires and the management of the John Day pool have contributed to the problem, but staff observations at exclosures show that browsing continues to seriously limit shrub and tree growth in riparian and upland areas. The recent decline in the number of deer permits granted is likely to worsen the problem. Better estimates of deer populations are needed, as are more regular assessments of vegetation recovery. In the meantime, with the current population at 150-200 deer, it is necessary to increase the hunt take, especially of does, to reach the target population of 80-100 deer. Controlled special permit hunts are an effective and inexpensive method of reducing herd size.

GOAL 11: Anglers experience abundant opportunities to catch fish while appreciating the Refuges.

Objective 11a: Provide for Diverse Fishing Opportunities				
Maintain diverse fishing opportunities on both Refuges and improve fishing facilities and access.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified with the text in this row.</i>	✓	✓	Slightly reduce area open to fishing	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Continue to allow WDFW to operate youth and family fishing augmentation/stocking at McNary Refuge’s Quarry Pond (a small isolated pond) each spring; however, limit stocking to rainbow trout populations.	✓	✓		✓
Maintain accessible sites for disabled fishing at Quarry Pond and on the Walla Walla River at McNary Refuge’s Wallula Unit.	✓	✓	✓	✓
Improve parking facilities and access to river shoreline fishing sites: upgrade fishing access at the Two Rivers, Burbank Sloughs, and Wallula Unit at McNary, and the McCormack and Paterson Units at Umatilla.	✓	✓		
<p>Rationale: Both Refuges have lengthy shorelines, abundant reservoir space, and diverse river, slough, and wetland habitats which provide opportunities for anglers fish for everything from large Chinook salmon to small perch and trout. Warm water fish are abundant and anglers can take home smallmouth bass, walleye, and other fish. At Umatilla, warm water fishing is the most popular kind of fishing and has won regional and national acclaim. Fishing for sturgeon is popular, as is fishing for salmon, steelhead, shad and catfish. Similarly, there are abundant bank fishing opportunities as well as river fishing from boats. This diversity of fishing opportunities is a plus for the Refuges. The Refuges can provide a satisfying recreational experience to many people each year from a great diversity of backgrounds. There is opportunity to upgrade fishing facilities. Although stocking of a nonnative species is a violation of NWRS policy (601 FW 3.14 F.), the current State funded and operated program at Quarry Pond is allowable because it only includes seasonal stocking of rainbow trout, a species that is part of the historic fish assemblage of local streams.</p>				

Objective 11b: Promote Fishing Awareness				
Improve public knowledge and awareness of quality fishing locations on the Refuges and disseminate public knowledge about the Refuge System at fishing and boating areas.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective applies as written above to alternatives (✓)</i>	✓	✓		
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Continue to define and map fishing locations. Develop a fishing brochure or set of tear sheets for the public, including information such as parking, roads, boat launches, and accessibility for people with disabilities. Seek partnerships with State and private groups for funding and publication.	✓	✓		
Improve Refuge fishing and related information by installing kiosks at Casey Pond, Wallula Unit boat launch, Paterson Unit boat launch, and McCormack Slough/Oregon fish hatchery boat launch. Include information about the Refuges, good fishing practices, fish identification and other interpretive information. Seek partnerships with State and private groups for funding and construction projects.	✓	✓		
Conduct surveys to determine needs of the fishing public; and provide a Spanish language informational brochure.	✓	✓		

Rationale: Fishing on the Refuges is dispersed and managing fishing has been more low-key than other Refuge recreational programs. Yet more visits are made to the Refuges for fishing than for any other use. The Refuge’s fishing public is more culturally diverse than any other Refuge user group and includes recent immigrants from a variety of countries and tourists from other parts of the State. Yet many who come to fish are probably unaware that they are on a Refuge. There is an opportunity for enhancing communications with the fishing population, to provide greater information to these users about the Refuge and Refuge System, and to create greater awareness of good fishing practices. Results from surveys will help the Refuge deliver the Service’s message. Since many people who fish on the Refuges are recent immigrants, it is desirable to provide some brochures and information panels in Spanish and other languages as appropriate.



GOAL 12: *Students and teachers understand and value the Refuge System, and the ecology and management of McNary and Umatilla National Wildlife Refuges.*

Objective 12a: Provide Environmental Education for Students

Provide environmental education (EE) for **1,500-3,000 students at McNary and 100-500 students at Umatilla annually**. Ensure that the program helps fulfill Washington Assessment of Student Learning (WASL) curriculum requirements.

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified by replacing bolded type above with text in this row.</i>	✓	✓	✓	McNary only
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Maintain total students served, but concentrate on programs for 4 th graders.		✓	✓	
Develop more “teach the teacher” programs and Refuge specific instructor training		✓	✓	
Meet annually with Educational Service District 123 to ensure programs are helping the school meet the state requirements.		✓	✓	
Make use of existing high quality programs, such as the Shorebirds Sister Schools Program, that have been developed and tested throughout the northwest.		✓	✓	

Rationale: Currently the Refuges provide EE to 1,500-3,000 students, the majority at the 4th grade level. About 15% of the EE classes hosted are off-Refuge (a staff member or volunteer visits the school). The rest of the classes are held at the McNary Environmental Education Center. By using high quality and time tested programs, such as the Shorebird Sister Schools Program, the Refuge can deliver high quality “teach the teacher” programs with a minimum commitment of resources.

Objective 12b: Provide Environmental Education Support				
Foster long-term support for the Environmental Education program by ensuring that McNary Refuge always has a minimum of 25 committed teachers and 30 committed volunteers available for the program.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Continue to support the Friends partnership at McNary Refuge with supplies and facility space.	✓	✓	✓	✓
Explore opportunities to gain additional teacher volunteers through the Washington State University teaching program.		✓	✓	
Provide leadership and resources to manage and train volunteers.		✓	✓	
<p>Rationale: The Friends group has played a critical role in supporting the McNary Environmental Education program, with an estimated 10,000 hours per year of volunteer support. This is equivalent to about five full-time equivalent employees (FTEs). Supporting the Friends with needed office space, supplies, and an available staff partnership is vital to allow the Friends to continue to provide this critical service. In addition, since the Friends group is comprised mainly of retired citizens in their 60s, 70s, and 80s, for the long-term health of the EE program it is essential to recruit and maintain additional volunteers.</p>				

Objective 12c: Promote Teacher-led Classes				
By the end of 15 years, ensure that at least 75% of the environmental education classes visiting the McNary Refuge are teacher-led.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>		✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Offer teacher training workshops and establish a program to encourage and select trained teachers to use the Refuges' facilities and programs for teacher led EE.		✓	✓	
Conduct outreach to build the base of knowledgeable and enthusiastic teachers.		✓	✓	
Develop lesson plans and supply education module boxes for use by teachers and volunteers		✓	✓	
Develop curricula for the EE program and provide support and resources for the Friends group and volunteers.		✓	✓	
<p>Rationale: An EE program that focuses on teaching the teacher has the potential to both expand the number of potential students participating in EE and to broaden the base of knowledgeable EE instructors in the community. Indirectly, this would have the effect of broadening support for the Refuges within the communities. Since it takes time for teachers to receive the training and get comfortable with the educational materials and environment, we anticipate slowly but gradually moving toward a thirty-five percent mark over the life of the CCP. Currently, Refuges' Complex Outdoor Recreation Planner and the McNary Refuge Manager spend approximately 200 hours per year total supporting the EE program. The support needs of the program would be better served by an EE Specialist and/or Volunteer Coordinator.</p>				

Objective 12d: Maintain and Improve Environmental Education Facilities				
Continue to focus McNary Refuge's environmental education efforts in and around Burbank Slough and the McNary Environmental Education Center (MEEC), while initiating limited EE programs at Umatilla Refuge based on volunteer and community interest and support.				

Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓) or the alternative is modified with the text in this row.</i>		✓	✓	At MEEC only
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Provide support and resources to support EE facilities and programs, and to maintain enthusiastic EE volunteers at McNary Refuge.		✓	✓	✓
Initiate contacts with the community, schools, and volunteers, to find interested teachers and volunteers interested in starting an EE program at Umatilla Refuge.		✓	✓	
Utilize alternative funds to construct EE sites at Umatilla, associated with the auto tour route. Explore opportunities to apply for wildlife-dependent use grants through the Fish and Wildlife Foundation and Heritage Trail funds.		✓	✓	
Tie Umatilla EE facilities (existing and new) into the proposed earthen trail or boardwalk accessing the east McCormack wetland and a .2 mile loop (objective 9d); and integrate features with the Morrow County Columbia River Heritage Trail.		✓	✓	
Rationale: The EE program is currently concentrated at the McNary Refuge which has developed a large volunteer program to support activities. This program benefits the Refuge, community, and school kids and should be supported to keep it running well. Umatilla currently has no program for EE but receives requests from local teachers. Staff, volunteers, and materials could be allocated to Umatilla to begin building an EE program similar to McNary's based on volunteer and community involvement. The existing auto tour route and Morrow County Columbia River Heritage Trail offer excellent areas for EE development and field activities.				



GOAL 13. Manage cultural resources for their educational, scientific, and cultural values for the benefit of present and future generations of Refuge users and communities.

Objective 13a: Protect Cultural Resources				
Increase monitoring and protection of all cultural resources and historical sites on both Refuges while increasing public and staff support and appreciation.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	✓
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Using guidance and assistance from the Regional Cultural Resources Team and Tribal programs assemble Regional/National/Tribal databases, reports, and site information to provide Refuge managers with specific access-protected data, site information and guidance.	✓	✓	✓	
Comply with Section 106 of the National Historic Preservation Act (NHPA) when conducting ground disturbing activities or modifying historic structures.	✓	✓	✓	✓
Complete a comprehensive cultural survey of both Refuges as called for in Section 110 of the NHPA, and pull together all previous site surveys, work requests and reports for easy access by managers	✓	✓	✓	
Develop a Refuge GIS layer for cultural resource sites and resources that contains barriers to protect sensitive information.	✓	✓	✓	

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All Refuge law enforcement officers will receive training in the Archaeological Resources Protection Act (ARPA), Native American Graves Protection and Repatriation Act (NAGPRA), and other State and Federal cultural resource regulations no later than March 2008.	✓	✓	✓	
Develop law enforcement monitoring protocols and schedules for patrolling cultural sites as part of a Law Enforcement Management Plan, to be completed no later than 2008. Hire one additional Law Enforcement Officer.	✓	✓	✓	
Identify and protect archaeological and cultural resources associated with rocky features; coordinate with the Umatilla Tribe’s Cultural Resources Program to identify significant sites, and plan for the protection at rocky sites; especially on the Stateline, Juniper Canyon, and Columbia River Island areas.				
<p>Rationale: The key to protecting cultural resources is promoting knowledge of and appreciation for the resources. Currently, information on known cultural sites is fragmented and not easily accessible to the Refuge Managers responsible for the Refuges’ management and operations. Umatilla had a comprehensive survey of resources completed by Willamette Associates (1986) and there are several other major surveys and project-specific survey work and reports that include portions of both Refuges; however, a comprehensive access-protected GIS-based database is needed. Law enforcement officers have received training in cultural resource law, but continuing education and coordination, with Tribal and State officers, is needed. Rocky sites are specified because Refuge managers do not know enough about the cultural resources of these sites.</p>				

Objective 13b: Increase Awareness and Appreciation for Cultural Resources				
Increase awareness of and appreciation for historic, archaeological, and cultural resources among Refuge staff and the public.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Bi-annually, provide all Refuge staff with 2-4 hours of training on managing historic, archaeological, and cultural resources.	✓	✓	✓	
Consult with Tribes, historical societies, and other preservation partners to identify types of cultural resource information appropriate for public interpretation.	✓	✓	✓	
Partner with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and other interested groups to tell the history of the Stateline-Wallula area, and prepare media (pamphlets, signs, exhibits) that portray the American Indians’ and early settlers’ cultural resources and history, on the Refuge, with emphasis the on fish and wildlife resources and their uses during these periods.	✓	✓	✓	
Partner with Tribes, historical societies, interested groups, and government agencies, to develop an overlook site at Wallula to interpret the rich history and importance of the area to Tribes and early Washington settlement.	✓	✓	✓	
Partner with the CTUIR, the Oregon Heritage Trail committee, and other interested groups, to tell the history and interpret the cultural resources of the Umatilla Refuge, and prepare media (pamphlets, signs, and exhibits) describing the history of American Indians and early settlers in this area.	✓	✓	✓	
<p>Rationale: Little interpretation of cultural resources has occurred to date on the Refuges. The rich history and cultural sites within both Refuges needs to be told. The Refuge, however, needs assistance and could achieve a higher level of interpretation by partnering with tribes and groups interested in history.</p>				

Objective 13c: Coordination on Cultural Resources				
Increase coordination and consultation with Tribes.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	

Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
In partnership with Tribes and the Regional Cultural Resources Team, establish "protocol for consultation" to help managers meet NHPA and ARPA requirements including consultation, identification, inventory and evaluation of projects and sites.	✓	✓	✓	
Establish NAGPRA protocol and procedures for handling inadvertent discoveries of human remains, burial objects, sacred objects, and objects of cultural patrimony.	✓	✓	✓	
Meet at least semiannually to discuss programs and projects with staffs of each of the following: Tribal Cultural Resources Programs; Confederated Tribes and Bands of the Yakama Indian Nation; the Nez Perce Tribe; the Confederated Tribes of the Umatilla Indian Reservation; the Confederated Tribes of the Colville Indian Reservation; and the Wanapum Band of Indians.	✓	✓	✓	
Rationale: Research conducted for this CCP has confirmed the historical presence of the following tribes within the lands encompassed by Refuge lands: Palouse, Cayuse, Yakama, Walla Walla, Umatilla, Nez Perce and Wanapum Tribes and affiliated bands. Although the Refuges have had consultations and meetings in the past, it is important that communication and consultation become more regular and systematic. Since the 2004 ruling by the 9th Circuit Court of Appeals on the Kennewick Man case, it has become incumbent on agencies to ensure that special and significant genetic or cultural relationship to a presently existing indigenous Tribe has been demonstrated, before any objects and remains can be repatriated. How the Refuges can accomplish this, in order to comply with NAGPRA, needs to be addressed.				

Objective 13d: Shoreline Bank Stabilization				
Explore the potential for shoreline bank stabilization, and bio-engineering, at eroding areas on the Strawberry Islands and Umatilla shoreline to protect cultural resources listed on and eligible to the National Register of Historic Places (NRHP).				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Apply for Corps and BPA funding for protection of shorelines threatened with erosion as a result of dam/reservoir operations.	✓	✓	✓	
Rationale: Some bank restoration was completed by the Corps at Strawberry Island. Erosion from operation of the reservoirs may threaten cultural resources at Strawberry Island and the Umatilla Refuges' islands in the Columbia River, and should be considered effects under the Corps/BPA Systems Operation program.				

Objective 13d: Increase Management Efforts for Archaeological Features at Two Sites on the National Register of Historic Places				
Identify and protect archaeological and cultural resources associated with the Miller Site and Telegraph Island, both listed on the National Register of Historic Places.				
Alternatives	Alt 1	Alt 2	Alt 3	Alt 4
<i>Objective as written above applies to alternatives (✓)</i>	✓	✓	✓	
Strategies Applied to Achieve Objective	Alt 1	Alt 2	Alt 3	Alt 4
Adopt and accomplish recommendations from the 1983 Strawberry Island Excavation Report (Schalk 1983), including removing sage and basin wildrye and replacing it with bluebunch wheatgrass and other forbs better representing historic conditions.	✓	✓	✓	
Increase law enforcement efforts to protect cultural resources at these two sites.	✓	✓	✓	
Conduct annual site visits and maintain written records and photo documentation.	✓	✓	✓	
Rationale: The final report by archeologists conducting the 1978-1979 Strawberry Island excavation (Schalk 1983), recommended five management actions to improve protection of the Miller Site, which is on the Register of National Historic Places. One of the recommendations was to maintain vegetation at an early stage of succession. Researchers were worried that both big sagebrush and basin wildrye, which were just beginning to colonize the previously bluebunch wheatgrass dominated site in the 1970s, could damage buried sites because of their extensive root systems. Since then, both species have come to dominate the surface of the archeological site.				

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Chapter 3. Physical Environment

3.1 Climate

The Refuges lie in the semi-arid shrub-steppe Columbia Basin Plateau in southeastern Washington and northeastern Oregon. 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, and the Cascade Range generates a rain shadow that limits rain and snowfall in the eastern half of Oregon and Washington States. The Cascade Range also serves as a source of cold air drainage, which has a considerable effect on the wind regime of the area. Mountain ranges to the north and east of the region shield the area from the severe winter storms and frigid air masses that move southward across Canada.

Meteorological measurements have been taken at the Hanford Meteorological Station since late 1944, and can be considered representative of the general climates of both McNary and Umatilla Refuges. Hanford data are used below to discuss weather patterns on the Refuge.

A. Temperature

Based on data collected from 1946 through 2002, the average monthly temperatures range from a low of 31°F in January to a high of 76°F in July. The highest winter monthly average temperatures recorded were 44°F in February 1958 and February 1991, and the lowest average monthly temperature was 12°F in January 1950. The highest monthly average temperature recorded was 82°F in July 1985, and the lowest summer monthly average temperature was 63°F in June 1953.

Daily maximum temperatures vary from an average of 35°F in late December and early January to 96°F in late July. 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. The greatest number of consecutive days on record with maximum daily temperatures of 90°F is 32. The record maximum temperature was 113°F, recorded on August 4, 1961, and again on July 13, 2002.

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. 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. The greatest number of consecutive days on record with minimum daily temperatures of 0°F or below is 11. The record minimum temperature of -23°F was recorded on both February 1 and 3, 1950.

B. Precipitation

Average annual precipitation 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. The wettest season on record was the winter of 1996–97, with 5.4 inches of precipitation; the driest season was the summer of 1973, with only 0.03 inches of precipitation. Most precipitation occurs during the late

autumn and winter, with more than half of the annual amount occurring from November through February. Days with greater than 0.50 inches of precipitation occur on average less than once each year.

Average snowfall ranges from 0.1 inch in October to a maximum of 5.2 inches in December, decreasing to 0.5 inches in March. The record monthly snowfall of 23.4 inches occurred in January 1950. The seasonal record snowfall of 56.1 inches occurred during the winter of 1992–93. Snowfall accounts for about 38% of all precipitation from December through February.

Fog records at Hanford may differ with those for both Refuges, as the Refuges generally see more fog days as a result of slightly lower elevations and the concentration of river systems (Columbia-Snake-Walla Walla Rivers at McNary Refuge and Columbia-Umatilla Rivers at Umatilla Refuge). So the following are likely under-reported. At Hanford, fog has been recorded during every month of the year; however, 89% of the occurrences are from November through February, with less than 3% from April through September. The average number of days per year with fog (visibility of six miles or less) is 48; the average number of days with dense fog (visibility of 0.25 mile or less) is 25. The greatest number of days with fog was 84 in 1985–86 and the least was 22 in 1948–49. The greatest number of days with dense fog was 42 in 1950–51 and the least was nine days in 1948–49. The greatest persistence of fog was 114 hours in December 1985, and the greatest persistence of dense fog was 47 hours in December 1957.

C. Wind

Monthly average wind speeds varies between the Refuges, as features such as the Wallula Gap, Walla Walla Valley and Horse Heaven Hills influence local microclimates within the Refuges. Hanford records are likely lower for wind speed and wind events compared to both Refuges, with maximum wind speeds and wind days occurring along the Stateline and Juniper Canyon Units as a result of the Wallula Gap. In general, winds are lower during the winter months, averaging six to seven miles per hour (mph), and faster during the summer, averaging eight to nine mph. The fastest wind speeds on Hanford are usually associated with spring and fall flows from the southwest. Monthly averages and extremes of temperature, dew point, and humidity are presented for Hanford in Neitzel (2004).

Prevailing wind directions near the surface in most of the Refuges 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. During the spring and fall, there is an increase in the frequency of winds from the southwest and a corresponding decrease in winds from the northwest.

Concerns about severe weather generally center on hurricanes, tornadoes and thunderstorms. Washington does not experience hurricanes, and tornadoes are infrequent and generally small in the northwestern part of the United States. The National Climatic Data Center maintains a database that provides information on the incidence of tornados reported in each county in the United States. This database reports that in the ten counties closest to the Refuges (Adams, Benton, Franklin, Grant, Klickitat, Kittitas, Walla Walla and Yakima Counties in Washington, and Morrow and Umatilla Counties in Oregon), only twenty-two tornados have been recorded since 1950. Of these, fifteen tornadoes had maximum wind speeds estimated in the range of 40 to 72 mph, four had maximum wind speeds in the range of 73 to 112 mph, and three had maximum wind speeds in the range of

113 to 157 mph. There were no deaths or substantial property damage (in excess of \$50,000) associated with any of these tornadoes.

3.2 Hydrology

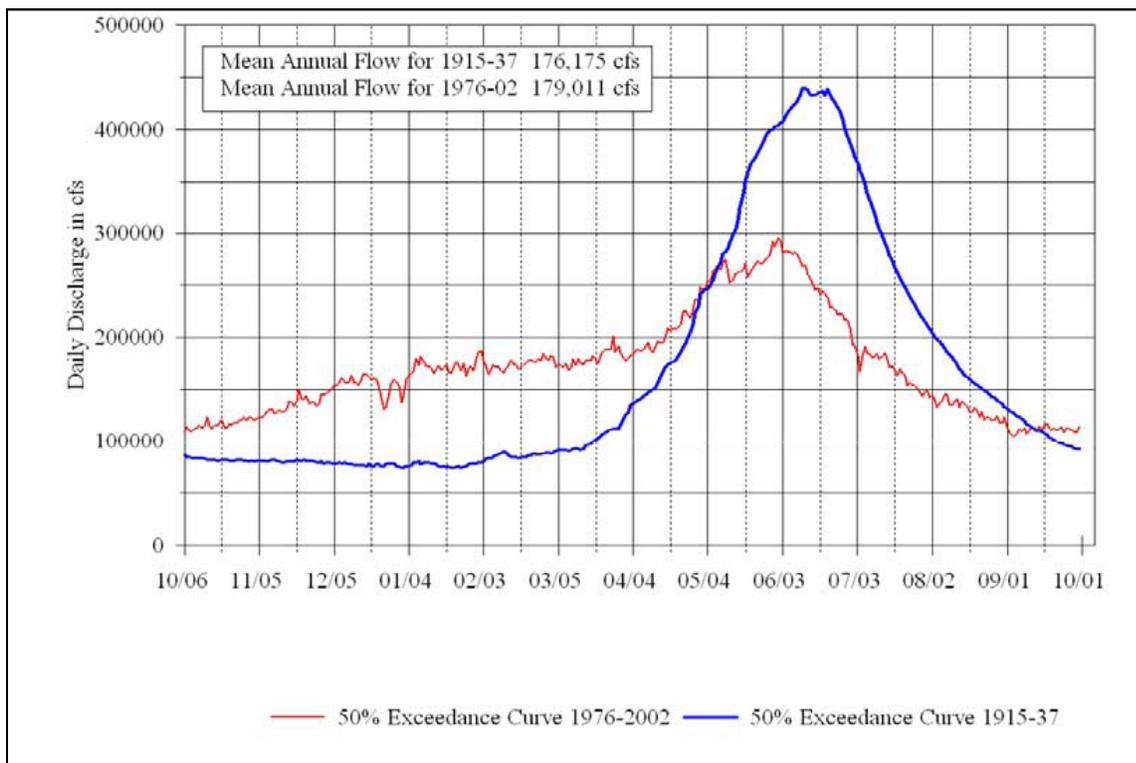
A. Columbia River and Hydropower Project System

Both Refuges are situated on and adjacent to slackwater pools created by the McNary and John Day Lock and Dam Projects located on the Columbia River. The dams are two of 31 federally owned hydropower projects on the Columbia and Snake Rivers that are owned and operated by the U.S. Army Corps of Engineers and the Bureau of Reclamation (USACE et al. 2005). All 31 dams and the electrical system are known as the Federal Columbia River Power System (FCRPS). Twelve of the major dams were constructed and are operated by the Corps, including McNary and John Day Dams (USACE 2000b). The FCRPS provides nearly 40% of the region's electric power as well as flood control, power production, navigation, recreation, fish and wildlife, and water supplies for irrigation, municipal use, and industrial uses (USACE 2000a). Given their location, the hydrology of McNary and Umatilla Refuges is largely dictated by management of the FCRPS, especially by forebay operations of the McNary and John Day Dams.

Development of hydropower projects on the Columbia River radically altered the flow regime of the river during the twentieth century. Reservoir storage projects constructed watershed-wide, principally between the 1930s and the mid-1970s, have created an active storage capacity in excess of 46 million acre-feet (MAF). This is equivalent to 1/3 of the mean annual flow of the river (as measured at The Dalles, Oregon). This storage capacity can be found in four projects in excess of 5 MAF each, six projects in the 1 to 4 MAF range, and dozens of smaller projects (WDOE and WDFW 2004).

The dams have a profound affect on Columbia River hydrology. In the pre-dam era, the river typically had relatively low flows during the fall and winter (October through March) period and much higher flows during the snowmelt runoff period, which occurs in the spring and summer (April through September). The outmigration of salmon smolts coincided with this former peak in flows producing a quick journey or "flush" to the ocean for the young fish. In the post-dam era, normal high water flows have been reduced with the peaks flattened out. Rather than peaking strongly during late spring and summer, spring runoff is contained within numerous storage reservoirs and gradually released over the year. There are now relatively higher flows in the winter, as the stored water is tapped for power generation, and lower summer flows than occurred historically. Figure 3-1 illustrates the change in the hydrograph from historic to current times.

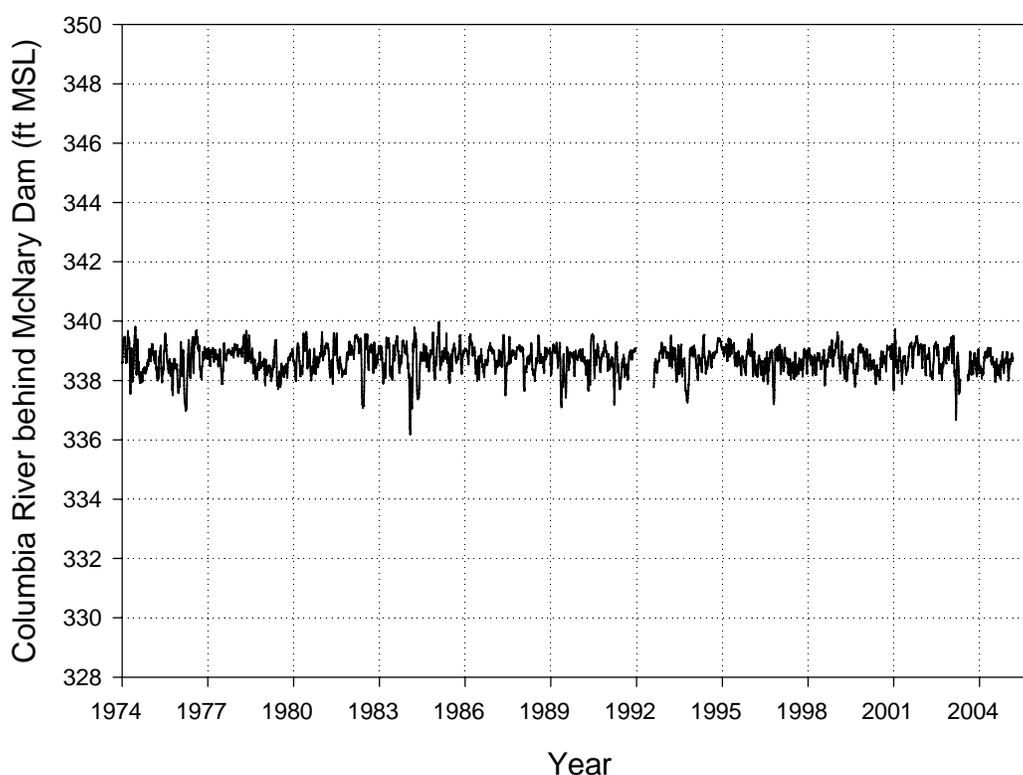
Figure 3-1. Historic and Current Hydrograph of the Columbia River



Exceedance curve: A flow exceedance curve shows the percent of time a flow has occurred historically. In this case, during 50% of the years, the flow equaled or exceeded the value shown. Source: *Managing the Columbia River: Instream Flows, Water Withdrawals and Salmon Survival (2004)* by Committee on Water Resources Management, *Instream Flows, and Salmon Survival in the Columbia River Basin*, National Research Council, 268 pages.

McNary Dam Operations: The McNary Refuge is greatly influenced by the Corps operation of Lake Wallula, the reservoir behind McNary Dam. Lake Wallula at its normal operating pool (an elevation of 340 feet mean sea level [msl]) is 61.6 miles long. The pool extends one mile up the Walla Walla River, 9.7 miles up the Snake River to Ice Harbor Dam and six miles up the Yakima River. McNary is a “run-of-the-river” project. It has no flood storage, no irrigation storage, and only limited short-term power-peaking functions. Therefore, the pool has been relatively stable, although daily fluctuations occur for power generation (Figure 3-2). In the upper reaches of the pool, near Strawberry Island, greater fluctuations occur seasonally from the backwater effect of variations in river flows. At the dam, the project is physically capable of drawdown from full pool level (340 msl) to minimum pool level (335 msl), a total of five feet. However, normal drawdown typically does not exceed three feet. In general, the pool builds to a maximum elevation at about 8:00 a.m. daily and is steadily drawn down all day as power is generated. The daily range in elevation depends on natural river flows and power demands, but a two or three foot fluctuation at the forebay is not uncommon (Corps, 1976). High pool levels often occur as the result of special requests for barge traffic, recreational needs, and the annual hydro-plane racing event held on the River every summer.

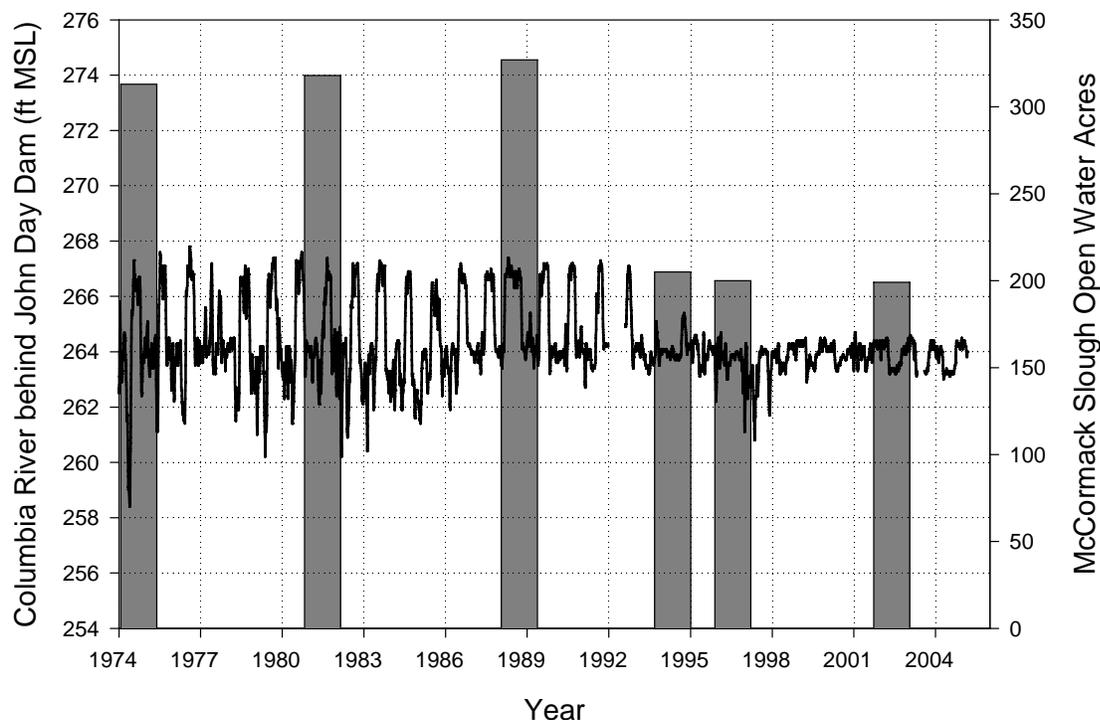
Figure 3-2. Hydrograph of Columbia River Water Levels behind McNary Dam (1974-2005).



John Day Dam Operations: The John Day Dam, 215 miles upstream from the Pacific Ocean, creates a 76-mile-long reservoir (Lake Umatilla). Lake Umatilla is the longest reservoir on the lower Mid-Columbia River and is also operated as a “run-of-the-river” project with little water level fluctuations. Normal reservoir operating elevation is 265 feet msl (normal pool). At the dam, the natural river level is about 100 vertical feet below the normal reservoir pool level, and the spillway crest is about 50 feet below the normal pool (USACE 2000a).

The John Day dam forebay operations were dramatically changed in accordance with the 1993 FCRPS Biological Opinion (BiOp). These changes reduced minimum and maximum pool elevations, especially spring and summer maximum pool elevations (Figure 3-3). Minimum pool levels were based on the needs of irrigators pumping from the river. Outside of drawdown studies in 1998, only slight modifications to dam operations have occurred since 1993. Current John Day Pool operations include a maximum pool elevation of 265 feet msl from October through March and 264 feet msl from April through September (USACE 2005a, USACE per. comm.). Minimum pool remains at 262.5 feet msl year round (USACE 2005a, USACE 2006 per. comm.).

Figure 3-3. Hydrograph of Columbia River water levels behind John Day Dam (1974-2005). Bars represent open water wetland acreage of McCormack Slough for specific air photograph years.



Operations from April through September represent the drawdown period (1.5-foot range of the minimum level) for fish passage (USACE 2005a, USACE 2005b). The 264-foot maximum is in stark contrast to pre-1993 operations, when pool elevations exceeded 267 feet (max 268) during peak spring-summer flows. This 4-foot decrease in maximum water elevation had a large impact to shorelines and shallow backwaters within Umatilla Refuge. Since 1993, the changed river operations create a seasonal cycle of reservoir water levels with higher fall through winter and lower spring through summer elevations from pre-1993 levels, which is a reversed seasonal cycle from both the pre-1993 project period and pre-dam natural flows. The difference in the current April-September and October-March periods averages about one foot in elevation. Frequent, daily and weekly changes in elevation occur, but a cyclical seasonal pattern remains that has profoundly changed Umatilla Refuge wetlands.

Effect of the Endangered Species Act on FCRPS River Operations: In 1991, NOAA Fisheries (formerly NMFS) listed the Snake River sockeye salmon as endangered under the Endangered Species Act (ESA). Over the last several years other Columbia and Snake River salmon and steelhead stocks have been listed under the ESA. Currently, there are 13 listed salmon and steelhead stocks within the Columbia Basin (USACE et al. 2004). The Service also listed two species of resident fish in the basin: bull trout and Kootenai River white sturgeon.

The ESA requires any Federal agency proposing a project that might affect an ESA-listed fish to first seek the expert opinion of the Service or NOAA Fisheries about the effects of the action on listed

species (NOAA Fisheries 2004a). An ESA recovery plan is not yet in place, however, a BiOp can be a component of such a plan as one part of the ESA process (USACE 2005a; NOAA Fisheries 2004a). BiOps are written as interim documents pending results of long-term studies (USACE 2000b).

The FCRPS Action Agencies, consisting of the Corps, Bureau of Reclamation, and BPA, operate the FCRPS consistent with BiOps issued by NOAA Fisheries and the Service (NOAA Fisheries 2000). The NOAA Fisheries FCRPS BiOp “incorporates flow, spill and other measures to improve fish migration conditions for anadromous fish listed under the ESA.” Both the NOAA Fisheries BiOp and the Northwest Power Planning Council Fish and Wildlife Program establish regional processes for fish passage management” (FPC 2005).

Chronology of Biological Opinions and Associated Litigation:

- In May 1993, following the ESA-listing of the Snake River sockeye, spring/summer and fall Chinook salmon, NOAA Fisheries issued its BiOp for 1993 operations of the FCRPS (NOAA 1994).
- The 1993 FCRPS BiOp was set aside by Federal Court in 1994.
- In March 1995, NOAA Fisheries issued its new FCRPS BiOp (NOAA 1995a). The 1995 BiOp concluded that the operation of the FCRPS as described in the 1993 BiOp “is likely to jeopardize the continued existence of listed salmon stocks” (spring/summer Chinook, fall Chinook, sockeye). The BiOp also concluded that “the only way to achieve significant improvements is with long term system reconfigurations” (NOAA 1995a).
- A supplemental BiOp followed in 1998 and 2000 to address additional salmon and steelhead species listed after 1995. They contained measures to avoid jeopardizing the continued existence of listed salmon, steelhead, bull trout and white sturgeon species.
- In June 2003, Judge Redden remanded the 2000 BiOp and directed NOAA Fisheries to resolve several deficiencies (NOAA Fisheries 2004).
- A new BiOp was issued in 2004 and the most recent operations of the action agencies have been under the 2004 BiOp.
- In May 2005 Judge Redden invalidated the 2004 BiOp as arbitrary and capricious and contrary to provision of the ESA, but did not require it to be withdrawn (USACE 2005a; USDC 2005).
- **In October 2005**, the court gave NOAA Fisheries a year to rewrite its BiOp and schedule quarterly reports to the Court (USACE et al. 2005).
- The remanded 2006 FCRPS BiOp will address each of the areas identified as inadequate in the 2004 BiOp. The action agencies prepared an implementation plan that describes actions they intend to implement to avoid jeopardy to Columbia Basin salmonids listed or proposed for listing under the ESA (USACE et al. 2005).

2006 Water Management Plan: Reservoirs slow river current and create slack water, slowing juvenile fish migration through the river system (USACE 2000). Lowering water levels behind the dams to levels that are substantially below the normal operating range is called drawdown. Lower water levels decrease reservoir width and depth, which increases water velocity. Increased water velocity could move juvenile fish through the reservoir more quickly, thus mimicking historically faster journeys downriver (USACE 2000).

The action agencies develop a Water Management Plan each year as part of the overall BiOp implementation planning process. The 2006 Water Management Plan (USACE 2005a, 2005b), includes the following river operations:

- “John Day pool shall operate within a 1½-foot range of the minimum level [262.5–264 ft msl] that provides irrigation pumping from April 10 to September 30. The purpose of this action is to provide a smaller reservoir cross section to reduce juvenile salmon travel time.”
- “The spring flow objective at McNary Dam [April 10-June 30] is set according to the April final runoff volume forecast at The Dalles Dam for April to August. When the forecast is less than 80 maf the flow objective will be 220 kcfs [thousand cubic feet per second]. If the forecast is between 80 maf and 92 maf the flow objective will be linearly interpolated between 220 kcfs and 260 kcfs. If the forecast is greater than 92 maf the flow objective will be 260 kcfs. Weekend flows are often lower than weekday flows due to less electrical demand in the region. During the spring and summer migration period (April through August), the Action Agencies will strive to maintain McNary flows during the weekend at a level which is at least 80% of the previous weekday average.”
- “The summer flow objective at McNary Dam [July 1-August 31] is 200 kcfs.”

Of concern to the Service are recent discussions of lowering the Wallula Pool to 335-336 feet msl during the spring to facilitate smolt passage. If enacted, a 3-4 foot drawdown would seriously and negatively impact McNary Refuge wetlands and irrigation systems. Similar operation changes at John Day Dam have already significantly affected resources at Umatilla Refuge by lowering spring-summer water levels by approximately four feet. The Refuges will need to watch and participate in these discussions to protect wildlife resources.

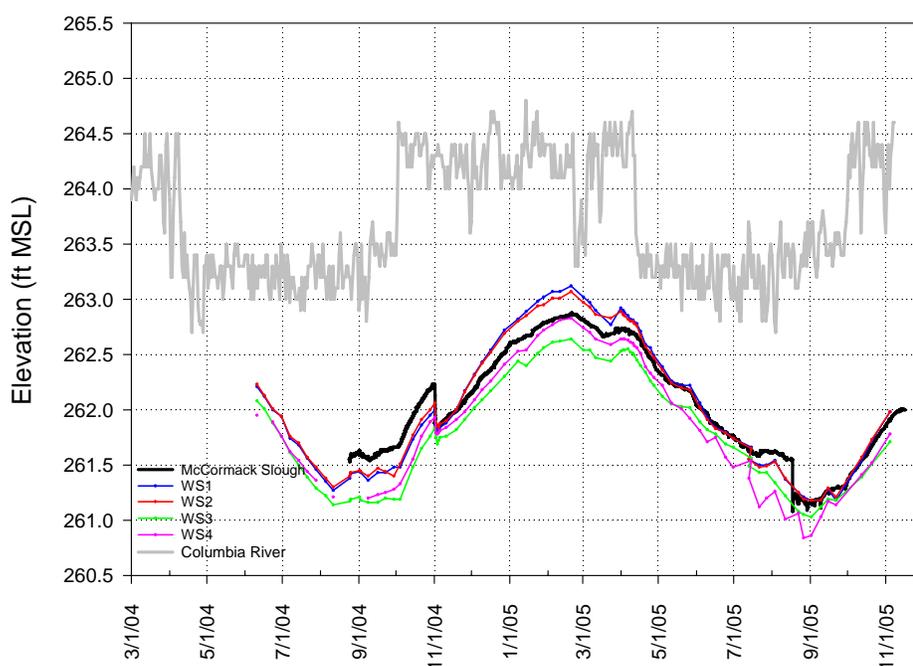
B. Wetlands Hydrology

The majority of the wetlands located on both Refuges are directly or indirectly connected to the Columbia River. Water level patterns in wetlands, therefore, generally follow the water level pattern of the pools themselves. For those wetlands that lack a direct connection to the river, water fluctuations are generally muted relative to the river, with increases and decreases occurring more gradually. Such wetlands include McCormack Slough, four wetland units near the McNary Headquarters, and several wetlands on the Peninsula Unit (J-Line and Curlew).

A recent study by the Service at McCormack Slough of Umatilla Refuge has provided Refuge staff with increased understanding of the relationship between river operations and Refuge wetland hydrology. McCormack Slough, like many other Refuge wetlands, lacks a direct connection to the river. The current land bridge located at the mouth of the slough was created after the initiation of the lowered John Day forebay operating levels, in 1993. Since the advent of the land bridge, the hydraulic connection between the river and the slough has occurred as ground water exchange, which causes the slough’s response to the changing river levels to be muted due to slow groundwater movement through the land bridge. Like the river, McCormack Slough water levels increase from October through March and decrease from April through September. Unlike the abrupt changes in the river,

the seasonal rise and fall of slough water levels is a gradual and steady change that extends through the April-September or October-March periods (see Figures 3-4 and 3-5).

Figure 3-4. Hydrographs of selected groundwater monitoring wells, West McCormack Slough water levels (black), and Columbia River water level behind John Day Dam (grey) (2004-2005). Rapid elevation decreases on November 1, 2004, and August 22, 2005, represented on the graph for groundwater wells and the slough, are due to the breaching of an internal earthen dike, and later a beaver dam, between the western and eastern halves of the slough. Higher water levels in the west slough (which is nearer the river) flooded into the east slough (that extends well away from the river). Since August 22, 2005, a direct overland connection remains within the slough.



A second difference from the river is the annual maximum water level fluctuation in the Slough, approximately two feet, as opposed to a one foot change in the river. Additionally, McCormack slough water levels are about one foot below the river year round. The difference in slough elevation from the river might be due to water flowing from the slough into adjacent groundwater (Figure 6). This loss probably increases with distance from the river and may be exacerbated by groundwater pumping.

Figure 3-5. Hydrographs of selected groundwater monitoring wells, East McCormack Slough water levels (black), and Columbia River water levels behind John Day Dam (grey) (2004-2005). Rapid elevation decreases on November 1, 2004, and August 22, 2005, represented on the graph for groundwater wells and the slough, are due to the breaching of an internal earthen dike, and later a beaver dam, between the western and eastern halves of the slough. Higher water levels in the west slough (which is nearer the river) flooded into the east slough (that extends well away from the river). Since August 22, 2005, a direct overland connection remains within the slough.

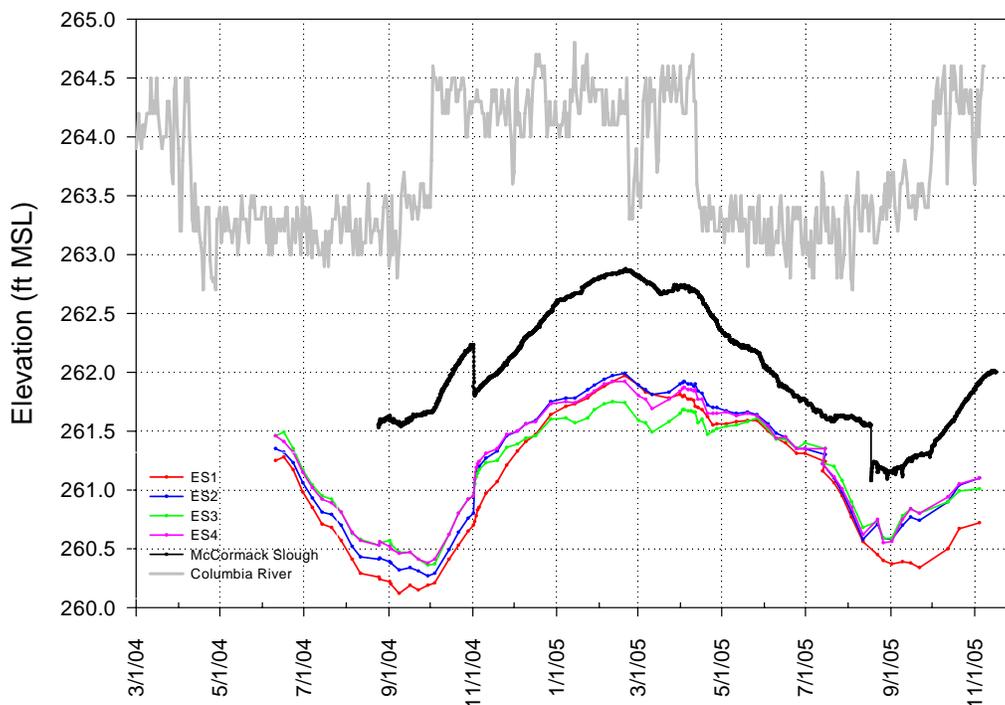
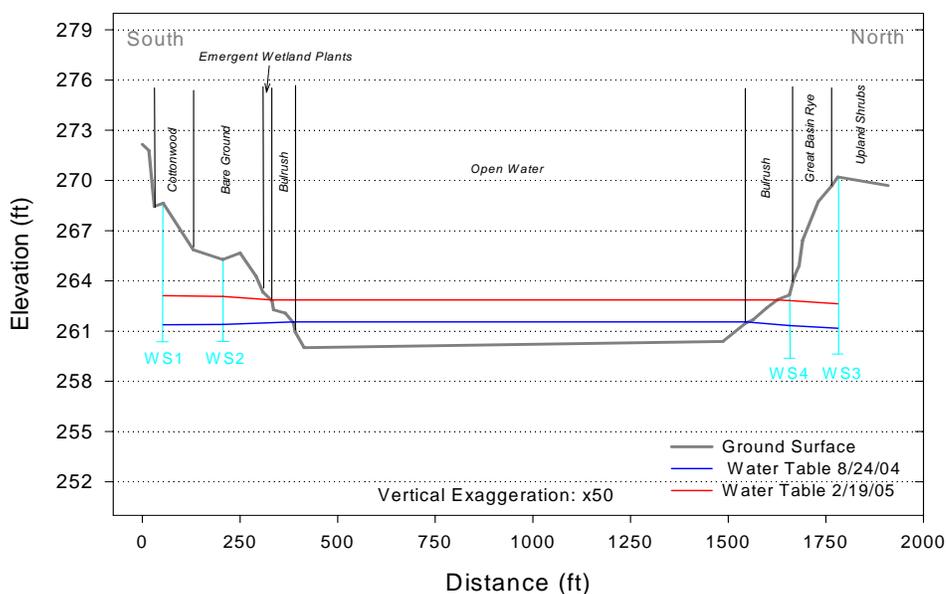


Figure 3-6. Cross section profile through west section of McCormack Slough. The Figure displays highest and lowest water surface elevations in 2004 and 2005, in addition to the approximate location of different vegetation types.



The Slough's current hydro period (and other Umatilla Refuge wetlands) no longer reflects pre-1993 seasonal patterns as before but are more similar to other naturally occurring wetlands that have a summer drawdown. The peak minimum elevation of the slough is at the end of September and reflects a reduction by as much as six feet from pre-1993 conditions. This has had substantial affects to Refuge resources. Open water areas within the slough, after the operational change of the river in 1993, has been reduced from just over 300 acres to slightly under 200, a decrease of 40% in open water surface area. Similar losses have occurred to other Refuge wetlands. Additionally, these changes have had detrimental impacts to all Refuge riparian areas. Stands of trees that were once near the water's edge are now high on the bank, resulting in widespread mortality among trees and shrubs. However, there are some positive benefits of the changed hydrology, such as opportunity to utilize the summer drawdown effect in wetlands. Several areas within McCormack Slough have been mechanically excavated to elevations that now function as highly productive seasonal wetland units (which are intensely managed for waterfowl foods). This potential exists elsewhere on the Refuge, in particular at Paterson Slough.

3.3 Topography and Bathymetry

Except for steep cliffs located along the Stateline and Juniper Canyon Units, the majority of upland habitats at both Refuges is flat or gently rolling. Elevations vary from 265 to 671 feet above mean sea level at Umatilla Refuge. At McNary Refuge, elevations vary from 340 to 440 on McNary, Two Rivers, Peninsula and Wallula Units. Cliffs top 1,200 feet elevations at the Stateline Unit. Bathymetry data is available for McCormack Slough from a Minster-Glasser 1995 survey for the majority of McCormack Slough, from 263 feet (high water level) and below. A complementary topographic and bathymetric survey of designated areas of McCormack Slough was completed by

Ducks Unlimited (DU) in 2004. Topographic mapping was completed for shoreline areas at elevations from 263 feet (high water level) and above. In addition, two small backwaters on the slough (not completed during Minster-Glasser bathometric work) were completed by DU. Most areas of topographic mapping by DU were later excavated during a wetland enhancement project, so mapping of those specific areas does not reflect current conditions.

3.4 Geology

The landforms comprising the Refuges have been shaped by water, wind, and volcanic action.

During multiple ice ages, the last being 18,000 to 12,000 years ago, a series of cataclysmic floods, popularly called the Spokane Floods, inundated large portions of the Pacific Northwest. Periodically, perhaps every 40 to 140 years, waters from glacial Lake Missoula in Montana burst forth past ice dams, crossing and creating the area now known as the Channeled Scablands of Washington, and eventually emptying through the Wallula Gap. For several weeks, as much as 200 cubic miles of water per day were delivered to the Wallula Gap, a constriction of the Columbia River that could discharge less than 40 cubic miles per day. As a result, ponded water temporarily filled the Pasco Basin and the Yakima and Touchet valleys to form huge but temporary lakes geologists refer to as Lake Lewis. Wallula Gap is one of the most spectacular examples of such Ice Age hydraulic dams, and exhibits other flood evidences such as “overtopping flows” on the Horse Heaven Hills which can be seen from McNary Refuge’s Stateline Unit. The Wallula Gap was recognized by the National Park Service as a National Natural Landmark in 1999 (36 CFR Part 62).

In 2001, the National Park Service completed a major special resource study and submitted a report to Congress proposing that an Ice Age Floods National Geologic Trail be established. Such a trail would represent the largest, most systematic, and most cooperative effort yet proposed to bring the dramatic story of the ice age floods to the public's attention. This in turn has the potential to bring significant visitors to the Refuges. The trail would essentially be a network of marked touring routes extending across parts of Montana, Idaho, Washington, and Oregon, with several special interpretive centers located across the region including possibly one proposed for the Wallula Gap on Refuge managed lands.

The following geology discussion is excerpted from the McNary Master Plan (1980). (http://www.nww.usace.army.mil/planning/ER/mcnary/default.htm#7_04).

Columbia River basalt underlies the Refuges and surrounding areas, and is the most prominent rock formation in the Columbia Basin physiographic province. As part of a series of immense lava flows, mostly of a middle Miocene period, this formation covers over 250,000 square miles. The formation, ranging in total thickness to over 5,000 feet, is made up of numerous individual flows, commonly 25 to 100 feet thick, extending laterally for miles. The rock is typically fine-grained, dark gray, dense basalt in the massive parts of the flows, but may be scoriaceous (cindery lava) in the upper parts. The upper parts of the flow are commonly oxidized and partly weathered and, therefore, shades of red and brown are common. Vertical columnar structures of polygonal cross sections formed as the lava cooled.

Throughout the study area, much of the basalt bedrock is overlain by sedimentary deposits composed of several formations. These deposits, consisting of silt, sand, gravel, and volcanic ash of the Pliocene or Holocene periods, were deposited by the glacier-swollen Columbia River at the close of the Pleistocene epoch.

Recent alluvium represented by narrow ribbons of river-washed gravels and reworked loess of volcanic ash, border the Columbia River and many of the smaller streams in the study area. This alluvium covers many larger areas along the Columbia River. With a high ratio of silt to gravel, this material displays limited permeability.

The Columbia River basalt is generally associated with the later sedimentary deposits. Basalt provides a good building or foundation material, and also serves as a principal groundwater aquifer, due to the water-bearing ability of the upper flows. Much of the area is overlain in varying degrees by a veneer of loess. These Pleistocene to Holocene silts were derived in part by wind action.

3.5 Soils

The soils of the Umatilla Refuge are mainly within the Quincy-Winchester-Burbank association. Areas close to the south shore of the Columbia River are largely made up of Burbank loamy fine sand with a 2-5 percent slope. These soils are deep excessively drained soils formed in gravelly alluvial deposits on terraces of the Columbia River. This soil is replaced with riverwash on the north side of the Columbia River.

Further inland from the Burbank soils are the Quincy loamy fine sands, which are found on gently sloping terraces (2-12 percent slope), along the Columbia River. These soils are excessively to somewhat excessively drained and are coarse textured.

South of the McCormack Slough area of the Umatilla Refuge are the Winchester soils and Dune land, which are deep, excessively drained soils. The Winchester soils range in slope from 0-5 percent. Dune land is a very minor portion of the Refuge lands. This soil type is very deep, loose sand that blows and shifts with the wind. These dunes vary in shape and size, but are predominantly 5-20 feet high and orient their long axis from southwest to northeast (Rasmussen 1971).

In addition to these soils the portion of the Umatilla Refuge located on the north shore of the Columbia River contains an additional soil type called Pasco silt loam. This soil has a slope of 0-2 percent and occurs on bottomlands. Pasco silt loam is poorly drained and is affected by salts and alkali to a depth of about 20 inches.

The McNary Refuge soil types are for the most part similar to the Umatilla Refuge soils with exceptions in the Walla Walla River area. The majority of this Refuge contains the same Quincy soils as the Umatilla Refuge with the same general characteristics.

That part of the McNary Refuge found along the Walla Walla River brings in a few new soil types that are similar to the Quincy series. This area has Hezel loamy fine sand and Sagemoor very fine sandy loams. Hezel soils are somewhat excessively drained and gently sloping to somewhat hilly. These soils consist of 15 to 30 inches of loamy fine sand over compact, stratified fine sand and silt of the

Touchet beds (Harrison et al. 1964). The Sagemoor soils are well-drained, medium textured soils that have lime at a depth of 8 to 15 inches below the surface. In addition to these two soil types the Walla Walla River area also has the Esquatzel silt loam soil type. This soil type is found in wide stream bottoms as well drained, medium textured soil.

3.6 Environmental Contaminants

A study of environmental contaminants in sediments, invertebrates, fish, and bird eggs at multiple locations along the Columbia River was completed and published by the Service in 2004 (Buck, 2004). The purpose of the study was to determine contaminant concentrations, compare concentrations within river segments, identify concentrations in biota that exceed guidance or reference levels, evaluate the magnitude of exceedances using hazard quotients (HQs), and derive biomagnification factors (BMFs) for persistent, bioaccumulative compounds. The BMFs were used to develop target fish concentrations (TFCs), or the concentrations in fish estimated to be protective of upper trophic level species such as bald eagles (*Haliaeetus leucocephalus*).

A total of 274 samples of sediment, invertebrates, fish, and eggs of piscivorous and non-piscivorous birds were collected in 1990 and 1991. Samples were collected from the lower Columbia River below Bonneville Dam (four river segments including three Refuges), at Umatilla Refuge, at Crescent Island on McNary Refuge, above McNary Dam, and in the lower Willamette River near Portland. Study results are summarized below.

Results showed that most organochlorine (OC) pesticides were below detection in sediment and biota. However, similar to previous and concurrent studies, the pesticide transformation products DDE and DDD were the most commonly detected and most elevated compounds in biota from both rivers. The pesticide DDE was detected in all fish samples during both years of the study, and in nearly all samples of clams and bird eggs. Polychlorinated biphenyls (PCBs), represented as total Aroclor PCBs or by summing individual congeners, were commonly found in fish and bird egg samples, but were rarely detected in sediment or invertebrates. Polychlorinated biphenyls and DDE in most fish samples exceeded mean concentrations reported in nationwide comparison studies, and exceeded estimated guidance values for the protection of avian predators. Concentrations of DDE and total PCBs exceeded estimated no-observable adverse effect levels (NOAELs) in some eggs of double-crested cormorants and Caspian terns in the lower river segment.

Mercury was detected in all invertebrates and birds eggs, and in most fish sampled. In invertebrates, mercury was below estimated guidance values for the protection of avian invertebrate predators, but some fish samples exceeded these guidance values. Mercury in eggs of some piscivorous birds in the lower river segments exceeded values associated with impaired reproduction in sensitive individuals. Most dioxin and furan congeners were near or below detection in sediment and invertebrates, but were commonly detected in fish and bird eggs. Nearly all fish sampled contained 2,3,7,8-tetrachlorodibenzo-pdioxin (TCDD) and 2,3,7,8-tetrachlorodibenzofuran (TCDF) in excess of guideline values derived in this study or other studies for the protection of bald eagles or other avian predators. The TCDD and TCDF exceeded estimated NOAELs in eggs of some piscivorous birds, particularly double-crested cormorants.

The BMFs derived based on data from Columbia River fish and bald eagle eggs were fairly consistent among river Segments 1 to 3 in the lower river, and the combined BMFs for the three segments were 113 for total PCBs, 75 for DDE, 2.8 for mercury, 16 for TCDD, and 2 for TCDF. The TFC values derived from the BMFs were 0.06 $\mu\text{g/g}$ for total PCBs, 0.04 $\mu\text{g/g}$ for DDE, 0.20 $\mu\text{g/g}$ for mercury, 0.9 pg/g for TCDD, and 7.5 pg/g for TCDF.

Although bioaccumulative contaminants were near or below detection limits in sediment and invertebrates, study results document biomagnification of some OC compounds to concentrations likely resulting in adverse impacts to piscivorous birds. Results did not indicate that individual river segments differed in their contribution to the contaminant concentrations observed in biota. This trend indicates that the river receives contaminants from numerous widespread sources, and that contaminants were evenly distributed in biota. The role of bed sediment in contaminant transfer to biota in the river is unknown, and additional information is needed to characterize this role and to develop better management strategies for bed sediment disturbance.

Study authors recommended a basin-wide strategy to better control release of bioaccumulative contaminants to the river and minimize impacts to fish-eating birds, to monitor changes in OC contaminants over time, and to better address contaminant uptake from sediment sources.

The study authors recommended that Refuges located along the Columbia River provide adequate riparian or vegetative buffers on any land supporting agriculture or pasture, or land formerly used for these purposes, to prevent erosion of soil associated with DDT or its metabolites from entering waterways. The report also recommends that population monitoring or nest counts of breeding terns, cormorants, and bald eagles continue, and that eggs of piscivorous birds be monitored for contaminants every five years.

Other Water Quality Issues at the Refuges: Although not a contaminant issue, an associated water quality problem involves carp—because they stir up the bottom it prevents establishment of aquatic vegetation and the development of the invertebrate community that would provide a food source for various diving waterfowl, as well as numerous dabblers during the breeding season.

Nitrogen levels of 30-35 mg/liter were noted at McNary Headquarters Unit 4 by Environmental Science students from Columbia Basin College (pers. comm., David Linehan). Natural concentrations of nitrogen are generally less than 10mg/liter (Lind 1979). Nitrates cause periodic algal blooms on the sloughs. It is not known whether the high levels of nitrates are attributable partly to chemical fertilizers and if this might be an argument for increasing the level of organic farming on the Refuges.

3.7 Surrounding Land Uses

A variety of land uses occur in the vicinity of both Refuges. Much of the land adjacent to Umatilla Refuge is agricultural or rangeland. Several small commercial enterprises for the storage and shipping of agricultural products are adjacent to Refuge lands. The small towns of Boardman and Irrigon, Oregon, and Paterson, Washington are nearby, but except for the Boardman Unit, little residential development borders the Refuge.

Much of the land in the immediate vicinity of McNary Refuge is also agricultural or rangeland. However, residential and commercial uses in the town of Burbank, Washington, are common near the McNary Headquarters Unit and will likely increase in the future. Land along U.S. Highway 12 is zoned heavy industrial by Walla Walla County. In 2000 the Refuge and Port of Walla Walla exchanged Refuge agricultural lands lying west of Highway 12 that were designated commercial use. In exchange, the Refuge received Port lands along the Columbia River plus funds to help purchase additional lands. These funds were used to purchase the Kohler tract in 2004. The former Refuge lands now owned by the Port are scheduled for development for light industrial purposes, most likely a business office complex. Current industrial uses include the Boise Cascade Paper and Tyson Foods Meat processing plants.

Crow Butte State Park lies adjacent to the Crow Butte Unit and occupies approximately the west half of Crow Butte Island.

A number of transportation corridors occur on the Refuges. At Umatilla Refuge, U.S. Interstate Highway 84 runs adjacent to and bisects portions of the Boardman Unit, in Oregon. U.S. Highway 14 runs adjacent to portions of the Refuge in Washington. The Union Pacific Railroad line runs adjacent to Interstate 84 through the Boardman Unit. The Burlington Northern Railroad line runs through parts of the Refuge on the Washington side. Trains using these tracks have been ignition sources for many wildfires on the Refuge.

The Umatilla Army Depot site occupies about 20,000 acres in Hermiston, Oregon and has operated as a storage depot for conventional munitions and chemical warfare agents since 1941. The Depot has stored stockpiled chemical weapons including mustard agent, and the nerve agents GB and VX since 1960. The Depot built an incinerator called the Umatilla Chemical Agent Disposal Facility and has been destroying its' chemical stockpile since September 7, 2004. Portions of Umatilla Refuge are designated within Depot's "Immediate Response Zone", which are those areas closest to the Depot and extending to an 8-mile radius. Under the State and County's Emergency Response Plan, a warning system will alert residents living or working near the Depot if an emergency occurs. The system includes 49 sirens that will broadcast emergency instructions within the Immediate Response Zone, and programmable highway message signs along major evacuation routes. If there is a chemical accident at the Umatilla Army Depot, a natural disaster, or any other type of emergency, officials will set off outdoor warning sirens and messages. Depending on the nature of the accident, the public will be instructed to shelter, evacuate, or do nothing.

At McNary Refuge, the U.S. Highway 12 corridor is adjacent to and in some areas bisects Refuge units. Portions of the highway are currently being widened to 4 lanes as part of an overall widening project from the Snake River to Wallula Junction, which has resulted in filling some Refuge wetlands and loss of some upland habitat. Mitigation projects to compensate for the loss of wetland and riparian habitats are being carried out by Washington Department of Transportation. Future completion of the project may impact more wetland areas.

The Union Pacific Railroad line lies adjacent to and within portions of McNary Refuge. As with Umatilla Refuge, trains passing on these tracks have been ignition sources for wildfires on McNary Refuge.

Powerline corridors also cross the Refuges and more may be added. The 500 kilovolt (kV) Ashe-Slatte electrical transmission line crosses the Umatilla Refuge at Crow Butte. At McNary Refuge, there is an existing 500 kV transmission line at Wallula and another 500 kV line that crosses the Strawberry Island and the Burbank Units. Near McNary Refuge, Florida Power and Light operates the Stateline Wind Energy Project, with over 500 wind turbines, on the ridges south of the Wallula Unit. Proposed development projects currently include the Wallula Power Project, a 1,300 megawatt, natural gas-fired, combustion turbine power plant. Associated with this project is the proposal to add another 500 kV power transmission line parallel to the existing 500 kV line that crosses the Wallula Unit.

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Chapter 4. Refuge Biology and Habitat

This chapter addresses the biological resources and habitats found on the Refuges. However, it is not an exhaustive overview of all species and habitats. The chapter begins with a discussion of biological integrity, as required under the Improvement Act. The bulk of the chapter is then focused on the presentation of pertinent background information for each of the eight conservation targets designated under the CCP. That background information includes a description, location, condition and trends associated wildlife or habitats, key ecological attributes, and finally, stresses and sources of stress (collectively, “threats”) to the target. The information presented was used as the CCP team developed goals and objectives for each of the conservation targets. In some cases, the information collected for key ecological attributes was later modified (see especially Appendix F, which presents the final structural attributes and conditions to be attained for shrub-steppe and riparian habitats.

4.1 Biological Integrity Analysis

The ecosystem surrounding McNary and Umatilla Refuges has undergone dramatic alteration since pre-settlement times. The three most discernible changes include a) the transformation of the Columbia River into a series of dammed slow-moving reservoirs; b) conversion of large portions of upland areas into agriculture, housing, commercial, and industrial lands; and c) loss of native species

The Service manages a highly altered ecosystem at the Refuges, due in large part to:

- **Artificial river operations**
- **Widespread nonnative invasives**
- **Extensive land use conversion and fragmentation**

accompanied by a large influx of nonnative and invasive plants and animals into the system. Many of the changes to uplands and the spread of invasive species were underway long before the dams were built and the Refuges were established. This section discusses the connection between these main landscape level changes with the current vegetation and wildlife on the lands and

waters occupied by the Refuges. This summary is not a complete analysis of all factors related to changes in native vegetation, fish and wildlife. Much of the information presented here is based upon the team’s knowledge of the area.

A. Damming of the Columbia River and Associated Aquatic and Shoreline Changes

Physical changes: The Refuges were established in areas that were inundated by the McNary and John Day Dams and on adjacent uplands. Historically, the river system was subject to enormous seasonal and annual fluctuations in volume. Huge floods coming down the Columbia created tremendous annual scouring with large annual flows flushing out small fine sediments. The cycles of scouring and deposition created a topographically diverse river channel, with flat benches on the sides and a deep channel with fast water in the middle. Braided side channels are evident from photos taken before dam construction. The river bottoms and margins were composed of a clean, gravelly substrate. After the dams were constructed, the flood cycle was disrupted. Sediments originating from exposed soils in upland portions of the watershed accumulate on the margins of the pools themselves, as runoff rushing from upland areas slows dramatically upon reaching Columbia River pools. This is evident along the depositional margins of McNary pool, especially along the Refuge’s shorelines from Burbank to Wallula where the Snake and Walla Walla Rivers meet Lake Wallula.

The slow moving water in the pools is higher in temperature than under pre-settlement conditions and the river receives chemicals and contaminants of various sorts. Agricultural runoff increases nitrogen in the water, possibly enough to affect plant growth and accelerate eutrophication. Nitrogen levels of 30-35 mg/liter were noted in McNary Headquarters Unit 4 by Environmental Science students from Columbia Basin College (pers. comm., David Linehan). Natural concentrations of nitrogen are generally less than 10 mg/liter (Lind 1979).

These environmental alterations have resulted in a variety of changes to vegetation, fish and wildlife along the river above and beyond the original inundation of habitats.

Vegetation changes: Actively accreting deposition zones are creating new areas for the colonization of riparian and wetland vegetation, while former riparian and wetland areas slowly lose access to surface water. The lack of scouring prevents early successional processes; therefore, perennial aquatic vegetation is slowly creeping further into the pools as new substrate gets deposited. The band of shoreline vegetation is widening with semi-aquatic plants, many of which are invasives. Backwater areas formerly dominated by large expanses of plants more characteristic of seasonal marshes are now changing to cattail and bulrush. Although the extent of cottonwood in the past is not fully known, some historical records indicate that woody riparian vegetation was sparse especially near the confluence of the Walla Walla and Columbia River (Lavender 1972, Evans 1991). Lewis and Clark found the lower Walla Walla valley to be poor and sandy, but to rapidly improve as they moved upstream, where they found the Walla Walla and Touchet Rivers lined with cottonwood, birch, hawthorne, and willows (Meinig 1995). It is likely that the Refuges today support a wider strip of woody riparian vegetation than existed in presettlement times due to more permanent inundation.

It is likely that the Refuges today support a wider strip of woody riparian vegetation than existed in presettlement times due to more permanent inundation.

Waterfowl changes: Some waterfowl nesting and feeding areas have been inundated due to dam construction, however, wintering area acreage, characterized by open water, has increased substantially (Rasmussen and Wright 1990). The slower river is more attractive to waterfowl, and waterfowl food sources have changed. A loss of suitable nesting areas for geese occurred with the inundation of nearly 9,500 acres of islands (Rasmussen and Wright 1990).

Changes to colonial nesting birds and shorebirds: Though island habitat was more available in the past than now, wildlife using the islands may have changed significantly. Judging from the accounts of older residents of the area, it was once a rarity to see gulls, pelicans or terns. Gulls began nesting on Island #22 in the 1970s and are now abundant, possibly supported by human garbage. Cormorants are also recent arrivals. Colonial nesting birds may have increased on both Refuges. The most reasonable explanation for this change is that piscivorous birds have a more assured food supply along the Middle Columbia River now, year round. In the past the river was confined to deeper channels in the summer. Shad and warm water fish resident year-round have increased and serve as a food supply in the shallows. Because of the abundance of mudflats now accumulating along the margins of the river and the creation of the Wallula Delta, shorebirds have shown a steady increase in the system.

Changes in aquatic wildlife and fish: Some areas of the Mid-Columbia River historically served as spawning grounds for fall Chinook salmon and steelhead (Northwest Power and Conservation Council 2004). The loss of shallow aquatic gravels due to inundation and sedimentation has reduced ecosystem availability of spawning habitat for salmonids. The Mid-Columbia River today serves mainly as a migration corridor to and from the Pacific Ocean for adult and juvenile salmonids

B. Uplands Conversion and Development

Upland areas surrounding the Refuges have been heavily converted to agricultural uses. The percentage of land in farms in 2002 was approximately 86% in both Morrow and Walla Walla Counties and was about 56% in Benton County. This compares with about 28% of the State of Oregon overall in farms and 36% of the State of Washington (National Agricultural Statistics Service http://151.121.3.33:8080/Census/Create_Census_US_CNTY.jsp - accessed November 2005).

The fragmented nature of Refuge uplands due to roads and railroads (particularly at McNary) together with the high degree of land conversion of shrub-steppe uplands along the Refuge edges and vicinity, affects the potential of the Refuges to support some native wildlife species, especially those requiring large patch sizes. The size of some patches remaining on the Refuges, even if restored to good condition, may be too small to support some Partners in Flight focal sagebrush breeders (Altman and Holmes 2000), such as sage grouse (Altman and Holmes 2000), sage sparrow (Vander Haegen et al. 2000), and Brewer's sparrow (Knick and Rotenberry 1995). Even those species such as small mammals and herptiles that typically have smaller home ranges and, therefore, may occupy smaller patch sizes can be negatively affected by habitat fragmentation due to isolation and limited dispersal options (Vander Haegen et al. 2001).

C. Influx of Exotic and Invasive Species

One of the most striking features of both Refuges is the extent to which invasive plants and animals have taken hold on both Refuges. Invasive plant species displace native vegetation, altering the composition and structure of vegetation communities, affecting food webs, and modifying ecosystem processes (Olson 1999). Ultimately, both plant and animal invasives can result in considerable impact to native wildlife. For example, though native to the eastern United States, bullfrogs introduced in the western United States have been implicated in localized declines of a number of native amphibian species through predation and competition (Bury and Whelan 1984, Kupferberg 1997). Current main habitats and ecotypes are mapped on Maps 11a and 11b. The vegetation map follows the National Vegetation Classification System.

Upland habitats: The spread of invasive species in upland habitats was likely facilitated by the rapid increase in grazing that resulted from European exploration and settlement in the American West. The first horses are thought to have reached the Columbia Plateau about 1730. Cattle and sheep were introduced next, first raised at Fort Nez Perce and later kept by the Cayuse and Walla Walla Indians, and by increasing numbers of settlers. By the 1880s, cattlemen were complaining about diminishing areas of native perennial bunchgrasses and their replacement by various weeds (Saul 2004).

Primary invasive plants on uplands on both Refuges include cheatgrass (*Bromus tectorum*), camelthorn (*Alhagi maurorum*), diffuse knapweed (*Centaurea diffusa*), kochia (*Kochia scoparia*), Russian knapweed (*Acroptilon repens*), Russian thistle (*Salsola kali*), Swainsonpea (*Sphaerophysa salsula*), and

yellow starthistle (*Centaurea solstitialis*). Less common species include hoary cress (*Cardaria draba*), puncture vine (*Tribulus terrestris*), rush skeletonweed (*Chondrilla juncea*), and Scotch thistle (*Onopordum acanthium*).

Cheatgrass, the most widespread and established weed in upland habitats, is linked to an altered fire regime. Cheatgrass is an annual grass that completes its lifecycle by mid-May or June. The carpet of dead plants creates a continuous low-stature fuel bed that facilitates the spread of fire. Fire kills sagebrush plants and seeds (Whisenant 1990). As a result, sagebrush cover has decreased and cheatgrass cover has increased, creating conditions for the cycle to repeat itself at shorter intervals. Fire now recurs at intervals much shorter than it did historically and with detrimental effects to the natural regeneration of native vegetation.

Riparian and wetland systems: Exotic plants that have proliferated in riparian areas include, false indigo (*Amorpha fruticosa*), perennial pepperweed (*Lepidium latifolium*), phragmites (*Phragmites australis*), reed canary grass (*Phalaris arundinaceae*), and Russian olive. Shade from Russian olive prevents development of a grass/forb layer underneath and inhibits cottonwood and willow. The loss of grass and forbs from olive shading may have affected small mammals. Russian olive does provide food, hiding, and thermal cover for black-billed magpies and brown-headed cowbirds, species generally negatively associated with native bird populations, while also benefiting resident birds such as ring-necked pheasant and California quail, breeding species such as long-eared owl, and wintering and migrating songbirds such as white-crowned sparrows and yellow-rumped warblers.

Aquatic systems: Historically, the Columbia River and its tributaries supported primarily a cold water fishery dominated by various salmonid species. Since presettlement, a large complement of warm water fish species has been introduced to the Columbia River, with the original intent to increase the diversity and quality of recreational angling. Many of these introduced fish prey upon native salmonids. For example, the common carp, a major pest in wetlands, was introduced as a foodfish in the Pacific Northwest in the late 1800s (Wydoski and Whitney 2003). Carp disrupt wetland functioning by stirring up bottom sediments.

Control efforts: Mechanical, physical, biological and chemical methods have been used to combat invasive plants in a variety of habitats. Control efforts are planned annually and Pesticide Use Proposals are submitted to Regional and/or National Integrated Pest Management Coordinators for approval. Insects introduced for biological control include:

- Thistle stem gall flies (*Urophora cardui*) for Canada thistle.
- Black-margined and golden loosestrife beetles (*Gallerucella californiensis* and *Gallerucella pusilla*, respectively) and loosestrife seed weevil (*Nanophyes marmoratus*) for purple loosestrife.
- Lesser knapweed weevils (*Larinus minutus*) for diffuse knapweed.

Considerable progress has been made in some areas with infestations of Russian olive, false indigo, perennial pepperweed, purple loosestrife, and Russian knapweed being reduced or eliminated.

4.2 Conservation Target Selection and Analysis

A. Conservation Target Selection

Early in the planning process, the team cooperatively identified eight priority species, groups, and communities for these Refuges, as recommended under the Service's Habitat Management Planning policy (620 FW1). These priorities, also called conservation targets, frame the CCP actions for wildlife and habitat. The conservation targets are species, species groups, or features that the Refuges will actively manage to conserve and restore over the life of the CCP. Negative features of the landscape, such as invasive plants, may demand a large part of the Refuge management effort, but are not designated as conservation targets.

The three main criteria for selection of these targets included:

- inclusion of the four main natural habitat types found at the Refuges;
- reflective of the Refuge System mission and the Refuges' purposes; and
- recommended as a conservation target in the Wildlife and Habitat Management Review recommendations from October 2003.

Other criteria that were considered to some degree in the selection of the targets included:

- highly localized and restricted mobility species; and
- species groups and Refuge features of special management concern.

Table 4-1 displays the targets that were selected and are the main focus of this plan.

Note that although migratory birds comprise a major focus of the purpose on both Refuges, migratory birds were not designated as a conservation target separately, mainly because migratory birds occupy such a variety of habitat niches. Migratory birds (as defined at 50 CFR 10.13) are included as part of the nested or benefiting resources for each of the identified targets as defined below. Example 1: the migratory bird species vesper sparrow is an occasional breeder on McNary Refuge. It is associated with shrub-steppe habitats, grasslands and weedy fields (Jones and Cornely 2002). It is also listed as sensitive under the Oregon list. Therefore, it is a nested species under the shrub-steppe habitat target. Example 2: Peregrine falcon is a migratory raptor that has nested on cliffs at McNary Refuge and feeds on shorebirds and waterfowl in wetland areas. It has recently been delisted but is still categorized as a Federal Species of Concern. Therefore, it is a nested species under the endangered, threatened, and sensitive species target. Example 3: Partners in Flight Columbia Plateau (Altman and Holmes 2000) focal species, the yellow warbler and yellow-breasted chat, are included as nested species under the riparian habitat target.

Table 4-1. Conservation Targets for the CCP

System Targets	Nested or Benefiting Resources
Shrub-steppe habitats	All shrub-steppe associated species as detailed in Appendix B but not including any waterfowl, shorebirds, or endangered, threatened or sensitive species.
Riparian habitats	All riparian habitat associated species as detailed in Appendix B but not including any waterfowl, shorebirds, or endangered, threatened or sensitive species

System Targets	Nested or Benefiting Resources
Wetland and deepwater habitats	All wetland and deepwater habitat associated species as detailed in Appendix B, but not including any waterfowl, shorebirds, or endangered, threatened or sensitive species
Cliffs, rimrock, and outcropping	All cliff, rimrock, or outcropping associated species as detailed in Appendix B, but not including any waterfowl, shorebirds, or endangered, threatened or sensitive species
Species Group Targets	Nested or Benefiting Resources
Waterfowl	All resident and migratory ducks, geese and swans listed in Appendix B.
Endangered, threatened, or sensitive species	Species known currently or suspected historically to have inhabited the Refuges that are listed as endangered, threatened, candidate, or proposed under the Federal Endangered Species Act as well as Federal Species of Concern. Target also includes Washington and Oregon State-listed threatened, endangered or candidate species but does <u>not</u> include State-listed sensitive species; these are included as nested species under the appropriate habitat targets.
Shorebirds	All avian species of the order Charadriiformes listed in Appendix B.
Landform Target	Nested or Benefiting Resources
Islands	Colonial nesting waterbirds, nesting Canada geese, wintering waterfowl and other migratory birds, and mule deer.

B. Conservation Target Analysis

Goals and objectives were designed directly around the Conservation targets. In developing objectives, the team analyzed each conservation target using a modified version of The Nature Conservancy’s Conservation Action Planning (CAP - formerly known as Five-S) process (TNC 2000). Under this process, each conservation target is analyzed to determine its key ecological attributes – those aspects of the environment, such as ecological processes or patterns of biological structure and composition that are critical to sustain the long-term viability of the target. These key ecological attributes are further divided into measurable indicators which consist of a characteristic of that factor that strongly correlates with the status of that factor. For most indicators, the team developed “desired” conditions that were based partly on scientific literature review and partly on team professional judgment. These desired condition levels for specific indicators were used to help design objectives for each target, as presented in chapter 2.

The team further borrowed from the TNC CAP process by brainstorming and ranking stresses and sources of stress (collectively “threats”) for most of the targets. A stress is the impairment or degradation of a key ecological attribute for a conservation target. A source is an extraneous factor that causes the stress (the most proximate cause). The relative severity of each stress was analyzed as well as the scope of the stress across the Refuges. Similarly, sources of stress were analyzed to determine their degree of contribution to the stress and the irreversibility of the stress caused by the source. Overall, these rankings were integrated in a way that resulted in a set of stresses and sources that were ranked Very High, High, Medium, or Low. In developing objectives, the team paid more attention to abating the risks from High or Very High stresses and sources.

4.3 Shrub Steppe System

A. Description and Location

Shrub-steppe habitats (many highly degraded) are located in all Refuge areas not dominated by riparian, wetlands/deepwater, cliff/rimrock, or agriculture. On McNary Refuge shrub-steppe habitats total approximately 3,000 acres and on Umatilla Refuge they total approximately 10,000 acres. Originally, upland habitats were comprised of native shrubs, including sagebrush (*Artemisia spp.*), rabbitbrush (*Chrysothamnus spp.*), bitterbrush (*Purshia tridentata*), and bunchgrasses such as needle-and-thread (*Stipa comata*), Indian ricegrass (*Oryzopsis hymenoides*), and Sandberg's bluegrass (*Poa secunda*), and various forbs. Most of the former native vegetation has been severely altered by historical land use, including intensive grazing, burning, and cultivation. The majority of nonirrigated lands on both Refuges is dominated by a gray rabbitbrush (*Chrysothamnus nauseosus*) - cheatgrass (*Bromus tectorum*) association. In some of the more stable areas bitterbrush, big sagebrush (*Artemisia tridentata*), and Sandberg's bluegrass is mixed with a lichen and moss layer.

Based on professional judgment, the CCP team identified certain blocks of shrub-steppe habitat (Appendix F, Table F-2) as priority areas for management, and identified certain key characteristics of note about each. These blocks represent most, but not all shrub-steppe habitat on the Refuges. The vegetation inventory, that began in 2005, will yield information that may result in changes to this list, but for now, the following list represents the locations that the Refuges' staff felt merited the most attention in terms of management for shrub-steppe characteristics to support associated species.

B. Condition and Trends

In 1989, Wildlife Impact Assessments were completed for the areas flooded by the McNary, John Day, Bonneville, and The Dalles projects (Rasmussen and Wright 1990). These assessments relied on vegetation maps created from aerial photography. Sources of historical vegetation maps came from aerial photographs dated before or at dam construction, and current vegetation maps were based on 1987 aerial photographs.

According to the McNary Assessment, shrublands comprised 34% of the land area inundated by the McNary reservoir, and grasslands comprised an additional 22% of the project area inundated. The John Day Assessment reported that shrub/steppe/grass habitats comprised 46% of the land area inundated by the John Day reservoir.

Sand blowouts and dunes are a separate cover type that was mapped by Rasmussen and Wright in the loss assessments, with value for native plants and some herptiles. About 1,100 acres and 3,425 acres categorized as sand blowout or dune were flooded by the McNary and John Day Pools, respectively.

At a regional scale, approximately half of the original distribution of shrub-steppe in the Columbia Basin of Washington and Oregon has been converted to agriculture (Quigley and Arbelhide 1997). In Washington, about 10.4 million acres of shrub-steppe existed prior to the arrival of settlers in the mid-1800s. By the late 20th century, only about 40% remained (Dobler et al. 1996). Locally, Benton and Walla Walla Counties had approximately 48 and 33 % of original shrub-steppe habitat

remaining by the late 20th century, respectively (Dobler et al. 1996). In addition to direct loss and conversion of shrub-steppe to other land uses, fragmentation, alteration of historic fire regimes, livestock grazing, and the spread of more than 800 species of exotic plants changed the character of existing shrub-steppe habitats (Johnson and O’Neill, 2001).

C. Associated Wildlife

Birds: About 100 bird species can occur in sagebrush habitats (Braun et al. 1976). Some of these species are sagebrush-obligates, almost entirely dependent on sagebrush habitats year-round or during the breeding season. Examples of obligate shrub-steppe species include sage grouse, Brewer’s sparrow, sage sparrow, and sage thrasher. Historical accounts from early explorers indicate that sage grouse and sharp-tailed grouse were common near the mouth of the Walla Walla River (Dice 1918, Gunkel 1978). Both of those species are now extirpated from the Refuges and local area. Brewer’s sparrows, sage sparrows, and sage thrashers were fairly common and likely breeding on the Refuges and the local area historically (Snodgrass 1904, Dice 1918). These birds have likely been extirpated as breeders on both Refuges due to habitat fragmentation and loss but occur as migrants.

Many other birds occur in shrub-steppe but are not as dependent on sagebrush or key on other habitat features such as soil type or presence of fossorial mammals (Johnson and O’Neil, 2001). Examples of these species are burrowing owl, lark sparrow, vesper sparrow, horned lark, loggerhead shrike, long-billed curlew, and western meadowlark. Both Refuges support these species during breeding and/or migration. Shrub-steppe uplands also currently provide habitat for California quail, ring-necked pheasant, Northern harrier, western kingbird, and savannah sparrow.

Mammals: Limited data is available on most mammals occurring on the Refuges. The most common large mammal occurring in shrub-steppe habitat on Umatilla Refuge is the mule deer. The current population numbers approximately 200. Viewing these animals from a close range along the Umatilla auto tour route is a popular public activity. Both mule and white-tailed deer (*Odocoileus virginianus*) occur on parts of McNary Refuge. Carnivores such as coyote (*Canis latrans*), raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*) are frequently seen on both Refuges. An occasional cougar (*Felis concolor*) may visit Umatilla Refuge. Further work to gather baseline data on small and medium mammals, including bats is needed.

Herptiles (Reptiles and Amphibians): Species known to occur in Refuge shrub-steppe habitats include pygmy short-horned lizard (*Phrynosoma douglassi*), sagebrush lizard (*Sceloporus graciosus*), side-blotched lizard (*Uta stansburiana*), common garter snake (*Thamnophis sirtalis*), racer (*Coluber mormon*), gopher snake (*Pituothis melanoleucus*), and western rattlesnake (*Crotalus viridus*). However, data on population size and distribution throughout both Refuges is lacking. The common night snake (*Hypsiglena torquata*) occurs in the cliff and talus habitat of the Stateline Unit on McNary Refuge (pers. comm., Mike Denny) and may occur in similar habitat elsewhere on the Refuges, but specific data is lacking. Historically, the striped whipsnake (*Masticophis taeniatus*) likely occurred on the Refuges, but current status is unknown.

D. Key Ecological Attributes

Table 4-2 describes key ecological attributes of a functioning shrub-steppe system and associated indicators. For each indicator, the conditions that would represent “good” or better are shown.

Table 4-2. Shrub Steppe Ecological Attributes, Indicators, and Condition Parameters

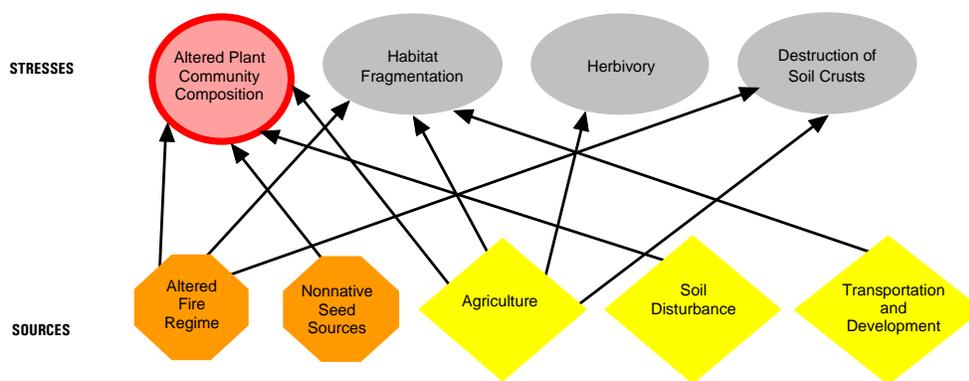
Key Ecological Attributes	Indicators	Desired Conditions (Ranked Good or Higher)
Fire Regime	<ul style="list-style-type: none"> • Fire intensity • Fire return interval • Lack of cheatgrass dominance 	<ul style="list-style-type: none"> • Cool creeping mosaic • ≥ 25 years • $< 15\%$ cover
Shrub-dominated Community Structure	<ul style="list-style-type: none"> • Shrub cover • Average shrub heights 	<ul style="list-style-type: none"> • 20%-50% • ≥ 2 feet
Shortgrass-dominated Community Structure	<ul style="list-style-type: none"> • Average shortgrass heights 	<ul style="list-style-type: none"> • 3-6 inches
Native Plant Species	<ul style="list-style-type: none"> • Total native plant cover • Understory native plant richness 	<ul style="list-style-type: none"> • $> 70\%$ • > 10 species, including at least 2 native grasses
Level of Herbivory	<ul style="list-style-type: none"> • Percent of first or second year wood not browsed 	<ul style="list-style-type: none"> • $\geq 50\%$ new wood left on plant
Connectivity	<ul style="list-style-type: none"> • Barrier type to next nearest patch • Distance between any 200+ acre patch and other shrub-steppe patch 	<ul style="list-style-type: none"> • Not separated by deepwater, paved roads, or tilled lands • ≤ 500 yards
Patch Shape and Size	<ul style="list-style-type: none"> • Patch size • Patch shape 	<ul style="list-style-type: none"> • ≥ 200 acres • Minimal edge; blocky or circular

E. Threats

Stresses and sources of stress to shrub-steppe habitats are shown in Figure 4.1. As explained in Chapter 1, a stress is something that destroys, degrades, or impairs a conservation target by impacting a key ecological attribute of that target. High ranked stresses are placing more pressure on the system than medium or low ranked stresses. Sources (the proximate cause of a stress) can contribute to more than one stress. Sources contributing to multiple stresses and having high contribution and irreversibility were ranked higher than other sources.

Figure 4.1 Stresses and sources of stress to shrub-steppe habitats.

(Stresses and sources ranked low not shown)



Circles with dark outline indicate High stress. Ovals indicate medium stress.
 Octagons with dark fill indicate source is a high threat. Diamonds with light fill boxes indicate source is a medium threat.

4.4 Riparian System

A. Description and Location

Woody riparian habitat (see definition in glossary) occupies a narrow fringe on both Refuges generally along the edges of wetlands and the Columbia River shoreline. On McNary Refuge, riparian habitats total approximately 1,650 acres and on Umatilla Refuge they total approximately 1,800 acres. Eastern cottonwood (*Populus deltoides*), black cottonwood (*Populus trichocarpa*), willow (*Salix* spp.), white alder (*Alnus rhombifolia*), and exotics such as Russian olive (*Elaeagnus angustifolia*), false indigo (*Amorpha fruticosa*) and black locust (*Robinia pseudoacacia*) are the primary tree and shrub species. Large areas of woody riparian habitat can be found on the McCormack, Paterson and Whitcomb Units of Umatilla Refuge. The Burbank Sloughs, Peninsula, Two Rivers, and Wallula Units on McNary Refuge also support significant stands of woody riparian habitat.

Native low elevation riparian habitats would typically include trees, such as black cottonwood, white alder, Pacific willow (*Salix lasiandra*), and peach-leaved willow (*Salix amygdaloides*). Common native shrubs include coyote willow (*Salix exigua*), red-osier dogwood (*Cornus stolonifera*), black hawthorn (*Crataegus douglasii*), currants (*Ribes* spp), and Woods rose (*Rosa woodsii*).

The CCP team identified several blocks of riparian habitat on each Refuge that merit high consideration for management. These areas, called the “key riparian areas,” are listed in Appendix F, Table F-4. Although other riparian sites exist on each Refuge, their structural condition, size or width, and/or degree of exotic invasion, precludes them from being among those considered most important for conservation and restoration during the life of the CCP.

In addition to these riparian blocks, McNary Refuge manages a large, labor and time intensive farming operation at the Cummins Property, located on the Wallula Unit. This mitigation site was established (while under Corps management) as part of the “Lower Snake River Fish and Wildlife Compensation Plan,” to replace upland and riparian habitat lost due to dam construction. The site includes eight tree and shrub plots planted in 1998 for riparian trees and shrubs, and four food plots intended for upland game use. Under terms of the cooperative agreement that McNary Refuge maintains with the Corps, the Refuge is obliged to continue managing these sites with irrigation to promote riparian and shrub vegetation.

B. Condition and Trends

Woody riparian habitats have never occupied a large portion of the landscape in the Inland Pacific Northwest. Quigley and Arbelhide (1997) estimated that prior to 1900, riparian habitats occupied only 2% of the landscape, but that current representation has dropped by approximately 75% to 0.5% of the landscape. Prior to 1900, approximately 60% of woody riparian habitat occurred in lower elevations (below 3,280 feet); now only 20% of woody riparian habitat in the Interior Columbia Basin is found below that elevation. Agricultural development, roads, dams, and other flood control activities in these lower areas are responsible for the decline (Quigley and Arbelhide 1997).

The McNary Loss Assessment (Rasmussen and Wright 1990) reported that 8% of the terrestrial habitat lost to inundation by the McNary Pool was comprised of riparian tree habitat, 2% riparian shrub

habitat, and 0.1% riparian herb habitat. The John Day Loss Assessment (Rasmussen and Wright 1990) reported that 4% of the terrestrial habitat lost to inundation by the John Day Dam was comprised of riparian tree habitat, 4% riparian shrub habitat, and 4% riparian herb habitat. These numbers should probably be used with some caution given the extremely dynamic nature of riparian plant communities under natural flooding and disturbance regimes. Riparian herb and shrub communities are particularly ephemeral.

Much of the riparian habitat that currently exists on the Refuge is located in what was formerly shrub-steppe habitat. The extent of riparian tree communities that may have occurred on the Refuges prior to Euro-American settlement is unknown, however, accounts from some early explorers reported very little woody riparian habitat at the confluence of the Walla Walla and Columbia Rivers (Evans 1991, Meinig 1995). Aerial photos, taken prior to dam construction, show few if any trees, along the shorelines of the river at Umatilla Refuge, and almost none at the mouth of the Walla Walla River. Photographs dating from the early 1900s suggest that cottonwood dominated riparian was not common, however willow dominated riparian shrub communities were.

Currently existing riparian habitat is deteriorating or disappearing, as access to ground water and surface water recedes, as pool operations have changed for the benefit of migrating salmonids. Existing riparian areas suffer poor recruitment due to the reservoir-caused diminishing of flood events and the dynamic changes that occur in natural fluvial systems. As a result, older mature trees that die are not being replaced by new growth. Still, as deposition and sedimentation proceeds in both the McNary and John Day pools, new substrates for riparian habitat will continue to be created. An example is the deposition area at Wallula Delta. One unknown is whether deposition areas will be colonized by native willows or cottonwoods or by invasive exotics. The channels created for the Wallula wetland restoration project show thriving recruitment of Plains cottonwood. Cottonwood recruitment is related to flooding events (Braatne and Jamieson 2001), but can be stimulated by other means. The Refuge staff noticed cottonwood recruitment occurring at Paterson where discing associated with moist soil management had occurred.

Riparian areas are plagued by Canada thistle (*Cirsium arvense*), false indigo, kochia, perennial pepperweed (*Lepidium latifolium*), phragmites (*Phragmites australis*), poison hemlock (*Conium maculatum*), reed canary grass (*Phalaris arundinacea*), and Russian olive. Less common invasive plants found in riparian habitats include hoary cress and salt cedar (*Tamarix ramosissima*).

C. Associated Wildlife

Birds: Riparian areas are disproportionately important to bird species (Johnson and O'Neil, 2001). The Refuges' riparian zones host large numbers of migratory birds during spring and fall, including yellow warbler, yellow-rumped warbler, orange-crowned warbler, ruby-crowned kinglet, dark-eyed junco, white-crowned sparrow, and song sparrow. Some of these species winter on the Refuges. As many as 60 bald eagles have been sighted using the Refuges' riparian trees for roosts during winter.

Common breeding species in Refuge riparian habitats include red-tailed hawk, American kestrel, great horned owl, California quail, ring-necked pheasant, eastern kingbird, American robin, downy woodpecker, northern flicker, Bewick's wren, house wren, black-capped chickadee, Bullock's oriole, and song sparrow. The nest-parasitic brown-headed cowbird commonly occurs in riparian habitats during spring and summer.

Ninety-seven native species are considered to be highly associated with riparian under the Partners in Flight Conservation Strategy for Landbirds in the Columbia Plateau (Altman and Holmes 2000). This plan lists several species as “dependent”: western wood peewee, Bullock’s oriole, willow flycatcher, yellow-breasted chat, yellow-billed cuckoo, and yellow warbler. The same species (but including Lazuli bunting and excluding western wood peewee) are considered to be focal species (those species highly associated with important attributes within each habitat and used to represent highly functioning ecosystems) under the PIF plan for riparian habitat. Data from the Monitoring Avian Productivity and Survivorship station at Wallula show Lazuli bunting, yellow warbler, and yellow breasted chat to be present, but as uncommon nesters on McNary Refuge.

D. Key Ecological Attributes

The CCP team members identified the following as key ecological attributes for a healthy and functioning riparian system:

Table 4-3. Riparian Ecological Attributes, Indicators, and Condition Parameters

Key Ecological Attributes	Indicators	Desired Conditions (Ranked Good or Higher)
Hydrologic Regime	<ul style="list-style-type: none"> • Flooding severity (depth, duration) • Fluvial processes, timing • Sediment left • Water table height • Influence of reservoir 	<ul style="list-style-type: none"> • Natural or artificial flooding imitating natural flood regime • River and floodplain functions and processes intact or maintained artificially with structures; timing follows natural flooding hydrograph • Deposition occurs in patterns mimicking natural; no perched floodplain. • Water table available to trees and shrubs for most of the year • Minor influence; increased water availability
Community Structure and Composition	<ul style="list-style-type: none"> • Total canopy closure • Dominant tree heights • Snags and woody debris • Age classes • Vertical structural complexity 	<ul style="list-style-type: none"> • >40% • >35 ft. • Snags >0.8/acre. Fair number of downed trees and stumps available. • Mostly mature forest or mostly shrubland • Multi-layered forests
Native Species Representation	<ul style="list-style-type: none"> • Total native species cover • Use by PIF focal species for breeding 	<ul style="list-style-type: none"> • >75% • Good numbers of migrants and nesters using areas; moderate nesting success, some PIF focal species present and breeding successfully
Disturbance Events	<ul style="list-style-type: none"> • Fire frequency and severity • Drought frequency and severity • Public use • Herbivory/grazing 	<ul style="list-style-type: none"> • Return interval >10 years, moderate or mosaic pattern • Not frequent or severe • Restricted or light in breeding season • Light grazing only by natural herbivores
Connectivity	<ul style="list-style-type: none"> • Barrier type to next nearest 	[Analysis not complete]

Key Ecological Attributes	Indicators	Desired Conditions (Ranked Good or Higher)
	patch <ul style="list-style-type: none"> Distance between any medium to large patch and closest riparian patch 	[Analysis not complete]
Patch Shape and Size	<ul style="list-style-type: none"> Patch size Riparian width 	<ul style="list-style-type: none"> ≥5 acres for shrublands; > 50 acres for woodlands > 100 feet width from water edge to upland.

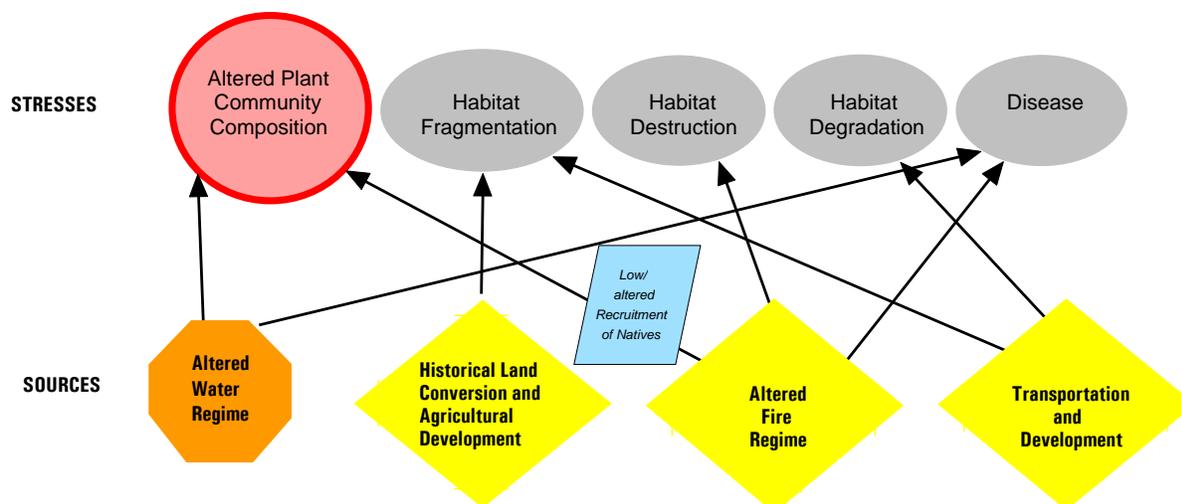
Sources for parameter condition definitions: Faber (2003), DiGuadio (2003); Knutson and Naef (1997); Mount et al. (2003); Hudson et al (2003); Askins et al (1987); Jaramillo and Hudson (2003); Opperman and Merenlender (2003); Halterman (2003); Evans (1989); Gardwall (2003); Sweicki and Bernhardt (2003); Jackson and Allen-Diaz (2003); Asherin and Claar (1976); and Altman and Holmes (2000).

E. Threats

The CCP team identified and ranked stresses (circles and ovals below) as well as the sources of stress (octagon and diamonds) to riparian habitat, as illustrated in Figure 4.2. Stress ranks were based on team rankings of severity and geographic scope of the problem. Source ranks were based on the contribution and irreversibility of the source. Overall source rankings, as illustrated by the degree of shading of the box, reflects the overall source ranking for all stresses to which it contributes.

Figure 4.2 Stresses and sources of stress to riparian habitats.

(Circles with dark outline are high stress. Ovals are medium stress. Octagons with dark fill indicate high source. Diamonds with light fill indicate medium source).



4.5 Wetlands and Deepwater Habitats

For the purposes of the CCP, wetlands are defined according to the classification system (Cowardin et al. 1979) used by the National Wetlands Inventory (NWI), but the wetlands and deepwater habitat conservation target excludes all riparian habitats which might be included under this classification, that is, those areas dominated by woody perennial shrubs or trees. According to Cowardin et al.

(1979) wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water. A positive indicator of wetland status requires the presence of one of the following: a) hydrophytic plants; b) hydric soils; or c) saturated or flooded soils during part of the growing season. Deepwater habitats are permanently flooded lands lying below the deepwater boundary of wetlands.

The key divisions of the NWI classification relevant at these Refuges include the lacustrine and palustrine systems. Lacustrine wetlands are generally permanently flooded and are identified as those areas lacking trees, shrubs, or emergent vegetation with greater than 30% areal coverage and measuring greater than 20 acres. Smaller areas can be defined as lacustrine if the water depth in the deepest part of the basin exceeds 6.6 feet at low water. Palustrine areas may or may not be permanently flooded, but they are typically recognized by the presence of trees, shrubs, or herbaceous emergent vegetation. On these Refuges, the palustrine type can also include nonvegetated areas less than 20 acres with water depths shallower than 6.6 feet in the deepest part of the basin at low water. Aquatic bed wetlands are wetlands that are dominated by vegetation that is floating and/or submerged and can be either palustrine or lacustrine. See the glossary for a complete definition of these three system types according to the NWI.

A. Description and Location

Lacustrine Habitats: Lacustrine habitats occupy 29,231 acres at Umatilla Refuge and 8,656 acres at McNary Refuge (NWI). Though they occupy a large portion of each Refuge's total area, habitat

Though they occupy a large portion of each Refuge's total area, habitat management influence over these areas is limited. The lacustrine habitats are subject to pool management decisions made by the Corps. Transportation, recreation, and water quality issues also affect the lacustrine habitats.

management influence over these areas is limited. The lacustrine habitats are subject to pool management decisions made by the Corps. Other factors affecting lacustrine habitats that are outside Refuge control include water quality problems that mainly emanate from outside the Refuge borders, and transportation and recreation uses along the River.

Umatilla Refuge: The primary aquatic feature of Umatilla Refuge is Lake Umatilla (Columbia River) which was created in 1969 when the John Day Lock and Dam was constructed on the Columbia River near Biggs, Oregon. Lake Umatilla is a run-of-the-river reservoir that is not designed to hold water for flood control but rather provides water depth sufficient for the passage of barge traffic and the production of hydroelectric energy. Umatilla Refuge is located about 50 miles upstream of John Day Lock and Dam and includes a portion of upper Lake Umatilla. The John Day Pool, as Lake Umatilla is commonly called, generally falls into the Lacustrine System under the NWI based on its location within a dammed river channel, size (>20 acres), and lack of persistent woody or emergent vegetation (<30% cover).

McCormack Slough in Oregon and Paterson and Crow Butte Sloughs in Washington are backwater sloughs of the Columbia River that make up the majority of wetland acreage on Umatilla Refuge. The open water portions of these sloughs are considered lacustrine, while the borders of the sloughs fall into the palustrine type.

McNary Refuge: The dominant aquatic feature of McNary Refuge is Lake Wallula (Columbia River), formed by the construction of the McNary Lock and Dam near Umatilla, Oregon. Lake Wallula is a run-of-the river reservoir that is not designed to hold water for flood control but rather provides water depth sufficient for the passage of barge traffic and the production of hydroelectric power. A significant portion of McNary Refuge includes deepwater areas in Lake Wallula. Other lacustrine portions of McNary include the deepwater sections of wetlands 1, 2, 3 and 4 on the McNary Headquarters Unit, Casey Pond on the Two Rivers Unit, and White-tail Bay, and Sanctuary Pond on the Wallula Unit. These wetlands are flooded due to backwater effects of Lake Wallula.

Although the normal operating level of the McNary Pool ranges only five feet, dropping water levels to the lowest allowable level (335 feet msl) for long periods, as is currently being implemented under court order to speed fish migration downstream, could have a significant impact on the amount of wetland acreage available (Table 4-4). Water levels in Casey Pond, White-tail Bay, Sanctuary Pond, and the Wallula Delta can fluctuate dramatically due to operation of the McNary Dam. At times, large areas of these wetlands can become exposed as water levels in Lake Wallula drop. This phenomenon makes the Wallula Delta an attractive area to shorebirds and other waterbirds during migration; however, the Refuge has little control over timing and level of inundation or exposure.

Table 4-4. Surface area (in acres) of McNary Headquarters Unit wetlands at different operating levels of the McNary Pool

River elevation	Surface area				
	Unit I	Unit II	Unit III	Unit IV	Total
335 feet msl	25	20	30	15	90
336 feet msl	30	25	60	30	145
340 feet msl	136	140	260	48	584

Source: Report by Glen Gately, Warrenstone Field Station, June 1979

Wetlands acreage at the lowest allowable operating level (335 feet msl) is 85% smaller than wetland acreage at the highest operating level of 340 feet msl. Evaporation rates on the remaining shallow water would likely be higher than at present, which would exacerbate wetland drying.

Palustrine Habitats: Palustrine habitats occupy 851 acres at Umatilla Refuge and 1,605 acres at McNary Refuge and offer high habitat values. These values include productive foraging habitat for seed eating waterfowl, breeding habitat for waterfowl, and muddy exposed substrates which support shorebirds. Palustrine habitats can be highly productive for various kinds of invertebrates because of temperature and water fluctuation cycles and decaying vegetation.

McNary Refuge: The borders of McNary Headquarters Unit wetlands 1, 2, 3 and 4 constitute palustrine wetlands and are dominated by emergent plants, especially bulrush, cattail, and phragmites. Several recently created wetlands on the Wallula Unit are flooded annually from fall through spring with water pumped from the Walla Walla River. Dudley wetlands created on the north side of the McNary Headquarters Unit 3 are flooded seasonally with excess irrigation water.

Other wetland sites on McNary Refuge include J-Line, Curlew and several unnamed wetlands on the Peninsula Unit, East Millet, West Millet, Cottonwood, Woodland and Wallula south wetlands on the

Wallula Unit. Some of the grassy slopes below outcroppings on the Stateline and Juniper Canyon Units may support small saturated wetlands due to groundwater seepage.

Umatilla Refuge: The borders of McCormack and Paterson Sloughs fall into the palustrine system, and smaller palustrine wetlands can be found on the Boardman, Paterson, and Whitcomb Units. Large areas of the palustrine wetlands located on Umatilla Refuge are permanently flooded with emergent vegetation composed primarily of cattail (*Typha* spp.) and bulrushes (*Scirpus* spp.), but some areas are seasonal in nature, becoming exposed during the late summer and producing some annual moist-soil plants.

Kathy's Pond on the McCormack Unit of Umatilla Refuge is a created wetland that is flooded seasonally using return water from the nearby Irrigon Fish Hatchery operated by Oregon Department of Fish and Wildlife.

B. Condition and Trends

Dam construction caused several significant changes in wetland and deepwater habitats along the stretches of the Columbia River now occupied by the Refuges. The dams significantly increased open water areas and covered over naturally occurring habitats. Rasmussen and Wright (1990) reported that open water acreage nearly doubled in the area of the McNary Pool after dam construction, from about 16,000 acres to approximately 32,000 acres. Similarly, within the area flooded by the John Day Dam, open water acreage more than doubled from about 21,000 acres to 48,000 acres. As a result 511 acres of emergent wetlands were lost (Rasmussen and Wright 1990). The character of the open water was changed in both cases from free-flowing river habitat to slackwater pool and backwater habitat. Using NWI terminology, riverine habitat was converted into lacustrine habitat. Natural fluvial processes that occurred along the river were lost, such as seasonal flooding and scouring that helped maintain river-associated wetlands by setting back succession. The timing of seasonal flows were also severely altered, which prior to the dams, included high water flows during spring and summer and low flows during fall and winter.

Under the highly altered managed system, the reservoir backwaters and associated wetlands lack natural renewing processes and are aging in terms of succession. The John Day report noted that "there were more areas supporting emergent vegetation at both Paterson and McCormack Sloughs in 1989 than were apparent on the 1979 aerial photographs. The numerous ponds appear to be undergoing natural succession through emergent wetland to uplands, probably primarily because of sedimentation." Diversity in habitat types has been giving way to dominant monocultures of tall, persistent emergent plants, that when combined with sedimentation, causes the infill of shallow backwaters and wetlands. As a result, certain types of palustrine habitats, particularly the shallow permanently or semi-permanently flooded areas known as "shallow marsh" are gradually declining. Non-persistent wetland and mud flats, for example, are vital to a variety of migratory birds and other wetland animals and both types are mostly non-existent on both Refuges. Under the NWI classification, shallow marsh includes the following palustrine types:

Class = Aquatic bed (water regime modifier = semipermanently flooded)

Class = Emergent wetland (water regime modifier = semipermanently flooded)

Class = Emergent wetland (water regime modifier = seasonally flooded)

At Umatilla Refuge, in 1993, a large decline in shallow marsh occurred when the Corps changed the spring-summer operating level of the John Day pool in accordance with the NOAA Fisheries (formerly NMFS) biological opinion on the ESA listing of Snake River sockeye salmon. Modified operations of the FCRPS have since continued and were updated due to subsequent ESA listings of salmon and steelhead. Compared to pre-1993 operation, the current river levels have averaged approximately 4 feet lower during spring and summer months, with further reduced fluctuation. As a result, seasonal patterns of high and low water elevations were reversed from both the pre-dam and pre-1993 project eras. Water elevations are now lowest during the spring and summer as opposed to the fall and winter. This river operations modification beginning in 1993 resulted in substantial changes to wetland and riparian habitats that had become established since dam construction. Backwater wetlands were markedly reduced in size, including a measured decrease by one third in open water area within McCormack Slough. Riparian vegetation was left higher on the river bank resulting in the ongoing death of established trees and shrubs, with new recruitment of trees and shrubs on the lower banks, among a plethora of nonnative and invasive plants. Currently, similar changes in reservoir operations have been implemented for Lake Wallula for which parallel impacts are anticipated.

Exotic invasives occurring in Refuge wetlands include Canada thistle (*Cirsium arvense*), phragmites (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), and Russian olive. Less common invasive plants found in wetland habitats include hoary cress, perennial sowthistle (*Sonchus arvensis*), and salt cedar (*Tamarix ramosissimus*). Aquatic areas likely host the invasive submergent, Eurasian water milfoil (*Myriophyllum spicatum*).

Good quantified information on submerged plants is lacking, however, transects on some aquatic areas were done in the 1970s. Managers reported that areas on McNary used to support large areas of sago pondweed, a species which supports larger populations of diving ducks and tundra swans, which is now much diminished (pers. comm., Al Sutlick).

C. Associated Wildlife

Birds: Wetlands and deepwater habitats on McNary and Umatilla Refuges provide habitat for a variety of migratory birds. Thousands of waterfowl representing over 20 species use both Refuges during winter or as stopover sites during spring and fall migrations. Shorebirds are another major group supported in muddy substrates and shallow waters at Refuge wetlands, most particularly at the Wallula Delta area at the confluence of the Walla Walla River with the Columbia. Most shorebirds using Refuge wetlands are migrants, however, American avocet, black-necked stilt, killdeer, long-billed curlew, Wilson's phalarope, and Wilson's snipe are known breeders on both Refuges. See the waterfowl and shorebirds conservation targets for more information on these two species groups, which constitute conservation targets in their own right under the CCP. Other common waterbird species that use Refuge wetlands primarily for foraging and/or resting include American white pelican, double crested cormorant, great blue heron, black-crowned night heron, Caspian tern, and ring-billed gull. Refuge wetlands also provide nesting habitat for other marsh birds such as pied-billed grebe, American coot, and Virginia rail. Common songbirds breeding in wetlands on both Refuges include marsh wren, red-winged blackbird, and yellow-headed blackbird.

Fish: Several species of native anadromous salmonids traverse the Columbia River portion of Umatilla and McNary Refuges during their migrations upstream to spawning areas and downstream to the Pacific Ocean (see discussion under Threatened and Endangered Species below). Backwater wetland

areas with a direct connection to the Columbia River, such as Casey Pond on McNary Refuge and Paterson Slough on Umatilla Refuge, are used as rearing habitat by juvenile salmonids during winter and early spring when water temperatures are not too high. Other native fish that can be found (primarily within the Columbia River) include chiselmouth (*Acrocheilus alutaceus*), northern pikeminnow (*Ptychocheilus organensis*), peamouth (*Mylocheilus caurinus*), sand roller (*Percopsis transmontana*), and suckers (*Catostomus* spp).

Creation of Umatilla and Wallula Lakes changed Columbia River conditions from what had been primarily a coldwater fishery to warmer, deepwater reservoirs, which consequently resulted in the introduction of a number of species of fishes not native to the area. Common introduced fishes include largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), crappie (*Pomoxis* spp), walleye (*Stizostedion vitreum*), common carp (*Cyprinus carpio*), and yellow perch (*Perca flavescens*).

Mammals: American beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), mink (*Mustela vison*), and river otter (*Lutra canadensis*) inhabit wetlands on both Refuges.

Reptiles and Amphibians: Species known to occur in suitable habitat include great basin spadefoot (*Spea intermontana*), Woodhouse’s toad (*Bufo woodhousii*), the nonnative bullfrog (*Rana catesbeiana*), and western painted turtle (*Chrysemys picta*).

D. Key Ecological Attributes

Table 4-5. Wetland and Deepwater Ecological Attributes, Indicators, and Condition Parameters

Key Ecological Attributes	Indicators	Desired Conditions (Ranked Good or Higher)
Hydrologic Regime	<ul style="list-style-type: none"> Water depth and annual cycle Water quality Groundwater exchange 	<ul style="list-style-type: none"> Natural fluvial cycle approximating natural hydrograph or direct artificial manipulation that mimics this cycle. Natural successional processes <1 foot in “depression” wetland pool levels compared to pool elevation.
Plant Community Structure and Composition	<ul style="list-style-type: none"> Seral stages Presence of emergents Presence of aquatic bed Percent cover Interspersion 	<ul style="list-style-type: none"> [Analysis not complete] Approaching a 50:50 cover-water ratio
Native Species Representation	<ul style="list-style-type: none"> Native species percent cover 	<ul style="list-style-type: none"> [Analysis not complete]
Food Chain	<ul style="list-style-type: none"> Presence of invertebrates and invertebrate prey 	<ul style="list-style-type: none"> [Analysis not complete]

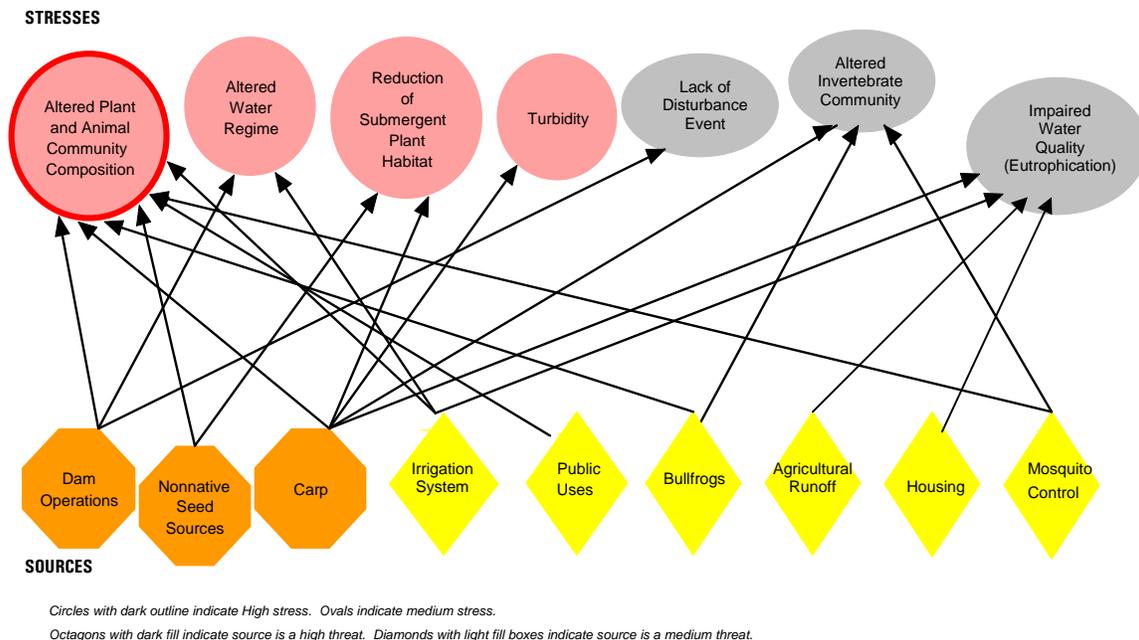
E. Threats

Stresses and sources to wetland and deepwater habitats are shown on Figure 4.3. The highest ranked threats included dam operations, nonnative seed sources and carp. Operations of the John Day Lock

and Dam dictate Refuge water levels in the reservoir and backwater sloughs, as well as the majority of ponds and other wetlands on the Refuge. As such, the option to use water control to mimic a more seasonal cycle of inundation and drying in Refuge palustrine wetlands is precluded except in a few small areas. Carp are also considered particularly insidious because they contribute to so many of the stresses, eliminating submerged vegetation, increasing water turbidity, and impacting the invertebrate community.

Figure 4.3 Stresses and sources of stress to wetland and deepwater habitats.

(Circles with dark outline are high stress. Ovals are medium stress. Octagons with dark fill indicate high source. Diamonds with light fill indicate medium source).



4.6 Cliffs, Rimrock, and Outcroppings

A. Description and Location

Areas of steep basalt cliffs and outcroppings can be found on both Refuges. The largest areas occur on the Stateline and Juniper Canyon Units of McNary Refuge. The Ridge, Whitcomb Island, Crow Butte, Paterson, and Boardman units on Umatilla Refuge contain smaller areas of basalt cliffs and outcroppings, as does the east end of Wallula Unit on McNary Refuge. Areas of shallow to moderately deep sandy and silt loam soils supporting shrub-steppe vegetation are found in association with these outcrops. Acres for these habitats are hard to estimate but on McNary and Umatilla Refuges, it's estimated that cliffs and rimrock occupy roughly 458 acres and 90 acres, respectively.

B. Condition and Trends

Rasmussen and Wright (1990) reported that an insignificant amount (<0.1%) of this habitat type was lost due to the McNary Dam, but that 894 acres were inundated by the John Day Pool. McNary Refuge supports the largest acreage and best quality of this habitat type. Cliff and talus habitats on

the Stateline and Juniper Canyon Units are very steep, with some cliff faces having a nearly vertical slope and peaking at over 900 feet above the Columbia River, offering habitat for a variety of plants and animals, some of which may be unique or rare. Vegetation, when it is present, is primarily shrub-steppe with native shrubs, bunchgrasses, and forbs more prevalent than in other Refuge shrub-steppe habits. This is likely due to the more protected nature of the cliffs and talus. However, wildfire has damaged shrub cover in some areas, and grazing has occurred historically and is currently occurring illegally in some areas, due to the lack of boundary fences. A lesser amount of this habitat is found on Umatilla Refuge. Umatilla cliff/talus habitat lacks the dramatic steep cliffs common to McNary. Frequent wildfires have reduced the quality of vegetation occurring on and near Umatilla cliff/talus areas. The trend for the condition of these habitats on both Refuges is generally to remain stable, if the frequency of wildfires can be reduced and grazing can be eliminated. Public use is likely not great except in a few areas such as Juniper Canyon or the Twin Sisters area bordering McNary Refuge.

C. Associated Wildlife

These areas provide nesting habitat for cliff dwelling birds as well as various reptiles. Biological resources have not been formally surveyed, but subject matter experts have noted that the Juniper Canyon/Stateline cliffs and talus areas are known to provide habitat for big herds of mule deer, a peregrine falcon eyrie, prairie falcons, white-throated swift, common night snake, big-horned sheep, black-tailed jackrabbit, and golden eagle. Rattlesnake hibernaculas are known to exist at Paterson and Crow Butte on Umatilla Refuge and there may be one on McNary’s Wallula Unit as well. Ferruginous hawks are in the vicinity of the Refuges and use the Refuge for at least foraging.

D. Key Ecological Attributes

Table 4-6. Cliff, Talus and Outcropping Ecological Attributes, Indicators, and Condition Parameters

Key Ecological Attributes	Indicators	Desired Conditions (Ranked Good or Higher)
Size and Composition of Rock-dominated Habitat	<ul style="list-style-type: none"> • Height of cliffs • Varying rock features supporting different species • Size and depth of talus 	<ul style="list-style-type: none"> • ≥25 feet considered priority habitat by WDFW. Higher cliff dominance • Maintain rock fissures, ledges, overhangs, deep cliff-face caves, loose slab rock, and shallow caves with a variety of aspects • Maintain stable talus with larger rock and deeper masses (Maser et al. 1979a, 1979b)
Security and Human Impacts	<ul style="list-style-type: none"> • Human activity on or near cliff, talus, or outcroppings 	<ul style="list-style-type: none"> • Buffer zones near potential nests, roost sites, or maternity colonies of 980 feet (Holmes et al. 1993) or WDFW recommendation that human access along cliff rims, faces, or immediately below nest cliffs be restricted within 0.5 mi. of nest from March-June 30 (Hays and Milner 2004).
Distribution of Habitats and Proximity to Forage and Water	<ul style="list-style-type: none"> • Presence of human developments, habitat alteration, or chemical applications 	<ul style="list-style-type: none"> • Human development is a quarter-mile or more from important prey concentrations near cliffs used by nesting raptors. Habitat alterations should be avoided and pesticides and rodenticides should not be used within this buffer.

Sources: All cited sources referenced in Tressler (2004).

E. Threats

A formal stress and source analysis like Figure 3 was not completed for this target. Currently, unauthorized uses present some of the larger threats to these habitats. Examples of these include a short-range shooting gallery at Juniper Canyon, and cow trespass from adjoining BLM land.

No rock-climbing is currently known to occur anywhere on the Refuges; however, future expansion of recreational activity, including rock-climbing, could occur if the National Geologic Trail under consideration for the Wallula Gap area draws many visitors (see Chapter 5 discussion for more details).

4.7 Islands

A. Description and Location

Both Refuges contain a number of large and small islands in the Columbia River. Some of these islands are the remnants of larger islands that existed in the Columbia River prior to flooding; others, such as Crescent Island, derive from dredge spoil. Island acreage currently totals 419 acres on Umatilla and 212 acres on McNary. These islands contain a variety of habitats, including sand and cobble beaches and flats, shallow river shoreline wetlands, sagebrush-dominated shrub-steppe, and woody riparian.

Table 4-7. Islands at McNary and Umatilla Refuges – Background Information

Refuge Jurisdiction	Significant Features	Open to Public	Management Issues
Hanford Islands			
Extends only to high water mark	<ul style="list-style-type: none"> Heron, great egret, gull and Forester's tern colonies. Swallow colony, use by pelicans, owls, and sandpipers Extensive use of shoreline areas by juvenile flightless waterbirds and waterfowl (Butler and Linehan 1994) 	Officially closed in 1993 to all uses except hunting, but trespass occurs.	<ul style="list-style-type: none"> Public trespass, especially at 3rd island (Island 20) Disturbance from beach use and adjacent boating Trees dying Growing gull colonies
Strawberry Island			
Extends to low water mark: beaches under Refuge jurisdiction	<ul style="list-style-type: none"> Designated National Historic Site. Archaeological sites. Winter roosting bald eagles, fawning deer herd. 	Not officially, but beaches exposed at low water are heavily used (Refuge lacks enforcement staff).	<ul style="list-style-type: none"> Island trespass Disturbance from beach use and adjacent boating Erosion of banks
Foundation, Badger, and Crescent			
Jurisdiction on all islands and extending into water to	<ul style="list-style-type: none"> Caspian Tern colony on Crescent Pelican colony on Badger Double-crested cormorant 	Only Crescent open to hunting. Foundation and Badger closures	<ul style="list-style-type: none"> Tern colony controversial but colony is not expanding

Refuge Jurisdiction	Significant Features	Open to Public	Management Issues
shoreline.	colony on Foundation	extend ¼ mile around islands	
<i>Umatilla Islands</i>			
Jurisdiction on all islands and extending into water to shoreline, excluding only Columbia River navigation channels.	<ul style="list-style-type: none"> • nesting Forsters terns, and possibly Caspian terns • great blue heron, great egrets, black-crowned night herons nest • bank swallow colony • Geese/duck nesting • Deer fawning 	Closed to all uses except for summertime use at the east end of West Blalock Island and the east end of Big Sand Dune Island and the tip of Crow Butte.	<ul style="list-style-type: none"> • Island trespass in summer • Potential impacts from campfires and fireworks • Signs need work

For the purposes of the CCP, Whitcomb Island and Crow Butte are not considered “islands” in further discussions of this conservation target.

B. Condition and Trends

Rasmussen and Wright (1990) reported a total of 6,708 acres of islands lost to inundation as a result of the construction of John Day Dam, while Lake Wallula flooded 2,741 acres of islands.

Probably due in part to the relative lack of human disturbance, habitat modification and degradation has also been somewhat attenuated at the islands. For example, the Umatilla Islands have some of the finest shrub-steppe habitat available on the Refuge.

Island size can and does change over time. During the 1980s, erosion at Umatilla Islands was described as a potentially large problem. Erosion can occur as the current washes against soft substrates on the islands. Yet currently, island size seems fairly stable at Umatilla. At McNary Refuge, Foundation Island is growing on its east side as the result of silt deposition.

C. Associated Wildlife

Colonial Waterbirds: Nesting waterbird colonies are the most distinctive biological feature of the islands. Colonial nesting birds present include California gull, ring-billed gull, Caspian tern, Forster’s tern, great blue heron, great egret, black-crowned night heron, and double-crested cormorant. The only known nesting colony of American white pelicans in the State of Washington occurs on Badger Island. White pelicans are listed as endangered by WDFW. Great egrets are frequently observed during summer and fall and may have begun nesting on East Sand Dune Island as well. The waterbird nesting season on the islands generally extends through July.

Most of the waterbirds are piscivorous (feed on fish) for most if not all of their diet and as such have caused concern, with other fish predators present in the Columbia system (such as northern pikeminnow and sea lions), about impacts to listed salmonids. Introduced fish such as large-mouthed bass and walleye also prey on young salmonids. Within the Refuge area, several waterbird species have been the subject of study, however, Caspian terns have so far been the avian species of greatest

concern, mainly due to their preference for juvenile salmonids and the impact that a large colony downstream in the Columbia River estuary has had on juvenile salmonid survival. Several years of data have been collected by researchers from Real Time Research, Inc. and Oregon State University, on the Crescent Island colony on McNary Refuge (Antolos et al. 2004, 2005). The following paragraph is excerpted from (Collis et al. 2004) Executive Summary.

The tern colony on Crescent Island consisted of about 530 breeding pairs in 2004, similar in size to the previous year. The diet of Caspian terns nesting on Crescent Island in 2004 consisted of about 70% juvenile salmonids, similar to diets of Crescent Island terns during the 2000-2003 breeding seasons. An estimated 470,000 (95% c.i. = 370,000–570,000) juvenile salmonids were consumed by Caspian terns nesting on Crescent Island in 2004. Preliminary results from 2004 suggest the predation rate by Crescent Island terns on Snake River steelhead smolts was 23%. In-river steelhead smolts from the Snake River were more vulnerable to tern predation than in-river steelhead smolts from the Upper Columbia (an estimated 4%). The high predation rate on in-river migrants from the Snake River was, however, offset by the transportation of most juvenile salmonids around the McNary Pool. Conversely, juvenile salmonids from the upper and mid-Columbia River (upstream of McNary Dam) were not transported past Crescent Island, resulting in a much larger proportion of those runs being susceptible to predation by Crescent Island terns. Predation rates on salmonids by Crescent Island terns are unlikely to increase appreciably over those observed in 2004. Reasons for this include the constraints on tern colony expansion (they are hemmed in by gulls) and a limited capacity for increased per capita smolt consumption. High transportation rates for Snake River smolts also preclude the vulnerability of many migrating juveniles.

A small tern colony was discovered on Rock Island in the Blalock Islands at Umatilla Refuge in 2005. Six breeding pairs were observed on one census, but only one chick appears to have fledged (Collis et al. 2005).

A bioenergetics model completed upstream near Wenatchee along the Columbia River (Parrish 2005) considered the potential impact of all piscivorous birds on salmonids, and identified common merganser and gulls as likely having a greater impact on salmonids than terns. At this time, no similar analysis has been completed for the Mid-Columbia area; therefore it is unknown whether the conclusions of that study apply to the Refuges.

Other Species: Canada geese and ducks nest on the islands and deer are known to fawn at least on the Strawberry and Umatilla Islands. A colony of bank swallows inhabits the Umatilla Islands. Sand and cobble shorelines and shallow water areas adjacent to the islands are used by thousands of waterfowl and other waterbirds during winter, and by rearing broods in summer (Butler and Linehan 1994). Wildlife likely seek out the islands for breeding habitat because of their relative isolation and the ability of the islands to provide security and protection from mammalian predators.

There is uncertainty whether colonial nesting birds that are now present along the mid-Columbia river were present before the dams. If here, they were probably present in much lower numbers. Gulls and cormorants seem to be rising more rapidly.

D. Key Ecological Attributes

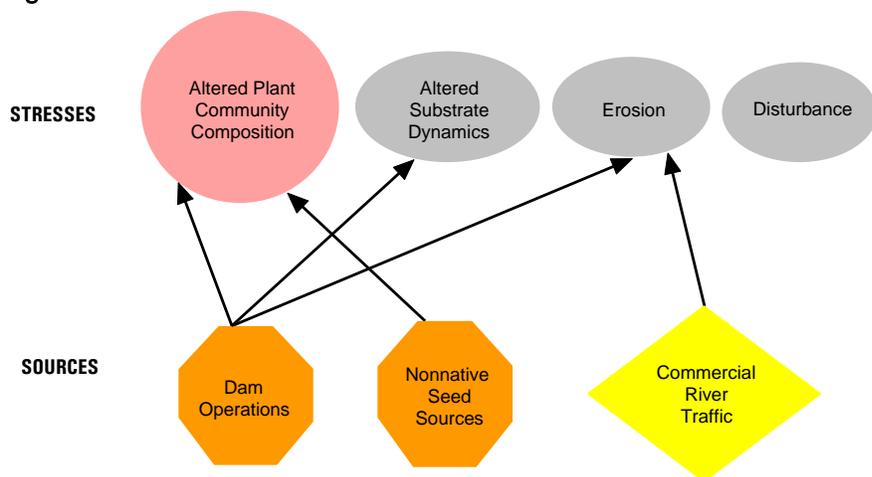
Table 4-8. Islands Ecological Attributes, Indicators, and Condition Parameters

Key Ecological Attributes	Indicators	Desired Conditions (Ranked Good or Higher)
Water Regime	<ul style="list-style-type: none"> • Flooding frequency • Height above river • Water depth around islands 	[Analysis not complete]
Security	<ul style="list-style-type: none"> • Distance from shoreline • Amount of public use 	[Analysis not complete]
Size	<ul style="list-style-type: none"> • Acres 	[Analysis not complete]
Status of key species	<ul style="list-style-type: none"> • Nest sites of colonial waterbirds • Goose nest sites • Deer fawning areas • Waterfowl loafing areas 	<ul style="list-style-type: none"> • All nesting and fawning features “stable” [Analysis not complete] [Analysis not complete]

E. Threats

Figure 4.4 shows the stresses and sources of stresses for the islands target. Potential impact to wildlife and cultural resources from recreational disturbance and recreation-induced habitat modification such as accidental fire has long been a concern of the Refuge. Human use causes direct impact on the beaches themselves, including direct displacement of geese, shorebirds, and bank nesting swallows, from potential foraging and nesting habitat. Garbage and human waste present ongoing problems. Although this stress (disturbance) was ranked as medium, the source (public use) was ranked as low (based upon public use having a high contribution to the stress of disturbance but a medium irreversibility). Thus, in keeping with our other diagrams, public use is not shown as a high or medium source of stress.

Figure 4.4 Stresses and Sources of Stress to Islands



Circles with dark fill indicate High stress. Ovals indicate Medium stress. Octagons with dark fill indicate source is a High threat. Diamonds with light fill boxes indicate source is a Medium threat.

4.8 Waterfowl

A. Description and Location



Thousands of waterfowl use both Refuges during fall, winter, and spring. Waterfowl species nesting on the Refuge include Canada goose, mallard, gadwall, Northern shoveler, American green-winged teal, blue-winged teal, cinnamon teal, redhead, ring-necked duck, ruddy duck, and wood duck. Production levels are not presumed to be high compared to other breeding areas along the flyway, but there is little data on this aspect.

Abundant wintering species include mallard, Canada geese, pintail, and American wigeon. Significant numbers of gadwall, Northern shoveler, canvasback, redhead, lesser scaup, and ring-necked duck also winter on both Refuges. Hundreds to several thousands of white-fronted geese and snow geese can occur during fall and spring migration. Up to 1,600 white-fronted geese have been observed during the spring migration, with the largest concentration of these located east of Highway 14 and Casey Pond on McNary Refuge. More than 3,000 snow geese were sighted at Whitcomb Island on Umatilla Refuge in February 2006. Small numbers of tundra swans also use the Refuges. Harvest records show that 90% of birds taken are mallards.

B. Condition and Trends

Prior to about 1990, the number of wintering waterfowl utilizing the two Refuges exceeded 500,000, about 50% of the flyway total for wintering populations. Since then, generally, less than 200,000 waterfowl have been recorded during individual aerial surveys (Figures 4.5 and 4.6). Continental populations for mallards, the most numerous Refuge species, are stable. This supports the hypothesis that a redistribution of wintering birds, at least for mallards, has occurred. Most local waterfowl biologists believe that a combination of warmer winters and lower food resources within the Columbia Basin (as compared to the 1980s) account for the population drop. The Central Valley in California has been the focus of numerous habitat enhancements recently and may be drawing a larger percentage of the wintering population. Changes in hunting areas and regulations enacted as part of the 1983 Wintering Waterfowl Redistribution Plan in the Columbia Basin (Lloyd et al. 1983) may also have contributed to the decline in numbers of wintering birds on the Refuges.

In 2005, an initial meeting was held to discuss writing a new Columbia Basin waterfowl management plan, and was attended by staff from McNary and Umatilla Refuges and other Columbia Basin Refuges, Fish and Wildlife Service's Office of Migratory Birds, ODFW, WDFW, Corps, DU, and the Yakama Nation. The plan is intended to explore all factors affecting waterfowl in the Columbia Basin including crop production, and other habitat data, weather factors, areas open or closed to hunting, waterfowl movements taken from banding data, and waterfowl production in an effort to boost waterfowl populations wintering in the Columbia Basin, recognizing that we will probably never return to number of birds common in the 1980s. Currently, a target numerical objective for wintering or migratory waterfowl in the Columbia Basin does not exist. The 2004 Strategic Guidance (NAWMP, Plan Committee 2004), a 15 year plan, does contain species-specific populations targets as a step-

down from the NAWP and evaluations of whether the continental population is currently short or over the target. There are also flyway goals for production by species. Annually there are population reports available based on the spring breeding surveys in the northern U.S. and Canada.

Figure 4.5 Waterfowl high counts, McNary Refuge, 1981-2004

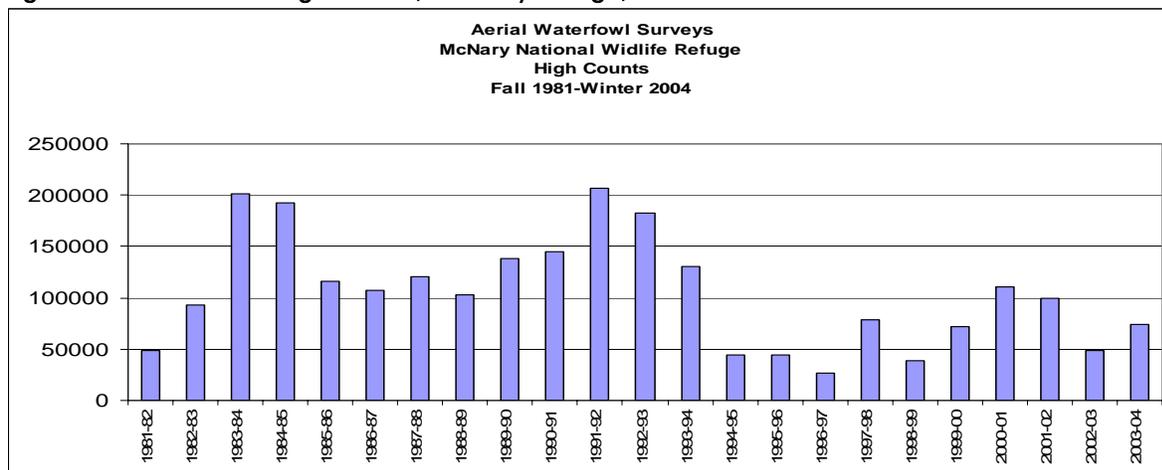
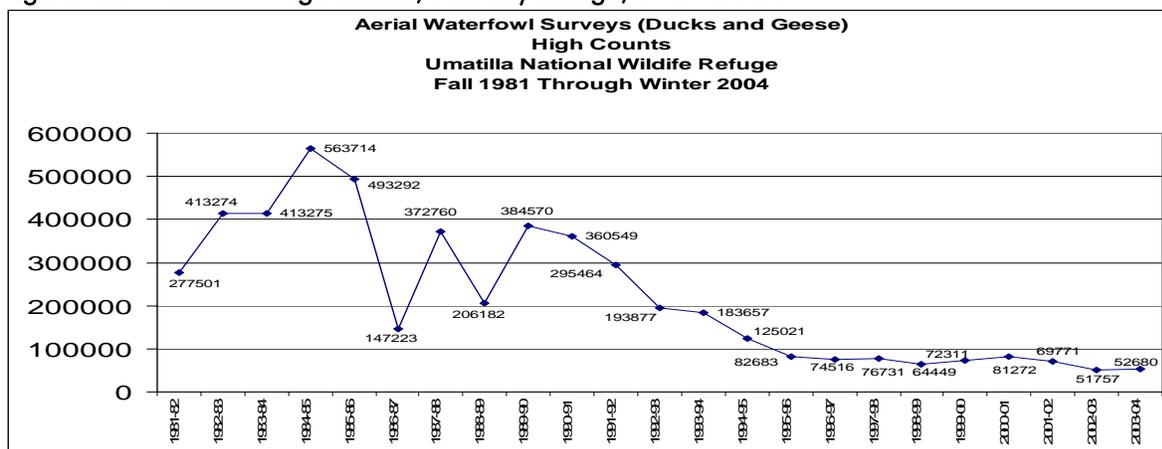


Figure 4.6 Waterfowl high counts, McNary Refuge, 1981-2004



According to the NAWMP Strategic Plan, pintail and scaup are decreasing at the flyway level. The western population of tundra swans exceeds the population objective by about 22,000. Population objectives have not been established for most of the Pacific Flyway Canada geese subspecies. Pacific white-fronted geese are increasing and numbers are well above the population objective. No trend data is available for Tule white-fronted geese, an uncommon migrant on the Refuges; however, the population estimate is only about 50% of the goal of 10,000 birds.

C. Habitats Utilized

Key waterfowl use areas are displayed in Maps 12A and 12B.

Wetlands: Waterfowl utilize both lacustrine and palustrine wetland habitats on the Refuges. Lacustrine habitats that support invertebrates and/or submergent vegetation (such as *Potamogeton*, duckweed [*Lemna spp*], or coontail) are particularly beneficial. Waters should be clear (with no carp).

Palustrine wetlands that host seed producing native annuals such as smartweed, swamp Timothy, wild millet, and goosefoot are considered valuable foraging habitat for waterfowl. Water depths between 6" and 30" are preferable to support a range of species. Invertebrates found in wetlands are also an important food source for ducks in spring and summer due to the increased demand for protein to support reproduction.

A few Refuge areas are managed as moist soil units, where water control is available, and the wetland can be flooded during fall and winter and then drawn down in spring to stimulate annual seed-producing plants in spring and summer. Current areas where moist soil management is practiced, include Kathy's Pond on Umatilla Refuge and West and East Millet Ponds on McNary Refuge. Irrigation water is available and used to flood Dudley wetlands at McNary, but effective moist soil management is precluded there by sandy soil conditions.

Due to the Corps-managed seasonal pool elevation patterns of Lake Umatilla, other moist soil management units are also possible within the Umatilla Refuge, and are in practice at McCormack Slough, without the advent of direct water manipulation by the Refuge. These designed sites have excavated ground surface elevations that fall between minimum and maximum annual pool fluctuation, providing seasonally flooded wetlands with spring-summer drawdown that support production of moist soil plants. Currently, these units are relatively some of the better and most consistent producing moist soil areas within the Refuges.

Croplands: Croplands are maintained on both Refuges to provide forage for thousands of Canada geese and mallards. White-fronted geese, snow geese, American widgeon, northern pintail, California quail, and ring-necked pheasant also frequent Refuge croplands.

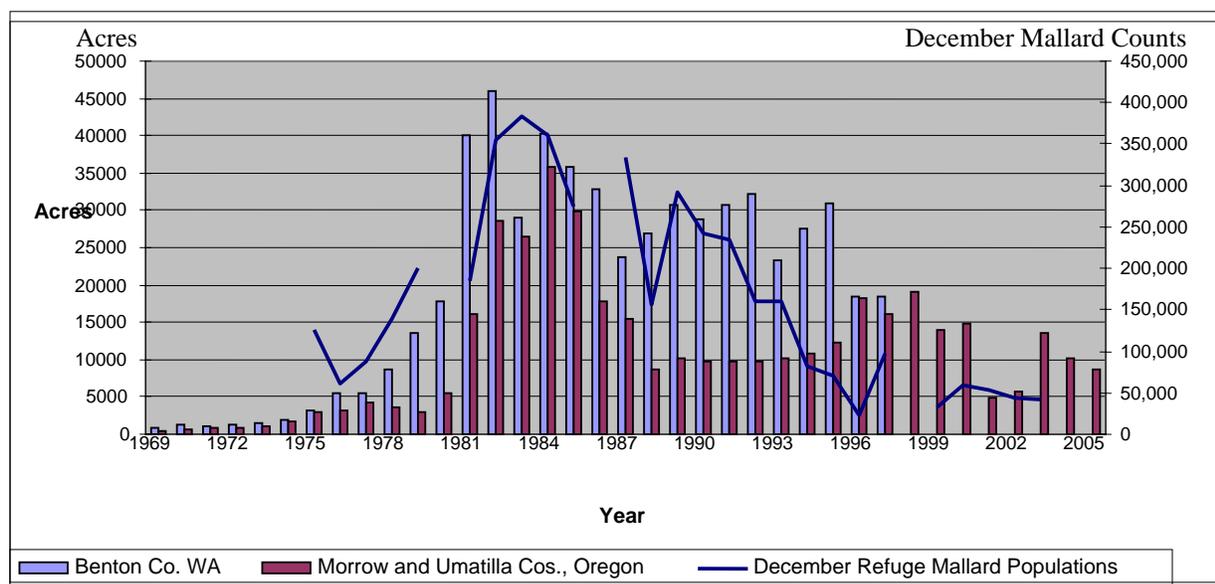
Cooperative farming has been practiced for many years at both Refuges with the objective of providing grain and green feed to migrating and wintering waterfowl. The Whitcomb and McCormack units on Umatilla Refuge support 1,297 acres of cooperative farming programs, and the McNary Headquarters Unit supports 632 acres. At Whitcomb Island, five of the agricultural circles are certified organically farmed, and the area is occasionally used to showcase successful organic farming programs. Cropland management plans exist for both Refuges (FWS 1999).

The crops grown in all the cooperatively farmed fields are mutually agreed upon by the Refuge and farmer, with the Refuge receiving shares (usually 25%). The Refuge shares are made up of grains and green forage, as best determined by the Refuge to meet wildlife objectives, while maintaining a viable cooperative agreement. The Refuge receives additional wildlife benefit, although not counted as Refuge shares, through the availability of waste grains and green forage following harvest of the cooperator's portion of the crops. The cooperator also maintains agricultural fields being transitioned into native grass stands, as well as grass shelterbelts on the perimeters of irrigated agricultural circles. Crops grown include alfalfa, field corn, winter wheat, and grasses.

The Refuge shares are left unharvested in the field for wildlife use as food and/or cover and are knocked down as needed to be made available following the end of the waterfowl hunting season. Corn is a more important food source later in the season, in part, because the moist soil units are generally available early in the fall and winter.

Winter wheat is also planted on the Peninsula Unit to attract geese. Portions of the Wallula Unit are planted to Japanese millet. Grain corn production within the Columbia Basin and in the local vicinity of the Refuges is of high importance to waterfowl. The availability of waste corn after harvest provides an important high-energy food source, with particular value to mallards. Migrating and wintering waterfowl population numbers are believed to have a high positive correlation to available grain corn (Figure 4-7). Relatively high growth and harvest of grain corn in the 1980s, and subsequent reductions in later years, are reflected in the numbers of waterfowl counted in annual population surveys.

Figure 4.7 Local Corn Production and Wintering Mallard Numbers, 1969-2005



Source: Mallard data from Refuge flights (no data 1969-1974; missing data 1980, 1986, 1998, 2004, 2005). Agricultural data from USDA National Agricultural Statistical Service. No data for Benton County 1998-present.

Within the south basin, there is currently a corn production deficit in meeting local needs, such as for dairy and beef, with local area farmers providing about 80% of demand (Neal 2006; Frederickson 2006). The reason for this deficit is economic. In general, grain corn is used as a rotational crop, as is wheat and sweet corn, for preferred money crops such as potatoes, onions or sugar beets. Sweet corn has a higher return than field corn or wheat, which have similar returns. Corn used to be sold for \$135/ton, but now goes for \$90 to \$110/ton, and irrigation costs have risen (Frederickson 2006). Given this, production of field corn will not increase from current levels unless there are additional markets for it at increased prices (Agrinorthwest 2006; Frederickson 2006). This year grain corn acreage will likely be down in Morrow County (Fredrickson 2006; Offut 2006), and stable in Benton County (Agrinorthwest 2006).

Some food-grade field corn has been grown for foreign markets by Frederickson Farms in the last two years (having the same value to waterfowl), but will not be grown this year (Frederickson 2006). Possible other new future markets for grain corn largely include: organic field corn for high-moisture dairy feed (organic dairy products); and ethanol production. This year will be the first time that organic field corn will be grown in the area (Maddox 2006) by Watts Brothers Farms on relatively small acreages. New ethanol plants are proposed at Plymouth, Washington and Boardman, Oregon. The new Boardman plant, currently under construction at the Port of Morrow, will use approximately 65,000 acres worth of grain corn (Neal 2006), which is higher than total current production in the south basin. Construction is planned for two more ethanol plants at the Port of Morrow, one of which will have twice the demand for corn as the plant currently under construction (Neal 2006). Unfortunately for area waterfowl, corn for the ethanol plants will be transported by rail from the Midwest (lower costs), and little is expected to be provided locally (Neal 2006; Frederickson 2006, Agrinorthwest 2006). However, RDO 3-Mile Canyon Farms in Morrow County is considering growing corn for ethanol production (Offutt 2006). Given the high past corn production and waterfowl use, and the continued poor outlook for increased corn production, growing these types of food resources on the Refuges will be of particular importance to help reduce the rate of decreasing waterfowl numbers.

Islands: During the waterfowl hunting season, the majority of waterfowl are concentrated near islands in the John Day and McNary pools that are closed to hunting. Islands also provide goose nesting and waterfowl brood habitat during late summer and fall.

D. Key Ecological Attributes

Table 4-9. Waterfowl Ecological Attributes, Indicators, and Condition Parameters

Key Ecological Attributes	Indicators	Desired Conditions
Species Abundance and Diversity	<ul style="list-style-type: none"> • 5-year average winter populations (or use-days) for declining species especially pintail and scaup • Population available for viewing and shooting 	<ul style="list-style-type: none"> • Stable or increasing • Large concentrations
Upland Food Availability	<ul style="list-style-type: none"> • amount of land in irrigated croplands • acres grain available and acres of corn available • acres of green feed available • timing of knock-down • Areas provided off-Refuge 	<ul style="list-style-type: none"> • All current circles fully utilized • Maximize 25% share as grain with 75-100% of this as corn. • As much as can be made available • Within constraints of baiting laws and farming seasons, spread knock down dates over fall, winter and spring to help provide for early and late migrants and provide more efficient utilization of crop by wintering birds. • Possibility of providing part of the corn needed on off-Refuge land, using Private Lands programs and incentives.

Key Ecological Attributes	Indicators	Desired Conditions
Wetland Food Availability	<ul style="list-style-type: none"> • Acres of moist soil units with high quality foods available over full migratory and wintering season. • Acres permanent wetland with aquatic vegetation and healthy invertebrate communities established. • Swans tied to sago pondweed. • Macroinvertebrate abundance and diversity 	<ul style="list-style-type: none"> • Increase in current moist soil areas; manage flooding regime to provide some areas with 6-24" water depths throughout fall, spring, and winter. • [Analysis not complete] • [Analysis not complete] • [Analysis not complete]
Hydrologic Regime	<ul style="list-style-type: none"> • Variety of water depths to accommodate dabblers and divers 	[Analysis not complete]
Security	<ul style="list-style-type: none"> • Nesting areas management • Acres of sanctuary areas provided during hunting season • Food availability in sanctuary areas • Predation • Impact from diseases • Molting areas management 	<ul style="list-style-type: none"> • Nesting areas protected from disturbance • Maintain or increase in sanctuary areas. • High quality foods available in sanctuary areas • [Analysis not complete] • Limited or no disease • [Analysis not complete]

Source: Planning Team

E. Threats

A formal stress/source analysis was not completed for the Waterfowl Conservation target.

4.9 Shorebirds

A. Description and Location

Nearly 40 different shorebird species are known to use the Refuges, reaching their highest numbers during the migration in both fall and spring. Six species breed on the Refuges, including American avocet, black-necked stilt, killdeer, spotted sandpiper, long-billed curlew, and Wilson’s snipe. The Wallula Delta, located at the confluence of the Walla Walla and Columbia Rivers on McNary Refuge, is a major shorebird stopover site in this area of the Columbia Basin. Surveys conducted from the early 1990s to the present have recorded as many as 8,600 shorebirds on the Wallula Delta during fall migration (International Shorebird Surveys, Manomet Center for Conservation Sciences). The species with the highest population numbers have been the western sandpiper, dunlin, killdeer, long-billed dowitcher, and American avocet. Many other species of shorebirds have been recorded in smaller numbers. Though shorebirds have been sighted at the Wallula Delta in all months of the year, the data shows that March through April are generally when most spring migrants are counted, and August through September is when most fall migrants are recorded. Migrating shorebirds also use the islands and shorelines of the Columbia River, and sloughs and wetlands.

Long-billed curlews have been recorded using both Refuges for feeding and/or breeding during spring. Results from surveys done by Refuge staff and volunteers in 2005 and 2006 have recorded breeding curlews on Umatilla Refuge’s Boardman, McCormack, Ridge, and Whitcomb Units, with the greatest number, by far, recorded on the McCormack Unit. Though curlews have been sighted on units of McNary Refuge during the breeding season, whether they actually nest on the Refuge is unknown.

B. Condition and Trends

Over time, shorebirds generally appear to have increased on the Refuges, especially McNary, due to increased availability of mudflat and shallow water habitats as sediment slowly accumulates along the margins of the pools.

C. Habitats Utilized

The types of habitats that shorebirds use on the Refuges include: exposed moist and nonvegetated substrates; mudflats along the Columbia River; and shallow portions of wetlands and sloughs. Upland fields and grasslands are used by long-billed curlews. Curlew breeding habitats were studied by Pampush and Anthony (1993), who found that this species seems to prefer cheatgrass dominated grasslands over bunchgrass, dense forbs, or open low shrub habitats; however, this is likely a function of preference for a low vegetation structure rather than specifically selecting for cheatgrass.

Habitat increases could possibly be created by requesting drawdown of the McNary and/or Umatilla pools during migration periods. The Refuges made this request in fall of 2004 and 2005. Similarly, habitats can be enhanced at some moist soil areas by managing for shallow water levels and exposed substrates during migration. Some limitations exist for this method, however, including: 1) during late summer, mosquito concerns have the potential to limit floodups, mainly on McNary Refuge; and 2) at Kathy’s Pond, little water is available for impounding during late summer and fall.

Exposed soils and mudflats were created by excavating persistent emergent wetlands and removing vegetation at McCormack Slough during recent years, but there is little systematic data to know how well these newly exposed areas were utilized by shorebirds. Refuge staff has observed that black-necked stilt and American avocet increase their use of excavated and or disked areas, but numbers soon drop without further management (pers. comm. Brian Allen).

D. Key Ecological Attributes

Table 4-10. Key Ecological Attributes for Shorebirds

Key Ecological Attributes	Indicators	Desired Conditions (Ranked Good or Higher)
Hydrologic Regime	<ul style="list-style-type: none"> • Timing and duration of drawdown events • Water depths 	<ul style="list-style-type: none"> • Drawdowns coinciding with fall (August-September) and spring migration; benthic substrate flooded or flushed during winter • Foraging areas characterized by water depths 0 to 5 cm in areas with known bathymetry and overall average depth

Key Ecological Attributes	Indicators	Desired Conditions (Ranked Good or Higher)
		of approximately 15 cm in areas with unknown or inconsistent bathymetry
Security	<ul style="list-style-type: none"> Amount, availability and quality of undisturbed habitats in spring and fall Frequency and duration of flushing events at key foraging sites 	<ul style="list-style-type: none"> Key forage areas protected by 100 foot buffer from human disturbance (Thomas et al. 2003); dogs, joggers, or recreational vehicles prohibited in key forage areas [Analysis not complete]
Foraging habitat	<ul style="list-style-type: none"> Macroinvertebrate density and diversity Number of forage sites available at any one time Size of exposed area 	<ul style="list-style-type: none"> [Analysis not complete] Alternate sites available during spring and fall migration [Analysis not complete]
Species Composition/ Dominance	<ul style="list-style-type: none"> Annual species richness Annual species abundance 	<ul style="list-style-type: none"> [Analysis not complete] [Analysis not complete]
Connectivity	<ul style="list-style-type: none"> Proximity to other available foraging areas 	<ul style="list-style-type: none"> [Analysis not complete]

Source: Prindle (2004).

E. Threats

A formal stress-source analysis was not completed for the shorebirds target. The following is a general discussion of threats that can cause problems for this target. Water level fluctuations in McNary and Umatilla pools can eliminate available shorebird foraging habitat for days at a time during migration season. During part of the time the shorebirds are present, the McNary pool is managed for high water to support boat races near Kennewick. Alternate foraging sites could be identified (on or off the Refuges), that are not subject to pool management decisions to alleviate this problem.

People using the Delta for hunting and recreation (including ATV use) likely cause some disturbance but the extent of this is unknown. Population data shows a decrease in shorebird numbers in October, but it is not known if the drop is due primarily to hunting disturbance.

Vegetation (especially purple loosestrife) is colonizing the soils of the Delta as they build up. Vegetation spread may be outpacing sediment buildup that is nonvegetated.

4.10 Threatened, Endangered, and Sensitive Species

A. State or Federally Listed Species Known to Occur on Refuges

One goal of the Refuge System is “To conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.” In the

policy clarifying the mission of the Refuge System, it is stated “We protect and manage candidate and proposed species to enhance their status and help preclude the need for listing.”

In accordance with the above, the CCP team considered any species with Federal or State status in the planning process. Table 4-11 lists the species that are State or federally listed that are known to occur on the Refuges. Other State or Federally listed species may occur, but have not been documented. Listed species that are suspected to have occupied Refuge lands historically are also part of this target. Discussion on the federally listed species follows the table in section B.

Table 4-11. Federal and State listed species known to occur or very likely to occur on McNary and Umatilla National Wildlife Refuges.

Species	Federal	Oregon	Washington	Current Occurrence on Refuges
American white pelican	Not Listed	Sensitive-Vulnerable	Endangered	Present year round on both Refuges; nests on McNary
Bald eagle	Threatened	Threatened	Threatened	Uncommon to common winter visitor
Burrowing owl	Species of Concern	Sensitive-Critical	Candidate	Nests on Umatilla Refuge
Loggerhead shrike	Species of Concern	Sensitive-Vulnerable	Candidate	Summer visitor; Breeding status unknown
Long-billed curlew	Not Listed	Sensitive-Vulnerable	Monitored	Nests on Umatilla Refuge
Peregrine falcon	Species of Concern	Endangered	Sensitive	Rare migrant, nests on or near McNary Refuge
Sandhill crane	Not Listed	Sensitive-Vulnerable	Endangered	Uncommon migrant
Swainson’s hawk	Not Listed	Sensitive-Vulnerable	Monitored	Summer visitor; Breeding status unknown
Fish				
Bull trout	Threatened	Candidate	Candidate	May occur during winter
Snake River chinook	Threatened	Threatened	Candidate	Migrates through Refuges
Snake River sockeye	Endangered	Not Listed	Candidate	Migrates through Refuges
Mid-Columbia steelhead	Threatened	Sensitive-Critical, Vulnerable	Candidate	Migrates through Refuges
Snake River steelhead	Threatened	Sensitive-Vulnerable	Candidate	Migrates through Refuges
Upper Columbia chinook	Endangered	Not Listed	Candidate	Migrates through Refuges
Upper Columbia steelhead	Endangered	Not Listed	Candidate	Migrates through Refuges

Species	Federal	Oregon	Washington	Current Occurrence on Refuges
Herptiles				
Woodhouse's toad	Not Listed	Sensitive-Peripheral	Monitored	Occurs on both Refuges
Painted turtle	Not Listed	Sensitive-Critical	Not Listed	Occurs on both Refuges
Sagebrush lizard	Species of concern	Sensitive-Vulnerable	Candidate	Occurs on both Refuges, though probably not abundant
Mammals				
Black-tailed jackrabbit	Not Listed	Not Listed	Candidate	Known to occur, abundance unknown
Preble's shrew	Species of Concern	Not Listed	Monitored	Likely occurs, abundance unknown
Washington ground squirrel	Candidate	Endangered	Candidate	Likely extirpated

B. Condition and Trends of Federally Listed Species and Habitats Utilized on Refuges

Bull Trout (*Salvelinus confluentus*): Historically, bull trout likely used the mainstem Columbia River as a migratory corridor. Bull trout are primarily found in colder streams, although individual fish are found in larger river systems throughout the Columbia River basin. All life history stages are associated with complex forms of cover, including large woody debris, undercut banks, boulders, and pools. It is unlikely any spawning occurs in this portion of the Columbia due to changes in substrate and water temperatures. Any bull trout using this portion of the Columbia River are likely stranded due to the dams and will be found in the deepest portion of the river. No spawning tributaries are found on either Refuge.

Chinook salmon (*Oncorhynchus tshawytscha*): The Columbia River, including those portions within Umatilla and McNary Refuges, serves as a migration corridor for adult Upper Columbia River spring, Snake River spring/summer, and Snake River fall Chinook spawners heading upstream; and for juveniles heading downstream toward the Pacific Ocean.

Some fall chinook spawn in the mainstem Columbia River, which may include the Umatilla Refuge portion of the Columbia River. However, these fish are not listed under the Endangered Species Act. Fall chinook juveniles are known to use Casey Pond and the lower portion of Burbank Slough within McNary Refuge, as rearing areas in the early spring. These smolts are very likely all from the Hanford Reach of the Columbia River, which are also not listed, though an occasional Snake River fall chinook juvenile may be present (John Easterbrooks, pers comm.).

Sockeye salmon (*Oncorhynchus nerka*): Critical habitat for this stock includes all Columbia River reaches upstream to its confluence with the Snake River. This encompasses the Columbia River portion of Umatilla and McNary Refuges.

Historically, Snake River sockeye were abundant in lakes and streams in northeast Oregon and Idaho. The current spawning distribution has been reduced to one lake in central Idaho, Redfish Lake. Snake

River sockeye have declined to near extinction. Returning spawners have numbered less than one dozen annually in recent years.

The Columbia River, including those portions within Umatilla Refuge and near McNary Refuge, serves as a migration corridor for adult Snake River sockeye spawners heading upstream and for smolts heading downstream towards the Pacific Ocean. No adult spawning or juvenile rearing occurs in the Columbia River.

Steelhead (*Oncorhynchus mykiss*): Critical habitat for the Snake River and Mid-Columbia River stocks was proposed on February 5, 1999, and includes the Columbia River upstream to the Yakima River. Proposed critical habitat for the Upper Columbia River steelhead includes the Columbia River and tributaries upstream of the Yakima River.

Snake River and Columbia River steelhead use the Columbia River below the confluence, with the Snake as a migration corridor to reach spawning areas in tributaries. No adult spawning occurs in the Columbia River near the Refuges. Steelheads also migrate through the Wallula Unit of McNary Refuge via the Walla Walla River.

Bald eagle (*Haliaeetus leucocephalus*): Bald eagles winter on both Refuges from November to April. As many as 60 birds have been sighted during the winter along the Columbia River on and in the vicinity of both Refuges. These birds are generally seen perching in large trees adjacent to the Columbia River or Refuge wetlands, where they look for wounded or vulnerable waterfowl or fish on which to feed. They occasionally use circle pivot irrigation facilities for perching above fields.

Washington ground squirrel (*Spermophilus washingtoni*): The historic range of the Washington ground squirrel encompasses portions of both Refuges. The species is likely extirpated from both Refuges. Some searching was conducted on Juniper Canyon, Stateline, and Wallula Units in 2003, but no animals were sighted.

C. Key Ecological Attributes and Threats

Key ecological attributes and threats differ for each listed species, and are not described here in the interests of space. Recovery plans and other species specific documents are the best source for in depth information on these species.

4.11 Current Wildlife and Habitat Research and Monitoring Efforts

A number of research projects have been conducted at McNary and Umatilla Refuges since the Refuges were established.

- Waterfowl research conducted has included a study of Canada Geese nesting on Umatilla Refuge islands (McCabe 1976), band recovery distributions and winter movements of mallards using several Columbia Basin sites including McNary and Umatilla Refuges (Regen 1980 and Rabenburg 1982).
- Long-billed curlew nesting ecology on Umatilla Refuge was studied by Oregon State University researchers in 1978-79 (Pampush 1980).
- During 1997-1998, researchers from the University of Idaho studied migratory songbird use of Russian olive woodlots compared to native willow stands on Umatilla Refuge (Hudson 2000).

Their results indicated that while Russian olive does provide some food and cover, native willow stands provided more cover and insects for migrating songbirds. Though Russian olive is a nonnative invasive, the researchers recommended against wholesale removal of Russian olive stands.

- Current research on McNary Refuge centers on the depredation of migrating salmonid juveniles by piscivorous colonial nesting birds. Researchers from Real Time Research, Inc. and Oregon State University have been studying the Crescent Island Caspian tern nesting colony since the mid-1990's (Collis et al. 2003). The research has largely focused on tern food habits, nesting ecology, and understanding colony size dynamics (Antolos 2002). Additionally, these researchers have also been studying the Foundation Island double-crested cormorant colony.

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Chapter 5. Refuge Facilities and Public Use Programs

5.1 Infrastructure and Administrative Facilities

The infrastructure and facilities discussed in this section include boundary fences and markers, entrances, roads, trails, administrative buildings, easements and rights of way, and water-related structures. Facilities associated with specific public use programs, such as boat launches and the environmental education center, are discussed in section 5.2. A map of these facilities is provided for each Refuge (Maps 13A and 13B).

A. Boundary Fences and Markers

McNary: The original 3,269 acres is fenced and signed. Portions of the Refuge extending along Hanson Loop Road are fenced, with boundary signs posted along main entrances. Some of the Corps lands managed under agreement are fenced but not posted. Corps land in the Juniper Canyon and State Line Unit are neither fenced nor posted.

Umatilla: Barbed wire fencing delineates and protects most of the Refuge's perimeter boundaries. All boundaries of the Refuge are signed.

B. Entrances and Access Points

McNary: There are currently five official entrances. Each Refuge unit has a marked entrance permitting vehicular access. In addition, there are numerous roadside pullouts along highways 12 and 730 that allow additional access to the Wallula, Stateline, Juniper Canyon, Peninsula, and Two Rivers Units. The public may also access the Refuges by boat at any suitable point along the approximately fourteen miles of Refuge shoreline fronting the Columbia River. Boating also provides access to the Refuge islands although some islands are closed to public access.

Given that much of the Refuge borders Highway 12 and Highway 730, multiple unofficial access points are available and used by the public. This is particularly evident along Hanson Loop Road and the Burbank Sloughs Unit. An access problem occurs on the Burbank Sloughs Unit and to some extent at Wallula, where the public seeks to cross the railroad lines (which flank the river on both sides) to access shoreline areas. No designated or official railroad crossings exist in these units and the crossings create a safety and liability problem for both the Refuge and the railroads. Fencing along the tracks has been proposed but may not be a feasible or effective solution.

Access to the Juniper Canyon Unit is directly off the fast moving Highway 730. A small narrow pull-out maintained by the Department of Transportation is used for parking. Access to this unit needs to be improved to provide the public with safe access to and from this unit.

Umatilla: The Refuge maintains three land-based entrance points on the Oregon side of the river and four on the Washington side, with at least one entrance in each management unit. Access to Refuge islands is gained by boat. The public may also access open areas of the Refuges by boat along a shoreline fronting the Columbia River. Like McNary, the Refuge finds that people illegally cross the

railroad tracks to access shoreline areas, particularly on Ridge and Paterson Units. To address this problem, the Refuge did create a designated under track crossing on the Ridge Unit, but this has not completely eliminated the problem. Burlington-Northern Railroad (BNRR) has taken issue with the Refuge over trespass and liability issues on railroad lands on the Washington side of Umatilla Refuge.

The Ridge Unit has no official legal public access across railroad property. Currently, the east access road of the Ridge Unit (near the onion plant) utilizes a private crossing over the railway and BNRR property. Also, although not an official public crossing, a cattle culvert is used by the public (and approved by BNRR law enforcement) off of the end of the mid-access road of the Ridge Unit.

Paterson Unit has a legal public railroad crossing. The access road is partially on railroad property and is very long and narrow. It is in poor condition but it does provide land-based access to the east side of the unit. Additionally, there are also persistent problems with illegal access into the Paterson Unit originating from Highway 14. Some individuals illegally access the unit by crossing private and BNRR-owned lands and have cut or vandalized fences.

On the Whitcomb Unit there is a public railroad crossing and good access to the Refuge. However, there is poor access to and frequent trespass on railroad lands by the public trying to access an area nearer Crow Butte.

On the Oregon side of the Columbia River, Umatilla Refuge has not received any complaints from the Union-Pacific Railroad (UP) regarding trespass issues. There are, however, Refuge users that access the Boardman Unit-North from the I-84 rest area. These people cross the UP railroad tracks and land. Most Refuge visitors legally access the Unit on its west boundary through former ODFW lands. Unfortunately, this section of ODFW land was temporarily removed from their management and closed to hunting.

The McCormack Unit does not have any railroad trespass issues. Occasionally, people cut the gates and trespass on the Refuge, from the old Highway 12, on the Refuge's western boundary; however, this is limited to a few occasional vandals. The unit does support a very popular fee-hunt waterfowl program and popular auto-tour route that is used for wildlife viewing and photography.

C. Roads and Parking Areas

McNary: There are 19.67 miles of roads maintained for public access on the Refuge. Of these roads, 17 miles are unpaved, and 2.67 miles are paved. Most of the unpaved roads are graveled but small sections are natural dirt surfaces. Gates have been installed in certain areas to minimize impact and disturbance and yet allow Refuge staff access for maintenance purposes or wildfire suppression. On the Two Rivers Unit there are two gates. One is on the end of old Highway 12/395 and the second is at a parking lot where people can access the river.

On the Wallula Unit there are two gates that are opened and closed seasonally. One is at Ranger Road and the other is at Game Department Road. Both gates are opened during the spring and summer to provide access to the Walla Walla River for fishing. The gates are closed during the fall/winter to reduce conflicts between cars and hunters and to reduce disturbance to waterfowl. The Peninsula Unit has three gates. The main entrance gate is open the majority of the year, except from February 1 to July 15, when it is closed to protect nesting birds. The early July closure eliminates fire

damage from illegal historic use of 4th of July fireworks. The second gate allows waterfowl hunters with disabilities to access an accessible hunting blind. The third gate allows access for maintenance and fire crews to the tip of the Peninsula.

Mileages are based on the Refuge Road Inventory, and do not include additional dirt roads throughout portions of the Refuge that have been created over years of off-road vehicle use. The illegitimate roads exist primarily on the Burbank Sloughs Unit, upstream from the Peninsula Unit. At this time, the staff estimates that there are approximately 4.5 miles of illegal roads on the Peninsula Unit, and along Hanson Loop, and another three miles of illegal roads in the Burbank Sloughs Unit. The potential removal or rehabilitation of these roads will be addressed during the CCP planning process. By eliminating illegal roads, developing improved and marked Refuge entrance points, and planting the area with native plants, the Refuge hopes to restore the area to native shrub-steppe habitat.

The main entrance to the Two Rivers Unit was recently relocated due to Highway 12 expansion. The entrance is now located across from Dodd Road. An old boat launch and unimproved parking area for Casey Pond has been closed. The old launch site had unsafe access onto Highway 12/395. A new launch and large parking area has been constructed on Casey Pond near the Bureau of Reclamation pump site. Access to the new launch is from Hanson Loop Road.

There are a total of 27 parking lots on McNary Refuge. There are ten parking lots on the Burbank Slough Unit, ten on the Wallula Unit, five on the Two Rivers Unit, two on the Peninsula Unit (including a parking space for people with disabilities near the accessible hunting blind), and one pull-off area at Juniper Canyon. Most of these parking areas are associated with hunting and fishing visits. There are also several pull-outs on various Refuge units. The State Line Unit and the Burbank Slough Unit do not have any parking lots directly on Refuge property.

Umatilla: Umatilla Refuge has a total of 15 miles of public use roads. These public access routes total 2.6 miles of paved roads, and 12.4 miles of unpaved roads. Part of this road mileage includes a 3.6-mile auto tour route on the McCormack Unit which is open from dawn till dusk.

The two main entrance roads into the McCormack Unit have electronically controlled gates that allow public access to the areas from dawn to dusk. During waterfowl hunting season, entrance gates open earlier. A gate on the top of Ridge Road is open seasonally for waterfowl hunting and deer hunting by permit. Various other gates provide access for maintenance and fire staff into closed areas.

There are a total of 15 parking lots on the McCormack Unit, two on the Boardman Unit, 7 on the Paterson Unit, 4 on the Ridge Unit, and 8 on Whitcomb Unit, for a total of 36 parking lots. There are also several pull-off areas on Umatilla Refuge. Most of the parking areas are associated with hunting and fishing visits.

D. Trails

McNary: A 1.9-mile interpretive trail is located at the McNary Headquarters Unit, starting at the McNary Environmental Education Center. The trail follows the slough's edge, and then leads into the surrounding shrub-steppe, finally looping along a farm field and back to the Center.

There are two designated horse trails. One is located on the Wallula Unit and follows the Walla Walla River on the north side upstream from Madam Dorion Park. The other is located on the Burbank Sloughs/Peninsula Unit and follows the river shoreline. Both trails are approximately 4 miles long.

Refuge staff also mows seasonal trails on the Burbank Slough Unit in the fee hunt area and in the Peninsula Unit, to provide waterfowl hunters access to designated hunting blinds or sites.

Umatilla: Umatilla Refuge contains a 2.6-mile public foot trail on McCormack Unit, which is part of the larger Morrow County Columbia River Heritage Trail. The Refuge section of the Heritage Trail encompasses a section of the former State Highway 730 that bisects the McCormack Unit. The Refuge allows foot, horse, and bicycle traffic on the trail.

Refuge staff also mows seasonal trails on the McCormack Unit in the fee hunt area to provide waterfowl hunters access to designated hunting blinds or sites.

E. Administrative Facilities

McNary: McNary Refuge headquarters is located off Maple Street in Burbank, Washington. Currently, the administrative facilities consist of a headquarters office, maintenance shop and pole barn, McNary Refuge's fire staff office trailer (without plumbing), and an unheated storage area for fire equipment (fire cache). There are two houses located on the premises. One has been converted to an education center, and the other usually serves as seasonal staff housing, but is currently being used as offices for the Hanford Reach National Monument/Saddle Mountain National Wildlife Refuge fire and maintenance staff.

A heated outdoor restroom with running water is available to the public in the Headquarter's parking lot. A hazardous materials storage building is also located at the Headquarters site. The Headquarters office provides four enclosed vehicle bays and the pole barn provides another four. The Refuge recently relocated the maintenance facilities to a new location off Gallant Road. Plans are in progress for new administrative offices in 2006. A new office, visitor contact station, and environmental education center are planned to replace existing buildings at the McNary Headquarters area. The planned 5,000-square-foot office will also provide space for Mid-Columbia Complex staff.

Umatilla: Administrative facilities for the Umatilla Refuge are located within the McCormack and Whitcomb Units. A fenced compound on the McCormack Unit encloses several buildings, structures, heavy equipment, and other equipment. The buildings include a one-room manager's office, a one-room maintenance office with a bathroom, a maintenance shop, a fire cache, a manufactured home used as a fire bunkhouse, and various storage buildings. Located near the compound are two older government-owned residences provided for Refuge staff living quarters. On Whitcomb Island there are an older residence for staff (not in use), a shop, and a storage building.

F. Easements and Rights-of-Way

McNary: Virtually every unit on McNary Refuge is either adjacent to or bisected by railways, public roads, and highways. Existing and relocated rights-of-way for railways, transmission lines, gas lines, and access roads are located throughout the McNary Refuge.

Umatilla: Abandoned rights-of-way for previously established railways, public roads, and highways were included into lands under cooperative agreements with the Umatilla Refuge. Former railways are located on both sides of the river in Oregon and Washington. The iron rails and wooden ties have been dismantled and removed, leaving only the grade intact. Portions of these remaining grades are inundated by the Umatilla Pool of the John Day Lock and Dam Project. Similarly, lengths of abandoned public roadways are located on the Oregon side of the Refuges, within the Boardman and McCormack Units. Existing and relocated rights-of-way for public roadways, railways, transmission lines, and various access roads are currently located throughout the Umatilla Refuge.

G. Dikes, Irrigation, and Water Control Structures

McNary: There are a series of earthen dikes that form the four ponds on the McNary Headquarters Unit (original 3,269 acre parcel). Each dike has water control structures installed to control water levels for waterfowl management. These structures were filled in during the 1990s for the purpose of carp eradication. Other dikes and water control structures were installed on the Peninsula Unit before the Service began managing the Unit. This created various small ponds and impoundments. These ponds were created to provide wildlife habitat, recreational fishing opportunities, and hunting. Two riparian restoration projects were completed in 2001 and 2003, on the north and south sides of the Walla Walla River on the Wallula Unit. Both projects consist of a series of wetlands, supplied by pumped river water, distributed to the various wetlands for tree and shrub irrigation and moist soil management.

Agricultural crop lands on McNary Refuge are irrigated by ten center pivots and four wheel lines. These crop lands are irrigated by water pumped from wells and surface water. The crops are grown for the purpose of providing winter forage and grains for waterfowl. The South Columbia Irrigation District supplies water for crops. Irrigation water terminates into Refuge wetlands at Dudley Ponds, field 8 ponds, and the southeast end of Casey Pond.

Umatilla: Earthen dikes were constructed within wetland areas of the McCormack and Paterson Sloughs, for waterfowl management during the early years of the Umatilla Refuge. A dike that was constructed near the mouth of McCormack Slough was subsequently equipped with a culvert and Waterman gate for water control.

Portions of remnant irrigation delivery systems are located within some areas of the Umatilla Refuge. A small section of such a system is currently being used to deliver water from the Irrigon Fish Hatchery to two managed seasonal wetland units within the McCormack Unit, Blackberry Slough, and Kathy's Pond. Blackberry slough is also equipped with an earthen dike and water control structure.

There are five agricultural crop circles located on the McCormack Unit that use electrically powered water pumping systems and center-pivot irrigation. Another 5.5 agricultural circles on Whitcomb Island use an electrically powered water pumping system drawing from an enclosed lagoon on the Columbia River.

5.2 Recreation Overview

A. Open and Closed Areas

McNary: All units of McNary Refuge are open to the public year round except the following: Strawberry Island, Badger Island, Crescent Island and the Wallula Delta (seasonal hunting closure February 1 to September 30), Sanctuary Pond (closed to hunting), McNary Headquarters Unit Pond II/ Dudley Pond area and the Iverson Road area. The Peninsula Unit is closed to vehicle traffic but open for foot traffic from Feb 1 through July 15 to protect nesting birds and limit fires.

Umatilla: Umatilla Refuge units are open year round to the public for wildlife-dependent recreation. The exception to this is that the western half of the McCormack Slough Unit is only open to permit deer hunters and permit waterfowl hunters. Most of the river islands are also closed; three beaches are open for summertime use.

B. Annual Recreation Visits

McNary: The Tri-Cities of Pasco, Kennewick, and Richland, Washington provide a population base of more than 140,000 people in proximity to McNary Refuge. According to 2004 RMIS data, the Refuge received 140,312 station visits annually, with visitors spending time in a variety of recreational pursuits as described below.

Umatilla: According to 2004 RMIS data, Umatilla Refuge received an estimated 91,290 station visits annually. The Columbia River Unit's open water areas attract approximately 30% of Refuge visitation, mostly in the form of recreational boating, fishing, and hunting. Of the Refuge units, the McCormack Unit with its scenic auto-tour route, wildlife viewing opportunities, and popular hunt program is second in visitor use numbers. The Whitcomb, Ridge, and Paterson Units in Washington State attract a significant amount of interest from local birders, hunters and travelers along State Highway 14. The Boardman Unit is a small linear area of shoreline and has very little public use aside from hunters and an occasional group fishing the river bank.

C. Visitor Satisfaction Survey 2004

During the fall of 2005, the Service conducted a survey at numerous national wildlife refuges, measuring visitor satisfaction. McNary Refuge was one of the Refuges surveyed. Twenty-eight visitors at McNary completed the survey. Eighteen of these were male, ten were female and all except one identified themselves as white. Some of the adults were accompanied by teens or children. In response to a question about their primary purpose for visiting the Refuge that day, ten visitors checked hunting, one checked hiking, seven indicated wildlife observation or photography, five indicated environmental education or interpretation, and one checked "other." About 35 questions were asked to gauge visitor satisfaction with visitor information, roads and trails, visitor contacts, adequacy of activities, and other general perceptions. For each of these questions, a five point response scale was provided. Overall, the recipients of the survey indicated a relatively high level of satisfaction with visitor services and facilities available at McNary (most questions averaged a score of four or above). A few measures of satisfaction yielded scores less than 3.5, and may merit some consideration in the CCP. These questions are summarized in Table 5-1.

Table 5-1. Aspects of Visitor Services that Rated Lower for Visitor Satisfaction at McNary

Statements	Score*
There is adequate staffing to efficiently handle visitor's requests.	3.33
This Refuge provides a sufficient law enforcement presence to minimize crime.	3.43
The fee is appropriate.	3.00

D. Recreational Opportunity Spectrum - Characterization of Refuge Units

In the initial stages of public use planning, the team used a tool called the Recreation Opportunity Spectrum (ROS) (Clark and Stankey 1979) to understand the appropriate public uses on each unit. In the ROS system, public use planning is initiated through an understanding of the site itself—what site characteristics are present in the different planning units that lend themselves to certain kinds of infrastructure and public use activities? The McNary and Umatilla Refuges are well suited for such an analysis, because the units are discrete geographically; fairly small and somewhat homogeneous; and visibly distinctive from one another in their character and in the types of public uses that already occur there. The planning team provided a short assessment of the ROS elements for each unit in each Refuge (Tables 5-2 and 5-3). The definition for each element below is the team's adaptation of the classic ROS definitions. Criteria for rating each element in the tables are defined below.

- **Access** - type of ingress/egress, means of conveyance allowed, ease of ingress into and through the site. High indicates easy access to most parts of unit by vehicle. Multiple access points and/or road and boat access are easily available. Low indicates more difficult access—foot access only and/or illegal trespass over neighboring lands or railways may be required to access portions of the unit. Moderate is between these two.
- **Remoteness** - perception of distance from human presence and developments—somewhat related to difficulty of access. High indicates that human presence or developments such as roads or buildings are not readily perceived or are perceived to be far from most of the unit. Low indicates nearby presence of humans or development. Moderate is between these two.
- **Visual character** - scenery and beauty present at sight, presence of views, degree to which visitors find themselves in a natural appearing area. High indicates high scenic character with topographic or community diversity and/or views. Low indicates no particular scenic value and/or views include non-natural features or industrial facilities. Moderate is between these two.
- **Site management** - visibility of management activities, especially those that might present conflicts with certain kinds of recreational activities. High indicates that Service management facilities and activities are readily apparent. Low indicates that management facilities and activities are not readily apparent. Moderate is between these two.
- **Social encounters** - probability of interaction between parties. High indicates that the site is fairly heavily used or that certain facilities draw many parties. Low indicates that the site is lightly used and that people may readily find themselves alone on any particular day. Moderate is between these two.
- **Visitor Impacts** - vulnerable or sensitive resources present at unit and being degraded. High indicates high existing impact (habitat loss or degradation, vandalism, garbage, drug labs, disturbance to wildlife, poaching etc.) to resources from visitors. Low indicates little or no impact from visitors. Moderate is between these two.
- **Regimentation** - current likelihood of visitors encountering law enforcement, restraints on movement or activity or posted rules for visitor use and behavior at unit. High indicates that

visitors are quite likely to encounter signs or staff recommending or requiring certain behaviors. Low indicates that visitors are not likely to encounter staff or posted rules. Moderate is between these two.

E. Accessibility of Recreation Sites and Programs for People with Disabilities

The Refuges each contain some facilities that are accessible to persons with disabilities.

Hunt Program Accessibility: McNary Headquarters Unit hunting blinds #8 and #2, and Peninsula blind #11, are designated accessible blinds, but some improvements are needed. Neither #8 or #2 have a pad as specified by the ADA, but both are covered and have platforms. Trail Access to all three of these blinds is not up to standard. Keeping pads maintained is time and labor intensive and trees tend to grow up through the pad at McNary. Accessible hunting blinds at Umatilla Refuge include #13 and #35 at McCormack Slough. Blind #13 needs improvements to comply with current ADA requirements. Bringing McNary's #8 blind and Umatilla's #35 blind up to code would be the most feasible.

At both Refuges, the accessible blinds are allocated to hunters with disabilities by reservation before other hunters can reserve them. If there are no disabled hunters with reservations, all standby hunters (including any disabled hunters) participate in a draw on these and other blinds with disabled hunters getting first choice on the accessible blinds.

Fishing Program Disabled Persons Access: The Refuge has two accessible fishing piers. One at Quarry Pond and another on the Wallula Unit near the boat launch.

Other Programs Disabled Persons Access: An accessible viewing and photo blind is available at McNary Headquarters Unit. It is accessible from the parking lot and the Environmental Education Center via a 1,800 foot accessible trail.

F. Law Enforcement

There is one dual function officer assigned to cover McNary Refuge and one full time officer assigned to cover all five Refuges within the Refuge Complex. Beginning in the fall of 2006, the one full time officer will have to cover two more Refuges and one national monument (Conboy Refuge, Saddle Mountain Refuge, and Hanford Reach National Monument). This represents one officer covering about a 250 mile area. At one time there were eight dual function officers to cover the five Refuges within the Complex. At least one dual function officer was assigned to each area of the Complex (southern Refuges within the Complex, central Refuges within the Complex, northern Refuges within the Complex) to protect the resources. Although dual function officers had other duties (Refuge management, maintenance, interpretation, and recreation management) they could effectively patrol their assigned zones and concentrate law enforcement patrols at busy visitor periods (waterfowl hunting season, the beginning of the trout season, holiday weekends, opening days for hunting etc.). Because of policy changes, there is now only one dual function officer and one full time officer to cover the growing Complex. This represents a dramatic decrease in law enforcement in a relatively short period.

The most common law enforcement issues encountered in the field are waterfowl hunting violations (lead shot, hunting in closed areas, taking birds out of season, and unplugged shotguns), vandalism (broken gates and defaced signs), theft (stolen gas, tools, equipment, and signs), off-road vehicle use, trash dumping (household and commercial), and vagrancy (squatters living in remote areas of the Refuge, and campers staying beyond 14 days in a 30 period at Madam Dorian Campground). Officers also participate in public education by presenting programs on hunting, fishing, and safety issues.

In 2004, Refuge Officers were contracted by the Bureau of Reclamation (BOR) to provide law enforcement for BOR properties adjacent to the Complex's Refuge lands. This includes patrolling BOR reservoirs, dams, canals, and facility compounds.

5.3 Waterfowl Hunting

Maps of areas open to waterfowl, small game, and big game hunting are shown in Maps 14A and 14B. In addition, the unit specific maps ("tear sheets") are provided. See Maps 15A, B, C, and D.

A. McNary Refuge

Waterfowl hunting remains one of the most popular activities on McNary Refuge. Seventy-six percent of the Refuge is open to waterfowl hunting (excludes Hanford Islands from analysis). Areas currently closed to waterfowl hunting include the southern most Hanford Island, Strawberry Island (and adjacent off-Refuge portions of the Lower Snake River), Foundation Island, Badger Island, Sanctuary Pond, former Burbank Slough Unit—Units 3 and 4 (now McNary Headquarters units, ponds, and sloughs), and the Two Rivers Unit (Casey Pond/Bleachers). Seasonal closures can occur to protect nesting and feeding birds. The Refuge provides both a regulated fee area and free "first come-first-served" waterfowl hunt areas. The majority of the hunting areas fall in the second category.

Facilities: There are approximately 20 slough hunting blinds and 8 field hunting blinds in the fee area. The number varies each year, and during the season, depending on weather conditions, farming operations, and safety considerations. Twelve posts are also located on the eastern shore of the Peninsula Unit, connected by a mowed footpath.

There are three accessible waterfowl hunting blinds on the Refuge. Two are located on the McNary Slough fee hunting area and one is on Peninsula Unit's free hunting area.

The Refuge runs a hunter check station, located at the McNary Headquarters Unit fee area. The check station provides or sells Golden Age, Golden Access, and Golden Eagle passports, season passes, and federal duck stamps. The check station checks in hunters, distributes permits/harvest cards, and assigns hunting blinds for the fee area. More importantly, the station provides general and specific hunting information to the public. Only hunters hunting the fee area are required to check in, but many hunters visit the check station to get hunting information.

Hunting options: There is a big public relations payoff in having a variety of hunts. This system allows people of different abilities and inclinations to enjoy hunting that suits their needs. In a public meeting a few years ago, the Refuge received the message, that generally hunters like the current level of

Table 5-2 Umatilla Refuge Unit Characterization according to Recreational Opportunity Spectrum (ROS) elements

	Ridge	Boardman	Islands	McCormack	Whitcomb		Paterson
Access	High	Low-moderate	Moderate	High	Whitcomb Island	Crow Butte	Low-moderate.
Remoteness	Low	Low	Moderate and seasonal	Low- moderate	High	Moderate-low	High
Visual Character	Moderate	Low	High	Moderate	Low	Moderate	High
Site Management	Low	Low	Moderate	High	Moderate	Low	Moderate
Social Encounters	Moderate to high.	Low in summer, High during hunting season	High in summer, low in winter	High	Low to high, depending on the season	Low	High during hunt season, Low all other times
Visitor Impacts	Moderate	Low	Currently moderate but potentially high.	High.	Low	Low	Low.
Regimentation	Low	Low	Low	High	Low	Low	Low

Table 5.3 McNary Refuge Unit Characterization according to Recreational Opportunity Spectrum (ROS) elements

	Head-quarters	Burbank Sloughs	Two Rivers	Hanford Islands	State -line	Juniper Canyon	Peninsula	Wallula		Foundation, Badger, Crescent and Strawberry Islands
Access	High	High	High	High	Low	Moderate	High-moderate. Seasonal.	Madame Dorian	Rest of Wallula	High at Strawberry. Low at other islands.
Remoteness	Low	Low	Low	Moderate	High	High	Moderate	High	High	Moderate
Visual Character	High	Moderate	Moderate	High	High	High	High	Low	High	High
Site Management	High	Low	Moderate – high	Low	Low	Low	Moderate	Very high	High	Low
Social Encounters	High	High	High	High in summer and hunting season.	Low	Low	Moderate	Very high	High	Low
Visitor Impacts	Moderate-high.	High	High	Moderate, but potentially high.	Low	High at bottom Low at top.	High	High	High	Low – moderate.
Regimentation	High	Low	Low – moderate	Low	Low	Low	Moderate	High	Mod-erate	Low

variety. Hunters may choose from either a fee waterfowl hunt or a free hunt. Fee hunting is the most popular, because it eliminates the uncertainty of whether a hunter will successfully secure a spot, and hunters value the information they gain from direct contact with Refuge staff. A description of each type of hunt offered is below. Table 5-4 includes some management considerations by unit for the waterfowl hunting program.

- **Fee hunt** - Open three days per week during season. Offered at McNary Headquarters Unit slough only. During the 2004/05 season, 1,620 hunters hunted the fee area. In the 2002/03 waterfowl hunt season when the sloughs remained unfrozen, over 2,100 hunters used the fee area. Access is by land only and some blinds have long walks. There is a high amount of staff time commitments (half of a fulltime position per year) for running the check station. Overall quality considered high by staff (based on bag averages, popularity, hunter comments, waterfowl abundance, and attractiveness to hunters from distant locations). A computerized lottery reservation system is used to allocate hunting privileges. Before the season begins, interested hunters apply for up to 10 specific hunt days. On average, a hunter applying for 10 days receives a reservation for one to three days of hunting, because there are always more hunting applications than days available to hunt. Hunters that do not receive a computerized reservation can go to the Refuge on the day of the hunt and try to obtain a “stand-by” blind. All hunters check in at the hunter check station and receive a permit prior to hunting. After the hunters with reservations have selected blinds, the remaining blinds are then opened to stand-by hunters. On average, only 7 of the 25 hunters with reservations show up. A stand-by drawing is held each morning and afternoon to accommodate hunters without reservations. Availability of stand-by spaces varies dramatically during the season.
- **Free hunt** - open seven days per week during the hunting season. No Refuge permit is required. Available at Peninsula, Two Rivers, Burbank Sloughs, and Wallula Units. The Refuge receives about 10,550 visits each year from hunters using this program. Land and water access are available at the other units. A few posts are fixed at Peninsula; in other areas, hunters are allowed to freely roam, but must space themselves at least 200 yards apart. Staff time commitments in support of this program are about one-quarter of a fulltime position per year (mainly in maintenance, law enforcement, and public use management), and overall quality considered by staff to be fair-good (based on bag averages, popularity, hunter comments, waterfowl abundance, and attractiveness to hunters from distant locations).
- **Youth hunt** - offered one or two days each year at McNary Headquarters Unit. Reservations are accepted for the youth hunt in the same manner as a regular season reservations. All youth hunters must show proof of completion of a state hunter safety course. Adult companions are allowed to hunt with the youths. Hunting is free to all participants in the Youth Hunt Day.



Table 5-4. McNary Refuge’s Waterfowl Hunt Program – Unit Management Considerations

Unit	Considerations and Comments
McNary Headquarters Fee Hunt Unit	Low law enforcement issues. Fee hunting is very popular (the fee area always has more hunters than any of the other units) at both Refuges. However, administrative costs of running fee hunts are relatively high. Currently, the fee only covers the cost of paying a check station attendant and postage for mailing permits; other costs of the hunt, including purchase and maintenance of blinds, trail maintenance and production of hunt leaflets, is not covered. It’s possible to do more of the fee hunt work with volunteers, and potentially to give people guaranteed blind spots, in return for a certain number of hours performing fee hunt administration (i.e. mowing trails, manning the check station, or doing mailings). In contrast, law enforcement work cannot be done with volunteers. The time it takes to hike to the furthest blinds is a complaint heard from some hunters.
Peninsula Unit	Hunters sometimes arrive the night before and “camp” on hunt sites. It is difficult for the Refuge to enforce the 5:00 a.m. start time because of multiple entrance points (river and roadway) and minimum law enforcement staff. The camping doesn’t involve tents, coolers, and camp chairs, because most campers only bring sleeping bags to stay warm. There are more violations here than at McNary’s fee area. Pit blinds in the middle of the Peninsula Unit are not being used, because the geese are not there. The Refuge spends a lot of time and resources trying to keep it mowed, yet this work results in very little goose hunting opportunity. There has been discussion to eliminate mowing and increase upland game bird hunting there instead. Hunting may interfere with non-hunt uses on the Peninsula and Wallula units. Non-hunters tend to avoid the Peninsula and Wallula Units during hunting season. But there may not be significant demand in winter for other uses at these units anyway. Because of the long walk-in time, some walk-in hunters lose out to hunters who access the unit by boat.
Two Rivers	Some hunters think hunting at the “two islands” is some of the best hunting in the State. There is sometimes fierce competition for the limited hunt sites, which may decrease hunt quality. Only incidental goose hunting occurs.
Burbank Sloughs	Limited access has been a problem. Some of the smaller sloughs on the former Port lands are well known for wood duck hunting. Only incidental goose hunting occurs.
Wallula	Millet fields and new wetland developments have the potential to attract a lot of birds, but Refuge staff members receive complaints about overcrowding at East and West Millet Ponds. Some requests have been received to provide designated fixed blinds at this Unit. Quality may also be limited by daily hunting which keeps the pressure on birds, and prevents them from using Refuge wetlands. Only incidental goose hunting occurs. Hunters camp overnight the night before. Hunting may interfere with non-hunt uses on the Wallula Unit. Non-hunters tend to avoid the Wallula Unit during hunting season. But there may not be significant demand in winter for other uses at this unit anyway.

Number of hunters and harvest statistics: The Refuge maintains statistics on the number of fee hunters. Hunters using the other units for free-roam waterfowl hunting are estimated to be about 10,550 annually. Table 5-5 shows the number of hunters using the McNary Slough Fee Unit in each of the last four years.

Harvest records dating back to 1999 show that mallards comprise between 80% and 90% of the ducks harvested. American widgeon, Northern shoveler, Northern pintail, and green-winged teal usually comprise between 1% and 4% each, of the total harvest. Gadwall, lesser scaup, wood duck, bufflehead, common merganser, redhead, ring-necked duck, cinnamon teal, American coot, common goldeneye, blue-winged teal, and ruddy duck make up the remainder.

The number of hunters using the fee area rises and falls depending on duck numbers and the amount of time that the sloughs are frozen over. Goose hunters and their success have varied during the same time period as shown in Table 5-6.

Table 5-5. McNary Slough Fee Unit Hunting Statistics

	2002/03	2003/04	2004/05	2005/06
Fee Hunters	1,737	1,437	1,589	1,119
Youth Hunters	182	115	131	131
Adult Companion	41	35	21	29
Season Pass Hunters	154	49	176	341
TOTALS	2,114	1,636	1,917	1,620

Table 5-6. Success Trends, McNary Slough Fee Unit

	2002/03	2003/04	2004/05	2005/06
Ducks Harvested	3,818	2,753	3,920	3,334
Number of Hunters	1,919	1,601	1,872	1,519
Ducks Harvested/Hunter	1.99	1.72	2.09	2.19
Geese Harvested	268	406	128	149

B. Umatilla Refuge

Overview: Waterfowl hunting is the second most popular activity on the Refuge after fishing. Fifty-six percent of the Refuge is open to waterfowl hunting. Closed areas include approximately half of the Refuge river area, including all the water around the Umatilla Islands, a portion of the Boardman Unit, the Kathy's Pond area, and a portion of Whitcomb Island. Seasonal closures can occur to protect nesting and feeding birds. The Refuge provides both a regulated fee area and free "first come-first-served" waterfowl hunt areas. The majority of the hunting areas fall in the second category.

Facilities: The McCormack Unit currently has 22 slough blinds, 11 river blinds, and 10 agricultural circle blinds. The number of blinds open on any given day is dependent on weather, safety conditions, and water levels. A hunter check station is located at the entrance to McCormack Unit, to provide hunters with general and specific hunting information, and the opportunity to purchase Federal Duck Stamps, Golden Age and Golden Eagle Passports, seasonal hunting passes, and daily passes to the McCormack Unit. The station checks in hunters, distributes permits/harvest cards, and assigns hunting blinds for the fee area. More importantly, the station provides general and specific hunting information to the public. Only hunters hunting the fee area are required to check in, but many hunters visit the check station to get hunting information.

Hunt Options: Like McNary Refuge, Umatilla Refuge also supports a fee hunt, free hunts, and a youth hunt, each of these managed under a very similar system. More details about the hunts are described below and in Table 5-7. Nearby off-Refuge lodging and RV camping areas are frequented by hunters; overnight camping on the Refuge is not allowed. A few hunters do park at entrance areas at midnight and sleep in their cars prior to the 5:00 a.m. opening.

- **Fee hunt** - Open three days/week during hunting season. Fee hunting is offered at McCormack Unit only. During the 2004/05 waterfowl season, 1,788 hunters used the fee area. Access is by land only and most blinds are easily accessed by mowed footpaths near small parking lots. Staff time committed to this program totals approximately half of a fulltime position per year. Overall hunting quality is considered high by staff (based on bag averages, popularity, hunter comments, waterfowl abundance, and attractiveness to hunters from distant locations). The unit provides diverse hunting opportunities, including: marked sites on the river shore-line; “box-type” blinds located on the enclosed slough (including moist soil managed areas); and agricultural fields with available pit blinds. About 40% of hunters hunting the fee area had reservations and hunted with their guests. On average, only 9 of the 25 daily reservations showed up on each hunt day. No hunters were denied an opportunity to hunt due to the lack of available blinds although some blind sites are much more productive than other sites.
- **Free hunt** - Open seven days/week during hunting season at the Ridge and Boardman Units; and three days/week during hunting season at the Paterson and Whitcomb Units. No Refuge permit is required. According to fiscal year 2003 Refuge Management Information System (RMIS) data, 15,728 hunters hunted waterfowl and upland game using this program. Land and water access are available at all units (but land-based hunting only, is available at Ridge Unit). Hunting opportunity is diverse and includes areas of river shoreline, protected river embayments, isolated enclosed ponds, and upland grassland and field areas. Hunters are allowed to freely roam, but must space themselves at least 200 yards apart. Staff time commitment in support of this program is approximately one-quarter of a fulltime position per year (mainly in maintenance, law enforcement, and recreation management). Overall hunting quality is considered by staff to be fair-good (based on bag averages, popularity, hunter comments, waterfowl abundance, and attractiveness to hunters from distant locations).
- **Youth hunt** - Offered one or two days each year at McCormack Slough. Reservations are accepted for the youth hunts in the same manner that a regular season reservation is made. All youth hunters must show proof of completion of a state hunter safety course. Adult companions are allowed to hunt with the youths.

Table 5-7. Umatilla Waterfowl Hunt Program – Hunt Unit Management Considerations

Unit	Considerations and Comments
McCormack	Supports the highest numbers of hunters compared with other Umatilla units. Because of the check-in procedures and increased regulations, law enforcement issues are minimal compared to other units. At McCormack, the Heritage Trail passes very close to several duck blinds and there are safety issues. A concept plan for the trail calls for closure of the trail during the hunting season, but counties want it open all year. The Refuge has made some recent infrastructure improvements (bridge, openings, and signage) on the current trail, but safety issues remain nonetheless. Another issue involving the trail, is in regards to the County’s interest in creating an alternative 55-mph highway route to fulfill evacuation needs from the nearby nerve gas depot. The County is looking at an old highway path (County-owned) and a road on the southern border of McCormack. The Federal government’s flowage easement on everything under an elevation of 267’ may restrict this development. The only other current impasse to vehicle passage on the old highway is the bridge recently built by the Refuge. If using and staying on the old highway, two wetland areas (submerged) as well as the footpath bridge create “impasse to vehicle passage.” The trail could be closed seasonally as winter use is limited.
Paterson	Considered the best waterfowl hunting of all units on the Washington side. Much of the back areas of Paterson are deep and are more difficult for retrieval than the points and

Unit	Considerations and Comments
	outer portions of bays. The unit has clean clear water with sandy bottoms. The long shorelines of the internal bays are not hunted as much as the points. The Refuge could color-code fixed hunt posts to diminish competition between boaters and walk-in hunters. The best spots are the points, which the boaters, having an advantage, generally get to first. A couple hunting posts for the walk-in hunters could be reserved.
Whitcomb	Considered good for shoreline ducks but the focus is more on field hunting for goose. The area between Crow Butte and Whitcomb Island is not very popular for hunting, as the boat access is average to poor. Very good land access is available to Whitcomb Island proper.
Ridge	Only shoreline hunting was allowed until two years ago, when the entire unit was opened. The unit provides river shoreline duck hunting, and goose pass shooting (from both river shoreline and higher rock ridges). Access is by land and boat, but hunters must be on the land to shoot. The area is not easily accessible by boat. Hunting quality is good. Few hunters use this unit, possibly because the unit used to be a designated sanctuary. When the unit was closed, there was a lot of pass shooting. After the unit was opened, waterfowl used the unit less (they use island areas more heavily now) and pass shooting declined. Law enforcement is disbursed and harder to do.
Boardman	The unit provides river shoreline duck (and some goose) hunting. Access is by land and boat. Land access is considered average and boat access very good.

Harvest Statistics: The Refuge maintains statistics on the number of fee hunters. Hunters using the other units for free-roam waterfowl hunting are estimated. Table 5-8 shows the number of hunters using the McCormack Fee Unit in each of the last 11 hunting seasons. The number of hunters using the unit has approximately doubled in that time period. The number of geese harvested remained fairly steady, while the number of ducks harvested has shown dramatic annual fluctuations but a generally rising trend.

Of the ducks harvested, records dating back to the last three seasons show that mallards comprise between 65% and 80% of all ducks taken. Green-winged teal, is the next most harvested species, comprising about 6%-12% of all ducks taken each year. The Northern pintail, American widgeon, gadwall, bufflehead, and Northern shoveler ducks usually comprise between 1% and 6% of the harvest each. Scaup (greater or lesser), wood duck, merganser (common or hooded), redhead, ring-necked duck, cinnamon teal, American coot, goldeneye, blue-winged teal, canvasback and ruddy ducks make up the remainder.

Table 5-8. McCormack Fee Unit: Number of Ducks and Geese Taken the Last 11 Seasons

	1994/ 95	1995/ 96	1996/ 97	1997/ 98	1998/ 99	1999/ 00	2000/ 01	2001/ 02	2002/ 03	2003/ 04	2004/ 05
hunters	1,580	1,661	2,041	2,224	2,104	1,918	2,236	2,357	2,089	1,971	1,788
ducks	2,729	3,547	1,678	3,831	3,801	2,885	4,596	4,011	3,243	3,216	2,531
geese	229	207	399	232	225	226	217	204	220	319	228

C. Waterfowl Hunting Program Desired Future Conditions

In preparation for writing objectives for the public use program, the CCP team brainstormed desired future conditions for each of the major public use programs at the Refuges. Following is the list of desired future conditions for the hunting programs.

Ethical	Meets population management objectives
Kid-friendly	Safe
No unnecessary competition for blinds	Range of accessibility options
Blinds spaced properly	Increased appreciation for wildlife
Plentiful game	Adequate sanctuary
Clean area	Sufficient opportunity (chances to hunt, not necessarily success)
Simplified regulations	

5.4 Upland Bird/Small Game Hunting

A. McNary Refuge

Areas open: Upland hunting is allowed on all the units except Strawberry Island, McNary Headquarters Unit in wetlands 3 and 4 (formerly Burbank Slough Units 3 and 4), the Iverson area south of the fee hunt area, the Dudley Pond area, Sanctuary Pond, and the islands that are otherwise closed to hunting.

Number of visits: Upland game hunting is a popular activity at McNary Refuge. Approximately 2,625 visits are made to the Refuge each year for upland bird or small game hunting.

Hunt Program: Only upland birds are permissible to take at McNary Headquarters Unit. On other units all upland game, including rabbits, raccoons, chukar, and turkeys are technically permissible to shoot. Non-toxic shot is required for all upland species.

On the McNary fee area, the upland bird hunting starts at noon. On the other units, upland game hunting regulations are the same as the State's, without additional Refuge regulations. Pheasant hunters are not required to check in or obtain a permit.

Currently, pheasants are planted by WDFW on the Wallula and Peninsula Units to supplement existing game bird populations. Pheasant releases to support the hunt programs on these former habitat management units have occurred for over 20 years. There is no cost to the Refuge for the released birds. The program is popular, especially for parents with youth hunters.

Management Considerations: On occasion, (typically opening weekend only) upland bird hunts can conflict with waterfowl hunts partly because of space (hunters competing for similar areas to shoot) and partly because of the disturbances created for each other. This appears to be an occasional problem throughout the McNary Fee Unit. Space competition with waterfowl hunters is not much of an issue at Two Rivers.

Pheasant hunting is more tied to grass and forbs cover. The Peninsula Unit offers some of the best hunting. The Two Rivers Unit used to have good grass cover, but lost some to the construction of a mitigation pond, and other areas became degraded during a Highway 12 expansion project.

Releases of nonnative animals are currently discouraged under NWRS policy. The presence of birds encourages more hunters and may add to overcrowding. At the same time, the pheasant release program can increase hunter satisfaction as more hunters harvest birds. At McNary, pheasant

releases seem to encourage more family groups to hunt the Refuge. The program receives heavy praise from local hunting clubs who provide hundreds of hours of volunteer service to the Refuge, and is also valued by the Refuge Complex because it retains a cooperative program with WDFW.

Harvest Statistics: Data is not available.

B. Umatilla Refuge

Areas Open: All areas on both Refuges are open to upland game bird hunting except for the sanctuary area east of Paterson Ferry road on Umatilla, Umatilla's islands, the area west of agricultural circle 1 at Umatilla, and a portion of the Boardman Unit

Number of visits: Upland Game bird hunting for pheasant and quail is a popular pursuit during the State's fall and early winter hunting season, with an estimated 1,400 visits per year for this activity.

Hunt Program: Fees and permits are not required for any of the units except McCormack, where reservations are required for opening weekend due to its popularity. Only 25 reservations are allowed for opening weekend; each reservation hunter may bring one guest. On this weekend, each hunter is charged \$5.00 each at the hunter check station. After the first weekend, 50 free permits are placed outside the hunter check station each day. During the 2004/05 season an average of eight hunters participated in upland game bird hunting on the McCormack Unit. Opening weekend was the most popular, followed by the next three weekends. After the first few hunting weekends, hunter numbers dramatically dropped, especially for the mid-week hunts. This was primarily due to most of the easily accessible birds being harvested. All the upland bird hunts at Umatilla Refuge start at noon.

Facilities: No additional facilities are required to maintain this program. Pheasant hunters are accommodated at the same check station that waterfowl hunters use.

Management Considerations: Space competition with waterfowl hunters is not much of an issue at Umatilla as upland bird hunters primarily use the edges of field circles.

The current number of reservations allowed at McCormack appears to be too many, because there is not enough space to safely accommodate the number of hunters. A large turnout occurs opening weekend and hunters end up attempting to harvest the same birds. However, crowding is rarely a problem on other weekends or weekdays.

Whitcomb Island is currently open for dove hunting as are the Ridge and Paterson Units. The McCormack Unit is closed to dove hunting.

Harvest Statistics: The number of hunters and pheasants or quail taken for each of the last five harvest seasons are presented in Table 5-9.

Table 5-9. Upland Bird Harvest at McCormack Fee Unit, 2000 through 2005.

	2000/01	2001/02	2002/03	2003/04	2004/05
Total Hunters	261	288	296	338	285
Total Pheasants Harvested	47	41	51	65	93
Pheasants per Hunter	0.18	0.14	0.17	0.19	0.33
Total California Quail	72	179	181	205	136
Quail per Hunter	0.28	0.62	0.61	0.67	.048

C. Upland Hunting Program Desired Future Conditions

The desired future conditions for the upland game hunting program are the same as those described for the waterfowl hunt program.

5.5 Big Game Hunting

A. McNary Refuge

Areas Open: The McNary units open to deer hunting include Wallula, Stateline, and Juniper Canyon. On very rare occasions elk are also harvested.

Number of Visits: Unknown.

Hunt Program: Hunters in the three units may use shotgun slugs only during the general season. Archery is open as well on the Wallula Unit, but not on the Stateline or Juniper Canyon Units.

Facilities: No facilities are maintained or managed expressly for this program.

Management Considerations: Good deer population information is lacking although the population is highest at Wallula. Managers have noted considerable damage from deer browsing on planted trees and shrubs.

There is a potential for conflict with anglers at Wallula because the big game hunting and steelhead fishing seasons overlap. The archery closure on the Stateline and Juniper Canyon Units may not be necessary.

There is a need to make State and Refuge regulations consistent and to develop clear tear sheets for the deer hunt program.

Harvest Statistics: Unknown.

B. Umatilla Refuge

The Refuge expanded the deer hunt to reduce a herd that had been largely untouched over the years, with the exception of some poaching and a small hunting program on the Refuge units in Washington. The program was expanded in 1997 to the Oregon side of the river. At that time, the population

estimate on McCormack was 400 animals. The goal was to try to reduce damage to native species of willows, cottonwoods, and other browse. The hunt is currently managed primarily for population control on both sides of the river. Formerly, deer hunting was not allowed on Refuge lands on the Oregon side; the Washington side was open during the general season. The Umatilla Refuge's Public Uses EA (1996) opened permit-only hunting for the Refuge's Washington and Oregon units.

Areas Open: Umatilla units open to deer hunting include: McCormack, Paterson, and Whitcomb. Closed areas include the Ridge and Islands Units and portions of the Boardman Unit.

Number of Visits: In 2004 a total of 48 permits were issued to hunt on Umatilla Refuge: 38 in Oregon and 10 in Washington. The number of permits issued each year may vary depending on deer populations and deer browse damage to native plants.

Hunt Program: Hunters apply for the deer hunting tags through either the ODFW or WDFW. Hunters chosen for tags are permitted to hunt on scheduled days in a specific Refuge unit. Only shotguns or muzzle loaders are allowed. Archery and modern firearms are not permitted. At the McCormack Unit, hunters meet for an orientation on the first morning of the hunt. They are also given harvest cards and must report their harvests to the Refuge.

Special youth-only hunts are offered as part of the deer hunts in Oregon and Washington.

Facilities: No facilities are maintained or managed expressly for this program.

Management Considerations: Since 1996, McCormack Unit had several hunts for deer, generally with each hunt lasting five days. Generally, there are a youth hunt and 2 adult doe seasons. Initially, 80 permits were issued, with between 15 and 20 permits issued for each hunt. During the youth hunts fewer tags are issued.

The number of tags issued per hunt has varied over the years since 1997. Early on, the number of tags issued was relatively high, because there were concerns about the impact deer populations were having on habitat. The types of hunts such as "antlerless only," or hunts specifically for youths will not change. The types of deer hunts to be held include: antlerless only (for youth hunts), two additional antlerless only and one "any deer" hunt.

The State has requested that the Service try to not change the type or number of hunts, however, changing the number of tags allowed per hunt would be acceptable to the State. The number of permits issued for all the hunts would be subject to change annually, depending on management needs. The Refuge Complex's public use manager has requested lowering the number of hunters per hunt, but creating more hunts to spread hunters out more and increase hunter safety. This would provide more recreational opportunity. All hunts would have to be scheduled before waterfowl hunting season starts.

Even though deer hunting has occurred for nine years, there's been no limited visible improvement in upland shrub conditions at McCormack Unit.

Harvest Statistics: Not summarized in this draft.

5.6 Fishing

With their lengthy shorelines, abundant reservoir space, and diverse river, slough, and wetland habitats, the Refuges provide opportunities for anglers to try their hand at catching everything from enormous wild Chinook salmon to stocked trout. Fishing continues to be one of the most popular activities for visitors at both McNary and Umatilla Refuges. In fact, more visits are made to the Refuges for fishing than for any other use. This diversity of fishing opportunity is a plus for the Refuges.

A. McNary Refuge

Number of Visits: Staff estimates that 16,750 fishing visits occur annually at the Refuge. Those who use the Refuge for fishing are more culturally diverse than any other group using the Refuge. There are recent refugees from a variety of countries, tourists from other parts of the State, as well as families born and raised in the Tri-Cities.

Facilities: The Refuge has two accessible fishing piers. The larger and more popular of the two is located on the Two Rivers Unit at Quarry Pond. The second and smaller one is located on the Wallula Unit at the boat launch. It enables visitors with disabilities to fish the Walla Walla River. Two boat launches are also managed by the Refuge. One is a large launch at the southern end of the Peninsula Unit which allows boats to launch into Casey Pond and travel out into the Columbia River. The launch and parking area has capacity for approximately 30 boats with trailers or 55 cars. The boat launch is a main access to the river, but because the waters surrounding it are shallow, there are limits on the size of boats that can use this launch. The second boat launch is located at the Wallula Unit, and accesses the Walla Walla River. There is also a small unimproved boat launch on the Two Rivers Unit near the old school house. The boat launches support boating associated with the fishing program, boating that takes place in conjunction with hunting, and boating that occurs for nonwildlife-dependent recreation.

Fishing options: Bass are the primary species sought by anglers, though many visitors fish for walleye, sturgeon, crappie, bluegill, channel catfish, bullheads, salmon, and steelhead. There are abundant bank fishing opportunities as well as opportunities for deep-water fishing from boats.

Three to five fishing tournaments per year occur on McNary Refuge, and in off-Refuge waters near Casey Pond. The tournaments attract “big name” bass fishermen. The Refuge and some of its staff recently appeared on ESPN, a television sports channel, as part of the coverage of a bass fishing tournament. The Refuge also appeared in a special on ESPN on National Wildlife Refuges.

Fishing is popular at Quarry Pond on the Two Rivers Unit, supported in this location by a stocking program. This is the only place on the Refuge that WDFW stocks fish. Stocking has occurred for many years, including during the years when the Corps managed the land. The main user groups at Quarry Pond are youths, families, and the elderly. The Refuge partners with the Blue Mountain Bass Fisherman’s Group.

The Walla Walla River supports a popular catfish fishery, which is allowed 24 hours a day because the best time to fish for catfish is at night.

Management Considerations: Even though anglers comprise the largest number of Refuge visitors, many who come to fish are probably unaware that they are even on a Refuge because the use is somewhat dispersed and not directly managed or regulated by the Refuge staff. There is an opportunity for enhancing communications with the fishing population, to disseminate greater information to these users about the Refuge and Refuge System in general, and to create a greater awareness of the good fishing spots. Fishing locations need to be defined and mapped, and this information made available to the public.

Bass fishing at McNary Headquarters Unit wetland 4 presents a safety and liability issue because there is no easy or safe way to access the key fishing spot at that location, which is at the water control structure on Lake Road (county road). The Refuge and Friends have met with County Commissioners several times to discuss the issue. This use only occurs for one month with approximately 12 people using it.

Stocking nonnative fish, such as occurs at Quarry Pond, is strongly discouraged under Service policy. The Refuge has made a commitment to maintain current activities pertaining to fishing and stocking fish at Quarry Pond, at least until the CCP is completed. The program does not currently cost the Refuge anything as the State does the stocking. Other factors to be considered: Quarry Pond is 1-2 acres in size and it is isolated from the river; the program serves youth and minority communities; and the program has a long history and is extremely popular.

B. Umatilla Refuge

Number of Visits: It is estimated there are over 20,000 fishing associated visits to Umatilla Refuge annually. The majority of these visits occur on the Columbia River, where numerous boat launches give visitors access to Refuge waters. There are currently no restrictions on public use hours or types of water craft used on the Columbia River portion of the Refuge.

Facilities: Of the seven boat launches in the Refuge's vicinity, two are located on the Refuge. There are three nearby off-Refuge public boat launches available on the Oregon side, including launches at the Boardman and Irrigon marinas, and one provided by the Corps just east of the McCormack Unit. A total of four more boat launches are available on the Washington shoreline. There is a paved launching facility at Crow Butte Park near the west boundary of the Refuge, as well as primitive gravel launches located on both the Ridge and Paterson Units, and one more on Corps land located between those units.

Fishing Options: Fishing tournaments for bass and walleye are popular events for local communities. Most are small club events with less than a dozen boats participating. At least two are open tournaments sponsored by local Chamber of Commerce groups. These bigger tournaments sometimes involve over 100 participants and have sizable cash prizes.

Special Use Permits are issued for tournaments held on Refuge waters, and special provisions assist with minimizing wildlife disturbances. In the past two years, there has been a steady increase in the number of special use permits requested by outside organization.

Management Considerations: There is a growing number of fishing tournaments.

C. Desired Future Conditions for the Fishing Program

Adequate sanctuary	Meets scientific management objectives
Minimal disturbance	Partnerships/public involvement in program (help with management)
Safe	Fish species present not detrimental
Fun	More pristine fisheries resource
Adequate fish resource	Increased appreciation for resource
Range of accessibility	Minimizes impact to other wildlife resources
Ample opportunity	

5.7 Wildlife Viewing and Photography

A. McNary Refuge

Number of Visits:

Facilities: The McNary Refuge’s Environmental Education Center has an exterior deck with two permanently mounted telescopes. Even when the Center is closed, the public can use the scopes to view wildlife on nearby ponds. An accessible paved trail leads from the Center to an accessible wildlife viewing and photography blind located on the slough 1,800 feet from the Center. For the more adventurous, a 2.1-mile interpretive trail and several short side trails off the main trail are available for bird watching.



Viewing and Photography Options: In addition to the viewing opportunities from the designated facilities mentioned above, informal wildlife viewing and photography is also available from all of the open Refuge roads and trails. Viewing is popular with Audubon Society members at the Walla Walla Delta where shorebirds congregate during migration. The Wallula Unit also attracts people looking for deer, riparian birds, and shorebirds. Bighorn sheep and raptors can be seen at the Stateline/Juniper Canyon Units. Professional, commercial photographers currently use the Refuge; and are required to obtain a Special Use Permit.

Management Considerations: Access to the Walla Walla Delta or good viewing points for viewing shorebirds there is problematic; there is currently a passage under the highway but not under the railroad tracks. The railroad is amenable to an underpass, but this type of work is expensive. For example, the pass under the railroad that was created for access to the Columbia Gorge Interpretive Center cost approximately \$1.2 million dollars. Universal design should be incorporated for all new visitor services projects.

At Burbank Slough, the trail needs to be closer to the water for better viewing opportunities. Some professional photographers dislike the blind at McNary Slough, which was not built solely for photography. There is a potential to allow photographers to use the fee area (which is closed to public use outside of hunting season) for better photography opportunities for a fee.

B. Umatilla Refuge

Number of Visits: Over 25,000 annually

Facilities: The designated auto tour route on McCormack Unit was designed in part to allow high quality viewing opportunities. The three-mile loop allows visitors to see wetlands and croplands maintained for waterfowl food, native shrub-steppe areas, and wildlife. Only vehicles are permitted on the auto tour route; pedestrians are not allowed to use it as a trail. Pedestrian visitors may use the Heritage Trail on McCormack Unit. Portions of the trail elevated on an earthen dike within the wetlands of McCormack Slough, allow for particularly good wildlife viewing. There are no existing photography blinds on the Refuge, but several pull-outs and overlooks along the auto tour route and along highway 14 provide good quality sites to see and photograph wildlife.

Viewing and Photography Options: In addition to the viewing from the pull-outs and overlooks, informal wildlife viewing or photography is also available from anywhere along Umatilla Refuge's 15 miles of public roads. Umatilla Refuge continues to attract a lot of attention from the wildlife watching public. The Refuge is open from dawn to dusk every day. It is a popular destination with local and out-of town birders because of the great diversity of habitats and wildlife species. Walking trails, auto routes and special events, such as Curlew Day, are popular with wildlife watchers and photographers. Waterfowl concentrations and the mule deer herd on McCormack Slough account for many Refuge visits. On McCormack Unit, pedestrians are not allowed off trail or off the auto tour route to view wildlife, but on other units, pedestrians may wander at will.

Management Considerations: Disabled access may be an area to improve.

C. Experiences Provided through the Wildlife Viewing Program

According to a recent handbook on wildlife viewing (Manfredo 2002) "people choose to participate in a particular recreation activity and a specific setting in order to attain certain desired psychological outcomes or satisfactions (experiences)." This seems particularly true in the case of wildlife viewing. Wildlife viewing provides a less tangible outcome to the visitor than hunting, fishing, or even environmental education. The benefits from the wildlife viewing program are primarily psychological, while the other programs also can provide a more concrete benefit in the form of food or school credits. To better understand how the wildlife viewing program provides these psychological outcomes, the Refuge staff listed some of the current reasons people come to view and photograph wildlife and the potential psychological outcomes. These are presented in Table 5-10.

Table 5-10. Experiences Provided by the Wildlife Viewing Program.

Reasons People Visit the Refuges to View Wildlife	The "Experience" or "Satisfaction" Gained *
To spend a few hours outside	Easily accessible natural setting
To see what kinds of birds they can see	Experience of diversity
Come to see how the birds change through the seasons	Experience of seasonal change
For the open space and to get out of the urban environment	Experiencing a natural environment
They come for a short retreat close to their homes	Renewal, relaxation easily accessible

Reasons People Visit the Refuges to View Wildlife	The "Experience" or "Satisfaction" Gained *
To walk, especially at Two Rivers and Burbank Slough	Exercise
For the safe environment	Freedom from fear
For the wetlands experience	Experience of water and concentrated wildlife
At Umatilla, some say "I just came down to see the deer."	A bond with certain species
To scout for ducks in advance of their hunting trip.	Preparation for other outdoor activities
Some specifically to take photographs	Practicing a hobby, creating memories/art
Some because they try to visit every Refuge in the nation	Refuge System loyalists
Some use the Auto Tour Route at Umatilla specifically because they can't navigate rough surfaces	To find accessible recreation
Frequently see couples, parents/kids or grandparents/kids	Relationships and bonding/traditions handed down
Many Scouts and birding groups are regular visitors. In addition the Refuges get lots of unscheduled class visits.	Learning experiences/identification with a larger community

*NOTE: most people probably come to fulfill many experiences but only one is chosen for each row to illustrate the diversity of experiences provided by the wildlife viewing and photography program.

D. Desired Future Conditions for the Wildlife Observation and Photography Program

Wildlife Observation

- Adequate sanctuary, minimal disturbance
- Access to quality habitats
- Increased appreciation for wildlife
- Personal life-changing experiences
- Range of accessibility
- Quality facilities
- Promotes Service messages
- Large concentrations of watchable wildlife

Photography

- Adequate sanctuary, minimal disturbance
- Quality facility (clean, access to viewable wildlife)
- Good photo opportunities
- Range of accessibility
- Refuge photo files filled with great photos
- Educational (written materials available)

5.8 Environmental Education

A. McNary Refuge

Number of Visitors: The environmental education program at McNary provides programs to over 3,500 students and adults annually.

Facilities: The key facility used is the McNary Environmental Education Center. The Center is housed in a former residential building. The residence has been adapted into offices and a small nature center. The Center is used by Refuge staff, volunteers and the Friends of Mid-Columbia River National Wildlife Refuge Complex.

Environmental Education Program Details: A small but very active Friends Group, supported by grants, runs the education program, with some assistance from the local chapter of the Audubon Society and Refuge staff. Students from local schools participate in nature walks, hands-on science activities, and educational curriculum developed by Refuge volunteers and staff. Most of the students are in grades 3 and 4 and the Center and surrounding lands support classes of 60 students each twice a week. The majority of classes visit the Refuge between April and June although the Center has at least one different class visiting each month of the year.



The Refuge also accommodates general tours and assists scout groups in achieving their badge requirements. Hours of operation for the Center vary seasonally. In general, volunteers staff the Center from 9:00 a.m. to 1:00 p.m. on Tuesdays, Wednesdays, and Saturdays throughout most of the year. During the busy spring months the Center remains open five days a week for school and community groups.

Management Considerations: Strong demand for the environmental education program continues, and there is enough demand to offer a class four or five days per week. However, volunteers are limited although some volunteers devote a significant amount of their time to the program. Recruitment of additional volunteers to facilitate the program remains an on-going concern. Certain facility upgrades, including a wet lab, and improved parking are needed. Regular evaluations from classes are needed to understand opportunities to improve the program. Suggestions have been made at the Regional level to expand the program beyond the McNary Headquarters Unit proper to other units, but other units' present issues with safety and access.

B. Umatilla Refuge

Number of Visitors: Under 150 per year.

Facilities: There are no designated facilities for environmental education at this Refuge, but limited activities take place on the McCormack Unit.

Program Descriptions: The Refuge occasionally hosts field trips and class visits by local junior and senior high schools. Refuge assistance is provided on request for groups with special needs or interests.

Management Considerations: None identified.

C. Desired Future Conditions for the Environmental Education Program

Adequate sanctuary for wildlife	Meet State requirements
Minimal disturbance to wildlife	Partnerships, volunteers
Quality programs that minimize staff requirement	Teacher training
Professional, aimed at right target, with right message	Increased knowledge/understanding of
Hands-on experience	Refuge resources

Promote Service messages

Aesthetically pleasing

5.9 Interpretation

Both Refuges provide brochures and signs at key visitor contact locations. The Refuge Complex also maintains a website (www.fws.gov/midcolumbiariver) where current information can be obtained at any time. However, except for the fee hunt areas, Refuge staffing is extremely limited.



A. McNary Refuge

Several events occur regularly that provide opportunities for the public to learn more about wildlife and the Refuge System.

National Wildlife Refuge Day is held each October to celebrate the Refuge System. Volunteers and Refuge staff present programs and demonstrations. The annual event features a morning bird walk, slide show, native plant talks, falconry demonstrations, fire equipment demonstrations, and several hands-on science stations for children.

“Second Saturdays” is a monthly event in which the Environmental Education Center hosts special speakers, activities, walks, and exhibits for the general public. Topics for the 2004 season included native plants, water insects, amphibians, Lewis and Clark history, animal bones identification, duck stamp collecting, hunting and fishing information/demonstrations, and duck banding.

The Refuge also hosts a variety of popular educational programs on weekends and evenings including Women in the Outdoors, night time bat and owl walks, evening nature safaris, birding classes, and flint knapping demonstrations. Another event, Greenwing Day, included demonstrations on duck identification and banding, duck calling, bird identification, and a retrieving dog demonstration.

The McNary Environmental Education Center is the main focus for Refuge interpretation, but it is not a staffed facility. Signed interpretive sites are located at Wallula Unit overlooking Sanctuary Pond and on the nature trail at the McNary Headquarters Unit.

B. Umatilla

There is no visitor center or regularly staffed visitor contact station on Umatilla Refuge. One interpretive overlook is located on the Ridge Unit and two are located on the McCormack Unit.

Each fall during National Wildlife Refuge Week, an event is held on the Refuge to celebrate the Refuge System. An evening hay ride is provided annually by Refuge staff and the Refuge’s cooperative farmer to view wildlife within areas normally closed to the public, learn about the local ecology and history, and learn about techniques of wildlife habitat management. The hay ride is a great opportunity for the public to learn about the Refuge and for the staff to meet the public.

Curlew Day has been held on most years to celebrate the return of the long-billed curlew to the Refuge. The birds migrate to the Refuge to mate and nest each spring on or about March 15. To celebrate this "messenger of spring," Refuge staff members set up binoculars and information tables along areas of the McCormack Unit and assist the public with spotting curlews and learning more about these unusual birds. Walking tours are also made available.

5.10 Nonwildlife-Dependent Recreation

A. Recreational Boating, Waterskiing, Swimming, and Beach Use

Pleasure boating using motor boats, jet skis (also known as personal watercraft), and canoes or kayaks are popular activities on the Columbia River during the warmer months. Most of the pleasure boating is concentrated near boat launches bordering Refuge waters. Facilities used for this activity are discussed under 5.6 Fishing. Waterskiing, swimming, and beach use also occur during the warm months, especially along some beaches located on Refuge islands.

McNary: Boating, waterskiing, swimming and beach use is especially popular adjacent to Strawberry Island on the Snake River. Some activity occurs along the main stem Columbia River along Peninsula Unit and Two Rivers Units, however, high winds cause safety issues in this location. Nonmotorized boating on the Refuges has become increasingly popular especially in the last 10 years. On Wallula Unit, canoeing is popular from the parking area to the old rail trestle. The Refuge does not have firm numbers on the number of visits made to the Refuges solely for pleasure boating, waterskiing, swimming, or beach use.

Strawberry Islands Management Considerations: There is a great deal of boat use and waterskiing in the river on either side of Strawberry Island and some of the boaters come ashore to use the beaches at Strawberry Island. The Service was conveyed jurisdiction over the island "both above and below the ordinary high water line of 339.4." Officially, the Strawberry Islands are closed because they are designated as a national historic site and as a sanctuary for wildlife. However, because of fluctuating pool levels, beaches exposed at low water experience unregulated use. The Refuge has posted closure signs at the top of the beach, where the banks rise steeply. The signs and steep banks discourage trespassing onto the upland areas. However, the Refuge lacks the funds and law enforcement staff needed to adequately enforce closure of the fluctuating boundary associated with pool levels and boating/beach use.

A deer herd uses the island for fawning and coyotes have been observed on the island along with bald eagles roosting in winter. Hawks nest on power lines on the island. It is unknown to what extent boat use on the river, or beach use directly on the island, causes disturbance to wildlife or habitat, though some direct effects have been documented. Several years ago, a campfire got out of control and burned a portion of the island.

Rip-rap is placed on the north and east sides of the Strawberry Islands to protect them from erosion. Long ago there was interest in developing an interpretive program—there is a boardwalk that was constructed for the purpose.

McNary Islands Management Considerations: Foundation and Badger Islands are closed at all times. Crescent Island is open to hunting but closed at other times of the year. The closure on Foundation and Badger extends a quarter-mile into the water during hunting season. These closures are self regulating partly because wind makes it hazardous to venture out to the islands, and the closures are well known by hunters, who police each other. Summertime use has not been an issue on the islands.

Umatilla: The Umatilla Islands and surrounding waters are under a winter sanctuary closure during waterfowl hunting season. During summer, recreational boating occurs on navigable waters adjacent to the islands. In addition, limited parts of the islands (east end of West Blalock Island and the east end of Big Sand Dune Island) are managed as seasonally open to the public (July 1-September 30). These areas were originally mapped as “recreation use” in the General Plan for Umatilla Refuge (U.S. DOA et al. 1968) and the public has used these as recreational beaches since. These portions of Blalock and East Sand Dune Islands were transferred to the Service to manage in 1995. The tip of Crow Butte is open for beach use as well. All other portions of the Umatilla Islands are closed to public use. The total number of visits for recreational boating, waterskiing, swimming, or beach use is not known, but in 1996, this form of recreation was estimated to comprise 9.3% of total Refuge visits (US DOI 1996). The Refuge also estimated at that time that 61% of the nonfishing-oriented boating occurred between June 1 and September 30.

Umatilla Islands Management Considerations: The Service and the Department of the Interior have both concluded that sufficient legal authority exists for the Service to regulate activities on the Columbia River within the Refuge (U.S. DOI 1994, USFWS 1991). The Umatilla Refuge’s Public Use Management Plan and Environment Assessment, signed in 1996, closed the islands and established buffer zones limiting use around the islands, citing local observations of disturbance to various waterbirds including pelicans, osprey, and broods of goose (Kronner 1989). However, since that time, a deliberate decision was made to designate public use sites and allow the public to continue to use the three beach areas. The beaches on the east end of Blalock Island are right off the deep channel (not under Service jurisdiction) where most of the waterskiing occurs and water-skiers are attracted to the beaches by virtue of their location.

Closure signs located above the beaches need improvement, more are needed and many have been overcome by overgrown indigo. There are other, generally smaller, beaches on the Umatilla Islands that remain closed. There is less pressure from the public on these islands than on Strawberry Island; however, there is some trespass into the closed areas. People also walk on the sand dune used by swallows. The Refuge observes signs of frequent campfires and fireworks. There has been no recent fire but there is a potential for it, although sand could mitigate against its spread. The Refuge maintains cooperative agreements with neighboring county sheriffs and the State of Washington to assist with law enforcement, but law enforcement and outreach staff are still spread very thin. Wildlife uses on the Islands are detailed under the Islands conservation target in Chapter 4.

B. Camping

A free campground is located on the Wallula Unit on McNary Refuge. The Madam Dorion Campground has potable water, vault toilets, picnic tables, a trash dumpster, a grassy area for pitching tents, and a gravel area for recreational vehicle parking. The upper and lower areas of the campground can hold approximately 25 camping parties on a first come-first served basis. The campground is used primarily during the warm weather months and during the waterfowl hunting

season. The permanent restroom vault toilets are pumped out two to three times per year and the seasonal port-a-let is cleaned out weekly. Picnic tables, fire rings, and a toilet are located at the upper parking area near the boat ramp on the Walla Walla River.

The McNary Master Plan land use designation for Madam Dorion Park was as an “intensive use” recreation area (McNary Master Plan, 1964 update).

Management Considerations: According to the 2000 Corps/Service agreement (see Section 1.6B), the Service is obligated “to ensure that Madame Dorian Park and all facilities thereon shall continue to be operated and maintained as a day-use and overnight camping recreation area at the same level of service or better than currently provided. The Service shall be responsible for all costs associated with operations and maintenance...Reasonable fees may be charged for entrance to or use of facilities at Madame Dorian Park.” Camping at Madame Dorian supports fishing and hunting, but is not limited to support of these wildlife-dependent uses. During fishing season there are 10-15 RVs on the river and another 12 tents and RVs near the road. Two Scout groups of 50-60 scouts camp here annually. The Service currently has a cooperative agreement with the Scouts.

A large vagrant population camps here in the summer. Vandalism and social problems affect this site more than all other Refuge sites combined. The Refuge would like to change this site to a day use area only because, alternative commercial camping areas exist close by, and day-use only would reduce impacts from campers to the riparian habitat, reduce constant and reoccurring law enforcement issues, excessive household and commercial dumping, and the abundance of illegal activities that occur including drug activities.

The campground was an approved fee site under the Recreation Fee Demo program, but is not managed as a fee site. Managing it as a fee site would allow the Refuge to recoup some costs of maintenance. However, some facilities need extensive upgrading. There is concern that the amount of fees that could be collected would not be enough to cover the cost of maintenance. Maintenance costs include maintaining a dump station and filter system for campsites as well as garbage and janitorial services. Local Youth Conservation Corps crews have helped with maintenance.

Desired Future Conditions for the Madame Dorian Area:

Day use only	Promotes Refuge message
Clean	Riparian restoration
Maintain clean restroom facilities sufficient to meet needs (i.e. sufficiently sized boat ramp)	Maintain boat launch facilities

C. Horseback Riding

McNary: Horseback riders frequent the trails that are designated for their use on Wallula and Peninsula units (see Trails section 5.1.D above). Horses are also permitted on open Refuge roads. Recently the Stateline and Juniper Canyon units have attracted horseback riders that cut through the property and onto private lands. Unlike the club riders that frequent the Wallula Unit and assist the Refuge by volunteering and picking up litter, the riders in Juniper Canyon have cut fences on adjacent private property and trespass onto adjacent ranches.

Umatilla: Horses are allowed on the section of the Heritage trail that passes through the McCormack Unit and on roadways throughout the other units.

D. Bicycling

Bicycling use occurs but is light. Statistics on bicycling are not kept.

E. Dog Trials

Dog trials have traditionally occurred on the Peninsula Unit but have not occurred with frequency in the last three years. Special Use Permits are issued by the Refuge for dog trials.

5.11 Illegal Uses

McNary: McNary Refuge has been negatively affected by vandalism, theft, garbage dumping, poaching, mobile drug manufacturing facilities (methamphetamine labs, and off-road vehicle use. The key problem areas for these illegal uses include Burbank Sloughs Unit and the Wallula Unit. Some problems with target shooting occur at the Stateline/Juniper Canyons unit. Wallula boat launch area also is origin of ORV use and horse trail at the end of the parking lot. Illegal uses persist partly because of the inadequacy of physical barriers (i.e. for off-road vehicles), lack of public buy-in, and limited law enforcement capability. Changes in Service policy that have virtually eliminated dual-function law enforcement positions have negatively affected resource protection and visitor safety.

Umatilla: Deer poaching, off-road vehicle use, vandalism, theft of Refuge property and after hours trespass continued to be problems. Changes in Service policy that have virtually eliminated dual-function law enforcement positions have negatively affected resource protection and visitor safety.

5.12 Area Outdoor Recreational Opportunities and Trends

A. Nearby Recreational Opportunities

McNary: The area near McNary Refuge is abundant with outdoor recreation activities. The Columbia and Snake Rivers provide ample fishing and boating opportunities. Smaller rivers such as the Walla Walla, Yakima, and Umatilla Rivers also provide boating and fishing opportunities. Boat launches are located at Port Kelly, Hood Park, Sacajawea State Park, and at Cargill Pond.

Many local farms allow hunting on their lands provided permission from the land owner is obtained first. Nearby Corps properties provide visitor facilities such as picnic tables, boat launches, visitor centers, public campgrounds, and hunting areas.

The Corps has several habitat management units (HMUs) on the Snake River. Until the fall of 2004, waterfowl hunting was prohibited on the Snake River above the Pasco to Burbank Snake River Bridge. That year the Corps and the State opened parts of the Snake River to waterfowl hunting. This was a major change to waterfowl hunting in the area.

In addition to the Refuge opportunities, there are a number of private hunt clubs in this area. The clubs are expensive, so the Refuge provides free areas to hunt, in addition to a high quality fee hunt.

The Tri-Cities has public and private campgrounds, boat launches, beaches, and numerous parks.

A regional bike path has been partially completed through Kennewick, Pasco and Richland. Over twenty miles of trail are currently available for biking on paved and gravel pathways. There has been talk of extending the bike network through Burbank using the Hansen Loop road adjacent to the Burbank Sloughs and Peninsula units. The town of Burbank could realize expanded economic development (e.g. small stores, restaurants, etc.) if such a trail were to be designated. An increase in public use along the street side of the Refuge boundary could help self-police the area and discourage the illegal uses that occur at Burbank Sloughs. The project has not yet received public approval or funding.

Local companies rent jet skies, motorboats, and canoes. Numerous clubs such as the Inter-Mountain Alpine Club and the Richland Rod and Gun Club provide outdoor oriented programs and activities.

Three other campgrounds are available within a 15-mile radius in addition to several more along the Snake River. These include Hood Park, Sacagawea State Park, Sand Creek and Mill Creek. There is also a private campground, called Pierce's Heavenly Valley, within 5 miles of Madame Dorian.

Umatilla Refuge: The area near Umatilla Refuge has many outdoor oriented activities. McNary Lock and Dam is located 12 miles east of the Refuge. The dam is operated by the Corps. The Corps facility encompasses several boat launches, picnic areas and ball fields, eight miles of nature trails, a large visitor center, two underwater fish viewing rooms, and several habitat management areas (HMUs). The HMUs provide many of the same wildlife viewing, fishing, and hunting opportunities as the Refuge.

A state fish hatchery is located adjacent to Refuge lands. The popular spot allows visitors viewing access to a working hatchery. Interpretive panels near rearing pens explain the life cycle of fish. There is also a small visitor center with interpretive displays

There are also several state fish and game lands near the Refuge. These areas are open seasonally for wildlife viewing, hunting, and fishing.

B. Outdoor Recreation Rates and Trends

A small state agency known as the Interagency Committee for Outdoor Recreation (IAC) advises the State of Washington on matters of outdoor recreation. The IAC conducts inventory of outdoor recreation sites and opportunities, conducts studies of recreational participation and preferences, and periodically releases documents related to overall State Comprehensive Outdoor Recreation Planning (SCORP).

Current Participation Rates: The most recently released SCORP Assessment (IAC 2002a) identified 14 major categories of outdoor recreation, subdivided into 170 activities. Of these 14 major categories, walking/hiking and nature activities figure as the two most popular, with 53 percent and 43 percent of Washington state residents participating in these activities, respectively. The IAC also indicated that observing/photographing nature and wildlife have participation rates of 42 percent, and visiting interpretation centers has a participation rate of 7.5 percent.

Forecast of Future Regional Recreation Demand and Key Recreation Needs Identified by IAC:

Overall, outdoor recreation activity in most activities continues to increase at high growth rates. In a recent technical report (IAC 2002b), IAC projected future participation in 13 of 14 major outdoor recreation use categories over periods of 10 and 20 years. Nine of these activities will experience double digit growth (see Table 5-11).

These most recent estimates of recreation trends were based on the National Survey on Recreation and the Environment Projections for the Pacific Region (NSRE), which includes Washington State. IAC adjusted the NRSE projections as necessary based on age group participation, estimates of resource and facility availability, user group organization and representation, land use and land designations; and “other factors” including the economy and social factors. Table 5-11 shows the percent change expected for Washington State by activity as reported by IAC.

The 1995 assessment identified trails and environmental education as the two highest outdoor recreation needs in the state. Many outdoor activities generally permitted on Refuges are expected to show increases of 20 percent to 40 percent over the next 20 years. The exception is hunting, in which participation is expected to fall at about that same rate.

Table 5-11. Projected Future Increase in Participation for Selected Outdoor Recreation Activities

Activity	Estimated Change, 10 years (2002-2012)	Estimated Change, 20 Years (2002-2022)
Walking	23%	34%
Hiking	10%	20%
Nature Activities (includes outdoor photography, observing wildlife and fish, gathering and collecting, gardening, and visiting nature interpretive centers)	23%	37%
Fishing	-5%	-10%
Hunting / Shooting	-15%	-21%
Sightseeing (includes driving for pleasure)	10%	20%
Camping – developed (RV style)	10%	20%
Canoeing/kayaking	21%	30%
Motor Boating	10%	No estimate
Equestrian	5%	8%
Non-pool swimming	19%	29%

Source: IAC (2002b).

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Chapter 6. Special Designation Lands, Cultural Resources, and Social/Economic Environment

6.1 Special Designation Lands

This section discusses sites or areas on the Refuges that have been assigned special designations by local, county, State, Federal or international governments, and in some cases nongovernmental organizations, so that these sites receive special management consideration. Sites listed under the National Register of Historic Places or as Important Bird Areas are discussed in detail below. Some of the designations that apply to refuge lands are covered in more detail in other sections of the Draft CCP/EA and are listed here.

Table 6-1. Special designations discussed in other sections

Designation	Location	Other Sections of Document Where Discussed
Snake River Compensation Lands	Cummins Property	4.4.A
Critical Habitat for Endangered Salmon and Steelhead	Columbia, Snake, Walla Walla, and Umatilla Rivers	4.10
National Natural Landmark	Wallula Gap	3.4
Immediate Response Zone	Umatilla Army Depot	3.7

A. National Register of Historic Places

Established under the National Historic Preservation Act of 1966 (NHPA), the National Register has identified and documented, in partnership with State, Federal, and tribal preservation programs, nearly 77,000 districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The documentation on each property consists of photographs, maps, and a National Register registration form, which provides a physical description of the place, information about its history and significance, and a bibliography. Documentation is now available on-line at the National Register Information System at <http://www.nr.nps.gov>. The following sites have received designation under the NHPA.

Strawberry Island Village Archeological Site, Franklin County, WA 1980-08-21: The Miller Site is situated on Strawberry Island in the Snake River and is considered a late prehistoric settlement. The north end of the island is covered with visible surface depressions making it significant as one of the largest and least impacted Native American village sites in the Region (Cleveland 1978).

B. Important Bird Areas (IBA)

The Important Bird Areas program (IBA) is a global effort to identify areas that are the most important for maintaining bird populations, and focus conservation efforts at protecting these sites. Within the United States, the program has been promoted and maintained by The American Bird Conservancy (ABC) and The National Audubon Society (NAS). The ABC is coordinating the identification of nationally significant IBAs while NAS is working to identify sites in individual states. The NAS is working within each state to identify a network of sites across the U.S. that provide critical habitat for

birds. This effort recognizes that habitat loss and fragmentation are the most serious threats facing populations of birds across North America and around the world. By working through partnerships, principally the North American Bird Conservation Initiative, to identify those places that are critical to birds during some part of their life cycle (breeding, wintering, feeding, migrating), the hope is to minimize the effects that habitat loss and degradation have on bird populations. In the United States the IBA program has become a key component of many bird conservation efforts. More information is available at <http://www.audubon.org/bird/iba/index.html>.

In Washington and Oregon, the goals of the IBA program are to: (1) identify the sites that are the most essential for long-term conservation of birds, and (2) to take action to ensure the conservation of these sites (Cullinan 2001).

An IBA is a site that provides essential habitat for one or more species of birds. The IBA selection process examines sites based on: (1) the presence and abundance of birds, and/or (2) the condition and quality of habitat. The IBAs are chosen using standard biological criteria and expert ornithologists' review. All sites nominated as potential IBAs are rigorously evaluated to determine whether they meet the necessary qualifications. The IBAs represent discrete sites, both aquatic and terrestrial, that are critically important to birds during their annual life cycle (e.g. breeding, migration, and/or wintering periods).

Walla Walla River Delta Unit IBA: The Walla Walla River Delta was chosen as an important bird area based on its significance for endangered species, large concentrations of waterfowl, shorebirds, gulls and terns. The shallow water and deep silt mudflats at the mouth of the Walla Walla provide a unique and productive habitat for shorebirds. The Walla Walla River Delta is a significant shorebird migration areas in eastern Washington. Peregrine falcons are found during peak migration times, and bald eagles congregate during winter on the flats and surrounding trees. The delta also attracts and supports large numbers of American white pelicans, wading birds, and waterfowl, particularly northern pintails and canvasbacks. The delta also supports an extraordinarily high population (> 1,500) of Vaux's swifts during fall migration. More information is available at <http://www.oregoniba.org/umatillanwr.htm>

Umatilla National Wildlife Refuge IBA: The Refuge is listed as an IBA based on large concentrations of migrating and wintering waterfowl and passerines. Also cited are significant number of bald eagles (30) spending the winter at the Refuge and nesting colonies of great blue heron and black-crowned night-heron. <http://www.oregoniba.org/umatillanwr.htm>

6.2 Archaeological and Cultural Resources

Despite its relative small size, the area stretching from the confluence of the Snake and Columbia Rivers downstream to Crow Butte, presents an exceptionally diverse historical, geological, cultural and tribal landscape. The Umatilla Rapids, Walla Walla and Snake River confluences were all particularly important fishing, trading, and trade route locations that attracted early peoples from throughout the southern Plateau to participate in the mutual co-utilization of the resource (Anastasio 1975). Because the rivers afforded the principal means of transportation, they would later attract early British and American explorers, trappers, fur traders, missionaries, miners and eventually settlers. This section can, therefore, serve only to present but a brief outline of this rich history and cultural heritage.

Archaeological and cultural resources are important components of our nation's heritage. The Service is committed to protecting valuable evidence of plant, animal, and human interactions with each other and the landscape over time. These may include previously recorded or yet undocumented historic, cultural, archaeological, and paleontological resources as well as traditional cultural properties. Protection of cultural resources is legally mandated under Section 106 of the National Historic Preservation Act (NHPA). Other legally-mandated responsibilities are found in the Native American Graves Protection and Repatriation Act (NAGPRA), Archaeological Resources Protection Act (ARPA), and various State regulations. The Service's Native American Policy (1994) articulates the general principles guiding the Service's relationships with Tribal governments in the conservation of fish and wildlife resources. Additionally, the Refuges seek to maintain a working relationship and consult on a regular basis with the various Tribes that are now, and/or were traditionally were tied to lands and waters within the Refuges. Those Tribes include the Palouse, Cayuse, Walla Walla, Umatilla, Yakama, Nez Perce, and Wanapum Tribes and affiliated bands.

Since archaeological and cultural resources encompass many elements and time periods, the following simple temporal divisions were used to distinguish and categorize this brief review of the resources: Pre-recorded History; Pre-Contact Native American Traditions; Post-Contact Early United States Traditions; and Recent U.S. Settlement and Economic Development Period.

A. Pre-recorded History

The Umatilla and McNary Refuges lie within what anthropologists call the Plateau Culture Area (Plateau) of the northwestern United States, which encompasses the Mid-Columbia area and adjoining regions. The period of pre-recorded history is represented by two important features highlighted here: presence of Paleo-Indian humans such as Kennewick Man during the Clovis/Post-Clovis Period prior to around 8,000 years ago; and settlements evidenced by pithouses during the later prehistoric period ending just 1,400 years ago.

Presence of Paleo-Indian Humans such as Kennewick Man. Archaeological excavations and evidence from the surrounding region, Lind Coulee, Sunset Creek, the Marmes Rock Shelter, Hanford Reach, suggest that some of the earliest people to arrive and/or inhabit America, occupied the Plateau region during the Clovis Paleo-Indian occupations 11,500 years ago to around 5000 BC (Ames et al. 1998). The 1996 discovery of a 9,300-year-old near-complete skeleton found along side the banks of the Columbia River just eight miles upstream of the McNary Refuge, is particularly significant. Commonly known as Kennewick Man, the skeleton is unique because it is both one of the oldest and most complete ancient skeletons from this time period ever found. In addition, according to scientists who have examined the remains, the skull appears to be unlike those of any Indian tribes now living in the area (Owsley in AP, Kennewick Man Virtual Interpretive Center, Tri-City Herald, 2006). Following the initial discovery of the bones in 1996, the Umatilla, Yakama, Nez Perce and Colville Tribes urged officials to rebury the skeleton without scientific study. The Tribes argued exclusive jurisdiction over the disposition of the remains they named "The Ancient One." Scientists argued that the process should follow NAGPRA guidelines for demonstrating cultural affiliation, and sued for a chance to study the remains. The 9th U.S. Circuit Court of Appeals agreed with the scientists, ruling there was no link between the skeleton and the present-day tribes and that the Corps had violated NAGPRA. Kennewick Man currently resides at the Burke Museum at the University of Washington where scientists continue studies to learn the story of the earliest people to come to, and/or occupy, the Plateau

region. As a result of the controversy and legal issues surrounding disposition of Kennewick Man, a large body of research and publications associated with the ethnography and cultural affiliation of Kennewick Man to the various tribes within the Region is available.

Late Period Settlements Evidenced By Pithouses: The final prehistoric period from 1900 BC to 1720 AD shows increasing development of the cultural traits that culminated in the cultures and present-day tribal structures of the region (Chatters and Pokotylo 1998). Pit houses became predominant and reliance on salmon fishing, plant gathering and hunting of large game is evident as is use of larger pit houses in more concentrated winter villages. The best known site from this period is the Miller Site on McNary Refuge's Strawberry Island Unit (Ames et al. 1998). Archaeologists feel there were two major occupations of the site beginning first 1400 years ago and later occupations which terminated prior to 1720 AD (Schalk 1983b). Located five miles upstream from the mouth of the Snake River, the Miller Site has 120-133 cultural depressions in two clusters on either side of the upstream portion of the island. Not all are housepits; they could be storage facilities, outdoor cooking areas, sweat lodges, firewood caches, salmon, root caches, menstrual huts and/or communal huts, (Cleveland 1976). The Miller Site was added to the National Register of Historical Places in 1974.

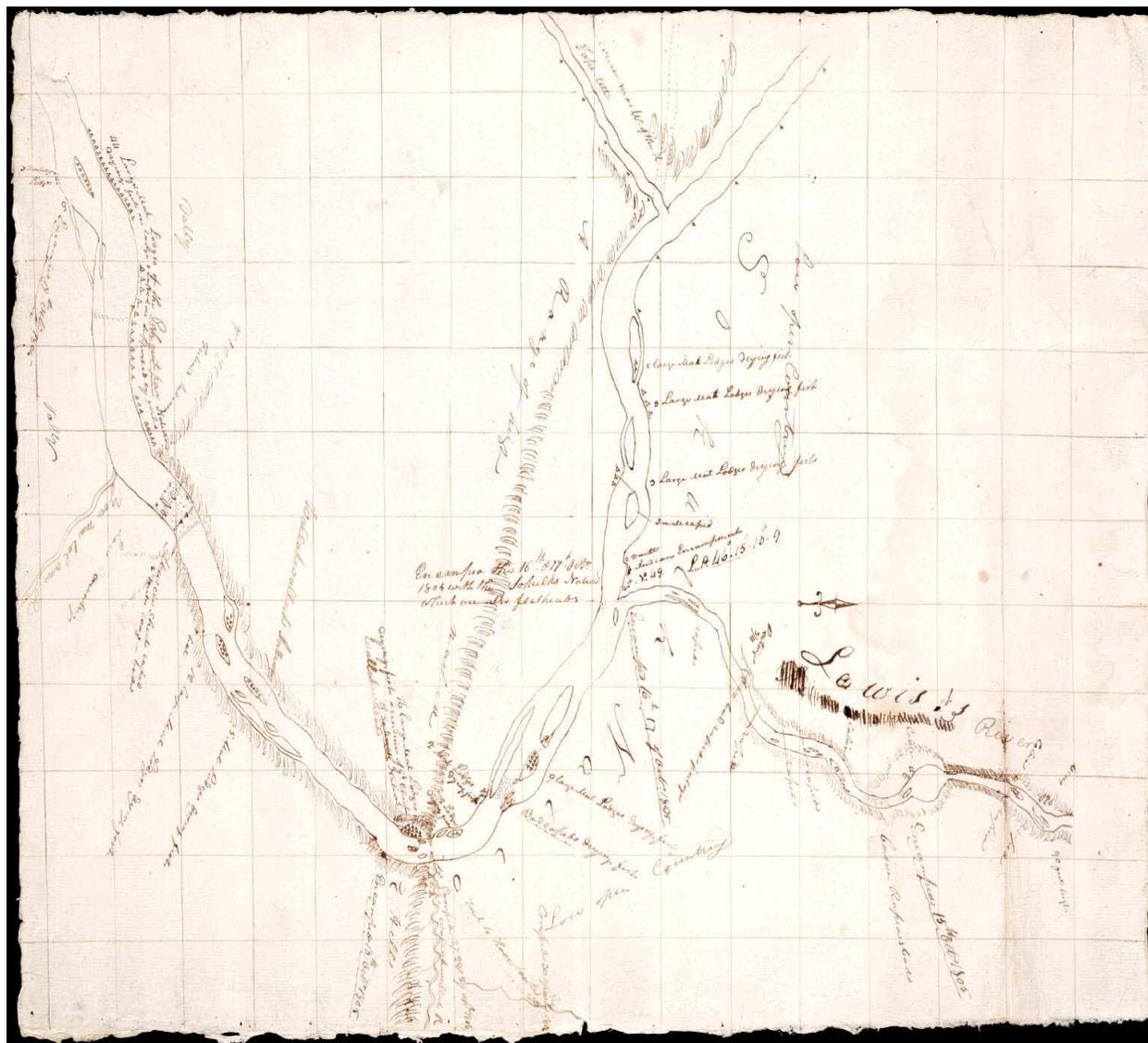
B. Pre-Contact Native American Traditions

It is evident that the rivers and associated lands from the Snake River to Crow Butte were the site of a particularly rich grouping of early Native American settlements. There is consensus among anthropologists that prior to 1855 (when treaties were negotiated with the Indian tribes of the region), local Indian peoples were not organized into "tribes," that is, there were no political units encompassing multiple villages with a common identity, sense of purpose, or territorial claim. Rather, it is believed people were identified first of all as members of a particular village community with which they were associated by birth and/or by having been raised there (Hunn 2000). Many sites along the Snake, Columbia, Walla Walla, and Umatilla Rivers were winter village locations, but at different times of the year members of these tribes could be in areas beyond their territory. Even the winter villages would contain individuals and family groups from different tribes.

The first written descriptions of these village communities were provided by Lewis and Clark who made first contact with the tribes as they descended the Snake River, arriving at the mouth of the river on October 16, 1805. Here they described in detail the lodges and peoples they identified as Chimnapums, Choppunish and Solkuks. The "Chim-nâ-pum" were the people of the village of *Chamnâ*, located upstream near the mouth of the Yakima River, and likely a group distinct from the Yakama that occupied the Yakima River Valley above Horn Rapids Dam. The Choppunish referenced were likely the Nez Perce of the Snake and Clearwater regions. The Solkuks were likely the Wanapum. However, some historians have suggested that the large encampment described by Lewis as *Kw'sí*, just a quarter mile upstream of what is now Sacagawea State Park, were Palouse (Trafzer 1999).

Another concentration of native settlements centered downstream from the confluence of the Snake River to Wallula. Here, Lewis and Clark, in both October 1805 and again in April 1806, encountered the Walla Wallas in several settlements on both sides of the Columbia River, on three islands, and in small villages two miles upstream on the Walla Walla River. Figure 6.1 is a reproduction of Clark's map of the area. The journals from the Corps of Discovery are a treasure trove of information about the first contact, including descriptions of Walla Walla Chief Yellepit and his village consisting of 16 lodges on the Columbia River opposite the mouth of the Walla Walla

Figure 6.1. Lewis and Clark's map of villages in the proximity of the confluence of the Snake and Columbia river (Moulton 1983). Reproduced courtesy of the Yale Collection of Western Americana, Beinecke Rare Book and Manuscript Library.



River, and the use of fishing weirs at a lodge site two miles upstream from its mouth. The journals also contain interesting and memorable events such as Chief Yellepit providing Captain Clark with an “elegant white horse,” Clark’s gift to Chief Yellepit of a Jefferson peace medal, a communal dance celebration held late into the night that included both Yakamas and Walla Wallas on their return in April 1806, and a description of the 1806 overland route to the Clearwater taken on their return at the behest and cooperation of the Walla Wallas. This overland route would likely have taken the expedition across present day Refuge lands at Wallula and Walla Walla Delta. Wallula would also become the center of Indian/Fur Trader/Government relations, as Fort Nez Perce (later renamed Fort Walla Walla) served as a trading fort, military garrison, settler stop-off, and commercial area, and later a site of Indian wars and treaties.

Lewis and Clark left Wallula, reaching the Umatilla Basin on October 19, 1805, noting villages of Walla Wallas, Umatillas, and further downstream near Crow Butte, the Pishquitpah. At the Expedition's campsite opposite Irrigon, they had almost 200 visitors to their camp. Clark estimated the population in this area to be 350 "men" and remarked that they were similar in appearance and customs to the people around the mouth of the Snake River. However he noted differences in dress and the presence of head-flattening, a Chinookan trait from the lower Columbia River. He also noted that they did not speak precisely the same language as those above the bend in the Columbia River (Sahaptin), but observed that they could understand each other. The next day the explorers likely stopped at Blaylock Island, on what is now part of the Umatilla Refuge, where they visited and described a burial "vault" (Thwaites, 1904). It is also in this area that they first noticed evidence of European trade goods and clothing, including encountering one man with a sailor's jacket.

Later in their published summary report, they enumerated two populations of Indians from the Umatilla area. These were the Walla Wallas, who occupied both sides of the Columbia River from Umatilla Rapids to the Snake River and numbered 1,600 people in 46 lodges. On the north side of the Columbia from the Rapids to the beginning of the high country around Crow Butte (Refuge), they identified the Pishquitpah (a Yakama Band) with 2,600 people living in 71 lodges.

Later travelers and explorers described similar tribal settlement patterns from Crow Butte, upstream to the Snake River. An 1814 gathering at Wallula, near the mouth of the Walla Walla River, consisted of an encampment of over 3,000 people extending over six miles (Ross 1924). Ross claimed that the second most important fishing location on the Columbia River, after The Dalles, was at Wallula (Ross 1904). Other descriptions by David Thompson in July 1811, Wilson Price Hunt in 1812, Robert Stuart in 1812, Gabriel Franchere in 1814, John Work in 1824 and in 1826, Peter Skene Ogden in 1825, botanist David Douglas in 1826, and later zoologist John Townsend in 1839, all provided varying accounts of villages and numbers of inhabitants (Ellis 1986). For instance, David Thompson of the North West Company visited Chief Yellepit on July 1811 and reported 80 Indian households between the Walla Walla River and Crowe Butte. Alexander Ross reported that almost 1,500 Walla Walla, Cayuse, and Sahaptins (Yakimas) had gathered at Wallula in August 1811. Gabriel Franchere traveled up the Columbia in April, 1814 and recorded many villagers fishing for salmon in the Umatilla to Wallula section of the Columbia River. But in March of 1828, Edward Ermatinger of the Hudson's Bay Company reported observing many geese along the Columbia River above the Umatilla Rapids, but few Indians.

This discrepancy may reflect what most historians believe, that seasonal presence of river settlements followed the supply and opportunity for exploiting the salmon resources. The passage of 14 years may also have much to do with the relative absence of Indians on the river in 1828. By that time, many Columbia River populations were being decimated by diseases. It is also possible they were being driven inland from their accustomed territories by then.

The modern day descendants of the tribes identified in early accounts are now located on several reservations and off-reservation communities. These include, but are not limited to, the Yakama, Palouse, Wanapum, Nez Perce, Walla Walla, Cayuse, and Umatilla. These tribes are commonly associated with the following reservations: the Confederated Tribes and Bands of the Yakama Indian Nation; the Nez Perce Tribe; the Confederated Tribes of the Umatilla Indian Reservation; the

Confederated Tribes of the Colville Indian Reservation; and the Wanapum Band of Indians, a non-federally recognized tribe. Tribal affiliations with lands now part of the Refuges are shown in Table 6-2.

Table 6-2. Tribal affiliations with lands now part of McNary and Umatilla Refuges

Reservation	Tribes
Confederated Tribes and Bands of the Yakama Indian Nation (Yakama Treaty of 1855)	Yakama, Palouse, Pishquitpah
Confederated Tribes of the Umatilla Indian Reservation (Walla Walla Treaty of 1855)	Walla-Wallas, Cayuses, Umatilla
Nez Perce Tribe (Nez Perce Treaty of 1855)	Nez Perce
Confederated Tribes of the Colville Indian Reservation (Executive Order of 1872)	Nez Perce, Palouse
Wanapum Band*	Wanapum

*Nonfederally Recognized Tribe

C. Post-Contact Early United States Traditions

The importance of the Columbia River area near the confluences of the Snake, Walla Walla, and Umatilla Rivers to native systems of trade is evidenced by the large number of historic trails. Like spokes of a wheel, overland routes had their beginnings from these native settlements on the Columbia River. From here access to the villages of the lower Yakima River and to the west was available; trails connecting to the Palouse, Nez Perce, Umatilla and Cayuse to the north were accessible; as were several trails leading east into the Blue Mountains. The "buffalo road" led to the east over the Continental Divide to buffalo hunting country; while another trade route led to the west over the Cascade Mountains. Later these trails would be developed by settlers and renamed the Colville, Daisy, Nez Perce, Mullan, Caribou, Old Emigrant-Naches, White Bluffs, and Oregon Trails; but their beginnings were the system of trails used by Native Americans for trade and travel.

The importance of this early trail system was not lost on the early fur traders, and consequently, it was decided to establish a fur trading post in the vicinity of Wallula. In 1818, fur traders Alexander McKenzie, Tom McKay, and Alexander Ross traveled upstream to Wallula to build Fort Nez Perce, a trading fort for the North West Company. Later it merged with the Hudson's Bay Company. From 1818 to 1855, the post carried on trade with native peoples from throughout the southern Plateau. Superintendents like Ross and Pierre Pambrun kept extensive records of both trapping and fur trades, as well as recording the traffic of missionaries, settlers, and others who visited the fort to supply, re-supply, or end their expedition. In September 1818, Mackenzie led the first trapping party of 55 men with 195 horses and 300 traps from Fort Nez Perce to the Blue Mountains to catch beaver. Later in 1822 and 1823, the Hudson's Bay trappers brought in 20,000 beaver and otter furs (Saul 2006). The interior Snake River and Columbia Basin country serviced by Fort Nez Perce proved to be a profitable fur producing region, although the beaver population was decimated fairly quickly, especially in the Walla Walla and Interior Basin. In 1830 and 1831, Fort Nez Perce recorded 39

badger, 19 black bear, 66 brown bear, 8 grizzly bear, 67 fisher, 72 red fox, 12 cross fox, 143 lynx, 5 marten, 50 mink, 1525 muskrat, 165 otter, 88 raccoon, 14 wolverine, and 247 wolf furs purchased from Indians at Fort Nez Perce (Meinig 1995). Since the Walla Walla, Cayuse and Nez Perce traveled and traded widely in the regions, the origination of the furs is unknown. Other famous fur trade parties set out from the Fort including the Ogden, Black, L'Etang, and Pambrun fur expeditions. Later Kit Carson and John C. Fremont would also visit the Fort.

The list of early explorers, expeditions, scientists and missionaries passing through the area is large and only highlights can be given here. One of the earliest visitors and most remarkable stories of the era was Madame Dorion, an Ioway Indian. As the only female member of the 1811-1812 John Jacob Astor exploration party led by Wilson Price Hunt that was looking for a route across the Plains and Rockies to the Pacific, Madame Dorion survived through incredible hardships. However, when she and her family returned with a trapping party to the Snake River, Bannock warriors attacked and killed all but Marie and her two sons when they escaped by hiding in the brush. Marie and her two boys survived more than 50 days in the bitter winter cold of the Blue Mountains before finally making it to a Walla Walla Indian village just a few miles upstream from the mouth of the Walla Walla River. The village site is thought to be east of the Highway 12 bridge at the Wallula Unit. A rock memorial celebrating Madame Dorion's tenacious spirit is located at the entrance to Madame Dorion Park.

Notable scientists and collectors David Douglas, Thomas Nuttall, and J.K. Townsend also came to the area and spent time at Fort Nez Perce. Douglas, of the London Horticulture Society, traveled up the Walla Walla River to collect plant samples (and take them back with him) in June of 1826. In 1834, ornithologist John Townsend spent part of a winter at Fort Nez Perce, from where he ventured out to collect local birds, including sage grouse and sharp-tailed grouse which he reported were abundant in close proximity to the Fort. Lewis and Clark themselves had collected and described the first specimens for *Lomatium cous* (cous, cous-root, or desert parsley) and *Crataegus douglasii* (black hawthorn) on the north bank of the Walla Walla River on April 29, 1806.

While at Fort Nez Perce in September 1835, Townsend met the first among the arrivals with intentions of settling, the Presbyterian missionaries Henry and Eliza Spaulding and Marcus and Narcissa Whitman, the first U.S. citizens to settle in the area. The Whitmans established a mission among the Cayuse at Waiilatpu, located some 23 miles upstream of the mouth of the Walla Walla. Father Pierre De Smet traveled to Fort Walla Walla in 1846 to help start a Catholic mission, but it was Bishop Augustin Blanchet who established a short-lived Catholic mission—Mission St. Anne. All changed with the Whitmans' deaths in a massacre on November 29, 1847, which would spell the beginning of an era of hostilities often called the Cayuse War, and later the Yakima Wars. Fort Nez Perce itself would be burned during the wars, and in 1854 Walla Walla warrior Chief Peo-Peo Mox-Mox was killed near the Fort. Yakama/Palouse Chief Kamiakin spent time at the Fort, and later Chief Joseph, leader of the last war of the Nez Perce, was held in captivity at the rebuilt fort. Smohalla, spiritual shaman and guide to the Wanapums, left his village in the Wallula area and settled with the Wanapums near Priest Rapids. Smohalla became known as leader of the Prophet Dance movement in the 1870s.

In May 1855, the chiefs of the Cayuse, Walla Walla, Umatilla, Nez Perce and Yakama agreed to meet with Isaac Stevens, new governor of the Washington territories, to end a period of hostilities. The meeting ground was in the Walla Walla Valley near Waiilatpu; while Governor Stevens and the army stayed at Fort Walla Walla at Wallula.

D. Recent Settlement and Economic Development Period

In 1860, the discovery of gold near Fort Colville in Washington as well as Idaho and Canada, boosted commercial interest in the area, and the need for shipment of supplies and goods began in earnest and heralded the beginnings of permanent development in the region. The first river steamer ship to make it up the Columbia to Wallula was the Colonel Wright, which established a schedule between The Dalles and Wallula of three times per week. By 1862, a full-scale gold rush in Idaho and Montana was in progress. Steamboats on the Columbia based out of Wallula played a major role in transporting miners and their supplies. As boat and commercial traffic increased, the towns of Umatilla and Wallula sprung up and became important transportation centers. Later, the Baker railroad would be the first in the State, serving the towns of Wallula to Walla Walla. Wallula would become the site where the last section of the transcontinental railroad would be completed. Luminaries visiting Wallula, and sometimes spending the night in the Wallula Hotel, included Presidents Rutherford B. Hayes and James Garfield, General William T. Sherman, and Secretary of State William M. Evarts. Well known authors Bill Nye and James Whitcomb Riley also visited and life in Wallula was even the subject of a chapter entitled “A Wallula Night” in one of Nye’s books.

Around 1870, stockmen began moving into the area to utilize the range country of the plateau. Through the 1880s, farmers discovered that wheat could be grown, and a new wave of settlement resulted. As railroads and highways developed further, however, Umatilla and Wallula were replaced as transportation centers and eventually became small towns. Wallula was eventually inundated by Lake Wallula with the completion of the McNary Dam in 1954.

6.3 Social/Economic Environment

A. Population, Housing, and Income

Table 6-3 shows the populations of each of the relevant counties, growth rates, and other social statistics collected by the U.S. Census. Some of the more striking differences in these counties, compared with the states as a whole, are highlighted.

McNary: The Refuge is mainly situated in Walla Walla County of Washington State, though parts of the Refuge (Strawberry Islands) extend into Franklin County and part of the Stateline Unit and all of the Juniper Canyon Unit are located in Umatilla County, Oregon. The nearest communities include Burbank, Pasco, Kennewick, and Richland (Tri-Cities), and the towns of Umatilla and Hermiston in Oregon. The Refuge is adjacent to the town of Burbank and across the river from Pasco and the outlying areas of Kennewick (see Map 1 in Chapter 1).

The population is growing rapidly in Benton County (above state average), but more slowly than the State overall in Walla Walla County. Because of the proximity of the Refuge to population centers in Benton County, the Refuge can expect greater pressure for recreational access. Population composition shows American Indian/Alaska Native persons at about 2.5 times the State level in Umatilla County, while Walla Walla and Umatilla Counties have populations of Hispanic or Latino origin at about double State averages. In both counties, the level of educational attainment is a bit lower than the State average. Walla Walla County has significantly more households in poverty than the State average and mean housing value in both counties is significantly lower than State averages.

Umatilla: The Umatilla Refuge is situated within Morrow County, Oregon and Benton County, Washington. The nearest communities in Oregon are Boardman and Irrigon, and the nearest communities in Washington are the towns of Paterson and Plymouth. The Refuge is approximately 20 miles west of Hermiston, Oregon, and 45 miles south from the Tri-cities area, Washington.

Populations have been growing rapidly and growth rates are well above the State average in Morrow County. The local population is more racially diverse than that of Oregon as a whole: Morrow County shows persons reporting categories other than Caucasian at nearly five times the State level in Oregon, and Benton County at twice the State level in Washington. Persons of Hispanic or Latino origin total almost a quarter of the population in Morrow County, and nearly a quarter of Morrow County households also have a language other than English spoken at home. The Refuge should take this into account in outreach and communication materials. Morrow County also shows much lower educational achievements than the State average or other nearby counties, both in terms of high school graduation rates and percent of the population holding bachelor degrees. Finally, the county has a poverty rate over 14%, nearly three percentage points higher than the Oregon State average, and median housing values are only about half the State average.

Table 6-3. Selected Population and associated Social Statistics, Local Counties

Population Parameter	Walla Walla County	Benton County	Washington	Umatilla County	Morrow County	Oregon
Population, 2004 estimate	57,354	155,991	6,203,788	73,436	11,681	3,594,586
Population, percent change, April 1, 2000 to July 1, 2004	3.9%	9.5%	5.3%	4.1%	6.2%	5.1%
Population, 2000	55,180	142,475	5,894,121	70,548	10,995	3,421,399
Population, percent change, 1990 to 2000	13.9%	26.6%	21.1%	19.1%	44.2%	20.4%
Persons under 18 years old, percent, 2000	24.6%	29.7%	25.7%	27.8%	30.8%	24.7%
Persons 65 years old and over, percent, 2000	14.8%	10.3%	11.2%	12.3%	10.6%	12.8%
White persons, percent, 2000	85.3%	86.2%	81.8%	82.0%	76.3%	86.6%
Black or African American persons, percent, 2000	1.7%	0.9%	3.2%	0.8%	0.1%	1.6%
American Indian and Alaska Native persons, percent, 2000	0.8%	0.8%	1.6%	3.4%	1.4%	1.3%
Asian persons, percent, 2000	1.1%	2.2%	5.5%	0.8%	0.4%	3.0%
Native Hawaiian and Other Pacific Islander, percent, 2000	0.2%	0.1%	0.4%	0.2%	0.1%	0.2%
Persons reporting some other race, percent, 2000	8.2%	7.0%	3.9%	10.7%	19.5%	4.2%
Persons reporting two or more races, percent, 2000	2.6%	2.7%	3.6%	2.2%	2.1%	3.1%

Population Parameter	Walla Walla County	Benton County	Washington	Umatilla County	Morrow County	Oregon
White persons, not of Hispanic/Latino origin, percent, 2000	78.8%	81.7%	78.9%	77.5%	72.0%	83.5%
Persons of Hispanic or Latino origin, percent, 2000	15.7%	12.5%	7.5%	16.1%	24.4%	8.0%
Living in same house in 1995 and 2000, percent age 5+, 2000	51.1%	51.2%	48.6%	50.9%	46.5%	46.8%
Foreign born persons, percent, 2000	9.4%	8.5%	10.4%	8.4%	14.5%	8.5%
Language other than English spoken at home, percent age 5+, 2000	16.2%	14.2%	14.0%	16.2%	23.3%	12.1%
High school graduates, percent of persons age 25+, 2000	81.1%	85.1%	87.1%	77.8%	74.1%	85.1%
Bachelor's degree or higher, percent of persons age 25+, 2000	23.3%	26.3%	27.7%	16.0%	11.0%	25.1%
Homeownership rate, 2000	65.2%	68.7%	64.6%	64.9%	73.1%	64.3%
Housing units in multi-unit structures, percent, 2000	20.0%	22.6%	25.6%	17.0%	9.4%	23.1%
Median value of owner-occupied housing units, 2000	\$114,300	\$119,900	\$168,300	\$98,100	\$89,000	\$152,100
Households, 2000	19,647	52,866	2,271,398	25,195	3,776	1,333,723
Persons per household, 2000	2.54	2.68	2.53	2.67	2.90	2.51
Median household income 1999	\$35,900	\$47,044	\$45,776	\$36,249	\$37,521	\$40,916
Per capita money income 1999	\$16,509	\$21,301	\$22,973	\$16,410	\$15,802	\$20,940
Persons below poverty, percent, 1999	15.1%	10.3%	10.6%	12.7%	14.8%	11.6%

Source: U.S. Census Bureau, State and County QuickFacts. Data derived from Population Estimates, 2000 Census of Population and Housing, 1990 Census of Population and Housing <http://quickfacts.census.gov/>.

B. Employment and Business

Table 6-4 displays some pertinent business statistics for the local counties. Benton and Walla Walla Counties have the largest economies in the area. Morrow County is notable for its small economy and the fact that retail sales per capita are only about half that for the other counties and less than half of the average for the State of Oregon.

Table 6-4. Business Statistics, Local Counties

Business QuickFacts	Walla Walla County	Benton County	Washington	Umatilla County	Morrow County	Oregon
Private nonfarm establishments with paid employees, 2001	1,278	3,325	164,072	1,608	153	101,003
Private nonfarm employment, 2001	17,220	49,545	2,294,285	20,571	1,630	1,364,924
Private nonfarm employment, percent change 2000-2001	2.2%	-2.0%	1.2%	3.1%	-1.8%	0.7%
Nonemployer establishments, 2000	2,386	5,974	326,397	3,229	417	212,165
Manufacturers shipments, 1997 (\$1000)	544,683	885,455	78,852,486	790,586	183,396	47,665,990
Retail sales, 1997 (\$1000)	376,404	1,208,780	52,472,866	567,167	38,826	33,396,849
Retail sales per capita, 1997	\$7,020	\$8,940	\$9,363	\$8,808	\$4,060	\$10,297
Minority-owned firms, percent of total, 1997	3.5%	7.2%	9.6%	3.9%	F	6.2%
Women-owned firms, percent of total, 1997	23.0%	31.1%	27.5%	26.8%	20.7%	27.6%
Housing units authorized by building permits, 2002	192	1,441	40,200	325	X	22,186 ¹
Federal funds and grants, 2002 (\$1000)	332,486	2,822,557	40,217,592	497,847	76,649	19,839,214

Source: U.S. Census Bureau, State and County QuickFacts. Data derived from Small Area Income and Poverty Estimates, County Business Patterns, 1997 Economic Census, Minority- and Women-Owned Business, Building Permits, Consolidated Federal Funds Report, and 1997 Census of Governments <http://quickfacts.census.gov/>.

C. Refuge Impact on Local Economies

In 1997, and again in 2002, a study was completed on about two dozen refuges nationally to estimate the economic effect refuges have on local economies. In both reports, Umatilla National Wildlife Refuge was featured. Data from the reports showed a significant level of expenditures within Morrow, Benton, and Franklin counties, stemming from recreational visits to the Refuge. The following table summarizes the level of expenditures made within these counties to support recreational visits to the Refuge. Total expenditures were \$3.2 million, with nonresidents accounting for almost 66% of this expenditure. Expenditures on fishing accounted for 23 percent of the total, hunting 46 percent, and non-consumptive uses 37 percent.

Table 6-5. Umatilla Refuge Visitor Recreation-related Expenditures (2002)

Activity	Resident	Non-Resident	Total
Non-consumptive	\$430.10	\$746.90	\$1,177.00
Hunting			
Big game	\$0.00	\$0.60	\$0.60
Small game	\$28.90	\$57.90	\$86.80
Migratory bird	\$85.80	\$1,089.50	\$1,175.30
Total hunting	\$114.70	\$1,148.00	\$1,262.70
Fishing	\$384.10	\$351.30	\$735.40
Total	\$928.90	\$2,246.20	\$3,175.10

Source: Laughland and Caudill (2002). All figures in thousands

Spending generates jobs and multiplier effects in the economy. The total monetary effect of economic activity generated in the three counties by Refuge visitors spending, totaled \$853,700. This final demand generated 48 jobs, with a total employment income of \$838,400. Based on the 2002 Refuge budget, the planning team estimated the ratio of economic effects per dollar of Refuge expenditure to be 2.5. This means that for every one dollar of budget expenditures, approximately \$2.50 of total economic effects is generated.

Table 6-6. Umatilla Refuge Economic Effects Associated with Refuge Visitation

Economic Effect	Nonresidents	Total
Final Demand	\$1,433,900	\$2,116,900
Jobs	31	48
Job Income	\$570,300	\$838,400

Source: Laughland and Caudill (2002).

Although “hard” data like the above is lacking, it is likely that because of its higher overall visitation, the economic effect of McNary Refuge on its local counties is equal to or above the effect from Umatilla. On the other hand, more visitors are local residents, who do not spend as much as non-residents when visiting the Refuges.

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Chapter 7. Environmental Effects

This chapter provides an analysis of the environmental consequences of implementing the alternatives described in Chapter 2. Impacts are described for the main aspects of the environments described in Chapters 3 through 6, including physical, biological, cultural, and socio-economic resources. The alternatives are compared “side by side” under each topic, to facilitate comparison. Both adverse and beneficial effects of implementing each alternative are described. The cumulative effects on the environment from implementing the various alternatives are presented in Section 7.7.

7.1 Summary of Effects

Table 7.1 provides an overview of the effects under each alternative by indicator. Effects are described in terms of the change from current conditions. Thus, Alternative 4, the no-action alternative (current management) has a neutral effect because no changes to management programs would occur under this alternative.

Although the analysis shows that none of the alternatives would be expected to result in significant effects, some positive (beneficial) or negative effects are expected. The terms intermediate, minor, and slight, are used to describe the magnitude of the effect. To interpret these terms, intermediate is a higher magnitude than minor, which is of a higher magnitude than slight. The word neutral is used to describe a negligible or unnoticeable effect compared to the current situation. For more detail, please refer to the remainder of Chapter 7.

Table 7.1 Summary of Effects under CCP Alternatives

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
EFFECTS TO WILDLIFE AND HABITATS				
Effects to Waterfowl	Intermediate positive effects from wetland improvements, increase in moist soil acreage, additional acreage planted to corn and other crops, and staggering of post-hunting crop knockdown.	Minor positive effects from wetland habitat improvements, moist soil acreage increase, and staggering of post-hunting crop knockdown.	Overall, minor negative effect stemming from combination of: loss of crop acreage, decrease in moist soil area, lack of actions to maintain open water in wetland areas, and lack of late or early season knockdown.	Neutral effect – same habitat actions as at present.
Effects to Shorebirds	Neutral effect – same habitat management as at present.	Minor positive effects from seasonal addition of habitat along river, seasonal fall flooding of some moist soil areas, and management of existing habitats to prevent vegetation encroachment, uplands habitat improvements for curlews, and	Slight positive effect from upland habitat improvements for curlews, and additional sanctuary at McCormack Slough.	Neutral effect – same habitat management as at present.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
		additional sanctuary at McCormack Slough.		
Effects to Threatened and Endangered Species	Neutral effect	Minor positive effect to bald eagles from improvements in riparian habitat and increase in cottonwood recruitment. Minor positive effect to salmonids through study and potential implementation of rearing habitat improvements.	Slight positive effect to bald eagles from improvements in riparian habitat and increase in cottonwood recruitment. Minor positive effect to salmonids through study and potential implementation of rearing habitat improvements.	Neutral effect – same habitat management as at present.
Effects to Wetland Habitats and Associated Wildlife	Intermediate positive effect stemming from habitat improvements. Public use disturbance would remain about the same as at present.	Overall neutral effect due to minor positive effects from habitat improvements but minor negative effects from new public use facilities that may increase disturbance.	Overall slight negative effect due to slight habitat improvement but minor negative effects from new public use facilities that may increase disturbance.	Neutral-slight positive effect as habitat improvement would proceed at about the same rate as at present and public use disturbance would remain about the same as at present.
Effects to Riparian Habitats and Associated Wildlife	Neutral effect – approximately same amount of habitat work as at present and about same level of public use disturbance as at present.	Minor positive effect stemming from habitat improvements. Public use disturbance would increase in some areas but these negative effects will be localized and limited to trails and thus are considered largely negligible.	Neutral-slight negative effect overall stemming from minimal habitat improvement work done and increase in disturbance effects in some areas (these disturbance effects will be localized and limited to trails and thus are considered largely negligible).	Neutral effect – approximately same amount of habitat work as at present and about same level of public use disturbance as at present.
Effects to River Islands and Associated Wildlife	Neutral effect – approximately same amount of disturbance as at present.	Intermediate positive effect – all islands closed to beach use and buffer enforced, reducing disturbance to island wildlife; a no-wake zone within 100 feet of islands and some restrictions on fishing tournament access near islands will reduce disturbance to island wildlife.	Intermediate positive effect – all islands closed to beach use and buffer enforced, reducing disturbance to wildlife; a no-wake zone within 100 feet of islands and some restrictions on fishing tournament access near islands will reduce wildlife disturbance.	Neutral effect – approximately same amount of disturbance as at present.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Effects to Shrub-Steppe Habitats and Associated Wildlife	Mostly neutral effect- approximately same amount of habitat improvement work as at present. Public uses mostly similar to present thus neutral effect from these.	Minor positive effect from habitat improvements, restoration of degraded habitats, and bitterbrush plantings. Public use disturbance would increase in some areas but these negative effects will be localized and limited to trails and thus are considered largely negligible.	Intermediate positive effects from habitat improvements, restoration of degraded habitats, and bitterbrush plantings. Public use disturbance would increase in some areas but these negative effects will be localized and limited to trails, thus are considered largely negligible.	Neutral effect – same amount of habitat improvement work as at present. Generally about the same level of public use disturbance as at present.
Effects to Talus, Outcrop, and Cliff Habitats and Associated Wildlife	Slight positive effect. Additional inventory and law enforcement would further protection efforts.	Slight positive effect. Additional inventory and law enforcement would further protection efforts.	Minor positive effect. Additional inventory, law enforcement, and corridor protection plan would further protection efforts.	Neutral effect.
PHYSICAL ENVIRONMENT EFFECTS				
Effects to Hydrology	Slight increase in water demand from more acres of croplands requiring irrigation.	Neutral effect	Slight decrease in water demand from fewer acres croplands requiring irrigation.	Neutral effect
Effects to Water Quality	Intermediate negative effects from herbicide or pesticide use on croplands, restored uplands, riparian, and aquatic areas.	Minor negative effects from herbicide or pesticide use on croplands, restored uplands, riparian, and aquatic areas.	Minor negative effects from herbicide or pesticide use on croplands, restored uplands, riparian, and aquatic areas.	Neutral effect
Effects to Air Quality	Slight negative impact stemming from gains in wildlife control efforts, offset by additional wind erosion of disked lands.	Slight positive impact stemming from gains in wildlife control efforts.	Slight positive impact stemming from gains in wildlife control efforts and diminished acres of croplands subject to wind erosion.	Neutral effect
Effects to Visual Quality	Neutral effect	Very slight negative impact from additional facilities.	Very slight negative impact from additional facilities.	Neutral effect

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
SOCIAL EFFECTS				
Overall visitation	Minor rise due to demographic trends, rising demand for outdoor recreation, and some Refuge actions to improve facilities and programs.	Intermediate rise due to demographic trends, rising demand for outdoor recreation, and Refuge actions to improve facilities and programs.	Intermediate rise due to demographic trends, rising demand for outdoor recreation, and Refuge actions to improve facilities and programs.	Minor rise due to demographic trends and rising demand for outdoor recreation.
Opportunities for Quality Wildlife Observation and Photography	Neutral to slightly negative effect because more visitors would arrive at the Refuges but the number of facilities available to accommodate them would remain approximately the same.	Minor positive effect because facility enhancements and habitat management actions would increase opportunities to see wildlife.	Minor positive effect because facility improvements and habitat management actions would increase opportunities to see wildlife.	Neutral to slightly negative effect because more visitors would arrive at the Refuges but the number of facilities available to accommodate them would remain approximately the same.
Opportunities for Quality Hunting	Neutral to minor positive overall effect stemming from: slight increase in acres available for hunting; several positive measures enhancing food availability and quality for waterfowl and gamebirds; other actions to reduce crowding and increase quality of hunt; phaseout of pheasant augmentation.	Neutral to slight positive effect overall stemming from approximately equal area available for hunting; slight increase in the area managed for waterfowl food; gain in area restored to shrub-steppe; other management actions to increase quality of gamebird hunt; and phaseout of pheasant augmentation.	Minor negative effect overall due to slight loss in acres available for hunting, loss in area available for waterfowl food, and lack of other management actions to increase quality of hunt; and phaseout of pheasant augmentation.	Neutral effect due to hunting acres and habitat management remaining the same as present.
Opportunities for Quality Fishing	Minor positive effect because of facility improvements and emphasis on education and orientation for	Minor positive effect because of facility improvements and emphasis on education and orientation for fishing visitors and because improved water	Mostly neutral effect because of lack of actions to improve facilities or improve wetland habitats. Some temporary loss of shoreline fishing	Neutral effect because of lack of actions to improve facilities or improve wetland habitats.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	fishing visitors and because improved water quality in Refuge ponds and sloughs through carp eradication efforts and vegetation management.	quality in Refuge ponds and sloughs through carp eradication efforts and vegetation management.	access areas could occur for habitat improvement projects.	
Opportunities for Quality Environmental Education	Slight positive effect because of staffing strategies that could result in enhanced volunteer support for the program.	Minor positive effect because of staffing strategies, trail improvements, and interpretation improvements that could enhance the program.	Minor positive effect because of trail improvements, and interpretation improvements that could enhance the program.	Neutral effect
Opportunities for Quality Interpretation	Minor beneficial effects due to inclusion of a consolidated McCormack facility and the kiosks at major fishing sites.	Intermediate beneficial effects due to additional interpretive pull-outs and signs along Highway 14, additional interpretive areas along trails at McNary and Wallula Units, by establishing an interpretive station at a consolidated visitor contact facility at McCormack Unit, and by providing kiosks at fishing sites.	Slight beneficial effect due to additional interpretive materials at McNary Headquarters Unit.	Neutral effect - no changes to interpretive facilities.
OTHER EFFECTS				
Effects to Cultural and Historic Resources	Intermediate potential for negative effects from wetland restoration work, upland restoration and disking associated with crops and moist soil management. Minor positive effects from various proactive measures taken for protection and management of cultural resources.	Minor potential for negative effects from: wetland restoration work; upland restoration disking associated with crops and moist soil management; construction of owl burrows; and increased trails and public facilities. Minor positive effects from various proactive measures taken for protection and management of cultural resources including closure of beach use.	Minor potential for negative effects from upland restoration and disking associated with croplands and moist soil work, and from increased trails and public facilities. Minor positive effects from various proactive measures taken for protection and management of cultural resources including closure of beach use.	Neutral effect

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Amount of Illegal Use	Minor-intermediate positive effects due to actions to deter illegal uses.	Minor-intermediate positive effects due to actions to counter illegal uses.	Minor - intermediate positive effects due to actions to counter illegal uses.	Neutral effect
Effects to Environmental Justice	Neutral to slightly positive effects on human health, and the social environment.	Neutral to slightly positive effects on human health, and the social environment.	Neutral to slightly positive effects on human health, and the social environment.	Neutral to slightly positive effects on human health, and the social environment.
Economic Effects	Minor-intermediate positive effect due to increased operational and visitor expenditures.	Intermediate positive effect due to increased operational and visitor expenditures.	Minor positive effect due to increased operational and visitor expenditures.	Neutral effect.
Cumulative Effects	Improvement of the capability of the Refuges to provide wintering food for waterfowl, with less emphasis on habitat improvements for other native species. However, actions will not reverse or halt the regional trend towards reduced biological integrity within the Columbia Basin.	Active improvement of shrub-steppe, riparian, and wetland habitats would increase or maintain the value of Refuge habitats for a wide variety of native fish and wildlife. However, actions will not reverse or halt the trend towards reduced biological integrity within the Columbia Basin. Biological diversity would probably remain about the same. Invasive species could become more prevalent on surrounding lands but on the Refuges, active efforts would be made to reduce their populations. The Service would improve the availability and quality of wildlife-dependent recreation, but regionally there would be little cumulative difference in recreational opportunity.	Active improvement of shrub-steppe, riparian, and wetland habitats, would increase or maintain the value of Refuge lands and waters for a wide variety of native fish and wildlife. However, actions will not reverse or halt the regional trend towards reduced biological integrity within the Columbia Basin. The Service would improve the availability and quality of wildlife-dependent recreation, especially under Alternatives 2 and 3, but within a regional context, there would be little cumulative difference in recreational opportunity.	Some improvement of shrub-steppe, riparian, and wetland habitats, would increase or maintain the value of Refuge lands and waters for a wide variety of native fish and wildlife. Invasive species could become more prevalent on surrounding lands and on the Refuges themselves.

7.2 Effects to Species and Habitats

Adverse effects to fish and wildlife species and habitats are considered significant if:

- An action would result in a substantial change in the amount or quality of available habitat for a wildlife species. (For wintering waterfowl, other migratory birds, or native resident wildlife, a substantial reduction in habitat resulting in a significant adverse impact would be defined as a reduction of 30 percent or more of the available acreage or 50 percent of the quality of habitat for these species within the Refuge; a significant beneficial impact would be defined as a 30 percent or greater increase in the quantity or 50 percent increase in the quality of habitat for wintering waterfowl, other migratory birds, or native resident wildlife).
- An action would substantially change the availability of habitat for interjurisdictional fish.
- An action would result in a substantial adverse effect; either directly or through habitat modifications, on any Federal threatened, endangered, candidate, or special concern wildlife or fish species. Also included would be species listed threatened or endangered by either Oregon's or Washington's Department of Fish and Wildlife.
- A substantial portion of native habitat would be removed or otherwise modified as to accommodate a proposed action.

A. Effects to Waterfowl

Alternative 1: Management to benefit waterfowl would be emphasized and maximized under Alternative 1. Management to open persistent emergent vegetation-choked areas to make them more accessible to waterfowl and encourage the growth of early successional wetland plants would be conducted on nearly 100 wetland acres per year or a total of 1,438 acres under Alternative 1. Carp management would be conducted on 4 wetland units on both Refuges under Alternative 1, to improve the quality of aquatic bed habitats resulting in increased plant and invertebrate forage available to waterfowl. Also under Alternative 1, undesirable invasive species in the wetland emergent zone would be reduced to an average maximum cover of 20% for all wetlands.

Though natural foods provide more balanced nutrition for waterfowl, agricultural crops can provide an easily accessible short-term source of high energy foods (Baldassare and Bolen 1994). The 2,100 acres of cooperatively farmed cropland supporting corn, wheat, and alfalfa on McNary and Umatilla Refuges provide forage for thousands of waterfowl annually, particularly Canada, Snow, and White-fronted geese, mallard, American widgeon, and Northern pintail. Crop acreage under Alternative 1 would be increased to 2,400 acres by replanting 300 acres of currently inactive croplands (25% of the total crop acreage would be available for wintering birds and 75% would be harvested by the cooperating farmer). Increased crop production might help compensate to a small degree, but would not replace, the decline in corn production that has occurred in Umatilla and Morrow Counties, Oregon since the mid-1980's (Figure 4.7). A minimum of 400 to a maximum of 580 acres would be planted to corn and reserved for the birds, and a minimum of 1,000 acres would be planted to green feed (e.g., alfalfa or winter wheat).

Further, Alternative 1 provides for post-hunting season knockdown of crops on 460 acres to extend the period of food availability into early March to benefit early spring migrants such as white-fronted

geese. Alternative 1 proposes increasing current moist soil acreage by 40 acres which would provide an additional source of more natural foods for waterfowl. Additionally, flooding 30 acres of existing moist soil wetlands prior to September 15 would increase the availability of natural foods for early fall migrants, under Alternative 1. All of these activities combined under Alternative 1, if carried out would create better habitat for waterfowl, thereby, possibly increasing the number of waterfowl on both Refuges during migration and winter. All of the habitat improvement activities described above if Alternative 1 is implemented would be beneficial to migrating and wintering waterfowl, however, the overall impact would not be significant.

Alternative 1 also provides for additional waterfowl hunting opportunities by opening a small section of Columbia River shoreline in the northwest part of the McCormack Unit on Umatilla Refuge. This new area would add about four new blinds. This action would result in increased hunter opportunity and perhaps increased waterfowl harvest overall, on the McCormack Unit; however, since the number of blinds is small and are they only available three days per week, the potential increased harvest would not be considered to be significant. No additional areas would be opened to hunting on McNary Refuge.

Alternative 2, which emphasizes all migratory birds, proposes to improve 1,000 acres (67 acres annually) of wetlands over the life of the plan. Carp management would be conducted on 250 acres. Further, under alternative 2, cover of undesirable invasive plants would be reduced to an average of 20% for all emergent wetlands over the life of the CCP.

Alternative 2, which places slightly less emphasis on providing foods for waterfowl than Alternative 1, would maintain cropland at the current level of 2,100 acres with 400 acres to 580 acres of corn reserved for the birds and at least 1,000 acres of green feed available each year. As in Alternative 1, post hunting season knockdown of crops on 460 acres for the benefit of late winter and early spring migrants, would be provided for under Alternative 2. An additional 10 acres of moist soil wetlands would be developed under Alternative 2. Early flooding by September 15 on 30 acres of moist soil wetlands would also be conducted under Alternative 2.

Alternative 2 also proposes opening additional hunting on the McCormack Unit as in Alternative 1 above. However, the East McCormack Slough would be closed to hunting, providing high quality sanctuary habitat for waterfowl, and perhaps offsetting any additional harvest from the new blinds. Overall, the implementation of Alternative 2 would have beneficial effects for waterfowl, however, these effects would not be expected to be significant.

Alternative 3, which emphasizes native biodiversity and historic conditions, provides for no improvement of emergent wetland habitat other than a reduction in undesirable invasive plant cover to an average maximum cover of 20%. Moreover, cropland would be reduced to a maximum of 1,850 acres under Alternative 3, however, this reduction is less than 30% of the total crop acreage, and therefore, not significant. Current inactive cropland and even some active cropland would be restored to shrub-steppe or short grass habitat for curlews. Moist soil acreage would be decreased by five acres under this alternative. Also, there would be early spring knockdown of crops and no early fall flood-up of wetlands under alternative 3.

No additional waterfowl hunting areas would be opened under Alternative 3. Additional sanctuary would be added under this alternative by closing the East McCormack Slough to hunting, likely

resulting in fewer harvested birds. Overall implementation of Alternative 3 would result in negative effects to waterfowl; however, these effects would not be expected to be significant.

Alternative 4 proposes the improvement of 500 acres of wetland habitat by opening up densely vegetated areas. No provision for reduction of invasive plant cover, however, is included in this alternative. Alternative 4 would maintain cropland at the current 2,100 acres with a minimum of 480 acres to a maximum of 580 acres in corn and at least 1,000 acres in green feed. There would be no extended post-hunting season knockdown of crops. Further, under Alternative 4, there would be no additional moist soil wetland acreage developed and no early season flood up of existing wetlands.

None of the 4 alternatives will cause any significant adverse effects to waterfowl. In fact, Alternatives 1 and 2 will have beneficial effects for waterfowl, though not considered significant under our threshold definitions.

B. Effects to Shorebirds

Alternative 2 provides the most benefits to shorebirds and shorebird habitat on the Refuges. Shorebird foraging habitat on the Walla Walla River Delta could increase by approximately 20 acres at times, during peak migration periods in fall and spring, under Alternative 2. This would be accomplished by working with the Corps to establish a soft restraint, to lower the McNary pool to 336-337 feet. Lowering the pool would not occur every day, but perhaps several days per week. Also, under Alternative 2, encroachment by wetland vegetation, both native and nonnative, would be managed to prevent the reduction of mudflats available to shorebirds. With more mudflats available for foraging, the annual shorebird numbers, currently 9,000 to over 10,000 birds, could potentially be increased. Alternative 2 also proposes additional shorebird foraging habitat by flooding 10 acres of moist soil wetlands annually, during August and September, at either the Wallula or McCormack Unit. None of these activities would be carried out under the other three alternatives.

Under Alternatives 2, current curlew breeding habitat would be increased by planting inactive cropland to short grasses, as well as converting some existing cropland to short grass habitat resulting in a net increase of acres.

Closing waterfowl hunting at east McCormack Slough under Alternatives 2 and 3 could benefit late migrating and wintering shorebirds by providing forage and resting habitat. Though potentially beneficial, the overall habitat increase for shorebirds would not be considered significant. Some minor disturbance could still occur on East McCormack Slough in the vicinity of the auto tour route and Heritage Trail as they pass near the slough.

Alternative 3: Alternative 3 includes the measure described under Alternative 2 to plant inactive cropland to short grasses. Under Alternative 3, additional breeding habitat for curlew would also be created by converting existing cropland (Field 5 on Umatilla's McCormack Unit) to short grass habitat. The Refuges would continue to monitor curlew populations by conducting annual spring breeding surveys.

Habitat improvements enacted under Alternatives 2 and 3 would provide beneficial effects to shorebirds, however, the effects would not be considered significant.

Alternatives 1 and 4: Under Alternatives 1 and 4, management efforts would be directed towards maintaining existing curlew habitat with little to no effort put into expanding habitat. The Refuges would continue to monitor curlew populations by conducting annual spring breeding surveys.

C. Effects to Threatened and Endangered Species

Bald Eagle: The McNary and Umatilla Refuges riparian habitats can host as many as 60 bald eagles from fall through early spring. Alternative 2 would potentially provide the most benefits for bald eagles by improving 926 acres of existing riparian habitat, and particularly by providing for 75 acres of cottonwood recruitment and enhancement over the life of the plan. Alternatives 3 and 4 would provide minimal benefits, while Alternative 1 provides no additional habitat benefits. Alternatives 2 and 3 propose closing the East McCormack Slough to waterfowl hunting. This would likely provide more foraging opportunities for eagles due to increased waterfowl present and less disturbance to the eagles themselves. Some of the reduced disturbance to eagles and wetland wildlife may be offset by changes to the auto tour route under Alternative 2; and proposed changes to the Heritage Trail under Alternatives 2 and 3. Overall, Alternative 2 appears to be the best alternative with respect to bald eagles. Any of the beneficial habitat improvements under Alternatives 2, 3, and 4, would not represent significant effects to bald eagles. None of the alternatives would have any significant adverse impacts to bald eagles.

Salmonids: Seven stocks of anadromous salmonids migrate through McNary and Umatilla Refuges via the Columbia, Snake, and Walla Walla Rivers. Backwater areas along the Columbia River such as Casey Pond and Paterson Slough are known to be used by some of these fish, particularly juveniles, in early spring for feeding (Easterbrooks 2000). Under Alternatives 2 and 3, other backwater areas on both Refuges could potentially be enhanced for juvenile salmonid rearing habitat, by breaching dikes and/or removing dense persistent emergent vegetation to provide more access for juvenile salmonids. The feasibility of this and any potential negative consequences, such as the potential for increased predation, would be assessed under Alternatives 2 and 3. If pre-project assessment proves positive, then funding will be pursued to implement projects. The effects to salmonids should be beneficial, but are not considered to be significant. None of the other alternatives call for enhancement of potential salmon habitat.

D. Effects to Wetland Habitats and Associated Wildlife

Alternative 1 (Habitat actions): Management activities proposed under Alternative 1 would provide the greatest benefit for wetlands and wetland-dependent wildlife. Alternative 1 provides for opening up and improving 1,438 acres (approximately 100 acres per year) of bulrush and cattail-choked marsh, providing more open water and a higher diversity of wetland vegetation. Carp management on four wetlands or wetlands units under Alternative 1, would further improve wetlands habitat for the benefit of waterbirds and other aquatic species. Also under Alternative 1, undesirable invasive species in the wetland emergent zone would be reduced to a maximum of 20% average cover for all wetlands.

Alternative 2 (Habitat actions): This alternative proposes to improve 1,000 acres (67 acres annually) of wetlands over the life of the CCP. Carp management would be conducted on 2 individual wetlands or wetland units. Further, under Alternative 2, cover of undesirable invasive plants would be reduced to an average of 20% for all emergent wetlands over the life of the CCP. Effects to wetland

habitats and associated wildlife would be beneficial under both Alternative 1 and 2, but not considered to be significant since the acreage to be improved represents less than 50% of the total wetlands available.

Alternative 3, which emphasizes native biodiversity and historic conditions, does not propose improvement of emergent wetland habitat other than a reduction in undesirable invasive plant cover to an average maximum cover of 20%. Alternative 4 proposes improvement of 500 acres of emergent wetland habitat over the life of the CCP. No provision for reduction of invasive plant cover is included in Alternative 4.

Effects from Public Use: Direct effects to wetland habitat from public use are hard to measure and would likely be minimal. Human disturbance to wetland wildlife is probably more of an issue of concern. Besides the obvious direct impact to game species through shooting, waterfowl hunters traveling to and from blinds in fee hunt areas, and moving through free roam areas, could disturb wintering birds of various species and other wildlife by interrupting foraging or forcing animals out of resting habitat or thermal cover causing an unnecessary expenditure of energy and possibly subjecting them to increased risk of predation or winter weather-related stresses. These disturbances will be quite difficult to measure, and are likely not significant, as waterfowl hunters typically will follow an established trail to get to a blind. Further, waterfowl hunting on many Refuge units is allowed only three days per week. Alternative 1 proposes opening a new area for waterfowl hunting on the Columbia River in the northwest part of McCormack Slough. Although new disturbance would be created around the new blinds on the river, it would likely not be significant. Alternative 2 proposes closing the East McCormack Slough portion of the fee hunt area on Umatilla Refuge, in exchange for a similar number of blinds on the Columbia River in the northwest portion of the McCormack Unit. This would likely result in a net reduction in disturbance to wetland wildlife in general, as East McCormack Slough probably offers better wetland habitat. Alternative 3 would close East McCormack Slough to hunting without opening any new areas, resulting in more undisturbed wetland habitat available during the hunting season for waterfowl and other waterbirds. Under Alternative 4, there would be no change in areas currently open to hunting.

Alternatives 1, 2, and 3 propose a different alignment for a portion of the Heritage Trail. Regardless of which alignment is selected, hikers using the trail will traverse a variety of habitats, including shrub-steppe, riparian, and wetlands. Hikers traveling near wetland areas in winter could disturb waterfowl and other waterbirds, including bald eagles, which could be critical in the winter as explained in the preceding paragraph. As long as hikers stay on the trail, this disturbance should be minimal and overall disturbance should not be significant.

Alternatives 2 and 3 propose establishing a birding trail at Wallula around South Wetland 3. This area is currently open year round. Uses include hunting when the season is open, fishing access, and bird watching. Once the hunting season has concluded, public use likely drops off significantly. Creating a designated, signed trail would likely create more awareness and use of the area at other times, especially in the spring, potentially resulting in more wildlife disturbance. The magnitude of this disturbance is difficult to quantify, however, is not expected to be significant.

Alternatives 2 and 3 propose expanding the existing McNary Headquarters nature trail to loop back to the education center as well as other trail modifications. This area is closed to hunting and therefore,

waterfowl and other waterbirds pack into this wetland unit by the thousands during winter. Wildlife disturbance could be increased by the addition of a loop around this wetland, but would likely not be significant if trail users stay on the trail and/or designated viewing areas.

E. Effects to Riparian Habitats and Associated Wildlife

Alternative 2 (Habitat actions): Alternative 2, which emphasizes management for migratory birds, provides for more riparian habitat improvement than any of the other three alternatives. Sixty-two acres per year of priority riparian habitat would be improved for a total of 924 acres (30% of total priority habitat) improved over the life of the CCP. This improvement would involve control of invasives and planting of native species and would be measured by a change in condition class to the next higher class (e.g., from poor to fair). Cottonwood stands would be improved at the rate of five acres per year for a total of 75 acres under Alternative 2. Effects to riparian habitats and associated wildlife under Alternative 2, though beneficial, would not be considered to be significant since the acreage to be improved is less than 50% of the total riparian acreage.

Alternatives 1, 3, and 4 (Habitat actions): Other than protection of existing riparian areas, Alternatives 1, 3, and 4 will provide little to no improvements for riparian habitat, therefore, providing little to no additional benefits to wildlife species inhabiting riparian areas. Under Alternatives 3 and 4, Refuge management to improve riparian habitats would be limited to five acres annually or 75 acres over 15 years. Any larger project would likely only be carried out if specific project funds are acquired. Under Alternative 1, no riparian improvement would be done.

Public Use Effects: Refuge riparian areas are used by hunters pursuing deer and upland game. Because these activities are basically free roam, it is difficult to quantify disturbance effects. Obviously deer hunting has direct impacts on the deer themselves, however, the activity is necessary and beneficial, in order to keep the deer populations at manageable levels which lessens excessive habitat damage from deer herbivory, and provides a recreational opportunity. Any other disturbance to wildlife from deer hunting is probably not of great concern because it is generally a well regulated activity and occurs early in the fall. Besides the obvious direct impact to game species through shooting, upland game hunters pursuing quail and pheasants in riparian habitats during the latter part of the hunting season could disturb wintering birds of many different species (including bald eagles), and other wildlife, by interrupting foraging or forcing animals out of resting habitat or thermal cover causing an unnecessary expenditure of energy and possibly subjecting them to an increased risk of predation or winter weather-related stresses. This disturbance will be dampened somewhat by the closure of the riparian area around east McCormack Slough to upland hunting, under Alternatives 2 and 3. Disturbances of riparian wildlife from upland game and deer hunters will likely be not significant because in most Refuge units' hunter numbers or days of use are controlled. Further, hunting is a wildlife-dependent compatible use that provides opportunities for recreation that would be considered beneficial.

Alternatives 1, 2, and 3 propose a different alignment for a portion of the Heritage Trail. Regardless of which alignment is selected, hikers using the trail will traverse a variety of habitats including shrub-steppe, riparian, and wetlands. Hikers traversing through riparian habitat in winter could potentially disturb bald eagles and other birds, mule deer, and other wildlife with effects similar to those listed in the preceding paragraph. As long as hikers stay on the trail, any potential habitat damage should not occur and disturbance to riparian birds and other animals should be minimal.

Alternatives 2 and 3 propose a 0.4-mile spur trail leading off the existing McNary Headquarters Nature Trail, northwest to the Corps' Hood Park campground on the Snake River. Part of this trail would traverse riparian habitat. Similar types of disturbance as indicated in preceding paragraphs could occur on this new trail, but would likely be minimized and not significant if hikers stay on the trail.

F. Effects to River Islands and Associated Wildlife

All alternatives (Habitat actions): No significant changes in the amount of island habitat are proposed or expected as a result of any of the alternatives. Corps management of the McNary and John Day pool levels for the benefit of salmon and recreational activities, which is beyond the control of the Refuges, will have more impact on island accretion or degradation. Alternatives 1, 2, and 3 do provide for monitoring and documenting rates of erosion.

Public Use Effects: Alternatives 2 and 3 provide for complete closure of the Umatilla Refuge islands. Therefore, potential habitat and wildlife disturbance would be eliminated under this alternative. Current seasonal swimming and beach use and associated other uses would be eliminated on all Refuge islands. Currently beach use is allowed on three designated sites within the Columbia River Islands: 1) a large sandy beach located on the far, east tip of West Blalock Island; 2) a large sandy beach located on the far, east tip of Big Sand Dune Island; and 3) a sand peninsula (sometimes a small sand island) located on the far, east tip of Crow Butte Island. Big Sand Dune Island supports great blue heron and black-crowned heron nesting colonies. Both West Blalock Island and Big Sand Dune Island support nesting Canada geese. All three islands support other breeding migratory birds, mule deer, and other wildlife. During the waterfowl hunting season both West Blalock and Big Sand Dune are closed to hunting, resulting in thousands of waterfowl and other waterbirds using the shoreline and shallow water around the islands for feeding and resting. Eliminating all beach use, including seasonal summer use, would eliminate any disturbance to colonial nesting birds, waterfowl and geese in particular, passerines including bank swallows, and shorebirds including long-billed curlews and large numbers of migrating shorebirds. Elimination of human disturbance during July will increase bird nesting activities, such as rearing of nestlings, and feeding of fledged but flightless juveniles which would still be occurring in July and early August. Beach users do not always stay on the designated use areas, so other impacts to nesting birds and the proliferation of litter and human waste will be eliminated. Beach use by humans brings the possibility of fire which could damage or destroy nesting habitat, especially the sagebrush habitat used by Canada geese and the large trees used by herons. Loss of either of these habitats would impact long-term future production of young.

Alternatives 2 and 3 would also include a no-wake zone within 100 feet of islands. In addition, special use permits (SUPs) for fishing tournaments would include no-access buffers of 0.5 miles from islands known to be supporting nesting colonies of American white pelicans between 15 March and 31 August, and a no-access buffer of 900 feet from all other Refuge islands from February 15-July 31, to prevent disturbance to nesting colonial birds. Both of these provisions would help minimize disturbance from boating and fishing to colonial birds and other wildlife using the islands.

G. Effects to Shrub-Steppe Habitats and Associated Wildlife

Shrub-steppe habitat protection, restoration, and improvement would receive greater emphasis under Alternative 3 followed by Alternatives 2, 1, and 4 in the order of most beneficial.

Alternatives 2 and 3 (Habitat actions): Alternative 3 provides for the improvement of 288 acres annually in the 15 priority areas resulting in a total of 4,322 acres (45% of the 9,605 total) of shrub-steppe being improved over the life of the CCP. Thirty percent (2,881 acres) of shrub-steppe habitat in the 15 priority areas would be improved over the life of the CCP under Alternative 2, or about 192 acres annually. This improvement would involve control of invasive plants and planting of native species, and would be measured by a change in condition class to the next higher class, e.g., from poor to fair. Restoration of bitterbrush as an important component of shrub-steppe would be emphasized under Alternatives 3 and 2. Alternative 3 would be the most beneficial for shrub-steppe habitat by proposing the planting of 100 acres of bitterbrush over the life of the CCP. Bitterbrush would be planted to 50 acres under Alternative 2. Alternative 3 would provide for the largest net gain of shrub-steppe habitat, by restoring 600 acres of inactive croplands, abandoned gravel pits, unnecessary roads, and waste sites, while Alternative 2 provides for the restoration of 350 acres of these types of areas. Both Alternatives 2 and 3 would provide beneficial effects to shrub-steppe habitat and associated wildlife. However, the expected benefits from implementation of either alternative would not be considered significant because the new acreage and the acreage to be improved represent less than 30% and 50% of current total habitat, respectively.

Alternatives 1 and 4 (Habitat actions): Under Alternative 1, management emphasis would be directed primarily towards waterfowl, waterfowl habitat, and public uses. Management and improvement of shrub-steppe habitats would be secondary and inconsistently conducted depending on budget and staff levels, as is generally the current situation (Alternative 4). While current shrub-steppe acreage would be maintained under both Alternatives 1 and 4, only 10% or 960 acres of priority shrub-steppe habitat would be improved over the life of the CCP, under either alternative. An 85-acre gravel pit area on McNary Refuge and approximately 25 acres of unneeded roads and trails on either Refuge would be restored to shrub-steppe, resulting in a net gain of 100 acres under Alternative 1, but not under Alternative 4. Further, no bitterbrush would be planted under Alternatives 1 and 4. Additionally, under Alternative 1, current inactive croplands on both Refuges could become active again, thus precluding these areas from being restored to shrub-steppe. None of these inactive croplands would be restored to shrub-steppe or reactivated as cropland under Alternative 4. Implementation of Alternatives 1 or 4 would provide some beneficial effects to shrub-steppe habitat and associated wildlife; however, these would not be significant.

Public Use Effects: Refuge shrub-steppe areas will be used by hunters under all alternatives pursuing deer, upland game, and even for pass shooting waterfowl. These activities can impact shrub-steppe habitat and disturb shrub-steppe wildlife. Because these activities are basically free roam, it is difficult to quantify disturbance effects. Obviously deer hunting has direct impacts on the deer themselves, but the activity is provided for under all alternatives, and it is necessary and beneficial in order to keep deer populations at manageable levels which lessens excessive shrub habitat damage due to deer herbivory, and provides a recreational opportunity. Because of the short season length and low number of hunters, habitat damage by deer hunters is likely negligible under all alternatives. Shrub-steppe habitat could be damaged by upland hunter traffic especially in popular areas that attract large numbers of hunters, however, this would also be hard to quantify. Besides the obvious direct

impact to game species through shooting, upland hunters pursuing quail and pheasants in the latter part of the hunting season could disturb wintering birds of many different species and other wildlife by interrupting foraging or forcing animals out of resting habitat or thermal cover, causing an unnecessary expenditure of energy and possibly subjecting them to increased risk of predation or winter weather-related stresses. This kind of disturbance would occur not just in shrub-steppe but in all habitats used by upland hunters including riparian and margins of emergent wetlands. The magnitude of this disturbance is hard to quantify due to the free roam nature of upland hunting. Each year and estimated 2,625 hunters participate in upland bird or small game hunting at McNary and 1,400 at Umatilla. The overall disturbance effect is negative, but mostly minor and not significant under all alternatives because: a) daily upland hunting on most of the units does not begin until noon; and b) on most Refuge units, upland hunting is allowed only three days per week and as the season progresses into the winter months, hunter participation tends to drop off. The McCormack Unit on Umatilla Refuge is the only upland area where the number of upland hunters is controlled by a permit system. Under Alternatives 3 and 4, the number of daily permits would remain at the current level of 25 per hunting day. Under Alternatives 1 and 2, the maximum number of permits per hunt day during the first two weekends would be reduced to 15, serving to dampen the wildlife disturbance effects due to free roam upland hunting, while providing a better quality hunt. Any direct impacts to habitat would, therefore, be reduced. Also, under Alternative 3, a portion of upland hunting habitat adjacent to the East McCormack Slough would be closed to upland hunting as part of the shift in waterfowl sanctuary provided for under Objective 1d, resulting in further disturbance reduction. Overall, shrub-steppe wildlife and habitat disturbance effects due to hunting of upland game and deer are not expected to have significant adverse effects. Further, hunting is a wildlife-dependent, compatible use that provides opportunities for recreation that would be considered beneficial.

Horseback riding is allowed on certain trails and roads on McNary and Umatilla Refuges under all 4 alternatives. One such trail is on the north side of the Wallula Unit. The trail begins at the Madame Dorion boat launch and runs 1.3 miles to the north and east around the north side of Sanctuary Pond ending at Ranger Road. Direct habitat damage to the shrub-steppe habitat from trampling and spread of invasive plant species could result, especially if the trail is heavily used. Horseback riders in spring and early summer could cause disturbance to nesting bird species such as savannah sparrow, western meadowlark, mallards, and California quail. This disturbance could result in the loss of nests and eggs directly from being crushed or from abandonment of the nest by the parent birds. Riders going off trail would cause more physical damage to the habitat and increase the potential area of disturbance to nesting birds, which are probably more of a concern than any other issues. As long as riders stay on the trail, which they are required to do, some of these potential wildlife disturbance impacts would be minimized and the effects not significant.

Alternatives 2 and 3 propose to promote bird watching by signing the Wallula horseback trail which may result in more use of the trail, thus increasing the frequency of disturbance, which should be localized and minimized, provided bird watchers stay on the trail. Bird watchers veering off the trail will increase the area of potential disturbance to nesting birds, and could over time cause damage to the habitat itself.

Alternatives 2 and 3 propose a 0.4-mile spur trail leading off the existing McNary Headquarters Nature Trail northwest to the Corps' Hood Park campground on the Snake River. Part of this trail would traverse shrub-steppe and riparian habitats. Similar types of disturbance as indicated above

could occur on this new trail, however, the effects are not likely to be significant. Other trail modifications and viewing opportunities are proposed for the McNary Headquarters Trail under Alternatives 2 and 3. As long as trail users stay on the trail and at designated viewing platforms, disturbance should be minimized.

Alternatives 1, 2, and 3 propose a different alignment for a portion of the Heritage Trail. Regardless of which alignment is selected, hikers using the trail will traverse a variety of habitats including shrub-steppe, riparian, and wetlands. As long as hikers stay on the trail any potential habitat damage should not occur, and disturbance to shrub-steppe and/or riparian birds and other animals should be minimal, and therefore, not significant.

H. Effects to Talus, Outcrop, and Cliff Habitats and Associated Wildlife

Mining and other extractive activities would be prohibited under all four alternatives; therefore, no change in the amount of these rocky habitats would be expected. Damage caused by recreational pursuits such as rock climbing and rock collecting would be minimal, because these are also prohibited activities under all alternatives. Though these habitats are open to hunting and hiking, much of the areas are inaccessible due to the steepness of the terrain, resulting in minimal habitat damage from these activities.

Alternatives 1, 2, and 3 provide for an inventory of plant and wildlife resources inhabiting these rocky habitats. Alternative 3 also proposes the development of a corridor management plan in partnership with neighboring landowners and other stakeholders. These activities would enhance awareness and management of these areas which should be beneficial in helping the public understand the fragile nature and importance of these habitats. Based on the analysis above, no significant impacts to talus, outcrop, cliff habitats and their associated wildlife are expected to result from implementing any of the 4 alternatives.

7.3 Effects to the Physical Environment

Topics addressed under the physical environment section include direct and indirect effects to hydrology, water quality, air quality, visual quality, and geology/soils. The criteria used in this document to determine if a particular impact represents a significant adverse effect are present below for each topic:

- **Hydrology** – An adverse hydrologic effect is considered significant if an action would result in a >1% reduction in Columbia River or tributary in-stream flows, increased flooding on- or off-site, a further deviation from historical hydrological patterns, or a reduction in the local groundwater table.
- **Water Quality** – Adverse impacts to water quality would be considered significant if the action would violate any water quality standards or waste discharge requirements, substantially increase downstream sedimentation, introduce persistent contaminants (nonpoint source pollution) into the watershed, or otherwise substantially degrade water quality.
- **Air Quality** – implementation of a proposed Refuge action would have a significant direct effect on air quality if the action would result in: emissions equal to or in excess of the standards set in local implementation plans for the Clean Air Act; large areas of soil becoming routinely exposed and subject to wind erosion; or sensitive receptors being exposed to substantial pollutant concentrations, including air toxics such as diesel particulates. Significant indirect effects to air

quality would occur if a proposed Refuge action results in frequent congestion on adjacent roadways. Significant cumulative effects would occur if the “de minimis” (minimum) thresholds developed by the EPA for proposed Federal actions in a nonattainment area are exceeded.

- **Visual Quality** – A proposal that would substantially alter the natural landform, or block public views to a public resource from designated open space areas or public roads, would be considered a significant adverse effect on visual quality.

A. Effects to Hydrology

None of the Refuges’ actions would be expected to have any significant effect on the local hydrology. Under all alternatives, the Service expects to make requests to the Corps for short-term pool level changes, to promote cottonwood regeneration in riparian areas (all alternatives), to allow for temporary drawdown of wetlands in order to eradicate carp (Alts. 1 and 2), and to provide additional mudflat habitat for shorebirds during fall and possibly spring migration. These minor changes to pool level would not significantly alter local hydrological patterns or the current hydrograph of the Columbia River within the vicinity of Lake Wallula or Lake Umatilla.

Under Alternative 1, 300 acres of former but currently inactive cropland would be brought under cultivation in the cooperative farming program, requiring additional irrigation. The water source for the crops would be the Columbia River. The volume required would be small (about 1 acre-foot/acre per year, equivalent to 300 acre-feet annually). Considering that the runoff of the Columbia River measures approximately 139 million-acre-feet annually (Washington Department of Ecology 2004), this withdrawal would not significantly affect the Columbia River hydrograph or local hydrological patterns. Under Alternative 3, cropland acreage would be reduced by about 250 acres overall. The Refuges would draw less water for irrigation under this alternative, with a small beneficial but insignificant effect to instream flows.

B. Effects to Water Quality

Minor short-term impacts to water quality could occur under all alternatives, stemming from the control of invasive plant species. Control would involve mechanical removal and the periodic application of herbicides. Although mechanical removal has the potential to expose soils to wind and water erosion, this activity would be limited largely to the use of hand tools (except in cropland areas) and would focus on individual plant removal, rather than the removal of large areas of vegetation. Therefore, the continuation of this control method is not expected to introduce substantial amounts of additional sediments into the local wetlands or rivers.

The use of herbicides or pesticides to control invasive plants or animals, or to control weeds or pests in croplands, also poses several environmental risks, including drift, volatilization, persistence in the environment, water contamination, and harmful effects to wildlife (Bossard et al. 2000). A larger number of acres would be subject to herbicide or pesticide use under Alternatives 1, the least number of acres would be subject under Alternative 4, and an intermediate numbers of acres under Alternatives 2 and 3 (see Table 7-2).

Table 7-2. Area potentially subject to annual herbicide or pesticide use

Maximum acres treated annually	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Croplands	2,400	2,100	1,850	2,100
Shrub-steppe uplands (areas restored plus areas improved)	164	542	888	64
Riparian	0	62	5	5
Carp Eradication	1,000	250	0	0
Total acres	3,564	2,954	2,743	2,169

Although there are a large number of acres on the Refuges potentially subjected to herbicide treatment, the potential for such risks under this alternative are considered minimal due to the types of herbicides used (non-persistent), the limited number of acres that would be exposed in riparian habitat, the efforts taken to drain wetland areas before eradicating carp, and the precautionary measures taken during application. Effects would not be considered significant under any alternative.

Some additional visitor facilities, kiosks and additional trails, would be established under Alternatives 2 and 3, with minor and short-term potential for water quality impacts during construction. The Refuge Manager’s office at Umatilla Refuge would be moved under Alternatives 1 and 2, potentially causing minor and short-term water quality impacts.

Mechanical soil disturbance would occur on river margins to facilitate cottonwood germination and also on the borders of wetlands to set back succession. This activity, mainly the shallow marsh improvement, would occur on more acres annually under Alternatives 1 (approximately 100 acres/year) than the other alternatives. Alternative 2 (77 acres/year), and Alternative 4 (approximately 30 acres/year) would have an intermediate number of acres disturbed mechanically, and Alternative 3 would have none. Some sedimentation into wetlands on the Columbia, Walla Walla, or Snake Rivers could occur, as a result of this activity, however, compared with sediment input into these rivers that stems from other sources off-Refuge each year (Jay and Naik 2002), this effect would be insignificant.

C. Effects to Air Quality

None of the alternatives would be expected to have significant effects to air quality. Air quality problems stemming from wildfire smoke could decrease slightly under Alternatives 2 and 3, which call for devoting additional resources to reducing wildfires. Any prescribed burning for habitat management would occur under the guidelines laid out in the Refuge’s Fire Management Plan (U.S. FWS 2001). The Service would adhere to all State and local smoke regulations.

The Refuges would experience some increases in visitation over the 15-year time horizon of the CCP (see Section 7.3), with a slightly higher overall increase under Alternative 2 than under the other alternatives. The increased visitation would generate additional traffic on local and Refuge roads. This increase would not degrade local air quality to any significant degree under any of the alternatives.

Local air quality is also influenced by windborne particulates, with bare loose soils being most vulnerable to wind erosion. Under Alternative 3, approximately 250 acres of ground would be restored to shrub-steppe, a change from its current use as annual croplands. Although there would be some time lag in establishing native vegetation during the restoration, this alternative would likely result in the greatest long-term reduction in wind erosion stemming from cultivated ground. Under

Alternative 1, 300 additional acres would be brought under cultivation, with the potential for bare ground and wind erosion before planting and after harvest. Under all alternatives, the Refuges' contribution to the local air shed's particulate matter would be very minor in the context of the extensive acreage of plowed agricultural lands surrounding the Refuges that contribute an overwhelming majority of particulate matter to the local and regional air shed.

Herbicide drift could contribute to minor localized impacts to air quality, but since these would rapidly dissipate, this effect is determined to be negligible under all alternatives.

D. Effects to Visual Quality

None of the alternatives would be expected to have more than very minor effects on visual quality (i.e. scenery). The Refuges' scenic beauty will remain undisturbed under all alternatives. A few minor developments, such as kiosks and signs, will be placed in a few areas under Alternatives 2 and 3, and to a lesser extent under Alternative 1. These improvements would be designed to enhance visitors' appreciation of the natural and visual resources contained within the area.

Three hundred acres of land would be brought under cultivation in Alternative. All of these acres would be derived from existing inactive croplands. These modifications would not substantially alter the landform or block views from public roads. Except for these minor modifications, there are no effects to visual resources under the CCP.

7.4 Social Effects

This section opens with an assessment of the change in Refuge user numbers expected under each of the alternatives. Following this assessment, how management actions under each alternative could affect quality opportunities for each of the Big Six uses is evaluated. In addition, opportunities for non-wildlife dependent recreation are examined, as is the amount of illegal uses.

Adverse effects to opportunities for recreational public uses would be considered significant if a proposed action resulted in:

- Substantial displacement of a wildlife-dependent public use (>25% of existing activities or opportunities moved to a different area or terminated at the Refuge); or
- Substantial reduction in the quality of the wildlife-dependent experience (crowding increasing by more than 50% or substantial anticipated losses of wildlife or habitat supporting the experience).

Positive effects to opportunities for recreational public uses would be considered significant if a proposed action resulted in substantial increase in opportunity for or quality of a wildlife-dependent public use (>25% increase over existing opportunity or quality of experience).

A. Projected User Numbers in 15 Years

As an overview to assessing the social effects of Alternatives 1 through 4, it is important to understand the broader context of McNary and Umatilla Refuges within the region and how recreational demand and public use is expected to change over time.

A growing visitor presence on the Refuges can be expected in the future. Many of the public use opportunities currently provided at the Refuges are very popular within the State, and are forecasted to attract increasing amounts of participants in the coming years

A 2002 report by Washington State's IAC (IAC 2002) estimated the percent of change in the number of people participating in recreational activities in the future compared to current levels. According to their study, it is estimated that "nature activities," including outdoor photography and wildlife observation, will increase 30% during the next 15 years. Hunting and fishing are expected to decrease (18% and 8% respectively) during the next 15 years. The IAC's estimates for future use were used in calculating future visitor activity numbers for McNary and Umatilla Refuges. In alternatives that improve or add visitor facilities, additional visitation is likely to occur and increase Refuge use above IAC's estimates.

According to statistics kept by the Friends of Mid-Columbia River Refuges, all but 150 of the 3,700 students that participated in formal activities at the McNary Environmental Education Center in 2004 were from within 25 miles of the Refuge.

Hunters applying for the McNary waterfowl fee hunt area were from the following locations: 65% from or within 30 miles of the Tri-Cities; 25% from the Portland area; and 20% from various other locations. Informal tallies taken by Refuge officers checking waterfowl hunters in the field reveal similar numbers but suggest a slightly higher percentage of local residents hunting the Refuge.

According to the 2002 *Banking on Nature* report, (Caudill and Henderson 2003) 85%-90% of nonconsumptive users (visitors participating in wildlife observation and wildlife photography) and 70% of anglers on Umatilla Refuge are residents of the area (defined as living within a 30-mile radius of the Refuge). Migratory waterfowl hunters are comprised of 50% nonresidents, big-game hunters are 75% nonresidents, and small-game hunters are 25% nonresidents. Informal tallies by Refuge officers checking waterfowl hunters on the Washington side of Umatilla Refuge show that the vast majority (70%) of waterfowl hunters using these units (Paterson, Ridge, and Whitcomb) are from the Tri-Cities area.

It is important to consider the significant amount of population growth forecast for the Tri-Cities, Portland, and Seattle areas. Population growth will occur regardless of which alternative is selected. Population growth and increasing recreational demand, particularly in nature activities will increase recreation on the Refuges.

Tables 7-3 and 7-4 show Refuge visitation (number of Refuge visits annually) estimates for each Refuge, under several categories, both current and expected under the different alternatives.

The following background information may be useful in interpreting the tables.

- Current visitation is based on visits tallied in the year 2004, as summarized in the 2004 Refuge Management Information System (RMIS) data.
- The future visitation estimates for Alternatives 1, 2, 3, and 4, represent the Refuge's best estimate of the number of visits in each category during the final year of the 15-year CCP time frame. These estimates are based on two factors. The first factor is the percent of change in the number of people participating in a recreational activity in the future compared to the current levels. Future

participation rates are based on the IAC’s 2002 *Estimates of Future Participation in Outdoor Recreation in Washington State* (IAC 2002). Projected population growth is incorporated into these figures already. Some activities offered at the Refuges do not correspond exactly to the categories used in the IAC reports—the nearest equivalent was used. The second factor is that alternatives that emphasize or improve facilities for a type of recreational activity are given additional weight of 10%; those that diminish opportunities are reduced. Where actual permit numbers or group numbers are known based on area or staffing constraints, changing growth rates were ignored.

Table 7-3. McNary Refuge’s Projected Annual Visitation in 15 Years, by Alternative

Recreational Activity	Current Visitation	IAC projected change ¹	Alt. 1	Alt. 2	Alt. 3	Alt.4
Waterfowl Hunting	10,600	-18%	9,560	9,560	7,830	8,700
Upland Game Hunting ²	1,400	-18%	1,400	1,400	1,400	1,400
Fishing	16,800	-7%	17,200	17,200	15,600	16,500
Environmental Education/ Interpretation	1,500— 4,000	+30%	3,000	3,000	3,000	3,000
Wildlife Observation/ Photography	57,000	+30%	74,100	81,500	81,500	74,100

¹ The IAC report estimated percent changes over 10 year intervals and 20 year intervals. The two intervals were averaged for our purposes in estimating changes over the 15- year lifetime of the CCP.

Table 7-4. Umatilla Refuge’s Projected Annual Visitation in 15 Years, by Alternative

Recreational Activity	Current Visitation	IAC projected change, 15 years ¹	Alt. 1	Alt. 2	Alt. 3	Alt.4
Waterfowl Hunting	13,000	-18%	11,700	10,660	9,600	10,660
Upland Game Hunting ²	2,600	-18%	2,600	2,600	2,600	2,600
Fishing	20,000	-7%	20,700	20,700	18,800	18,800
Environmental ³ Education/ Interpretation	200	+30%	260	500	500	260
Wildlife Observation/ Photography	35,600	+30%	46,200	50,900	49,000	46,200
Big Game Hunting ²	28	-18%	28	28	28	28

¹ The IAC report estimated percent changes over 10 year intervals and 20 year intervals. The two intervals were averaged for our purposes in estimating changes over the 15- year lifetime of the CCP.

² Although statewide decreases in hunting are expected by the IAC, the popularity and status of hunting programs at these refuges, together with anticipated habitat improvements led the Planning Team to anticipate that there would be no change in hunter visits over the next 15 years.

³ Environmental Education on the Refuge is primarily limited by Refuge staffing and volunteers devoted to presenting EE programs. The public demand for EE programs far exceeds what the Refuge can provide. When funding permitted an interpretative park ranger position at McNary Refuge, the EE program grew from 150 visitors a year to over 4,000 visitors. The additional staffing also allowed for large volunteer and Friends programs to develop.

B. Opportunities for Quality Wildlife Observation and Photography

No significant adverse effects are expected under any of the alternatives, because none of the alternatives would displace any wildlife observation or photography activities. Although visitation will increase under all alternatives, mostly due to population increases and the growing popularity of wildlife viewing, none of the alternatives are expected to result in increasing crowding by more than 50% or in substantial anticipated losses of wildlife or habitat supporting the wildlife viewing or photography experience.

Alternatives 2 and 3: Facilities to improve opportunities for wildlife observation and wildlife photography (trails, photography blinds, and overlooks) would be expanded and enhanced under Alternative 2, and to a slightly lesser extent, under Alternative 3. These facility improvements would increase access to natural areas and improve wildlife viewing and photography opportunities.

Habitat improvements under Alternative 2 emphasize migratory birds and special status species. It would be reasonable to assume that the habitat improvements proposed under this Alternative would increase wildlife viewing and photography opportunities for these target species. Habitat improvements under Alternative 3, which emphasizes native biodiversity, would also improve the chances for visitors to see and photograph a greater spectrum of native plants and animals.

Under Alternatives 2 and 3, the positive effects to opportunities stemming from facility enhancements would not be considered significant because the proposed actions are not expected to increase the opportunities for, or quality of, wildlife viewing or photography by 25% or more over the existing conditions.

Alternatives 1 and 4: Only minor facility changes (realignment of the Heritage Trail) would occur under Alternative 1, and no changes to facilities would occur under Alternative 4. Effects would be neutral to slightly negative under Alternative 4 and Alternative 1, because growth in population and recreational demand means that more visitors would arrive at the Refuges, but the number of facilities available to accommodate the visitors under these alternatives would remain approximately the same.

C. Opportunities for Quality Hunting

Waterfowl and Upland Game Birds: The effects of the different alternatives on this activity were addressed in terms of the quantity of hunting acres available, the habitat condition, and other management actions that affect hunting opportunities. The chosen indicators for each alternative were 1) acres available for hunting; 2) overall habitat quality; and 3) other management actions that affect hunt quality.

Note that, technically, all of the acres open to waterfowl hunting are also open to upland bird hunting, but obviously the quality of the waterfowl and upland game bird hunt depends partly on the habitat area chosen.

Alternative 1 contains features to increase the number of acres available for hunting and also to increase habitat quality for game species. The actions outlined below would result in neutral to minor positive effects to opportunities for quality hunting, but the net effect would not be significant because there would be less than a 25% change in opportunity for or quality of hunting.

Acres available for waterfowl hunting: Approximately 25,952 acres would be open to both upland bird and waterfowl hunting, a 47-acre addition to the current area available (see Alternative 4). Forty-seven acres of additional river shore habitat would be opened to waterfowl hunting on Umatilla's McCormack Unit. One to five blinds would be established and managed under Umatilla's reservation system. This would increase the available blinds from 35 to 40, and give 10 to 20 more hunters per day an opportunity to draw a blind. Several goose blinds occupying approximately 100 acres of upland areas on the Peninsula Unit would be eliminated, but because these blinds are largely unproductive (these fields are seldom used by geese and thus rarely hunted anymore) and hunters could still use the area for free roam hunting if they wish. The overall effect of this alternative is still a net increase in the hunting area.

Acres available for upland game bird hunting: Upland game hunted areas would be the same as the acres available for waterfowl hunting.

Habitat quality waterfowl: Habitat quality improvements for waterfowl species under Alternative 1 include the following: (a) the Refuges would add 300 acres of cropland for a total of 2,400 acres farmed (crops on 25% of this acreage would be retained by the Refuge for waterfowl use). Though these additional croplands would be located in areas closed to hunting, they would increase (by 75 acres) the amount of "hot" foods available to all wintering birds during the coldest months; (b) 40 acres of moist soil management units would be created for the production of native food. These additional 40 acres would be located on areas of the Refuges currently open to waterfowl hunting; and (c) efforts would be made to increase open shallow water marsh habitat by as much as 96 acres per year on both Refuges. This would be done on areas both opened and closed to hunting. This could have the effect of drawing more birds to Refuge waters, and potentially increasing the quality of waterfowl hunting. All of these changes would be expected to result in a minor increase in the quality of waterfowl hunting under this alternative.

Habitat quality upland game: Habitat quality would also improve for upland game because: (a) Approximately 100 acres of goose hunting area on upland portions of the Peninsula Unit would no longer be managed (i.e. mowed or hayed) to attract geese. Instead, old fields in this area would be planted in native grasses. The aim here would be to replace poor quality goose hunting with higher quality upland bird hunting; (b) efforts would be made to restore old road beds, waste sites, gravel pits, and former cropland to upland shrub-steppe habitat. Under this alternative, Objective 7e calls for restoring as much as 100 acres. This, in combination with the 100 acres of former goose hunting land, would add 200 acres of restored upland for bird hunters. This could increase the ability for the land to support more birds.

Other management actions: This alternative includes several management actions to increase the quality of the upland game bird hunt, as follows: (a) Standardization of hunt days and start times would be implemented. All units on both Refuges would follow State start times, except the fee hunt units, where upland bird hunting would not start until noon of each hunt day. (b) Crowding and pressure on the McCormack upland permit hunt would be reduced by requiring permits for the opening two weekends and reducing allowable permits to 15 per

day. (c) The present pheasant augmentation program on McNary would be phased out due to Service policy prohibiting non-native stocking. This initially could reduce the ability for hunters to bag birds since some of the lands are degraded and can't support enough birds to sustain the hunting pressure. The Refuges would continue upland and riparian restoration efforts, which should result in higher quality upland habitat capable of supporting more birds.

Alternative 2 strives to provide a quality hunting program in concert with other Big Six uses and habitat programs on the Refuge. The actions outlined below would result in neutral to slight positive effects to opportunities for quality hunting, but the net effect would not be significant because there would be less than a 25% change in opportunity for or quality of hunting.

Acres available for waterfowl and game bird hunting: Approximately 25,739 acres would be open to waterfowl and upland bird hunting. This is a reduction of 166 acres from the current area (25,905 acres). The change would result from trading an area that is currently open (east McCormack hunt unit on Umatilla) with an area that is currently closed (river shoreline at Umatilla). The two areas would change status. No net loss of huntable area would result – the same number of blinds would be available as at present. The east McCormack slough would then function as sanctuary, but the birds using it would likely move through the hunt area as they moved back and forth from the river.

Habitat quality waterfowl: Refuge cropland would be maintained at current levels (2,100 acres) and moist soil management units would be increased by 10 acres from the current level. New moist soil units would provide natural foods for some of the earlier migrants like northern pintails. As in Alternative 1, open water shallow marsh areas would be created and maintained at a rate of approximately 67 acres/year.

Habitat quality upland game birds: As compared to Alternative 1, more land would be restored back to native shrub-steppe. An additional 250 acres would be converted by taking inactive croplands which are unneeded or unsuitable for production. This would be added to the 100 acres gained from restoration of highly degraded uplands for an increase to 350 acres of restored native shrub-steppe. This would result in an intermediate net gain of habitat and habitat quality for upland game birds.

Other management actions: Other actions designed to increase the quality of the upland bird management strategies would essentially mirror those in alternative 1. The goose pit blinds on Peninsula would be eliminated, as well as the fall mowing. Hunt days and start times would be standardized, McCormack upland permits would be reduced to 15 per day on the opening two weekends, and the pheasant release program would be phased out.

Alternative 3 would enact changes aimed at more aggressive restoration of natural habitats. The actions outlined below would result in minor negative effects to opportunities for quality hunting, but the net effect would not be significant because there would be less than a 25% change in opportunity for or quality of hunting.

Acres available for waterfowl and upland game bird hunting: As in Alternative 2, the east McCormack slough hunt area would be turned into waterfowl sanctuary, thus eliminating three hunt blinds from the Umatilla fee unit program. No additional blinds or hunt areas

would be added on the Refuges to replace the lost hunting area. The total hunt area available would decrease by 207 acres, to 25,698 acres. Fall mowing would be eliminated on the Peninsula Unit goose blinds; however, the middle unit goose blinds would still be maintained.

Habitat quality waterfowl: Under Alternative 3, the overall cropland acreages of both Refuges would decrease to 1,850 from the current 2,100. The conversion of 250 acres of existing cropland to shrub-steppe habitat (meaning a loss of about 63 acres of crops dedicated to wintering waterfowl) could have an adverse impact on the Refuge's ability to attract and hold birds during the winter, resulting in a minor loss in habitat quality, with a minor indirect effect to hunting quality.

Habitat quality upland game birds: This alternative would restore as much as 600 acres of native grasslands and shrub-steppe habitat restoring 250 acres of active waterfowl grain production croplands; 250 acres of inactive croplands and 100 acres of degraded uplands, old road beds, and gravel pits. This would result in a minor positive effect to game bird habitat quality.

Other management actions: This alternative maintains the current program (start times, number of permits, etc.) for upland game birds, except the present pheasant augmentation program on McNary would be phased out, due to Service policy prohibiting nonnative stocking. Initially, this could reduce hunters' ability to bag birds because some of the lands are degraded, and can't support enough birds to sustain the hunting pressure. As described above, the Refuges would place additional emphasis on upland and riparian restoration efforts, which should eventually result in higher quality upland habitat capable of supporting more birds.

Alternative 4: Under Alternative 4, no changes would be made to current management practices.

Big game hunting. Very minor changes in the big game hunt program are proposed under Alternatives 1, 2, and 3. Hunting would continue to provide both recreation and deer population control, to prevent adverse impacts to vegetation. Umatilla would continue to conduct special permit hunts for the purpose of population control and habitat health on the McCormack and Paterson Units. The population target level for deer on McCormack would be set at 80-100 deer and the total number of hunting permits would increase slightly over the present level, to attain this population level. The Stateline and Juniper Canyon Units of McNary would continue to be managed and opened to hunting in accordance with State regulations. The only other unit opened to hunting on McNary Refuge would be the Wallula Unit, which is currently according to State regulations, with special regulations allowing the use of shotguns or bows and arrows only. Habitat conditions would be monitored to determine if any special hunts were needed for deer population control. None of the alternatives would result in significant effects to the big game hunting program.

D. Opportunities for Quality Fishing

A vast majority of the areas available to fishing on both Refuges are accessible by boat or by car and are within reasonable walking distances from available parking. These areas include open water and shoreline along the Columbia and Walla Walla Rivers in the Wallula and John Day pools. Other

areas include backwater sloughs and channels adjacent to or connected to the Columbia River. No significant adverse effects are expected under any of the alternatives, because none of the alternatives would displace fishing activity from >25% of the sites now available, nor would any of the alternatives be expected to result in crowding increasing by more than 50% or substantial anticipated losses of fish or habitat supporting the fishing experience.

Alternatives 1 and 2: Currently there are seven developed and four undeveloped boat launches located on or near the Refuges that provide adequate access to Refuge fishing resources. Under Alternatives 1 and 2, the actual mileage of shoreline access available may not actually increase since most of these areas are already accessible under current conditions. The major changes under these alternatives are upgrading existing facilities by improving parking and boat launches at several sites on each Refuge. In addition, under Alternatives 1 and 2, the Refuges would install kiosks, and improve the availability of information at heavily used fishing sites. The anticipated result would be better informed and oriented fishing visitors who better understand and appreciate the Refuges and their resources. Other positive effects under Alternatives 1 and 2 would be improved water quality in Refuge ponds and sloughs, through carp eradication efforts and vegetation management.

Under Alternatives 1 and 2, the positive effects to fishing would not be considered significant because the proposed actions are not expected to increase the opportunities or quality of fishing by 25% or more over the existing conditions.

Alternative 3: In Alternative 3 no efforts would be made to increase access to fishing areas or to provide informational kiosks at fishing sites. Under this alternative, some access to fishing resources could be temporarily lost due to closures for shoreline habitat restoration, threatened and endangered species management, or species diversity management. Low pool management for the benefit of migrating shorebirds could result in seasonal losses of Delta shoreline currently available to fishing. Rearing habitat for salmonids could be increased by enhancing backwater slough areas. This would slightly improve fisheries production over years to come; however, fishing opportunities for these species would be unlikely to shift much.

Alternative 4: There would be no changes enacted to the current programs under Alternative 4.

E. Opportunities for Quality Environmental Education

No significant adverse effects are expected under any of the alternatives, because none of the alternatives would displace any environmental education activities. Although the environmental education program is geared to grow under Alternatives 2 and 3, these alternatives would accommodate the additional students through expanding the schedule, using teachers as facilitators, and expanding the volunteer base. Additional crowding would be unlikely to occur. Finally, none of the alternatives would result in substantial anticipated losses of wildlife or habitat supporting the environmental education experience.

Alternative 1 focuses on consumptive public uses and would not implement any measures to change the environmental education (EE) programs. Alternatives 2 and 3 both include measures to offer the existing environmental education programs to more students, up to 3,000 at McNary, and up to 500 at Umatilla.

Alternative 1 would further enhance environmental education programs by providing interpretive exhibits near the McNary Environmental Education Center that could be used by teachers. In addition, a visitor contact station added under Alternative 1 at Umatilla Refuge would enhance EE opportunities by providing a meeting place for classes, visitor orientation, interpretive panels, and access to the Refuge Manager.

Alternatives 2 and 3: Under Alternatives 2 and 3, a volunteer coordinator or park ranger would be hired. This person could recruit volunteers and work with the local schools (Umatilla, Hermiston, Boardman, Burbank, and Tri-City communities) to develop and grow the environmental education program. The volunteer coordinator or park ranger could tie Refuge environmental education programs directly into Oregon's teaching curriculum (similar to the Washington Assessment of Student Learning-WASL). This would ensure Refuge programs could assist the schools with State education requirements. Teach-the-teacher programs would be initiated, thus reducing the amount of Refuge staff and volunteer time required to facilitate classes. An additional staff member could also research and adapt time tested programs such as the Sister Shorebird Schools program. The Refuges could then use these programs to provide high quality classes without investing much time in curriculum development.

Under Alternatives 2 and 3, additional trail spurs and loops would be added and/or improved near the existing EE headquarters site at McNary Headquarters Unit. Trail improvements would also be made along the Heritage Trail site at the McCormack Unit on Umatilla Refuge. These would facilitate the Refuge's education programs because most school groups use the trails while engaged in EE. Of the seven science stations used at McNary Refuge for teaching fourth graders, three are directly on the Trail. In addition, classes for scouting groups almost always include a two-mile nature hike on the trail.

Alternatives 2 and 3 would further enhance environmental education programs by providing interpretive exhibits near the McNary Environmental Education Center that could be used by teachers

A visitor contact station at Umatilla Refuge, added under Alternative 2, would enhance EE opportunities by providing a meeting place for classes, visitor orientation, interpretive panels, and access to the Refuge Manager.

Under Alternatives 2 and 3, the positive effects would not be considered significant because the proposed actions are not expected to increase the opportunities or quality of environmental education by 25% or more over the existing conditions.

F. Opportunities for Quality Interpretation

All alternatives provide existing opportunities for visitors to encounter interpretative signs and materials. Alternative 2 would further enhance this activity by providing additional interpretive pull-outs and signs along Highway 14, additional interpretive areas along trails at The McNary and Wallula Units, establishing an interpretive station at a consolidated visitor contact facility at McCormack Unit, and providing kiosks at fishing sites. Alternative 1 also includes the consolidated McCormack facility and the kiosks at major fishing sites. Alternative 3 includes additional interpretive materials at McNary Headquarters unit but not the other improvements mentioned above. In

summary, of the action alternatives, Alternative 2 would include the greatest number of direct measures to expand interpretive opportunities for Refuge visitors; Alternative 1 would include an intermediate amount of measures, and Alternative 3 a minor amount. No changes would occur under Alternative 4.

No significant adverse effects are expected under any of the alternatives, because none of the alternatives would displace existing interpretive activities. Crowding at interpretive sites, already low, would be unlikely to occur. None of the alternatives would result in substantial anticipated losses of wildlife or habitat supporting the interpretation experience.

Under Alternatives 1, 2, and 3, the positive effects to opportunities stemming from facility enhancements would not be considered significant because the proposed actions are not expected to increase the opportunities for or quality of interpretive experiences by 25% or more over the existing conditions.

G. Opportunities for Nonwildlife-Dependent Recreation

Potential opportunities for other public uses not considered priority or deemed non-wildlife dependent under the National Wildlife Improvement Act, would be contingent on the completion of Refuge compatibility determinations for that particular use. Hiking and biking, unrelated to wildlife viewing; camping, boating/watercraft use unrelated to fishing, hunting, or wildlife viewing; beach use and swimming; and horseback riding are all currently allowed on the Refuges, even though they are considered nonwildlife-dependent forms of recreation by definition. Some of these uses are restricted under current management rules, but a limited outreach and law enforcement capability has prevented the Refuges from effectively enacting and enforcing current rules.

There would be no efforts to augment or increase these activities under any of the alternatives. For the most part, the nonwildlife-dependent uses would be allowed to continue, with some tightening of rules and law enforcement to ensure that the uses remain compatible with the Refuges' purposes.

A use that would be eliminated entirely would be camping at Madame Dorion Park. This would be eliminated under Alternatives 1, 2, and 3, with the Madame Dorion site continuing to be open for Big Six public uses, including night fishing for catfish.

A no-wake zone on Refuge managed waters, within 100 feet of islands, would be enacted under Alternative 2 to minimize noise and wake disturbance to islands and wildlife. This would diminish disturbance from pleasure boaters near sensitive island resources.

Beach use and swimming from Refuge islands would be eliminated entirely under Alternatives 2 and 3. Currently, summer beach use occurs at Strawberry Islands, and the Refuges have not effectively enforced an existing closure. Law enforcement would be increased under these alternatives, to eliminate all access from these sensitive island complexes. Beach use would also be eliminated on three designated beaches on the Umatilla Islands. These alternatives include the current closures on all other Refuge islands.

Some benefit to non-wildlife dependent uses, especially hiking, horseback riding, and boating, would occur indirectly through trail improvements and boat launch and parking improvements slated to

occur under Alternatives 1, 2, and 3. Under alternatives 2 and 3, eight miles of designated trail would be available for horse back riding and 22 miles of roads would be available for hiking/biking.

These activities would be monitored and evaluated regularly to determine their impacts. Management strategies aimed at upland habitat improvement or threatened and endangered species protection could further restrict or completely eliminate these activities in some areas. At the same time however, the quality of these activities could increase due to improvements in facilities, trail heads, signage, and information. Partnerships with user groups would be pursued and developed to help improve and maintain trail/road conditions. Improvements to upland habitats could increase the quality of the visitor experience.

In sum, no significant adverse effects are expected under any of the alternatives, because none of the activities are wildlife-dependent. Although opportunities for two non-wildlife dependent uses (camping and beach use) would be eliminated entirely, this effect is not considered significant under the criteria outlined above. In addition, there are numerous other camping areas available within 20 miles of McNary Refuge, and any persons wishing to camp near the Refuge should be able to find reasonable opportunity nearby. Beach use is also available nearby on non-refuge shorelines and non-Service administered islands.

No significant positive effects are expected under any of the alternatives due to the changes cited above; the proposed actions are not expected to increase the opportunities or quality of wildlife-dependent public uses by 25% or more over the existing conditions.

H. Amount of Illegal Use

Trespass into closed areas, off-road vehicle use, illegal drug activity (especially the dumping of methamphetamine lab materials), target shooting, dumping of household waste, and vandalism all occur on the Refuges. Some of the same reasons that attract legitimate Refuge visitors—solitude, open public spaces, quiet hidden valleys, wooded areas, and minimal human interference—also attract individuals seeking quiet places for their illegal activities

All action alternatives include more aggressive measures to curb illegal activities and create a safe environment for visitors. Alternatives 1, 2, and 3, seek to involve the town of Burbank in an outreach program to reduce dumping and off-road vehicle use on the Refuge units adjacent to the downtown area. Under these alternatives, the Service would pursue funding to survey the former Corps properties, to establish boundaries and to sign the Refuge appropriately. These alternatives would close off illegal roads and four wheel drive tracks to improve wildlife habitats and wildlife-dependent recreation on the Burbank Sloughs and Peninsula Units, and establish designated roads and improved parking areas. Law enforcement presence would be increased under these alternatives to deal with illegal use problems.

The actions outlined above would result in intermediate positive effects to opportunities for recreational public uses, but they would not be significant because they would likely not result in a substantial increase in the opportunity for quality of any wildlife-dependent public uses.

I. Environmental Justice

Since CCP implementation is expected to result in generally positive effects on the human environment, all proposed public use actions have a little risk of resulting in disproportionate adverse effects on human health, economics, or the social environment.

7.5 Economic Effects

Both McNary and Umatilla Refuges have direct economic impacts on the local economy. Both Refuges as well as the associated administering Refuge Complex office (now located in Richland, Washington) have annual budgets that support employee salaries, operations, maintenance costs, and various programs. The Refuges are sometimes allocated funding for capital improvements such as building roads or facilities. All of these activities require spending by the Service, which results in effects on the local economy.

The Refuges also provide an indirect economic impact on the local economy through the many recreational activities that they support. These activities currently include hunting, fishing, wildlife observation, photography, hiking, environmental education, interpretation, horseback riding, camping, and boating, and most of these activities would continue under each of the action alternatives (although the emphasis areas vary slightly). Individuals that visit the Refuges and participate in these activities buy goods and services in local towns and cities (e.g., food, lodging, fuel, equipment), and thus contribute to the health of the regional economy.

Farming is also supported on both Refuges through contract.

The area of economic influence is assumed to be primarily Benton, Walla Walla, Morrow, and Franklin Counties. These are the counties within which the Refuge offices or lands are situated; Refuge operation and maintenance expenditures occur primarily within these counties, and the majority of visitors to the Refuges live within these counties and are assumed to make most of their purchases near their homes or near the Refuges.

Effects are considered significant if the gain or loss in total personal income stemming from expenditures associated with the Refuges exceed 5% of the total personal incomes of the counties in the economic influence area.

Since Refuge operational expenditures would vary by alternative based on the staffing levels and programs associated with each alternative (see Appendix D), each alternative would result in a different degree of economic effect (Appendix D, Table D-8). Alternative 2, which would require the highest level of staffing and expenditure, would have a greater effect on the local economy than the other alternatives. This would translate into more jobs and more personal income within the analysis area under this alternative, compared with the other alternatives. Alternative 4 would have the least economic benefit locally as a direct result of Refuge expenditures, with fewer jobs and less personal income generated. The effects of Alternatives 1 and 3 are intermediate between Alternatives 2 and 4.

Refuge recreational programs and facilities would vary by alternative. In 2002 (similar to current conditions), Refuge visitors were estimated to spend about \$3.2 million per year to recreate at Umatilla Refuge (see table 6-5 in Chapter 6). The total economic effect of this visitor spending in the

three-county area of influence was estimated at \$2.1 million dollars (Laughland and Caudill 2003), with personal income estimated at \$838,400. Figures are not available for McNary Refuge but could be similar. The authors estimated that for each \$1 of Refuge expenditures, \$2.50 of total economic effects are generated from visitor expenditures.

In the future, the types and quantities of visitor facilities and programs are expected to influence the number of visitors. In addition, over the next 15 years, visitation is expected to be affected by demographic changes and changing cultural values that influence people's choices for recreation. Estimates of annual visitation after 15 years to each Refuge under each alternative and for different recreational categories are presented in Tables 7-3 and 7-4. As evident from these tables, visitation is estimated to change by activity, with an overall increase in visitation under each alternative. The addition is mostly due to projected increases in wildlife observation/photography activities. Overall recreational visitation is expected to be slightly higher under Alternative 2 than under the other alternatives, because of the greater emphasis in this alternative for a wide range of recreational facilities and programs. As a result, Alternative 2 would result in the highest number of local jobs and have the highest degree of local economic effect stemming from the recreational expenditures of Refuge visitors.

One aspect of the recreational activity analysis deserves explanation. The most recent *Banking on Nature* report reveals that at Umatilla Refuge, an estimated 50% of waterfowl hunters live locally, about 70% of anglers are local residents, and about 85% to 90% of nonconsumptive users are local residents (Caudill and Henderson 2003). At McNary Refuge, the staff estimates that the percentage of local users is higher than that of Umatilla for waterfowl hunting, and similar to Umatilla for other uses. Visitors from outside of the local area spend more money in the local area (motels, restaurants), while recreating on the Refuge than local residents do. Spending by non-residents due to choosing the Refuges as a recreation destination thus represents an infusion of money into the local economy that would not occur if the Refuges were not there.

If the Refuges did not exist, local residents would possibly take advantage of similar recreational opportunities nearby, such as local wildlife areas and state parks. To the extent that nearby areas could replicate the recreational experiences provided at McNary and Umatilla Refuges, the expenditures made by these visitors represent spending that may have taken place inside the county regardless of the existence of the Refuge. Hence, the analysis may overestimate somewhat the contribution of the Refuges to the local economy. However, since nearby areas are small and don't provide the spectrum of recreational activities supported by the Refuges, it is probably true that most of the recreational spending by Refuge visitors living locally represents an actual infusion of money into the local economy that would not occur if the Refuges did not exist.

In 2004, Morrow County, Oregon had a total personal income (TPI) of \$326 million dollars, Benton County, Washington had a TPI of \$4.8 billion dollars, Walla Walla County had a TPI of \$1.4 billion dollars and Franklin County had a TPI of \$1.2 billion dollars (data from Bureau of Economic Analysis, <http://www.bea.gov/bean/regional/bearfacts/countybf.cfm>).

A detailed economic analysis of the alternatives was not completed to determine multiplier effects of the alternative spending on the counties. However, based on the background information presented above and the estimated changes in Refuge spending under each alternative (see Appendix D), the

Refuges’ effect on personal income would be a maximum of 4-8 times the 2003 estimate of \$838,000 for each Refuge. Thus, comparing this amount to the TPI for the counties above, the economic effect would not be significant because the effect on the TPI of the counties in question would not exceed 5% of the total.

7.6 Effects to Cultural and Historical Resources

The National Historic Preservation Act (NHPA) of 1966, as amended, establishes the Federal Government’s policy on historic preservation and the programs through which that policy is implemented. An impact to cultural resources would be considered significant if it adversely affects a resource listed in or eligible for listing in the NRHP. In general, an adverse effect may occur if a cultural resource would be physically damaged or altered, isolated from the context considered significant, affected by project elements that would be out of character with the significant property or its setting. Title 36 CFR Part 800 defines effects and adverse effects on historic resources.

Table 7-5 lists those activities called for in the CCP that are most likely to affect cultural/historic resources and compares their effects under the four alternative scenarios. Not all activities with possible affects are listed, nor are all potential effects listed. However, the table does address those activities most likely to have an effect on cultural or historical resources and the effects most likely to result.

The activities common to all alternatives are: upland restoration work including seeding using drills, shrub planting, soil preparation including agricultural disking, and shoreline bank stabilization for the protection of shoreline under objective 13d. To avoid adverse effects to cultural resources as a result of future upland restoration and/or shoreline protection, a cultural resource survey would be conducted prior to implementing any restoration activities. Any new cultural resources identified during the survey would be recorded and evaluated for eligibility to the NRHP. If any sites are determined to be eligible to the NRHP, the restoration plans would need to be assessed for potential effects to the historic property. If effects are possible, the proposal would be reviewed to ensure that the effects have the least impact to original materials and are in conformance with the *Secretary of the Interior’s Standards for the Treatment of Historic Properties*. Changes that comply with the Secretary’s Standards would have no adverse affect on historic properties. Once an assessment has been completed, the findings would be forwarded to SHPO for concurrence. The upland restoration enhancement and shoreline protection projects proposed under all of these alternatives would not be expected to have an adverse effect on historic resources.

Table 7-5. Comparison of activities most likely to affect cultural/historic resources.

Activity/ Objectives	Potential Effects	Alt. 1 Severity	Alt. 2 Severity	Alt. 3 Severity	Alt. 4 Severity
Upland restoration/ 7a,7d,7e	Disturbance from planting seed and shrubs; soil preparation	Potential for 10% of uplands	Potential for 30% of uplands	Potential for 45% of uplands	Potential for 10% of uplands
Reduced Fire Starts / 7c	Decreased fire related soil exposure and damage, vandalism, theft and erosion	Minor decrease in fire starts and resulting effects	Decreased fire starts and resulting effects	Decreased fire starts and resulting effects	No change

Activity/ Objectives	Potential Effects	Alt. 1 Severity	Alt. 2 Severity	Alt. 3 Severity	Alt. 4 Severity
Riparian restoration/5a, 5b	Disturbance from shrub/ tree planting and fluctuation pool levels for cottonwoods	None	Up to 62 acres per year	Up to 5 acres per year	Up to 5 acres/year
Wetland enhancement /4a	Disturbance during wetland excavation and disking	1438 acres	1000 acres	None	500 acres
Increase Island Law Enforcement/ 6a,6b	Reduced disturbance and/or vandalism	None	Decrease incidents and vandalism	Decrease incidents and vandalism	None
Eliminate Beach Use at Strawberry Island and Umatilla Islands	Eliminate potential disturbance, degradation, or vandalism/theft	None	Eliminate island access; protect resources	Eliminate island access; protect resources	None
Increase crop production/1a, 1c	Ground disturbance from disking cropland; moist soil	Increased disking on 400 additional acres and 20 new acres moist soil	10 acres new moist soil	Decrease in disking on 250 acres; 5 acres fewer moist soil.	No change
Limit public uses and access/7a, 6b	Reduced disturbance and/or vandalism with decrease in public use/access	Small decrease in access and use at Headquarters Unit	Decrease in access/use at Headquarters and Stateline Units	Decrease in access/use at Headquarters and Stateline Units	No change
Construct artificial owl burrows/1b	Disturbance from digging owl burrows	None	Minor due to localize nature of project	Minor due to localize nature of project	None
Reduce incidents of dumping /9i	Decrease in dumping that diminishes integrity of sites	Positive effects for cultural resources	Positive effects for cultural resources	Positive effects for cultural resources	No change
Construct trails and kiosk /9a-9d	Soil disturbance, construction; human disturbance at sites	None	Increase in trails and public use	Increase in trails and public use	No change
Construct visitor and office facilities/9e	Soil disturbance, construction activity, human disturbance	Localized impact	Localized impact	Localized impact	No change
Cultural resource protection and	Increase in cultural resource protection efforts will decrease likelihood of impacts and	Positive effect for maintaining	Positive effect for maintaining	Positive effect for maintaining	No change

Activity/ Objectives	Potential Effects	Alt. 1 Severity	Alt. 2 Severity	Alt. 3 Severity	Alt. 4 Severity
appreciation/13a3b,13c	negative effects to sites	cultural resources	cultural resources	cultural resources	
Increase management of NRP sites /13e	Decrease likelihood of disturbance and vandalism	Positive effect for maintaining cultural resources	Positive effect for maintaining cultural resources	Positive effect for maintaining cultural resources	No change
Increase protection of known shoreline sites /13d	Decrease likelihood of disturbance and vandalism; but would involve disturbance to shoreline	Positive effect for maintaining cultural resources			

Many of the activities listed in Table 7-5 are common to Alternatives 1, 2, and 3. Specifically, activities under the Cultural Resources Goal 13 are considered to have a positive effect on cultural resources. The likelihood of disturbance, vandalism, and destruction of sites would be reduced by the strategies listed for accomplishing the goal of a program for better managing cultural resources. Another positive activity is the reduction of fire starts (7c) which would reduce risk of exposure of soils to wind erosion and exposure of artifacts to potential vandalism. Elimination of beach use and associated activities at Refuge Islands (especially Strawberry Island at McNary and Blalock at Umatilla) will decrease the likelihood of resource degradation, damage, or vandalism incidents. So the positive projects listed above that are proposed under Alternatives 1, 2, or 3, would not be expected to have an adverse effect on historic resources.

Under Alternative 1, effects could be possible from the earth moving work and surface disturbance associated with wetland restoration and enhancement work. This work often goes deeper into soil profiles than the disking and planting associated with upland plant restoration activities. After survey work prior to construction on wetland projects, activities occurring in proximity to known sites would be monitored because of the potential for buried cultural material in these areas. If any cultural materials are uncovered during excavation, the Regional Historic Preservation Officer would be contacted to review the materials and recommend a treatment that is consistent with applicable laws and policies. Implementation of the procedures described above is expected to avoid adverse effects to historic resources; however, additional analysis under NEPA may be required once specific details are known.

Prior to major excavations and as outlined in objective 13c, the Service would work with Native American groups to create a Memorandum of Understanding (MOU) to implement the inadvertent discovery clause of the Native American Graves Protection and Repatriation Act (NAGPRA). Development of this MOU would involve identifying the Native American Tribes, Groups, and direct lineal descendants that may be affiliated with these Refuge lands, initiating consultation with the affiliated Tribes, Groups, and/or direct lineal descendants, developing procedures to follow for intentional and inadvertent discoveries, and identifying the persons to contact for the purposes of NAGPRA. Completion of the MOU would reduce the potential for harm to occur from project work.

Most of the potential effects to cultural resources described under Alternative 1 would also occur under Alternative 2. Therefore, the measures for determining and addressing adverse effects

described above for activities common to all alternatives and Alternative 1, would also apply to Alternative 2. The construction of owl burrows is an additional activity involving soil disturbance; cultural resource survey and evaluation procedures above would be followed. Under Alternative 2, public access to sites with cultural resources might increase as a result of trail, kiosk, and public use facility construction, with potentially minor negative consequences. Implementation of the procedures described above is expected to avoid adverse effects to historic resources; however, additional analysis under NEPA may be required once specific details are known. The construction and public use facilities proposed under this alternative would not be expected to have an adverse effect on historic resources.

Potential effects to cultural resources under Alternative 3 are very similar to Alternative 2. Alternative 3 includes no wetland restoration work and less disking for croplands and moist soil. However, this alternative has the greatest amount of potential upland restoration and enhancement activities of the four alternatives. Expanded public access into areas that include cultural resources could also result in minor negative effects to these resources. The upland restoration and enhancement projects proposed under all of these alternatives would not be expected to have an adverse effect on historic resources.

Although the activities listed for Alternative 2 could affect the resource, they are relatively minor and would not be considered an adverse effect. Major disturbance would be avoided by the survey and consultation process as described in Section 106 of NHPA described above. Public access is currently permitted and expansion of facilities and trails under this alternative would receive the same scrutiny, to ensure they would not detract from cultural resources; therefore, no adverse effects to cultural resources as a result of human activity within the Refuges are anticipated. The minor changes that could occur under this alternative, like the others, would not alter the relationship, configuration, design, and/or function of the various known sites and would not diminish the historic character of known sites. Such changes would meet the criteria finding for a No Adverse Effect.

Based on the criteria for assessing adverse effects that are provided in the NHPA, all of the alternatives are considered to be a “No Adverse Effect” undertaking as per 36 CFR Part 800.5(3)(b), hence none of the alternatives would have a significant impact to cultural resources. The Service’s determination of no adverse effect would be submitted to State Historic Preservation Office for concurrence. No mitigation would be required.

7.7 Cumulative Effects

The term “cumulative effects” is defined in the Council of Environmental Quality’s (CEQ) regulations in 40 CFR Part 1508.7, as:

“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.”

As described in Chapter 4, cumulatively, there has been a substantial modification to native upland and riverine habitats in the Interior Columbia Basin over time (Rasmussen and Wright 1990; Quigley and Arbelbide 1997). Although a number of natural areas have been designated and are maintained in the Interior Columbia Basin, modification and loss of native habitats continues at a regional scale. There is a clear trend of regionally increasing population growth, which, coupled with a growing

economy, is bringing increased development and associated habitat loss, particularly in the Tri-Cities and in Morrow County. Invasive species and altered ecosystem processes are widespread within the area. Within this context, region-wide biological integrity may be at risk. Over time, the Refuges, although relatively small and isolated from other natural lands, may become increasingly valuable for the persistence of Columbia Basin native wildlife. All of the alternatives would maintain Refuge habitats valuable to wildlife. Active improvement of shrub-steppe, riparian, and wetland habitats, particularly under Alternatives 2 and 3, would increase or maintain the value of Refuge lands and waters for a wide variety of native fish and wildlife. Alternative 1, which emphasizes habitat improvements for waterfowl, would improve the capability of the Refuges to provide wintering food for waterfowl, with less emphasis on habitat improvements for other native species. However, actions proposed under the Draft CCP/EA will not reverse or halt the regional trend toward reduced biological integrity within the Columbia Basin. Under all alternatives, biological diversity (the number of species present on the Refuge) would probably remain about the same. Invasive species could become more prevalent on surrounding lands but on the Refuges, active efforts would be made to reduce their populations, especially under Alternative 2. The Service would improve the availability and quality of wildlife-dependent recreation, especially under Alternatives 2 and 3, but within a regional context, there would be little cumulative difference in recreational opportunity.

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APPENDIX A: PUBLIC INVOLVEMENT

Public involvement was sought throughout the development of the CCP, starting in January of 2004 with the preparation of a Public Outreach Plan. Public involvement strategies emphasized face-to-face meetings with key agencies, tribal governments, federally elected officials, and local Refuge users. The Refuge also held open houses, sent newsletters, conducted surveys, and gave presentations at community organizations to inform the public, invite discussion and solicit feedback.

A mailing list of approximately 2500 persons and organizations is maintained at the Refuge and was used to distribute planning updates and public meeting announcements. Below is a brief summary of the events, meetings, and outreach tools that were used in our public involvement efforts.

Meetings with Congressional Representatives and/or their Aides

- April 30, 2004. Met with Kristin Eby, aide to Senator Maria Cantwell, Richland, WA.
- May 3, 2004. Met with Larry Bartee, aide to Senator Gordon Smith, Pendleton, WA.
- May 4, 2004. Met with Scott Gruber, aide to Congressman George Nethercutt, WA 5th District
- May 5, 2004. Met with Judy Olsen, aide to Senator Patty Murray, Spokane, WA Office.
- May 7, 2004. Met with Colby Marshall, aide to Representative Greg Walden, OR 2nd District
- May 10, 2004. Met with Shawn Bills, aide to Senator Murray, Yakima WA Office.
- May 18, 2004. Toured with Shawn Bills, aide to Senator Patty Murray.
- May 20, 2004. Met with Joyce Olson, aide to Representative Doc Hastings, WA 4th District

Meetings with Tribal Officials

- April 21, 2004. Met with the Yakama Indian Nation
- April 29, 2004. Met with Confederated Tribes of the Umatilla Indian Reservation.
- May 20, 2004. Met with the Yakama Indian Nation
- July 26, 2004. Met with the Yakama Indian Nation
- August 6, 2004. Met with the Yakama Indian Nation
- October 26, 2004. Met with the Yakama Indian Nation
- March 1, 2005. Met with the Yakama Indian Nation
- March 8, 2005. Met with Confederated Tribes of the Umatilla Indian Reservation.
- March 24, 2005. Met with the Yakama Indian Nation
- May 12, 2005. Met with the Yakama Indian Nation
- May 23, 2005. Met with the Yakama Indian Nation
- September 7, 2005. Met with the Yakama Indian Nation to sign a coordination agreement.
- October 24, 2005. Met with the Yakama Indian Nation

Meetings with Local Elected Officials

- March 14, 2005. Met with Walla Walla County Mosquito District.
- March 28, 2005. Met with Walla Walla County Mosquito District.
- May 26, 2005. Met with Walla Walla County Mosquito District.
- Jan. 19, 2006. Met with Walla Walla County Mosquito District.
- Jan. 31, 2006. Met with Walla Walla County Commissioners.

Meetings with Local Community Organizations involving CCP Issues

- June 1, 2004. Met with Richland Rod and Gun Club
- June 4, 2004. Met with Richland Rod and Gun Club
- September 7, 2004. Met with Richland Rod and Gun Club
- October 4, 2005. Met with Richland Rod and Gun Club

Meetings with Agency Representatives

- February 2, 2004. Meeting with Army Corps of Engineers
- May 25, 2004. Meeting on Columbia Basin Wintering Waterfowl Plan, Yakima, with Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, Yakama Indian Nation and Army Corps of Engineers.
- July 9, 2004. Meeting with Army Corps of Engineers.
- August 4, 2004. Meeting with Yakama Indian Nation, Washington Department of Fish and Wildlife regarding Pelican Planning.
- September 23, 2004. Meeting with Army Corps of Engineers.
- September 24, 2004. Meeting with Army Corps of Engineers.
- December 1, 2004. Meeting with Washington Department of Fish and Wildlife
- January 10, 2005. Meeting with Washington Department of Fish and Wildlife
- February 8, 2005. Meeting with Washington Department of Fish and Wildlife regarding CCP issues at McNary, Nisqually, and Umatilla National Wildlife Refuges.
- March 10, 2005. Meeting with Oregon Department of Fish, Wildlife and Washington Department of Fish and Wildlife, and Yakama Indian Nation regarding Columbia Basin Wintering Waterfowl Plan.
- May 19, 2005. Meeting with Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife regarding wintering waterfowl.
- May 25, 2005. Meeting with Army Corps of Engineers and Washington Department of Fish and Wildlife regarding avian predation.
- July 7, 2005. Meeting with Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife regarding wintering waterfowl plan.
- September 22, 2005. Army Corps of Engineers coordination meeting.
- November 8, 2005. Meeting with Washington Department of Fish and Wildlife.
- January 10, 2006. Meeting with Oregon Department of Fish and Wildlife regarding CCP coordination.
- January 11, 2006. Meeting with Oregon Department of Fish and Wildlife at Boardman.
- October 5, 2006. Meeting with Washington Department of Fish and Wildlife.

Public Open Houses/Scoping Sessions

- June 16, 2004. Public scoping meeting - Burbank, WA
- June 23, 2004. Public scoping meeting - Boardman, OR

Other Meetings

- June 14, 2005. Extended CCP Team meeting.
- June 29, 2005. Regional Office CCP presentation.
- July 21, 2005. Extended CCP Team meeting.
- October 18, 2005. Regional Office Caspian Tern meeting.
- June 7, 2006. Extended CCP Team meeting to review internal draft.
- June 8, 2006. Extended CCP Team meeting to review internal draft.

Press Coverage:

- June 14, 2004. News Release - Tri-City Herald, East Oregonian, and Hermiston Herald.

Planning Updates

- June 2004. Planning Update 1 sent to approximately 2,000 persons/organizations/officials.

Other Tools

- June 2004. Public scoping questionnaire sent to 2,000 people.
- Fall 2004. Refuges' visitor satisfaction survey.
- May 2004. Letters sent to following tribal governments introducing CCP process: Nez Pierce, Confederated Tribes of the Umatilla, Confederated Tribes and Bands of the Yakama Nation, Wanapum People.
- February 2005. Briefing Statement prepared for Service officials.

Federal Register Notices:

- May 24, 2004. Federal Register published *Notice of Intent to Prepare a Draft Comprehensive Conservation Plan and Associated Environmental Assessment; and Notice of Public Meetings.*

APPENDIX B. VERTEBRATE SPECIES OF MCNARY AND UMATILLA REFUGES

The following tables display the vertebrate species known or thought to occur on the Refuges, together with their status (if any) on federal or state threatened and endangered or rare species lists, and Heritage status. Pertinent plans pertaining to the species are noted where they exist.

Table B.1 Birds of McNary and Umatilla National Wildlife Refuges

Common name <i>(Italics = breeds on refuges)</i>	Primary Habitat Association	Occurrence	Mgmt. Plan	Fed List	WA List	OR List	Heritage Global Rank	Heritage WA State Rank	Heritage OR State Rank
Loons (Family Gaviidae)									
Pacific Loon	deepwater	rare	WCP - NR	NL	NL	NL	G5	S4S5N	
Common Loon	deepwater	rare	WCP - HC	NL	WS	NL	G5	S2B,S4N	SH
Grebes (Podicipedidae)									
<i>Pied-billed Grebe</i>	wetlands	common	WCP - NR	NL	NL	NL	G5	S4B,S5N	S5
Horned Grebe	wetlands	occasional	WCP - LC	NL	WM	OSPB	G5	S3B,S5N	S2B,S5N
Red-necked Grebe	wetlands	rare	WCP - LC	NL	WM	OSCB	G5	S3B,S5N	S1B,S4N
Eared Grebe	wetlands	occasional	WCP - HC	NL	NL	NL	G5	S2B,S4N	S4
Western Grebe	wetlands/ deepwater	occasional	WCP - HC	NL	WC	NL	G5	S3B,S3N	S3B,S2S3N
Clark's Grebe	wetlands/ deepwater	rare	WCP - LC	NL	WM	NL	G5	S2B	S3B, S2N
Pelicans (Pelecanidae)									
<i>American White Pelican</i>	wetlands/ deepwater	common	WCP - HC	NL	WE	OSV	G3	S1B	S2B
Cormorants (Phalacrocoracidae)									
<i>Double-crested Cormorant</i>	wetlands/ deepwater	common	WCP - NR	NL	NL	NL	G5	S4S5B	S5
Bitterns/Herons (Ardeidae)									
<i>American Bittern</i>	wetlands	occasional	WCP - LC	NL	NL	NL	G4	S4B,S3N	S4
<i>Great Blue Heron</i>	wetlands	common	WCP - NR	NL	WM	NL	G5	S4S5B,S5N	S4
<i>Great Egret</i>	wetlands	occasional	WCP - NR	NL	WM	NL	G5	S3B	S3
<i>Cattle egret</i>	wetlands	rare		NL	NL	NL	G5	SNA	
<i>Black-crowned Night-Heron</i>	wetlands	common	WCP - MC	NL	WM	NL	G5	S3B,S3N	S4
Ibises (Threskiornithidae)									
White-faced ibis	wetlands	rare	WCP - MC	FS C	NL	NL	G5	SNA	S3B
Swans/Geese/Ducks (Anatidae)									
Tundra Swan	wetlands	occasional	NAWMP	NL	NL	NL	G5	S4N	
Trumpeter Swan	wetlands	rare	NAWMP	NL	NL	NL	G4	S3N	S1?B,S3N
White-fronted Goose	wetlands	occasional	NAWMP	NL	NL	NL	G5	S3S4N	
Ross's Goose	wetlands	rare	NAWMP	NL	NL	NL	G4	SNA	
Snow Goose	wetlands	occasional	NAWMP	NL	NL	NL	G5	S3N	
<i>Canada Goose</i>	wetlands	abundant	NAWMP	NL	NL	NL	G5	S5B,S5N	S5
<i>Wood Duck</i>	wetlands	occasional	NAWMP	NL	NL	NL	G5	S3N,S4B	S4
<i>Green-winged Teal</i>	wetlands	common	NAWMP	NL	NL	NL	G5	S4B, S3N	S5
<i>Mallard</i>	wetlands	abundant	NAWMP	NL	NL	NL	G5	S5B,S5N	S5

Common name (<i>Italics = breeds on refuges</i>)	Primary Habitat Association	Occurrence	Mgmt. Plan	Fed List	WA List	OR List	Heritage Global Rank	Heritage WA State Rank	Heritage OR State Rank
<i>Northern Pintail</i>	wetlands	common	NAWMP	NL	NL	NL	G5	S4B,S4N	S5
<i>Blue-winged Teal</i>	wetlands	common	NAWMP	NL	NL	NL	G5	S5B	S4
<i>Cinnamon Teal</i>	wetlands	common	NAWMP	NL	NL	NL	G5	S5B	S5
<i>Northern Shoveler</i>	wetlands	common	NAWMP	NL	NL	NL	G5	S4B,S3N	S5
<i>Gadwall</i>	wetlands	common	NAWMP	NL	NL	NL	G5	S4N,S5B	S5
Eurasian Wigeon	wetlands	rare	NAWMP	NL	NL	NL	G5	S4N	
<i>American Wigeon</i>	wetlands	common	NAWMP	NL	NL	NL	G5	S4B,S5N	S5
Canvasback	wetlands	common	NAWMP	NL	NL	NL	G5	S3B,S4N	S4
<i>Redhead</i>	wetlands	common	NAWMP	NL	NL	NL	G5	S3N,S5B	S4
<i>Ring-necked Duck</i>	wetlands	common	NAWMP	NL	NL	NL	G5	S3N,S4B	S3
Greater Scaup	wetlands	occasional	NAWMP	NL	NL	NL	G5	S3N	SU
<i>Lesser Scaup</i>	wetlands	common	NAWMP	NL	NL	NL	G5	S3N,S4B	S3
Harlequin Duck	wetlands	rare	NAWMP	FSC	NL	OSUB	G4	S2B,S3N	S2B,S3N
Long-tailed Duck	wetlands	rare	NAWMP	NL	NL	NL	G5	S3S4N	
Surf Scoter	wetlands	rare	NAWMP	NL	NL	NL	G5	S3N	
White-winged Scoter	wetlands	rare	NAWMP	NL	NL	NL	G5	S3N	
Common Goldeneye	wetlands	common	NAWMP	NL	NL	NL	G5	S5N	SU
Barrow's Goldeneye	wetlands	rare	NAWMP	NL	NL	OSUB	G5	S3B,S4N	S3B,S3N
Bufflehead	wetlands	common	NAWMP	NL	NL	OSUB	G5	S4N	S2B, S5N
Hooded Merganser	wetlands	occasional	NAWMP	NL	NL	NL	G5	S3B,S4B	S4
Common Merganser	wetlands	occasional	NAWMP	NL	NL	NL	G5	S3N,S4B	S4
Red-breasted Merganser	wetlands	rare	NAWMP	NL	NL	NL	G5	S3N	
<i>Ruddy Duck</i>	wetlands	common	NAWMP	NL	NL	NL	G5	S4B,S3N	S4
Vultures (Cathartidae)									
Turkey Vulture	various	rare		NL	WM	NL	G5	S4B	S5
Kites/Eagles/Hawks (Accipitridae)									
<i>Osprey</i>	wetlands/deepwater	occasional		NL	WM	NL	G5	S4B	S4
Bald Eagle	riparian	occasional	Recovery	FT	WT	OT	G5	S4B,S4N	S4B,S4N
Northern Harrier	shrub-steppe	common		NL	NL	NL	G5	S4B,S4S5N	S5
<i>Sharp-shinned Hawk</i>	riparian	occasional		NL	NL	NL	G5	S3S4B,S4N	S4
Cooper's hawk	riparian	occasional		NL	NL	NL	G5	S4B,S4N	S4
Northern Goshawk	riparian	rare	ICBEMP	FS C	WC	OSC	G5	S3B,S3N	S3B
<i>Swainson's Hawk</i>	riparian	occasional	PIF	NL	WM	OSV	G5	S3S4B	S3B
<i>Red-tailed Hawk</i>	riparian	common		NL	NL	NL	G5	S5B,S5N	S5
Ferruginous Hawk	shrub-steppe	rare	PIF, ICBEMP	FS C	WT	OSC	G4	S2B	S3B
Rough-legged Hawk	shrub-steppe	occasional		NL	NL	NL	G5	S4N	
Golden Eagle	shrub-steppe	occasional	PIF	NL	WC	NL	G5	S3	S4
Falcons (Falconidae)									
<i>American kestrel</i>	riparian	common		NL	NL	NL	G5	S4S5B	S5
Merlin	riparian	occasional		NL	WC	NL	G5	S3B,S4N	SHB
<i>Peregrine Falcon</i>	cliffs	rare	PIF	FS C	WS	OE	G4	S2B,S3N	S2B, S5N

Common name (<i>Italics = breeds on refuges</i>)	Primary Habitat Association	Occurrence	Mgmt. Plan	Fed List	WA List	OR List	Heritage Global Rank	Heritage WA State Rank	Heritage OR State Rank
<i>Prairie Falcon</i>	cliffs	occasional	PIF	NL	WM	NL	G5	S3B,S3N	S4
Gallinaceous Birds (Phasianidae)									
Gray Partridge	croplands	rare		NL	NL	NL	G5	SNA	SE
Chukar	shrub-steppe	occasional		NL	NL	NL	G5	SNA	SE
<i>Ring-necked Pheasant</i>	croplands	occasional		NL	NL	NL	G5	SNA	SE
Wild Turkey	riparian	rare		NL	NL	NL	G5	SNA	SE
<i>California Quail</i>	various	common		NL	NL	NL	G5	SNA	S4SE
Rails (Rallidae)									
<i>Virginia Rail</i>	wetlands	common	WCP - LC	NL	NL	NL	G5	S3N,S4B	S4
<i>Sora</i>	wetlands	occasional	WCP - LC	NL	NL	NL	G5	S4B	S4
<i>American Coot</i>	wetlands	abundant	WCP - NR	NL	NL	NL	G5	S4B	S5
Cranes (Gruidae)									
Sandhill Crane	wetlands	rare	WCP - HC	NL	WE	OSV	G5	S1B,S3N	S3S4B
Plovers (Charadriidae)									
Black-bellied Plover	wetlands	occasional	SCP	NL	NL	NL	G5	S4N	
Pacific golden plover	wetlands	rare	SCP	NL	NL	NL	G5	S2S3N	
American golden plover	wetlands	occasional	SCP	NL	NL	NL	G5	S3N	
Semi-palmated Plover	wetlands	occasional	SCP	NL	NL	NL	G5	S4N	S1
<i>Killdeer</i>	wetlands	abundant	SCP	NL	NL	NL	G5	S4S5B,S4S5N	S5
Stilts/Avocets (Recurvirostridae)									
<i>Black-necked Stilt</i>	wetlands	common	SCP	NL	WM	NL	G5	S3B	S4
<i>American Avocet</i>	wetlands	common	SCP	NL	NL	NL	G5	S4B	S4
Sandpipers/Phalaropes/Allies (Scolopacidae)									
Greater Yellowlegs	wetlands	common	SCP	NL	NL	NL	G5	S4S5N	S1
Lesser Yellowlegs	wetlands	occasional	SCP	NL	NL	NL	G5	S4N	
Solitary Sandpiper	wetlands	occasional	SCP	NL	NL	NL	G5	S3S4N	S1
<i>Spotted Sandpiper</i>	wetlands	common	SCP	NL	NL	NL	G5	S3N,S4B	S4
<i>Long-billed Curlew</i>	wetlands	occasional	SCP	NL	WM	OSV	G5	S2BS3B,S2N	S3B
Marbled Godwit	wetlands	occasional	SCP	NL	NL	NL	G5	S3N	
Sanderling	wetlands	rare	SCP	NL	NL	NL	G5	S4N	
Western Sandpiper	wetlands	common	SCP	NL	NL	NL	G5	S4S5N	
Semi-palmated Sandpiper	wetlands	rare	SCP	NL	NL	NL	G5	SNA	
Least Sandpiper	wetlands	occasional	SCP	NL	NL	NL	G5	S4N	
Baird's Sandpiper	wetlands	occasional	SCP	NL	NL	NL	G5	SNA	
Pectoral Sandpiper	wetlands	occasional	SCP	NL	NL	NL	G5	S3N	
Dunlin	wetlands	occasional	SCP	NL	NL	NL	G5	S4S5N	
Long-billed Dowitcher	wetlands	occasional	SCP	NL	NL	NL	G5	S4S5N	
<i>Wilson's Snipe</i>	wetlands	common	SCP	NL	NL	NL	G5	S4B,S5N	S4
<i>Wilson's Phalarope</i>	wetlands	occasional	SCP	NL	NL	NL	G5	S3B?	S4
Red-necked Phalarope	wetlands	occasional	SCP	NL	NL	NL	G4G5	S4N	
Jaegers/Gulls/Terns (Laridae)									
Parasitic Jaeger	wetlands/deepwater	rare		NL	NL	NL	G5	S4N	

Common name (<i>Italics = breeds on refuges</i>)	Primary Habitat Association	Occurrence	Mgmt. Plan	Fed List	WA List	OR List	Heritage Global Rank	Heritage WA State Rank	Heritage OR State Rank
Franklin's Gull	wetlands/deepwater	occasional	WCP - HC	NL	NL	OSP	G4G5	SNA	S2B
Bonaparte's Gull	wetlands/deepwater	occasional	WCP - NR	NL	NL	NL	G5	S5N	
Mew gull	wetlands/deepwater	rare	WCP - NR	NL	NL	NL	G5	S5N	
<i>Ring-billed Gull</i>	wetlands/deepwater	abundant	WCP - NR	NL	NL	NL	G5	S5B,S5N	S5
<i>California Gull</i>	wetlands/deepwater	common	WCP - HC	NL	NL	NL	G5	S4B,S5N	S5
Herring Gull	wetlands/deepwater	occasional	WCP - NR	NL	NL	NL	G5	S4N	
Thayer's Gull	wetlands/deepwater	occasional	WCP - MC	NL	NL	NL	G5	S4N	
Western Gull	wetlands/deepwater	occasional		NL	NL	NL	G5	S4B,S4N	S4
Glaucous Gull	wetlands/deepwater	rare		NL	NL	NL	G5	SNA	
Glaucous-winged Gull	wetlands/deepwater	occasional	WCP - NR	NL	NL	NL	G5	S5B,S5N	S2
<i>Caspian Tern</i>	wetlands/deepwater	common	WCP - LC	NL	WM	NL	G5	S3B?	S4
Common tern	wetlands/deepwater	occasional		NL	NL	NL	G5	S4N	
<i>Forster's Tern</i>	wetlands/deepwater	occasional	WCP - MC	NL	WM	NL	G5	S3B	S3B
Black Tern	wetlands/deepwater	occasional	WCP - HC	FS C	WM	NL	G4	S4B	S3B
Doves (Columbidae)									
<i>Rock Dove</i>	various	common	none	NL	NL	NL	G5	SNA	SE
<i>Mourning Dove</i>	various	abundant	none	NL	NL	NL	G5	S5B,S5N	S5
Barn Owls (Tytonidae)									
<i>Common Barn Owl</i>	various	common		NL	NL	NL	G5	S4	S4
Typical Owls									
<i>Western Screech Owl</i>	riparian	occasional		NL	NL	NL	G5	S4	S4
<i>Great Horned Owl</i>	riparian	common		NL	NL	NL	G5	S5	S5
Snowy Owl		rare		NL	WM	NL	G5	S3N	
<i>Burrowing Owl</i>	shrub-steppe	occasional	PIF, ICBEMP	FS C	WC	OSC	G4	S2S3B	S3B
<i>Long-eared Owl</i>	riparian	occasional	ICBEMP	NL	NL	NL	G5	S3B,S4N	S4
<i>Short-eared Owl</i>	various	occasional	ICBEMP	NL	NL	NL	G5	S3B,S4N	S4
Northern Saw-whet Owl	riparian	rare		NL	NL	NL	G5	S4B,S4N	S4
Goatsuckers (Caprimulgidae)									
<i>Common Nighthawk</i>	shrub-steppe	occasional		NL	NL	NL	G5	S4B	S5B
Common Poorwill	shrub-steppe	rare		NL	NL	NL	G5	S3S4B	
Vaux's Swift	riparian	occasional		NL	WC	NL	G5	S3S4B	S5
<i>White-throated Swift</i>	cliffs	rare		NL	NL	NL	G5	S3S4B	S4
Hummingbirds (Trochilidae)									
Black-chinned Hummingbird	riparian	occasional	ICBEMP	NL	NL	NL	G5	S4B	S4
Rufous Hummingbird	riparian	rare	ICBEMP	NL	NL	NL	G5	S4S5B	S4
Kingfishers (Alcedinidae)									
<i>Belted Kingfisher</i>	wetlands	occasional		NL	NL	NL	G5	S5	S4

Common name (<i>Italics = breeds on refuges</i>)	Primary Habitat Association	Occurrence	Mgmt. Plan	Fed List	WA List	OR List	Heritage Global Rank	Heritage WA State Rank	Heritage OR State Rank
Woodpeckers (Picidae)									
Lewis' woodpecker	riparian	rare	PIF	FS C	WC	OSC	G4	S3B	S2S3B
Red-naped Sapsucker	riparian	rare		NL	NL	NL	G5	S4S5B	S4
<i>Downy Woodpecker</i>	riparian	common		NL	NL	NL	G5	S4S5	S4
Hairy Woodpecker	riparian	rare		NL	NL	NL	G5	S5	S4
<i>Northern Flicker</i>	riparian	common		NL	NL	NL	G5	S5	S5
Flycatchers (Tyrannidae)									
Olive-sided Flycatcher	riparian	occasional		FS C	NL	OSV	G4	S4B	S3B
<i>Western Wood-Pewee</i>	riparian	common		NL	NL	NL	G5	S5B	S4
Willow Flycatcher	riparian	occasional		FS	NL	OSU	G5	S4S5B	S3S4B
Hammond's Flycatcher	riparian	occasional		NL	NL	NL	G5	S5B	S4
Dusky Flycatcher	riparian	occasional		NL	NL	NL	G5	S4S5B	S4
Gray Flycatcher	riparian	rare		NL	WM	NL	G5	S2S3B	S4
Western Flycatcher	riparian	occasional		NL	NL	NL	G5	S3B	S4
<i>Say's Phoebe</i>	shrub-steppe	occasional		NL	NL	NL	G5	S5B	S4
<i>Western Kingbird</i>	shrub-	common		NL	NL	NL	G5	S5B	S5
<i>Eastern Kingbird</i>	riparian	common		NL	NL	NL	G5	S4S5B	S4
Larks (Alaudidae)									
<i>Horned Lark</i>	shrub-	occasional		NL	NL	NL	G5	S4S5B	S5
Swallows (Hirundinidae)									
Tree Swallow	various	occasional		NL	NL	NL	G5	S5B	S5
<i>Violet-green Swallow</i>	various	common		NL	NL	NL	G5	S5B	S5
<i>Northern Rough-winged</i>	various	common		NL	NL	NL	G5	S4S5B	S4
<i>Bank Swallow</i>	various	abundant		NL	NL	OSU	G5	S4B	S4
<i>Cliff Swallow</i>	various	abundant		NL	NL	NL	G5	S5B	S5
<i>Barn Swallow</i>	various	common		NL	NL	NL	G5	S4S5B	S5
Jays/Magpies/Crows (Corvidae)									
Steller's jay	riparian	rare		NL	NL	NL	G5	S5	S5
<i>Black-billed Magpie</i>	various	common		NL	NL	NL	G5	S5	S5
<i>American Crow</i>	various	common		NL	NL	NL	G5	S5	S5
<i>Common Raven</i>	various	common		NL	NL	NL	G5	S5	S4
Chickadees and Titmice (Paridae)									
Black-capped Chickadee	riparian	common		NL	NL	NL	G5	S5	S5
Nuthatches (Sittidae)									
Red-breasted nuthatch	riparian	uncommon		NL	NL	NL	G5	S5	S5
White-breasted nuthatch	riparian	uncommon		NL	NL	NL	G5	S4	S4
Creepers (Certhiidae)									
Brown Creeper	riparian	rare		NL	NL	NL	G5	S4S5B,S5N	S4
Wrens (Troglodytidae)									
<i>Rock Wren</i>	basalt cliffs	occasional		NL	NL	NL	G5	S5B,SZN	S5
<i>Canyon Wren</i>	basalt cliffs	occasional		NL	NL	NL	G5	S4	S4
<i>Bewick's Wren</i>	riparian	common	PIF	NL	NL	NL	G5	S5	S4
<i>House Wren</i>	riparian	common		NL	NL	NL	G5	S5B	S4

Common name (<i>Italics = breeds on refuges</i>)	Primary Habitat Association	Occurrence	Mgmt. Plan	Fed List	WA List	OR List	Heritage Global Rank	Heritage WA State Rank	Heritage OR State Rank
Winter Wren	riparian	occasional		NL	NL	NL	G5	S5	S4
<i>Marsh Wren</i>	wetlands	abundant		NL	NL	NL	G5	S4N,S5B	S5
Golden-crowned Kinglet	riparian	occasional		NL	NL	NL	G5	S4S5B	S4
Ruby-crowned Kinglet	riparian	common		NL	NL	NL	G5	S4B,S5N	S4
Thrushes									
Western Bluebird	riparian	occasional	ICBEMP	NL	WM	NL	G5	S3B	S4B,S4N
Mountain Bluebird	riparian	occasional		NL	NL	NL	G5	S4B	S4
Townsend's Solitaire	riparian	occasional		NL	NL	NL	G5	S4S5B	S4
Swainson's Thrush	riparian	occasional		NL	NL	NL	G5	S5B	S5
Hermit Thrush	riparian	occasional		NL	NL	NL	G5	S4N,S5B	S4
<i>American Robin</i>	riparian	common		NL	NL	NL	G5	S5B,S5N	S5
Varied Thrush	riparian	occasional		NL	NL	NL	G5	S5B,S5N	S4
Mockingbirds Thrashers (Mimidae)									
Sage Thrasher	shrub-steppe	occasional	ICBEMP	NL	WC	NL	G5	S3B	S4
Wagtails/Pipits (Motacillidae)									
American Pipit	mudflats	occasional		NL	NL	NL	G5	S3B,S3N	SU
Waxwings									
Bohemian Waxwing	riparian	rare		NL	NL	NL	G5	S5N	
Cedar Waxwing	riparian	occasional		NL	NL	NL	G5	S2S4N	S5
Shrikes (Laniidae)									
Northern Shrike	shrub-	uncommo		NL	NL	NL	G5	S4N	
Loggerhead Shrike	shrub-steppe	occasional	PIF, ICBEMP	FSC	WC	OSV	G4	S3B	S3B,S2N
Starlings/Mynas (Sturnidae)									
<i>European Starling</i>	riparian	abundant		NL	NL	NL	G5	SNA	SE
Vireos (Vireonidae)									
Cassin's Vireo	riparian	occasional		NL	NL	NL	G5	S4B	S4
Warbling Vireo	riparian	occasional		NL	NL	NL	G5	S5B	S5
Red-eyed Vireo	riparian	occasional		NL	NL	NL	G5	S3B	S4
Wood Warblers (Parulidae)									
Orange-crowned	riparian	occasional		NL	NL	NL	G5	S4B	S5
Nashville Warbler	riparian	rare		NL	NL	NL	G5	S4S5B	S4
<i>Yellow warbler</i>	riparian	occasional	PIF	NL	NL	NL	G5	S4S5B	S4
Yellow-rumped	riparian	common		NL	NL	NL	G5	S4N,S5B	S5
Townsend's Warbler	riparian	occasional		NL	NL	NL	G5	S4N,S5B	S4
MacGillivray's Warbler	riparian	occasional		NL	NL	NL	G5	S4S5B	S4
Common Yellowthroat	riparian	rare		NL	NL	NL	G5	S5B	S5
Wilson's Warbler	riparian	occasional		NL	NL	NL	G5	S5B	S5
<i>Yellow-breasted Chat</i>	riparian	occasional	PIF	NL	NL	NL	G5	S3S4B	S4B
Tanagers (Thraupidae)									
Western Tanager	riparian	occasional		NL	NL	NL	G5	S5B	S4
Towhees and Sparrows (Emerizidae)									
Spotted Towhee	riparian	occasional		NL	NL	NL	G5	S5B,S5N	S5
Chipping Sparrow	riparian	occasional		NL	NL	NL	G5	S4S5B	S4
Brewer's Sparrow	shrub-steppe	occasional	PIF, ICBEMP	NL	NL	NL	G5	S3B	S4

Common name (<i>Italics = breeds on refuges</i>)	Primary Habitat Association	Occurrence	Mgmt. Plan	Fed List	WA List	OR List	Heritage Global Rank	Heritage WA State Rank	Heritage OR State Rank
<i>Vesper Sparrow</i>	shrub-steppe	occasional	ICBEMP	NL	NL	NL	G5	S4B	S4
<i>Lark Sparrow</i>	shrub-steppe	occasional	ICBEMP	NL	NL	NL	G5	S3B	S4
Sage Sparrow	shrub-steppe	occasional	PIF, ICBEMP	NL	WC	OSC	G5	S3B	S2B
American Tree sparrow	riparian	rare		NL	NL	NL	G5	S4N	
<i>Savannah Sparrow</i>	shrub-steppe	common		NL	NL	NL	G5	S4N,S5B	S5
<i>Grasshopper Sparrow</i>	shrub-steppe	occasional	ICBEMP	NL	WM	OSV/S P	G5	S3B	S2B
Fox Sparrow	riparian	occasional		NL	NL	NL	G5	S4B,S5N	S4
<i>Song Sparrow</i>	riparian	abundant		NL	NL	NL	G5	S5	S5
Lincoln's Sparrow	riparian	occasional		NL	NL	NL	G5	S4B,S4N	S4
Golden-crowned Sparrow	riparian	rare		NL	NL	NL	G5	S5B	
White-crowned Sparrow	riparian	abundant		NL	NL	NL	G5	S5B,S5N	S5
Harris' Sparrow	riparian	occasional		NL	NL	NL	G5	SNA	
Swamp Sparrow	wetlands	rare		NL	NL	NL	G5	SNA	
Dark-eyed Junco	riparian	occasional		NL	NL	NL	G5	S5B,S5N	S5
Grosbeaks (Cardinalidae)									
<i>Black-headed Grosbeak</i>	riparian	occasional		NL	NL	NL	G5	S5B	S5
<i>Lazuli Bunting</i>	riparian	occasional	PIF, ICBEMP	NL	NL	NL	G5	S5B	S4
Blackbirds and Orioles (Icteridae)									
<i>Red-winged Blackbird</i>	wetlands	abundant		NL	NL	NL	G5	S5B,S5N	S5
<i>Western Meadowlark</i>	shrub-steppe	common	ICBEMP	NL	NL	NL	G5	S4N,S4S 5B	S4
<i>Yellow-headed Blackbird</i>	wetlands	common		NL	NL	NL	G5	S3N,S4B	S5
<i>Brewer's Blackbird</i>	various	occasional		NL	NL	NL	G5	S5	S5
<i>Brown-headed Cowbird</i>	riparian	common	ICBEMP	NL	NL	NL	G5	S4N,S5B	S5
<i>Bullock's Oriole</i>	riparian	uncommo	PIF	NL	NL	NL	G5	S4B	S4
Finches (Fringillidae)									
Gray-crowned Rosy Finch	various	rare		NL	NL	NL	G5	S3B,S3N	S3
Purple Finch	riparian	rare		NL	NL	NL	G5	S4B,S4N	S4
Cassin's Finch	riparian	rare		NL	NL	NL	G5	S4S5B	S4
<i>House Finch</i>	riparian	common		NL	NL	NL	G5	S5	S5
Red Crossbill	riparian	rare		NL	NL	NL	G5	S4B	S4
Common Redpoll	riparian	rare		NL	NL	NL	G5	S2S4N	
Pine Siskin	riparian	occasional		NL	NL	NL	G5	S4S4N	S5
<i>American Goldfinch</i>	riparian	common		NL	NL	NL	G5	S5B,S5N	S4
Evening Grosbeak	riparian	occasional		NL	NL	NL	G5	S4B,S4N	S5
Old World Sparrows (Passeridae)									
<i>House Sparrow</i>	croplands	common		NL	NL	NL	G5	SNA	SE

Table B.2 Amphibians and Reptiles of McNary and Umatilla National Wildlife Refuges

Common Name	Scientific Name	Habitat Type	Present on Refuge	Fed list	OR List	Heritage Global Rank	Heritage OR Rank
Order Caudata							
Tiger Salamander	Ambystoma tigrinum	variable habitats	YES	NL	NL		
Long-Toed Salamander	Ambystoma macrodactylum	semiarid sagebrush desert, under rocks near water	unknown	NL	NL	G5	S5
Order Anura							
Great Basin Spadefoot	Spea intermontana	variable habitats with sandy soil near water	YES	NL	NL	G5	S5
Western Toad	Bufo boreas	variable habitats near water	unknown	NL	OSV	G4	S4
Wood-house's Toad	Bufo woodhousii	found in permanent water sources in arid lands	YES	NL	OSP	G5	S2
Pacific Treefrog	Hyla regilla	variable habitats, can wander far from water	YES	NL	NL	G5	S5
Northern Leopard Frog	Rana pipiens	prefers quiet flowing water	unknown	NL	OSC	G5	S2
Bullfrog	Rana catesbeiana	always found in or near water in variable habitats	YES	NL	NL	G5	SE
Order Testudines							
Painted Turtle	Chrysemys picta	shallow, quiet water w/muddy substrate in variable	YES	NL	OSC	G5	S2
Order Squamata							
Short-horned Lizard	Phrynosoma douglassii	sagebrush with sandy soils	YES	NL	NL	G5	S4
Sagebrush Lizard	Sceloporus graciosus	sagebrush with open ground adjacent to cover	YES	FSC	OSV	G5	S5
Side-blotched Lizard	Uta stansburiana	arid regions with scattered brush	YES	NL	NL	G5	S5
Western Skink	Eumeces skiltonianus	moist places in arid lands	YES	NL	NL	G5	S5
Rubber Boa	Charina bottae	variable habitats	unknown	NL	NL	G5	S4
Western Racer	Coluber mormon	open areas in sagebrush habitat	YES	NL	NL	G5	S4
Night Snake	Hypsiglena torquata	arid desert scrub near rocky outcrops	unknown	NL	NL	G5	S3
Striped Whipsnake	Masticophis taeniatus	sagebrush flats	unknown	NL	NL	G5	S4
Gopher Snake	Pituophis catenifer	variable habitats	YES	NL	NL	G5	S5
Common Garter Snake	Thamnophis sirtalis	variable habitats	YES	NL	NL	G5	S5
Western terrestrial garter snake	Thamnopsis elegans	variable habitats, often near water	unknown	NL	NL	G5	S5
Western Rattlesnake	Crotalus viridis	variable habitats near rocky areas	YES	NL	NL	G5	S4

Table B.3. Mammals of McNary and Umatilla National Wildlife Refuges

Common Name	Habitat Type	Present on Refuge	Plan	Fed List	WA List	OR List	Heritage Global	Heritage WA	Heritage OR
Order Insectivora									
Preble's Shrew	near streams in arid lands	unknown	ICBEMP	FSC	WM	NL	G4	SR	S3
Vagrant Shrew	wetlands	unknown		NL	NL	NL	G5	S5	S4
Merriam's Shrew	shrub-steppe grasslands	unknown		NL	WC	NL	G5	S3	S3
Coast Mole	loose soil in varying habitats	unknown		NL	NL	NL	G5	S5	S5
Order Chiroptera									
Little Brown Myotis	riparian	Yes		NL	NL	NL	G5	S5	S4
Yuma Myotis	near water in desert scrub	unknown	ICBEMP	FSC	NL	NL	G5	S5	S3
Long-eared Myotis	watercourses in arid regions	unknown	ICBEMP	FSC	WM	OSU	G5	S3	S3
Fringed Myotis	variable, prefers riparian	unknown	ICBEMP	FSC	WM	OSV	G4G5	S3	S2
Long-legged Myotis	riparian forests	unknown	ICBEMP	FSC	WM	OSU	G5	S3	S3
California Myotis	crevice dweller near water	unknown		NL	NL	NL	G5	S5	S4
Western Small-footed Myotis	cliffs in arid lands	unknown	ICBEMP	FSC	WM	OSU	G5	S4	S3
Hoary Bat	riparian corridors	Yes	ICBEMP	NL	NL	NL	G5	S5	S4
Western Pipstrelle	greasewood, sage, open arid	unknown		NL	WM	NL	G5	S4	S4
Big Brown Bat	variable near development	unknown		NL	NL	NL	G5	S5	S4
Spotted Bat	variable, nests in cliff crevices	unknown	ICBEMP	FSC	WM	NL	G4	S3	S1
Townsend's Big-Eared Bat	all habitats, roosts in caves	unknown	ICBEMP	FSC	WC	OSC	G4	S2	S2
Pallid Bat	sage, arid lands	unknown	ICBEMP	FSC	WM	OSV	G5	S3	S3
Order Carnivora									
Coyote	variable	Yes		NL	NL	NL	G5	S5	S5
Red Fox	variable	Yes		NL	NL	NL	G5	S5	S4
Raccoon	variable	Yes		NL	NL	NL	G5	S5	S5
Long-tailed Weasel	all habitats	Yes		NL	NL	NL	G5	S5	S5
Mink	wetlands	Yes		NL	NL	NL	G5	S5	S5
Badger	variable open habitats	Yes		NL	NL	NL	G5	S5	S4
Striped Skunk	all habitats	Yes		NL	NL	NL	G5	S5	S5
River Otter	freshwater creeks	Yes		NL	NL	NL	G5	S5	S4
Mountain Lion	variable - occasional visitor	Yes		NL	NL	NL	G5	S4S5	S4
Bobcat	arid sub-species	Yes		NL	NL	NL	G5	S5	S4
Order Artiodactyla									
Elk	variable prefer forest	Yes		NL	NL	NL	G5	S5	S5
Mule Deer	shrub-steppe/ woodlands	Yes		NL	NL	NL	G5	S5	S5
White-tailed Deer	riparian thickets	Yes		NL	NL	NL	G5	S5	

Common Name	Habitat Type	Present on Refuge	Plan	Fed List	WA List	OR List	Heritage Global	Heritage WA	Heritage OR
Order Rodentia									
Least Chipmunk	shrub-steppe	unknown		NL	NL	NL	G5	S4	S4
Yellow-pine Chipmunk	shrub-steppe	unknown		NL	NL	NL	G5	S5	S4
Yellow-bellied Marmot	talus and rock piles in variable	Yes		NL	NL	NL	G5	S5	S4
Townsend's Ground Squirrel	shrub-steppe	unknown		NL	WC	NL	G4	S4	
Washington Ground Squirrel	shrub-steppe	unknown	ICBEMP	FC	WC	OE	G2	S2	S2
Northern Pocket Gopher	variable, riparian	Yes		NL	NL	NL	G5	S5	S4
Great Basin Pocket Mouse	sagebrush/grease wood	Yes		NL	NL	NL	G5	S5	
Ord's Kangaroo Rat	sandy shrub-steppe	Yes		NL	WM	NL	G5	S3S4	S4
American Beaver	wetlands	Yes		NL	NL	NL	G5	S5	S5
Western Harvest Mouse	grassy areas near water	unknown		NL	NL	NL	G5	S5	S4
Deer Mouse	all habitat types	Yes		NL	NL	NL	G5	S5	S5
Northern Grasshopper Mouse	sagebrush with fine sandy soil	unknown		NL	WM	NL	G5	S5	S4
Bushy-tailed Woodrat	variable habitat types	unknown		NL	NL	NL	G5	S5	S5
Sagebrush Vole	arid shrub-steppe w/ grass	unknown	ICBEMP	NL	WM	NL	G5	S2S3	S4
Muskrat	aquatic	Yes		NL	NL	NL	G5	S5	S5
Porcupine	riparian forests	Yes		NL	NL	NL	G5	S5	S5
Order Lagomorpha									
Pygmy Rabbit	dense clumps, great basin sage	unknown		FE	WE	OSV	G4	S1	S2
Nuttall's Cottontail	shrub-steppe, rocky ravines	YES		NL	NL	NL	G5	S5	S4
White-tailed Jackrabbit	open shrub-steppe	unknown		NL	WC	OSU	G5	S4	S4
Blacktailed Jackrabbit	open shrub-steppe	YES		NL	WC	NL	G5	S4	S4

Description of codes used on Lists

Management Plan

ICBEMP = Interior Columbia Basin Ecosystem Management Plan
 NAWMP = North American Waterfowl Management Plan
 PIF = Partners in Flight
 SCP = Shorebird Conservation Plan
 WCP = Waterbird Conservation Plan
 LC = Low Concern
 HC = High Concern
 MC = Medium Concern
 NR = Not at Risk

<p>Federal List FE = Federal Endangered FT = Federal Threatened FC = Federal Candidate FSC = Federal Species of concern NL = Not Listed</p>
<p>WA List WE = Washington Endangered WT = Washington Threatened WC = Washington Candidate WS = Washington Sensitive WM = Washington Monitored NL = Not Listed</p>
<p>OR List OE = Oregon Endangered OT = Oregon Threatened OSC = Oregon Sensitive - Critical OSV = Oregon Sensitive - Vulnerable OSP = Oregon Sensitive - Peripheral OSU = Oregon Sensitive - Undetermined Status NL = Not Listed</p>
<p>Natural Heritage G4 = Apparently secure globally G5 = Demonstrably secure globally S1 = Critically imperiled (5 or fewer occurrences) S2 = Vulnerable to extirpation (6-20 occurrences) S3 = Rare or uncommon (21-100 occurrences) S4 = Apparently secure, with many occurrences S5 = demonstrably secure in state SE = An exotic established in the state SH = Historical occurrences only but still expected to occur SU = Status uncertain: need more information SNA = Not applicable B = breeding N = Nonbreeding</p>

APPENDIX C. COMPATIBILITY DETERMINATIONS

Introduction

The compatibility determinations (CDs) developed during the CCP planning process evaluate uses as projected to occur under Alternative 2, the Preferred Alternative in the Draft EA for the McNary and Umatilla Refuges CCP (Draft CCP/EA). The evaluation of funds needed for management and implementation of each use also assumes implementation as described under Alternative 2. Chapter 7 of the Draft CCP/EA also contains analysis of the impacts of public uses to wildlife and habitats. That portion of the document is intended to be incorporated through reference into this set of CDs. Uses that occur on the Hanford Island Unit of McNary Refuge are not evaluated in these CDs. The Hanford Islands Unit is being planned under the Hanford Reach National Monument CCP.

A. Uses evaluated at this time

The following section includes full CDs for all Refuge uses that are required to be evaluated at this time. According to Service policy, compatibility determinations will be completed for all uses proposed under a CCP. Existing wildlife-dependent recreational uses must also be reevaluated and new CDs prepared during development of a CCP. According to the Service’s compatibility policy, uses other than wildlife-dependent recreational uses are not explicitly required to be reevaluated in concert with preparation of a CCP, unless conditions of the use have changed or unless significant new information relative to the use and its effects have become available or the existing CDs are more than 10 years old. However, the Service planning policy recommends preparing CDs for all individual uses, specific use programs, or groups of related uses associated with the proposed action. Accordingly, the following CDs are included in this document for public review.

Refuge Use	Page	Compatible	Year Due for Re-evaluation
Wildlife Observation and Photography	C-4	yes	2022
Waterfowl Hunting; Upland game bird hunting; other migratory bird hunting (McNary)	C-13	yes	2022
Waterfowl Hunting; Upland game bird hunting; other migratory bird hunting (Umatilla)	C-19	yes	2022
Big Game Hunting (McNary)	C-25	yes	2022
Big Game Hunting (Umatilla)	C-30	yes	2022
Fishing	C-36	yes	2022
Environmental Education and Interpretation	C-46	yes	2022
Boating	C-53	yes	2017
Camping	C-63	no	n/a
Horseback Riding	C-73	yes	2017
Swimming and Beach Use	C-81	no	n/a
Farming	C-88	yes	2017
Research	C-94	yes	2017
Dog Training, including Field Trials	C-102	no	n/a

B. Compatibility - Legal and Historical Context

Compatibility is a tool Refuge managers use to ensure that recreational and other uses do not interfere with wildlife conservation, the primary focus of Refuges. Compatibility is not new to the Refuge System and dates back to 1918, as a concept. As policy, it has been used since 1962. The Refuge Recreation Act of 1962 directed the Secretary of the Interior to allow only those public uses of Refuge lands that were “compatible with the primary purposes for which the area was established.”

Legally, Refuges are closed to all public uses until officially opened through a compatibility determination. Regulations require that adequate funds be available for administration and protection of Refuges before opening them to any public uses. However, wildlife-dependent recreational uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) are to receive enhanced consideration and cannot be rejected simply for lack of funding resources unless the Refuge has made a concerted effort to seek out funds from all potential partners. Once found compatible, wildlife-dependent recreational uses are deemed the priority public uses at the Refuge. If a proposed use is found not compatible, the Refuge manager is legally precluded from approving it. Economic uses that are conducted by or authorized by the Refuge also require compatibility determinations.

Under compatibility policy, uses are defined as recreational, economic/commercial, or management use of a refuge by the public or a non-Refuge System entity. Uses generally providing an economic return (even if conducted for the purposes of habitat management) are also subject to compatibility determinations. The Service does not prepare compatibility determinations for uses when the Service does not have jurisdiction. For example, the Service may have limited jurisdiction over refuge areas where property rights are vested by others; where legally binding agreements exist; or where there are treaty rights held by tribes. In addition, aircraft overflights, emergency actions, some activities on navigable waters, and activities by other Federal agencies on “overlay Refuges” are exempt from the compatibility review process.

New compatibility regulations, required by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act), were adopted by the Service in October, 2000 (<http://Refuges.fws.gov/policymakers/nwrpolicies.html>). The regulations require that a use must be compatible with both the mission of the System and the purposes of the individual Refuge. This standard helps to ensure consistency in application across the Refuge System. The Act also requires that compatibility determinations be in writing and that the public have an opportunity to comment on most use evaluations.

The Refuge System mission emphasizes that the needs of fish, wildlife, and plants must be of primary consideration. The Improvement Act defined a compatible use as one that “. . . in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the Refuge.” Sound professional judgment is defined under the Improvement Act as “. . . a finding, determination, or decision, that is consistent with principles of sound fish and wildlife management and administration, available science and resources . . .” Compatibility for priority wildlife-dependent uses may depend on the level or extent of a use.

Court interpretations of the compatibility standard have found that compatibility is a biological standard and cannot be used to balance or weigh economic, political, or recreational interests against the primary purpose of the Refuge (Defenders of Wildlife v. Andrus [Ruby Lake Refuge]).

The Service recognizes that compatibility determinations are complex. For this reason, refuge managers are required to consider “principles of sound fish and wildlife management” and “best available science” in making these determinations (House of Representatives Report 105-106). Evaluations of the existing uses on McNary and Umatilla Refuges are based on the professional judgment of Refuge and planning personnel including observations of Refuge uses and reviews of appropriate scientific literature.

In July 2006, the Service published its Appropriate Refuge Uses Policy (603 FW1). Under this policy, most proposed uses must also undergo a review prior to compatibility. This review is appended at the end of this appendix. Uses excepted from the policy include Big Six uses and uses under reserved rights – see policy for more detail. Appropriate uses reviews are included here for boating, camping, horseback riding, swimming and beach use, farming, research, and dog training. Compatibility determinations are included for camping, swimming/beach use, and dog training, explaining why these uses should no longer be allowed.

References

Defenders of Wildlife v. Andrus (Ruby Lake Refuge I). 11 Envtl. Rptr. Case 2098 (D.D.C. 1978), p. 873.

House of Representatives Report 105-106 (on NWRSA) -
<http://refuges.fws.gov/policyMakers/mandates/HR1420/part1.html>

Compatibility regulations, adopted by the Service in October, 2000:
<http://refuges.fws.gov/policymakers/nwrpolicies.html>

Wildlife Observation and Photography

COMPATIBILITY DETERMINATION

Uses: Wildlife Observation; Photography (wildlife)

Refuge Name(s): McNary National Wildlife Refuge and Umatilla National Wildlife Refuge

Establishing and Acquisition Authorities: (McNary)

McNary NWR was established in 1955 by cooperative agreement with the U.S. Army Corps of Engineers, which transferred administrative control of the original 2849 acre parcel to the U.S. Fish and Wildlife Service (Federal Register of May 1956; Document No. 56-3499; and Cooperative Agreement between U.S. Army Corps of Engineers and the Service in September 1963 and as amended September 1969). Additional lands were purchased in subsequent years under the Migratory Bird Conservation Act (16 USC 715d). A small parcel was donated to the Service in 1969, under the Refuge Recreation Act (16 USC 460k-1, k-2). In 1972 another parcel was transferred to the Service from the Bureau of Reclamation under the Fish and Wildlife Coordination Act (16 USC 664). In 1999 the original Refuge was transferred from the Corps to the Service through the Water Resources Development Act (WRDA) 1999 bill (P.L. 106-53; 16 USC 668dd). Additional lands were added in 2000 (Cooperative Agreement No. DACW68-4-00-13), dated January 2000 and as amended June 2000).

Purposes: (McNary)

- for the conservation, maintenance, and management of wildlife, resources thereof, resources thereof, and habitat thereon, under plans... (All units, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “for development, conservation and management of wildlife resources..” (All units, General Plan, 1953).
- “particular value in carrying out the National Migratory Bird Management Program” (Original Burbank Unit, and Hanford Islands Unit, General Plan, 1953).
- “multiple use value relating to the conservation of fish life, waterfowl and upland game birds” (Peninsula, Two Rivers, and Wallula Units, General Plan, 1953)
- Snake River Mitigation Compensation Plan (Cummins Property only, Cooperative Agreement between USACE and USFWS, 2000)
- “Dam Project Purposes” [primary purposes of navigation, power development, and irrigation - Public Law Number 14, 79th Congress, First Session, approved 2 March 1945]. (Cooperative Agreement between USACE and USFWS, 2000, Stateline units only).
- Other parcels: Small pieces of the Refuge were also added later by purchase under the Migratory Bird Treaty Act. The Refuge also manages a small tract of land under a 10-year lease with the Washington Department of Natural Resources; and, according to Realty files, approximately 20 small tracts were acquired under authority of the Refuge Recreation Act PL 87-714, 1962.

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

Establishing and Acquisition Authorities: (Umatilla)

Umatilla Refuge was established in 1968 and the Service entered into a Cooperative Agreement with the Corps on July 3, 1969 in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within the said states.

Refuge Purposes: (Umatilla)

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between USACE and USFWS.)
- Additional Land Acquisitions: A land tract of 670 acres, a tract of 27.1 acres and another tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6 acre tract also was acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

National Wildlife Refuge System Mission: “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 et seq.).

Description of Use: Wildlife observation and photography are allowed in the open areas of McNary and Umatilla Refuges. Designated areas are closed permanently or seasonally to public access and are appropriately signed. See Section 5.2 of the Draft CCP/EA for more information on closed areas.

The majority of wildlife observation and photography takes place informally. The only area on McNary Refuge designed specifically for wildlife observation and photography is the wildlife viewing/photography blind on the McNary Headquarters Unit. The blind was created specifically for bird watchers and photographers and includes interior black screening and special openings for photography equipment. Otherwise, public access roads, roadway pull-outs, interpretive overlooks and kiosks, interpretive trails, horse trails, and waterways enable visitors to access to the Refuge, and, therefore, allow wildlife observation and photography opportunities.

On Umatilla Refuge the McCormack Unit automobile tour route was designed specially to assist visitors see and photograph wildlife. Roadway pull-outs along state highway 14 offer visitors views of the Refuge, and overlooks on the McCormack Unit assist visitors in seeing wildlife.

Prime areas for wildlife observation include the following:

McNary Refuge - McNary Headquarters Unit

- Wildlife Viewing/photography blind
- Nature Trail
- Environmental Education Center deck with permanent wildlife viewing scopes
- Wallula Unit
- North Shore Road Millet Pond pull-out
- Sanctuary Pond Overlook/Kiosk
- Walla Walla Delta (prime shorebird habitat)

Umatilla Refuge - McCormack Unit

- Automobile tour route with wildlife viewing and interpretive pull-outs
- Callow's Overlook
- Kathy's Pond kiosk
- Ridge Unit
- Highway 14 Pull-out/Columbia River Islands Overlook
- Paterson Unit
- Main Roadway

When determined compatible, wildlife observation and photography are priority public uses on Refuge System lands as identified in the Refuge Improvement Act of 1997. Entry on all or portions of individual areas may be temporarily suspended by posting, upon occasions of unusual or critical conditions affecting land, water, vegetation, wildlife populations, or public safety. See Section 5.7 of the Draft CCP/EA for more information on the existing wildlife viewing and photography programs. See Chapter 2, Goal 9, for more details on the programs under the Preferred Alternative 2.

Availability of Resources: Wildlife observation and photography require minimal resources. Maintenance for existing facilities runs \$2,500 annually excluding road maintenance costs. Estimated costs for operating the wildlife viewing and photography program as envisioned under Preferred Alternative 2 are displayed in the following tables

McNary Refuge: Wildlife observation and photography costs under Alternative 2.

Proposed Activity or Project	One Time Expense (\$)	Recurring Expenses (\$/year)
New Trail Development	35,000	2,000
Photography Blind Construction/maintenance	10,000	750
Totals	45,000	2,750

Umatilla Refuge: Wildlife observation and photography costs under Alternative 2.

Proposed Activity or Project	One Time Expense (\$)	Recurring Expenses (\$/year)
New Trail Development/maintenance	35,000	2,000
Photography Blind Construction/maintenance	10,000	750
Totals	45,000	2,750

Anticipated Impacts of the Use:

Disturbance from People: Numerous studies have confirmed that people on foot can cause a variety of disturbance reactions in wildlife, including flushing or displacement (Erwin 1989; Fraser et al 1985; Freddy 1986), heart rate increases (MacArthur et al 1982), altered foraging patterns (Burger and Gochfeld, 1991), and even, in some cases, diminished reproductive success (Boyle and Samson 1985). These studies and others have shown that the severity of the effects depends upon the distance to the disturbance and its duration, frequency, predictability, and visibility to wildlife (Knight and Cole 1991). Wildlife photographers tend to have larger disturbance impacts than those viewing wildlife since they tend to approach animals more closely (Klein 1993, Morton 1995, Dobb 1998). At McNary Refuge, people using the nature trail are generally in groups of one to three people during the off peak education season (July–March) and in groups of 10-15 during the peak education season (April–June). Disturbance to wildlife, such as flushing a nesting bird, is inherent to these activities; however, the disturbance is temporary and generally not malicious. Any unreasonable harassment would be grounds to close the area to these uses or restrict the uses to minimize harm.

The most likely impact to the Refuges’ soil and vegetative resources from viewing and photography would be during spring and early summer in areas open to cross country hiking. Most cross country travel is limited to the area adjacent to the McNary Environmental Education Center (approximately a two-acre site). Beyond the center, most visitors stay on the nature trail because of the vegetation (abundant thistles, thick tule beds, etc.) and hidden reptiles (rattlesnakes, bull snakes). Limited impacts to nesting birds and flowering/growing native vegetation are expected, but should be minor because few visitors engage in cross-country hiking outside of the immediate education area. Seasonal closures may be implemented to protect sensitive areas/species. Fall and winter activities pose little impact to vegetation.

Access by motorized vehicles and bicycles is limited to established trails, public roads, and parking lots. Parking lots and access trails have minimal impacts because they are relatively small in size and also allow for the safe use of these public lands.

At Umatilla Refuge most wildlife observation occurs from within vehicles on the popular McCormack automobile tour route and from vehicle pull-outs. Except for Heritage Trail, there are no maintained footpaths on the Refuge outside the waterfowl hunting season. Because there are no maintained footpaths, most wildlife observation activity and associated disturbance is confined to the tour route and there is minimal wildlife disturbance because wildlife is frequently more sensitive to disturbance from people on foot than in vehicles (Skagen 1980; Grubb and King 1991; MacArthur et al. 1982).

Wildlife observation and photography may impact threatened and endangered species, including the bald eagle. Disturbance impacts to the bald eagle would be expected to increase, but could be reduced to a certain extent through the design of public use facilities.

Effect of disturbance intensity: Some researchers have attempted to correlate disturbance events in wildlife to the intensity, proximity, or loudness of human disturbance. While studying shorebirds on an eastern coastal Refuge, Burger (1986) found that the level of disturbance in the shorebirds increased (fewer remained, more flew) as the total number of disturbances and the number of children, joggers, people walking, dogs, aircraft, and boats increased, and the duration of the disturbance and distance from the disturbance decreased.

Effect of human proximity: Other researchers have looked at the question of proximity. At what distance do humans on foot elicit a disturbance response? From an examination of the available studies, it appears that the distance varies dramatically from species to species. Burger and Gochfeld (1991) found that sanderlings foraged less during the day and more during the night as the number of people within 100m increased. Elk in Yellowstone National Park were disturbed when people were at average distances of 573m (Cassirer 1990). These elk temporarily left the drainage and their home range core areas and moved to higher elevations, steeper slopes, and closer to forested areas. Average return time to the drainage was two days. Erwin (1989) studied colonial wading and seabirds in Virginia and North Carolina. Mixed colonies of common terns-black skimmers responded at the greatest distances, with respective means of 142m and 130m; mixed wading bird species were more reluctant to flush (30-50m average). There were few statistically significant relationships between flushing distance and colony size. Similarly, there were few differences between responses during incubation compared to post-hatching periods.

An analysis of over 4,000 human activity events near bald eagle nests in Central Arizona (Grubb and King 1991) found distance to disturbance to be the most important classifier of bald eagle response, followed in decreasing order of discriminatory value by duration of disturbance, visibility, number of units per event, position relative to affected eagle, and sound.

Breeding bald eagles in north-central Minnesota (Fraser et al. 1985) flushed at an average distance of 476m at the approach of a pedestrian. A multiple regression model including number of previous disturbances, date, and time of day, explained 82% of the variability in flush distance and predicted a maximum flush distance at the first disturbance of 503m (SE=131). Skagen (1980), also studying bald eagles in northwest Washington, found a statistically significant decrease in the proportion of eagles feeding when human activity was present within 200m of the feeding area in the previous 30 minutes. A statistically significant between-season variation occurred in the use of feeding areas relative to human presence, which correlated with food availability. Eagles appeared more tolerant of human activity in the season of low food availability.

In a review of several studies of the reaction of waterfowl and other wetland birds to people on foot, distances greater than 100m in general did not result in a behavioral response (DeLong 2002).

Effects on migrant birds versus resident birds: Klein (1989) studied the effect of visitation on migrant and resident waterbirds at Ding Darling National Wildlife Refuge, finding that resident birds were less sensitive to human disturbance than migrants. Migrant ducks were particularly sensitive when they first arrived on site in the fall. They usually remained more than 80m from [a visitor footpath on a dike], even at very low visitor-levels. Herons, egrets, brown pelicans, and anhingas were most likely to habituate to humans, thus exposing them to direct disturbance as they fed on or near the dike. Shorebirds showed intermediate sensitivity. Strauss (1990) observed piping plover chicks spent less time feeding (50% versus 91%) and spent more time running (33% versus 2%), fighting with other chicks (4% versus 0.1%), and standing alert (9% versus 0.1%) when pedestrians or moving vehicles were closer than 100m than when they were undisturbed. In addition, plover chicks spent less time out on the feeding flats (8% versus 97%) and more time up in the grass (66% versus 0.1%) during periods of human disturbance.

Disturbance from Dogs: Dogs also elicit a greater response from wildlife than pedestrians alone (MacArthur et al. 1982; Hoopes 1993). In the case of birds, the presence of dogs may flush incubating birds from nests (Yalden and Yalden 1990), disrupt breeding displays (Baydack 1986), disrupt foraging activity in shorebirds (Hoopes 1993), and disturb roosting activity in ducks (Keller 1991). Many of these authors indicated that dogs with people, dogs on-leash, or loose dogs provoked the most pronounced disturbance reactions from their study animals. Despite thousands of years of domestication, dogs still maintain instincts to hunt and chase. Given the appropriate stimulus, those instincts can be triggered. Dogs that are unleashed or not under the control of their owners may disturb or potentially threaten the lives of some wildlife. In effect, off-leash, dogs increase the radius of human recreational influence or disturbance beyond what it would be in the absence of a dog. Dog-walkers will be required to maintain control of their animal while on the Refuge, thereby reducing the potential and severity of these impacts to wildlife.

The role of dogs in wildlife diseases is poorly understood. However, dogs host endo- and ectoparasites and can contract diseases from, or transmit diseases to, wild animals. In addition, dog waste is known to transmit diseases that may threaten the health of some wildlife and other domesticated animals. Domestic dogs can potentially introduce various diseases and transport parasites into wildlife habitats (Sime 1999). The Refuges can limit dog disturbance by enforcing current Refuge regulation (50CFR 26.21(b) "...no unconfined domestic animals, including but not limited to dogs...shall be permitted to roam at large....."

Wildlife photography: Wildlife photography is likely more disturbing, per instance, than wildlife observation. Klein (1993) observed at Ding Darling that of all the nonconsumptive uses, photographers were the most likely to attempt close contact with birds. He also concluded that even slow approach by photographers was disruptive to waterbirds.

Predictability of Disturbance (Habituation): Dwyer and Tanner (1992) noted that wildlife habituate best to disturbance that is somewhat predictable or "background." Investigating 111 nests of sandhill cranes in Florida, Dwyer and Tanner found that nesting cranes seemed to habituate to certain forms of human disturbance and nested within 400m of highways, railroads, and mines; cranes also were

tolerant of helicopter flyovers. Visits to nests and development-induced alterations of surface water drainage were implicated in 24% of the nest failures.

Refuge Specific Impacts: both Refuge visitation and the number of facilities devoted to wildlife observation and photography are projected to increase under the Preferred Alternative 2 (vehicle pull-offs, overlooks, observation blinds, trail miles). Given this, future disturbance effects are likely to be somewhat higher than present. Most studies cited above have demonstrated immediate, rather than long term responses to disturbance. Long term responses are inherently more difficult and expensive to determine. Given that wildlife observation is not typically a loud or intense kind of activity, the area of habitat within a known distance of human activity centers (public use area, trails, EE sites, overlooks) is considered a reasonable indicator to evaluate the disturbance effects of public uses on Refuge wildlife.

Impacts from wildlife observation/photography, and the modes of transport used by visitors engaged in these activities, can be contained most effectively, mitigating the overall effect on Refuge wildlife by encouraging visitors to remain on trails, automobile tour routes, and within the areas designated for public use.

Public education that informs photographers of ethical and least intrusive methods could reduce some impacts. Several new wildlife observation/photography areas are proposed under Preferred Alternative 2. The purpose of these areas is to provide a site where photographers can get close-up photographs without disturbing wildlife. Placement of these additional areas would likely reduce disturbance from wildlife photographers, because photographers would gain access to high quality photo shooting sites without disturbing new areas.

Although disturbance to wildlife from these activities will be higher than at present, the overall effect to Refuge wildlife will still be minimal.

Public Review and Comment: Open houses were held and written comments were solicited from the public during the writing of the McNary and Umatilla Refuges Draft CCP/EA. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the Draft CCP/EA. Additional public review and comment will be solicited during the Draft CCP/EA comment period.

Determination (check one below)

Use is Not Compatible

Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

- Certain modes of access, such as motorized vehicle, horses and bicycles, will be limited to designated trails, public roads, and parking lots.
- Harassment of wildlife or excessive damage to vegetation is prohibited.

- Pets must be kept under control (leashed) at all times.
- Native trees and shrubs will be planted where feasible to create screening along trails and at observation points to reduce disturbance.
- Elevated overlooks, trails, and boardwalks will be designed to help reduce negative visitor impacts to soils, vegetation, and hydrology.
- Regulations will be available to the public through a Refuge brochure.
- Directional, informational, and interpretive signs will be posted and maintained to educate the public on minimizing wildlife and habitat disturbance.
- Human activity will be monitored and impacts evaluated on the increased human uses of the Refuge.

Justification:

This use has been determined compatible because wildlife viewing and photography will not materially interfere with or detract from the purposes for which the Refuges were established. The associated disturbance to wildlife is limited and minor. Wildlife observation and photography are priority public uses and provide visitors with the joys of abundant wildlife and wild lands. These uses also help fulfill the mission of the National Wildlife Refuge System.

Refuge Determination:

Prepared by: _____
(Signature) (Date)

Refuge Manager/
Project Leader
Approval: _____
(Signature) (Date)

Concurrence:

Refuge Supervisor: _____
(Signature) (Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA): _____
(Signature) (Date)

Mandatory 10- or 15-year Re-evaluation Date: (provide month and year for “allowed uses)

12/2022 Mandatory 15-year re-evaluation date (for wildlife-dependent public uses)

_____ Mandatory 10-year reevaluation date (for all uses other than wildlife-dependent public uses)

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Waterfowl Hunting; Upland game bird hunting; Other migratory bird hunting (McNary)

Compatibility Determination

Uses: Hunting (waterfowl); Hunting (upland game); Hunting (other migratory birds)

Refuge Name: McNary Refuge

County and State: Walla Walla, Franklin, and Benton Counties, Washington. Umatilla County, Oregon.

Establishing and Acquisition Authorities:

McNary Refuge was established in 1955 by cooperative agreement with the Corps which transferred administrative control of the original 2,849-acre parcel to the Service (Federal Register of May 1956; Document No. 56-3499; and Cooperative Agreement between the Corps and Service in September 1963, and as amended September 1969). Additional lands were purchased in subsequent years under the Migratory Bird Conservation Act (16 USC 715d). A small parcel was donated to the Service in 1969, under the Refuge Recreation Act (16 USC 460k-1, k-2). In 1972, another parcel was transferred to the Service from the Bureau of Reclamation under the Fish and Wildlife Coordination Act (16 USC 664). In 1999, the original Refuge was transferred from the Corps to the Service through the Water Resources Development Act (WRDA) 1999 bill (P.L. 106-53; 16 USC 668dd). Additional lands were added in 2000 (Cooperative Agreement No. DACW68-4-00-13), dated January 2000 and as amended June 2000.

Refuge Purpose(s):

- for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans... (All units, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “for development, conservation and management of wildlife resources...” (All units, General Plan, 1953).
- “particular value in carrying out the National Migratory Bird Management Program” (Original Burbank Unit, and Hanford Islands Unit, General Plan, 1953).
- “multiple use value relating to the conservation of fish life, waterfowl and upland game birds” (Peninsula, Two Rivers, and Wallula Units, General Plan, 1953).
- Snake River Mitigation Compensation Plan (Cummins Property only, Cooperative Agreement between Service and Service, 2000).
- “Dam Project Purposes” [primary purposes of navigation, power development, irrigation, and conservation of wildlife - Public Law Number 14, 79th Congress, First Session, approved March 2, 1945]. (Cooperative Agreement between the Corps and Service, 2000, Stateline and Juniper Canyon units only).
- Other parcels: Small pieces of the Refuge were also added later by purchase under the Migratory Bird Conservation Act. The Refuge also manages a small tract of land under a 10-year lease with

the Washington Department of Natural Resources; and, approximately 20 small tracts were acquired under authority of the Refuge Recreation Act of 1962 (PL 87-714).

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

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-668ee]).

Description of Uses:

Sport hunting for waterfowl (ducks and geese), upland game birds, upland game, and other migratory birds is currently allowed on all units, or portions of units within the McNary National Wildlife Refuge. Of the seven units open to hunting, four (Peninsula, Two Rivers, Burbank Sloughs, and Wallula) are open daily during the respective state seasons. The Peninsula Unit has additional special regulations that require waterfowl hunters to hunt from established sites on the east shoreline and a noon starting time for upland bird hunters on Wednesdays, Saturdays, and Sundays. A portion of the McNary Division (McNary Headquarters Unit - Units 1 and 2) is opened to waterfowl and upland bird hunting three days a week under a highly regulated specialized hunt. Waterfowl hunters on this division must pay a fee and hunt from selected sites through a reservation system. Upland hunters may only hunt this division on waterfowl hunt days and not before noon. The remainder of the McNary Division (McNary Headquarters Unit-Units 3 and 4) is closed to hunting. The Strawberry Islands are closed to hunting. Foundation and Badger Islands are closed. Crescent Island is open daily to waterfowl hunting during the State season.

Under Preferred Alternative 2, the hunts would continue as described above, with modifications as included in Chapter 2 of the Draft CCP/EA. Specifically,

- Current goose pit blinds on Peninsula Unit would be removed due to the lack of productive hunting in this area. The area would be open to upland game hunting. Habitat management favoring upland birds would be undertaken to increase their abundance in this area, while the sporadic mowing and haying in this area would be discontinued.
- A combination of designated posts and designated parking areas will be implemented on the north side of Wallula.
- Some hunt blinds accessible to hunters with disabilities would be improved. One additional accessible blind would be added.
- The current program of pheasant population augmentation practiced by the State would be phased out within two years of CCP completion.
- Upland game bird hunt times and hunt days would be standardized, but a noon start time would be retained for the fee hunt unit.
- The Service would continue to work in partnership with the States, Tribes and Corps to rewrite the Wintering Waterfowl Plan (in progress), which deals with wintering waterfowl habitats and

sanctuary areas in the middle Columbia Basin. Any additional modifications to Refuge hunting programs would be consistent with this plan.

Of the 16,067 acres that comprises McNary Refuge (not including the Hanford Islands), 11,834 acres (76%) are open to waterfowl hunting. However, approximately 3,000 acres, consists of upland shrub-steppe habitat. Another 8,656 acres are lacustrine or open water habitat on the Columbia River. Many of these areas provide little or very marginal waterfowl hunting opportunities. Actual huntable prime waterfowl habitat that is open to hunting is closer to 3,731 acres, or 47% of Refuge lands. Available upland game habitat amounts to 6,331 acres, or 38% of total Refuge lands.

Total Refuge sanctuary (lands completely closed to hunting) amounts to 4,233 acres, or 24% of Refuge lands.

Although there is the potential that waterfowl, upland bird, and migratory bird hunting could pose conflicts to other Big Six uses, most of the other Big Six uses are separated spatially and temporally from hunt areas. Current and future wildlife observation and environmental education uses will be concentrated on McNary Headquarters Unit 4, where no hunting is allowed. The adjacent area on the Headquarters Unit (Unit 3), which is managed as year round sanctuary, buffers the hunt area from the viewing area and helps enhance viewing by providing adjacent safe haven. Fishing areas overlap waterfowl hunting areas to some degree but are mostly separated seasonally from the hunt use (fishing occurs mainly in spring, summer, and fall). Interpretation is focused near parking areas, at kiosks, and along pulloffs or trails. The most likely potential for conflict or safety issues would occur along the trail at Wallula Unit. The Refuge will mitigate possibilities for user conflicts or safety issues by making hunt area boundaries and seasons information available to all Refuge users via various venues (interpretive kiosks, website, Refuge offices).

Availability of Resources:

Costs below reflect mailing, publications, administration, staff time, preparation, and seasonal employees.

Category and Itemization	One-time (\$)	Annual (\$/yr)
Administration and management:	\$0	\$68,000
Maintenance:	\$0	\$4,500
Monitoring:	\$0	\$
Special equipment, facilities, or improvements:	\$0	\$4,500
Totals	\$0	\$77,000
Offsetting revenues:	\$0	\$16,500

The Refuge employs a seasonal biotechnical position to run the Refuge check station from October through January. This position is required to collect fees, assign blinds, post information, and run daily operations for the reservation hunt program on the McNary hunt unit. Additional costs include the annual printing of Refuge information and the replacement and installation of signs. Staff time is required from the manager, the Complex outdoor recreation planner, a full time law enforcement officer, and maintenance crew. The costs are reflected in the table above. Revenue collected from

hunter application and daily hunt fees are used to offset the costs of providing this use. The Refuge is currently increasing both application and hunt fees to further offset the costs of this program.

Anticipated Impacts of the Uses:

Sport hunting involves the direct take of Refuge wildlife designated as huntable game species by Refuge regulation. In addition to loss of individual target species, hunting causes disturbances to feeding and resting nontarget species because of the noise (shotgun), movement, and general disturbance necessary for this activity. In addition, nontarget species are killed by hunters by accident or intent and waterfowl are often crippled or killed and not retrieved. Waterfowl are wary, seeking Refuge from all forms of disturbance, particularly those associated with loud noise and rapid movement (Korschgen and Dahlgren 1992). Studies indicate that hunting does cause disturbance to hunted species as well as to nonhunted species. These disturbances are manifested by alertness, fright (obvious or unapparent), flight, swimming, disablement, or death (Korschgen and Dahlgren 1992). Numerous studies have shown that hunting disturbance causes increased flight time in waterfowl species. Use of specific areas and daily flight activity by brants (*Branta bernicla*) were influenced by tidal level, food availability, time of day, and particularly by disturbance from hunters (Henry 1980). Flight requires considerably more energy than any other activity except egg laying. Human disturbance compels waterfowl to change food habits, feed only at night, lose weight, or desert feeding areas (Korschgen and Dahlgren 1992).

Though, as mentioned above, there are obvious impacts on waterfowl populations related to hunting (most notably disturbance and direct take), the proportion of waterfowl populations subject to hunting on Refuges is very low. Thus, hunting on Refuges as a whole, or on McNary Refuge specifically, is not likely to have an adverse impact on the status of any recognized waterfowl population in North America. Several points support this contention: 1) the proportion of the national waterfowl harvest that occurs on Refuges is small, 2) there are no waterfowl populations that exist wholly and exclusively on national wildlife refuges, 3) annual hunting regulations within the United States are established at levels consistent with the current population status, 4) Refuges cannot permit more liberal seasons than provided for in the Federal frameworks, and 5) Refuges purchased with funds derived from the Federal Duck Stamp Program must limit hunting to 40% of the available area.

There are also some indirect beneficial impacts of Refuge hunting. Refuge hunting can contribute to the well being of wildlife by providing financial, educational, and sociological benefits. The hunting community in general remains the largest support base for funding wildlife management programs. Refuges provide an opportunity for a high quality waterfowl hunting experience to all citizens regardless of economic standing. Many individual Refuges have developed extensive public information and education programs bringing hunters into contact with Refuge activities and facilitating awareness of wildlife issues beyond hunting.

Public Review and Comment:

Open houses were held and written comments were solicited from the public during drafting of the Draft CCP/EA for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement during development of the CCP. Additional public review and comment will be solicited during the CCP comment period.

Determination: (check one below)

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

- The hunt program will be conducted as outlined in Chapter 2 of the Draft CCP/EA. The Refuge hunting plan, hunt leaflets, and section 32 of 50 CFR will be updated as necessary. All hunters shall comply with State hunting regulations.
- Hunting will be subject to Refuge specific hunt regulations in effect establishing set days, areas, times, points of entry, and permit requirements under which to hunt.
- The McNary Units 1 and 2 fee area will be opened to hunting Wednesdays, Saturdays, and Sundays only, during the State waterfowl season.
- Adequate sanctuary will be established, monitored, and evaluated.
- Adequate wintering waterfowl food supplies will be provided in closed areas of the Refuge.
- Law enforcement patrols will be conducted on a regular basis to assure compliance with State, Federal, and Refuge regulations.
- Over the 15-year life of the CCP, future increases in fees may be necessary to sustain this program.
- The Refuge will ensure safety and minimize conflict with other priority uses by providing information about hunting boundaries and seasons to the general public and those utilizing other Refuge programs. Information will be provided at interpretive kiosks, on the Refuge website, and in Refuge offices.
- Camping, overnight use, and fires will be prohibited.

Justification:

Waterfowl, upland game, and other migratory bird hunting is a traditional wildlife-oriented recreation and is listed as a priority public use under the Refuge Wildlife Improvement Act as amended, 1997. Despite the direct and indirect impacts associated with sport hunting waterfowl, upland game, and other migratory birds' flyway populations are not likely to be affected significantly by the hunting program on the Refuge. Waterfowl population objectives and allowable harvest is determined on a flyway basis. Changes in regional land uses (i.e., agriculture/crops) are more likely to influence population trends than localized hunting programs (Paveglio, pers. comm.) The Refuge has no control over changes in land use practices. Limited hunt days (i.e. some areas open only three days/week), no hunt zones, and established sanctuary in Refuge wetlands and fields, ensure that wintering and migrating waterfowl can find food and rest areas on the Refuges even in the midst of the hunting season. Hunt regulations and sanctuary should be continually monitored and evaluated to ascertain their value in balancing the disturbance caused by allowing hunting on the Refuge. Under the stipulations outlined above, this activity does not materially detract from meeting Refuge purposes or the Refuge System mission. Refuge specific regulations are designed to minimize impacts, and will be evaluated for their effectiveness annually.

Mandatory 10- or 15-Year Re-evaluation Date: (provide month and year for “allowed” uses only)

Mandatory 15-year reevaluation date (for wildlife-dependent public uses)

Mandatory 10-year reevaluation date (for all uses other than wildlife-dependent public uses)

NEPA Compliance for Refuge Use Decision: (check one below)

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

References Cited:

Henry, W.G. 1980. Populations and behavior of black brant at Humboldt Bay, California. M.S. thesis, Humboldt State University, Arcata, CA. 111 pp.

Korschgen, C.E. and Dahlgren, R.B. 1992. Human disturbances of waterfowl: Causes, effects, and management. Fish and Wildlife Leaflet 13.2.15. 8 pp.

Refuge Determination:

Prepared by: _____ (Signature) _____ (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) _____ (Date)

Concurrence:

Refuge Supervisor: _____ (Signature) _____ (Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA): _____ (Signature) _____ (Date)

Waterfowl Hunting; Upland game bird hunting; Other migratory bird hunting (Umatilla)

Compatibility Determination

Uses: Hunting (waterfowl); Hunting (upland game); Hunting (other migratory birds)

Refuge Name: Umatilla Refuge

County and State: Service Region 1; Benton County, Washington, Morrow County, Oregon.

Establishing and Acquisition Authorities:

Umatilla Refuge was established in 1968, and the Service entered into a Cooperative Agreement with the Corps on July 3, 1969, in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), and the Fish and Wildlife Coordination Act as amended (48 Stat. 401, 16 U.S.C. 661 et seq.), and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior, and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within the said states.

Refuge Purposes:

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between the Corp and Service)
- Additional Land Acquisitions: A land tract of 670 acres, a tract of 27.1 acres, and a tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6-acre tract was also acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

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-668ee]).

Description of Use(s):

Sport hunting for waterfowl (ducks, geese), upland game birds, and other migratory birds is currently allowed on a limited basis on all units except the Columbia River Islands Unit which is closed to hunting. Of the five units open to hunting, three (McCormack, Whitcomb, and Paterson) are open three days a week and two (Boardman and Ridge) are open daily during the respective States' waterfowl season. All units are managed as open hunts, with no restrictions on number of hunters, except at the McCormack Unit, where there is a highly regulated specialized hunt. Waterfowl hunters on the McCormack Unit must use selected blinds/sites and pay a fee for use of the blinds, facilities, and reservation system. Upland hunters on all units may only hunt on waterfowl hunt days and not before noon.

Under Preferred Alternative 2, the hunts would continue as described above, with modifications as included in Chapter 2 of the Draft CCP/EA (see Goal 10). Specifically,

- The McCormack Unit hunt area and sanctuary boundaries would be modified slightly. The current waterfowl and upland game hunt area on east McCormack Slough would be closed. A new designated hunt site (with the same number of hunting posts formerly available at East McCormack Slough) would be opened along the river shoreline, an area that is currently sanctuary.
- Some disabled hunt blinds would be improved. One additional disabled blind would be added.
- Available permits issued for the fee-based pheasant hunt at McCormack would decrease from 25 to 15 permits over the first two hunt weekends.
- Upland game bird hunt times and hunt days would be standardized, but a noon start time would be retained for the fee hunt unit.
- The Service would continue to work in partnership with the States, Tribes and Corps to rewrite the Wintering Waterfowl Plan (in process), which deals with wintering waterfowl habitats and sanctuary areas in the middle Columbia Basin. Any additional modifications to Refuge hunting programs would be consistent with this plan.

Of the 25,128 acres that comprise Umatilla (GIS estimate), 56% is open to waterfowl hunting. However, as much as 7,000 acres consists of upland shrub habitat that would provide little or very marginal waterfowl hunting opportunities. Available upland game habitat amounts to 11,663 acres, or 43% of total Refuge lands. Total Refuge sanctuary (lands completely closed to hunting) amounts to 44% of Refuge lands. Most of this sanctuary consists of open water, Columbia River, and Refuge islands.

Availability of Resources:

Category and Itemization	One-time (\$)	Annual (\$/yr)
Administration and management:	\$0	\$68,000
Maintenance:	\$0	\$4,000
Monitoring:	\$0	\$0
Special equipment, facilities, or improvements:	\$0	\$7,000
Total	\$0	\$79,000
Offsetting revenues:	\$0	\$16,500

The Refuge employs a seasonal biotechnical position to run the Refuge check station from October through January. This position is required to collect fees, assign blinds, post information, and run daily operations for the reservation hunt program on the McCormack hunt unit. Additional costs include the annual printing of Refuge information and the replacement and installation of signs. Staff time is required from the manager, the Complex outdoor recreation planner, a full time Law Enforcement officer, and maintenance crew. The costs are reflected in the table above. Revenue collected from hunter application and daily hunt fees is used to offset the costs of providing this use.

Anticipated Impacts of the Uses:

Sport hunting involves the direct take of Refuge wildlife designated as huntable game species by Refuge regulation. In addition to loss of individual target species, hunting causes disturbances to feeding and resting nontarget species because of the noise (shotgun), movement, and general disturbance necessary for this activity. In addition, nontarget species are killed by hunters by accident or intent, and waterfowl are often crippled or killed and not retrieved. Waterfowl are wary, seeking Refuge from all forms of disturbance, particularly those associated with loud noise and rapid movement (Korschgen and Dahlgren 1992). Studies indicate that hunting does cause disturbance to hunted species as well as to nonhunted species. These disturbances are manifested by alertness, fright (obvious or unapparent), flight, swimming, disablement, or death (Korschgen and Dahlgren 1992). Numerous studies have shown that hunting disturbance causes increased flight time in waterfowl species. Use of specific areas and daily flight activity by brants (*Branta bernicla*) were influenced by tidal level, food availability, time of day, and particularly by disturbance from hunters (Henry 1980). Flight requires considerably more energy than any other activity except egg laying. Human disturbance compels waterfowl to change food habits, feed only at night, lose weight, or desert feeding areas (Korschgen and Dahlgren, 1992).

Though, as mentioned above, there are obvious impacts on waterfowl populations related to hunting (most notably disturbance and direct take), the proportion of waterfowl populations subject to hunting on Refuges is very low. Thus, hunting on refuges as a whole, or on Umatilla Refuge specifically, is not likely to have an adverse impact on the status of any recognized waterfowl population in North America. Several points support this contention: 1) the proportion of the national waterfowl harvest that occurs on refuges is small; 2) there are no waterfowl populations that exist wholly and exclusively on national wildlife refuges; 3) annual hunting regulations within the United States are established at levels consistent with the current population status; 4) Refuges cannot permit more liberal seasons

than provided for in Federal frameworks; and 5) Refuges purchased with funds derived from the Federal Duck Stamp must limit hunting to 40% of the available area.

There are also some indirect beneficial impacts of Refuge hunting. Refuge hunting can contribute to the well being of wildlife by providing financial, educational, and sociological benefits. The hunting community in general remains the largest support base for funding wildlife management programs. Refuges provide an opportunity for a high quality waterfowl hunting experience to all citizens regardless of economic standing. Many individual Refuges have developed extensive public information and education programs bringing hunters into contact with Refuge activities and facilitating awareness of wildlife issues beyond hunting.

Under the changes recommended to the hunt program for the CCP, impacts of waterfowl hunting would be small. Most wintertime nonhunting users of the Refuge are on the Auto Tour Route and/or the Heritage Trail. Changes proposed under the CCP will reduce conflicts between trail users and hunters as follows. A new route alignment using the ridge road will be implemented to replace the current trail section that bisects the mid slough (old highway roadbed and earthen-fill). The new trail realignment will eliminate the need for a seasonal trail closure that has been in place to reduce user conflict during the waterfowl hunting season. An additional new section of trail will be developed within wetland habitats that will be closed to hunting at the eastern end of the slough, near public use facilities (parking and rest rooms) directly adjacent to Paterson Ferry Road (county road). This site will also serve as the official trailhead on the Refuge.

Public Review and Comment:

Open houses were held and written comments were solicited from the public during the drafting of the Comprehensive Conservation Plan and Environmental Assessment for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the CCP. Additional public review and comment will be solicited during the Draft CCP/EA comment period.

Determination: (check one below)

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

- Program will be conducted as outlined in Chapter 2 of the Draft CCP/EA. The Refuge hunting plan, hunt leaflets, and section 32 of 50 CFR will be updated as necessary.
- Hunting is allowed only on public access areas of the Refuge.
- Hunting will be subject to Refuge specific hunt regulations in affect establishing set days, areas, times, points of entry, and permit requirements for hunting.
- McCormack fee area will be opened to hunting Wednesdays, Saturdays, and Sundays only, during the State waterfowl season.
- Adequate sanctuary will be established, monitored, and evaluated.

- Adequate wintering waterfowl food supplies will be provided in closed areas of the Refuge.
- Law enforcement patrols will be conducted on a regular basis to assure compliance with State, Federal, and Refuge regulations.
- Over the 15-year life of the CCP, future increases in fees may be necessary to sustain this program.
- The Refuge will ensure safety and minimize conflict with other priority uses by providing information about hunting boundaries and seasons to the general public and those utilizing other Refuge programs. Information will be provided at interpretive kiosks, on the Refuge website, and in Refuge offices.
- Camping, overnight use, and fires will be prohibited.

Justification:

Waterfowl, upland game, and other migratory bird hunting is a traditional wildlife-oriented recreation and is listed as a priority public use under the National Wildlife Refuge Improvement Act as amended, 1997. Despite the direct and indirect impacts associated with sport hunting waterfowl, upland game, and other migratory birds, flyway populations are not likely to be affected significantly by the hunting program on the Refuge. Waterfowl population objectives and allowable harvest is determined on a flyway basis. Changes in regional land uses (i.e., agriculture/crops) are more likely to influence population trends than localized hunting programs. The Refuge has no control over changes in land use practices. Limited hunt days (three days/week), no hunt zones, and established sanctuary in Refuge wetlands and fields, ensure that wintering and migrating waterfowl can find food and rest areas on the Refuges even in the midst of the hunting season. Hunt regulations and sanctuary should be continually monitored and evaluated to ascertain their value in balancing the disturbance caused by allowing hunting on the Refuge. Under the stipulations outlined above, this activity does not materially detract from meeting Refuge purposes or the Refuge System mission. Refuge specific regulations are designed to minimize impacts, and will be evaluated for their effectiveness annually.

Mandatory 10- or 15-Year Reevaluation Date: (provide month and year for “allowed” uses only)

Mandatory 15-year reevaluation date (for wildlife-dependent public uses)

Mandatory 10-year reevaluation date (for all uses other than wildlife-dependent public uses)

NEPA Compliance for Refuge Use Decision: (check one below)

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

References Cited:

Henry, W.G. 1980. Populations and behavior of black brant at Humboldt Bay, California. M.S. thesis, Humboldt State University, Arcata, CA. 111 pp.

Korschgen, C.E. and Dahlgren, R.B. 1992. Human disturbances of waterfowl: Causes, effects, and management. Fish and Wildlife Leaflet 13.2.15. 8 pp.

Refuge Determination:

Prepared by: _____ (Signature) _____ (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) _____ (Date)

Concurrence:

Refuge Supervisor: _____ (Signature) _____ (Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA): _____ (Signature) _____ (Date)

Big Game Hunting (McNary)

Draft Compatibility Determination

Use: Hunting (big game)

Refuge Name: McNary National Wildlife Refuge.

County and State: Walla Walla, Franklin, and Benton Counties, Washington. Umatilla County, Oregon.

McNary Refuge was established in 1955 by cooperative agreement with the Corps which transferred administrative control of the original 2,849-acre parcel to the Service (Federal Register of May 1956; Document No. 56-3499; and Cooperative Agreement between the Corps and Service in September 1963, and as amended September 1969). Additional lands were purchased in subsequent years under the Migratory Bird Conservation Act (16 USC 715d). A small parcel was donated to the Service in 1969, under the Refuge Recreation Act (16 USC 460k-1, k-2). In 1972, another parcel was transferred to the Service from the Bureau of Reclamation under the Fish and Wildlife Coordination Act (16 USC 664). In 1999, the original Refuge was transferred from the Corps to the Service through the Water Resources Development Act (WRDA) 1999 bill (P.L. 106-53; 16 USC 668dd). Additional lands were added in 2000 (Cooperative Agreement No. DACW68-4-00-13), dated January 2000 and as amended June 2000.

Refuge Purpose(s):

- for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans... (All units, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “for development, conservation and management of wildlife resources...” (All units, General Plan, 1953).
- “particular value in carrying out the National Migratory Bird Management Program” (Original Burbank Unit, and Hanford Islands Unit, General Plan, 1953).
- “multiple use value relating to the conservation of fish life, waterfowl and upland game birds” (Peninsula, Two Rivers, and Wallula Units, General Plan, 1953).
- Snake River Mitigation Compensation Plan (Cummins Property only, Cooperative Agreement between Service and Service, 2000).
- “Dam Project Purposes” [primary purposes of navigation, power development, irrigation, and conservation of wildlife - Public Law Number 14, 79th Congress, First Session, approved March 2, 1945]. (Cooperative Agreement between the Corps and Service, 2000, Stateline and Juniper Canyon units only).
- Other parcels: Small pieces of the Refuge were also added later by purchase under the Migratory Bird Conservation Act. The Refuge also manages a small tract of land under a 10-year lease with the Washington Department of Natural Resources; and, approximately 20 small tracts were acquired under authority of the Refuge Recreation Act of 1962 (PL 87-714).

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

National Wildlife Refuge System Mission: “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 et seq.).

Description of Use:

Big game hunting would exist and be managed as a priority public use under both the provisions of applicable State regulations and Refuge special use regulations. Under current conditions, big game hunting is allowed on portions of the Refuge that fall under GMU 149 in Washington, and GMU 44 in Oregon. These portions include the Wallula Unit in Washington, and the State Line and Juniper Canyon Units in both Washington and Oregon. These three units are owned by the Corps and managed by the Service, under a cooperative agreement. The remainder of Refuge land, including fee title land, is closed to all big game hunting.

Hunting on the Wallula Unit is managed under Refuge special use regulations that permit the pursuit of game with archery and shotgun only. Seasons and species limits are set by State regulation. Hunting is permitted on the Stateline and Juniper Canyon Units under seasons and provisions set by the State.

Big game hunting would continue unchanged under the Preferred Alternative 2 of the Draft CCP/EA.

Availability of Resources:

The big game hunting program on McNary does not require any additional staff time over other uses that are occurring during the same time period. Refuge deer hunting is only allowed during a one week period on Wallula, this use is not likely to detract staff resources away from the waterfowl program occurring at the same time. Furthermore, the Juniper Canyon and State Line Units fall under a highly regulated State permit program which restricts the amount of hunters and days these units can be hunted. It is unlikely that significant additional Refuge law enforcement presence would be required to manage this activity on these units. Base funding would cover the costs for administering this program.

Anticipated Impacts of the Use:

Many of the impacts associated with big game hunting opportunities are similar to those considered for other public uses (e.g., waterfowl hunting, wildlife observation and photography – see those Compatibility Determinations). Like these uses, big game hunting also can cause direct mortality, and short-term changes in game species distribution and abundance. Direct mortality can impact isolated, resident game species populations by reducing breeding populations to a point where the isolated population can no longer be sustained. This can result in localized extirpation of isolated populations, which could occur with smaller populations on the Refuge.

Hunting intensity can influence habitat use for a variety of wildlife species. Highly mobile species such as mule deer can move away from areas of heavy disturbance and/or hunting pressure while less

mobile species (e.g., California quail) retain smaller home ranges and are more subject to long-term exposure. For example, the largest mule deer herds on the Mid-Columbia River Refuge Complex are located on Umatilla Refuge adjacent to agriculture lands in closed nonhunted portions of the Refuge. Smaller herds have been observed along riparian units of the McNary Refuge where hunting and other public uses are more common.

Currently, big game hunting pressure on the Wallula Unit is relatively low, with archery being the most commonly used method of pursuit. Archery season lasts the month of September when temperatures are still warm and deer are less likely to be moving during large portions of the day. Firearm season lasts only a week during October, and is relatively unpopular due to antler restrictions and the shotgun only requirement. Because of this, it's unlikely that deer hunting on this Unit significantly impacts local deer populations. Furthermore, vegetation surveys show a noticeable level of deer browse on riparian shrub species. This could indicate a localized population spike or an increased use as sanctuary as deer move from the surrounding highway traffic and farming operations. Increased browsing could degrade the limited riparian habitat available to migrating/nesting song birds and other riparian obligate species.

The Stateline and Juniper Canyon Units are primarily in Oregon, and exist as broken up, fragmented parcels surrounded and interspersed by private land. They fall under GMU 44, which is managed by the ODFW as a controlled hunt area. Only a specified amount of tags can be drawn to hunt this area during a three week period. Hunting pressure on these units is likely lower than on the surrounding private lands where deer use could be encouraged for hunting opportunity.

Unrestricted travel through the hunted area(s) can have some impact on soils and vegetation.

User conflict and safety issues do provide some areas of concern on these units. Hikers, horseback riders, and anglers use these areas during big game seasons. However, with the exception of fishing, levels of use are relatively low and peak seasons generally do not overlap. Most of the fishing activity is concentrated on the river banks where established parking areas are close by. These fishing areas are likely not preferred by deer hunters. The restrictions to archery and shotgun limit trajectory and lower the risk of potential third party injury.

Public Review and Comment:

Open houses were held and written comments were solicited from the public during drafting of the Draft CCP/EA for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the CCP. Additional public review and comment will be solicited during the CCP comment period.

Determination (check one below):

Use is Not Compatible

Use is Compatible with the following stipulations

Stipulations Necessary to Ensure Compatibility:

The following stipulations ensure that deer hunting on the Wallula, Stateline, and Juniper Canyon Units of the Refuge, is compatible:

- Only shotgun and archery are permitted on the Wallula Unit.
- Weapons used for hunting on the Stateline and Juniper Canyon Units will be restricted to the provisions listed under the applicable State regulations.
- Specific area closures may be implemented to improve safety and reduce user conflict in areas having other public uses.
- Specific area closure may be implemented to protect Refuge buildings and personnel.
- Camping, overnight use, and fires will be prohibited.
- Over the life of the CCP, Refuge staff will monitor vegetation on Wallula and consider increasing the hunt if warranted based on impacts to vegetation.

Justification:

Big game hunting is included as a Big Six priority use. Deer hunting can be managed without materially detracting from meeting Refuge wildlife objectives. Therefore, the hunt supports Refuge purposes, goals and objectives, and the NWRS mission.

Mandatory 10- or 15-Year Reevaluation Date: (provide month and year for “allowed” uses only)

Mandatory 15-year reevaluation date (for wildlife-dependent public uses)

Mandatory 10-year reevaluation date (for all uses other than wildlife-dependent public uses)

NEPA Compliance for Refuge Use Decision: (check one below)

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

Refuge Determination:

Prepared by: _____ (Signature) _____ (Date)

Refuge Manager/
Project Leader

Approval: _____
(Signature) (Date)

Concurrence:

Refuge Supervisor: _____
(Signature) (Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA): _____

(Signature) (Date)

Big Game Hunting (Umatilla)

Draft Compatibility Determination

Use: Hunting (big game)

Refuge Name: Umatilla National Wildlife Refuge (Mid-Columbia River Refuges Complex)

County and State: Service Region 1; Benton County, Washington, Morrow County, Oregon.

Establishing and Acquisition Authorities:

Umatilla Refuge was established in 1968, and the Service entered into a Cooperative Agreement with the Corps on July 3, 1969, in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), and the Fish and Wildlife Coordination Act as amended (48 Stat. 401, 16 U.S.C. 661 et seq.), and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior, and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within the said states.

Refuge Purposes:

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between the Corp and Service)
- Additional Land Acquisitions: A land tract of 670 acres, a tract of 27.1 acres, and a tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6-acre tract was also acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

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-668ee]).

Establishing and Acquisition Authorities:

Umatilla Refuge was established in 1968 and the Service entered into a Cooperative Agreement with the Army Corps of Engineers on July 3, 1969 in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within the said states.

Refuge Purposes:

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between USACE and USFWS.)
- Additional Land Acquisitions: A land tract of 670 acres, a tract of 27.1 acres and another tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6 acre tract also was acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

Description of Use:

In 1996, changes to Umatilla Refuge’s big game hunting program were implemented after release of an Environmental Assessment (EA) for public use on the Refuge (Environmental Assessment of Public Use on Umatilla National Wildlife Refuge, April 1996). Washington units were closed to general hunting seasons for big game, and special permit deer hunts were subsequently instituted in both Oregon and Washington for the McCormack, Paterson, and Whitcomb Units to control deer population. This compatibility determination would allow for the continuation of these hunts as described under Preferred Alternative 2 of the Draft CCP/EA. A description of the current program is in section 5.5 of the Draft CCP/EA; proposed changes under the preferred alternative are under Goal 10, objective 10d.

McCormack Unit—The McCormack Unit permit deer hunt is conducted per State Oregon Department of Fish and Wildlife (ODFW) hunting regulations as a “Controlled Hunt” which is a season where the number or distribution of hunters is limited through a public drawing. Through prior coordination with Refuge personnel, ODFW sets dates of open season, type of weapon(s) allowed, bag limits, and number of tags issued. Harvest regulations are intended to meet population management objectives identified by the Refuge. Additional Refuge-specific land use regulations apply. This has included required hunt program orientation, required harvest success reporting, specific area closures for safety and other needs, limitations on guests allowed for permittees, and other general regulations such as allowed daily entry times onto the Refuge and no overnight camping or camp fires.

Paterson and Whitcomb Units—The Paterson and Whitcomb Units permit deer hunts differ from above in that they are located in Washington and hunts are set by the Washington Department of Fish and Wildlife (WDFW). Regulations and procedures of the hunts are generally identical to those conducted in Oregon on the McCormack Unit.

Availability of Resources:

The following funding/annual costs would be required to administer and manage big game hunting within the Refuge, as described above.

Category and Itemization	One-time (\$)	Annual (\$/yr)
Administration and management:	\$0	\$1,000
Maintenance:	\$0	\$ 500
Monitoring:	\$0	\$ 500
Special equipment, facilities, or improvements:	\$0	\$ 0
Law Enforcement		\$2,000
Total		\$4,000

Anticipated Impacts of the Use:

Impacts to Wildlife and Habitats: Direct mortality to deer associated with the hunt would of course occur. Some wounding would occur as well. In all cases, the Refuge would seek to minimize needless deer mortality while providing a quality hunt experience and obtaining habitat objectives. Foot travel associated with deer hunting could potentially result in vegetation trampling and disruption

of soil crusts. Since deer hunting would involve small numbers of hunters, this activity would likely have a small impact.

The activity of hunters pursuing deer on the Refuge could also disturb some wildlife species. Hunters walking in close proximity to wetlands and gunfire from hunting can result in behavioral responses by waterfowl and other wetland birds. Portions of the Refuge open to deer hunting would include wetlands. Most waterfowl use, however, occurs earlier in the year for breeding and nesting activities, or later in the year during fall and winter migrations. Thus, minimal impacts to waterfowl would be expected.

This use is unlikely to impact threatened and endangered species. Bald eagles use the Refuge, but this use generally coincides with large wintering populations of waterfowl, which occurs well after the hunt.

Impacts to other priority public uses: Hunting (especially gunshot noise) has the potential to disturb Refuge visitors engaged in other priority public uses. To minimize this potential conflict, the Refuge has designated defined hunting areas that provide for a safety buffer area for the auto tour route. In addition, the Columbia River Heritage Trail will be realigned to the Ridge Road in place of crossing the slough. A new trailhead and 0.2 mile loop trail section will also be developed on the far eastern end of the slough where deer hunting is not allowed. The trail realignment and other new developments will substantially decrease user conflict with hunting from the current status. The current closure of the trail during the hunting season will no longer be needed.

Big game hunting could have an effect on wildlife observation and photography quality. Although uncertain, it seems likely that wildlife observation/photography opportunities could be increased as animals move away from the hunted zones toward no hunting zones. The ultimate outcome for the visitor is that higher numbers of animals may be visible, but the aesthetic value of the experience may be diminished somewhat by the occasional sound of shots.

Public Review and Comment:

Open houses were held and written comments were solicited from the public during the drafting of the Comprehensive Conservation Plan and Environmental Assessment for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the CCP. Additional public review and comment will be solicited during the CCP comment period.

Determination (check one below):

Use is Not Compatible

Use is Compatible with the following stipulations

Stipulations Necessary to Ensure Compatibility:

- Modern firearms will not be allowed.
- Weapons used for hunting will be restricted to muzzle loading black powder rifles, and/or shotguns, per state regulations and per specific Refuge regulations.
- Specific area closures will be implemented to improve safety along the auto tour route. This closure will include all lands east of a north-south line that extends through the unit and passes through parking lots C, D, and F.
- Specific area closure will be implemented to protect Refuge buildings and personnel. This will include all areas north of the north tree line.
- Public use trails will be closed during permit deer hunts on the McCormack Unit.
- Camping, overnight use, and fires will be prohibited.

Justification:

The hunt is being conducted as a management tool to help meet population goals for deer as identified in the CCP, Objective 10d.

Hunting at Umatilla Refuge as described in this CD contributes to the mission of the Refuge System by conserving native shrub-steppe and riparian habitats through deer management. Deer browsing of bitterbrush is a known concern on the Refuge. Deer hunting will reduce deer densities which can decrease browsing intensity on bitterbrush, and riparian tree and shrub sprouts, enough to allow escapement and height growth putting them beyond the reach of deer. Deer hunting also contributes to the mission by providing a wildlife-oriented recreational benefit to Americans. By limiting the numbers of hunters and days of hunting as well as always providing sanctuary from human disturbance in other areas of the Refuge, a deer hunting program will not interfere with the Refuge achieving its purposes. Hunting is also one of the six priority public uses of the Refuge System as stated in the National Wildlife Refuge System Improvement Act of 1997. Therefore, the hunt supports Refuge purposes, goals and objectives of the Refuge, and the NWRS mission.

Mandatory 10- or 15-Year Reevaluation Date: (provide month and year for “allowed” uses only)

Mandatory 15-year reevaluation date (for wildlife-dependent public uses)

Mandatory 10-year reevaluation date (for all uses other than wildlife-dependent public uses)

NEPA Compliance for Refuge Use Decision: (check one below)

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

References

U.S. Department of the Interior. 1995. Environmental Assessment of Public Use on Umatilla National Wildlife Refuge, Morrow County, Oregon, Benton County, Washington.

U.S. Fish and Wildlife Service. 2006. Draft Comprehensive Conservation Plan for the Turnbull National Wildlife Refuge, WA, Portland, OR. Appendix E Compatibility Determinations.

Refuge Determination:

Prepared by: _____
(Signature) (Date)

Refuge Manager/
Project Leader
Approval: _____
(Signature) (Date)

Concurrence:

Refuge Supervisor: _____
(Signature) (Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA): _____
(Signature) (Date)

Fishing

COMPATIBILITY DETERMINATION

Use: Fishing (general); Fishing (tournament); Fishing (special events)

Refuge Names: McNary National Wildlife Refuge and Umatilla National Wildlife Refuge

County and State: Walla Walla, Franklin, and Benton Counties, Washington, Umatilla County, Oregon.

Establishing and Acquisition Authorities: (McNary)

McNary Refuge was established in 1955 by cooperative agreement with the Corps which transferred administrative control of the original 2,849-acre parcel to the Service (Federal Register of May 1956; Document No. 56-3499; and Cooperative Agreement between the Corps and Service in September 1963, and as amended September 1969). Additional lands were purchased in subsequent years under the Migratory Bird Conservation Act (16 USC 715d). A small parcel was donated to the Service in 1969, under the Refuge Recreation Act (16 USC 460k-1, k-2). In 1972, another parcel was transferred to the Service from the Bureau of Reclamation under the Fish and Wildlife Coordination Act (16 USC 664). In 1999, the original Refuge was transferred from the Corps to the Service through the Water Resources Development Act (WRDA) 1999 bill (P.L. 106-53; 16 USC 668dd). Additional lands were added in 2000 (Cooperative Agreement No. DACW68-4-00-13), dated January 2000 and as amended June 2000.

Refuge Purpose(s) (McNary):

- for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans... (All units, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “for development, conservation and management of wildlife resources...” (All units, General Plan, 1953).
- “particular value in carrying out the National Migratory Bird Management Program” (Original Burbank Unit, and Hanford Islands Unit, General Plan, 1953).
- “multiple use value relating to the conservation of fish life, waterfowl and upland game birds” (Peninsula, Two Rivers, and Wallula Units, General Plan, 1953).
- Snake River Mitigation Compensation Plan (Cummins Property only, Cooperative Agreement between Service and Service, 2000).
- “Dam Project Purposes” [primary purposes of navigation, power development, irrigation, and conservation of wildlife - Public Law Number 14, 79th Congress, First Session, approved March 2, 1945]. (Cooperative Agreement between the Corps and Service, 2000, Stateline and Juniper Canyon units only).
- Other parcels: Small pieces of the Refuge were also added later by purchase under the Migratory Bird Conservation Act. The Refuge also manages a small tract of land under a 10-year lease with

the Washington Department of Natural Resources; and, approximately 20 small tracts were acquired under authority of the Refuge Recreation Act of 1962 (PL 87-714).

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

Establishing and Acquisition Authorities: (Umatilla)

Umatilla Refuge was established in 1968 when the Service entered into a Cooperative Agreement with the Corps on July 3, 1969 in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended, 16 U.S.C. 661 et seq.), and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior, and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within said states.

Refuge Purposes: (Umatilla)

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between USACE and USFWS.)
- Additional Land Acquisitions: A land tract of 670 acres, a tract of 27.1 acres and another tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6 acre tract also was acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

National Wildlife Refuge System Mission:

“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 et seq.].)

Description of Use:

McNary: The Refuge receives over 16,700 fishing visits annually (RMIS FY2004). The vast majority of fishing occurs from March 1 through the end of October. Early season fishing is focused on walleye and trout with fishing occurring primarily in the Columbia River within the boundaries of the Peninsula, Two Rivers, Burbank Sloughs, and Wallula Units. Fishing in the late spring and summer primarily focuses on bass fishing in the Columbia River, and in the ponds that make up the Burbank Sloughs. Fishing for catfish in the Walla Walla River on the Wallula Unit, is also popular. Late summer and fall is primarily salmon fishing in the Columbia River within the boundaries of the Two Rivers, Peninsula, Burbank Sloughs, and Wallula Units and in the Walla Walla River in the Wallula Unit. Quarry Pond receives very heavy use (300-500 anglers in a weekend) during the month of March and then tapers off dramatically in early April as the pond is fished out. McNary Headquarters pond IV receives a few fishermen, mostly children and long time local residents, fishing the bass beds during spawning in April or May, but the area is rarely fished the rest of the year.

Fishing occurs at McNary Refuge in the locations listed below.

- On the McNary Headquarters Unit, fishing occurs only in pond IV. Fishing use to occur in pond III but a walking trail to the pond is no longer maintained and fishing has practically ceased. Trail maintenance stopped because of its disturbances to wildlife and nesting birds. Fishing is not allowed in ponds I and II. Boats are not allowed for fishing in any of the unit's ponds. A small but active group of people including many local children fish primarily for bass in the pond.
- On the Burbank Sloughs Unit, fishing is allowed in all ponds and sloughs and in the Columbia River and along its banks. Boats are allowed but are only used in the Columbia River because of the small size of the unit's ponds. A few anglers walk (.25 to 1.5 miles) into the Unit's small ponds, but a majority use a variety of boats to fish in the Columbia River. Boat anglers gain access to the River from boat launches at Corps facilities at Hood Park or Cargill Pond.
- On the Peninsula Unit, fishing is allowed in and along the banks of Casey Pond, and in and along the banks of the Columbia River. Motorized and nonmotorized boats are allowed in Casey Pond. Fishing is also allowed in several other ponds on the Unit. These ponds are relatively small and shallow and anglers bank fish them. Access to the small ponds is from the unit's main entrance off Hanson Loop Road. A new (2004), good quality boat launch and large parking area are provided to anglers on the unit. Access to Casey Pond and the new boat launch is gained from a dirt road about one mile from the unit's main entrance. Boaters launching from the Casey Pond launch can gain access to the Columbia River through a large opening in the dike.
- On the Two Rivers Unit, fishing occurs in the Columbia River and along its banks and on the banks of Quarry Pond. Quarry Pond is the most popular spot on the unit to fish. It is especially popular with new immigrants and with families who have small children. Currently, the Washington Department of Fish and Wildlife stocks the pond with rainbow trout three times a year between March and May. The pond has no outlet to the river and is quickly fished out by the large numbers of anglers. Two dirt parking areas, seasonal port-a-lets, and an accessible fishing pier are available at the pond. Trash and litter are a significant problem. In the past five years the Refuge has closed a road along the pond to vehicle traffic and has also closed off several smaller

parking areas that were too close to the water's edge. The Refuge has worked with local hunting and fishing organizations and other volunteers to clean up the popular site. The clean-up days along with litter patrols by the Refuge's seasonal Youth Conservation Corps have helped to lessen the amount of debris in the area.

- Boat anglers access the Columbia River adjacent to the Two Rivers Unit from the same launches they use when fishing the Peninsula Unit. In addition, there is a small unimproved boat launch on the unit. The main (and only) vehicle entrance is off State Highway 12.
- On the Wallula Unit, fishing occurs in several places including in the Walla Walla River and along its banks; in the Columbia River and along its banks; in White Tail Bay and along its banks; and in small ponds on the south side of the Wallula Unit. Fishing is not allowed in Sanctuary Pond. Boats access the Walla Walla River from a boat launch near at Madam Dorian Campground. A dirt parking area is provided along with a small accessible fishing pier. Port-a-lets are installed in the parking area during busy summer months when funding permits. Year-round vault toilets and/or port-a-lets are located a quarter of a mile away at Madam Dorian Campground. There are several parking areas for anglers on the Unit, on both the north and south side of the Walla Walla River.
- The most popular types of fishing in the Columbia and Snake Rivers include salmon, steelhead, and walleye fishing. Bass fishing is also very popular in the areas around the Burbank Slough Unit (McNary Headquarters), Burbank Sloughs Unit (behind downtown Burbank), and the Peninsula Unit. There is some sturgeon fishing in the Columbia River near McNary Refuge. A few anglers fish for shad and carp. Catching northern pike minnow has become somewhat popular with the introduction of a cash reward from the States of Oregon and Washington for catching these fish.
- The most popular fishing occurring in the Walla Walla River is for catfish followed by steelhead. Many anglers come to the Wallula Unit specifically for catfish. Ponds on Refuge units are mostly fished for bass.

Umatilla: Recreational fishing is the most popular "Big Six" recreation on Umatilla Refuge. The Refuge receives over 20,000 fishing visits annually (RMIS FY2004). The vast majority of fishing occurs from March 1 through the end of October. Early season fishing focuses on walleye fishing and occurs primarily in the Columbia River along the McCormack, Boardman, Ridge, Paterson, and Whitcomb Island Units. Late spring and summer fishing is focused on fishing for bass around the same units and in the ponds on the Paterson Units. There is also some fishing for catfish along the banks of the units. Late summer and fall fishing is primarily for salmon and steelhead in the Columbia River along the Refuge units. The gravel ponds of McCormack Unit receive some fishing (two to ten people per week during the warmer weather months) and the ponds in the Paterson Unit are fished for bass, mostly by local residents of the area and the Tri-Cities.

Fishing occurs on the Refuge in the following locations, on the Oregon side of the Columbia River:

- On the McCormack Unit, fishing occurs at the gravel ponds. Fishing is from the banks and boats are not allowed. The McCormack Slough is not open to fishing.

- On the McCormack Unit and the Boardman Unit fishing occurs in the Columbia River. Because the areas adjacent to the river on the McCormack Unit are closed to the public, except to permit hunting, bank fishing is not allowed. Bank fishing is allowed on the Boardman Unit.
- Refuge islands (Long Walk Island, Sand Dune Islands, Straight Six Island, Blalock Islands, and Telegraph Island) are closed to all public use including bank fishing.
- On the McCormack Unit, Kathy's Pond is seasonally dry and does not contain fish.

The ODFW notifies the Refuge of fishing tournaments on the John Day Pool. The Refuge then issues special use permits for fishing tournaments that may enter Refuge waters. In 2005, 16 special use permits were issued for fishing tournaments with tournaments occurring from February through October. Tournaments ranged in size from small club tournaments of 5 to 10 boats, to unlimited boat tournaments (generally 30 to 60 boats).

Washington side of the Columbia River:

- On the Paterson, Ridge, and Whitcomb Island (Whitcomb Island and Crow Butte) Units, fishing occurs in the Columbia River and from the banks of units. Fishing also occurs in several ponds on each unit. Only nonmotorized boats are allowed in the ponds, but boats are rarely if ever used.
- At Umatilla Refuge, the Columbia River is primarily fished for salmon, steelhead, and walleye. Refuge ponds and backwaters are primarily fished for bass. A few anglers fish for shad and carp. A monetary reward offered seasonally by the States of Oregon and Washington, for catching northern pike minnows, has made catching the small fish popular.

Under Preferred Alternative 2 of the Draft CCP/EA, the fishing program will continue as described above with the following changes:

McNary Refuge

1. Installation of a fishing/Refuge/safety information kiosk at the Wallula (Madam Dorian) boat launch and at the Casey Pond boat launch.
2. Build a fishing pier at McNary Headquarters pond IV. Install a fishing/Refuge/safety information kiosk.
3. Stocking at Quarry Pond would be limited to rainbow trout.
4. Improvement of parking facilities and access to river shoreline fishing sites (Two Rivers, Burbank Sloughs, and Wallula units).

Umatilla Refuge

1. Partner with ODFW to install a fishing/Refuge/safety information kiosk at the boat launch adjacent to the McCormack Unit.
2. Partner with WDFW to improve the boat launch and parking area at/adjacent to the Patterson Unit. Project should include the installation of a fishing/Refuge/safety information kiosk.
3. Improve parking facilities and access to river shoreline fishing sites (McCormack and Paterson units).

Both Refuges

1. Hire seasonal park rangers to keep information up-to-date in kiosks and provide improved law enforcement coverage.

Availability of Resources:

McNary and Umatilla Refuges are open for hunting, environmental education, interpretation, wildlife photography, and wildlife observation as well as fishing. Access trails, parking lots, signage and other facilities are often used for multiple purposes. Even though fishing is the most popular visitor activity on Umatilla Refuge, only a very limited number of facilities have been developed specifically for fishing. With increased funding, improvements could be made to the programs. Limited funding and staff resources negatively effects maintenance and law enforcement of current facilities. Most of the costs associated with carrying out the improvements described in Preferred Alternative 2 are one-time expenses. The Service will explore all available options to obtain funding to implement these projects, including partnership efforts.

Costs to Administer and Manage Fishing Programs at McNary Refuge under Preferred Alternative 2.

Activity or Project	One Time Expense (\$)	Recurring Expense (\$/year)
Placement and Maintenance of Kiosks and Signs	46,000	3,000
Development/ Maintenance of Accessible fishing Pier	55,500	3,000
Law Enforcement	20,000	10,000
Monitoring (primarily of bird colonies)		10,000
Totals	\$121,500	\$26,000

Costs to Administer and Manage Fishing Programs at Umatilla Refuge under Preferred Alternative 2.

Activity or Project	One Time Expense (\$)	Recurring Expense (\$/year)
Placement and Maintenance of Kiosks and Signs	92,000	3,000
Boat launch development	180,000	5,000
Law Enforcement	20,000	10,000
Monitoring (primarily of bird colonies)		10,000
Totals	\$292,000	\$28,000

Anticipated Impacts of the Use:

Fishing, when practiced as a solitary and stationary activity, tends to be less disturbing to wildlife than hunting or motorized boating (Tuite et al. 1983). Direct habitat impacts include a certain amount of litter and general garbage left at fishing sites. Motorized boats create noise and potentially leave oil and gas residue. Installation and use of parking areas and access trails will decrease impacts to vegetation and soil adjacent to fishing areas, by concentrating visitors on hardened surfaces.

Fishing would cause disturbance to birds and other wildlife using open waters and backwaters of the Refuges. Fishing activities may influence the composition of bird communities, as well as distribution, abundance and productivity of waterbirds (Tydeman 1977; Bouffard 1982; Bell and Austin 1985;

Bordignon 1985; Edwards and Bell 1985; and Cooke 1987). Anglers often fish in shallow, sheltered bays and creeks that birds prefer, negatively impacting distribution and abundance of waterfowl, grebes, and coots (Cooke 1987). Increases in anglers and associated shoreline activity discouraged waterfowl from using otherwise suitable habitat (Jahn and Hunt 1964). In Britain, anglers displaced waterfowl from their preferred feeding and roosting areas and caused widgeon, green-winged teal, pochard, and mallard to depart from a reservoir prematurely (Jahn and Hunt 1964). Anglers influenced the numbers, behavior, and diurnal distribution of avian scavengers present at sites in Washington, when compared to nonfishing days (Knight et al. 1991). Shoreline activities, such as human noise, would cause some birds to flush and go elsewhere. In addition, vegetation trampling, and deposition of sewage or other chemicals are expected to commonly occur (Liddle and Scorgie 1980). Disturbance and destruction of riparian vegetation, and impacts to bank stability and water quality, may result from high levels of bank fishing activities.

Boating, associated with fishing, can alter bird distribution, reduce use of particular habitats or entire areas by waterfowl and other waterbirds, alter feeding behavior and nutritional status, and cause premature departure from areas (Knight and Cole 1995). Impacts of motorized boating can occur even at low densities, given their noise, speed, and ability to cover extensive areas in a short amount of time.

Colonial nesting birds on river islands may be among the most sensitive of the wildlife species subjected to potential disturbance from fishing and fishing-associated boating. Washington State provided management recommendations for State priority habitats and species (WDFW 2001). In this document, WDFW provided management recommendations for limiting disturbance to American white pelican (state listed as endangered) and great blue heron. These are summarized below.

Management Recommendations from WDFW Priority Habitats and Species

Species	Management Recommendation
American white pelican	<ul style="list-style-type: none"> • Establish a buffer zone of 400-800m (0.25-0.5 miles) and up to 1,600m (1.0 miles) from the nesting island which is closed to human activity such as boating (especially power boating), fishing, water skiing, discharge of fire arms, wildlife observation, etc. (Doran et al. 2004) • Close nest islands to trespass during the breeding season from 15 March through 31 August
Great blue heron	<ul style="list-style-type: none"> • Establish a protective buffer limiting human activity 820-985 feet from the outer edge of active colonies between February 15–July 31.

The number of fishing tournament applications for Umatilla waters has increased in recent years. Refuge staff will have to develop test sites to monitor the effects of the increase in angler to wildlife and in particular nesting birds.

Public Review and Comment:

Open houses were held and written comments were solicited from the public during development of the Draft CCP/EA for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further

details public involvement during development of the CCP. Additional public review and comment will be solicited during the Draft CCP/EA comment period.

Determination (check one below):

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

- Camping, overnight use, and fires are prohibited.
- Littering is prohibited.
- The Service shall maintain portable toilet facilities at Service boat launches and heavily used fishing areas to minimize human waste problems on shorelines and island trespass.
- All persons fishing shall be required to have a valid State license and follow applicable State regulations.
- Special use permits (SUPs) for fishing tournaments shall include no-access buffers half a mile from islands known to be supporting nesting colonies of American white pelicans between March 15 and August 31. In addition, a no-access buffer of 900 feet from all other Refuge islands from February 15-July 31, shall be included in tournament SUPs to prevent disturbance to nesting colonial birds.
- The Refuge Complex shall work in partnership with the States, recreational fishing organizations, and other conservation partners to develop permit conditions to include as “boilerplate” for tournament SUPs. Consideration shall be given to addressing issues of zoning, numbers of participants in any one tournament, no-wake zones, and speed limits.
- The fishing program will be conducted as outlined in Chapter 2 of the Draft CCP/EA. The Refuge fishing plan, leaflets, and section 32 of 50 CFR will be updated as necessary.
- Fishing will be subject to Refuge specific fishing regulations in effect establishing set days, areas, times, points of entry, and permit requirements under which to fish.
- Law enforcement patrols will be conducted on a regular basis to assure compliance with State and Refuge regulations.

Justification:

Fishing is a “Big 6” wildlife dependent recreational activity. It brings visitors to the Refuge and often enhances the visitors’ appreciation of natural resources. Parts of both McNary and Umatilla Refuge are closed to all public use and these areas provide important undisturbed habitat for fish and wildlife. In other areas only nonmotorized boats are allowed, this lessens the disturbances to colonial water birds and other wildlife. Other areas require long walks by anglers and thus receive minimal angler use and minimal disturbance to wildlife. Some areas receive high use and in these areas the wildlife is disturbed or displaced during high visitor usage. The combination of closed areas, seasonal use areas, minimally used areas, and seasonal high use areas, allows recreational fishing and high quality fish and wildlife habitat to co-exist on the Refuge. Fishing at anticipated levels will not materially interfere with the purposes of the Refuge. Stipulations will help reduce or eliminate any unwanted

impacts of the use. State regulations and monitoring help ensure that harvest levels of fish do not harm long-term populations.

Mandatory 10- or 15-year Reevaluation Date: (provide month and year for “allowed uses)

12/2022 Mandatory 15-year re-evaluation date (for wildlife-dependent public uses)

_____ Mandatory 10-year reevaluation date (for all uses other than wildlife-dependent public uses)

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Signatures:

Prepared by: _____ (Signature) _____ (Date)

Refuge Manager/
Project Leader

Approval: _____
(Signature)

(Date)

Concurrence:

Refuge Supervisor: _____
(Signature)

(Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA: _____

(Signature)

(Date)

Environmental Education and Interpretation

Compatibility Determination

Use: Environmental Education and Interpretation
[CD Database Uses: Environmental education (teaching teachers or group leaders);
Environmental education (teaching students); and Interpretation]

Refuge Name(s): McNary National Wildlife Refuge
Umatilla National Wildlife Refuge

County and State: Walla Walla, Franklin, and Benton Counties, Washington, Umatilla County, Oregon.

Establishing and Acquisition Authorities: (McNary)

McNary Refuge was established in 1955 by cooperative agreement with the Corps which transferred administrative control of the original 2,849-acre parcel to the Service (Federal Register of May 1956; Document No. 56-3499; and Cooperative Agreement between the Corps and Service in September 1963, and as amended September 1969). Additional lands were purchased in subsequent years under the Migratory Bird Conservation Act (16 USC 715d). A small parcel was donated to the Service in 1969, under the Refuge Recreation Act (16 USC 460k-1, k-2). In 1972, another parcel was transferred to the Service from the Bureau of Reclamation under the Fish and Wildlife Coordination Act (16 USC 664). In 1999, the original Refuge was transferred from the Corps to the Service through the Water Resources Development Act (WRDA) 1999 bill (P.L. 106-53; 16 USC 668dd). Additional lands were added in 2000 (Cooperative Agreement No. DACW68-4-00-13), dated January 2000 and as amended June 2000.

Refuge Purpose(s) (McNary):

- for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans... (All units, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “for development, conservation and management of wildlife resources...” (All units, General Plan, 1953).
- “particular value in carrying out the National Migratory Bird Management Program” (Original Burbank Unit, and Hanford Islands Unit, General Plan, 1953).
- “multiple use value relating to the conservation of fish life, waterfowl and upland game birds” (Peninsula, Two Rivers, and Wallula Units, General Plan, 1953).
- Snake River Mitigation Compensation Plan (Cummins Property only, Cooperative Agreement between Service and Service, 2000).
- “Dam Project Purposes” [primary purposes of navigation, power development, irrigation, and conservation of wildlife - Public Law Number 14, 79th Congress, First Session, approved March 2, 1945]. (Cooperative Agreement between the Corps and Service, 2000, Stateline and Juniper Canyon units only).

- Other parcels: Small pieces of the Refuge were also added later by purchase under the Migratory Bird Conservation Act. The Refuge also manages a small tract of land under a 10-year lease with the Washington Department of Natural Resources; and, approximately 20 small tracts were acquired under authority of the Refuge Recreation Act of 1962 (PL 87-714).

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

Establishing and Acquisition Authorities: (Umatilla)

Umatilla Refuge was established in 1968 when the Service entered into a Cooperative Agreement with the Corps on July 3, 1969 in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended, 16 U.S.C. 661 et seq.), and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior, and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within said states.

Refuge Purposes: (Umatilla)

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between USACE and USFWS.)
- Additional Land Acquisitions: A land tract of 670 acres, a tract of 27.1 acres and another tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6 acre tract also was acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

National Wildlife Refuge System Mission: “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 et seq.)).

Description of Use: Environmental education (EE) and interpretation are both defined as wildlife-dependent recreational uses under the Improvement Act. Environmental Education consists of educational activities conducted by Refuge staff, volunteers, partners, and teachers. The EE themes pertain to the Refuge, the National Wildlife Refuge System, wildlife and their habitats and the human environment. The goal of the EE program is to have students and teachers understand and value the Refuge System and the ecology and management of McNary and Umatilla Refuges.

Under the Preferred Alternative 2 of the Comprehensive Conservation Plan, 1,500 – 3,000 students will be served annually through McNary Refuge’s EE program, and 100-500 students will be served annually through the Umatilla EE program. Currently there is no formal EE program at Umatilla Refuge although classes do occasionally visit the Refuge as part of their science field trips. When a Park Ranger position existed at the Refuge Complex, several formal EE presentations were given annually at Umatilla Refuge.

Interpretation occurs in less formal activities (i.e. infrequently scheduled tours or casual talks) conducted by Refuge staff or volunteers. Interpretive materials are also available to visitors through exhibits (mostly found in the McNary EE Center), interpretive panels, and brochures.

At McNary Refuge, EE occurs primarily around the EE Center, Pond IV, the wildlife viewing/photography blind and the two-mile nature trail. Seventy percent of EE use occurs during the spring (mid April-mid June) although programs exist throughout the rest of the year. The least active months are from December through February.

Interpretive materials are available on the Refuges. A McNary Nature Trail brochure map is available at the trailhead along with six interpretive panels along the trail. A Refuge bird list that includes bird watching tips is available at the EE Center. On the North Shore Road of the Wallula Unit, an interpretive kiosk overlooks Sanctuary Pond.

At Umatilla Refuge, an automobile tour route winds through the McCormack Unit. Several interpretive panels are installed at various pull-outs. There is an interpretive site (Callow’s Overlook) along the automobile tour route and an interpretive kiosk at Kathy’s Pond off Paterson Ferry Road. On Highway 14 in Washington, there are interpretive panels overlooking the Ridge Unit.

Refuge general brochures and hunting information sheets are available at the entrances to most Refuge units at both Refuges.

Additional information on current EE and interpretive programs and facilities can be found in sections 5.8 and 5.9 of the Draft CCP/EA. Proposed program and facility changes or improvements can be found in Chapter 2 of the Draft CCP/EA, Goal 12.

Under Preferred Alternative 2 of the Draft CCP/EA, the environmental education and interpretive programs will continue as described above with the following improvements:

- Develop more “teach-the-teacher” programs and Refuge specific instructor training.
- Meet annually with Educational Services District 123 to ensure that Refuge programs are helping the school districts meet their state educational requirements.

- Use high quality established programs, such as the Shorebirds Sister Schools program and develop education “module” boxes to assist new volunteers and teachers.
- Explore opportunities to gain additional teacher volunteers through the Washington State University teachers program.
- Hire a volunteer coordinator and or park ranger to manage and train volunteers and support the EE program.
- Utilize the Refuge Roads or other project funds to construct EE and interpretive sites (shade structures, orientation and interpretive panels, visitor contact area by the Refuge Manager’s new office, and harden surface areas at interpretive overlooks along Highway 14) at Umatilla Refuge. Some of these facilities could be constructed in conjunction with a parking area and trail head for the Refuge section of the Heritage Trail.

Availability of Resources: The following is the estimated construction costs and annual costs for new EE and interpretive programs developed under Preferred Alternative 2:

Costs to administer and manage environmental education and interpretive programs for McNary Refuge under Preferred Alternative 2 of the Draft CCP/EA.

Activity or Project	One Time Expense (\$)	Recurring Expense (\$/year)
Develop and produce interpretive panels	15,000	1,000
Educational Materials	8,000	1,000
Volunteer Specialist or Park Ranger (position shared with Umatilla)	40,000	25,000
Totals	\$63,000	\$27,000

Costs to administer and manage environmental education programs for Umatilla Refuge under Preferred Alternative 2 of the Draft CCP/EA.

Activity or Project	One Time Expense (\$)	Recurring Expense (\$/year)
Develop teacher and volunteer programs	2,000	700
Educational Materials	3,000	1,000
Volunteer Specialist or Park Ranger (position shared with McNary)	40,000	25,000
Construct shade structure	35,000	1,500
Develop, produce, and install interpretive panels	55,000	0
Construct McCormack visitor contact area	51,000	0
Maintain McCormack visitor contact area, Highway 14 pull-outs and interpretive panels	0	18,500
Totals	\$ 186,000	\$ 46,700

Anticipated Impacts of the Uses: Impacts from EE activities at McNary Refuge occur mostly in the area around the EE Center and south side of Pond IV, where school groups concentrate to take part in hands-on science activities. Impacts observed in this area of under two acres include: vegetation trampling, disturbance to nesting birds, and disturbance to feeding or resting birds or other wildlife in the proximate vicinity. The EE program developed under Preferred Alternative 2 at Umatilla Refuge would also produce impacts around the Refuge Manager’s new office and visitor contact area. This

area is already a disturbed site because it has been used as the waterfowl hunter check station for over 20 years and has a year-round parking lot and restroom facility. The nearby lawn area has been used in the past as a staging area for Refuge events. Additional stress to the site would be added during nonhunting months for education programs at the visitor contact area and along a few parts of the nearby Heritage Trail.

An unpublished study (Jose, 1997) examined the effect of EE site activities at Blackhorse Lake on the Turnbull Refuge. The study was designed to compare waterfowl presence and behavior patterns between the times when EE activities were occurring and when EE classes were not on-site. The study results indicated that fewer waterfowl were present in the study area when EE classes were on site as compared to the control times. The study also found more short flights undertaken by birds when EE classes were on site. Redheads displayed the highest number of flight responses, followed by mallards. Ruddy ducks almost never flew but had the highest increase in directional swimming away from the EE classes. The study author recommended that sites heavily used by smaller bodied birds, such as ruddy ducks, buffleheads, and teals, not be used as environmental education sites.

Participation in environmental education programs is growing throughout Oregon and Washington. The McNary program is limited by the number of qualified volunteers and teachers, and Refuge staff that can lead environmental education classes. With the growth of participation in EE programs and the emphasis of these programs by the Service, future effects can be expected to be higher than present. The EE program has a certain detrimental impact on Refuge habitats and wildlife but most EE activities are contained within a relatively small public use area. McNary Refuge is over 16,000 acres and the heavily impacted area around the EE Center is less than two acres. During the primary season (April and May) for EE, the McNary Headquarters waterfowl fee hunt areas (ponds I and II) are closed to the public, and therefore, provide additional sanctuary for breeding wildlife.

Similar conditions exist at Umatilla Refuge. The Refuge is 23,555 acres. The EE program activities would be concentrated in an area of approximately two acres, and would primarily occur during nonhunting months. During these months, over 50 % of the McCormack Unit (where EE would occur) is closed to the public, and therefore, supplies additional wildlife sanctuary.

Public Review and Comment:

Open houses were held and written comments were solicited from the public during development of the Draft CCP/EA for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the CCP. Additional public review and comment will be solicited during the Draft CCP/EA comment period.

Determination:

Use is Not Compatible

Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

User Stipulations:

- Require advance reservations for larger groups (over 20) participating in environmental education activities.
- Instruct all groups in trail etiquette and ways to reduce wildlife and habitat disturbance during a “welcome” session.
- Encourage students and teachers to participate in stewardship activities including habitat restoration or monitoring.
- Limit EE at McNary Refuge to designated sites on pond IV.
- Encourage groups at McNary Refuge to put all their own garbage in the Service provided dumpsters.
- Encourage groups at Umatilla Refuge to bring their own water and carry out their own trash.

Administrative stipulations:

- During “teach the teachers” workshops, instructors will review trail etiquette and how to minimize wildlife disturbances.
- An effort will be made to limit group size to no more than 60 participants per day, reducing disturbance to wildlife and overcrowding of Refuge facilities during times of peak demand.
- The EE Center will be accessible to all visiting public. Special efforts will be made to accommodate disabled visitors.
- Signs, pamphlets, and verbal instructions from Refuge staff and volunteers will promote appropriate use of trails, boardwalks, and platforms to minimize wildlife and habitat disturbance.
- Periodic monitoring and evaluation of sites and programs will be conducted to assess if objectives are being met and the resource is not being unacceptably degraded.
- Where feasible, native trees and shrubs will be planted to create screening along trails and at observation points to reduce disturbance.
- If funding permits, EE sites will be hardened and piers constructed to facilitate aquatic studies and to help reduce negative visitor impacts to soils, vegetation and hydrology.
- Regulations will be available to the public through a Refuge brochure.

- Directional, informational, and interpretive signs will be posted and maintained to help keep visitors on trails and help educate the public on minimizing wildlife and habitat disturbance.

Justification: Environmental education and interpretation contribute to the mission of the National Wildlife Refuge System by providing wildlife-oriented educational and recreational benefits to Americans. Environmental Education and Interpretation are two of the six wildlife-dependent recreational uses of the National Wildlife Refuge System as stated in the National Wildlife Refuge System Improvement Act of 1997. By limiting the size of groups and providing closed areas for sanctuary from human disturbance in other areas of the Refuge, these programs will limit disturbances to wildlife. Environmental Education and interpretation are important parts of McNary and Umatilla Refuges’ vision and goals.

Refuge Determination:

Prepared by: _____ (Signature) _____ (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) _____ (Date)

Concurrence:

Refuge Supervisor: _____ (Signature) _____ (Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA): _____ (Signature) _____ (Date)

Mandatory 10- or 15-year Reevaluation Date: (provide month and year for “allowed uses)

12/2022 Mandatory 15-year reevaluation date (for wildlife-dependent public uses)
_____ Mandatory 10-year reevaluation date (for all uses other than wildlife-dependent public uses)

References:

Jose, J. 1997. Evaluation of the Effect of Environmental Education Classes on Waterfowl Behavior. Unpublished report. Biology 454 class, Eastern Washington University, Cheney, Washington.

Boating

Compatibility Determination

Use: Boating

Refuge Names: McNary National Wildlife Refuge and Umatilla National Wildlife Refuge

County and State: Walla Walla, Franklin, and Benton Counties, Washington, Umatilla County, Oregon.

Establishing and Acquisition Authorities: (McNary)

McNary Refuge was established in 1955 by cooperative agreement with the Corps which transferred administrative control of the original 2,849-acre parcel to the Service (Federal Register of May 1956; Document No. 56-3499; and Cooperative Agreement between the Corps and Service in September 1963, and as amended September 1969). Additional lands were purchased in subsequent years under the Migratory Bird Conservation Act (16 USC 715d). A small parcel was donated to the Service in 1969, under the Refuge Recreation Act (16 USC 460k-1, k-2). In 1972, another parcel was transferred to the Service from the Bureau of Reclamation under the Fish and Wildlife Coordination Act (16 USC 664). In 1999, the original Refuge was transferred from the Corps to the Service through the Water Resources Development Act (WRDA). 1999 bill (P.L. 106-53; 16 USC 668dd). Additional lands were added in 2000 (Cooperative Agreement No. DACW68-4-00-13), dated January 2000 and as amended June 2000.

Refuge Purpose(s) (McNary):

- for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans... (All units, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “for development, conservation and management of wildlife resources...” (All units, General Plan, 1953).
- “particular value in carrying out the National Migratory Bird Management Program” (Original Burbank Unit, and Hanford Islands Unit, General Plan, 1953).
- “multiple use value relating to the conservation of fish life, waterfowl and upland game birds” (Peninsula, Two Rivers, and Wallula Units, General Plan, 1953).
- Snake River Mitigation Compensation Plan (Cummins Property only, Cooperative Agreement between Service and Service, 2000).
- “Dam Project Purposes” [primary purposes of navigation, power development, irrigation, and conservation of wildlife - Public Law Number 14, 79th Congress, First Session, approved March 2, 1945]. (Cooperative Agreement between the Corps and Service, 2000, Stateline and Juniper Canyon units only).
- Other parcels: Small pieces of the Refuge were also added later by purchase under the Migratory Bird Conservation Act. The Refuge also manages a small tract of land under a 10-year lease with the Washington Department of Natural Resources; and, approximately 20 small tracts were acquired under authority of the Refuge Recreation Act of 1962 (PL 87-714).

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

Establishing and Acquisition Authorities: (Umatilla)

Umatilla Refuge was established in 1968 and the Service entered into a Cooperative Agreement with the Corps on July 3, 1969, in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior, and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within the said states.

Refuge Purposes: (Umatilla)

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between the Corps and Service).
- Additional Land Acquisitions includes a land tract of 670 acres, a tract of 27.1 acres, and a tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6-acre tract also was acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

National Wildlife Refuge System Mission: “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 et seq.).

Description of Use:

This CD covers “recreational” boating use on the Refuges, that is, boating that is not directly supporting hunting, fishing, wildlife observation, photography, interpretation, or environmental education. The types of recreational boating addressed in this compatibility determination includes: motorboats and nonmotorized boats, including kayaks and canoes, in all Refuge waters.

Boating occurs throughout the year, but the primary recreational boating months are June through September.

At McNary Refuge, boating takes place primarily in the Columbia River and is evenly divided on the Burbank Sloughs, Peninsula, Two Rivers, and Wallula Units. There is some recreational boating (figures unknown) in the Walla Walla River in the Wallula Unit but most boating on the Walla Walla is related to fishing and waterfowl hunting. Some recreational canoeing and kayaking occurs in the Walla Walla River but user surveys have not occurred. As of spring 2006, personal watercrafts were not being used in McNary Refuge waters. It is estimated that McNary Refuge receives over 8,000 recreational boating visits annually with the majority (7,000) of these visits by motorboats.

Umatilla Refuge receives an estimated 18,500 recreational boating visits annually with the vast majority (18,000) if these by motorboats. Boating takes place primarily in the Columbia River on the McCormack, Boardman, Paterson, Ridge, and Whitcomb Island Units. Recreational boating is split fairly evenly amongst these units. Personal watercrafts are seen occasionally in Refuge waters.

Preferred Alternative 2 of the Draft Comprehensive Conservation Plan (Draft CCP/EA) would continue to provide recreational boating opportunities with an emphasis on use supporting priority public uses, including wildlife observation/photography, interpretation, environmental education, waterfowl hunting, and fishing.

Currently, boating occurs in the following areas:

McNary Refuge: On the McNary Headquarters Unit, pond III and the area around the pond are closed year-round, therefore, no boating occurs. Pond IV is near the Refuge headquarters office and environmental education center. The area around this pond receives year-round public visitation but the pond is not open to boating. The irrigation canal receives some angling, but because its size, shape, steep banks, and lack of launch facilities, it is not practical for boating.

The Burbank Sloughs Unit does not have any boating because the ponds are small and vehicle access is limited to maintenance and emergency vehicles. The Columbia River portion of the Burbank Sloughs receives both recreational motor boating and nonmotorized craft. It is an especially popular area for nonmotorized crafts because the unit has many back sloughs and coves to explore and has shallow waters that favor very small crafts.

On the Two Rivers and Peninsula Units, recreational boating occurs on Casey Pond. The pond has a good quality boat launch and large parking area that has ample space for boat trailers. The other ponds on the units are small and/or shallow and are not used for boating. Boating is popular on the Columbia River portion of these units.

On the Wallula Unit, the Walla Walla River, including White Tail Bay, is open to all boating. Sanctuary Pond is currently open to boating when water levels permit. Sanctuary Pond is primarily used by a few canoes and kayakers. Boating on the Columbia River portion of the unit is not as popular as on other units because high winds often occur at the sharp bend in the Columbia River making water conditions hazardous.

Umatilla Refuge: On the McCormack Slough Unit, recreational boats are not allowed on the slough and are not used in the Gravel Ponds because the ponds are too small.

The Columbia River portions of the McCormack and Boardman Units are open to recreational boating.

On the Paterson Unit, water depth and accessibility makes boating impractical in the unit's ponds. Some of the unit's sloughs are open to the Columbia River and recreational boating takes place in the Columbia River and in some sloughs when high water conditions exist.

On the Ridge Unit, the ponds are small and often shallow. Vehicle access is limited and boating is not practical.

On the Whitcomb Unit, the sloughs are open to the Columbia River and both the river and sloughs are open to boating.

Availability of Resources: Refuge funds are not spent directly on recreational boating but recreational boating benefits indirectly from investments made in facilities (boat launches, parking areas, access roads) that support Big Six activities such as fishing, hunting, wildlife observation and photography, where boats are used.

See fishing compatibility determination about facility improvements that would benefit both recreational boaters and anglers that use boats to pursue fish.

The main expenditures of Refuge funds to support this use will be in law enforcement (to ensure boaters are complying with area closures and any applicable speed limits or other restrictions) and in monitoring of wildlife populations.

Cost to Administer and Manage Boating Programs at McNary Refuge under Preferred Alternative 2 of the Draft CCP/EA

Activity or Project	One Time Expense (\$)	Recurring Expense (\$/year)
Law Enforcement	\$0	10,000
Monitoring	\$0	10,000
Totals	\$0	\$20,000

Costs to administer and manage boating programs for Umatilla Refuge under Preferred Alternative 2 of the Draft CCP/EA.

Activity or Project	One Time Expense (\$)	Recurring Expense (\$/year)
Law Enforcement	\$0	10,000
Monitoring	\$0	10,000
Totals	\$0	\$20,000

Anticipated Impacts of Use:

McNary and Umatilla Refuges provide crucial foraging and resting habitat for wintering and migratory birds, including waterfowl, shorebirds, and other waterbirds. Recreational boating can affect their use in Refuge waters. Boating is not allowed in all Refuge waters; McNary and Umatilla Refuge both have areas that are closed to all public use and these areas provide important undisturbed habitat for fish and wildlife. In other areas of the Refuges only nonmotorized boats are allowed. Some smaller water bodies within the Refuges are unsuitable and not practicable for boating. Some areas receive high use; therefore, the wildlife is disturbed or displaced during high visitor usage.

Boating activity, both motorized and nonmotorized, can alter distribution, reduce use of particular habitats or entire areas by waterfowl and other birds, alter feeding behavior and nutritional status, and cause premature departure from areas (Knight and Cole 1995). More sensitive species may find it difficult to secure adequate food or loafing sites as their preferred habitat becomes fragmented and recreation-related disturbances increase (Skagen et al. 1991; Pfister et al. 1992). Motorized boats generally have more impact on wildlife than nonmotorized boats because motorboats produce a combination of movement and noise (Tuite et al. 1983, Knight and Cole 1995). Motorized boats can also cover a larger area in a relatively short time, in comparison to nonmotorized boats.

Canoes and kayaks can cause significant disturbance effects based on their ability to penetrate into shallower marsh areas (Speight 1973, Knight and Cole 1995). In the Ozark National Scenic Riverway, green-backed heron activity declined on survey routes when canoes and boat use increased on the main river channel (Kaiser and Fritzell 1984). Canoes or slow moving boats have also been observed to disturb nesting great blue herons (Vos et al. 1985). Huffman (1999) found that non-motorized boats within 30 meters of the shoreline in south San Diego Bay caused all wintering waterfowl to flush between the craft and shore. However, compared to motorboats, canoes and kayaks appear to have less disturbance effects on most wildlife species (Jahn and Hunt 1964; Huffman 1999; DeLong 2002).

In Denmark, fast-moving boats were observed to have the greatest impact on red-breasted merganser broods (Kahlert 1994). The presence of fast-moving boats also caused the most significant modifications to the amount of time animals spent feeding and resting. In England, an increased rate of disturbance from boats partly caused a decline in roosting numbers of shorebird species (Burton et al. 1996). In addition, boaters have been observed to cause massive flights of diving ducks on the Mississippi River (Thornburg 1973). Motorized boats within 100 meters of shore caused all wintering waterfowl and shorebirds to flush between the craft and shore in south San Diego Bay, regardless of speed (Huffman 1999). However, disturbance to birds in general was reduced when boats traveled at or below the five mph speed limit. Impacts of boating can occur even at low densities, given their

noise, speed, and ability to cover extensive areas in a short amount of time. The total number of boats and people can be an inappropriate measure of recreational intensity because the presence of a single boat might be just as disturbing as that of many (Tuite et al. 1983, Knight and Knight 1984). Even a low level of boating activity affects the duration and pattern of use by wildlife (Bratton 1990).

Motorized boats introduce noise and pollution, in the form of gas and oil in water, and particulates in the air, in estuarine and riverine habitats at the Refuge. An EPA report indicates that two-stroke engines, found on many motorized boats, discharge as much as 25% of unspent oil and gas directly into the water. Increased speeds of two-stroke engines can result in greater discharge of unspent oil and gas. Hydrocarbons in gas and oil released from two-stroke engines float on the surface and settle within shallow estuarine habitats. Hydrocarbon pollution has been found to bioaccumulate within the complex food web, posing a serious threat to the marine environment (Tjarnlund et al. 1993). Hydrocarbons can also be transferred to eggs from the plumage of incubating birds. Extremely small amounts of petroleum hydrocarbons can be toxic to eggs and birds that may ingest these contaminants (Hoffman 1989).

Of the wildlife likely most vulnerable to disturbance from boating, this CD focuses on three groups: wintering or nesting waterfowl, nesting colonial waterbirds, and roosting bald eagles. Typically, large concentrations of waterfowl are found in Sanctuary Pond during the fall and winter months. During the spring, waterfowl and shorebirds use the pond in lesser numbers.

A variety of species of nesting colonial birds are found on the McNary Refuge islands and nesting occurs to a lesser degree on the Umatilla Islands. Great blue herons were one of the most sensitive of 23 waterbird species, when measuring flush distances from motorized watercraft (Rodgers and Schwikert 2002). Bald eagles are a common to uncommon winter visitor and a regularly used winter roost site used by up to 32 birds (Denny, pers. comm.) is located at the southern end of the Peninsula Unit.

According to the WDFW priority species recommendations for bald eagle (Watson and Rodrick 2004), boating can negatively affect bald eagle behavior. Foraging eagles on the Columbia River estuary maintained an average distance of 400m (1,300 ft) from stationary boats, and they responded to boat presence by reducing feeding time and the number of foraging attempts (McGarigal et al. 1991). Stalmaster and Newman (1979) found that 50% of wintering eagles in open areas flushed at 150m (500 ft) but 98% would tolerate human activities at 300m (1,000 ft). Activities that disturb eagles while feeding, especially during winter, can cause them to expend more energy, which increases their susceptibility to disease and poor health (Stalmaster 1987). A significant decrease in the proportion of bald eagles feeding at a site was observed when motorized boating activity occurred within 200m of that area in the preceding 30 minutes (Skagen 1980).

Recommendations from WDFW's Priority Habitats and Species reports (Larsen et al. 2004) to reduce human disturbance to priority species follow.

Management Recommendations from WDFW’s Priority Habitats and Species

Species	Management Recommendation
American white pelican	<ul style="list-style-type: none"> • Establish a buffer zone of 400-800m (0.25-0.5 miles) and up to 1,600 m (1.0 mi) from the nesting island, closed to human activity such as boating (especially power boating), fishing, water skiing, discharge of fire arms, wildlife observation, etc. (Doran et al. 2004) • Close nest islands to trespass during the breeding season from March 15 through August 31
Great blue heron	<ul style="list-style-type: none"> • Establish protective buffer limiting human activity within 820-985 feet from the outer edge of active colonies between February 15 through July 31.
Bald eagle	<ul style="list-style-type: none"> • Protect core communal roost stands and staging stands with a buffer of approximately 120 m (400 ft) around core stands. The forest structure of buffer stands should include large trees and follow prescriptions to prevent deterioration from the effects of wind throw. • Activities that produce noise or visual effects within 120 m (400 ft) of the edges of communal roost trees or staging trees should be conducted outside of the critical roosting period (November 15 - March 15). • Leave 250-ft wide strips of perch trees and protective buffers along shorelines within eagle nesting territories and winter feeding areas. • Consider timing restrictions to avoid activities that may disturb eagles during critical periods. The following periods and distances may be less in urbanizing areas where eagles show more tolerance to human activities: Wintering: November 15 through March 15 within 400-ft of roost stands

On McNary Refuge islands (Foundation, Badger Island, and Crescent) some population monitoring of tern, cormorant, and gull colonies has been underway for several years. Additional monitoring of pelican and blue heron colonies is needed. On Umatilla Refuge, great blue heron and black night crowned heron colonies are known to occur on Big Sand Dune Island. Some limited nesting activity by Forster’s tern and Caspian tern have also been documented, but no true colonies are known.

Public Review and Comment:

Open houses were held and written comments were solicited from the public during the drafting of the Comprehensive Conservation Plan and Environmental Assessment for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the CCP. Additional public review and comment will be solicited during the CCP comment period.

Determination (check one below):

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations necessary to ensure compatibility: The following stipulations are required to ensure that motorized and nonmotorized boating is compatible:

- Continue to maintain areas closed year-round to boating, and areas seasonally closed, and waters open year-round.
- Permit no boating that is not associated with waterfowl hunting on Ponds I and II.
- To minimize disturbance to waterfowl on a sanctuary area, prohibit recreational boating on Sanctuary Pond November 1-February 15.
- To minimize disturbance, a no-wake zone will be enforced for all watercraft on Refuge waters within 100 feet of islands.
- No jet skis, personal watercraft, or waterskiing will be allowed in Refuge waters.
- Continue periodic law enforcement to help ensure compliance with regulations and area closures.
- Regulations will be described in brochures and posted at Refuge boat ramps. Outreach and education to boating groups will occur periodically.
- Monitor boating activities by periodically assessing and estimating the level of boating activity in various Refuge locations. Maintain survey efforts to assess population numbers for the wintering bald eagle roost on the Peninsula, populations of wintering waterfowl and colonial nesting waterbirds. Monitoring data will be used by the Refuge Manager in the periodic re-evaluation of this Compatibility Determination.

Justification:

Recreational boating itself is not considered wildlife-dependent recreation. Although recreational boating has a potential to impact wetland wildlife, implementing the prescribed measures listed in the Stipulations section should reduce many of these impacts. Effects to wintering species from purely recreational boating is expected to be minimal except on sheltered Refuge backwaters that are occasionally used by kayak and nonmotorized boats, however, the listed stipulation preventing boating on Sanctuary pond should reduce this. Summertime use may cause disturbance to nesting colonial waterbirds, but with island integrity being an area of emphasis in the CCP, law enforcement efforts will be stepped up to prevent unauthorized access to closed portions of islands. With this effort, it is anticipated that fewer boaters will closely approach islands, and recreational boating disturbance to colonial waterbirds will decline. Overall, the combination of closed areas, seasonal use areas, minimally used areas, and seasonal high use areas will result in an adequate amount of habitat available to the majority of disturbance-sensitive wildlife. In addition, high-speed boating disturbance near island shorelines would be reduced.

It is anticipated that birds will find sufficient food resources and resting places such that their abundance and use of the Refuges will not be measurably lessened, the physiological condition and production of waterfowl and other waterbirds will not be impaired, their behavior and normal activity patterns will not be altered dramatically, and their overall status will not be impaired.

Improved outreach and educational information for Refuge visitors involved in activities associated with boating would also help to reduce the impacts associated with boating activities. Recreational boating is not a Big Six wildlife dependent recreational activity but it can bring visitors to the Refuge and often enhances the visitors' appreciation of natural resources.

Mandatory 10- or 15-year Reevaluation Date: (Provide month and year for allowed uses.)

_____ Mandatory 15-year re-evaluation date (for wildlife-dependent public uses)

2017 Mandatory 10-year reevaluation date (for all uses other than wildlife-dependent public uses)

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Refuge Determination:

Prepared by: _____ (Signature) _____ (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) _____ (Date)

Concurrence:

Refuge Supervisor: _____ (Signature) _____ (Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA): _____ (Signature) _____ (Date)

Camping

Compatibility Determination

Use: Camping

Refuge Name(s): McNary National Wildlife Refuge and Umatilla National Wildlife Refuge

County and State: Walla Walla, Franklin, and Benton Counties, Washington, Umatilla County, Oregon.

Establishing and Acquisition Authorities: (McNary)

McNary Refuge was established in 1955 by cooperative agreement with the Corps which transferred administrative control of the original 2,849-acre parcel to the Service (Federal Register of May 1956; Document No. 56-3499; and Cooperative Agreement between the Corps and Service in September 1963, and as amended September 1969). Additional lands were purchased in subsequent years under the Migratory Bird Conservation Act (16 USC 715d). A small parcel was donated to the Service in 1969, under the Refuge Recreation Act (16 USC 460k-1, k-2). In 1972, another parcel was transferred to the Service from the Bureau of Reclamation under the Fish and Wildlife Coordination Act (16 USC 664). In 1999, the original Refuge was transferred from the Corps to the Service through the Water Resources Development Act (WRDA) 1999 bill (P.L. 106-53; 16 USC 668dd). Additional lands were added in 2000 (Cooperative Agreement No. DACW68-4-00-13), dated January 2000 and as amended June 2000.

Refuge Purpose(s) (McNary):

- for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans... (All units, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “for development, conservation and management of wildlife resources...” (All units, General Plan, 1953).
- “particular value in carrying out the National Migratory Bird Management Program” (Original Burbank Unit, and Hanford Islands Unit, General Plan, 1953).
- “multiple use value relating to the conservation of fish life, waterfowl and upland game birds” (Peninsula, Two Rivers, and Wallula Units, General Plan, 1953).
- Snake River Mitigation Compensation Plan (Cummins Property only, Cooperative Agreement between Service and Service, 2000).
- “Dam Project Purposes” [primary purposes of navigation, power development, irrigation, and conservation of wildlife-Public Law Number 14, 79th Congress, First Session, approved March 2, 1945] (Corps/Service Cooperative Agreement 2000, Stateline and Juniper Canyon units only).
- Other parcels: Small pieces of the Refuge were also added later by purchase under the Migratory Bird Conservation Act. The Refuge also manages a small tract of land under a 10-year lease with the Washington Department of Natural Resources; and, approximately 20 small tracts were acquired under authority of the Refuge Recreation Act of 1962 (PL 87-714).

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

Establishing and Acquisition Authorities: (Umatilla)

Umatilla Refuge was established in 1968 when the Service entered into a Cooperative Agreement with the Corps on July 3, 1969 in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended, 16 U.S.C. 661 et seq.), and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior, and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within said states.

Refuge Purposes: (Umatilla)

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between USACE and USFWS.)
- Additional Land Acquisitions: A land tract of 670 acres, a tract of 27.1 acres and another tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6 acre tract also was acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

National Wildlife Refuge System Mission: “The mission of the 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-668ee]).

Description of Use:

McNary Refuge manages the Madam Dorion Campground located on the Wallula Habitat Management Unit as stipulated under an agreement between the Service and the Corps (Cooperative

Agreement No. DACW68-4-00-13). The campground is currently in nonfee status and provides vault toilets, an RV dump station (March-Sept), and potable water (March-Sept). There are five tent sites with picnic tables and fire grates. Recreational Vehicle (RV) campers are provided a large gravel area in which to park. There are no developed sites or hook-ups for RV campers. Currently, 25 camping parties can be accommodated. This campground is considered largely primitive due to its lack of development and facilities. Potable water is provided through a domestic well with a chlorine pump. Irrigation water is provided through a pump house located on the Walla Walla River. Both systems are antiquated and require regular maintenance

The campground is used primarily from spring through summer, but is open year round. Current regulations allow for a maximum stay of 14 days within 30 days. Many of the users are seasonal agricultural workers employed throughout the area and other transients who use the campground as temporary housing. The remainder of visitors will camp temporarily en route to other destinations or stay overnight to fish on the Walla Walla River.

Availability of Resources:

Operating the campground in its present state requires the regular staff time of two Wage Grade 8s, one full time and two dual function law enforcement officers (LEOs), and a summer time Youth Conservation Corps crew member, a total staffing investment each year of \$40,000.00. The vault toilets are serviced both under contract and by Refuge staff. Annual maintenance of the domestic water and irrigation systems requires \$7,000.00 in equipment, in addition to the staff time costs above. Operating the campground as a fee unit would require a full time position for fee collection and operations; at minimum one full day a week of staff time for collection and counting of money; and increased law enforcement presence.

Listed below are the current costs for administering the Madam Dorion Campground.

Category and Itemization	One-time Expense (\$)	Recurring Costs (\$/yr)
Administration and management:	\$0	\$40,000
Maintenance:	\$0	\$7000
Monitoring:	\$0	\$0
Special equipment, facilities, or improvements:	\$20,000	\$0
Total	\$20,000	\$47,000
Offsetting revenues:	\$0	\$0

Current staffing is not adequate to meet the needs of operating this campground in a compatible manner. Resources are not available to regularly clean facilities, pick up garbage, handle the disposal of garbage, or control weeds and maintain grounds. The antiquated water systems and the RV dump station have cost the Service \$10,000.00 in repairs in 2006 alone. Even with these repairs, the systems still fail State certification levels, and will require additional funding to bring them up to standards.

Anticipated Impacts of the Use:

Anticipated impacts of this single camping site include habitat degradation; wildlife disturbance; site disturbance; soil and stream bank erosion; soil compaction; litter, and human waste disposal.

Habitat degradation: The campsite has space for 25 family units or a maximum population of 75-100 people, but seldom exceeds 30. The most likely impact to the Refuges' soil and vegetative resources from camping would start during spring and early summer in the campsite area, adjacent upland, and wetland and riparian areas accessed by campers in daily activities. Fall and winter activities pose less impact to vegetation, except for wood and small twig gathering used for campfires. The campsite is adjacent to riparian woodland and small wetlands which are particularly valuable for nesting passerine birds along the Walla Walla River. The large gravel area used by RV campers is devoid of tree and shrub habitat that would normally be present in this transition zone between riparian and upland vegetation. Both nesting birds and migrant neo-tropical birds that use woodland and understory vegetation are impacted by the loss of this habitat. In addition, birds and other animals that are disturbed by the activities associated with camping will be excluded from these areas. A small grassland field is kept in a mowed condition to allow occasional group camping. According to Sun and Walsh (1998), if not well-managed, camping can adversely affect the values of natural and semi-natural resources. Recreation can degrade land, water, and wildlife, by simplifying plant communities, increasing animal mortality, displacing and disturbing wildlife, and distributing refuse (Boyle and Samson 1985). It may also affect wildlife through trampling of habitat (Liddle 1975) and animal disturbance (Ward et al. 1973). One night of camping was sufficient to cause evident impact in four vegetation types (Cole 1995). Camping-induced soil disturbance may provide conditions that favor weed infestations and serve as a source of new infestations as campers bring in weed seed from other locations.

Wildlife disturbance: The peak periods of use of the campsites are late spring, summer, and fall which coincide with peak use of the Walla Walla River riparian corridor by nesting and migrating birds. Wildlife disturbance results from the presence of campers and their pets throughout the day and night, especially during the breeding season for nesting migratory birds. The Walla Walla River riparian corridor is especially important to nesting and migrating birds. In their study comparing bird use of campground and noncampground riparian sites, Blakesley and Reese (1988) found that differences in avian community composition appeared related to nesting substrate, cover, and foraging substrate. Bird species missing from campgrounds were ground or shrub nesting species and ground foraging species likely as a result of a sparsely vegetated understory. Forest bird species sensitive to human disturbance may avoid campgrounds while more common and widespread species favor them (Garton et al. 1977). In her study of land use effects on breeding birds on the Snake River, Saab (1996) found that overall bird abundance was significantly reduced in recreation areas while species richness and composition were similar among land use types. In Arizona, Aitchison (1977) found that breeding bird densities were similar between a campground (when closed to campers) and a relatively natural area; however, bird species composition differed between sites, the campground having relatively heavier bodied bird species. Once the campground was opened for human use, the breeding bird population decreased in density and diversity, while on the natural site, the bird population remained the same. Pets accompanying campers have the potential to chase and kill wildlife. Food from campsites may increase small mammal densities (Clevenger and Workman 1977 and Foin et al. 1977) and increase mammalian predators.

In Yosemite National Park, California, Garton et al. (1977) reported that the campground forest had less litter, grass and forb cover, log cover, and fewer trees under 25-feet than noncampground forest. The reduced vegetation was due primarily to campground visitors trampling vegetation, littering, and cutting up logs and trees for firewood. The campground forest became more like a meadow-forest margin favoring Brewer's blackbirds, brownheaded cowbirds, and American robins-edge species that take advantage of human food sources. At Madame Dorion Campground, the presence of brown-headed cowbirds and nonnative house sparrows and starlings associated with campsites, would be detrimental to achieving Refuge goals to increase woodland nesting birds, such as yellow warbler and willow flycatcher, because of nest parasitism and/or competition. In the long term, the effects of continuous campground use will mean the area will support a much-reduced bird community in terms of species richness, diversity, and density. Only the most strongly human-attracted species, such as European house sparrows and starlings, and brown-headed cowbirds would likely benefit from the campsite (Garton et al. 1977).

Site disturbance: Small fires have occurred as a result of camp fires set outside the permitted boundaries of the campground fire grates, and unattended fires have been found in grates during non-burn days. Irresponsible use of fire and damage to standing live or dead trees is most frequent near campsites. In addition, partially fire-consumed logs are occasionally found on the site in- and-out of fire grates provided to campers. There have been several instances of wooden fence posts being torn down to be used in fire grates; and regular evidence of illegal burning of plastics, rubber, and cans, and other items of improperly disposed items at the campsite.

The majority of Refuge campers seek a peaceful outdoor experience. However, there are campers who use camping as an opportunity to party. Loud motors, music, and uncontrolled dogs associated with some Refuge camping, disturb wildlife and detract from a peaceful outdoor experience for other Refuge users. Night time activities, including barking dogs, sounds, and lights likely disturb wildlife in adjacent habitats.

Dogs associated with campers also elicit a greater response from wildlife than pedestrians alone would (MacArthur et al. 1982; Hoopes 1993). In the case of birds, the presence of dogs may flush incubating birds from nests (Yalden and Yalden 1990), disrupt breeding displays (Baydack 1986), disrupt foraging activity in shorebirds (Hoopes 1993), and disturb roosting activity in ducks (Keller 1991). Many of these authors indicated that dogs with people, dogs on-leash, or loose dogs provoked the most pronounced disturbance reactions from their study animals. Despite thousands of years of domestication, dogs still maintain instincts to hunt and chase. Given the appropriate stimulus, those instincts can be triggered. Dogs in the campground that become unleashed or not under the control of their owners may disturb or potentially threaten the lives of some wildlife. In effect, off-leash dogs increase the radius of human recreational influence or disturbance beyond what it would be in the absence of dogs. The role of dogs in wildlife diseases is poorly understood. However, dogs host endo- and ectoparasites and can contract diseases from, or transmit diseases to, wild animals. In addition, dog waste is known to transmit diseases that may threaten the health of some wildlife and other domesticated animals. Domestic dogs can potentially introduce various diseases and transport parasites into wildlife habitats (Sime 1999). The Refuges can limit dog disturbance which can be mitigated by enforcing current Refuge regulation (50CFR 26.21(b) "...no unconfined domestic animals, including but not limited to dogs...shall be permitted to roam at large..."). However, camping increases the likelihood of unleashed dogs and their impacts.

Soil and stream bank erosion: Camping in riparian areas may also result in increased runoff into streams due in part to exposed soil and reductions in vegetation (Green 1998). In the case of Madame Dorion camping, a large graveled RV site increases the risk of runoff into the Walla Walla River. Significant streambank erosion and vegetation trampling have and continue to occur along the shoreline of the Walla Walla River as a result of camper activities at Madame Dorion Campground. Even low levels of hiking or camping activity have been shown by research to cause substantial degradation to vegetation and soils (Cole in Farrell and Marion, 2002). Foot trails leading from the campground to shoreline fishing areas erode the streambank and impact shoreline vegetation, causing further erosion from seasonal high water levels.

Soil compaction: Soil compaction occurs in areas used for camping, resulting in reduced vegetative reproduction and pioneering of invasive weed species (Liddle 1975). Use of a campsite as infrequently as one night per year is sufficient to cause measurable impacts in many vegetation types, but usually results in height reduction rather than cover loss (Cole 1995). The amount of impact generally increases with an increase of use, but not proportionally. Four times the amount of use did not result in four times the amount of cover and height reduction (Cole 1995).

Litter and human waste disposal: In one study, water quality in streams, measured by total coliform bacteria counts adjacent to camps, was negatively affected by weekend campsite use that revealed higher coliform counts (Christensen et al. 1978). In this western Washington study, bacteria were rapidly transmitted to the river water, even in dry periods. The presence of the single pit-vault toilet at the Madame Dorion campsite reduces, but does not eliminate the risks of coliform entering the Walla Walla River. Campers regularly discard baitcups, trash, and other litter items at the campsite or along the adjacent shorelines while fishing and recreating. Use of detergent, soap, and toothpaste in streams and lakes harms fish and other aquatic life. Campers often leave other undesirable items (straw, couches, mattresses, chairs, etc.). Illegal removal of natural objects (plants, antlers, live animals, etc.) and cultural objects may result from camper visits. Creation of “improvements” (lean-tos, tables, chairs, game poles, etc.) and alteration of the site (trenching) are also byproducts of camping. Refuge law enforcement officers and managers report that Madam Dorion is frequently used as a transient stopover for people, and as a temporary residence. In many cases, these campers are merely using it as a free place to stay until they find somewhere else to go. Many of them will homestead, using the campground as a free place to live until informed by Refuge staff of the 14-day limit. These campers tend to leave more litter and trash, and accommodate their sites for extended stays by using local materials (wood, vegetation, government property like posts and split-rails) to erect lean-tos, tables, etc.

Public Review and Comment:

Open houses were held and written comments were solicited from the public during the development of the Draft CCP/EA for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the CCP. Additional public review and comment will be solicited during the comment period for the Draft CCP/EA.

Determination: (check one below)

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

N/A

Justification:

Camping is not listed as one of the Big Six wildlife dependent recreational uses under the National Wildlife Refuge Improvement Act of 1997, as amended. Furthermore, it has been determined that Madame Dorion campground is not necessary for the safe, practical, and effective conduct of existing Refuge wildlife dependant recreational uses. While a certain portion of campers do participate in fishing activities, it's questionable whether Madam Dorion is needed to facilitate this single activity. Furthermore, present evidence indicates that Madam Dorion is used primarily as a transient stopover for people on their way to other places. The majority of these campers don't stay to partake in other Refuge related activities. In many cases, campers are merely using it as a free place to stay until they find somewhere else to go. Many of them will homestead, using the campground as a free place to live until informed by Refuge staff of the 14-day limit. Many RV users simply stop to use the RV dumping station and move on. This type of common use indicates that many users of Madam Dorion Campground are not employing camping to facilitate other wildlife-dependent uses.

Currently, funding for the infrastructure and staff needed to develop and maintain Madam Dorion is not available. The weekly, monthly, and annual maintenance of this campground continues to pull Refuge resources and staff time away from projects designed to reach and achieve Refuge goals and objectives. Madam Dorion is currently a no-fee campground. Developing a fee collection program would require a substantial initial investment, perhaps as much as \$1 million to build the infrastructure capable of sustaining and controlling the impacts of use. It is not certain if the revenue collected would offset the initial costs or the annual costs of operations. Currently there is no funding available to develop this campsite, nor is any expected in the near or distant future.

Camping is considered appropriate only when no reasonable (based on time, distance and expense) lodging opportunities are available off-refuge and when staff resources needed to manage camping do not detract from the quality of another priority wildlife-dependent recreational use (U.S. Fish and Wildlife Service 2001a). There are other private and public campgrounds nearby that accommodate both RV and tent campers with a better level of service. During the CCP review, the team focused on the presence of an alternative, privately-owned campground (Pierce's Happy Valley) directly adjacent to the Refuge. This well maintained fee camping site provides enhanced services over the government-operated campground. The team believes the public is better served by converting the Madame Dorion site to a day use only site, reducing law enforcement issues associated with camping, and allowing the Refuge to promote Big Six uses such as wildlife viewing and photography at the Madame Dorion site. Existing boat launch and rest area facilities would be maintained.

Based on the preceding analysis, camping has a negative impact on Refuge habitat; displaces and disturbs wildlife; is not necessary for the safe, practical, and effective conduct of existing Refuge wildlife dependant recreational uses; and detracts staff and operational resources away from programs that contribute to the conservation and management of wildlife. It materially interferes with the Refuge achieving its purposes, and therefore, is determined not a compatible use.

Mandatory 10- or 15-Year Reevaluation Date: (provide month and year for “allowed” uses only)

n/a

NEPA Compliance for Refuge Use Decision: (check one below)

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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Refuge Determination:

Prepared by: _____ (Signature) _____ (Date)

Refuge Manager/
Project Leader

Approval: _____
(Signature)

(Date)

Concurrence:

Refuge Supervisor: _____
(Signature)

(Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA: _____

(Signature)

(Date)

Horseback Riding

Compatibility Determination

Use: Horseback riding

Refuge Name(s): McNary National Wildlife Refuge and Umatilla National Wildlife Refuge

County and State: Walla Walla, Franklin, and Benton Counties, Washington, Umatilla County, Oregon.

Establishing and Acquisition Authorities: (McNary)

McNary Refuge was established in 1955 by cooperative agreement with the Corps which transferred administrative control of the original 2,849-acre parcel to the Service (Federal Register of May 1956; Document No. 56-3499; and Cooperative Agreement between the Corps and Service in September 1963, and as amended September 1969). Additional lands were purchased in subsequent years under the Migratory Bird Conservation Act (16 USC 715d). A small parcel was donated to the Service in 1969, under the Refuge Recreation Act (16 USC 460k-1, k-2). In 1972, another parcel was transferred to the Service from the Bureau of Reclamation under the Fish and Wildlife Coordination Act (16 USC 664). In 1999, the original Refuge was transferred from the Corps to the Service through the Water Resources Development Act (WRDA) 1999 bill (P.L. 106-53; 16 USC 668dd). Additional lands were added in 2000 (Cooperative Agreement No. DACW68-4-00-13), dated January 2000 and as amended June 2000.

Refuge Purpose(s) (McNary):

- for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans... (All units, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “for development, conservation and management of wildlife resources...” (All units, General Plan, 1953).
- “particular value in carrying out the National Migratory Bird Management Program” (Original Burbank Unit, and Hanford Islands Unit, General Plan, 1953).
- “multiple use value relating to the conservation of fish life, waterfowl and upland game birds” (Peninsula, Two Rivers, and Wallula Units, General Plan, 1953).
- Snake River Mitigation Compensation Plan (Cummins Property only, Cooperative Agreement between Service and Service, 2000).
- “Dam Project Purposes” [primary purposes of navigation, power development, irrigation, and conservation of wildlife - Public Law Number 14, 79th Congress, First Session, approved March 2, 1945]. (Cooperative Agreement between the Corps and Service, 2000, Stateline and Juniper Canyon units only).
- Other parcels: Small pieces of the Refuge were also added later by purchase under the Migratory Bird Conservation Act. The Refuge also manages a small tract of land under a 10-year lease with

the Washington Department of Natural Resources; and, approximately 20 small tracts were acquired under authority of the Refuge Recreation Act of 1962 (PL 87-714).

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

Establishing and Acquisition Authorities: (Umatilla)

Umatilla Refuge was established in 1968 when the Service entered into a Cooperative Agreement with the Corps on July 3, 1969 in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended, 16 U.S.C. 661 et seq.), and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior, and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within said states.

Refuge Purposes: (Umatilla)

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between USACE and USFWS.)
- Additional Land Acquisitions: A land tract of 670 acres, a tract of 27.1 acres and another tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6 acre tract also was acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

National Wildlife Refuge System Mission: “The mission of the 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-668ee]).

Description of Use:

McNary: Horseback riding is currently permitted on McNary Refuge on gravel roads that are only open to vehicular travel, and on two designated horse trails as stipulated under a cooperative agreement with the Corps (CA# DACW68-4-00-13). As proposed, horseback riding would be allowed only on roads open to vehicular travel, and on the two previously designated horse trails on the Peninsula and Wallula Units of the Refuge. Both trails are approximately four miles long and traverse both upland and shoreline habitat in their respective units. The trails are primarily used by local riding clubs in groups ranging from two to eight riders at any given time. Most use occurs in the spring and fall months. Some groups have taken an ownership approach to the trails and have adopted trail etiquette rules such as single file riding and staying on the established trail, though evidence of alternate trail use has been documented on the Wallula Unit. Currently, the Refuge has no hard numbers, but annual observations from staff indicate that these trails are receiving infrequent and seasonal use.

Umatilla: Horseback riding on Umatilla Refuge is currently limited to gravel roads open to vehicular travel and to the newly created Morrow County Heritage Trail, which bisects the McCormick Unit. The Heritage Trail, as it passes through the Refuge, consists of a section of the old 730 Highway which is paved. This trail is also open to bicyclists and pedestrians and is well marked with route signs. As proposed, horseback riding would be allowed on roads open to vehicular travel and on the Heritage Trail section which passes through the Refuge. Currently, the most used road by horse traffic is the Refuge’s auto tour route, though use is infrequent.

Availability of Resources:

The initial costs to administer the designated trail portion of the horseback riding program could cost anywhere from \$2,000 to \$10,000 for signing, required maintenance and rehabilitation, and parking lot improvements. Annual costs should be minimal after this. The direct costs for road maintenance would be minimal, with road maintenance and monitoring for other public use activities covering all costs. The annual cost to administer and monitor this use through law enforcement personnel is listed below. Base funding is available to cover staff costs.

McNary Costs:

Category and Itemization	One-time (\$)	Annual (\$/yr)
Administration and management:	\$0	\$5,000
Maintenance:	\$0	\$1,000
Special equipment, facilities, or improvements:	\$7,000	\$200
Total	\$7,000	\$6,200
Offsetting revenues:	\$0	\$0

Umatilla Costs:

Category and Itemization	One-time (\$)	Annual (\$/yr)
Administration and management:	\$0	\$0
Maintenance:	\$0	\$1,000

Monitoring:	\$0	\$0
Special equipment, facilities, or improvements:	\$2,000	\$0
Total	\$2,000	\$1,000
Offsetting revenues:	\$0	\$0

Anticipated Impacts of the Use(s):

Possible biological impacts of horseback riding include disturbance to wildlife and habitat modification. Wildlife can be affected by the sight and sound of recreationists (Boyle and Sampson 1985). Habitat can be affected through vegetation trampling, soil compaction, and erosion (Cole 1983, 1990).

Some of the effects of disturbance to wildlife from recreational activities include: affecting foraging behavior; reducing productivity; causing abandonment or altering of breeding territories; altering distribution; altering flight behavior; causing energy depletion; and disrupt nest and brood rearing attentiveness (Klein 1989, Knight and Skagen 1988).

Public use activities can also have adverse impacts on vegetation and soil conditions. Impacts from vegetation trampling can lower species richness, decrease ground cover and plant species density, increase weedy annuals, and induce changes in species composition (Gragherr 1983, Bright 1986, Bonanno 1992).

Impacts related to horseback riding include exotic plant seed dispersal (Beck 1993, Hammitt and Cole 1987), soil compaction and erosion (Bainbridge 1974, Hendee et al. 1990, Hammitt and Cole 1987), stream sedimentation (Seney and Wilson 1991), trail widening (Whitaker 1978), vegetation trampling (Nagy and Scotter 1974, Weaver and Dale 1978, Whitaker 1978), aesthetic concerns relative to horse manure (Lee 1975), direct wildlife disturbance (Owen 1973), and direct and indirect conflicts with other recreationists. Exotic plants can be spread to new sites through forage (e.g., hay brought in to feed horses, which contains seeds of exotic plants) and manure (Beck 1993).

Exotic plant establishment is further facilitated by increased trail disturbance as many exotic plants gain a competitive advantage in highly disturbed sites. This soil disturbance is often created through soil compaction with as much as 1,500 p.s.i. exerted on the soil surface with each step (Hendee et al. 1990). Additionally, hoof action tends to dig up and puncture the soil surface (McQuaid-Cook 1978) which causes greater sediment loss than any other form of recreational trail use (Seney and Wilson 1991), and increases the potential for disturbance tolerant vegetation (e.g., exotic plant) to establish. Trail widening is also a consideration, as horses tend to walk on the down slope sides of trails (Whitson 1974). Anticipated results include a wider trail, a much wider area of disturbance, and ongoing trail maintenance problems. Vegetation impacts can be much more pronounced considering that hikers tend to flatten vegetation while horses tend to churn up soil, thus, cutting plants off at the rootstalk (Whitaker 1978). This can increase spread of previously established exotics by providing loose disturbed soil for germination and spreading reproductive plant structures. This impact initially increases exotic plant encroachment with light to moderate trail use and eventually lowers species richness values to near zero with heavy impacts (Hendee et al. 1990).

Wildlife disturbance relative to horseback riding has been poorly studied, with most references using other activities such as hiking and cross-country skiing to infer horseback riding impacts. One study identified disturbance tolerance of waterfowl to horseback riders and found that horseback riders could approach geese up to a distance of 46 m. This is compared to suggested hiking trail distances of 75 m (Miller et al. 1998) and boat buffers ranging from 77 to 273 m (depending on the type of boat, whether or not the boat is motorized, and species impacted; Burger et al. 1999). The 46 m approach distance offered by Owen (1973) is consistent with observations, suggesting that horseback wildlife observers can approach wildlife at closer distances than through other forms of travel. Many wildlife species appear to be habituated to livestock, thus, are less likely to flee when approached through this method. Using the 46 m buffer as an example, this would translate into 144 acres of habitat potentially being impacted directly by horse use, though the two established trails are located along areas where disturbance to waterfowl is not likely. Any form of approach is expected to cause some disturbance, which will vary according to the species affected and the type, level, frequency, and duration of disturbance, as well as the time of day or year that it occurs.

Public Review and Comment:

Open houses were held and written comments were solicited from the public development of the Draft CCP/EA for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the CCP. Additional public review and comment will be solicited during the CCP comment period.

Determination: (check one below)

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

At present, horseback riding on both McNary and Umatilla Refuges does not seem to be impacting wildlife and associated habitat any more than other permitted public use activities (i.e. fishing, hiking, and vehicle access). This is likely due to the relatively low level of use, most of which occurs during cooler months when wildlife is not as active. However, as stated in the anticipated impacts described in the previous section, any increased or unrestricted horseback riding could lead to significant impact on wildlife resources through exotic seed encroachment, vegetative trampling, erosion, and wildlife disturbance. These impacts would be cumulative with associated impacts from other public use opportunities. Therefore, in order to ensure the compatibility of this use, the following stipulations shall be applied.

- Horseback riding must be restricted to those areas already designated for riding (i.e. roads open to vehicular travel, and previously designated trails).
- Open roads and designated trails would be subject to seasonal closures based on presence of sensitive wildlife populations.

- Horse trailers would be restricted to designated parking areas listed in the Refuge brochure and posted on site.
- Horseback riding would be a day use only activity.
- Designated horse trails would be signed at both ends and at regular intervals throughout the length of the trail. Riders would be required to ride single-file on these trails. Riders would be restricted to the designated trail.
- A maximum number of riders per party, day, or season may be established.
- Monitor vegetation damage and impact along roadsides, designated parking areas, and trails.
- Monitor funds required to enforce regulations and administer use. Monitor level of use.
- Activity could be closed upon finding of significant negative impacts to Refuge facilities or wildlife resources.
- Require the use of certified weed-free hay and the washing of horses before and after rides to minimize weed spread.
- All educational and interpretive materials for riders will emphasize principles of the Leave-No-Trace backcountry horse use (www.Int.org).

Justification:

While not one of the six priority wildlife dependent public uses listed or identified in the National Wildlife Refuge System Administration Act as amended (1997), horseback riding is believed to be a compatible public use under the stipulations outlined in this compatibility determination. Primary reasons for this determination include:

1. Wildlife observation can be an element of horseback riding.
2. Horseback riding allows the Refuges to reach a target audience not reached through other opportunities; horseback riders are potential partners and a potential source of support for the Refuges.
3. Impacts associated with horseback riding would be minimized through implementation of the stipulations noted above.
4. Trail use and impacts will be monitored and the use modified if necessary.

Horseback riding, if practiced as described in the Description of Use section above, would not interfere with the Refuge's achieving their purposes or contributing to the System mission.

Mandatory 10- or 15-Year Reevaluation Date: (provide month and year for "allowed" uses only)

_____ Mandatory 15-year reevaluation date (for wildlife dependent public uses)

12/2017 Mandatory 10-year reevaluation date (for all uses other than wildlife dependent public uses)

NEPA Compliance for Refuge Use Decision: (check one below)

___ Categorical Exclusion without Environmental Action Statement

___ Categorical Exclusion and Environmental Action Statement

X Environmental Assessment and Finding of No Significant Impact

___ Environmental Impact Statement and Record of Decision

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Refuge Determination:

Prepared by: _____ (Signature) _____ (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) _____ (Date)

Concurrence:

Refuge Supervisor: _____ (Signature) _____ (Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA): _____ (Signature) _____ (Date)

Swimming and Beach Use

Draft Compatibility Determination

Use: Swimming and Beach Use

Refuge Name: Umatilla National Wildlife Refuge

County and State: Benton County, Washington, and Umatilla County, Oregon.

Establishing and Acquisition Authorities: (Umatilla)

Umatilla Refuge was established in 1968 when the Service entered into a Cooperative Agreement with the Corps on July 3, 1969 in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended, 16 U.S.C. 661 et seq.), and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior, and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within said states.

Refuge Purposes: (Umatilla)

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between USACE and USFWS.)
- Additional Land Acquisitions: A land tract of 670 acres, a tract of 27.1 acres and another tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6 acre tract also was acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

National Wildlife Refuge System Mission: “The mission of the 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-668ee]).

Description of Use:

Under Alternatives 2 and 3, current seasonal beach use and associated other uses such as swimming would be discontinued on all Columbia River Islands of the Refuges. These uses are currently allowed on three designated islands within the Umatilla Refuge: 1) a large sandy beach located on the far, east tip of West Blalock Island; 2) a large sandy beach located on the far, east tip of Big Sand Dune Island; and 3) a sand peninsula (sometimes a small sand island) located on the far, east tip of Crow Butte Island. Beach use including boating, sunbathing and picnicking have a long history of use in this area (see Anticipated Impacts for further discussion on that historic use). The season of use has been restricted to July 1 through September 30.

The three beach sites are on the extreme tips of islands, directly adjacent to deep-water navigation channels that are not part of the Refuge. This shipping channel is within 30 meters of the beaches. The uses that occur on these sites and that are analyzed in this CD include non-Big Six uses such as picnicking, sun bathing, swimming, and boating. Waterskiing takes place almost entirely in the deep water shipping channel, outside of Refuge jurisdiction, rather than in the shallows within Refuge areas that have numerous exposed bars and other hazards to boating. Waterskiing will not be allowed on Refuge waters and has been determined to be not appropriate as a Refuge use.

In recent years, beach users normally include relatively small groups of less than 10 persons per beach. On the 4th of July numbers sometimes reach nearly 50 per beach. In 1994, it was estimated that 1,219 users (Refuge-wide for a full year) engaged in boating not associated with fishing, and 5,367 users engaged in fishing related boating (USDOI 1996).

More recent data of this quality is lacking. Observational information by staff to date, suggests substantial increase in the number of beach users in recent years. This trend is expected to continue into the future, especially in light of developments in local communities. Most noteworthy is the possibility of a major motor speed way development in Boardman, Oregon, associated with NASCAR racing. Illegal trespass onto the closed islands, as well as overnight camping on opened beaches, is now occasionally encountered.

Availability of Resources:

Currently, staffing levels for law enforcement are inadequate for implementation of this or other alternate management options for allowing swimming and beach use. Current law enforcement staffing consists of only one full time LE Officer (LEO) covering eight refuges spread out nearly 250 miles within the Mid-Columbia Basin. Boat patrols require a minimum of two LEOs. An ongoing agreement with the Morrow County Sheriff’s Department, as well as assistance by inter-tribal officers, has provided some additional coverage on the islands, but this effort is small and sporadic. Availability of dedicated funding would provide possible opportunity to expand such agreements for

improved enforcement. Current staffing levels of law enforcement are totally inadequate for conducting this public use.

In 1996, a Public Use EA (USDOI, 1996) was completed which called for full closures on the Columbia River Islands and buffers (USDOI 1996) surrounding the islands where boating and water use was prohibited. Swimming and beach use were terminated as a result. Refuge efforts at enforcing the closure were moderately successful but hampered at that time by a shortage of law enforcement staff. As a result of inadequate law enforcement then, and a lack of public acceptance of these provisions, a compromise was made in 1998 which allowed public beach use at the three designated beaches described under “Description of Use.” This change provided some improvement in protection to wildlife resources and was practical to implement, but did not address negative wildlife impacts from beach use identified in the 1996 EA.

	One-time Costs (\$)	Recurring Costs (\$/year)
Law Enforcement		18,000
Sign maintenance	1,500	800
Program monitoring/education	1,000	1,200
Administration		1,500
TOTAL	\$2,500	\$21,500

Anticipated Impacts of the Use:

Background:

There is a varied past of closures to public use on the Refuge’s Columbia River Islands, however this is not inclusive of the larger islands such as Crow Butte or Whitcomb Island. The “Columbia River Islands” of the Refuge refer to relatively smaller islands of the Blalock Island Complex that are all portions of the former Blalock Island of the pre-dam era, as well as Telegraph Island, and Long Walk Island (also known as the Coyote Islands).

Prior to 1995, a segment of the Blalock Island Complex was under the management of the Corps that included all lands and waters within T5N, R25E, sections 13, 23, and 24, that are located between the north and south navigation channels of the Columbia River. The exposed land within the described area included portions of islands currently named East Blalock, West Block, and Big Sand Dune. Seasonal closures were enforced on all Refuge managed islands, with an open period from July 1 to Sept 30.

In 1995, the 1969 cooperative agreement between the Corps and Service for management of Umatilla Refuge was amended “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged” (Cooperative Agreement 1995). The amended agreement did not include or designate any special purposes to these portions of the islands.

Near that same time, in 1996, the Refuge finalized an environmental assessment (EA), titled *Environmental Assessment of Public Use on Umatilla National Wildlife Refuge*. The EA “was prepared to partially fulfill the requirements of the Final Settlement Agreement [of Aududon et al. v. Babbitt] by considering and disclosing the impacts of waterborne recreation and other public uses on Umatilla National Wildlife Refuge” (USDOI 1996). The preferred alternative from this EA included a year round closure of all Columbia River Islands and the establishment of buffer zones where necessary to minimize disturbance to breeding bird colonies. The preferred alternative was implemented and the islands were closed to all use in 1996. A later compromise in 1998 re-opened three islands for seasonal beach use from July 1 to September 30.

Impacts on Wildlife:

Breeding Birds—We anticipate negative impacts to colonial nesting birds from direct beach use at the designated sites for Crow Butte, West Blalock, and Sand Dune Islands. Nesting activity by colonial birds currently occurs on Sand Dune Island, where up to hundreds of great blue herons, great egrets, and black-crowned night herons use willow trees for nesting. A human-induced fire, as a result of beach use activities, could totally eliminate the trees supporting the colony. In addition, nesting birds cannot use beach areas for foraging sites while feeding young; and young fledged birds cannot use beach areas being used by humans. However, the nesting location at Sand Dune Island is at a distance beyond the recommended buffers identified in the 1996 EA (USDOI 1996), so direct interference with the nesting colony is not a problem except for beach users who illegally trespass into the interior of the island. Although the timing of most beach use occurs in late summer (July 1 - September 30), which is generally after the nesting season, young birds and foraging adults would still use the beach areas well into July and early August, if they were available. Beach use is supported by boating, and there is a considerable body of evidence suggesting negative consequences for birds from boating (USDOI, 1996). (For a wealth of information on disturbance caused by boating and beach use see pp. 37-40; for nesting occurrences see p. 34, Table 5.)

Preferred nesting habitat that is abundant on most islands for use by Canada geese is sage-steppe areas that provide large shrubs for concealment and protection, but also allow sufficient open space for seeing and escaping approaching threats. Other areas are also used for nesting by geese such as riparian trees and shrubs, and tall grasses that provide good concealment. All three designated beach sites are located on extreme portions of the islands on exposed sandy tips that minimize direct impacts to geese on active nests. However, nest sites do occur well within recommended buffer distances from designated beaches (USDOI, 1996). The timing of the heaviest use by humans occurs in the summer, which is a time of year that is well after nesting activity. However, the sandy beach sites are preferred for loafing by geese. The presence of human activity on beaches precludes that use by the birds. It should be noted though, that the designated beach sites do represent a small percentage of suitable loafing area that is available. Human-induced fire resulting from beach users is a threat to the sagebrush habitat used by nesting geese. Such a fire could totally eliminate the sagebrush supporting nesting geese, especially at Blalock Island (See USDOI 1996 for information on occurrences of nesting).

Other breeding bird use on the islands includes bank swallows, various passerines, American avocets, California quail, ring-necked pheasant, and possibly long-billed curlews and burrowing owls. Designated and seasonal beach use would likely cause minor negative impacts for all said species.

Human use directly on the islands would occur generally outside of the main breeding season; however, some of the species such as bank swallows and avocets could still be using beach sites for nesting during July. Fledged young of the year are known to use beach areas and associated vegetation zones for resting and feeding. Another concern is loss of beach areas for use by migrating shorebirds and other waterbirds including American white pelicans. Beach users displace shorebirds causing additional stress during the migration period. In addition, any boating activity during the breeding season could cause serious harm, especially to terns, avocets, and ducks (some nesting data is available for ducks: see USDOI 1996).

Mammals—The Umatilla Islands represent some of the best fawning sites for mule deer on the Refuge. The islands have ample vegetation for food and concealment, are distant from the main shore, and are surrounded by deep water channels, providing a site with reduced predation and disturbance. Given that the location of the designated beaches are on the tips of the islands, and that the deer have suitable cover, disturbance from beach use sufficient to cause significant detriment to fawning activity would not be anticipated. Additionally, mule deer are overly abundant on the Refuge and there is active management in place to reduce their numbers. Negative impacts to other mammals would not be expected at any significant level.

Habitat—With use restricted to designated beaches, there would be only minimal disturbance to habitat. The designated beaches are frequently washed over and are very dynamic. However, illegal activities stemming from the designated beaches pose the most serious threats to habitats on the island. Paper/plastic litter and human waste are expected problems, as well as some trespass onto the closed island areas. Wildfire resulting from beach users is the most significant threat, with fire ignitions potentially resulting from camp fires, fireworks or other sources. Campfires and use of fireworks are common violations on the beaches and pose a significant threat to habitat and wildlife resources.

Cultural Resources—The islands have a rich cultural resource history and use by early Americans. The potential for loss or damage to important sites is increased by the presence of beach use and associated public uses, including the potential for fire, disturbance, and inadvertent discoveries and/or exposures.

Public Review and Comment:

Open houses were held and written comments were solicited from the public during development of the Draft CCP/EA for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the CCP. Additional public review and comment will be solicited during the CCP comment period.

Determination (check one below):

Use is Not Compatible

Use is Compatible with the following stipulations

Stipulations Necessary to Ensure Compatibility:

n/a

Justification:

Swimming and beach use is not listed as one of the Big Six wildlife dependent recreational uses under the National Wildlife Refuge Improvement Act of 1997, as amended. Swimming and beach use on the three designated island sites on Umatilla Refuge are not necessary for the safe, practical, and effective conduct of existing Refuge wildlife-dependant recreational uses. While a certain portion of beach users do participate in fishing activities, it's obvious that beach access is not needed to facilitate this single activity. Furthermore, campfires and use of fireworks are common violations on the beaches and pose a significant threat to habitat and wildlife resources, especially trees used by colonial nesting birds and sagebrush used by nesting geese. Beach users displace wildlife including migrating shorebirds, fledged young of the year birds who use the beach vegetation zone, and adult colonial nesting birds foraging to feed young of the year in nests. The proposed use is also inconsistent with the 1996 EA which determined that beach uses should be terminated.

Swimming and beach use does not contribute to the public's understanding and appreciation of the Refuge's natural and cultural resources, nor is the use beneficial to the Refuge's natural or cultural resources. Beach use increases the potential for damage or degradation of important cultural resources on the islands.

Currently, the availability of resources for administration and adequate law enforcement patrols to implement swimming and beach use is not sufficient. Given the growing limitations of staffing and budget, resources are insufficient to meet the requirements for needed protection to wildlife resources and the public safety of Refuge visitors. Currently, there is no longer any law enforcement staff stationed at Umatilla Refuge and the one full-time officer for the Refuge Complex is stationed in the Tri-Cities.

Based on the analysis above, swimming and beach use has a negative impact on Refuge habitat, displaces wildlife, and pulls staff and operational resources away from programs that contribute to the conservation and management of wildlife, therefore, materially interferes with the Refuge achieving its purposes, and is determined not a compatible use.

Mandatory 10- or 15-Year Reevaluation Date: (provide month and year for "allowed" uses only)

N/A

References:

- U.S. Department of the Interior. 1995. Environmental Assessment of Public Use on Umatilla National Wildlife Refuge, Morrow County, Oregon, Benton County, Washington.
- U.S. Army Corps of Engineers. 1995. Amendment to the 1969 Cooperative Agreement between Corps and Service.
- U.S. Army Corps of Engineers. 1969. Cooperative Agreement between the Corps and Service.

Refuge Determination:

Prepared by: _____ (Signature) _____ (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) _____ (Date)

Concurrence:

Refuge Supervisor: _____ (Signature) _____ (Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA): _____ (Signature) _____ (Date)

Farming (McNary and Umatilla)

Draft Compatibility Determination

Use: Farming

Refuge Name(s): McNary National Wildlife Refuge and Umatilla National Wildlife Refuge

County and State: Walla Walla, Franklin, and Benton Counties, Washington, Umatilla County, Oregon.

Establishing and Acquisition Authorities: (McNary)

McNary Refuge was established in 1955 by cooperative agreement with the Corps which transferred administrative control of the original 2,849-acre parcel to the Service (Federal Register of May 1956; Document No. 56-3499; and Cooperative Agreement between the Corps and Service in September 1963, and as amended September 1969). Additional lands were purchased in subsequent years under the Migratory Bird Conservation Act (16 USC 715d). A small parcel was donated to the Service in 1969, under the Refuge Recreation Act (16 USC 460k-1, k-2). In 1972, another parcel was transferred to the Service from the Bureau of Reclamation under the Fish and Wildlife Coordination Act (16 USC 664). In 1999, the original Refuge was transferred from the Corps to the Service through the Water Resources Development Act (WRDA) 1999 bill (P.L. 106-53; 16 USC 668dd). Additional lands were added in 2000 (Cooperative Agreement No. DACW68-4-00-13), dated January 2000 and as amended June 2000.

Refuge Purpose(s) (McNary):

- for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans... (All units, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “for development, conservation and management of wildlife resources...” (All units, General Plan, 1953).
- “particular value in carrying out the National Migratory Bird Management Program” (Original Burbank Unit, and Hanford Islands Unit, General Plan, 1953).
- “multiple use value relating to the conservation of fish life, waterfowl and upland game birds” (Peninsula, Two Rivers, and Wallula Units, General Plan, 1953).
- Snake River Mitigation Compensation Plan (Cummins Property only, Cooperative Agreement between Service and Service, 2000).
- “Dam Project Purposes” [primary purposes of navigation, power development, irrigation, and conservation of wildlife - Public Law Number 14, 79th Congress, First Session, approved March 2, 1945]. (Cooperative Agreement between the Corps and Service, 2000, Stateline and Juniper Canyon units only).
- Other parcels: Small pieces of the Refuge were also added later by purchase under the Migratory Bird Conservation Act. The Refuge also manages a small tract of land under a 10-year lease with the Washington Department of Natural Resources; and, approximately 20 small tracts were acquired under authority of the Refuge Recreation Act of 1962 (PL 87-714).

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

Establishing and Acquisition Authorities: (Umatilla)

Umatilla Refuge was established in 1968 when the Service entered into a Cooperative Agreement with the Corps on July 3, 1969 in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended, 16 U.S.C. 661 et seq.), and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior, and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within said states.

Refuge Purposes: (Umatilla)

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between USACE and USFWS.)
- Additional Land Acquisitions: A land tract of 670 acres, a tract of 27.1 acres and another tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6 acre tract also was acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

National Wildlife Refuge System Mission: “The mission of the 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-668ee]).

Description of Use:

Current cropland farming practices include organic and biological farming (Cropland Management Plan, 1996). Under organic farming practices the use of chemical fertilizer and pesticides are

eliminated. The use of organic fertilizers (such as manure) and crop rotation (including nitrogen fixing crops) are used to improve soil fertility and tilth. Control of weeds and plant pests are accomplished by crop rotation, mechanical techniques, and biological controls such as predatory insects. Crop variety is limited as some crops are unable to be successfully cultivated under organic practices in this area. Under biological farming practices, crops grown are selected primarily for their wildlife value. Use of organic fertilizer and crop rotations are used to improve soil fertility, but chemical fertilization is used if soil tests determine particular deficiencies, or if manure or crop rotations are found impractical for a particular crop. Plant pests and weeds are controlled by crop rotations, mechanical techniques, and bio-controls where practical, but approved low toxicity chemical agents are used as needed on a case by case basis.

Production methods include cooperative agreement farming, which involves a negotiated agreement between the Refuge and private farmer to produce crops for both parties. The cooperator is responsible for all the costs of production except for maintenance of underground irrigations systems and pumps. In return for producing a specified amount of crops for the Refuge, the cooperator is allowed to harvest and sell the remaining crops. All crop selections are agreed to by the Refuge, and special conditions are documented in the cooperative agreement (Cropland Management Plan, 1996).

Currently, a total of 1,297 acres are in cooperative farming programs on Umatilla Refuge, with the Refuge obtaining 324 acres (25%) of crops for wildlife, and the cooperator(s) harvesting 973 acres (75%) for their share. On McNary Refuge, a total of 632 acres are in cooperative farming programs, with the Refuge obtaining 25% of the crop share for wildlife and the cooperator harvesting the remainder (75%) for their share. The 75%/25% (cooperator/Refuge) share ratio was deemed appropriate for this area by the Oregon State University Agricultural Extension office (Cropland Management Plan, 1996). Any field which is double cropped during the growing season is assessed the 75%/25% cooperator/Refuge split for each crop (Cropland Management Plan, 1996).

Crops grown include cereal grains and green forage for migratory and wintering waterfowl use. Grain crops grown to meet the high energy demands of migratory and wintering waterfowl include corn, wheat and occasionally buckwheat. Green forage crops which provide for the fall, winter and spring Canada goose population include alfalfa, winter wheat, and occasionally grass (Cropland Management Plan, 1996). The Refuge shares are obtained by 1) taking a share of a crop which is also being harvested by the farmer or 2) having the farmer grow specific crops just for the Refuge by splitting a field or devoting an entire field to Refuge shares. Exceptions include involving the cooperator in establishing native upland grasses in former farm fields, as well as developing native grasses in shelterbelts on the perimeter of current farming circles for improved weed and erosion control and wildlife uses.

The Comprehensive Conservation Plan (CCP) would continue this program to varying degrees and emphasis, depending on the selection of an alternative.

Availability of Resources:

The following funding/annual costs would be required to administer and manage cooperative agreement farming, as described above.

	One-time Costs	Recurring Costs
Underground irrigation system and pumps		\$10,000
Road maintenance		\$1,000
Program monitoring		
Administration		\$4,000
TOTAL	0	\$15,000

Anticipated Impacts of the Use:

The Columbia Basin and the lands of the Umatilla Refuge were once dominated by shrub-steppe habitat. This greater area, at present, is dominated by cropland farming. Combined with other development in the area, this once vast expanse of shrub-steppe habitat has been significantly degraded as a result of conversion, fragmentation, small patch size, lack of connectivity, introduction and spread of nonnative invasive weeds, livestock grazing, and fires. With a paralleled history, the biological integrity of the relatively small area (10,255 acres) of shrub-steppe habitat on the Refuge is in an overall degraded to highly degraded state. Croplands represent 9.5 percent of the total upland area on the Refuge. Other direct impacts of cropland management include exposure of soils to wind erosion, the use and introduction into the environment of chemical agents from pesticide usage, and continuance of the introduction and spread of weeds through use of manures and field to field movement of cultivating and harvesting equipment.

About 100 bird species can occur in sagebrush habitats (Braun et al. 1976). Some of these species are sagebrush-obligates, almost entirely dependent on sagebrush habitats year-round or during the breeding season. These species include sage grouse, Brewer’s sparrow, sage sparrow, and sage thrasher. These sagebrush obligate birds have been reduced or most likely extirpated as breeders on Umatilla Refuge. Some of the songbirds may occur as migrants. When considering the conversion of Refuge croplands to shrub-steppe habitat the potential benefit would be negligible on a landscape scale for improving functional attributes of this system in support of dependant species (in particular, obligate nesting species).

Many other species occur in shrub-steppe habitat but are not as dependent on sagebrush. Examples of these species are burrowing owl, lark sparrow, vesper sparrow, horned lark, loggerhead shrike, long-billed curlew, and western meadowlark. Umatilla Refuge supports many if not all of these species during breeding and/or migration.

Primary invasive plants are described in Chapter 4 of the Draft CCP/EA and in the 1996 and 1999 Cropland Management Plans.

Public Review and Comment:

Open houses were held and written comments were solicited from the public during development of the Draft CCP/EA for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the CCP. Additional public review and comment will be solicited during the CCP comment period.

Determination (check one below):

Use is Not Compatible

Use is Compatible with the following stipulations

Stipulations Necessary to Ensure Compatibility:

The following stipulations ensure that Cropland Farming Management is compatible:

- Cropland farming will be done under an approved Cropland Management Plan per agency policy.
- Annual cooperative farming agreements will be established with the cooperator per agency policy.
- Pest plants and weeds will be controlled by crop rotations, mechanical treatments and biological controls where practical; approved pesticides will be used only on a case by case basis.
- Pesticide use must be in compliance with the Service policy requirements for completing an approved Pesticide Use Proposal, and it must meet other State and Federal requirements.
- Cooperators will provide a record of herbicides used including chemical name, amount used, date, location, and how applied.
- Pesticide applicators must meet all State, Federal and agency requirements.
- Diligence shall be exercised in the control of county-listed invasive weeds.
- Monitoring of the cropland farming program will be performed by qualified Refuge staff.

Justification:

Although not a Big-Six use, cropland farming management is a critical Refuge operation in meeting purposes of the Refuge (e.g., “for waterfowl management” Rivers and Harbors Act of 1965), as well as goals and objectives established in the Draft CCP/EA (e.g., Goal 1: Manage high quality food and sanctuary to support large concentrations of migratory waterfowl; Objective 1A: Provide Crops for Waterfowl). Umatilla Refuge provides mitigation for losses of waterfowl habitat caused by the John Day Lock and Dam Project. Options for providing a more natural means to secure food supplies for

area waterfowl do not exist (Cropland Management Plan 1996). Area wetlands do not produce adequate natural waterfowl foods, because of their rarity and the lack of availability of high quality, productive wetlands. Consequently, waterfowl have relied heavily on waste grain in area corn fields (Cropland Management Plan, 1996).

The Refuge share of cropland farming, which is managed primarily for the benefit of waterfowl, includes cereal grains and green forage. Grain crops grown to meet the high energy needs of migratory/wintering waterfowl include corn, wheat, and buckwheat. Green forage crops, which primarily provide for the fall, winter, and spring goose populations, include alfalfa, winter wheat, and occasionally grass. Because of restrictions on crops grown, areas farmed by the cooperator for their share provide additional benefit (not included in Refuge share) to waterfowl by providing waste grains and/or green forage in harvested fields.

Mandatory 10- or 15-Year Reevaluation Date: (provide month and year for “allowed” uses only)

_____ Mandatory 15-year reevaluation date (for wildlife-dependent public uses)

12/2017 Mandatory 10-year reevaluation date (for all uses other than wildlife-dependent public uses)

References

- U.S. Fish and Wildlife Service. 1999. Cropland Management Plan. Mid Columbia Refuge Complex.
- U.S. Fish and Wildlife Service. 1996. Cropland Management Plan. Mid Columbia Refuge Complex.

Research; Scientific Collecting; Surveys

Compatibility Determination

Use: Research; Scientific Collecting; Surveys

Refuge Name(s): McNary National Wildlife Refuge and Umatilla National Wildlife Refuge

County and State: Walla Walla, Franklin, and Benton Counties, Washington, Umatilla County, Oregon.

Establishing and Acquisition Authorities: (McNary)

McNary Refuge was established in 1955 by cooperative agreement with the Corps which transferred administrative control of the original 2,849-acre parcel to the Service (Federal Register of May 1956; Document No. 56-3499; and Cooperative Agreement between the Corps and Service in September 1963, and as amended September 1969). Additional lands were purchased in subsequent years under the Migratory Bird Conservation Act (16 USC 715d). A small parcel was donated to the Service in 1969, under the Refuge Recreation Act (16 USC 460k-1, k-2). In 1972, another parcel was transferred to the Service from the Bureau of Reclamation under the Fish and Wildlife Coordination Act (16 USC 664). In 1999, the original Refuge was transferred from the Corps to the Service through the Water Resources Development Act (WRDA) 1999 bill (P.L. 106-53; 16 USC 668dd). Additional lands were added in 2000 (Cooperative Agreement No. DACW68-4-00-13), dated January 2000 and as amended June 2000.

Refuge Purpose(s) (McNary):

- for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans... (All units, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “for development, conservation and management of wildlife resources...” (All units, General Plan, 1953).
- “particular value in carrying out the National Migratory Bird Management Program” (Original Burbank Unit, and Hanford Islands Unit, General Plan, 1953).
- “multiple use value relating to the conservation of fish life, waterfowl and upland game birds” (Peninsula, Two Rivers, and Wallula Units, General Plan, 1953).
- Snake River Mitigation Compensation Plan (Cummins Property, Corps/Service Cooperative Agreement, 2000).
- “Dam Project Purposes” [primary purposes of navigation, power development, irrigation, and conservation of wildlife - Public Law Number 14, 79th Congress, First Session, approved March 2, 1945]. (Corps/Service Cooperative Agreement 2000, Stateline and Juniper Canyon units only).
- Other parcels: Small pieces of the Refuge were also added later by purchase under the Migratory Bird Conservation Act. The Refuge also manages a small tract of land under a 10-year lease with the Washington Department of Natural Resources; and, approximately 20 small tracts were acquired under authority of the Refuge Recreation Act of 1962 (PL 87-714).

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

Establishing and Acquisition Authorities: (Umatilla)

Umatilla Refuge was established in 1968 when the Service entered into a Cooperative Agreement with the Corps on July 3, 1969 in accordance with section 4 of the Act of Congress approved December 22, 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended, 16 U.S.C. 661 et seq.), and a General Plan for Wildlife Management approved by the Secretary of Army, the Secretary of the Interior, and the heads of the agencies of the States of Oregon and Washington exercising administration over wildlife resources within said states.

Refuge Purposes: (Umatilla)

- “for the conservation, maintenance, and management of wildlife, resources thereof, and habitat thereon, under plans...” (All lands, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “those lands and waters acquired for primary purposes of the project [John Day Lock and Dam] and found to have their greatest value in furthering the national migratory bird program will be made available by cooperative agreement to the Bureau of Sport Fisheries and Wildlife of the U.S. Fish and Wildlife Service” (All lands, General Plan, Umatilla Lock and Dam, 1968).
- “for waterfowl management” (Original fee lands, Rivers and Harbors Act of 1965, Public Law 89-298).
- “to include additional lands that were originally excepted from management by the Service because they were classified for recreation use...All remaining terms and conditions of the Cooperative Agreement remain unchanged.” (Portions of Blalock and Sand Dune Islands only, 1995 Amendment to the 1969 Cooperative Agreement between USACE and USFWS.)
- Additional Land Acquisitions: A land tract of 670 acres, a tract of 27.1 acres and another tract of 27.6 acres was acquired under the Fish and Wildlife Act “development, management, advancement, conservation, and protection of fish and wildlife resources.” The 27.6 acre tract also was acquired under the joint authority of the Emergency Wetlands Resources Act, which authorizes the purchase of wetlands consistent with the wetlands priority conservation plan.
- Tracts totaling 136.45 acres were acquired under the Migratory Bird Conservation Act “for migratory bird Refuges, both for inviolate sanctuaries and for management purposes.”

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

National Wildlife Refuge System Mission: “The mission of the 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-668ee]).

Description of Use: Fish, wildlife, and habitat research is an existing use and is conducted on Refuge lands and waters by independent researchers, partnering agencies, educational groups, and Refuge staff. Some research is used to address basic wildlife conservation questions such as survival of federally listed endangered and threatened juvenile salmon stocks in the Columbia River. Other

research is more specific to Refuge management and resources and is used in an adaptive way to measure the effectiveness of Refuge habitat and wildlife management programs.

Umatilla and McNary Refuges together receive three to seven requests per year on average to conduct scientific research on the Refuges. Most have involved Columbia River System salmon and steelhead research and include studies of: piscivorous waterbirds; Caspian tern foraging; salmon/steelhead PIT tag recovery; smolt radio telemetry and migration patterns; habitat use of burrowing owls; and wetland/groundwater hydrology. Between the years 2000 and 2005 there were between four and seven active special use permits issued for research and monitoring studies including those summarized in the following table. Under the CCP, special use permits would only be issued for monitoring and investigations which contribute to the enhancement, protection, preservation, and management of native plant and wildlife populations and their habitats, especially as they relate to Refuge lands and management activities.

Summary of research activities at Umatilla and McNary Refuges 2000-2005.

Organization	Research Topic and Description	Location of Research and Habitats	Timing of Research	Equipment and Facilities Used
OSU and Real Time Research (contract with NOAA Fisheries Service); Dr. Daniel Roby	Avian predation of salmonids; mainly Caspian terns diet preferences and impacts to salmon and steelhead smolts	Colonial nesting waterbird colonies primarily on Crescent, Badger, and Foundation Islands in Columbia River	Nesting season from April through June; research started in 1998	Seasonal field spy blind set up; access by boats; low-altitude fly-over some years
Oregon State University (contract with NOAA Fisheries Service); Dr. Daniel Roby	Caspian tern feeding behavior and selective foraging; net-pen study on Refuge wetland	Unit II wetland at McNary Refuge's Burbank Slough	May through June	Access to shoreline/wetland by vehicle on established roads/trails; net-pens in Wetland II
NOAA Fisheries Service; Northwest Fisheries Science Center; Brad Ryan	Salmon/steelhead PIT tag recovery; nesting colonies are searched for tags deposited on the island as a result of predation	Nesting islands are searched for PIT tags; both hand-held and jeep mounted detection antenna are used; primarily on Crescent, Badger, and Foundation Islands in Columbia River	Fall and early winter; annual and ongoing research effort	Access to island by boat; at Crescent Is. a jeep is used to mount radio tag receiver and magnetic collector otherwise hand-held wands are used
NOAA Fisheries Service: Northwest Fisheries Science Center; Brad Ryan	Smolt radio telemetry; use of fixed-site radio telemetry to track smolt migration in Columbia and Snake Rivers	Radio telemetry antennas and receivers placed on Refuge at Strawberry Island in the Snake River and Peninsula Unit and Crescent Island in the Columbia River	Antennas are placed during the smolt migration period from April through August	Access to islands by boat; 8-12 foot antenna secured by guy wires
USGS-BRD and Arizona Coop Fish and Wildlife Unit	Habitat use and requirements of burrowing owls	Refuge uplands and shrub steppe areas; off-Refuge sites; nest searches conducted and habitat evaluated	Breeding season from February through July	Access by vehicle on established roads

Research proposals are reviewed by the Refuge and conservation partners, as appropriate. If a proposal is approved, special use permits are issued and administered by the Refuge Manager. Evaluation criteria for approving studies will include, but not be limited to, the following:

- research contributing to specific Refuge management issues will be given higher priority over other research requests
- research that will conflict with other ongoing research, monitoring, or management programs will not be granted
- research projects that can be accomplished off-Refuge are less likely to be approved
- level and type of disturbance will be carefully evaluated when considering a request
- Refuge evaluation will determine if any effort has been made to minimize disturbance through study design, including considering adjusting location, timing, scope, number of permittees, study methods, number of study sites, etc.
- Approvals are subject to sufficient staffing for the Refuge to monitor researcher activity in a sensitive area
- the length of the project will be considered and agreed upon before approval
- projects will be reviewed annually
- These criteria will also apply to any properties acquired in the future within the approved boundary of the Refuge

Availability of Resources: Under the Preferred Alternative 2, the following annual funding costs (based on FY 2005 costs) would be required to administer and manage research activities as described above. Refuge operational funds are currently available through the Service budget process to administer this program as envisioned under Alternative 2. However, grants may be sought with the assistance of the Friends of Mid-Columbia River Refuges group to assist for smaller projects.

Category and Itemization	One-time (\$)	Annual (\$/yr)
Administration and management (Refuge biologist and managers): Evaluation of applications and permit management	\$0	\$3,000
Maintenance:	\$0	\$0
Monitoring of ongoing research projects and their effects: (Refuge biologist and managers)	\$0	\$5,000
Special equipment, facilities, or improvements:	\$0	\$0
Offsetting revenues:	\$0	\$0
Total	\$0	\$8,000

Anticipated Impacts of Use:

Short term impacts - Use of the Refuge to conduct research will generally benefit Refuge fish, wildlife, plant populations, and their habitat, and contribute to recovery of listed threatened and endangered species. Monitoring and research investigations are also an important component of adaptive management. Research investigations would be used to evaluate salmon and steelhead recovery efforts and assist managers in managing Refuge habitats to aid in recovery efforts. Specific restoration

and habitat management questions would be addressed in research investigations, such as the burrowing owl studies, to improve habitat and benefit wildlife populations.

Standardized monitoring would be used to insure data compatibility for comparisons from across the landscape. An expected short-term effect of monitoring and research investigations is that Refuge management activities would be modified to improve habitat and wildlife populations, as a result of new information.

Some effects would occur through disturbance which is expected with some research activities, especially where researchers are entering sanctuaries or sensitive islands with colonial nesting birds. Researcher disturbance could include altering wildlife behavior, going off designated trails, collecting soil and plant samples or trapping and handling wildlife. Death of animals due to the use of lethal collection methods as well as accidental death and injury from trapping and handling and other invasive procedures (Pit-tagging, force feeding, and blood collection) can occur. American white pelican colonies are known to be sensitive to human disturbance and will abandon nests. The public's perception of lethal methods, such as the taking of cormorants to determine stomach contents, might be negative.

Disturbance to breeding, resting and feeding wildlife and their habitats may occur through frequent contact with researchers performing data collection and monitoring activities. Results of disturbance could include the abandonment of nest and young resulting from frequent visitation to nest or breeding sites. In addition, trapping and marking of wildlife for habitat and population studies may result in injury and mortality; study of food habits, parasitism or disease may require the taking of animals; and measurement of habitat characteristics or experimental manipulation of habitats may result in the alteration or destruction of wildlife habitat.

Damage or alteration to the habitat from researchers would be minor; however, some increase in invasive plants is possible from ground disturbance and/or transportation of source seed on research equipment and personnel. The blinds used by tern researchers at Crescent Island are small, on the surface, temporary, and are removed at the end of each season. The radio antenna used for PIT tag monitoring is moored to the ground with stakes and wires; but they too are removed after each season of use and have no lasting impact. The use of vehicles on Crescent Island to collect Pit-tags could damage young vegetation. However, the nesting colonies are found in the cobble-stone substrate of the island, which is generally devoid of vegetation and/or limited by the bird colonies themselves.

Most effects would be minor because only a minimum number of samples (e.g., water, soils, vegetative litter, plants, and macroinvertebrates) and required for identification and/or experimentation and statistical analysis would be permitted and captured, and marked wildlife would be released. Refuge evaluation of research proposals would insure that only proposals with adequate safeguards to minimize impacts would be accepted. Potential impacts associated with research activities would be minimized because sufficient restrictions would be included as part of the study design, and researcher activities would be monitored by Refuge staff. Refuge staff would ensure research projects contribute to the enhancement, protection, preservation, and management of native Refuge wildlife populations and their habitats, thereby, helping the Refuges fulfill the purposes for

which they were established, the mission of the National Wildlife Refuge System, and the need to maintain ecological integrity.

Additionally, special use permit conditions would include restrictions to further ensure impacts to wildlife and habitats are avoided and minimized.

Long-term impacts Expected long-term and cumulative effects include: a growing body of science-based data and knowledge as new/continued monitoring and new/continued research complements and expands upon previous investigations; resulting in an expanded science-based body of data and information from which to draw upon to implement the best Refuge management possible. Natural resources inventory, monitoring and research are not only provisions of the Improvement Act, but they are necessary tools to maintain biological integrity and diversity and environmental health, which are also key provisions of the Act. Inventory, monitoring and research are intended to improve habitat and wildlife populations. This in turn could improve wildlife-dependent recreation by increasing encounters with wild things.

Public Review and Comment: Open houses were held and written comments were solicited from the public during development of the CCP/EA for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the CCP. Additional public review and comment will be solicited during the CCP comment period.

Determination (check one below):

Use is Not Compatible
 Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

The criteria for evaluating a research proposal, outlined in the description of use section above, will be used when determining whether a proposed study will be approved on the Refuge. If proposed research methods are evaluated and determined to have potential adverse impacts on Refuge wildlife or habitat, then the Refuge will determine the utility and need of such research to conservation on management of the Refuge's wildlife and habitat. If the need is demonstrated by the research permittee and accepted by the Refuge, then measures to minimize potential impacts (e.g., reduce the numbers of researchers entering an area, restrict research in specified areas) will be developed and included as part of the study design and included on the special use permit.

Special use permits will contain specific terms and conditions that the researcher(s) must follow relative to activity, location, duration, seasonality, etc. to ensure continued compatibility. All Refuge rules and regulations (CFR 50) must be followed unless otherwise accepted in writing by Refuge management. Stipulations necessary to ensure compatibility include:

- Extremely sensitive wildlife habitat areas will be avoided unless sufficient protection from research activities (i.e., disturbance, collection, capture and handling) is implemented to limit the area and/or wildlife potentially impacted by the proposed research.

- When and where needed, some areas may be temporarily/seasonally closed to research; research can be permitted to resume when impacts to wildlife and habitat are no longer a concern.
- Research activities will be modified to avoid harm to sensitive wildlife and habitat when unforeseen impacts arise, such as a wildfire altering landscape conditions or large declines in a population.
- At any time, Refuge staff may accompany the researchers to determine potential impacts.
- Refuge staff will monitor researcher activities for compliance with conditions outlined on the Special Use Permit. A Refuge manager and/or Project Leader may determine that previously approved research and special use permits be terminated due to observed impacts.
- The Refuge manager and/or Project Leader will also have the ability to unilaterally cancel a Special Use Permit if the researcher is out of compliance with permit conditions and/or to ensure wildlife or habitat protection and/or visitor and public safety.
- All researchers will be required to submit a detailed research proposal for review and recommendation by the Refuge biologist and approval by the Refuge Manager. The biologist will provide the required proposal format to researchers.
- Agencies and entities operating stationary monitoring stations requiring utilities (air quality, weather) will cover maintenance and operating costs including utilities for their station.
- All samples and specimens collected from the Refuge are Refuge property. Once research is complete or terminated, researchers shall check with the Refuge to ascertain whether samples and specimens are to be turned over to Refuge offices. Service personnel shall be provided access to the samples and specimens at any time at no cost (unless arrangements are made to the contrary).
- The Refuge Biologist will review all research proposals and identify any conditions of the research permits that eliminate or minimize negative impacts to any one area, species, or habitat of the Refuge. The Refuge Biologist will make a recommendation to the Refuge Manager on whether the research should occur, based on weighing of benefits and impacts.
- Research requiring the collection of animals will only be authorized after careful consideration by the Refuge Biologist and Refuge Manager as to the importance of Refuge populations to the conservation of the species, the possible adverse impacts to the Refuge populations, and the humaneness of the collection methodology. State and Federal collection permits are required.
- Consultation will be conducted for any research activities that may possibly have an impact on threatened or endangered species.
- The Refuge Manager will issue no more than six special use permits annually for Refuge research. Additional permits may be considered depending on staff workload and cumulative impacts of existing research projects on wildlife and habitats. The permit holder will list each person assisting on the research project and provide description and license number of vehicles that will be used.

- Refuge staff will monitor research projects to ensure that on-going research is not causing long-term habitat damage or impacting any animal populations.
- Additional site specific and research specific terms and conditions will be included in all SUP's.

Justification: Two provisions of the National Wildlife Refuge Improvement Act are to “maintain biological integrity, diversity and environmental health” and to conduct “inventory and monitoring.” Refuge plans and actions based on research and monitoring provide an informed approach to habitat and wildlife programs. Refuge monitoring and research will directly benefit and support Refuge goals, objectives and management plans and activities and can contribute to recovery of endangered/threatened species. Management of fish, wildlife, plants and their habitat will improve through the application of knowledge gained from monitoring and research. Biological integrity, diversity and environmental health will benefit from scientific research conducted on natural resources at the Refuge. The Refuge manager and biologist will ensure that proposed monitoring and research investigations will contribute to the enhancement, protection, conservation, and management of native wildlife populations and their habitats on the Refuge, thereby helping the Refuges fulfill the purposes for which they were established, as well contributing to the mission of the Refuge System.

Mandatory 10- or 15-Year Reevaluation Date: (provide month and year for “allowed” uses only)

_____ Mandatory 15-year reevaluation date (for wildlife-dependent public uses)

2017 Mandatory 10-year reevaluation date (for all uses other than wildlife-dependent public uses)

Refuge Determination:

Prepared by: _____ (Signature) _____ (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) _____ (Date)

Concurrence:

Refuge Supervisor: _____ (Signature) _____ (Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA): _____ (Signature) _____ (Date)

Dog Training, including Field Trials

Compatibility Determination

Use: Dog Training, including Field Trials

Refuge Name: McNary National Wildlife Refuge.

County and State: Walla Walla, Franklin, and Benton Counties, Washington, and Umatilla County, Oregon.

McNary Refuge was established in 1955 by cooperative agreement with the Corps which transferred administrative control of the original 2,849-acre parcel to the Service (Federal Register of May 1956; Document No. 56-3499; and Cooperative Agreement between the Corps and Service in September 1963, and as amended September 1969). Additional lands were purchased in subsequent years under the Migratory Bird Conservation Act (16 USC 715d). A small parcel was donated to the Service in 1969, under the Refuge Recreation Act (16 USC 460k-1, k-2). In 1972, another parcel was transferred to the Service from the Bureau of Reclamation under the Fish and Wildlife Coordination Act (16 USC 664). In 1999, the original Refuge was transferred from the Corps to the Service through the Water Resources Development Act (WRDA) 1999 bill (P.L. 106-53; 16 USC 668dd). Additional lands were added in 2000 (Cooperative Agreement No. DACW68-4-00-13), dated January 2000 and as amended June 2000.

Refuge Purpose(s):

- for the conservation, maintenance, and management of wildlife resources thereof, and habitat thereon, under plans... (All units, 16 U.S.C. §§ 664, Fish and Wildlife Coordination Act).
- “for development, conservation and management of wildlife resources...” (All units, General Plan, 1953).
- “particular value in carrying out the National Migratory Bird Management Program” (Original Burbank Unit, and Hanford Islands Unit, General Plan, 1953).
- “multiple use value relating to the conservation of fish life, waterfowl and upland game birds” (Peninsula, Two Rivers, and Wallula Units, General Plan, 1953).
- Snake River Mitigation Compensation Plan (Cummins Property only, Cooperative Agreement between Service and Service, 2000).
- “Dam Project Purposes” [primary purposes of navigation, power development, irrigation, and conservation of wildlife - Public Law Number 14, 79th Congress, First Session, approved March 2, 1945]. (Cooperative Agreement between the Corps and Service, 2000, Stateline and Juniper Canyon units only).
- Other parcels: Small pieces of the Refuge were also added later by purchase under the Migratory Bird Conservation Act. The Refuge also manages a small tract of land under a 10-year lease with the Washington Department of Natural Resources; and, approximately 20 small tracts were acquired under authority of the Refuge Recreation Act of 1962 (PL 87-714).

Additional detail on the purposes of this Refuge may be found in Chapter 1 of the Draft CCP/EA.

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.

Description of Use:

Field dog trials formally test dogs’ scenting, marking, and retrieving ability. At McNary Refuge, these events typically last one day, and use dead frozen or dummy birds. The use is confined to a small field area on the Two Rivers Unit, is usually attended by 20 to 25 people and 10 to 15 dogs, and takes place on the second weekend in March. This is in compliance with the State dog training season which runs from August through March. No horses are affiliated, or allowed for this use.

Currently, this activity is administered through issuance of a special use permit with strict stipulations that must be followed.

Historically, the Two Rivers Unit was listed as an official State dog trial area, and larger, more competitive trials, involving horses, trailers, and overnight camping, were held annually. However, no trials of that magnitude have been conducted within the last seven years, and future requests for such trials are not anticipated.

This event is not a wildlife-dependent recreational use. The use was determined not appropriate under the Appropriate Uses review (Appendix K).

Availability of Resources:

Costs to administer the use are detailed below.

Activity or Project	One Time Expense (\$)	Recurring Expense (\$/year)
Site Designation and Prep	\$0	2,000
Maintenance (Annual Noxious Weed Control)	\$0	1,000
Enforcement and Oversight	\$0	2,000
Totals	\$0	5,000

Anticipated Impacts of the Use:

This event usually takes place in the spring and may contribute to short-term disturbances of ground nesting birds and other wildlife. Numerous studies have confirmed that people on foot can cause a variety of disturbance reactions in wildlife, including flushing or displacement (Erwin 1989; Fraser et al. 1985; Freddy 1986), heart rate increases (MacArthur et al 1982), altered foraging patterns

(Burger and Gochfeld, 1991), and even, in some cases, diminished reproductive success (Boyle and Samson 1985). Based on this information, it is likely that field dog trials would have similar impacts. These studies and others have shown that the severity of the effects depends upon the distance to the disturbance and its duration, frequency, predictability, and visibility to wildlife (Knight and Cole 1991).

The most likely impact to the Refuge resources would be during spring and early summer. Limited impacts to nesting birds could occur as described below, but would be relatively minor because the dog training would be limited to a confined area and would occur on only one or two days per season.

The presence of dogs may flush incubating birds from nests (Yalden and Yalden 1990), disrupt breeding displays (Baydack 1986), disrupt foraging activity in shorebirds (Hoopes 1993), and disturb roosting activity in ducks (Keller 1991). Despite thousands of years of domestication, dogs still maintain instincts to hunt and chase. Given the appropriate stimulus, those instincts can be triggered. Dogs that are unleashed or not under the control of their owners may disturb or potentially threaten the lives of some wildlife. In effect, off-leash dogs increase the radius of human recreational influence or disturbance beyond what it would be in the absence of a dog.

Impacts to native vegetation could occur from movement of dogs and people over the landscape. Noxious weeds could be spread further into shrub-steppe habitat through the additional traffic. The short duration, infrequency, and restricted area of these events could result in minor impacts to resident wildlife but may have long-term impacts such as noxious weed spread and infestation.

The role of dogs in wildlife diseases is poorly understood. However, dogs host endo- and ectoparasites and can contract diseases from, or transmit diseases to wild animals. In addition, dog waste is known to transmit diseases that may threaten the health of some wildlife and other domesticated animals. Domestic dogs can potentially introduce various diseases and transport parasites into wildlife habitats (Sime 1999).

Current Refuge regulation (50CFR 26.21(b) states "...no unconfined domestic animals, including but not limited to dogs...shall be permitted to roam at large...").

Public Review and Comment:

Open houses were held and written comments were solicited from the public during development of the Draft CCP/EA for the McNary and Umatilla Refuges. Appendix A of the Draft CCP/EA further details public involvement undertaken during development of the CCP. Additional public review and comment will be solicited during the CCP comment period.

Determination (check one below):

Use is Not Compatible

Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility: n/a

Justification:

Dog training is not listed as one of the six wildlife dependent recreational uses under the National Wildlife Refuge Improvement Act of 1997, as amended. Dog training on the Refuges is not necessary for the safe, practical, and effective conduct of existing Refuge wildlife-dependent recreational uses. While most waterfowl and upland game hunters do employ dogs, training areas can be found elsewhere. The effects of dog training pose a minor threat to habitat and wildlife resources, and temporarily displace wildlife.

Dog training does not appreciably contribute to the public's understanding and appreciation of the Refuge's natural and cultural resources, nor is the use beneficial to the Refuge's natural or cultural resources.

Though the additional resources needed to administer the use are small, all resources on the Refuges for administering uses are stretched very thin. Given the growing limitations of staffing and budget, resources are insufficient to meet the requirements for needed protection to wildlife resources and the public safety of Refuge visitors.

Based on the analysis above, dog training has a negative impact on Refuge habitat, displaces wildlife, and detracts staff and operational resources away from programs that contribute to the conservation and management of wildlife, therefore, it materially interferes with the Refuge achieving its purposes and is determined not a compatible use.

Mandatory 10- or 15-Year Reevaluation Date: (provide month and year for "allowed" uses only)

None

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Refuge Determination:

Prepared by: _____
(Signature) (Date)

Refuge Manager/
Project Leader
Approval: _____
(Signature) (Date)

Concurrence:

Refuge Supervisor: _____
(Signature) (Date)

Regional Chief,
National Wildlife
Refuge System
(for HI, ID, OR,
PI, and WA): _____
(Signature) (Date)

APPENDIX D. IMPLEMENTATION

Overview

Implementation of the preferred alternative of the CCP will require increased funding, which will be sought from a variety of sources. This plan will depend on additional Congressional allocations, partnerships and grants. There are no guarantees that additional Federal funds will be made available to implement any of these projects. Other sources of funds will need to be obtained (both public and private). Activities and projects identified will be implemented as funds become available.

Operational management of Refuge lands is accomplished by permanent and temporary staffing, volunteers and partnerships. Operational management includes managing public use, law enforcement, biology, fire, maintenance, administration, and habitat management programs on the Refuge.

Many of the infrastructure and facility projects will be eligible for funding through construction or Transportation Equity Act (TEA 21) funds (i.e. Refuge Roads).

The Draft CCP proposes several projects to be implemented over the next 15 years. All of these projects are included in either the Refuge Operational Needs System (RONS) or the Service Asset Management System (SAMMS). Both are used to request funding from Congress. Currently, a large backlog of maintenance needs exists on the Refuges. In 2005, the deferred maintenance backlog for McNary and Umatilla Refuges was \$2,901,554.00. Reduction of the backlog is an ongoing goal and is included here in the analysis of funding needs. The Refuge Operational Needs System (RONS) documents proposed new projects to implement the CCP to meet Refuge goals and objectives and legal mandates.

Annual revenue sharing payments to Morrow County, Oregon, Benton County, Washington and Walla Walla County, Washington will continue. Total revenue sharing payments made in 2005 were \$3,709, \$3,780, and \$18,009 respectively.

Monitoring activities will be conducted on a percentage of all new and existing projects and activities to document wildlife populations and changes across time, habitat conditions, and responses to management practices. Actual monitoring and evaluation procedures will be detailed in step-down management plans.

Costs to Implement CCP, by Alternative

The following sections detail both one time and recurring costs for various projects, by alternative. One time costs reflect the initial costs associated with a project whether it is purchase of equipment, contracting services, or construction. Recurring costs reflect the future operational and maintenance costs associated with the project.

A. One Time Costs

One time costs are project costs that have a start up cost associated with them, such as purchasing a new vehicle for wildlife and habitat monitoring or designing and installing an interpretive sign. These projects are usually projects that can be completed in three years or less. These projects do not include permanent operational costs (staff salary and support). They can, however, include the cost of temporary or term salary associated with a short term project. Salary for new positions and operational costs are reflected in operational or “recurring” costs.

Funds for one time costs will be sought through increases in Refuge base funding, special project funds, grants, Refuge Roads or Transportation Equity Act (TEA3) funding, and fire funds.

Projects listed in Table D-1, D-2, and D-3 show one time costs, such as those associated with building and facility needs such as offices, public use facilities, road improvements, and new signs. One time costs are also associated with habitat restoration and protection projects such as specific riparian and wetland projects or research. New research projects, because of their short term nature are considered one time projects, and include costs of contracting services or hiring a temporary employee for the short term project. Tables D-1, D-2, and D-3 compare one time costs between the four alternatives.

Table D-1. One Time Costs (in thousands) for Research, Monitoring, and Planning

Project – Research & Monitoring	Priority	Unit	Unit Cost	Alt 1	Alt 2	Alt 3	Alt 4	Potential Fund Source
Prescribed Fire monitoring (equipment support) Obj 7c	H			0	50	50	0	RONS; Fire Base
Connectivity Planning – Obj 7f	L			0	0	60	0	
Corridor Plan – Obj 8c	L			0	0	100	0	
Monitor expansion of invasive plants Obj 2a	M	Proj	20	0	20			RONS; 00015
Quantify curlew areas Obj 2c	M	Proj	10	0	10	10	10	
Monitor populations & nest success Obj 2c	M	Proj	10	10	10	10	10	
Shorebirds: literary search; inventory invertebrates; correlate reservoir levels w/abundance; assess connectivity	M	Proj	15	0	15	0	0	
Salmon: assess benefits of creating side channels; prep feasibility report & funding request; develop strategies to enhance connectivity	M	Proj		0	24	24	0	
Endangered/Threat. Species: surveys; status reports	H	Proj	10	0	10	10	0	
Small mammals: map soils/select survey acres; baseline inventory. Obj 3c	L	Proj	5	0	5	5	0	
Shallow Marsh: inventory plants and monitor treatments. Obj 4a	M	Ac	20	7	7	7	0	
Aquatic Beds: inventory submerged plants and obtain bathymetric data. Obj 4b	M	Proj	8	0	8	0	0	
Riparian: increase MAPPS monitoring. Obj 5a	M	Proj	15	0	15	0	0	
Cottonwood: select site and monitor plantings. Obj 5b	M	Proj	3	0	3	0	0	
Waterbirds: monitor size of colonies; facilitate and monitor research; monitor piscivorous bird colonies; monitor island erosion. Obj 6a	H	Proj	10	10	10	10	0	
Burrowing Owls: investigate ground squirrel transplants; experiment w/artificial burrows; identify historic sites; monitor. Obj 7b	M	Proj	8	0	8	8	0	
Inventory invasive species. Obj 7c	H	Proj	20	20	20	20	0	
Bitterbrush research Obj 7d	M	Proj	10	0	10	10	0	
Shrub Steppe - monitor treatments Obj 7e	M	Proj	10	0	10	10	0	
Cliff habitats: baseline resource inventory. Obj 8b	L	Proj	30	30	30	30	0	
Cliff habitats Obj 8a, 8c	M			\$0	\$0	\$30	\$0	
Horseback riding: assess usage and monitor impacts. Obj 9f	L	Proj	5	0	5	5	0	
Public use surveys: Fishing Obj 11b	L	Proj	20	20	20	0	0	
Cultural Resource Surveys Obj 13a, 13d	H	Proj	110	110	110	110	0	
All Research, Monitoring, and Planning Projects Subtotal (thousands)				\$207	\$400	\$509	\$20	
High Priority Research, Planning, and Monitoring Only (thousands)				\$140	\$200	\$200	\$0	

Table D-2. One Time Costs (in thousands) for Facilities

Project – Facilities	Priority	Unit	Unit Cost	Alt 1	Alt 2	Alt 3	Alt 4	Fund Source
EE Bldg Replacement w/ furnishings Obj 12b								
number of square feet				3500	3500	3500	3500	
total cost	M	sq. feet	\$275	\$963	\$963	\$963	\$963	1262 Deferred Maint. (funds expected to be allocated in FY 2007 budget)
McCormack office w/ visitor contact area & furnishings Obj 9e								
number of square feet				3,600	3,600			
total cost	M	sq. feet	290	\$1,044	\$1,044	\$0	\$0	1262; Deferred Maint
Fire Facilities (office, crew room, fire cache and engine storage Obj 7c								
number of square feet				0	2,000	2,000	0	
total cost	H	sq. feet	150	\$0	\$300	\$300	\$0	
New Trails – Obj 7g,9a,9b,9c,9d,11a,12d	M	mi	20	0	\$70	\$70	0	Grants, RONS, TEA3
McCormack Unit Observations/Photo Blinds Obj 9d	H	ea	10	20	\$20	\$20	0	Grants; RONS; 03006R
Interpretive Signs: Wallula, Peninsula, Juniper Canyon, Hwy 14 Obj 9b,9c,9h	H	ea	5	\$75	\$150	\$50	0	Grants; RONS 00008R, 00010R
Parking (Hunter Access) Construction Obj 10a	M	ea	16	\$48	\$50	\$32	0	Grants; RONS 03007R
Interpretive Kiosks or Observation Platforms Obj 9a,9f,11b,12d	L	ea	70	\$70	\$70	0	0	RONs 02003R
Regulatory Signs Obj 1d, 6a, 9c, 6b	M			\$20	\$30	\$10	\$10	
Boundary Survey & signing McNary Obj 8b, 7e, 9i	M			30	\$30	\$30	0	
Clean-up Illegal Dumping Sites Obj 7e	H			\$5	\$20	\$20	\$5	
Hunter Check Station Consolidation Goal Obj 10a	M			\$10	\$10	0	\$5	
Camping Madame Dorian Goal Obj 9a	M			\$5	\$5	\$5	\$5	
Hunting Program Improvements Obj 10a, 10b, 10c	M			\$30	\$20	20	\$5	
Fencing Obj 5a	M			\$0	\$30	0	\$0	
Roads Obj 11a	H			\$50	\$50			
Horse Trail Signs Obj 9f	L			\$0	\$5	5	\$0	
Fishing Prog Piers and Boat Launches Obj 11a	M			\$60	\$60	0	\$0	
Cultural Resource - signs overlook, exh	H			\$80	\$80	80	\$0	
Strawberry Island stabilization Obj 13d	M			\$100	\$100	100	\$0	
All Facilities Subtotal (thousands)				\$2,610	\$3,107	\$1,705	\$993	
High Priority Facilities Subtotal (thousands)				\$230	\$620	\$470	\$5	

Table D-3. One Time Costs (in thousands) for Habitat Management.

Project – Habitat	Priority	Unit	Unit Cost	Alt 1	Alt 2	Alt 3	Alt 4	Fund Source
Shrub–Steppe Condition Improvement on Refuge over 15 years - Obj 7a, 7e, 7f								
number of acres				960	2,881	2,881	960	
total cost	M	ac	190	\$182	\$547	\$547	\$182	9263/9264; RONS 00017
Wetland Restoration (Excavation) on Refuge over 15 years - Obj 4a								
number of acres				45	45	40	40	
total cost	H	ac	1000	\$45	\$45	\$40	\$40	
Pest Plant Management over 15 years								
number of acres				5000	5000	7500	4500	RONS; Special Funds
total cost	H	ac	250	\$1,250	\$1,250	\$1,875	\$1,125	
Emergent-wetland restoration (mowing/disking/shoreline work) Obj 4a								
number of acres				1438	1000	0	500	
total cost	H	ac	200	\$288	\$200	\$0	\$100	
Prescribed Fire over 15 years								
number of acres				4000	3000	1000	3000	
total cost	H	ac	60	\$240	\$180	\$60	\$180	
Bitterbrush Steppe Restoration - Obj 7d								
number of acres				0	50	100	5	RONS 00017
total cost	M	ac	400	\$0	\$20	\$40	\$2	
Riparian Management - Obj 5a								
number of acres				0	926	75	75	RONS 98001
total cost	H	ac	250	\$0	\$232	\$19	\$19	
Carp Eradication - Obj 4b								
number of acres				400	200	0	0	RONS 00017, 00014
total cost	H	ac	250	\$100	\$50	\$0	\$0	
Cottonwood Recruitment Obj 5b								
number of acres				0	75	0	0	RONS 98001
total cost	H	ac	200	\$0	\$15	\$0	\$0	
Uplands for Curlew Nesting Enhanced - Obj 2c								
number of acres				0	45	90	0	RONS 98001
total cost	M	ac	200	\$0	\$9	\$18	\$0	
Croplands - Obj 1a								
number of acres				2400	2100	1850	2100	
total cost	H	ac	10	\$24	\$21	\$19	\$21	
Moist Soil - Obj 1c								
number of acres				396	366	348	356	
total cost	H	ac	10	\$4	\$4	\$3	\$4	
Salmon backwater enhancements Obj 3a	H			\$0	\$200	\$200	\$0	
Island substrate Obj 6a	L			\$0	\$10	\$10	\$0	
Strawberry Island habitat Obj 13d	M			\$9	\$9	\$9	\$0	
All Habitat Projects Subtotal (in thousands)				\$2,142	\$2,792	\$2,840	\$1,673	
High Priority Habitat only Subtotal (in thousands)				\$1,951	\$2,196	\$2,216	\$1,488	

B. Operational and Maintenance (Recurring) Costs

Operational and maintenance costs reflect Refuge spending of base funds allocated each year. These are also known as recurring costs and are usually associated with day to day operations and projects that last longer than three years. Operational costs use base funding in Service fund codes 1261, 1262, 1263, 1264, 1265, 9131, 9263, and 9264.

Maintenance includes preventative maintenance; cyclic maintenance; repairs; replacement of parts, components, or items of equipment; adjustments, lubrication, and cleaning (non janitorial) of equipment, painting; resurfacing; rehabilitation; special safety inspections; and other actions to assure continuing service and to prevent breakdown.

Alternative 4 reflects the current backlog. Alternatives 1, 2, and 3 reflect the backlog and chart the increased maintenance need associated with new facilities and additional acquisitions.

Table D-4 displays operating and maintenance costs by alternative. Alternative 4 is based on a breakdown of how FY 2005 funds were spent on day to day operations. Alternatives 1, 2, and 3 reflect increased funding needs for proposed increases in public uses and facilities, increased habitat restoration and conservation activities, and new monitoring needs. This table includes such things as salary, operational expenditures such as travel, training, supplies, utilities and annual maintenance costs.

Table D-4. Operational (Recurring) costs.

Project	Action	Resources Needed	Alt 1	Alt 2	Alt 3	Alt 4
1.a Survey and Censuses	All methods of enumerating fish and wildlife populations, vegetative habitats, analysis, interpretation and reporting	1260- Biologist & Bio Techs and Volunteers ½ Volunteer Coordinator	\$70	\$70	\$70	\$50
1.b Studies & Investigations	Research projects for managing fish and wildlife populations and habitats	1260 Biologist & Cooperators	\$80	\$80	\$80	\$60
2.a Wetland Restoration	The conversion of altered or degraded on-refuge wetland habitats, including riparian zones back to their original conditions	1260, Special project funds ½ Maintenance Worker	\$100	\$100	\$50	\$50
2.b Upland/island/cliff Mgmt	The conversion of altered or degraded on-refuge upland habitats back to their original condition by such actions as replanting native species	1260 & special project funds	\$100	\$150	\$80	\$80
3.a Wetland Management	The manipulation of water bodies to affect vegetation and/or create desired wildlife conditions	1260	\$110	\$100	\$40	\$65
3.b Riparian Habitat Management			\$30	\$60	\$60	\$10
3.c Graze/Mow/Hay Crop Management	The management of grasslands and other habitats for the benefit of wildlife by cropland, grazing, mowing, or haying	1260	\$100	\$100	\$30	\$30
3.f Fire Management	Prescribed burning and wildfire preparedness activities. Follow-up monitoring and reporting	1262-91319263 ½ FMO, Eng Boss, 1 PS Fire Fighter, 3 Temp FF, Crew Leader and 5 crew, special project funds	\$900	\$900	\$600	\$710
3.g Native Pest Plant Control			\$3	\$3	\$9	\$2
3.h Invasive Plant Management	The eradication, reduction, or control of invasive or exotic plants. Includes monitoring	1260, special project funds	\$300	\$300	\$200	\$150
4.a Bird Banding	Marking and banding of birds	1260, Volunteers	\$20	\$15		\$14
5.a Interagency Coordination	Interactions with other Federal, State and local governments to share information, resolve problems, develop cooperative efforts, and manage species and habitats	1260/9131	\$50	\$50	\$40	\$37
5.b Tribal Coordination	Activities associated with the development of cooperative agreements, MOU's, annual funding agreements and similar cooperation/coordination/ communications efforts with tribes.	1260	\$20	\$20	\$20	\$16
5.c Private Lands Activities	Efforts to assist private land owners with habitat improvement and wildlife issues. (Initiate Stewardship Mgt.)	11,219,264	\$50	\$50	\$50	\$45
Wildlife Population Management			\$80	\$80	\$20	\$20
6.a Law Enforcement	Public Safety, Resource Protection, Hunt Program	1260, 2 Law Enforcement Officers	\$200	\$200	\$119	\$119
6.e Water Rights Managements	Activities associated with compliance with state and federal laws to protect and achieve adequate supplies of water. Reading, maintaining and installing measurement devices and gaging stations, preparing water mgt. plans, also monitoring off-refuge water uses	1260	\$45	\$45	\$45	\$45
6.f Cultural Resource Management	Supporting the study and protection of significant prehistoric and historic sites. Evaluation of cultural resources and management of museum property.	1260, 9131	\$50	\$50	\$50	\$10
6.g Land Acquisition Support	Staff participation in land acquisition activities, including development of acquisition proposals and appraisals, meetings, inventories and surveys	1260	\$1	\$1	\$1	\$1
7.a Visitor Services	Providing access, facilities, and programs for refuge visitors. Planning, construction, operation and maintenance of visitor facilities such as roads, trails, signs. Interpretation, environmental education, hunting and other recreation	1260, EE Specialist, ½ Volunteer Coordinator, maintenance worker, temp Park Ranger (EE)	\$300	\$300	\$200	\$122
7.b Outreach	Off-site education of public about Service activities through presentations, exhibits, news releases, and radio/TV spots	1260	\$50	\$50	\$30	\$47
8.a Planning		1260	\$30	\$30	\$22	\$22
TOTALS	Subtotals Annual Operational Costs (in thousands)		\$2,689	\$2,754	\$1,816	\$1,704
	Operational Costs over 15 years (in thousands)		\$40,332	\$41,310	\$27,240	\$25,566

C. Staffing

Staff is needed to manage and enhance the quality and diversity of indigenous wildlife habitats on the McNary and Umatilla Refuges. With the proper staffing to implement this plan, habitat management practices can be implemented and monitoring of flora and fauna responses to management can be applied, which will allow us to apply adaptive management strategies so crucial for long term success in meeting the mission, goals and objectives of the Refuges.

Staff will interact with the public for education purposes and to provide for public safety. Maintenance staff will maintain facilities and equipment. Training of staff and coordination among staff, volunteers and partners will ensure the mission and guiding principles of the National Wildlife Refuge System endure.

The following proposed full development level staffing plan would achieve optimum Refuge outputs within this planning period (15 years). The rate at which this station achieves its full potential to fulfill the objectives and strategies contained in the plan is dependent upon receiving adequate funding and staffing.

Table D-5 includes costs for permanent and seasonal staff needed each year. It does not include staff costs associated with special projects; these are summarized in Table D-1, D-2, or D-3. Table D-5 is also related to the Refuge Annual Performance Plan. Alternative 4 reflects how allocations were spent among management activities in FY 2005 at Mid-Columbia River Refuges. The table includes funds spent in 1121, 1261, 1262, 9131, 9263, and 6860. Table D-6 includes staff associated with the fire program only.

Table D-5. Annual costs of salaries and benefits, associated w/ staff by alternative

Staff – Refuge Operations	Status	Staff Positions	Justifying Objective	Alt 1	Alt 2	Alt 3	Alt 4
Project Leader	PFT	GS-0485-14	Current	X	X	X	X
Deputy Project Leader	PFT	GS-0485-13	Current	X	X	X	X
Wildlife Biologist	PFT	GS-0486-12	Current	X	X	X	X
Wildlife Biologist	TERM	GS-0486-09	7C		X	X	
Wildlife Biologist	PFT	GS-0486-09	2A		X	X	
Wildlife Biologist	PFT	GS-0486-09	7B		X	X	
Fishery Biologist	PFT	GS-11	8A		X	X	
Fire Program Analyst	PFT	GS-0401-13	Current	X	X	X	X
Outdoor Recreational Planner	PFT	GS-0023-11	Current	X	X	X	X
Environmental Education Specialist	PFT	GS-0025-09	12C		X	X	
Park Ranger	PFT	GS-0025-09	12D	X	X		
Volunteer Coordinator	PFT	GS-0023-09	12B	X	X	X	
Refuge Manager-Um	PFT	GS-0485-11	Current	X	X	X	X
Refuge Manager-McN		GS-0485-12	Current	X	X	X	X
Law Enforcement Officer	PFT	GS-0025-09	Current	X	X	X	X
Law Enforcement Officer	PFT	GS-0025-09	4B	X	X		
Law Enforcement Officer	PFT	GS-0025-09	9A	X	X		
Law Enforcement Officer	PFT	GS-0025-09	13A	X	X		
Administrative Officer	PFT	GS-0341-09	Current	X	X	X	X
Administrative Support Assistant	PFT	GS-0303-07	Current	X	X	X	X
Engineering Equipment Operator	PFT	GS-5716-09	3B	X	X	X	
Engineering Equipment Operator-McN	PFT	WG-5716-8	Current	X	X	X	X
Engineering Equipment Operator-McN	PFT	WG-5716-08	Current	X	X	X	X
Engineering Equipment Operator	PFT	WG-5716-08	1,2,3,5	X	X	X	
Engineering Equipment Operator-Um	PFT	WG-5716-10	Current	X	X	X	X
Check Station Attendant	TEMP	GS-0000-04	Current	X	X		X
Check Station Attendant	TEMP	GS-0000-04	Current	X	X		X
Social Services Assistant (YCC)	TEMP	GS-0000-05	Current	X	X	X	X
Social Services Assistant (YCC)	TEMP	GS-0000-05	1,2,3,5	X	X		
Archeologist	PFT	GS-11			X	X	
GIS Coordinator	PFT	GS-09			X	X	
Total Positions				24	31	24	16

PFT: Permanent Full Time
 PS: Permanent Seasonal
 Temp: Temporary Position
 Term: Term Position
 GS: General Schedule Federal Employee
 WG: Wage Grade Scale

Table D-6. Annual costs of salaries and benefits, associated w/ Fire Program staff by alternative

Staff – Fire Program	Status	Staff Positions	Alt 1	Alt 2	Alt 3	Alt 4
Fire Management Officer	PFT	GS-0401-12	x	x	x	x
Assistant Fire Management Officer North	PFT	GS-0401-09/11	x	x	x	x
Assistant Fire Management Officer South	PFT	GS-0401-09/3	x	x	x	x
Dispatcher	TERM	GS-0000-07	x	x	x	x
Supervisory Range Tech	PFT	GS-0462-07/08	x	x	x	x
Supervisory Range Tech	PFT	GS-0462-07/08	x	x	x	x
Supervisory Range Tech	PFT	GS-0462-07/08	x	x	x	x
Lead Range Tech	PS	GS-0455-06	x	x	x	x
Lead Range Tech	PS	GS-0455-05	x	x	x	x
Lead Range Tech	PS	GS-0455-05	x	x	x	x
Range Tech	PS	GS-0455-05	x	x	x	x
Range Tech	PS	GS-0455-05	x	x	x	x
Range Tech	PS	GS-0455-05	x	x	x	x
Range Tech	PS	GS-0455-05	x	x	x	x
Range Tech	PS	GS-0455-05	x	x	x	x
Range Tech	Temp	GS-0455-03/04	x	x	x	x
Range Tech	Temp	GS-0455-03/04	x	x	x	x
Range Tech	Temp	GS-0455-03/04	x	x	x	x
Range Tech	Temp	GS-0455-03/04	x	x	x	x
Range Tech	Temp	GS-0455-03/04	x	x	x	x
Range Tech	Temp	GS-0455-03/04	x	x	x	x
Range Tech	Temp	GS-0455-03/04	x	x	x	x
Range Tech	Temp	GS-0455-03/04	x	x	x	x
Range Tech	Temp	GS-0455-03/04	x	x	x	x
Range Tech	Temp	GS-0455-03/04	x	x	x	x
Totals			706,084	706,084	706,084	706,084

D. Youth Programs

Each year, the Refuge hires a Youth Conservation Corps crew. The YCC crew is used for light maintenance on the Refuge including litter pick-up, lawn cutting, painting, fence repair, and other light maintenance chores.

E. Volunteer Programs

The Complex has a varied and very active volunteer program. During 2005, individual volunteers donated 8,650 hours towards accomplishing Refuge programs including maintenance, public use assistance, biological support, environmental education, and administrative duties. This is an increase of about 50% in the last ten years. The total number of volunteers have quadrupled in the last ten years (Table D-7).

Table D-7. Volunteer Numbers/Hours Contributed at Mid-Columbia River Refuges

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Volun- teers	102	45	103	186	394	394	220	425	425	405	385	415
Hours	5360	4287	3318	4480	8473	8472	9160	6455	6415	10890	8105	8650

F. Partnership Opportunities

McNary Refuge's location next to a large metropolitan area facilitates many opportunities for partnerships with other agencies, interest groups and schools. Coordinated partnership efforts will focus on habitat restoration, land protection, environmental education, fish and wildlife monitoring, outreach, and quality wildlife-dependant recreation. Current and past partners include local schools, and non-profit groups (such as The Audubon Society, Friends of Mid-Columbia River Refuge Complex, Richland Rod and Gun Club, Washington State University, Washington State Parks and Recreation Commission, The Nature Conservancy, County Fire Districts and many others). Future partners will include these groups as well as state and tribal agencies. Partnerships like these will increase our effectiveness, knowledge, and community support, as well as reduce Refuge operating costs.

G. Budget Summary

Table D-8 summarizes the data from the above tables and displays the overall **annual** funding need, by alternative, for Mid-Columbia River National Wildlife Refuge.

Table D-8. Summary of Refuge Annual Funding Need, by CCP Alternative

	Alt 1	Alt 2	Alt 3	Alt 4
All projects - One time expenditures (total costs over 15 years), in thousands				
Research and Monitoring	207	400	509	20
Facilities	2,610	3,107	1,705	993
Habitat Management	2,142	2,792	2,840	1,673
A. Subtotal One Time Expenditures – All	4,958	6,298	5,054	2,685
High Priority Projects - One time expenditures (total costs over 15 years), in thousands				
Research and Monitoring	140	200	200	0
Facilities	230	620	470	5
Habitat Management	1,951	2,196	2,216	1,488
B. Subtotal One Time Expenditures high priority projects only	2,321	3,016	2,886	1,493
Recurring Costs – all (total costs over 15 years), in thousands				
C. Recurring Costs – all projects / salaries/Maintenance	40,332	41,310	27,240	25,566
Total Annual Need – All projects. (In thousands) (A + C)/15				
	3,019	3,174	2,153	1,883
Total Annual Need – High Priority Projects Only (In thousands) (A + B)/15				
	2,844	2,955	2,008	1,804

APPENDIX E: WILDERNESS REVIEW

Introduction

A. Policy and Direction

U.S. Fish and Wildlife Service policy (Sec 602) requires wilderness reviews to be completed as part of the Comprehensive Conservation Planning process.

A wilderness review is the process we use to determine whether or not we should recommend Refuge lands and waters to Congress for wilderness designation. The wilderness review process consists of three phases: inventory, study, and recommendation. The inventory is a broad look at the Refuge to identify lands and waters that meet the minimum criteria for wilderness. All areas meeting the criteria are classified as wilderness study areas (WSAs). If WSAs are identified, the review moves on to the study phase.

During the study phase, WSAs are further analyzed for all values (ecological, recreational, cultural), resources (wildlife, water, vegetation, minerals, soils), and uses (management and public) within the Wilderness Study Area. The findings of the study determine whether or not the WSAs merit recommendation from the Service to the Secretary for inclusion in the Wilderness System.

If it is determined during the inventory that no areas qualify as WSAs or if we conclude from the study that we should not recommend any areas as wilderness, we prepare a brief report that documents the unsuitability of the lands and waters for wilderness study or recommendation. The report is submitted to the Director of the Fish and Wildlife Service.

B. Previous Wilderness Reviews

There have been no previous wilderness reviews conducted on these Refuges.

C. Lands Considered Under This Wilderness Review

All Service-managed lands (areas under fee title or agreement) within the McNary and Umatilla National Wildlife Refuges' current approved boundaries were considered during the inventory of wilderness areas. This is consistent with current policy.

Wilderness Inventory Process

A. Criteria for Lands to Be Identified as for Potential Inclusion in the National Wilderness Preservation System

The Wilderness Act of 1964, as amended (16 U.S.C. 1131-1136) provides the following description of wilderness:

"A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of

wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions...”

Criteria for identifying areas as wilderness are described further on in Section 2(c) of the Act and are cited here:

- Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
- Has an outstanding opportunity for solitude or a primitive and unconfined type of recreation.
- Have at least five thousand acres of land or is of a sufficient size as to make practicable its preservation and use in an unimpaired condition; and
- May also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

B. Process of Analysis

The following process was used to evaluate Refuge lands and waters for their suitability for wilderness designation:

1. Determination of Refuge unit sizes.
2. For any areas that met the size criterion, an assessment was made of its capacity to provide opportunities for solitude or primitive and unconfined recreation.
3. For any areas that met the size criterion, an assessment was made of its naturalness.
4. For any areas that met the size criterion, an assessment was made of its features of scientific, educational, scenic, or historic value.

More detail on the actual factors considered used for each assessment step follows.

1. **Unit Size:** Roadless areas met the size criteria if any one of the following standards applied.
 - An area with over 5,000 contiguous acres. State and private lands are not included in making this acreage determination.
 - A roadless island of any size. A roadless island is defined as an area surrounded by permanent waters or that is markedly distinguished from the surrounding lands by topographical or ecological features.
 - An area of less than 5,000 contiguous Federal acres that is of sufficient size as to make practicable its preservation and use in an unimpaired condition, and of a size suitable for wilderness management.
 - An area of less than 5,000 contiguous Federal acres that is contiguous with a designated wilderness, recommended wilderness, or area under wilderness review by another Federal wilderness managing agency such as the Forest Service, National Park Service, or Bureau of Land Management.

At both McNary and Umatilla Refuges, some of the units extend over both uplands and well into the Columbia River “pools.” As elaborated upon in Chapter 1 of the CCP, these pools are located behind dams on the Columbia River and are best characterized as reservoir habitat. Lake Wallula is a large reservoir on the Columbia River upriver from McNary Dam, and Lake Umatilla is a large reservoir that was formed by John Day Dam. For the purposes of this wilderness review, any portion of a unit including part of Lake Wallula or Lake Umatilla was considered to be roadless. In addition, in all units that include both pool and upland areas, the pool portions were separated from adjoining upland or riparian areas of the unit for analysis purposes. This was done because access, habitat, and management are so different between upland and pool portions. The unit boundaries are artifacts of what the landscape looked like before the dams were built and do not reflect the very real site differentiation between pool and upland. Thus pool portions were effectively considered as a separate unit.

Both management roads and public access roads were considered as roads. Rail beds were also considered to comprise roads, since they are permanent structures and the railroads in this area pass trains at least once an hour.

2. Solitude or Primitive and Unconfined Recreation: A WSA must provide outstanding opportunities for solitude or primitive recreation. The area does not have to possess outstanding opportunities for both solitude and primitive and unconfined recreation, and does not need to have outstanding opportunities on every acre. Further, an area does not have to be open to public use and access to qualify under this criteria; Congress has designated a number of wilderness areas in the Refuge System that are closed to public access to protect resource values.

Opportunities for solitude refer to the ability of a visitor to be alone and secluded from other visitors. Primitive and unconfined recreation means non-motorized, dispersed outdoor recreation that is compatible and does not require developed facilities or mechanical transport. Primitive recreation activities may provide opportunities to experience challenge and risk, self reliance, and adventure.

These two opportunity “elements” are not well defined by the Wilderness Act but, in most cases, occur together. However, an outstanding opportunity for solitude may be present in an area offering only limited primitive recreation potential. Conversely, an area may be so attractive for recreation use that experiencing solitude is not an option.

In the wilderness inventory for the roadless islands in the McNary and Umatilla Refuge Complex, the following factors were the primary considerations in evaluating the availability of outstanding opportunities for solitude or primitive and unconfined recreation:

- island size;
- availability of vegetative screening;
- presence of motorized boats or vehicles within the area or typically used to access the area.

3. Naturalness: In addition to being roadless, a WSA must meet the naturalness criteria. Section 2(c) defines wilderness as an area that “... generally appears to have been affected primarily by the forces of nature with the imprint of man’s work substantially unnoticeable.” The area must appear natural to the average visitor rather than “pristine.” The presence of historic landscape conditions is not required. An area may include some human impacts provided they are substantially unnoticeable in the unit as

a whole. Significant human-caused hazards, such as the presence of unexploded ordnance from military activity, and the physical impacts of refuge management facilities and activities are also considered in evaluation of the naturalness criteria. An area may not be considered unnatural in appearance solely on the basis of the “sights and sounds” of human impacts and activities outside the boundary of the unit.

In this wilderness inventory, the following factors were primary considerations in evaluating naturalness:

- presence of buildings or facilities;
- presence of irrigation structures and/or crops;
- presence of water control structures or dikes; and
- presence of motorized boats or vehicles.

4. Features of value: Wilderness areas “may” contain other values or features, including ecological, geological, scientific, educational, scenic or historical values. These values or features are not required.

Inventory Results

Results for the Refuges are depicted in Table E-1. Following the table, a short discussion is provided on some of the details of analysis and consideration.

Table E-1 Results of Wilderness Review (only the areas that met size criterion are included in table)

Area	Unit Acres	Meets Size Criterion	Meets Solitude/ Primitive Recreation Criterion	Meets Naturalness Criterion	Meets Supplemental Values Criterion (optional)	Conclusion: Suitable for further consideration as wilderness?
McNary Areas						
Peninsula Unit (pool portion only)	6978.96	yes	no	no	yes	No
Badger Island	49.3	yes	no	yes	yes	No
Crescent Island	8.3	yes	no	yes	yes	No
Foundation Island	19.3	yes	no	yes	yes	No
Strawberry Island	135.7	yes	no	yes	yes	No
Umatilla Areas						
Columbia River Unit (aquatic portion only)		yes	no	yes	yes	No
Blalock Islands	113.5	yes	no	yes	yes	No
Long Walk Island	201.9	yes	no	yes	yes	No
Sand Dune Islands	102.8	yes	no	yes	yes	No
Straight Six Islands	5.3	yes	no	yes	yes	No
Telegraph Islands	0.7	yes	no	yes	yes	No

A. Size Criterion

Which portions of the Refuges meet the size criterion?

Both McNary and Umatilla Refuge are comprised of numerous disjunct units, separated by private lands, county, state, or federal roads, or connected by waters of the McNary or John Day pools, respectively. See maps 1, 2, and 3 in Chapter 1 of the Draft CCP/EA. A variety of islands, some ephemerally covered by water, exist on each Refuge. Some are natural remnants of islands that were much more extensive before the dams were built – others were created through the deposit of dredge spoil.

McNary Refuge: As depicted on Map 2 in Chapter 1 of the Draft CCP/EA, McNary Refuge [not including the Hanford Islands unit, which is being evaluated under the Hanford Monument CCP] includes 7 separate units. These units are discontinuous, separated by roads, state highways, railways, or private land (most of which is in croplands and some of which is in industry). Only one of the units exceeds 5,000 acres (Peninsula unit). Peninsula unit includes about 788 acres of upland, though a road runs through most of the middle of the upland. The rest of Peninsula unit is comprised of water (the unit overlays Lake Wallula) and islands. This pool portion of Peninsula unit is larger than 5,000 acres and is being carried forward for further analysis.

Strawberry Island unit contains two roadless islands. The pool portion of Peninsula unit also contains three roadless islands. None of the other units contain roadless islands as defined in the size criteria above. Although Stateline and Juniper Canyon units abut BLM land, there are no established or proposed wildernesses or any areas under wilderness review in the vicinity of the Refuge (pers. comm., Robert Alward).

Thus, the McNary Refuge areas that are carried on for further analysis in the wilderness review are: Peninsula Unit (aquatic portion only), Strawberry Islands, Badger Island, Foundation Island, and Crescent Island.

Umatilla Refuge: As depicted on Map 3 in Chapter 2 of the Draft CCP/EA, Umatilla Refuge includes 6 separate units. The upland portions of these units are all discontinuous, separated by private land and industry. The navigation channels of the Columbia River (an inholding within the Refuge boundary and not subject to any Refuge management authority) separate the aquatic (pool) portions of the Columbia River units from each other. Thus none of the units connects with any of the other units.

None of the units contains upland roadless portions that exceed 5,000 acres, nor can any of the upland portions of any of the units be said to comprise a “roadless island.” There are no adjacent wildernesses.

Based on unit sizes and road locations, only the waters of the Columbia River Unit and the islands located in the Columbia River are being carried forward for analysis (Blalock Islands, Long Walk Island, Sand Dune Islands, Straight Six Islands, and Telegraph Islands). Not all the islands are named, but this analysis is meant to include all the islands that exist within the Umatilla boundary.

B. Solitude or Primitive and Unconfined Recreation Criterion

Which portions of the Refuge or the Study area “have outstanding opportunities for solitude or a primitive and unconfined type of recreation?”

As discussed in Chapter 5 of the Draft CCP/EA, fishing and boating are very popular uses at both Refuges. Fishing is estimated to account for 16,750 visits on McNary (based on FY 2005 estimate, RAPP workbook) and 20,000–25,000 visits on Umatilla, annually. Much of the fishing and almost all of the boating use occurs on the pool. Still others are drawn to the water for hunting or wildlife observation. Public use is heavy on the pool during fishing season, hunting season, and especially during the summer. Recreational boating occurs throughout both pool areas, including on the Refuge portions of the pools. Beaches, especially those at the base of Strawberry Island and on the East Blalock and East Sand Dune Island, attract many users to the islands directly in the summertime. In short, human recreational activity is widespread in the area, and motorized boats of all sizes use the Refuge waters and the nearby navigation channels.

There are few places of true seclusion on any of the islands, due to their small size and generally flat topography. Some of the islands, especially those at Umatilla Refuge, also have virtually no vegetative screening.

While solitude could be found on certain days and in certain places within the areas considered, it would be a stretch to classify the solitude as “outstanding” or the recreational experience as “primitive and unconfined.” In conclusion, none of the island or aquatic areas are considered to meet this criterion.

C. Naturalness criterion

Which portions of the Refuges are “affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable?”

As described above, changes wrought by man are noticeable on the aquatic areas. The aquatic areas themselves consist of a dammed river. Much of the shoreline is unnatural (rip-rapped). Water levels can fluctuate by the hour as dam operators manage the river to meet electricity needs. Huge barges pass regularly through the adjacent navigation channels of the river, creating large wakes. Trains rumble through on both shorelines at least once an hour.

The islands do have a largely natural appearance. Portions of some of the islands may have been grazed or farmed in the past, but these signs of human development are not necessarily substantial to the untrained eye. Although weeds are widespread, most casual observers are not familiar enough with native or weed species to be able to detect the difference. There are no roads, buildings or other structures on the islands. There are signs in some areas, but these are relatively inconspicuous and do not represent a permanent improvement.

In conclusion, all of the islands on both Refuges do meet the naturalness criterion. The pool portions of Peninsula Unit on McNary and the Columbia River Unit on Umatilla do not meet this criterion.

D. Supplemental Values Criterion

Which portions of the Refuges contain supplemental values or features of interest?

All of the islands considered can be said to contain both ecological and scenic values. The islands are important to colonial nesting waterbirds and to waterfowl. Some of the plant communities are relatively intact. The pool portions of the Peninsula unit and the pool portion of the Columbia River Unit both contain some scenic value, but it is not extraordinary in either location. The historic value of the pool portions could possibly be rated highly, given that Lewis and Clark passed through on the waters. Some of the islands are known to have significant cultural resources and cultural value to the Confederated Tribes of the Umatilla Indian Reservation.

E. Summary

Although there are several locations on McNary Refuge and on Umatilla Refuge that meet several of the above criteria for wilderness designation, none meet all the criteria. The availability of opportunities for solitude or primitive and unconfined recreation is the major limiting factor.

Given the area's population and history of landscape modification, and the Refuges' continuing links to the Columbia River hydropower system, restoration of the river or islands' "wilderness character" is not likely to occur.

It is concluded, therefore, that there are no areas on McNary or Umatilla National Wildlife Refuges that qualify as wilderness study areas.

APPENDIX F. CONDITION CLASSES for SHRUB-STEPPE AND RIPARIAN HABITATS

Introduction

This appendix describes condition classes for shrub-steppe and riparian habitat types, two broad habitat targets in the CCP. Condition categories are described according to two or three vegetation structural attributes important to species utilizing this kind of habitat. The team chose to use a 4-tier condition class category system to facilitate the Service’s ability to enumerate acres of habitat that might be in less than stellar condition. While achieving good or excellent habitat conditions as described by various species experts remains an important goal, realistically the Refuges will more likely be able to gradually improve habitats to move them closer to the type of condition favored by the target species. In addition, using management condition categories to track habitats over time will facilitate reporting of acres in Refuges Annual Performance Plan (RAPP).

Shrub Steppe

Fifteen priority shrub-steppe areas (Table F-3) were identified by the planning team for focusing future improvement over the life of the CCP. These areas were selected partly due to size and current condition, i.e. they were already in some form of shrub-steppe rather than agriculture or some other heavily degraded areas such as roads or gravel pits.

Because “shrub-steppe” encompasses a wide variety of different plant communities and structural conditions, and management to promote conditions for some of the inhabitants may conflict with management to promote conditions for other inhabitants, the shrub-steppe target has here been subdivided into two sub-types: shrub-steppe and grasslands. Shrub-steppe is typified by a higher level of native shrub cover—areas chosen to be managed for this subtype should be able to achieve >10% mature sagebrush or bitterbrush component by the end of fifteen years. Grasslands are typified by few or no sagebrush or bitterbrush shrubs.

Objective 7a calls for the Refuges to improve shrub-steppe condition. Approximately half of the priority shrub-steppe areas should be managed to improve conditions for shrub-steppe habitats (Table F-1). The other half should be managed to improve conditions for grassland habitats (Table F-2).

Table F-1. Shrub-Steppe Habitats: Condition Class Categories

Condition Class	Native Shrub Cover *	Understory vegetation cover percent native species	Open Ground Cover	
Poor	< 5 %	<25% native species cover	0 or >75%	
Fair	5-10%	25-50 % native species cover	51-75%	
Good	11-20%	51-75% native species cover	21-50%	
Excellent	21-30%	>75% native species cover	10-20%	

Condition Class	Native Shrub Cover *	Understory vegetation cover percent native species	Open Ground Cover	
Recommended Conditions for Various Target Species				Other species-specific parameters
Sage sparrow (Vander Haegen 2004)	10-25%	> 10% native (exotic annual grasses < 10%)	≥ 10 %	Shrub height generally > 20 inches
Sage thrasher (Altman and Holmes 2000; Vander Haegen 2004a)	5-20% big sagebrush, clumped	5-20% (< 10% cover exotic annual grasses)	≥ 10%	Sagebrush height > 31 inches; < 10% cover other shrubs; patches of 40 acres or greater

* Target composition for native shrub cover is sagebrush and/or bitterbrush predominant

Table F-2. Grassland Habitats: Condition Class Categories

Condition Class	Grass Cover	Percentage native species for all herbaceous plants (grasses and forbs)	Open Ground Cover	
Poor	1-10%	< 25% native species	0 or > 80%	
Fair	11-20%	25-50% native species	61-80%	
Good	21-30%	51-75% native species	50-60%	
Excellent	31-60%	> 75% native species	10-40%	
Recommended Conditions for Various Target Species				Other species-specific parameters
Burrowing owl (Altman and Holmes 2000)	Native grass cover < 40% and < 16 inches tall		> 40%, including bare and/or cryptogamic crust	Burrow providers, 660 ft. buffer zone around nest burrows with no pesticide applications or disturbances allowed.
Grasshopper sparrow (Altman and Holmes 2000)	> 15% (bunchgrasses)	Species composition > 60% of grasses present are native bunchgrasses		Bunchgrass height > 10"; native shrubs < 10%; patches > 100 acres or multiple patches > 20 acres
Long-billed curlew (Denchant et al. 2003) See also Colorado PIF and Monatana Bird Conservation Plan				Shrubs or areas of cheatgrass intermixed with patches of Sandberg's bluegrass (<i>Poa sandbergii</i>) Shorter vegetation (< 24 cm), nest density was positively correlated with percent cover of bare ground and with the evenness of forb height. Limit grasshopper or insecticide use

Table F-3. Descriptions of fifteen shrub-steppe priority areas for management under the CCP

Refuge Area	Acres	Condition	Area Description
McNary Refuge			
McNary Headquarters Unit 3	385	Poor	Little to no sagebrush or bitterbrush present. Native bunchgrass cover very patchy. Undesirable invasives predominant in understory.
McNary Headquarters Unit 2	214	Poor	Little to no sagebrush or bitterbrush present. Native bunchgrass cover patchy. Undesirable invasives predominant in understory.
Badger Island	39	Good	Island has good shrub cover. Data on understory currently lacking,
Wallula Unit North	510	Fair	Much of the sagebrush and bitterbrush on this area consumed in 2001 Port Kelly wildfire. An area of good sagebrush cover and some bitterbrush that was spared by the fire remains around Sanctuary Pond. Sagebrush and bitterbrush seedlings planted in fall 2001 – sagebrush has good survival, bitterbrush did not. Understory vegetation primarily nonnative grasses and forbs. Some patchy areas of native bunchgrasses.
Wallula Unit South	604	Poor	Much of the sagebrush and bitterbrush consumed by 2001 Port Kelly wildfire. Some patchy areas of good native bunchgrass cover, otherwise nonnative plants predominant
Stateline Unit	743	Fair	Scattered tracts along east bank of Columbia River ranging. Undisturbed areas have good bunchgrass and/or sagebrush/bitterbrush cover. Areas disturbed by fire and/or grazing have little shrub cover and a predominance of invasives in the understory.
Juniper Canyon Unit	199	Fair	Isolated tract around Juniper Canyon Creek and riparian area similar to tract on Stateline Unit.
Total Acres	2,694		

Refuge Area	Acres	Condition	Area Description
Umatilla Refuge			
Paterson Unit	2,584	Fair	Largest block of shrub-steppe habitat on Complex. Wildfire damaged about 500 acres of shrub-steppe in 2002 taking out sagebrush and bitterbrush. Area seeded with native grasses and sagebrush seedlings planted in fall 2002. Large areas still dominated by invasives. Excellent bunchgrass cover on a portion of unit north of RR tracks.
Ridge Unit	208	Poor	Narrow block on north side of Columbia River. Wildfire damaged
Whitcomb Unit	340	Poor	Area damaged by wildlife in 2000.
Crow Butte Unit	692	Fair	Damaged by wildfire. Most sagebrush burned off.
Blalock Islands	102	Good	Good sagebrush cover and native understory.

McCormack Unit Kathy's Pond	624	Fair	East of Paterson Ferry Road. Shrub cover, mostly rabbitbrush with some sagebrush and bitterbrush. Understory dominated by non-natives.
McCormack Unit South	1,667	Fair	About 1000 acres burned in wildfire in 2000. Much sagebrush and bitterbrush consumed. High curlew use for nesting in portions of area. Some burrowing owl use as well. Maintain as grassland in these areas.
McCormack Unit Desert Area	592	Fair	Good shrub cover but mostly rabbitbrush. Patchy native bunchgrass cover.
Total Acres	6,809		

Riparian

Ten priority riparian areas were identified on McNary and Umatilla Refuges totaling 3,053 acres. Objective 5a under Goal 5 in the CCP proposes improving the condition of up to 30% of this acreage, i.e. from poor to fair.

Table F-4 describes the structural conditions that should be achieved for riparian tree-dominated habitats. Riparian shrub-dominated habitats should be managed to attain the structural conditions described under Table F-5. Table F-6 lists the riparian areas to be managed under the CCP.

Table F-4. Riparian Tree-Dominated Habitats: Condition Class Categories

Condition Class	Overstory Canopy Cover*	Overstory Trees Age Classes	Percent of Native Forb and Grass Cover Comprised of Natives	Native Understory Shrub Cover	
Poor	< 5 %	1	<25%	< 10%	
Fair	5-20 %	1-2	25-50%	11-20%	
Good	21-30%	Several	51-75%	21-50%	
Excellent	31-60%	Several	> 75%	51-80%	
Recommended Conditions for Various Target Species					Other species-specific parameters
Bullock's Oriole (Altman and Holmes 2000)	30-60%	Protect large gallery cottonwoods			

* (native and nonnative cottonwood, peachleaf willow, pacific willow, white alder, etc)

Table F-5. Riparian Shrub-Dominated Habitats: Condition Class Categories

Condition Class	Percent of Native Forb and Grass Cover	Native Shrub Cover	Shrub Height	
Poor	<25%?	< 10%?		
Fair	25-50%?	11-20%?		

Condition Class	Percent of Native Forb and Grass Cover	Native Shrub Cover	Shrub Height	
Good	51-75%?	21-50%?		
Excellent	> 75%?	51-80?		
Recommended Conditions for Various Target Species				Other species-specific parameters
Lazuli Bunting (Altman and Holmes 2000)	>25% and <70%	>25% and <70%		Interspersion of shrub patches and herbaceous openings
Willow Flycatcher (Altman and Holmes 2000)	interspersed	40-80% (patches 10 square meters in size)	>3 feet high	Patches exceeding 5 acres, preferably 20 acres or more. Tree cover <30%.

Table F-6. Descriptions of riparian priority areas for management under the CCP

Refuge Area	Acres	Condition	Area Description
McNary Refuge			
McNary Headquarters Unit	41	Poor	Area has some large cottonwoods and willow shrubs, but also quite a bit of Russian olive and even a few salt cedar shrubs.
Burbank Sloughs	279	Poor	Woody cover a mix of willow, cottonwood, Russian olive, and false indigo.
Foundation Island	19	Good	The island is small but large cottonwood trees are present and provide nesting habitat for cormorants and herons.
Peninsula Unit	125	Fair	Large cottonwoods present and areas of good willow cover. False indigo encroaching on shoreline.
Two Rivers Unit	128	Fair	Good willow cover and a number of large cottonwoods.
Wallula Unit	870	Poor	Large cottonwoods and good willow coverage in some areas. Much of area (700 acres) burned in Port Kelly wildfire.
Crescent Island	8	Fair	
Juniper Canyon Unit	27	Good	Good willow cover, need more information on understory. Trespass cattle grazing could be a problem.
Total Acres	1497		
Umatilla Refuge			
Paterson Unit	585	Good	Large cottonwoods and good willow cover. Wildfire damaged about 100 acres in 2002.
Whitcomb Unit	251	Fair	
McCormack Unit	553	Poor	Many large cottonwoods dying or dead with little to no regeneration around McCormack Unit due to past wildfire and lowering of John Day pool. Willows overbrowsed by deer. Areas along river in better

Refuge Area	Acres	Condition	Area Description
			shape but invaded by false indigo.
Longwalk Islands	146	Fair	Large cottonwoods and good willow cover.
Boardman Unit	21	Fair	Some large cottonwoods, but also large areas of Russian olive.
Total Acres	1556		

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APPENDIX G: COMPLIANCE

The following executive orders and legislative acts have been reviewed as they apply to implementation of the Comprehensive Conservation Plan (CCP) for McNary and Umatilla National Wildlife Refuges, located in Oregon and Washington states.

- **National Environmental Policy Act (1969).** The planning process has been conducted in accordance with National Environmental Policy Act Implementing Procedures, Department of Interior and Service procedures, and has been performed in coordination with the affected public. The requirements of the National Environmental Policy Act (42 U.S.C. §4321 et seq.) and its implementing regulations in 40 CFR Parts 1500-1508 have been satisfied in the procedures used to reach this decision. These procedures included: the development of a range of alternatives for the CCP; analysis of the likely effects of each alternative; and public involvement throughout the planning process.

An environmental assessment (EA) was prepared for the project that integrated the CCP management objectives and alternatives into the NEPA document and process. The Draft CCP and EA shall be released for a 30-day public comment period in December 2006. The affected public shall be notified of the availability of these documents through a Federal Register notice, news releases to local newspapers, the Service's refuge planning website, and a planning update. Copies of the Draft CCP/EA and/or planning updates shall be distributed to an extensive mailing list. In addition, the Service shall host two public open houses. The CCP shall be revised based on public comment received on the draft documents.

- **National Historic Preservation Act (1966).** The management of archaeological and cultural resources of the Refuge will comply with the regulations of Section 106 of the National Historic Preservation Act. No historic properties are known to be affected by the proposed action based on the criteria of an effect or adverse effect as an undertaking defined in 36CFR800.9 and Service Manual 614FW2, however, determining whether a particular action has a potential to affect cultural resources is an ongoing process that occurs as step-down and site-specific project plans are developed. Should historic properties be identified or acquired in the future, the Service will comply with the National Historic Preservation Act if any management actions have the potential to affect any these properties.
- **Endangered Species Act.** This Act provides for the conservation of threatened and endangered species of fish, wildlife, and plants by Federal action and by encouraging the establishment of state programs. Section 7 of the Act requires consultation before initiating projects which affect or may affect endangered species; consultation on specific projects will be conducted prior to implementation.
- **National Wildlife 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 (Public Law 105-57, Improvement Act) requires the Service to develop and implement a comprehensive conservation plan for each refuge. The CCP identifies and describes Refuge purposes; Refuge vision and goals; fish, wildlife, and plant populations and related habitats; archaeological and cultural values of the Refuge; issues that may affect populations and

habitats of fish, wildlife, and plants; actions necessary to restore and improve biological diversity on the Refuge; and opportunities for wildlife-dependent recreation, as required by the Act.

During the CCP process the refuge manager evaluated all existing and proposed refuge uses at both McNary and Umatilla Refuges. Priority wildlife-dependent uses (hunting, fishing, wildlife observation and photography, environmental education and interpretation) are considered automatically appropriate under Service policy and thus exempt from appropriate uses review. Uses found inappropriate included: geocaching, hang gliding/Para gliding, rock climbing, off-road use motorized, off-road use non-motorized, waterskiing, jetskiis/personal watercraft, camping, swimming/beach use, and dog training. The following uses were found to be appropriate: boating, horseback riding, farming, and research.

Compatibility determinations have been prepared for the following uses: wildlife observation and photography; waterfowl hunting, upland game bird hunting and other migratory bird hunting; big game hunting; fishing; environmental education and interpretation; boating; camping; horseback riding; dog training; swimming and beach use; farming; and research. All of these uses except camping, dog training, and swimming/beach use were found to be compatible with Refuge purposes and the System mission with stipulations specified in each of the compatibility determinations.

- **Wilderness Act.** The Service has evaluated the suitability of the Refuges for wilderness designation (Appendix E) and has found there are no areas that are suitable for wilderness designation.
- **Executive Order 11988. Floodplain Management.** Under this order Federal agencies "shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains." Dams effectively preclude natural flooding in the Columbia River system; still, the CCP is consistent with Executive Order 11988 because CCP implementation would assist in restoring natural ecological values in the historic Columbia River floodplain.
- **Executive Order 11990. Protection of Wetlands.** The CCP is consistent with Executive Order 11990 because CCP implementation would potentially enhance and restore wetland resources on the refuge.
- **Executive Order 12372. Intergovernmental Review.** Coordination and consultation with affected Tribal, local and State governments, other Federal agencies, and local interested persons has been completed through personal contact by Service Planners, Refuge staff, and Refuge Supervisors.
- **Executive Order 12898. Federal Actions to Address Environmental Justice in Minority and Low-Income Populations.** All Federal actions must address and identify, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, low-income populations, and Indian Tribes in the United States. The CCP was evaluated and no adverse human health or environmental effects were identified for minority or low-income populations, Indian Tribes, or anyone else.

- **Executive Order 13186. Responsibilities of Federal Agencies to Protect Migratory Birds.** This Order directs departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act. A provision of the Order directs Federal agencies to consider the impacts of their activities, especially in reference to birds on the Fish and Wildlife Service’s list of Birds of Conservation (Management) Concern (BCC). It also directs agencies to incorporate conservation recommendations and objectives in the North American Waterbird Conservation Plan and bird conservation plans developed by Partners in Flight (PIF) into agency planning. The effects of all alternatives to Refuge habitats used by migratory birds were assessed within the CCP and EA.

Chief, Branch of Refuge Planning

Date

APPENDIX H: GLOSSARY

Abbreviations

Act	National Wildlife Refuge System Improvement Act of 1997 (also Improvement Act or NWRSA)
ADA	Americans with Disabilities Act
AHPA	Archaeological and Historic Preservation Act
ARPA	Archaeological Resources Protection Act
ATV	All Terrain Vehicles
BLM	Bureau of Land Management
CCP	Comprehensive Conservation Plan
CFR	Code of Federal Regulations
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
EA	Environmental Assessment
EE	Environmental Education
FCRPS	Federal Columbia River Power System
FWS	U.S. Fish and Wildlife Service (also, Service, USFWS)
GAP	Gap Analysis Program
GIS	Geographic Information System
HMP	Habitat Management Plan
HMU	Habitat Management Unit
IAC	Interagency Committee for Outdoor Recreation (Washington State)
ICBEMP	Interior Columbia Basin Ecosystem Management Project
Improvement Act	National Wildlife Refuge System Improvement Act of 1997(also Act, NWRSA)
LE	Law Enforcement
MAPS	Monitoring Avian Productivity System
MMS	Maintenance Management System
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NAGPRA	Native American Graves Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
NWRS	National Wildlife Refuge System
NWRSA	National Wildlife Refuge System Improvement Act of 1997
ODFW	State of Oregon Department of Fish and Wildlife
PIF	Partners in Flight
PILT	Payment in lieu of taxes.
R1	Region 1 of the FWS (WA, OR, CA, HI, NV, ID)
RONs	Refuge Operating Needs System
ROS	Recreational Opportunity Spectrum
SCORP	Statewide Comprehensive Outdoor Recreation Plan
Service	U.S. Fish and Wildlife Service (also FWS, USFWS)
TES	Threatened and Endangered Species
TNC	The Nature Conservancy
USFWS	U.S. Fish and Wildlife Service
WDFW	State of Washington Department of Fish and Wildlife

Glossary

Alluvium. Sediment transported and deposited in a delta or riverbed by flowing water.

Adaptive Management. Refers to a process in which policy decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in management plan. Analysis of results help managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.

Alternative. Alternatives are different means of accomplishing refuge purposes and goals and contributing to the System mission (draft Service Manual 602 FW 1.5). The no action alternative is current refuge management while the action alternatives are all other alternatives.

Approved Refuge Boundary. A National Wildlife Refuge boundary approved by the National or Regional Fish and Wildlife Service Director. Within this boundary, the Service may negotiate with landowners to acquire lands not already owned by the Service. (modified from R1 Landowner guide, USFWS Division of Refuge Planning)

Archaeology. The scientific study of material evidence remaining from past human life and culture (Webster's II).

Basalt. A dark dense volcanic rock (Webster's II).

Biological Diversity (also Biodiversity). The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur (USFWS Manual 052 FW 1. 12B). The System's focus is on indigenous species, biotic communities, and ecological processes.

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. (NWRS Biological integrity policy)

Categorical Exclusion. A category of actions that do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a Federal agency pursuant to the National Environmental Policy Act (40 CFR 1508.4).

Colonial nesting birds. Birds that nest in groups. At these refuges, most of the colonial nesting birds are waterbirds, such as gulls, terns, cormorants, and herons.

Columbia Basin. The region drained by the Columbia River system.

Columbia Plateau. An approximately 80,000 square mile depression in the earth's crust located east of the Cascades and west of the Blue Mountains in Oregon and Washington. The Plateau was formed by the immense weight of over 200 lava flows piling up in the broad valleys of the Columbia River Basin between 6 and 16 million years ago. (Turnbull CCP/EA, Chapter 3, Section 3.1)

Compatible Use. A wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the Mission of the System or the purposes of the refuge (Service Manual 603 FW 3.6). A compatibility determination supports the selection of compatible uses and identifies stipulations or limits necessary to ensure compatibility.

Composition (plant). The inventory of plant species found in any particular area.

Comprehensive Conservation Plan. A document that describes the desired future conditions of the refuge, and provides long-range guidance and management direction for the refuge manager to accomplish the purposes of the refuge, contribute to the mission of the System, and to meet other relevant mandates (Service Manual 602 FW 1.5).

Connectivity. The arrangement of habitats that allows organisms and ecological processes to move across the landscape; patches of similar habitats are either close together or linked by corridors of appropriate vegetation. The opposite of fragmentation. (Turnbull NWR Habitat Management Plan)

Conservation Targets (also Priority Species, Species Groups, and Communities). The resources, comprised of ecological systems, ecological communities, species, species groups, or other natural resources, selected as the focus of conservation action at the Refuges over the life of the CCP. (adapted from Low, Functional Landscapes, 2003)

Consumptive use. Recreational activities, such as hunting and fishing that involve harvest or removal of wildlife or fish, generally to be used as food by humans.

Contaminants. or Environmental contaminants - Chemicals present at levels greater than those naturally occurring in the environment resulting from anthropogenic or natural processes that potentially result in changes to biota at any ecological level. (USGS, assessing EC threats to lands managed by USFWS) Pollutants that degrade other resources upon contact or mixing. (Adapted from Webster's II)

Cooperative Agreement. An official agreement between two parties. In this case, the term refers to agreements that provide McNary or Umatilla Refuges authority to manage lands actually owned by the Army Corps of Engineers.

Cover. The estimated percent of an area, projected onto a horizontal surface, occupied by a particular plant species.

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

Cultural Resource Inventory. A professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined geographic area. Inventories may involve various levels, including background literature search, comprehensive field examination to identify all exposed physical manifestations of cultural resources, or sample inventory to project site distribution and density over a larger area. Evaluation of identified cultural resources to determine eligibility for the National Register follows the criteria found in 36 CFR 60.4 (Service Manual 614 FW 1.7).

Decadence. Marked by decay or decline. For plants, showing little or no new growth. Adapted from Merriam-Webster online dictionary.

Deciduous. Describes trees and shrubs which shed all of their leaves each year.

Disturbance. Significant alteration of habitat structure or composition. May be natural (e.g., fire) or human-caused events (e.g., aircraft overflight).

Ecosystem. A dynamic and interrelating complex of plant and animal communities and their associated non-living environment.

Ecosystem Management. Management of natural resources using system-wide concepts to ensure that all plants and animals in ecosystems are maintained at viable levels in native habitats and basic ecosystem processes are perpetuated indefinitely.

Embayment. A bay or a conformation resembling a bay. (Merriam-Webster online dictionary)

Environmental Assessment. A concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).

Edaphic. Resulting from or influenced by the soil rather than the climate. (yourdictionary.com)

Endangered Species (Federal). A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.

Endangered Species (State). A plant or animal species in danger of becoming extinct or extirpated in the State of Washington or the State of Oregon within the near future if factors contributing to its decline continue. Populations of these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.

Environmental Education Field Sites. Outdoor locations where groups of students engage in hands-on activities within an environmental education curriculum.

Environmental Health. Composition, structure, and functioning of soil, water, air, and other abiotic features comparable with historic conditions, including the natural abiotic processes that shape the environment. (NWRS Biological integrity policy)

Enhance. To improve the condition of an area or habitat, usually for the benefit of certain native species.

Extirpated. Species no longer inhabiting an area that they historically occupied.

Finding of No Significant Impact (FONSI). A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, that briefly presents why a Federal action will have no significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared (40 CFR 1508.13).

Fee hunt (also reservation hunt; regulated hunt). Areas containing designated blinds for waterfowl hunting, which are allocated via a lottery system and available for a fee.

Fluvial processes. Referring to the physical interaction of flowing water and the natural channels of rivers and streams. Adapted from Britannica Online Encyclopedia.

Fossorial. Adapted to digging or burrowing. Adapted from Merriam-Webster Online Dictionary.

Free roam hunt (also first come-first served hunt or free hunt). Areas open to waterfowl hunting without restrictions on the number or distribution of hunting sites (except that hunters must space themselves 200 yards apart).

GAP analysis. Analysis done to identify and map elements of biodiversity that are not adequately represented in the nation's network of reserves. It provides an overview of the distribution and conservation status of several components of biodiversity, with an emphasis on vegetation and terrestrial vertebrates. (Cassidy et al.1997)

Goal. Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units (Draft Service Manual 620 FW 1.5).

Habitat. Suite of existing environmental conditions required by an organism for survival and reproduction. The place where an organism typically lives.

Habitat Management Plan. A plan that guides refuge activities related to the maintenance, restoration, and enhancement of habitats for the benefit of wildlife, fish, and plant populations.

Habitat Restoration. Management emphasis designed to move ecosystems to desired conditions and processes, and/or to healthy ecosystems.

Headquarters. An administrative center.

Herptiles. Referring to amphibians and reptiles.

Historic Conditions. Composition, structure, and functioning of ecosystems resulting from natural processes that we believe, based on sound professional judgment, were present prior to substantial human related changes to the landscape. (NWRS Biological integrity policy)

Hydrograph. The annual flow pattern of a river.

Hydrologic Regime. The normal pattern of rainfall and runoff occurring in an area.

Indicator. A measurable characteristic of a key ecological attribute that strongly correlates with the status of the key ecological attribute.

Inholding. Refers to lands within an Approved Refuge Boundary that are not owned by the U.S. Fish and Wildlife Service. These can be private lands or lands owned by city, county, state, or other federal agencies.

Interpretation. A teaching technique that combines factual information with stimulating explanation. (yourdictionary.com) Frequently used to help people understand natural and cultural resources.

Interpretive Trail. A trail with informative signs, numbered posts that refer to information in a brochure, or where guided talks are conducted for the purpose of providing factual information and stimulating explanations of what visitors see, hear, feel, or otherwise experience while on the trail.

Invasive. Nonnative species disrupting and replacing native species (thebiotechdictionary.com)

Inventory. A survey of the plants or animals inhabiting an area.

Inversion. A reversal of the normal behaviour of temperature in the region of the atmosphere nearest the Earth's surface, in which a layer of cool air at the surface is overlain by a layer of warmer air. (Under normal conditions air temperature usually decreases with height.) (Britannica online dictionary).

Issue. Any unsettled matter that requires a management decision (e.g., a Service initiative, opportunity, resource management problem, a threat to the resources of the unit, conflict in uses, public concern, or the presence of an undesirable resource condition) (Draft Service Manual 602FW 1.5).

Key ecological attribute. Those aspects of the environment, such as ecological processes or patterns of biological structure and composition that are critical to sustain the long-term viability of the target. These key ecological attributes are further divided into measurable **indicators** .

Keystone species. Species who enrich ecosystem function in a unique and significant manner through their activities, and the effect is disproportionate to their numerical abundance. Their removal initiates changes in ecosystem structure and often loss of diversity. These keystones may be habitat modifiers (i.e. Cottonwoods or beavers), predators (ie. puma and coyote) or herbivores (i.e. prairie dog). (Sonoran Desert Conservation Plan).

Lacustrine wetlands. Those areas that are generally permanently flooded and lacking trees, shrubs, or emergent vegetation with greater than 30% areal coverage and measuring greater than 20 acres. Smaller areas than this can be included if the water depth in the deepest part of the basin exceeds 6.6 feet at low water. (NWI)

Landform. A natural feature of a land surface (yourdictionary.com)

Limnology. The scientific study of bodies of freshwater such as lakes. (yourdictionary.com)

Lithic Debris Scatter. Flakes and fragments of cryptocrystalline silica, or sometimes basalt and obsidian, indicating the manufacture of projectile points, scattered about a site that probably represents a temporary Native American campsite. (adapted from Holstine et al.)

Maintenance. The upkeep of constructed facilities, structure and capitalized equipment necessary to realize the originally anticipated useful life of a fixed asset. Maintenance includes preventative maintenance; cyclic maintenance; repairs; replacement of parts, components, or items of equipment, periodic condition assessment; periodic inspections, adjustment, lubrication and cleaning (non-janitorial) of equipment; painting, resurfacing, rehabilitation; special safety inspections; and other actions to assure continuing service and to prevent breakdown.

Maintenance Management System (MMS). A national database of refuge maintenance needs and deficiencies. It serves as a management tool for prioritizing, planning, and budgeting purposes. (RMIS descriptions)

Migration. The seasonal movement from one area to another and back.

Migratory birds. Those species of birds listed under 10.13 of 50 CFR chapter 1. USFWS, DOI. (11/23/2001 draft policy).

Monitoring. The process of collecting information to track changes of selected parameters over time.

National Environmental Policy Act of 1969. Requires all Federal agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision making (from 40 CFR 1500).

Native. With respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem. (NWRS Biological integrity policy)

National Register of Historic Places. The Nation's master inventory of known historic properties administered by the National Park Service. Includes buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archeological, or cultural significance at the national, state, and local levels. (USFWS, Considering Cultural Resources)

National Wildlife Refuge. A designated area of land, water, or an interest in land or water within the System.

National Wildlife Refuge System. Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife, including species threatened with extinction; all lands, waters, and interests therein administered by the Secretary as wildlife refuges; areas for the protection and conservation of fish and wildlife that are threatened with extinction; wildlife ranges; games ranges; wildlife management areas; or waterfowl production areas.

National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). A federal law that amended and updated the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668).

Nested or benefiting resources. Those species, species groups, or resources expected to benefit from actions taken for the conservation target.

Non-attainment areas. A geographic area that is not in compliance with the National Ambient Air Quality Standards for a particular pollutant. (Turnbull Habitat Management Plan)

Nonconsumptive recreation. Recreational activities that do not involve harvest, removal or consumption of fish, wildlife or other natural resources.

Noxious Weed. A plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive or difficult to manage; parasitic; a carrier or host of serious insect or disease; or non-native, new, or not common to the United States, according to the Federal Noxious Weed Act (PL 93-639), a noxious weed is one that causes disease or had adverse effects on man or his environment and therefore is detrimental to the agriculture and commerce of the United States and to the public health.

Objective. A concise target statement of what will be achieved, how much will be achieved, when and where it will be achieved, and who is responsible for the work. Objectives are derived from goals and provide the basis for determining management strategies. Objectives should be attainable and time-specific and should be stated quantitatively to the extent possible. If objectives cannot be stated quantitatively, they may be stated qualitatively (Draft Service Manual 602 FW 1.5).

Operations. Activities related to the normal performance of the functions for which a facility or item of equipment is intended to be used. Costs such as utilities (electricity, water, sewage) fuel, janitorial services, window cleaning, rodent and pest control, upkeep of grounds, vehicle rentals, waste management, and personnel costs for operating staff are generally included within the scope of operations.

Pacific Flyway. One of several major north-south travel corridors for migratory birds. The Pacific Flyway is west of the Rocky Mountains.

Palustrine Wetlands. Wetlands that may or may not be permanently flooded and typically recognized by the presence of trees, shrubs, or herbaceous emergent vegetation. May include non-vegetated areas measuring less than 20 acres in extent and with water depths shallower than 6.6 feet in the deepest part of the basin at low water. (Cowardin et al. 1979)

Payment in Lieu of Taxes (PILT). See Revenue Sharing.

Piscivorous. Wildlife that consume fish as part of their normal diet.

Planning Team. The primary U.S. Fish and Wildlife staff and others who played a key role in developing and writing the CCP

Plant Association. A classification of plant communities based on the similarity in dominants of all layers of vascular species in a climax community.

Plant Community. An assemblage of plant species unique in its composition; occurs in particular locations under particular influences; a reflection or integration of the environmental influences on the site such as soils, temperature, elevation, solar radiation, slope, aspect, and rainfall; denotes a general kind of climax plant community (e.g., ponderosa pine).

Preferred Alternative. This is the alternative determined [by the decision maker] to best achieve the Refuge purpose, vision, and goals; to best contribute to the Refuge System mission; to best address the significant issues; and to be consistent with principles of sound fish and wildlife management.

Priority Public Uses. Hunting, fishing, wildlife observation and photography, environmental education and interpretation, where compatible, are identified under the National Wildlife Refuge System Improvement Act of 1997 as the six priority public uses of the National Wildlife Refuge System.

Public. Individuals, organizations, and groups; officials of Federal, State, and local government agencies; Indian tribes; and foreign nations. It may include anyone outside the planning team. It includes those who may or may not have indicated an interest in Service issues and those who may be affected by Service decisions.

Raptor. A category of carnivorous birds, most of which have heavy, sharp beaks, strong talons, and take live prey (e.g., peregrine falcon, bald eagle).

Refuge Operating Needs System (RONS). A national database of unfunded refuge operating needs required to meet and/or implement station goals, objectives, management plans, and legal mandates. It is used as a planning, budgeting, and communication tool describing funding and staffing needs of the Refuge System. (RMIS descriptions)

Refuge Purpose(s). The purpose(s) 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, a refuge unit, or refuge subunit (Draft Service Manual 602 EW 1.5).

Restore. To bring back to a former or original condition. (Webster's II)

Revenue Sharing. Service payments (government lands are exempt from taxation) made to counties in which national wildlife refuges reside. These payments may be used by the counties for any governmental purpose such as, but not limited to, roads and schools. (USFWS Revenue sharing pamphlet).

Riparian. Refers to an area or habitat that is transitional from terrestrial to aquatic ecosystems; including streams, lakes wet areas, and adjacent plant communities and their associated soils which have free water at or near the surface; an area whose components are directly or indirectly attributed to the influence of water; or relating to a river; specifically applied to ecology, "riparian" describes the land immediately adjoining and directly influenced by streams. For example, riparian vegetation includes any and all plant life growing on the land adjoining a stream and directly influenced by the stream.

Run-of-the-river reservoir. A reservoir created by a dam that is not designed for active storage of water. The operating range of the dam permits water depth fluctuations to vary by less than five feet. (adapted from Overview of Water Supply paper, Federal Caucus Website, www.salmonrecovery.gov).

Shorebirds. Avian species of the order Chardrii.

Shrub-Steppe. Arid land characterized in its native form by bunchgrasses and sagebrushes where soil and moisture limit the growth of trees. (modified from Franklin and Dyrness, 1973)

Songbirds (Also Passerines). A category of medium to small, perching landbirds. Most are territorial singers and migratory.

Source. An extraneous factor that causes a stress (the most proximate cause). (TNC 2000)

Step-down Management Plans. Step-down management plans provide the details necessary to implement management strategies identified in the Comprehensive Conservation Plan (Draft Service Manual 602 FW 1.5).

Strategy. A specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives (Service Manual 602 FW 1.5).

Stress. The impairment or degradation of a key ecological attribute for a **conservation target**. (TNC 2000)

Threatened Species (Federal). Species listed under the Endangered Species Act that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

Threatened Species (State). A plant or animal species likely to become endangered in Washington within the near future if factors contributing to population decline or habitat degradation or loss continue.

Vegetation Type (Also Habitat Type, Forest Cover Type). A land classification system based upon the concept of distinct plant associations.

Viewpoint. A designated point that provides an opportunity to see wildlife or habitats of interest. The point may or may not be “supported” with an interpretive sign. Usually the viewpoint is supported by a pullout or a parking area. (CCP Team definition, 9/10/02)

Vision Statement. A concise statement of the desired future condition of the planning unit, based primarily upon the System mission, specific refuge purposes, and other relevant mandates (Service Manual 602 FW 1.5).

Waterfowl. Resident and migratory ducks, geese, and swans.

Watershed. The region or area drained by a river system or other body of water. (Webster’s II) See also subwatershed.

Wetlands. Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water at some time during the growing season of each year. (Service Manual 660 FW 2; Cowardin 1979) **Permanent wetland** - a wetland basin or portion of a basin that is covered with water throughout the year in all years except extreme drought. Typically the basin bottom is vegetated with submerged aquatic plant species including milfoil, coontail, and pondweeds. **Semi-permanent wetland** - a wetland basin or portion of a basin where surface water persists throughout the growing season of most years. Typical vegetation is composed of cattails and bulrushes. **Seasonal wetland** - a wetland basin or portion of a basin where surface water is present in the early part of the growing season but is absent

by the end of the season in most years. Typically vegetated with sedges, rushes, spikerushes or burreed.
(Turnbull Habitat Management Plan)

Wildlife-dependent recreation. Hunting, fishing, wildlife observation and photography, environmental education and interpretation. These are also referred to as the priority public uses of the National Wildlife Refuge System.

APPENDIX I. INVENTORY, MONITORING, AND RESEARCH NEEDS

Inventory, monitoring, and research are essential components of refuge management. For the biological program, knowledge of species occurrence, abundance, and habitat needs and availability is necessary to help plan, guide, and assess habitat management activities. The McNary and Umatilla Comprehensive Conservation Plan lists a number of proposed strategies under various biological goals and objectives. The table below summarizes these and lists the resources needed to complete the inventory or monitoring effort called for in the objective/strategy.

Inventory, Monitoring, and Research Objectives or Strategies in the Preferred Alternative

Objective	Strategy	Resources Needed	Timetable
2a. Increase Available Delta mudflat	Monitor expansion of invasives and other plants and conduct chemical and mechanical treatments, as needed, to maintain mudflats. (Alternative,2)	Biologist, Bio Techs and/or Volunteers; chemicals and applicator; mechanical equipment and operator	Every two years following CCP implementation
2c. Maintain and Increase Long-billed Curlew Habitat	Continue to identify and quantify existing curlew nesting and foraging areas. (Alternatives 1,2,3,4)	Biologist, Bio Techs and/or Volunteers	Initiate within first year of CCP implementation
2c. Maintain and Increase Long-billed Curlew Habitat	Monitor populations and/or nest success, using transects or other standardized techniques. (Alternatives 1,2,3,4)	Biologist, Bio Techs and/or Volunteers	Initiate within first year of CCP implementation
2d. Conduct shorebird studies	Evaluate existing literature and consult with experts regarding macroinvertebrate prey items. Conduct inventory of macroinvertebrates at the primary and alternate foraging sites to determine and compare species present, densities, etc. (Alternative 2)	Biologist, Bio Techs and/or Volunteers	Within first 10 years of implementation of CCP
3a. Salmon backwater enhancements	Assess the biological benefits (both waterfowl and fisheries) of restoring side-channel fish habitats; coordinate with fishery biologists.	Biologist, Bio Techs and/or Volunteers	Within first 10 years of implementation of CCP
3b. Conduct Inventory for Certain Rare Species	Identify potential habitat areas and conduct targeted inventory for several species/species groups. (Alternatives 2 and 3)	Biologist, Bio Techs and/or Volunteers; funding; equipment	Within first 10 years of implementation of CCP
3c. Conduct baseline inventory for small mammals	Conduct a one-week long baseline inventory in approximately 6 shrub-steppe priority areas to collect initial data on the presence, abundance, and diversity of small mammals. (Alternatives 2 and 3)	Biologist, Bio Techs and/or Volunteers; trapping equipment	Within first 10 years of implementation of CCP

Objective	Strategy	Resources Needed	Timetable
5a. Improve Condition of Riparian Habitat	Monitor bird species and richness by expanding the current MAPS station and adding point counts and nest searches, including sampling at Wallula Delta. Track changes in species richness, abundance, and productivity over time, aiming for a 10% increase in species richness and 20% increase in passerine productivity from 2005 levels. (Alternative 2)	Biologist & Bio Techs and Volunteers, mists nets and banding equipment	Initiate within first 5 years of CCP implementation and conduct throughout remaining life of the CCP
4a. Increase Amount of High Quality Shallow Marsh	Inventory plant communities and annually monitor effectiveness of management treatments. (Alternatives 1,2)	Biologist, Bio Techs and/or Volunteers	Initiate within first 5 years pf CCP implementation.
4b. Maintain and Improve Aquatic Bed Habitats	Conduct inventory of submerged plants; obtain bathymetric data; experiment with water drawdowns. (Alternatives 1 and 2)	Biologist, Bio Techs and/or Volunteers	Within 2 years of CCP implementation and every 5 years following.
6a. Maintain waterbird population	Monitor size of nesting and Waterbird colonies; identify potential threats to production; coordinate with other agencies and interested parties. (Alternatives 2 and 3)	Biologist, Bio Techs and/or Volunteers	
7b. Protect and restore Burrowing Owls	Investigate the possibility of transplanting ground squirrels into appropriate areas; experiment with the creation of artificial burrows; identify historic sites that may have been occupied by colonies on the Refuges.. (Alternatives 2 and 3)	Biologist, Bio Techs and/or Volunteers	Initiate within first five years of CCP implementation
7d. Bitterbrush Improvement	Review, consult with experts, and if necessary initiate research studies to explore causes of bitterbrush decadence and death at Umatilla Refuge. (Alternatives 2 and 3)	Biologist & Bio Techs and Volunteers; research funding	Within first 5 years of CCP implementation
8b. Conduct baseline inventory of rocky habitats	Conduct baseline inventory of plant and wildlife resources (rare plants, birds, bats, herptiles) in rocky habitats with focus on species presence, abundance, and locations of any key functional areas. (Alternatives 1, 2, and 3)	Biologist, Bio Techs and/or Volunteers	Initiate within first five years of CCP implementation
11b. Fishing Awareness	Conduct surveys to determine needs of fishing public and their demography. (Alternatives 1 and 2)	Biologist, Bio Techs, Public Use Specialist, and/or Volunteers	Within first 5 years of CCP implementation

APPENDIX J. CCP TEAM MEMBERS

The CCP was developed primarily by the core team members. The team sought expert advice and review from other professionals from several different agencies and organizations. Extended team members provided critical input during field reviews early in the process and continued to provide review and comment as the document evolved. Core and extended team members are listed below.

In addition to the team members listed below, U.S. Fish and Wildlife Service staff members Steve Moore, Ben Harrison, Fred Paveglio, Jane Bardolf, and Mike Marxen were of particular assistance in critical review of the plan. Kendra Maty developed most of the CCP maps.

Core Team Members

Name	Role (role on team listed first, actual title if different is in parentheses)	Address
Gary Hagedorn	Project Leader	U.S. Fish and Wildlife Service Mid-Columbia River NWR Complex 3250 Port of Benton Blvd. Richland, WA 99532
Dave Linehan	Main Refuge contact / lead (Deputy Project Leader)	same as Gary Hagedorn
Sharon Selvaggio	Team Leader (Conservation Planner)	USFWS - Northwest CCP Team 911 NE 11 th Avenue Portland, OR 97232-4181
Howard Browsers	Complex Wildlife Biologist	same as Gary Hagedorn
Art Shine	Complex Outdoor Recreation Planner	same as Gary Hagedorn
Brian Allen	Refuge Resources/Programs (Refuge Manager)	same as Gary Hagedorn
John Gahr	Refuge Resources/Programs (Refuge Manager)	same as Gary Hagedorn

Extended Team Members

Name	Role (role on team listed first, actual title if different is in parentheses)	Address
Al Sutlick	Corps of Engineers Coordination/Historical info	U.S. Army Corps of Engineers Walla Walla District Office 201 N. 3 rd St. Walla Walla, WA 99362
Mark Halupczok	Wildlife Biologist	U.S. Army Corps of Engineers 1215 East Ainsworth Pasco, WA 99301
Kye Carpenter	Warm water fish	same as Mark Halupczok
Mike Livingston	Wildlife biologist)	Washington Dept. of Fish and Wildlife 2620 North Commercial Ave. Pasco, WA 99301
Paul Hoffarth	Fish biologist	Same as Mike Livingston
Pat Fowler	Wildlife biologist	Wash. Department of Fish and Wildlife
Jeff Tayer	Region 3 Director WDFW	Wash. Department of Fish and Wildlife 1701 South 24 th Ave. Yakima, WA 98902
Tracy Hames	Yakama Tribal Representative	Yakama Nation P.O. Box 151 Toppenish, WA 98948
Carl Scheeler	Umatilla Tribal Representative (Wildlife Program Manager)	Confederated Tribes of the Umatilla Indian Reservation Wildlife Program Manger DNR PO Box 638 Pendleton, OR 97801
Debbie Spring	Consultation - Fish Resources	National Marine Fisheries Service 304 South Water Street, Suite 201 Ellensburg, WA 98926
Mark Plummer	Fish biologist	same as Mark Halupczok

Name	Role (role on team listed first, actual title if different is in parentheses)	Address
Brad Bortner	Migratory Birds	U.S. Fish and Wildlife Service Division of Migratory Birds 911 NE 11 th Ave. Portland OR 97232-4181
Betsy Bloomfield	Conservation planning	The Nature Conservancy 507 S. 5 th Ave. Yakima, WA 98902
Virginia Parks	Cultural Resources	U.S. Fish and Wildlife Service 20555 SW Gerda Ln. Sherwood, OR 97140
Larry Rasmussen	Fisheries	USFWS - Ecological Services Oregon Fish and Wildlife Office 2600 SE 98 th Ave., Suite 100 Portland, OR 97266
Kevin Blakely	Oregon Department of Fish and Wildlife	John Day Watershed District Manager 73471 Mytinger Lane Pendleton, OR 97801
Bradley Bales	Oregon Department of Fish and Wildlife	Oregon Dept. of Fish and Wildlife 3406 Cherry Ave. NE Salem, Or 97303
Geoff Dorsey	U.S. Army Corps of Engineers	U.S. Army Corps of Engineers PO Box 2946 Portland OR 97208

APPENDIX K. APPROPRIATE USE DETERMINATIONS

Introduction

Under the Appropriate Refuge Uses Policy, 603 FW 1, (2006) refuge managers are directed to determine if a new or existing public use is an appropriate refuge use. If an existing use is not appropriate, the refuge manager is directed to modify the use to make it appropriate or terminate it, as expeditiously as practicable. If a new use is not appropriate, the refuge manager will deny the use without determining compatibility. If a use is determined to be appropriate, then a compatibility determination should be developed to determine whether the use can be allowed.

For purposes of this CCP an “appropriate use” must meet at least one of the following three conditions.

- The use is a wildlife-dependent recreational use as identified in the Refuge Improvement Act.
- The use involves the take of fish and wildlife under State regulations.
- The use has been found to be appropriate as specified in section 1.11 of the policy and documented on FWS Form 3-2319.

During the CCP process the refuge manager evaluated all existing and proposed refuge uses at both McNary and Umatilla Refuges using the following guidelines and criteria as outlined in the policy:

- Do we have jurisdiction over the use?
- Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?
- Is the use consistent with applicable Executive orders and Department and Service policies?
- Is the use consistent with public safety?
- Is the use consistent with goals and objectives in an approved management plan or other document?
- Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?
- Is the use manageable within available budget and staff?
- Will this be manageable in the future within existing resources?
- Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?
- Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?

Using this process and these criteria, and as documented on the following pages, the refuge manager determined the following uses are not appropriate:

Geocaching
Hang gliding/Para gliding
Rock climbing

- Off-road use motorized
- Off-road use non-motorized
- Waterskiing
- Jetskiis/Personal Watercraft
- Camping
- Swimming/Beach Use
- Dog training

The refuge manager also determined the following refuge uses were appropriate, and directed that compatibility determinations be completed for each use.

- Wildlife Observation & Photography
- Hunting - Waterfowl, Upland game bird, Other Migratory Birds
- Big Game Hunting
- Fishing
- Environmental Education and Interpretation
- Boating
- Horseback Riding
- Farming
- Research

Compatibility determinations are included for camping, swimming/beach use, and dog training, to explain why these uses should no longer be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Geocaching

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Geocaching

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Hang gliding/Para gliding

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Hang gliding/Para gliding

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Rock climbing

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Rock climbing

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Off-road use motorized and Off-road use non-motorized

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Off-road use motorized and Off-road use non-motorized

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Waterskiing

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Waterskiing

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Jetskiis/Personal Watercraft

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Jetskiis/Personal Watercraft

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Camping

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Camping

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Swimming and Beach Use

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Swimming and Beach Use

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Dog Training

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Dog Training

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate Appropriate

Refuge Manager: _____ Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____ Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Boating

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: _____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Boating

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Horseback Riding

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

A compatibility determination is required before the use may be allowed.

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FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Horseback Riding

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Farming

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

A compatibility determination is required before the use may be allowed.

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02/06

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Farming

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: McNary NWR

Use: Research

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Umatilla NWR

Use: Research

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: October 3, 2006

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____