

*Landscape from north of CPR*  
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# *Appendix D*

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## **D.1 Introduction**

### **D.1.1 Refuge Overview**

The 187,757 acre Malheur National Wildlife Refuge (NWR) is situated within the Harney Basin in southeastern Oregon. Located in the Northern Great Basin, this portion of the state is lightly populated, generally arid with cold winters, and characterized by wide open spaces. Although the Refuge constitutes a small percentage of the Northern Great Basin it is disproportionately important as a stop along the Pacific Flyway and as a resting, breeding, and nesting area for migratory birds and other wildlife. Many species migrating through or breeding here are highlighted as priority species in national bird conservation plans.

Malheur NWR is composed of three very distinct environments, each including a diversity of native habitats and landscapes. The core of the Refuge is dominated by a shallow lake basin and encompasses the Harney, Mud, and Malheur Lakes. This 103,799-acre area covers 56 percent of Refuge lands with the majority of acres being highly impacted by invasive common carp. The Blitzen Valley, a broad corridor (64,215 acres) to the south of the lake basin, is divided down its entire length by the Blitzen River and its associated linear riparian habitat. The Blitzen Valley covers 34 percent of the Refuge and provides most of the water flowing to the lake basins. The Double-O is a broad valley basin that covers 10 percent of Refuge lands. Intermittent water from the Silver Creek watershed flows through this management area and drains into Harney Lake. Together, these three environments result in a diversity of habitats and support more than 415 species of birds, mammals, fish, reptiles, and amphibians.

Historical bird counts show that the Refuge and the Silvies River floodplain just north of the Refuge may support anywhere between 5 to 66 percent of the Pacific Flyway migrating populations for various priority waterfowl. On the Refuge, breeding habitat is significant for waterbirds, with the Refuge currently supporting over 20 percent of the Oregon population of breeding greater sandhill cranes. Most colonial waterbird numbers have easily exceeded 10 percent of the regional population at peak, even reaching up to 77 percent of the Great Basin population for certain species. Numbers of migrating shorebirds have been documented at levels high enough to qualify the Refuge as a Regional Western Hemispheric Shorebird Reserve. The Refuge also supports high densities of certain nesting riparian passerines and meadow-dependent species such as the largest nesting population of bobolinks in the western United States.

Currently the majority of productive habitat is within the Blitzen Valley and the Double-O Units. Both of these units are comprised of highly altered habitats consisting of open water ponds, marshes, meadows, uplands, and riparian areas. Pond, marsh, and meadow habitats are intensively managed through an extensive series of roads, dikes, canals, water control structures, and other man-made features.

The lake units of the Refuge (Malheur, Mud, and Harney) have experienced a lesser degree of active management than the other units. However, during the first half of the twentieth century, invasive common carp were introduced into the Harney Basin. Introduction of carp has caused the ecological collapse of one of the largest natural freshwater marshes (Malheur Lake) in the lower 48 states.

This has resulted in a change from the 1970s when the lake's bulrush/cattail marsh spanned tens of thousands of acres, supporting hundreds of thousands of waterfowl, shorebirds, and waterbirds.

Today the lake is a large body of muddy water absent of aquatic vegetation, with very limited bird use. The carp-induced conditions in Malheur Lake are compromising the biological integrity, diversity, and environmental health of the lake. These factors are ultimately preventing Malheur Lake from fulfilling the refuge purpose that President Theodore Roosevelt established by Executive Order No. 929, “as a preserve and breeding ground for native birds.”

### **D.1.2 The Wilderness Review Process**

U.S. Fish and Wildlife Service (USFWS) policy ([602 FW 3.4 C.\(1\)\(c\)](#)) requires that wilderness reviews be completed as part of the Comprehensive Conservation Planning process.

The National Wildlife Refuge Service’s (NWRS’s) Policy on Wilderness Stewardship includes guidance for conducting wilderness reviews ([610 FW 4](#)).

A wilderness review is the process of determining whether the FWS should recommend NWRS lands and waters to Congress for wilderness designation. The wilderness review process consists of three phases: wilderness inventory, wilderness study, and wilderness recommendation.

#### **Wilderness Inventory (Phase I)**

The wilderness inventory is a broad look at a refuge to identify lands and waters that meet the minimum criteria for wilderness: size, naturalness, and outstanding opportunities for solitude or primitive and unconfined type of recreation. All areas meeting the criteria are classified as preliminary Wilderness Study Areas (WSAs). If preliminary WSAs are identified, those areas then proceed to the study phase.

**This Wilderness Review only includes the inventory phase (phase 1 of the whole wilderness review process). A subsequent study phase would occur following the publication of the CCP/EIS.**

#### **Wilderness Study (Phase II)**

During the study phase, WSAs are further analyzed:

- for all values of ecological, recreational, cultural, economic, symbolic importance.
- for all resources, including wildlife, vegetation, water, minerals, soils.
- for existing and proposed public uses.
- for existing and proposed refuge management activities within the area.
- to assess the refuge’s ability to manage and maintain the wilderness character in perpetuity, given the current and proposed management activities. Factors for evaluation may include, but are not limited to, staffing and funding capabilities, increasing development and urbanization, public uses, and safety.

#### **Wilderness Recommendation (Phase III)**

If the wilderness study demonstrates that a WSA meets the requirements for inclusion in the National Wilderness Preservation System, a wilderness study report would be written that presents the results of the wilderness review, accompanied by a Legislative Environmental Impact Statement (LEIS). The wilderness study report and LEIS that support wilderness designation are then transmitted from the Director of the USFWS through the Secretary of Interior to the President of the United States,

and ultimately to the United States Congress for action. Refuge lands recommended for wilderness consideration by the wilderness study report will retain their WSA status and be managed as wilderness and in accordance with the management direction established in the refuge's CCP until Congress makes a decision on the area. According to FWS ([610 FW 3.13](#)), when a WSA is revised or eliminated, or when there is a revision in "wilderness stewardship direction, we include appropriate interagency and tribal coordination, public involvement, and documentation of compliance with NEPA."

### **D.1.3 Criteria for Evaluating Lands for Possible 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 untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act as 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 ....*

The following criteria for identifying areas as wilderness are outlined in Section 2(c) of the Act and are further expanded upon in NWRS policy ([610 FW 4](#)). The first three criteria are evaluated during the inventory phase; the fourth criterion is listed during the inventory but is then evaluated during the study phase.

- generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
- has outstanding opportunities for solitude or a primitive and unconfined type of recreation;
- has at least 5,000 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.

### **D.1.4 Relationship to Previous Wilderness Reviews**

The Wilderness Act of 1964 (Public Law 88-577) provided the authority for evaluating existing NWRs, or parts thereof, for inclusion into the National Wilderness Preservation System. This Law directed the review of every roadless area of 5,000 contiguous acres or more, and every roadless island within the NWRS.

A wilderness review and subsequent WSA document was prepared in March 1967 (U.S. Department of the Interior [USDI] 1967); this document identified Malheur Lake (48,317 acres) and Harney Lake (30,000 acres) as potential wilderness areas. As a part of this procedure, the Secretary of the Interior directed the USGS to conduct mineral surveys on these sites. The USGS completed the mineral appraisal in March 1967.

A public Wilderness Hearing was conducted in Burns, Oregon, on May 2, 1967, to gather public input, and written comments continued to be accepted through August 1967. In a letter dated September 5, 1967, the USDI Bureau of Outdoor Recreation indicated that the Malheur Lake unit would be reduced to 20,600 acres; this decision was based on public comments. The Harney Lake unit remained at 30,000 acres.

The revised proposal, totaling 50,600 acres in the Malheur Lake and Harney Lake units, was first introduced in a Wilderness Omnibus Bill (S.3014) in October 1969. The Senate Committee on Interior and Insular Affairs held hearings on November 6, 1969. Due to opposition from Congress regarding the Malheur Lake unit, the Malheur proposal was deleted from the bill (S.3014) and sent back for revision.

According to a FWS Wilderness Fact Sheet, in 1973 the FWS once again reviewed the proposal as directed by Congress and revised the proposal to encompass only the 30,000-acre Harney Lake area. Memos also indicate that this revision was forwarded as a recommendation to the Secretary of the Interior. This recommendation was formally adopted, according to Refuge memos, by the Secretary on May 16, 1973. The 1979 Wilderness Fact Sheet and memos from the associate director of the Bureau of Sport Fisheries and Wildlife (BSF&W) to the Legislative Council (dated July 31, 1973, and signed August 4, 1973) and from the Secretary of the Interior to the Chairman of the House Committee on Interior and Insular Affairs outlines the issues and revised recommendation. A draft Environmental Statement (as they were known at that time) was prepared later in 1973 (USDI 1973), but was never finalized. This draft Environmental Statement included only the 30,000-acre Harney Lake unit.

In 1975, H.R. 5893 (dated April 10, 1975) and H.R. 3507 (dated February 20, 1975) were introduced during the 1st session of the 94th Congress. Both of these bills included the original 50,600 acres from the original 1967 proposal. The inclusion of Malheur Lake in these bills appears to be a mistaken carryover from the original 1969 bill, as none of the requested revisions (from the 1969 hearings) were forwarded to Congress, and there is no indication in the records that Congress discussed the Malheur proposal. No action was taken regarding the Malheur proposal during the 1976 Omnibus Wilderness Hearings.

Between 1976 and 1987, there are no Malheur NWR wilderness-related correspondences in the files. From 1988 to the present, all correspondences indicate that only the 30,000-acre Harney Lake unit was still being considered for wilderness designation. The Harney Lake unit has continued to be managed as a Wilderness Study Area since the original 1969 proposal was introduced.

## **D.2 Inventory Phase of Wilderness Review**

The following constitutes the inventory (Phase I) of the wilderness review for Malheur NWR. Based on inventory outcomes, the next phase (wilderness study) will be conducted as a step-down process to the CCP.

### **D.2.1 Lands and Waters Considered Under This Wilderness Review**

All FWS-owned lands and waters (in fee title) within the Malheur NWR–acquired boundary were considered during this wilderness review. This review includes the re-evaluation of Refuge lands first evaluated during the 1960s and 1970s as described above.

## D.2.2 Inventory Units

The first step of a wilderness assessment is to divide the refuge or other management entity into preliminary wilderness evaluation units. The boundaries of these artificial units can follow the refuge boundary, but may not cross permanent roadways, private or other non-Federal lands, or non-Service owned waterways. These roads, non-Federal lands, or waterways can form the boundary for an individual evaluation unit. Other obvious incompatible wilderness uses or structures (such as refuge headquarters, residential areas, rights-of-way, and non-jurisdictional waters) may also be eliminated from any evaluation units at this time. Once boundaries have been established for each individual evaluation unit, the criteria in Sections D.2.3 and D.2.4 are applied to determine each unit's suitability as potential wilderness and the need for further evaluation under the Wilderness Study.

In determining units to be evaluated for wilderness character per this inventory, the Refuge was mapped using geographic information system (GIS) software. Using the major constraints set by the Wilderness Act, specifically land ownership/refuge boundary and permanent road systems, initial large evaluation units were developed by including all contiguous lands within those intractable confines. Through this process, ten units were defined for evaluation and are described below.

## D.2.3 Evaluation of Unit Size

### Criteria for Evaluation

Roadless areas are defined in Section 3(c) of the Wilderness Act Act as: 1) a roadless area of 5,000 contiguous acres or more, or 2) a roadless island. "Roadless" is defined as the absence of improved roads suitable and maintained for public travel by means of 4-wheeled, motorized vehicles that are intended for highway use.

According to Service policy ([610 FW 4](#)), roadless areas meet the size criteria if any one of the following standards applies:

- The area is over 5,000 contiguous acres solely in FWS ownership.
- It is a roadless island of any size. A roadless island is defined as "an area surrounded by permanent waters or an area that is markedly distinguished from the surrounding lands by topographical or ecological features."
- It is 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.
- It is 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 (BLM).

### Results of Evaluation

The 59,664-acre **Malheur Lake Unit** meets the minimum size requirements for a wilderness area. This acreage encompasses the lake bed and associated wetland habitats. Because of the continuity of this area, it was not deemed reasonable to split the lake bed into smaller parcels.

The 31,157-acre **Harney Lake Unit** meets the minimum size requirements for a wilderness area. This is 1,157 acres more than in the 1969 Harney Lake Wilderness Proposal.

The 5,818-acre **Double-O–Stinking Lake Unit** meets the minimum size requirement for a wilderness area. This area includes the northwestern section of the Double-O Unit, including the Stinking Lake Research Natural Area (RNA).

The 5,660-acre **Double-O–Chappo Unit** meets the minimum size requirement; this unit is comprised of the northeastern section of the Double-O Unit.

The 7,973-acre **Sodhouse-West Unit** meets the minimum size requirement. It includes lands west of the Center Patrol Road.

The 6,497-acre **Sodhouse-East Unit** meets the minimum size requirement. It includes lands east of the Center Patrol Road, including the waters of the Blitzen River.

The 1,206-acre **Upper Bridge Creek–Knox Springs Unit** does not meet the minimum size requirement, but is located adjacent to a BLM Wilderness Study Area and therefore will be further evaluated.

The 426-acre **Barnes Springs Unit** does not meet the minimum size requirement, but is located adjacent to a BLM Wilderness Study Area and therefore will be further evaluated.

The 4,520-acre **Buena Vista–Unit 8 Unit** does not meet the minimum size requirement, but is sufficiently close to minimum size to continue evaluation.

The 3,336-acre **P Ranch–East Block Unit** includes lands east of the Center Patrol Road to the Refuge boundary. This unit does not meet the minimum size requirement and will not be evaluated further.

Six of the ten units identified for wilderness evaluation are of sufficient size to evaluate further in the inventory process. Two additional units do not meet the size requirement, but are adjacent to existing BLM wilderness study areas, and therefore will be considered further for inventory evaluation. One unit is only slightly less than the minimum size requirement, so it will be evaluated further. The remaining unit is sufficiently below the minimum size requirement and therefore will not be further evaluated.

## D.2.4 Naturalness Evaluation

### Criteria for Evaluation

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.”

According to Service Policy ([610 FW 4](#)), an area meets the naturalness criterion under the following considerations:

- We make a distinction between an area’s “apparent naturalness” and “historic conditions” in the context of biological integrity, diversity, and environmental health. The term “historic

conditions” refers to the condition of the landscape in a particular area before the onset of significant, human-caused change. The term “apparent naturalness” refers to whether or not an area looks natural to the average visitor who is not familiar with historic conditions versus human-affected ecosystems in a given area. We address the question of the presence or absence of apparent naturalness (i.e., are the works of humans substantially unnoticeable to the average visitor?) in the inventory phase of the wilderness review. In the study phase of the wilderness review, we make an assessment of an area’s existing levels of biological integrity, diversity, and environmental health.

- We avoid an approach to assessing naturalness that limits wilderness designation only to those areas judged pristine. Land that was once logged, used for agriculture, or otherwise significantly altered by humans may be eligible for wilderness designation if it has been restored or is in the process of being restored to a substantially natural appearance.
- We use caution in assessing the effects on naturalness that relatively minor human impacts create. An area being evaluated may include some human impacts provided they are substantially unnoticeable in the unit as a whole. Examples of manmade features that would not disqualify an area for consideration as a WSA include: trails, trail signs, bridges, fire towers, fire breaks, fire suppression facilities, pit toilets, fisheries enhancement facilities (such as fish traps and stream barriers), fire rings, hitching posts, snow gauges, water quantity and quality measuring devices, research monitoring markers and devices, wildlife enhancement facilities, radio repeater sites, air quality monitoring devices, fencing, spring developments, and small reservoirs. Even with these features, an area may express wilderness character and values.
- We may disqualify portions of an area from consideration where significant human-caused hazards make that area unsafe for public use, such as contaminated sites or the existence of unexploded ordnance from military activity. Once these conditions are corrected, we may then consider that portion of the area.
- We do not disqualify areas from further wilderness study solely on the basis of the “sights and sounds” of civilization located outside the areas. Where human impacts are outside the area being inventoried, we do not normally consider them in assessing naturalness. However, if an outside impact of major significance exists, we should note it and evaluate it in the inventory conclusions. Human impacts outside the area should not automatically lead us to conclude that an area lacks wilderness characteristics.
- We do not disqualify areas from further wilderness study solely on the basis of established or proposed refuge management activities or refuge uses that require the use of temporary roads, motor vehicles, motorized equipment, motorboats, mechanical transport, landing of aircraft, structures, and installations generally prohibited in designated wilderness (see definition of “generally prohibited use” in 610 FW 1.5). The physical impacts of these practices should be the focus of the naturalness evaluation. We evaluate existing and proposed refuge management activities and refuge uses in the study phase of the wilderness review.

Today few areas exist that do not exhibit some impact from anthropogenic influences, be it noise, light, or air pollution; water quality or hydrological manipulations; past and current land management practices; roads; suppression of wildfires; invasions by non-native species of plants and animals; or public uses. While allowing for the near-complete pervasiveness of modern society on the landscape, the spirit of the Wilderness Act is to protect lands that still retain the wilderness qualities of being: 1) natural, 2) untrammled, and 3) undeveloped. These three qualities are the cornerstones of wilderness character. For areas proposed or designated as wilderness, wilderness character must be monitored to determine baseline conditions and thereafter be periodically monitored to assess the condition of

these wilderness qualities. Proposed and designated wilderness areas by law and policy are required to maintain wilderness character through management and/or restoration in perpetuity.

Defining the first two qualities (natural and untrammeled) requires a knowledge and understanding of the ecological systems that are being evaluated as potential wilderness. Ecological systems are comprised of three primary attributes: composition, structure, and function. Composition refers to the components that make up an ecosystem, such as the habitat types, native species of plants and animals, and abiotic (physical and chemical) features. These contribute to the diversity of the area. Structure is the spatial arrangement of the components that contribute to the complexity of the area. Composition and structure are evaluated to determine the naturalness of the area. Function refers to the processes that result from the interaction of the various components, both temporally and spatially, and the disturbance processes that shape the landscape. These processes include, but are not limited to, predator–prey relationships, insect and disease outbreaks, nutrient and water cycles, decomposition, fire, windstorms, flooding, and both general and cyclic weather patterns. Ecological functions are evaluated to determine the wildness or untrammeled quality of the area.

The third quality assessment is whether an area is undeveloped. Undeveloped refers to the absence of permanent structures such as roads, buildings, dams, fences, and other man-made alterations to the landscape. Exceptions can be made for historical structures or structures required for safety or health considerations, provided they are made of natural materials and relatively unobtrusive on the landscape.

### **Results of Naturalness Assessment**

**Malheur Lake Unit:** The Malheur Lake Unit contains approximately 8 miles of levee system, 1.6 miles of access roads, and 68 miles of boundary fence. Roads access hunt areas and a boat launch. An artificial osprey nesting platform also exists within the lake bed. In the 1970s, Malheur Lake was an extensive bulrush/cattail/sago pondweed marsh that supported hundreds of thousands of migrating and nesting birds. The lake today is a body of muddy water devoid of most bird use. Although Malheur Lake has retained most hydrological inputs, the lake basin itself has lost much of its natural function due to the introduction of invasive species. Invasive species, aquatic and terrestrial, have altered this ecological system in a manner that has changed all natural attributes except hydrology. The hydrology of the lake is still driven by annual climate conditions that cause the lake to fluctuate from an average low of 24,000 acres to an average high of 47,000 acres. Lake surface acres have ranged from a low of 400 in 1992 to a high of 170,000 in 1984 (well outside of the Refuge boundary).

Due to the impacts of invasive common carp, Malheur Lake is now devoid of nearly all aquatic vegetation. Upland areas that are not submerged contain significant amounts of invasive species such as perennial pepperweed and Russian olive. Aquatic and terrestrial invasives are also present in all tributaries. This has created a situation where issues on the Refuge impact the watershed and the watershed impacts the Refuge. Although Malheur Lake is nearly devoid of aquatic vegetation, and it has lost much of its natural biological function, the works of man are substantially unnoticeable to the casual visitor. Malheur Lake would appear natural to the average visitor who is not familiar with historical conditions versus the human-affected ecosystem. Even though Malheur Lake is a highly altered ecological system that no longer functions properly, it does meet the wilderness criteria of “apparent naturalness.” Naturalness in combination with properly functioning ecosystems is a valued attribute.

Although Malheur Lake meets the “apparent naturalness” criteria, current ecological conditions do not meet the requirements of the NWR System mission, nor does the Lake possess biological integrity, diversity, or good environmental health. In addition to these criteria, Malheur Lake’s suitability for management and preservation as wilderness is evaluated based on the area’s primary purpose. The purpose for Malheur Lake is “... a refuge and breeding ground for migratory birds and other wild life ...” as defined by Executive Order 7106, dated July 19, 1935.

Through the Comprehensive Conservation Planning process, the Refuge is developing strategies to restore the ecological function of Malheur Lake, thereby enabling the fulfillment of Refuge purpose and other mandates. As strategies are developed, they will be based on the best available science, including site-specific science that is being currently being compiled through extensive research, inventory, and monitoring. The Refuge’s goal is to develop and implement a comprehensive restoration strategy for Malheur Lake while striving to retain the area’s natural appearance.

Malheur Lake does meet “apparent naturalness” from a wilderness standard; however, the purpose and other required mandates for Malheur Lake are not being fulfilled under current deteriorated biological conditions. For this reason USFWS will delay further wilderness evaluation until ecological integrity is restored.

**Harney Lake Unit:** The Harney Lake Unit is primarily an alkali playa with a desert scrub vegetation component around the periphery. Minimal water flows reach the Harney Lake basin and originate primarily from spring systems and Silver Creek. Silver Creek inflows rarely reach the basin due to upstream diversions on the adjacent Double-O unit and private lands. Independent of these diversions and impoundments, water flows from springs and Silver Creek are insufficient to fill the basin annually, and the basin fills completely only during extreme flood events. This alkali playa creates a unique and somewhat harsh environment suited for specific flora and fauna. This unit also contains the Harney Lake RNA.

The Harney Lake Unit does not contain alterations by man-made features or biological agents. This unit retains much of its natural characteristics and will be further evaluated in Section D.2.5.

**Double-O-Stinking Lake Unit:** The Double-O–Stinking Lake Unit is comprised of arid shrubland habitat and natural spring systems. This area includes the Stinking Lake RNA. This unit has a well-developed wetland system, and the springs have been significantly altered for water management. The unit has three water troughs or other watering developments and eight man-made wetland units. Water flows in these wetland units are manipulated by 35 water control structures and over 7 miles of levees/roads, one borrow ditch, and 19 miles of water delivery ditches. Improved roadways for administrative use total almost 10 miles, and public access is allowed along the southern boundary of the unit. There are two historic homesteads in the unit. Other developments include an osprey nesting platform, two wells, one fish screen, and two bridges. Powerlines bisect the unit to service both Refuge and private facilities.

The unit contains approximately 17 miles of fencing with 75 percent of this as interior fence. Invasive plants are problematic, especially perennial pepperweed, reed canarygrass, and Canada thistle. Non-native common carp are present and represent a serious threat to the native biodiversity; this species requires continual and intensive control measures.

Within the unit is the Stinking Lake RNA. This portion of the unit retains its natural character and function; however, this 1,555-acre area does not meet the minimum wilderness size requirements.

Thus the Double-O–Stinking Lake Unit requires considerable management and contains developed features that compromise the natural qualities of the unit and will not be considered further for evaluation.

***Double-O–Chappo Unit:*** The Double-O–Chappo Unit lies adjacent to the Double-O–Stinking Lake Unit within the northeastern section of the Double-O Unit. The unit is comprised of arid shrubland habitat and outflows from the natural spring systems. This unit has a developed wetland system and has one water trough and seven man-made wetland units. Water flows in these wetland units are manipulated by 24 water control structures and over 6 miles of levees, 2.5 miles of water delivery ditches, and one borrow ditch. There are 4.3 miles of improved roadways for administrative use and public access is allowed along portions of these roads. Other developments include public use signage and two small bridges.

In the unit there is approximately 22 miles of fencing, half of which is interior fencing. The unit contains a mechanically leveled field used in the past for farming. Invasive plants are problematic, especially perennial pepperweed, reed canarygrass, and Canada thistle. Non-native common carp are present and represent a serious threat to the native biodiversity; this species requires continual and intensive control measures. The unit is intensively manipulated; all water flows are managed with numerous man-made structures. Past farming practices have altered the natural plant communities. Due to these factors, the unit does not contain the natural qualities to be further considered for evaluation.

***Sodhouse-West Unit:*** The Sodhouse-West Unit consists of lands west of the Center Patrol Road, in the northern portion of the Blitzen Valley. The unit has seven man-made wetlands that are manipulated by 25 water control structures, 3 miles of dikes, and 32 miles of canals and ditches. The unit contains about 20 miles of administrative roads, with an additional 15 miles of public roads along the unit boundary, including State Highway 205. Other developments include two historic lookout towers and 13 miles of interior fencing; portions of the unit are farmed and hayed. The unit contains large acres of invasive weeds, such as perennial pepperweed, reed canarygrass, thistles, and cheatgrass; carp are also a significant issue within the waterways and negatively impact the native flora and fauna of the site. Due to the presence of non-native species, the highly managed nature of the unit, and the man-made developments, this unit does not retain sufficient naturalness to be included for further wilderness evaluation.

***Sodhouse-East Unit:*** The Sodhouse-East Unit is comprised of a section of long linear lands east of the Center Patrol Road, including the waters of the Blitzen River. The unit contains one dam and five man-made wetlands that are manipulated by 23 water control structures, 8 miles of dikes, and 9 miles of canals and ditches. Portions of the unit are farmed for grain crops. The unit contains about 9 miles of administrative roads, with an additional 11 miles of public roads. Other developments include four bridges, a dam/fish ladder, a gravel pit, and 11 miles of interior fencing. The unit contains large acres of invasive weeds, such as perennial pepperweed, reed canarygrass, thistles, and cheatgrass; carp are also a significant issue within the waterways and negatively impact the native flora and fauna of the site. Due to the presence of non-native species and the highly managed nature of the unit with man-made developments, this unit does not retain sufficient naturalness to be included for further evaluation.

***Buena Vista–Unit 8:*** The Buena Vista–Unit 8 Unit is a linear unit of the Refuge containing one water trough, six man-made wetlands that are manipulated by 24 water control structures, 9 miles of dikes/levees, and many miles of canals and ditches. Portions of the unit are farmed for grain crops.

The unit contains about 12 miles of administrative roads, with an additional 5.5 miles of public roads and is bordered by State Highway 205. Other developments include four bridges, a dam, a fish ladder, two fish screens, a gravel pit, and 11 miles of interior fencing. The unit also contains large acres of invasive weeds, such as perennial pepperweed, reed canarygrass, thistles, and cheatgrass; carp are also a significant issue within the waterways and negatively impact the native flora and fauna of the unit. Due to the presence of non-native species requiring active control, man-made developments, and its highly managed nature, this unit does not retain sufficient naturalness nor is of sufficient size (4,520 acres) to be included for further evaluation.

***Upper Bridge Creek/Knox Springs Unit:*** The 1,206-acre Upper Bridge Creek/Knox Springs Unit is located adjacent to a BLM Wilderness Study Area. The unit contains one developed spring area and one culvert. A managed ditch delivers water from the spring to Refuge wetlands. The unit has 2 miles of exterior and 4 miles of interior fence. The unit also has six man-made rock weirs in Bridge Creek.

Ongoing restoration activities include the use of mechanized equipment for reconnecting creeks to floodplains, rehabilitation of waterway embankments, and tree/shrub plantings. Fencing enclosures are required for plant establishment during restoration activities. The upland vegetation of the site is dominated by non-native crested wheatgrass plantings with almost no remaining native plants. Invasive cheatgrass is also prevalent in the unit. Due to the unit's highly altered ecosystem there is a long-term need for non-native grass eradication, revegetation with native forbs and grasses, and an ongoing riparian restoration program. Under current conditions, this unit cannot fulfill the Refuge purpose, or be considered to have biological integrity, diversity, and environmental health. Because of the lack of natural qualities, the Upper Bridge Creek/Knox Springs Unit will not be considered for further wilderness evaluation at this time.

***Barnes Springs Unit:*** The 426-acre Barnes Springs Unit is located adjacent to a BLM Wilderness Study Area. The unit contains one developed spring and an adjacent homestead site. Other developments include 3.8 miles of boundary fencing and 0.4 miles of roads/trails. This unit also contains large acres of invasive weeds, especially medusahead and cheatgrass. The former originates and re-infests the Refuge from large infestations on adjacent BLM lands. Medusahead is a particularly difficult species to eradicate/control, requiring mechanized spraying and manipulation. Juniper encroachment onto this unit requires mechanical thinning and prescribed burning regimes. Under current conditions, this unit cannot fulfill the Refuge purpose, or be considered to have biological integrity, diversity, and environmental health. Because of the lack of natural qualities, the Barnes Springs Unit will not be considered for further wilderness evaluation at this time.

## **D.2.5 Evaluation of Opportunities for Outstanding Solitude or Primitive/Unconfined Recreation**

### **Criteria for Evaluation**

In addition to size and naturalness, wilderness areas must provide outstanding opportunities for solitude or a primitive and unconfined type of recreation. The area does not need to have outstanding opportunities for both elements and does not need to have outstanding opportunities on every acre. An area also does not have to be open to public use and access to qualify under these criteria. Each area is assessed on its own merits and is not compared to other areas.

Opportunities for solitude refer to the ability of a visitor to be alone and secluded from other visitors in the area. Primitive and unconfined recreation means non-motorized, dispersed outdoor recreation

activities that are compatible and do not require developed facilities or mechanical transport. Primitive recreation activities may provide opportunities to experience challenge and risk, self-reliance, and adventure.

**Results of Outstanding Solitude or Primitive/Unconfined Recreation Assessment**

The Harney Lake Unit is not open to public use to protect the unit’s unique micro-habitats and the importance of the site to wildlife species, such as nesting western snowy plovers. Public use and interpretive facilities are planned adjacent to, but not within, the unit. If the unit were open to public use, the size of the unit would provide outstanding opportunities for solitude and/or primitive recreation.

**D.2.6 Inventory Summary and Conclusion**

Table D-1 summarizes the above evaluation factors for each of the units that were delineated and evaluated as described in Section D.2.2.

The majority of Malheur NWR is a highly altered wetland and upland system. The lands and waters were significantly altered both prior to and during Service ownership. The Refuge has actively managed these lands to meet the needs of wildlife species at both Refuge and Pacific Flyway levels to enable the Refuge to meet its establishing purposes. The effects of management have included changes to the soils, flora, and fauna. Man-made developments abound in the form of an extensive road system, hundreds of miles of primary dikes, ditches, and fences, altered creeks and river, and thousands of water-management structures.

In this inventory (Phase I) the Harney Lake Unit was found to meet the minimum wilderness criteria for size, naturalness, and outstanding opportunities for solitude and primitive/unconfined recreation. A total of 31,157 acres were found to have wilderness characteristics, which is 1,157 acres greater than the existing WSA proposed in 1969. Based on the findings in this inventory, Harney Lake will be further evaluated in the Wilderness Study Phase as a step-down process to the CCP.

**Table D-1. Results of Wilderness Inventory (Phase I) for Malheur NWR**

Refuge Unit	Size	Naturalness	Outstanding opportunities for solitude or primitive/unconfined recreation	Summary: Area will move forward for Phase II Wilderness Study
Malheur Lake	Yes	Yes	NE	No
Harney Lake	Yes	Yes	Yes	Yes
Double-O–Stinking Lake	Yes	No	NE	No
Double-O–Chappo	Yes	No	NE	No
Sodhouse-West	Yes	No	NE	No
Sodhouse-East	Yes	No	NE	No
Upper Bridge Creek/Knox Springs	No*	No	NE	No

<b>Refuge Unit</b>	<b>Size</b>	<b>Naturalness</b>	<b>Outstanding opportunities for solitude or primitive/unconfined recreation</b>	<b>Summary: Area will move forward for Phase II Wilderness Study</b>
Barnes Spring	No*	No	NE	No
Buena Vista–Unit 8	No	No	NE	No
P Ranch–East	No	NE	NE	No

Notes:

NE – Not evaluated (once any wilderness criteria was not met, further evaluation was not conducted.)

\*located adjacent to existing wilderness area or wilderness study area; size requirement does not apply.

### **D.3 References**

- U.S. Department of the Interior (USDI). 1967. Wilderness Study Areas: Malheur National Wildlife Refuge. Fish and Wildlife Service. Bureau of Sport Fisheries and Wildlife. Unpublished report on file at Refuge office.
- USDI. 1973. Draft Environmental Statement. Proposed Malheur Wilderness Area, Harney County, Oregon. Bureau of Sport Fisheries and Wildlife. Unpublished report on file at Refuge office. 24 pp.

