

Appendix K – Wilderness Review

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Wilderness Review: Bear Valley, Tule Lake, Upper Klamath, Lower Klamath, and Clear Lake NWRs

The purpose of a wilderness review is to identify and recommend for Congressional designation National Wildlife Refuge System (System) lands and waters that merit inclusion in the National Wilderness Preservation System (NWPS). Wilderness reviews are a required element of comprehensive conservation plans (CCPs) and conducted in accordance with the refuge planning process outlined in 602 FW 1 and 3, including public involvement and the National Environmental Policy Act (NEPA) compliance.

There are three phases to the wilderness review: 1) inventory, 2) study; and 3) recommendation. Lands and waters that meet the minimum criteria for wilderness are identified in the inventory phase. These areas are called wilderness study areas (WSAs). WSAs are evaluated through the CCP process to determine their suitability for wilderness designation. In the study phase, a range of management alternatives are evaluated to determine if a WSA is suitable for wilderness designation or management under an alternate set of goals and objectives that do not involve wilderness designation. The recommendation phase consists of forwarding or reporting recommendations for wilderness designation from the Director through the Secretary and the President to Congress in a wilderness study report.

If the review does not identify any areas that meet the WSA criteria, we document our findings in the administrative record for the CCP, fulfilling the planning requirement for a wilderness review. We inventoried Service lands and waters within Bear Valley, Tule Lake, Upper Klamath, Lower Klamath, and Clear Lake NWRs and found three areas that meet the eligibility criteria for a WSA as defined by the Wilderness Act. This appendix summarizes the wilderness review for these five refuges.

Inventory Criteria

The wilderness inventory is a broad look at the planning area to identify WSAs. These are roadless areas that meet the minimum criteria for wilderness identified in Section 2(c) of the Wilderness Act.

“A wilderness, in contrast with those areas where man and his 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, and which: (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological or other features of scientific, educational, scenic, or historical value.”

A WSA must be a roadless area or island, meet the size criteria, appear natural, and provide outstanding opportunities for solitude or primitive recreation. The process for identification of roadless areas and application of the wilderness criteria are described in the following sections.

Identification of Roadless Areas and Roadless Islands

Identification of roadless areas and roadless islands required gathering and evaluating land status maps, land use and road inventory data, and aerial and satellite imagery for the refuges. “Roadless” refers to the absence of improved roads suitable and maintained for public travel by means of motorized vehicles primarily intended for highway use. Only lands currently owned by the Service in fee title or BLM lands managed under a cooperative agreement were evaluated.

Evaluation of the Size Criteria

Roadless areas or roadless islands meet the size criteria if any one of the following standards applies:

- 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.

Evaluation of the Naturalness Criteria

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.

Evaluation of Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation

In addition to meeting the size and naturalness criteria, 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 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. These 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, can be expected to 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.

Evaluation of Supplemental Values

Supplemental values are defined by the Wilderness Act as “...ecological, geological, or other features of scientific, educational, scenic, or historic value.” These values are not required for wilderness but their presence should be documented.

Inventory Findings:

Bear Valley NWR

As documented below, Bear Valley NWR does not meet the criteria necessary for a WSA.

Roadless Areas and Roadless Islands

Bear Valley Refuge was established in 1978 to protect a vital night roost site for wintering bald eagles. The Refuge consists of 4,200 acres, with much of the Refuge bisected by roads, making the size unsuitable for consideration as wilderness. The largest area without roads is approximately 2,494 acres.

Naturalness Criteria

The Refuge consists primarily of old growth ponderosa pine, incense cedar, white and Douglas fir. These mature stands of trees have open branching patterns of large limbs which allow easy eagle access and can support many birds. Located on a northeast slope, the roost also shelters these raptors from harsh and prevailing winter winds. In recent years, as many as 300 bald eagles have used the roost in a single night. Bear Valley Refuge also serves as nesting habitat for several bald eagle pairs.

Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation

Bear Valley Refuge is closed to all public entry, except for walk-in deer hunting before November 1, to reduce disturbance to the eagles. From December through mid-March excellent opportunities are available from outside the Refuge to observe early morning fly-outs of large numbers of bald eagles and other raptors from their Bear Valley roost.

Supplemental Values

Bear Valley NWR does contain features of scientific, educational, scenic, and historical value. However, Bear Valley NWR does not meet the overall criteria for recommendation as a wilderness area because:

- Much of the Refuge has been bisected by roads;
- It does not encompass 5,000 contiguous acres.

As documented below, one of the roadless areas at Tule Lake NWR meets the criteria necessary for a WSA.

Roadless Areas and Roadless Islands

Tule Lake NWR consists of 39,117 acres, with approximately 19,000 acres used as croplands, over 10,000 acres of open water and nearly 10,000 acres of wetlands and uplands. Using a geographic information system to model roadless areas, only one roadless area is large enough for consideration as a WSA. The WSA consists of 9,346 acres within Tule Lake NWR, and it consists of primarily open water, completely within Sump 1A.

Naturalness Criteria

Tule Lake Refuge consists of two open water sumps (reservoirs totaling 13,000 acres) surrounded by croplands. A portion (currently, about 17,000 acres) of the surrounding area is farmed by Reclamation lessees. Refuge permittees farm another 1,903 acres of cereal grain also. This crop, together with the waste grain and potatoes from the lease program, is a major food source for migrating and wintering geese and other field-feeding waterfowl. Irrigation water is managed by the Tulelake Irrigation District under a contract with Reclamation.

Motorized and non-motorized boats use the open waters of the refuge for hunting waterfowl. Currently, motorized boating is authorized within these 9,346 acres.

Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation

When experiencing the refuge outside of the hunt seasons there are opportunities for solitude, although agricultural activities on the shore may disrupt solitude at times.

Supplemental Values

The refuge is a significant staging area for migrating waterfowl during spring and fall migrations. It is used primarily by white-fronted, snow, Ross, and cackling Canada geese, all of which nest in the Arctic tundra. Tule Lake hunting opportunities consist of two large marsh units accessible by boats, a spaced-blind hunt in dry fields, and open free-roam areas offering field hunts over harvested grain and smaller marsh units.

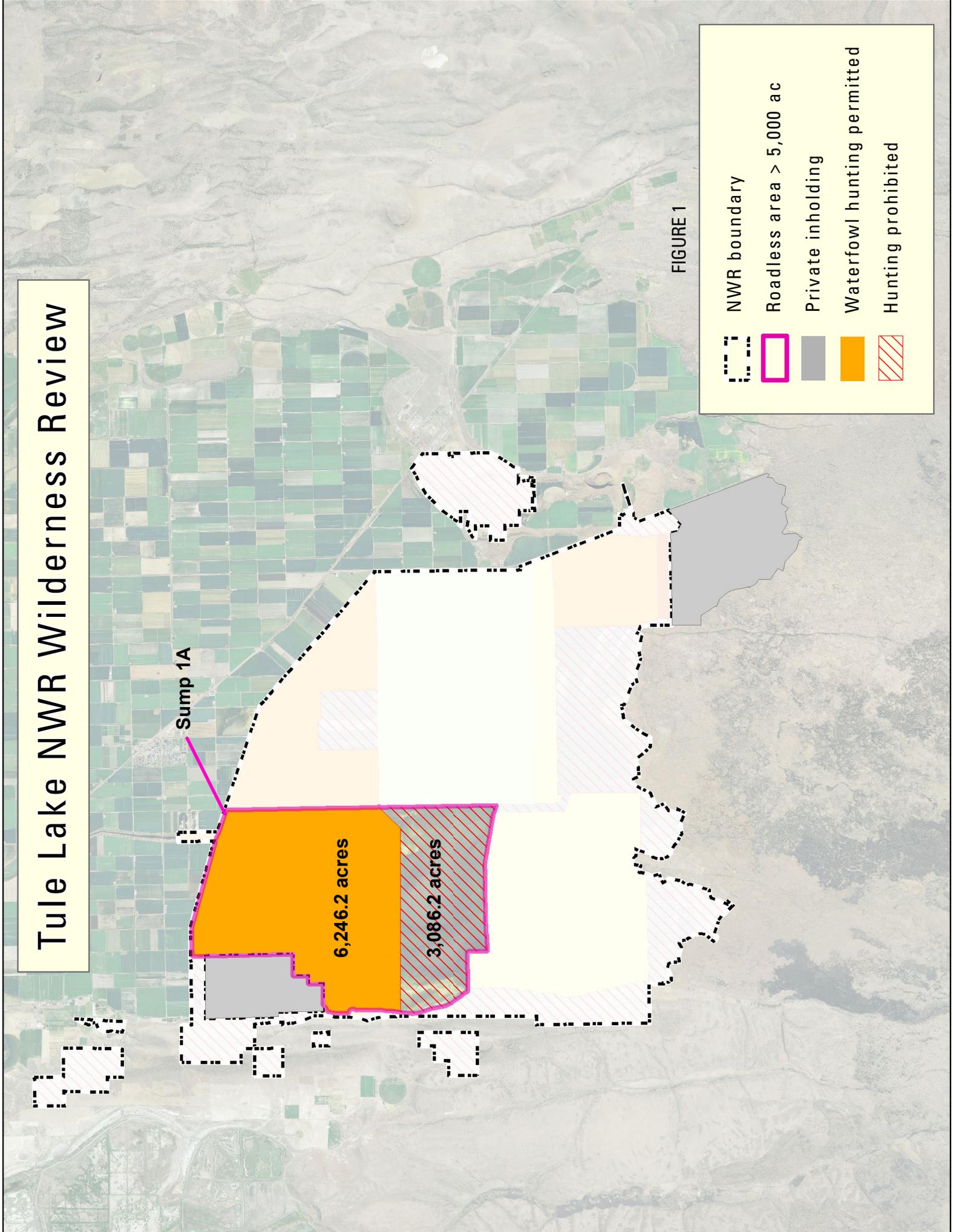
Tule Lake NWR Wilderness Review

Sump 1A

6,246.2 acres

3,086.2 acres

FIGURE 1



As documented below, a roadless area within the Upper Klamath NWR meets the criteria necessary for a WSA.

Roadless Areas and Roadless Islands/Size Criteria

Upper Klamath Refuge was established in 1928 and is comprised of 23,098 acres of mostly freshwater marsh and open water. Using a geographic information system to model roadless areas, only one roadless area is large enough for consideration as a WSA. The roadless area totals 12,862 acres, and is predominately marshlands and open water. Currently, motorized boating is authorized within these 12,862 acres.

Naturalness Criteria

Upper Klamath Lake, which is the largest freshwater lake solely in Oregon, is very shallow and has extensive wetlands within and immediately adjacent to the natural lake area. Historically, there were up to 52,000 acres of marshland associated with Upper Klamath Lake and up to 65,000 acres of open water at maximum capacity. Lake levels were controlled by two basalt reefs in the upper part of the Link River above the current location of the dam. Prior to construction of the dam and channelization of the reefs, lake levels varied from about 4,140 to 4,143 feet, with a mean annual variation of about two feet.

These habitats serve as excellent nesting and brood rearing areas for waterfowl and colonial nesting birds including American white pelican and several heron species. Bald eagle and osprey nest nearby and can sometimes be seen fishing in Refuge waters.

Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation

A boat is a must for those who wish to explore this refuge. A marked canoe trail is open year round and canoes may be rented nearby.

Supplemental Values

The Refuge's managed water also provides regionally significant ecological value for migratory birds and other wildlife.

Upper Klamath NWR Wilderness Review

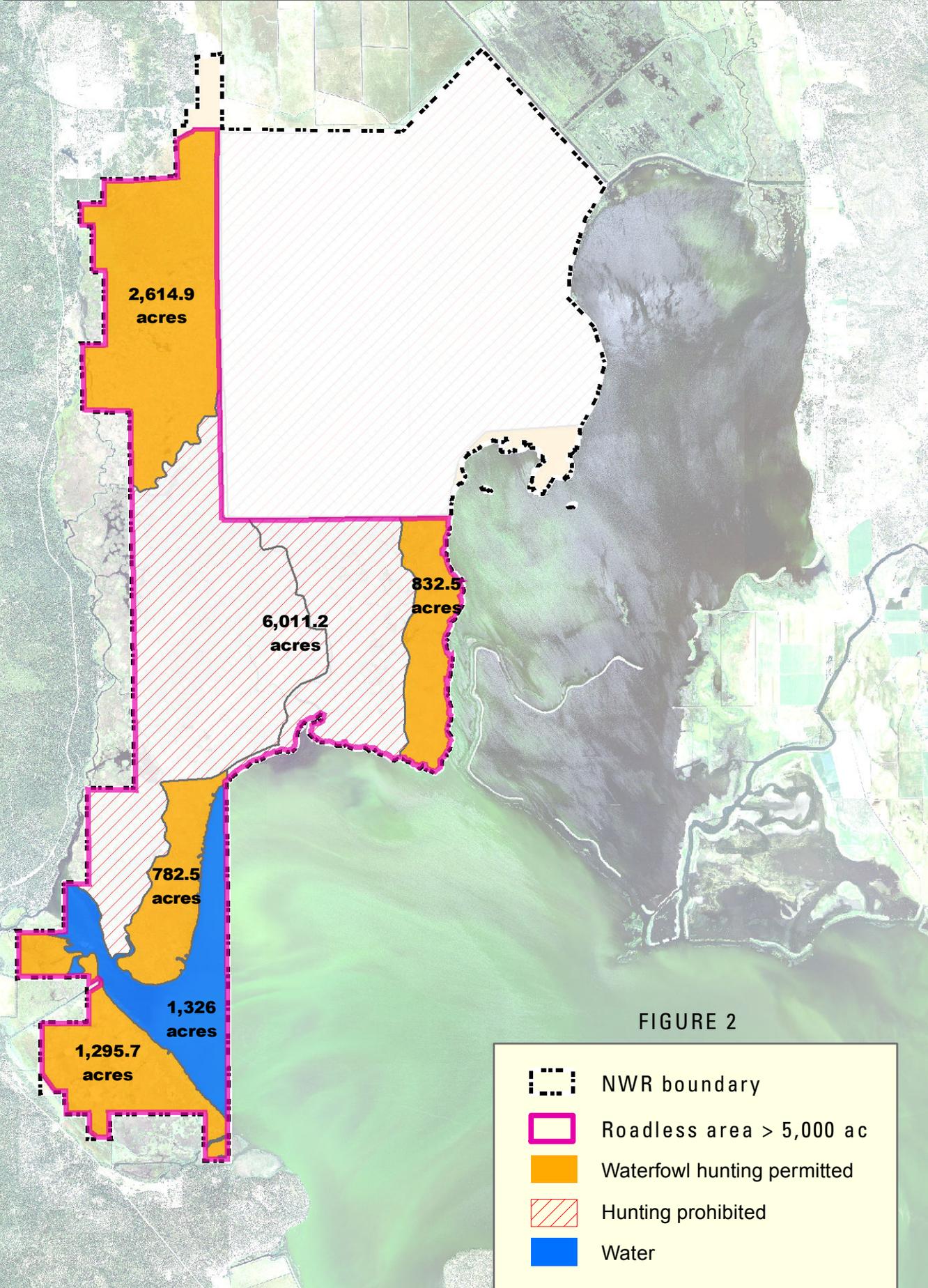
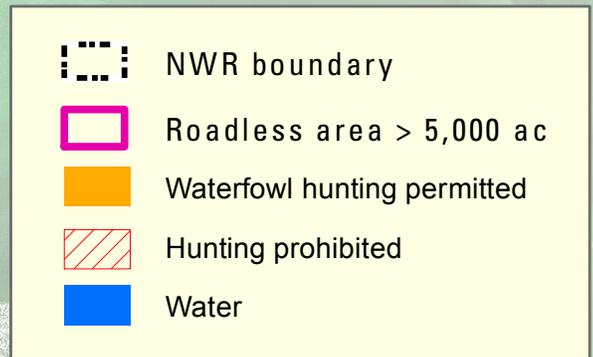


FIGURE 2



As documented below, the roadless areas within Lower Klamath NWR do not meet the criteria necessary for a WSA.

Roadless Areas and Roadless Islands

The Lower Klamath NWR consists of approximately 50,912 acres, and is a varied mix of shallow freshwater marshes, open water, grassy uplands, and croplands that are intensively managed to provide feeding, resting, nesting, and brood rearing habitat for waterfowl and other water birds. Using a geographic information system to model roadless areas, only one roadless area is large enough for consideration as a WSA. This 7,150 acre roadless area is crisscrossed with levees, which are large examples of man's alteration of the natural landscape.

Naturalness Criteria

Depending on water availability, seasonally flooded wetlands cover up to one-third of the Lower Klamath Refuge land area or approximately 15,000 acres. This habitat occupies the shallow peripheral areas of the original Lower Klamath Lake system. Seasonally flooded wetlands are characterized by a flooding regime extending less than year round, but greater than 6 months (of which 2 months must be during the growing season). While there may be areas at the Refuge offering solitude or naturalness, only one is larger than 5,000 acres and roadless. That roadless area consists of 7,150 acres, and is crisscrossed with levees, and is very noticeably influenced by man.

Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation

The 50,092-acre refuge is a varied mix of intensively managed shallow marshes, open water, grassy uplands, and croplands that provide feeding, resting, nesting, and brood-rearing habitat for waterfowl and other water birds. This refuge is one of the most biologically productive refuges within the Pacific Flyway. Approximately 80 percent of the flyway's migrating waterfowl pass through the Klamath Basin on both spring and fall migrations, with 50 percent using the Refuge.

Supplemental Values

The Refuge, with a backdrop of 14,000-foot Mount Shasta to the southwest, is listed in the National Register of Historic Places as a National Historic Landmark. However, Lower Klamath NWR does not meet the overall criteria for recommendation as a wilderness area because:

- Much of the roadless area has been bisected by levees;
- The roadless area is noticeably influenced by man.

As documented below, a roadless area within Clear Lake NWR meets the criteria necessary for a WSA.

Roadless Areas and Roadless Islands

Clear Lake National Wildlife Refuge in northeastern California consists of approximately 20,000 acres of open water surrounded by over 26,000 acres of upland bunchgrass, low sagebrush, and juniper habitat. Small, rocky islands in the lake provide nesting sites for American white pelicans, double-crested cormorants, and other colonial nesting birds. The lake has two lobes, an east and a western lobe with a “U” shaped peninsula between the two lobes.

Clear Lake NWR has mixed jurisdiction, with the Bureau of Reclamation having ownership over a large portion of the eastern lobe of the Lake, including primary jurisdiction over the “U” portion of the Refuge. Using a geographic information system to model roadless areas, only one roadless area with FWS primary jurisdiction is large enough for consideration as a WSA. This WSA consists of 9,882 acres of lands and open waters, primarily water, depending on the season.

Naturalness Criteria

Clear Lake was a natural lake that existed prior to construction of the Clear Lake Dam, which was constructed between 1908 and 1910 to increase the storage capacity of Clear Lake as part of the Klamath Project. The dam lies at the head of the Lost River, which flows northward from California into Oregon. A straight channel was cut between the two lobes of the lake in 1931 by Reclamation to augment the Klamath Project water supply during a drought in the early 1930’s.

The upland areas provide habitat for pronghorn antelope, mule deer, and sage grouse. When the lake is low as it was in 2009 the amount of shoreline is greatly increased. Because the lake elevation fluctuates so much over time sagebrush cannot get established in the shoreline zone of the lake and invasive plants such as cheat grass and Medusahead tend to colonize those areas. Currently the shoreline vegetation consists primarily of forbs, perennial and annual grasses. Over the past 25 years, the lake elevation has fluctuated approximately twenty feet from 4,520 feet elevation in late summer of 1992 to 4,539 feet elevation in the spring of 1986. In the past five years the highest lake elevation reached was in the spring of 2006, when the lake was up to over 4,532 feet. The Clear Lake Reservoir is the primary source of water for the agricultural program of the eastern half of the Klamath Basin, with water levels regulated by the Bureau of Reclamation. Grazing has occurred regularly on the Refuge for decades. In recent years, approximately 5,500 acres (600 animal-unit-months [AUMs]) in the peninsula area (“U” Unit) of the Refuge have been grazed annually from mid-August to mid-November.

Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation

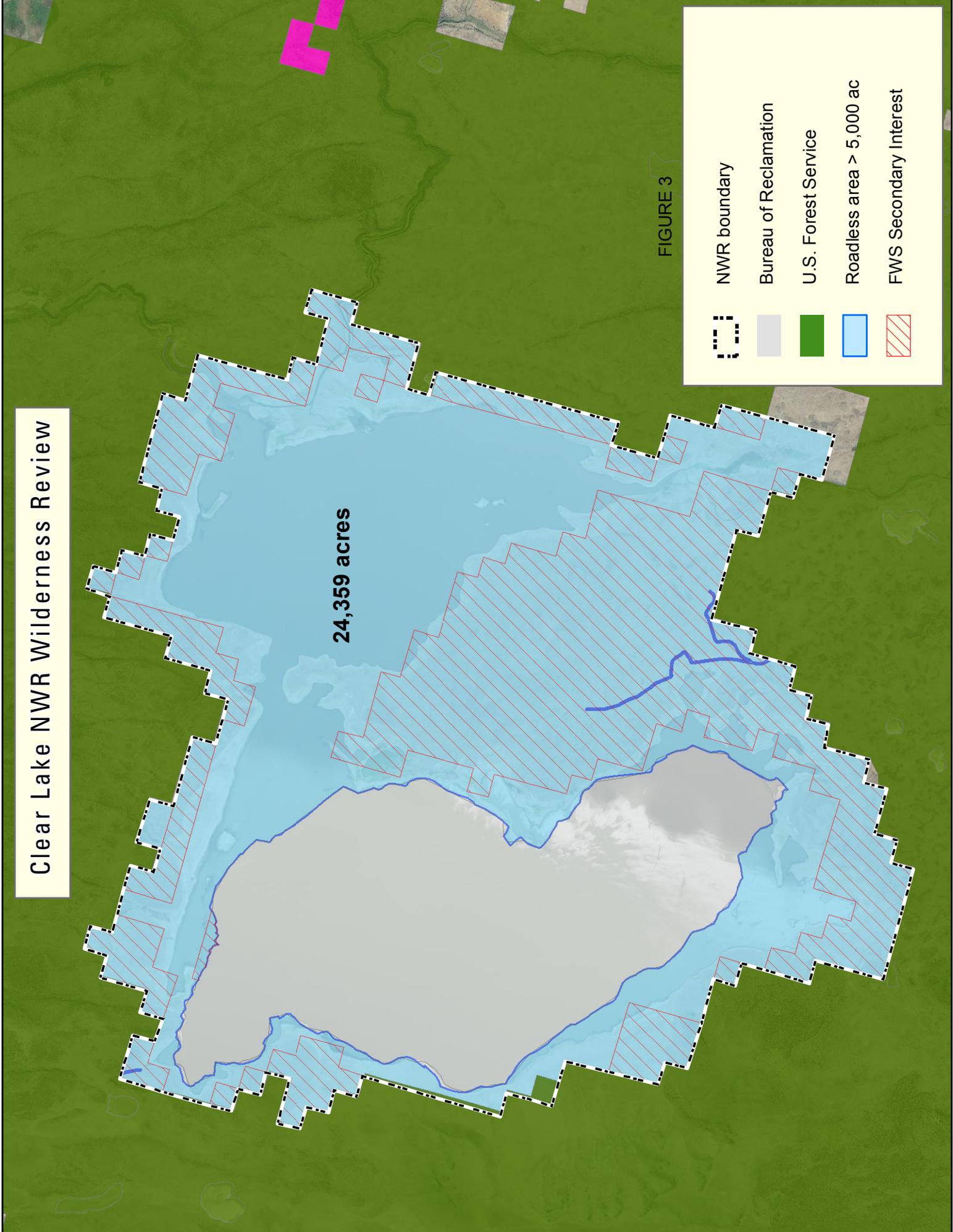
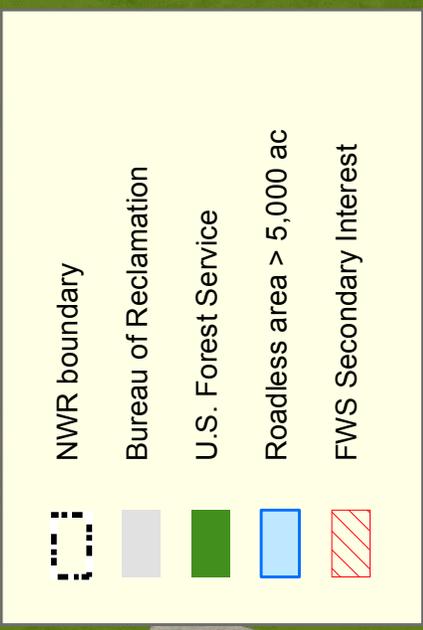
Except for limited waterfowl and pronghorn antelope hunting during the regular California State seasons, the refuge is closed to all public access to protect fragile habitats and to reduce disturbance to wildlife.

Supplemental Values

Some viewing of strutting sage grouse occurs in the spring from U.S. Forest Service Road 136, which runs along and through the refuge's southern boundary.

Clear Lake NWR Wilderness Review

24,359 acres



Refuge unit	Yes/no and Comments					
	(1) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition;	(2) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;	(3a) has outstanding opportunities for solitude;	or (3b) has outstanding opportunities for a primitive and unconfined type of recreation;	(5) contains ecological, geological or other features of scientific, educational, scenic, or historical value.	Unit qualifies as a wilderness study area (meets criteria 1, 2, and 3a or 3b)
Bear Valley	No, 2,494 ac.	No, numerous roads	Yes	Yes	Yes	No
Tule Lake	Yes, 9,346 ac.	Yes	Yes	Yes	Yes	Yes
Upper Klamath	Yes, 12,862 ac.	Yes	Yes	Yes	Yes	Yes
Lower Klamath	Yes, 7,150 ac.	No, crisscrossed with levees	Yes	Yes	Yes	No
Clear Lake	Yes, 9,882 ac.	Yes	Yes	Yes	Yes	Yes

Wilderness Study Areas within the Klamath Complex

Wilderness Study Areas

The three WSAs (Tule Lake, Upper Klamath, and Clear Lake NWRs) found to possess the required wilderness characteristics defined by the Wilderness Act were each further evaluated through the refuge planning process to determine their suitability for designation, management, and preservation as wilderness. Considerations in this evaluation included:

- Quality of wilderness values
- Evaluation of resource values, public uses, and associated management concerns; and
- Capability for management as wilderness or “manageability.”

This information provides a basis to compare the impacts of a range of management alternatives and determine the most appropriate management direction for each WSA.

Quality of Wilderness Values

Tule Lake NWR WSA is entirely within Sump 1A, which captures return irrigation flows from the Klamath Project. Tulelake Irrigation District operates most of the infrastructure on Tule Lake NWR

under contract with the Bureau of Reclamation. This WSA is surrounded by 17,000 acres of agricultural lands.

Clear Lake NWR WSA consists of 9,882 acres adjacent to Bureau of Reclamation lands within the refuge. The Clear Lake Reservoir is the primary source of water for the agricultural program of the eastern half of the Klamath Basin, with water levels regulated by the Bureau of Reclamation. Grazing has occurred regularly on the Refuge for decades. In recent years, approximately 5,500 acres (600 animal-unit-months [AUMs]) in the peninsula area (“U” Unit) of the refuge have been grazed annually from mid-August to mid-November. The refuge is closed to the public except for waterfowl hunting on the shoreline, and pronghorn antelope hunting (six permits per year).

Upper Klamath NWR WSA consists of 12,862 acres, and is predominately marshlands and open water. Three boat launches are close to the perimeter of the WSA, allowing visitors to hunt, fish, and enjoy the solitude. The Service allows sport hunting for waterfowl, including geese, ducks (including mergansers), American coots (*Fulica americana*) and common moorhens (*Gallinula chloropus*), and Wilson’s snipe (*Gallinago gallinago*) on designated areas of Upper Klamath NWR. Within the Refuge boundary on Upper Klamath Lake, recreational fishing is primarily done from boats. Two boat launches on the western shore of Upper Klamath Lake are the primary access points to the western portions of the Refuge.

Evaluation of Resource Values, Public Uses, and Associated Management Concerns

Tule Lake NWR WSA

Tule Lake WSA is entirely within Sump 1A. Sumps 1A and 1B are managed under agreement among the Service, Reclamation, and the Tulelake Irrigation District. The sumps function to capture return flows during the spring/summer irrigation season, protect private property from flooding, and provide wildlife habitat. Most of the area is comprised of open water dominated by submergent plant communities with extensive periodic blooms of filamentous green algae. Minimum water levels in the sumps are mandated by a 1992 Biological Opinion to protect the endangered Lost River and shortnose sucker.

Motorized and non-motorized boats use the open waters of the refuge for hunting waterfowl. Currently, motorized boating is authorized within these 9,346 acres.

In cooperation with Ducks Unlimited, California Department of Fish and Game, Tule Lake Irrigation District, and the U.S. Bureau of Reclamation, the Service installed water control infrastructure in 1998 to allow for water level manipulation of Sump 1B. During the early 2000s, a series of seasonal water drawdowns were conducted which allowed for the germination of emergent wetland plants and the enhancement of submergent plant communities. Prior to these management actions, the area had been flooded continuously for over 60 years. A similar project is currently in the planning stages for Sump 1A.

Clear Lake NWR WSA

Clear Lake’s water is managed by the Bureau of Reclamation; the left node of the lake is the Bureau of Reclamation’s, and primary jurisdiction for the “U” is the Bureau of Reclamation, with secondary jurisdiction held by the Service. Over the past 25 years the lake elevation has fluctuated approximately twenty feet from 4,520 feet elevation in late summer of 1992 to 4,539 feet elevation in the spring of 1986. The 2002 Operations Plan for the Klamath Project issued a Biological Opinion (BiOp) for Clear Lake that lake levels are not to drop below 4520.6’ between April 1 and September 30 to

protect two endangered fish; the Lost River and shortnose suckers. The uplands are used by pronghorn, mule deer, greater sage grouse (sage grouse) and other song birds.

Upper Klamath NWR WSA

Upper Klamath Refuge is almost exclusively composed of wetland habitat. The wetlands, however, are part of Upper Klamath Lake which is managed by the Bureau of Reclamation. Lake levels are currently controlled by a Biological Opinion which restricts the minimum lake level to 4139 feet or about one foot below the bottom of the marshes.

Upper Klamath Lake is hypereutrophic and regularly experiences massive blue-green algal blooms and water quality extremes (including high pH and ammonia concentrations, and widely variable dissolved oxygen concentrations) during the summer and fall. These degraded conditions are associated with unnaturally elevated inputs of nitrogen and phosphorus to the Lake, and seasonally high water temperatures. Water quality degradation in the Upper Klamath Lake watershed has led to large-scale fish kills related to algal bloom cycles in the lake. These episodes have also been correlated with seasonally high temperatures and low lake levels. Toxins generated by the algae are tied to fish die offs in the Lake, potentially including endangered suckers.

Capability for Management as Wilderness

Tule Lake NWR

Alternative A (Current Management)

Under this alternative, the Tule Lake WSA would not be recommended as suitable for wilderness designation. The following table illustrates the current Refuge management activities for the Tule Lake WSA.

Table A1. Wilderness Study Area Management Activities – Per Unit

Unit	Mgt Activity	Equipment/ Frequency/time of year
TL Sump 1A	Weed Treatments	The Service works to scout, map, and control priority weeds especially in priority wildlife habitats and uses an integrated pest management approach to control of invasive species. Practices employed include manipulation of water levels, tilling and disking, mowing, varying the timing of these practices, hand pulling of weeds, prescribed burning, bag-type repellents, trapping and removal, and application of pesticides. Trucks and All-Terrain Vehicles (ATVs) are driven on levees to open head gates. Pesticides are applied using hand wands or backpack sprayers; boomless sprayers mounted on ATVs, utility-terrain vehicles, or trucks; and occasionally from aircraft.
	Wetland Management	Wetlands are provided in Sump 1A. Reclamation maintain static water levels according to a 2008 BiOp. Motorized boats are used to apply prescribed fire of marsh in Sumps. The Service is planning on installing a water control structure to allow for water level manipulation of Sump 1A to allow for the germination of emergent wetland plants and the enhancement of submergent plant communities.
	Fire Treatments	From 1936 to 2005, there were 58 wildfires on Tule Lake Refuge. The agricultural uses on the Refuge have led to a high incidence of wildfire,

		<p>often the result of escaped prescribed fires or vegetation debris burns. Until recently, lessees were permitted to burn their fields. Some of these burns escaped the intended fields, explaining a large percentage of wildfire activity on the Refuge. These types of wildfires have varied from only a few acres to over 3,000 acres. Air boats and specialty tracked vehicles and helicopters are used for prescribed fires in Sump 1A.</p> <p>The high mountain desert climate combined with cured grasses and gusty winds have also been factors in a number of Tule Lake Refuge wildfires. The Refuge is bordered to its west by Sheepy Ridge. The ridge is covered in readily combustible fuels and has caught fire numerous times over the decades.</p>
	Waterfowl Hunting	<p>The Refuge is currently open for migratory game bird hunting (see Refuge-Specific Regulations for Hunting and Fishing, California at 50 C.F.R. §32.24). The Refuge offers a diversity of waterfowl hunting opportunities, including free-roam hunts in marshes using motorized and non-motorized boats (Sump 1A, north of buoys) and in fields over harvested grain. Additionally, hunters may shoot from spaced blinds (numbered posts in dry fields), from Frey’s Island, and from Sump 1B (east of buoys). A daily lottery is used to select individuals who are allowed to hunt in these latter three areas. An annual lottery is also used to select individuals to participate in waterfowl hunting on opening weekend. There are 6 boat launching and parking areas across the Refuge that provide access to the marshes [in sumps 1A and 1B].</p>
	Guided Hunts	<p>Typically, there are up to 5 hunting guides operating on the Refuge under Special Use Permits each hunt season. Guides must be qualified and licensed by the State of California and are required to submit in writing their experience, equipment and safety plans, which are evaluated by Service personnel during the competitive selection process.</p> <p>Waterfowl and pheasant are the target species. From between 2005 through 2014, guided recreational hunting for waterfowl on the Refuge averaged about 150 client use days per season, with a high of 250 use days in 2006 and a low of 120 use days in 2014.</p> <p>A majority of the permittees access the Refuge by privately owned vehicles then launch motorized or non-motorized boats on the flooded wetlands within the Refuge.</p>
	Boating	<p>There are 6 boat launching and parking areas across the Refuge that provide access to the marshes [in sumps 1(A) and 1(B)]. Boats may be used on all areas open to waterfowl hunting. All State boating requirements are enforced by refuge officers.</p> <p>Some boat-in areas are restricted to non-motorized boats only and these areas are open from sunrise to sunset. The non-motorized boating primarily occurs in two areas; the David Champine Canoe trail which is located in the eastern end of the second cell of Discovery Marsh. This trail is open year-round, subject to the available of water. A second</p>

		canoe area is located in the northeast corner of Sump 1A where the Lost River channel enters the lake. This area is open between the end of the waterfowl nesting season and before the start of the hunting season (July 1st through Sept. 30).
	Current Water Management	Tule Lake Refuge wetland sumps receive their water from the Lost River and return flow irrigation. Water levels in the sumps have been stabilized to prevent flooding. The Tule Lake Tunnel (a concrete-lined 6,000-foot tunnel) was constructed to help in the water level stabilization by conveying drainage from the Tule Lake sump to the Lower Klamath Refuge. This transfer of water from Tule Lake to Lower Klamath Refuge has increased water volumes to the Lower Klamath Refuge wetlands. Management of water levels requires mechanized equipment to maintain and clear drains, ditches, and open gates. Vehicles are used to access areas, usually by driving on levees.
	Biological Surveys	Airboats, fixed-wing aircraft, and vehicles are used to survey waterfowl throughout the year, for monitoring, banding, and general access.
	Disease Monitoring	Since the 1940's when 100,000 birds died of botulism, waterfowl disease problems have occurred almost annually on Tule Lake and Lower Klamath Refuges; avian cholera and botulism type C cause the greatest mortality. Avian cholera was first recorded in 1955 and some winters have claimed up to 20,000 birds. Other chronic disease problems that occur each year but are not contagious and cause less mortality include lead poisoning, aspergillosis, and tuberculosis. Refuge staff use motor boats and air boats to survey for disease and collect dead birds.

Clear Lake NWR

Alternative A (Current Management)

Under this alternative, the Clear Lake WSA would not be recommended as suitable for wilderness designation. The following table illustrates the current Refuge management activities for the Clear Lake WSA.

Table A2. Wilderness Study Area Management Activities – Per Unit

Unit	Mgt Activity	Equipment/ Frequency/time of year
CL	Weed Treatments	Small amounts of the invasive annual grasses medusahead and cheatgrass are found primarily on the southwest corner and south side respectively of the Refuge. Trucks and ATVs are used to scout, map, and control priority weed species with an emphasis on protecting high priority wildlife habitat. In 2006, the Service obtained grant funding to remove encroaching juniper trees and in the fall over 1,400 acres of the Refuge was treated. The work was done by a contract crew with chainsaws and the trees were bucked up and left in place to provide wildlife cover.
	Fire Treatments	In an effort to increase the forb coverage and availability for deer, pronghorn and sage grouse, prescribed fires were conducted on the

		refuge in the 1990's. In 1993, one-hundred acres of low sage on the west side of the "U" were burned to stimulate production of forbs and grasses. In August, 1995 an additional 800 acres of low sage on the northwest side of the "U" was burned.
	Waterfowl Hunting	Sport hunting is permitted for waterfowl, including geese, ducks, American coots, common moorhens, and Wilson's snipe on designated areas of Clear Lake NWR. The hunt zone lies only along the shoreline of Clear Lake. The exact acreage varies due to the ever changing lake water level. The western shoreline is the only area open for waterfowl hunting, the remainder of the refuge is closed as sanctuary.
	Pronghorn Hunting	Pronghorn antelope hunting is by permit only and on a very limited basis. The California Department of Fish and Wildlife (CDFW) conduct a special drawing from successful tag holders of the Clear Lake Zone (zone 2). A maximum of 6 permits are allowed each year.
	Current Water Management	Clear Lake water levels are presently regulated for flood control and irrigation with minimum lake elevation dictated by the 2002 Biological Opinion. A minimum water level of 4,520.6 feet is mandated for October 1.
	Biological Surveys	Sage grouse monitoring is conducted using trucks and ATVs. Waterbird population sampling is generally performed using fixed-wing aircraft.

Upper Klamath NWR

Alternative A (Current Management)

Under this alternative, the Upper Klamath WSA would not be recommended as suitable for wilderness designation. The following table illustrates the current Refuge management activities for the Upper Klamath WSA.

Table A3. Wilderness Study Area Management Activities – Per Unit

Unit	Mgt Activity	Equipment/ Frequency/time of year
UK	Weed Treatments	Although pesticides have been approved for use, no acres have been treated with chemicals for invasive species control. For management purposes we reviewed and approved the potential use of pesticides on Upper Klamath NWR when we acquired the Barnes-Agency tract. Staffing constraints over the past several years have precluded conducting weed management with pesticides.
	Fire Treatments	Prescribed fire and fire suppression is accomplished using air boats, specialty tracked vehicles, and helicopters.
	Wetland Management	Hank's Marsh and Upper Klamath Marsh units of Upper Klamath Refuge are almost exclusively composed of freshwater marsh habitat. The wetlands are part of Upper Klamath Lake which is managed by the Bureau of Reclamation.
	Waterfowl Hunting	The Refuge is currently open for migratory game bird hunting (see Refuge-Specific Regulations for Hunting and Fishing, Oregon at 50 C.F.R. §32.56). The hunt zone totals almost 9,100 acres, including Hank's

		Marsh; and the northern, eastern, and southern portions of the emergent marsh in the NW corner of Upper Klamath Lake (see attached map). This total area comprises approximately 39% of the almost 23,100 acres under U.S. Fish and Wildlife Service (Service) management jurisdiction. The remainder of the Refuge is closed to migratory bird hunting and serves as a sanctuary area for waterfowl during the hunting season.
	Guided Hunts	There are expected to be up to 5 guides operating on the Refuge under Special Use Permits annually. Guides must be qualified and licensed by the State of Oregon. Commercially guided waterfowl hunting and fishing, including all means of access and other elements identified in the guides' operations plans. Authorized means of access for areas on the Refuge include motorized boats, non-motorized boats, hiking, snowshoeing, and cross-country skiing. Mechanized/electronic/motorized decoys and mechanized/electronic calls are authorized per state regulations.
	Boating	Waterfowl hunters primarily use boats to access the Refuge, with perhaps 75% launching from Rocky Point and a smaller number from Malone Springs. Both of these boat launches are on the western shore of Upper Klamath Lake, adjacent to the Refuge, and on the Winema National Forest. Motor boats are used by the public in all areas except the canoe trails. Motor boats are used throughout the Refuge by staff for administrative purposes. Within the Refuge boundary on Upper Klamath Lake, recreational fishing is primarily done from boats. Two boat launches on the western shore of Upper Klamath Lake are the primary access points to the western portions of the Refuge. Rocky Point and Malone Springs boat launches and their associated day-use areas are operated and maintained by the US Forest Service (USFS) and are open to public use free of charge. In 2014, the Refuge Manager estimated that 75% of the boaters on Upper Klamath Lake (including anglers) use the Rocky Point boat launch (paved boat ramp); the remaining 25% use the Malone Springs boat launch (shallow, gravel launch area).
	Biological Surveys	Periodic waterfowl surveys are flown from fixed-wing aircraft September through April ideally twice a month, but often only once a month and sometimes not at all depending on conditions.

Alternative B

Under this alternative, no units would be recommended for wilderness designation.

Tule Lake NWR

Tule Lake management of Sump 1A under Alternative B would require annual habitat objectives for proper waterfowl management as described in Appendices M and N, revise the Complex Fire Management Plan, and update the Inventory and Monitoring Plan.

Clear Lake NWR

Under Alternative B, management within the WSA of Clear Lake NWR would work with the Intermountain Research and Extension Station to develop control strategies targeted toward exotic annual grasses while protecting native grasses, shrubs, and forbs. Refuge staff will develop a rapid assessment and control program for new invasive species. Revise and renew the Complex Fire Management Plan, and revise the hunt plan to require non-toxic ammunition for the antelope hunt.

Upper Klamath NWR

Management of this WSA under Alternative B would include the development of an invasive species management program which includes monitoring. The Service also plans on preventing the introduction of aquatic invasive species by pursuing partnerships with the state of Oregon and USFS to develop and operate a portable decontamination station(s) near boat launches on Forest Service lands. Plans also include revising and renewing the Fire Management Plan, and updating the Refuge Inventory and Monitoring Plan. The Service also plans on marking the canoe trail with more signage to increase safety.

Alternative C

Under this Alternative, no units would be recommended for wilderness designation.

Tule Lake NWR

Management under this Alternative for the WSA in Sump 1A would be similar to Alternative B, except water elevation manipulation would be pursued to improve wetland diversity and productivity.

Clear Lake NWR

There is no Alternative C.

Upper Klamath NWR

There is no Alternative C.

Discussion

Each of the three WSAs is either in the water or on a marsh. Each WSA is also in an area where the control of the water is not with the Fish and Wildlife Service, but with the Bureau of Reclamation. Managing any of the WSAs as a wilderness may not be in the best interest of the Fish and Wildlife Service, due to lack of control over the water flow and levels.

Public Review and Comment

This Wilderness Study is an appendix to the CCP, and will be reviewed by the public, other government and non-governmental agencies, and interested groups. The comments provided on the CCP and appendices will help further develop and refine the alternatives presented and allow for better decision-making. A decision on the CCP and Wilderness recommendation will be made in the Final CCP.



The Refuge uses tracked cargo carrier such as the M548 as fire vehicles. The large wide tracks allow it to traverse relatively wet, muddy, and rough terrain that other heavy equipment cannot navigate. Each of the two M548s in the Refuge Complex are capable of hauling 400 to 600 gallons of water and are equipped with fire-fighting equipment including pumps, hose lays, and other tools.



Airboats are invaluable on the lakes and marshes, used for prescribed fire, survey and monitoring, and as a way to get out in the marshlands and open water quickly. In this photo, airboats were used to capture molting/flightless Canada geese in a funnel trap at Clear Lake for banding.