

**San Pablo Bay National Wildlife Refuge
Waterfowl Hunt Plan**

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U.S. Fish and Wildlife Service

**San Pablo Bay National Wildlife Refuge
2100 Sears Point Road
Sonoma CA 95476**

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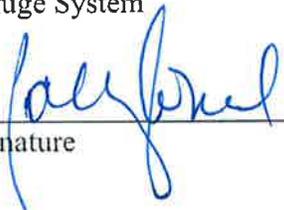

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SAN PABLO BAY NATIONAL WILDLIFE REFUGE AMENDED WATERFOWL HUNTING PLAN

I. Introduction

San Pablo Bay National Wildlife Refuge (Refuge) consists of 19,965 acres located along the northern edge of San Pablo Bay in northern California (Figure 1). The Refuge extends into Sonoma, Napa, and Solano Counties. The Refuge was specifically established to support migratory birds that travel along the Pacific Flyway. The Pacific Flyway is a bird migration pathway that generally runs from Alaska and the Aleutian Islands south to Mexico and South America, paralleling the coast of Washington, Oregon, and California. This is one of four unique flyway regions that birds travel through in the United States. Millions of waterfowl and shorebirds migrate to wintering and breeding grounds along the Pacific Flyway. This Refuge is an important wintering area for waterfowl, particularly canvasbacks (*Aythya valisineria*), scaup (*Aythya* spp.), and scoters (*Melanitta* spp.). The Refuge also supports habitat for endangered species including the California Ridgway's rail (*Rallus obsoletus obsoletus*) and salt marsh harvest mouse (*Reithrodontomys raviventris*). Other endangered species that use the estuary include delta smelt (*Hypomesus transpacificus*), Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*), and green sturgeon (*Acipenser medirostris*).

The purpose of this amended Waterfowl Hunting Plan (Plan) is to propose opening two additional units to waterfowl hunting which will increase the areas of the Refuge open to hunting from approximately 8,000 acres (40% of the Refuge) to 10,216 acres (51% of the Refuge); and to outline how the hunting program will be managed on the Refuge. The Plan documents how the Refuge will provide safe, quality hunting opportunities, while minimizing conflicts with other priority wildlife-dependent recreational uses (Service Manual, 605 FW 1). The Plan will discuss the following topics: compatibility, the effect of hunting on Refuge objectives, assessment of target species, description of the existing and proposed hunting areas, avoiding biological and public conflicts, and the procedures to conduct the daily hunt.

II. Conformance with Statutory Authorities

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (Refuge System) and the purposes for which individual refuges were established, as well as other policies, laws, and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966 (Administration Act), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act); the Refuge Recreation Act of 1962; and selected portions of the Code of Federal Regulations and Service Manual. The Refuge Recreation Act, as amended, authorized the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use when such uses do not interfere with the area's primary purpose.

2.1 Refuge System Mission and Goals

The Administration Act, as amended by the Improvement Act, states: "The mission of the 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."

The following Refuge System goals guide the development of comprehensive conservation plans (CCPs) and the administration, management, and growth of the Refuge System:

- € 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 (i.e., hunting, fishing, wildlife observation and photography, environmental education, and interpretation).
- € Foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

2.2 *Refuge Purposes*

Lands within the Refuge System are acquired and managed under a variety of legislative acts and administrative orders and authorities. The official purpose or purposes for a refuge are specified in or derived from the law, proclamation, executive order, agreement, public land order, funding source, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit. The purpose of a refuge is defined when it is established or when new land is added to an existing refuge. San Pablo Bay National Wildlife Refuge was established under the authority of three Federal acts. These acts and the corresponding purposes are:

- € Migratory Bird Conservation Act (16 U.S.C.715d) - "... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds."
- € An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes (16 U.S.C. 667b) - "... particular value in carrying out the national migratory bird management program."
- € Endangered Species Act of 1973 (16 U.S.C. 1534) – "... to conserve (A) fish or wildlife which are listed as endangered species or threatened species.... or (B) plants ..."

California State Enabling Legislation, Division 7, Chapter 1, Article 3; Section 10680 and 18685 of California Fish and Game code was also required for Fish and Game Commission and County approval. Largely comprised of thousands of acres of tidelands leased from the California State Lands Commission, the Refuge's ultimate plans include protection and conservation of more than 19,000 acres of critical wildlife habitat in northern San Pablo Bay.

2.3 *Refuge System Improvement Act*

The Improvement Act identified a new mission statement for the Refuge System; established six priority wildlife-dependent recreational uses (hunting, fishing, wildlife observation and photography, environmental education, and interpretation); emphasized conservation and enhancement of the quality and diversity of fish and wildlife habitat; stressed the importance of partnerships with federal and state agencies, tribes, organizations, industry, and the general public; mandated public involvement in decisions on the acquisition and management of refuges; and required, prior to acquisition of new refuge lands, identification of existing compatible wildlife-dependent uses that would be permitted to continue on an interim basis pending completion of comprehensive conservation planning.

The Improvement Act establishes the responsibilities of the Secretary of the Interior for managing and protecting the Refuge System; requires a CCP for each refuge by the year 2012; provides guidelines and directives for the administration and management of all areas in the Refuge System, including wildlife refuges, areas for the protection and conservation of fish and wildlife threatened with extinction, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas.

2.4 Compatibility Determination

The Improvement Act also establishes a formal process for determining compatibility of uses. Before any uses, including wildlife-dependent recreational uses, are allowed on refuges, federal law requires that they be formally determined compatible. A compatible use is defined as a use that, in the sound professional judgment of the refuge manager, will not materially interfere with or detract from the fulfillment of the purposes of the refuge or mission of the Refuge System. Sound professional judgment is defined as a finding, determination, or decision that is consistent with the principles of sound fish and wildlife management and administration, available science and resources (e.g., funding, personnel, facilities, and other infrastructure), and applicable laws. The Service strives to provide wildlife-dependent recreational uses when compatible. If financial resources are not available to design, operate, and maintain a priority use, the refuge manager will take reasonable steps to obtain outside assistance from the state and other conservation interests.

In 2011, the Service determined that waterfowl hunting was a compatible wildlife-dependent recreational use on the Refuge (Hunting Compatibility Determination (CD), Appendix E of the Final CCP (U.S. Fish and Wildlife Service 2011). In 2017, the Service prepared a revised Hunting CD that addressed hunting on the Dickson Ranch and Cullinan Ranch Units of the Refuge. In the revised Hunting CD the Service again concluded that hunting on the Refuge is a compatible use and will not materially interfere with or detract from the purposes for which the Refuge was established. Stipulations listed in the revised Hunting CD to ensure compatibility include law enforcement patrols; environmental education and outreach; development of hunting materials; and encouraging the use of retrieving dogs.

2.5 Compliance with Endangered Species Act

The Service prepared an Intra-Service section 7 biological evaluation amendment to the 2011 Biological Opinion (Service File 81420-2011-F-0774-2). The Service concluded that the proposed waterfowl hunting on the Cullinan Ranch and Dickson Ranch Units may affect, but is not likely to adversely affect either the California Ridgway's rail or the salt marsh harvest mouse.

2.6 *Appropriate NEPA Documents*

The Service prepared an environmental assessment evaluating the potential impacts of waterfowl hunting on the Cullinan Ranch and Dickson Ranch Units.

III. Statement of Objectives

The Refuge's management goals, objectives, and strategies (CCP, Chapter 5) are designed to achieve the Refuge's purposes, which are listed in Chapter 1. According to the Refuge's Vision Statement, "the Refuge will be inclusive of all age groups, backgrounds, and skill levels by providing a variety of opportunities, including fishing, hunting, trails, interpretive signs and guided tours, and off-refuge environmental education to facilitate that connection, that belonging, that immersion." Hunting is also included as a wildlife-oriented activity listed in Goal 7: "Provide the local community and other visitors with compatible wildlife-oriented outdoor recreation opportunities to enjoy, understand, and appreciate the resources of the Refuge."

The hunting program is incorporated in the CCP objectives with the following statement (CCP Objective 7.2): "Within five years of Plan completion, expand outreach for the fishing and hunting Programs." Strategies that include hunting are: "Develop the hunt program and revise the existing 1986 hunt plan specifically for the Refuge in cooperation with CDFW; and organize a hunter clean-up day, and provide an orientation day with Refuge law enforcement to provide hunting regulations and service opportunities.

The Refuge manages the hunting program based on the following Service quality criteria (Service Manual, 605, FW1):

- Promote safety of participants, other visitors, and facilities
- Promote compliance with applicable laws and regulations and responsible behavior
- Minimize or eliminate conflict with fish and wildlife population or habitat goals or objectives in an approved plan
- Minimize conflicts with other compatible wildlife-dependent recreation
- Minimize conflicts with neighboring landowners
- Promote accessibility and availability to a broad spectrum of the American people
- Promote resource stewardship and conservation
- Promote public understanding and increase public appreciation of America's natural resources and our role in managing and conserving these resources
- Provide reliable/reasonable opportunities to experience wildlife
- Use facilities that are accessible to people and blend into the natural setting
- Use visitor satisfaction to help define and evaluate programs

The waterfowl hunting program will continue to be conducted in a safe and cost-effective manner.

The Amended Hunt Plan was developed to provide safe hunting opportunities, while minimizing conflicts with other priority wildlife-dependent recreational uses. Waterfowl hunting will be permitted in accordance with state and federal regulations to ensure that it will not interfere with the conservation of fish and wildlife and their habitats. Therefore, the sport of hunting waterfowl on the Refuge complies with state regulations, the Administration Act as amended by the Improvement Act, and the Refuge Recreation Act.

IV. Assessment

A. Are wildlife populations present in numbers sufficient to sustain optimum population levels for priority refuge objectives other than hunting?

Yes, wildlife populations are present in sufficient numbers for priority Refuge objectives for wildlife management and for the other priority wildlife-dependent recreational uses (i.e., wildlife observation and photography, environmental education, and interpretation). Table 1 lists 31 species of waterfowl typically detected in San Francisco and San Pablo Bays, 16 of those species occur on the Refuge. The Refuge adopts harvest regulations set by the State of California, which uses concepts of density dependent compensatory mortality and adaptive harvest management to ensure sustained game species populations (See Section 5.3, Species to be Taken). Harvest regulations can be found on this website:

<https://www.wildlife.ca.gov/hunting/waterfowl>, or a booklet can be obtained at sporting goods stores or California Department of Fish and Wildlife offices.

The Refuge is evaluated to determine the best public use strategy for providing high quality wildlife-dependent public use opportunities. Approximately 10,216 acres (~51%) of the Refuge will be open to hunting of waterfowl. Approximately 9,305 acres (~50%) of the Refuge will be left as a sanctuary where no hunting is permitted.

B. Is there competition for habitat between target species and other wildlife?

Possibly, while each species occupies a unique niche, there is only a finite amount of space available to satisfy various habitat requirements of water, food, cover, breeding, and roosting areas.

C. Are there unacceptable levels of predation by target species on other wildlife?

No, target species (waterfowl) do not prey on other species at unacceptable levels.

V. Description of Hunting Program

A. Areas of the Refuge that support populations of the target species.

Target game species commonly occurring on the Refuge include a variety of species of waterfowl including ducks, geese and coots (Table 1). Descriptions of Refuge habitats, and associated plant and wildlife species are described below and in further detail in Chapter 3 of the Final CCP (U.S. Fish and Wildlife Service 2011).

Habitats

Habitats on the Refuge that support waterfowl include shallow bay water and channels, tidal

flat, tidal marsh, muted tidal marsh, and tidally restored diked baylands (e.g., Cullinan Ranch and Dickson Ranch Units), which is presently dominated by open water (Figures 2 and 3). Hunting currently takes place in open bay water, while no hunting is permitted in other refuge habitats. This hunt plan is proposing to open the two units consisting of tidally-restored diked baylands (Cullinan Ranch and Dickson Ranch Units). The following habitats provide habitat (foraging, resting) for waterfowl.

Shallow bay water and channels

Shallow bays and channels are characterized as the bottom being entirely between 18 feet below mean lower-low water and mean higher-high water. Shallow bays and channels are important for many invertebrates, fish, and waterbirds. This rich environment is an especially productive feeding area for many fish, including Pacific herring (*Clupea pallasii*), Sacramento splittail (*Pogonichthys macrolepidotus*), northern anchovy (*Engraulis mordax*), and jacksmelt (*Atherinopsis californiensis*). It is also an important migratory corridor for anadromous fishes such as Chinook salmon, steelhead, and green sturgeon (*Acipenser medirostris*). A few of the many bird species that occur in this habitat include western grebe (*Aechmophorus occidentalis*), American wigeon (*Anas americana*), canvasback, Forster's tern (*Sterna forsteri*), and least tern (*Sterna antillarum*). Vegetation is limited to algal species and eelgrass, an important plant species founds in this habitat. Diving ducks such as scaup, ruddy duck, canvasback will use this habitat as well.

Tidal flat

The majority of the Refuge is made up of tidal flat habitat. Tidal flats primarily consist of mudflats. It occurs from below mean lower-low water to mean tide level and supports less than 10 percent cover of vascular vegetation, other than eelgrass. These expanses of fine-grained silts and clay support an extensive community of diatoms, worms, and shellfish, as well as algal flora, including green algae, red algae, and sea lettuce. Eelgrass can also be a component of mudflats. This habitat type also supports feeding shorebirds and at high tide, seabirds.

Tidal marsh

Tidal marsh, also known as salt marsh, is a vegetated wetland that is subject to the tidal and salinity influences of the Pacific Ocean. Tidal marsh typically occurs between mean sea level and mean higher-high water. Marsh pans are typical features of extensive, well-developed tidal marshes. These are natural ponds that form in the marsh plain. These ponds are usually less than one foot in depth and fill with tidal water only during very high tides. Tidal salt marsh is generally dominated by Pacific cordgrass (*Spartina foliosa*) and pickleweed. Pacific cordgrass is usually the dominant species on broad tidal mudflats that fringe tidal marsh plains. In middle tidal salt marsh, at elevations near and above mean high water, Pacific cordgrass yields to common pickleweed. Additional plant species on tidal marsh plains include fat hen (*Atriplex triangularis*), marsh-rosemary (*Limonium californicum*), alkali heath (*Frankenia salina*), jaumea (*Jaumea carnosa*), and gumplant (*Grindelia* spp.). Often, dabbling ducks such as mallard and northern pintail, and Canada geese will use these habitats for foraging and resting.

Muted tidal marsh

Muted tidal marsh is a subset of tidal marsh that occurs on the Refuge. Muted tidal marsh areas contain impediments to full tidal action such as internal berms and culverts. These impediments mute or dampen the tides, which can result in lower tidal marsh elevations and alter tidal marsh plant communities.

In the North Bay, tidal marshes support gobies, sculpins, and threespine stickleback (*Gasterosteus aculeatus*) (Goals Project 2000). Birds common to tidal marsh of the Refuge include northern harrier (*Circus cyaneus*), California clapper rail, California black rail, salt marsh common yellowthroat (*Geothlypis trichas sinuosa*), and San Pablo song sparrow (*Melospiza melodia samuelis*) and many species of shorebirds and waterfowl. Small mammal species that rely primarily on tidal marsh include salt marsh wandering shrew (*Sorex vagrans haliocoetes*), Suisun shrew (*Sorex ornatus sinuosis*), and salt marsh harvest mouse.

Tidally restored diked baylands

Diked baylands are areas of historical tidal marshes that have been isolated from tidal influence by dikes or levees. They were dried out and commonly farmed for oat hay for decades which caused these units to subside or sink below sea level.

Many of these baylands are slowly being restored to tidal influence by breaching the levees. Because these units are subsided, the dominant habitat is open water, which will eventually sediment in to create tidal marsh. However, this process will take several decades and the open water habitat will likely remain for the next 20-30 years. The Cullinan Ranch and Dickson Ranch Units are considered tidally restored diked baylands. These two units provide habitat for both waterfowl and shorebirds in addition to many fish species that occur in the bay.

B. Areas to be opened to hunting.

Hunt Program Background Information

Waterfowl hunting is a historic activity that occurred prior to the Refuge's establishment. Hunting was opened on the refuge in the 1980s and it is regulated under the Code of Federal Regulations (Title 50, 32.24) and California Department of Fish and Wildlife (CDFW). The first hunt plan was developed in 1986 and allowed waterfowl hunting in the open bay portion of the refuge. This hunt plan will supersede the old plan and will allow for additional areas (described below) to be opened to waterfowl hunting.

Refuge Hunting Area Descriptions

Open Bay and Channels

Unless posted in the field, the open bay, channels and sloughs are currently open to hunting. Hunting in these areas is open seven days a week during the hunt season only from a motorized or non-motorized boat, and only up to the high water line. A Refuge Permit is not needed for hunting in these tidal areas. There is approximately 8,000 acres of open bay and sloughs that are managed as part of the refuge.

Dickson Ranch Unit of Sears Point

Sears Point is a 2,327-acre parcel located between the Sonoma Baylands Unit and Tolay Creek in Sonoma County. The Dickson Ranch Unit is a 970-acre parcel of Sears Point located south of State Route 37 that is now tidal (Figure 3). Historically, the Dickson Ranch

Unit was tidal marsh habitat before being diked off and drained in the late 1800s to provide farmland for oat and hay. Sonoma Land Trust purchased the land in 2004 with the intention of restoring the land back to tidal marsh. The unit was breached to the bay in October 2015 and was added to the refuge in May 2016. Currently, the Dickson Ranch Unit is shallow open water to mudflat depending on the tides. At a negative tide, the unit is predominantly mudflat and at a higher tide the unit may be up to 5 feet deep in some areas. In general, water depths likely oscillate between 1 and 4 feet deep depending on the tide. There is a deeper channel that was constructed through Dickson Ranch Unit to increase tidal action through the site and facilitate navigation by boat.

The Dickson Ranch Unit is designed so that daily tidal circulation will bring in sediment to raise the bottom elevation of the unit to create tidal marsh habitat. However, it is expected that this process could take 20-30 years. In the meantime, approximately 970 acres of the open water provides habitat for many species of waterfowl and shorebirds.

The refuge is proposing to open over 600 acres of the Dickson Ranch Unit to waterfowl hunting (Figure 3). There will be a 450-foot (150-yard) no hunting zone designated immediately adjacent to the public trails along the Dickson Ranch Unit. This will help physically separate trail users from waterfowl hunters to increase safety. There will also be a no hunting zone in the northeast section of the Dickson Ranch Unit. These no hunting zones will provide approximately 370 acres of sanctuary habitat for waterfowl in the Dickson Ranch Unit. Bird retrieval will be allowed in the no hunting zones/sanctuary area.

Hunters will be allowed to hunt waterfowl three days a week (Wednesday, Saturday, and Sunday) during waterfowl hunting season from a motorized or non-motorized boat in the Dickson Ranch Unit. Hunters are advised to navigate their boats through the deeper channel or navigate in other sections of the Dickson Ranch Unit at higher tides to avoid getting stuck on the muddy bottom. Hunters are advised to use caution while navigating the strong tidal currents at the levee breaches. Hunters may pull their boats onto the interior side of the Dickson Ranch Unit levees that are within the hunting zone (southern breached former levee) to hunt. Hunters may also pull their boats onto the interior marsh mounds to hunt. Hunters should attempt to minimize any impacts to tidal marsh vegetation. Hunters will be allowed to use hunting dogs or other methods of retrieval, including getting out of their boats to retrieve downed birds. Again, hunters are advised to use caution regarding muddy conditions at lower tides and strong tidal currents near breaches.

Cullinan Ranch Unit

Cullinan Ranch Unit is a 1,575-acre parcel located in Solano and Napa Counties (Figure 2). South Slough and Dutchman Slough bound this unit from the north, while Highway 37 bounds it from the south. The unit is bound by Guadalcanal Village from the east and CDFW Pond 1 from the west. Historically, Cullinan Ranch was part of a network of tidal marshes and sloughs along the Napa River. The first permanent dikes were constructed in the early 1900s, and more were added in the 1940s to prevent flooding and isolate the ranch as reclaimed wetland. Cullinan Ranch was farmed (primarily for oat and hay) into the 1980s. In 1987, several conservation groups defeated the proposed development of Cullinan Ranch into a residential marina community. The refuge acquired Cullinan Ranch in 1991 and in January 2015 approximately 1,200 acres of the unit was breached to tidal waters. The remaining 375

acres (Cullinan East Unit) are still under construction. Currently, the Cullinan Ranch Unit is open water with varying depths depending on the tides. In general, water depths likely oscillate between 1 and 4 feet deep depending on the tide. The project is designed so that daily tidal circulation will bring in sediment to raise the bottom elevation of the unit to create tidal marsh habitat. However, within 20-30 years, could convert to tidal marsh with little open water. In the meantime, approximately 1,100 acres of open water provides habitat for many species of waterfowl and shorebirds.

The refuge is proposing to open 1,100 acres of the Cullinan Ranch Unit to waterfowl hunting (Figure 2). There will be a 450-foot (150-yard) no hunting zone designated immediately adjacent to the public trail and adjacent to State Route 37. This will help physically separate trail and roadway users from waterfowl hunters to increase safety. This no hunting zone will provide approximately 331 acres of sanctuary habitat for waterfowl in the Cullinan Ranch Unit. Bird retrieval will be allowed in the no hunting zones/sanctuary area.

Hunters will be allowed to hunt waterfowl three days a week (Wednesday, Saturday, and Sunday) during waterfowl hunting season from a motorized or non-motorized boat in the Cullinan Ranch Unit. Hunters are advised to navigate their boats through Cullinan at higher tides to avoid getting stuck on the muddy bottom. Hunters are advised to exercise caution while navigating the strong tidal currents at the levee breaches at Dutchman Slough. Hunters may pull their boats onto the interior side of the Cullinan Ranch Unit levees that are within the hunting zone (northern breached former levee) to hunt. Hunters may also pull their boats onto the interior marsh mounds to hunt. Hunters should attempt to minimize any impacts to tidal marsh vegetation. Hunters will be allowed to use hunting dogs or other methods of retrieval, including getting out of their boats to retrieve downed birds. Again, hunters are advised to use caution regarding muddy conditions at lower tides and strong tidal currents near breaches.

C. Species to be taken, hunting periods, hunting access

Waterfowl

Only ducks, geese, and coots may be hunted on the refuge during waterfowl hunting season. All other wildlife is protected. Hunters must comply with all State and Federal regulations and the refuge-specific regulations. See <https://www.wildlife.ca.gov/Hunting/Waterfowl>

The San Francisco Bay region is identified as one of the 34 waterfowl habitat areas of major concern in the North American Waterfowl Management Plan (USFWS 2004). A total of 381,301 waterfowl and coots were counted in the SF Estuary during the mid-winter survey in 2012 (Richmond et al. 2014). More than 30 species of waterfowl are found in the San Francisco Bay ecosystem, divided into dabbling ducks, diving ducks, and swans and geese (Goals Project 2000). The Bay is recognized for a large population of diving ducks, both bay and sea ducks (Goals Project 2000).

The San Francisco Bay Estuary was historically the primary wintering area for the Pacific Flyway canvasback population. The Refuge was established, in part, to protect important wintering habitat for migratory waterfowl, particularly canvasbacks. Historically, more than 50 percent of canvasbacks surveyed in the Estuary were located in the North Bay and Napa-Sonoma ponds. More recently, canvasback numbers have declined. Scaup, ruddy duck

(*Oxyura jamaicensis*), and dabbling ducks also use the area. Mallards (*Anas platyrhynchos*), a dabbling duck relying on seasonal wetland habitats, winters most often in great numbers in both the North and South Bays (Goals Project 2000).

Sixteen migratory or resident waterfowl species have been observed at the Refuge. These include the greater white-fronted goose (*Anser albifrons*), Canada goose (*Branta Canadensis*), mallard (*Anas platyrhynchos*), gadwall (*Anas strepera*), northern pintail (*Anas acuta*), American wigeon (*Anas americana*), northern shoveler (*Anas clypeata*), cinnamon teal (*Anas cyanoptera*), green-winged teal (*Anas crecca*), canvasback (*Aythya valisineria*), redhead (*Aythya americana*), greater scaup (*Aythya marila*), lesser scaup (*Aythya affinis*), long-tailed duck (*Clangula hyemalis*), surf scoter (*Melanitta perspicillata*), common goldeneye (*Bucephala clangula*), bufflehead (*Bucephala albeola*), and ruddy duck (*Oxyura jamaicensis*).

Total peak waterfowl populations have been estimated at over 81,000 in the San Pablo Bay area. Northern pintail commonly use CDFW managed open water ponds (formerly salt ponds) north of State Route 37 and subtidal open waters of San Pablo Bay. The majority of canvasbacks wintering in the San Francisco Bay occur in the CDFW managed tidal ponds and subtidal open waters of San Pablo Bay. Surf scoters have numbered up to 80,000 individuals counted during a single winter season in the Estuary by USGS Western Ecological Research Center (WERC). In the North Bay, flocks are widespread in mid- to late winter. This species has experienced significant declines during the last decade that may be related to contaminants on wintering or breeding grounds.

More than half of the ruddy ducks in North America winter at or near the Pacific Coast from southern Canada to Mexico (Goals Project 2000). The majority (85 percent) winter in California, primarily at San Francisco Bay. Shallow managed open water ponds (former salt ponds) in the northern part of the Bay area support the second highest numbers of ruddy duck in the San Francisco Bay region (Accurso 1992), but smaller flocks numbering in the hundreds were observed in the nearshore, northernmost, and northwestern waters of the North Bay. Diving ducks make up most of the waterfowl found in the open San Pablo Bay area. Annual waterfowl surveys indicate a downward trend for diving ducks when comparing 2007 North Bay survey results to 1997 results. Major species such as scoter, canvasback, and scaup also showed a declining trend during the last decade. Scoters have increased during the last six years but are down for the last decade. Canvasbacks have increased in the North Bay during the past three years but are still well below numbers observed in the late 1990s. Scaup numbers have fluctuated in the North Bay, but the general 10-year trend is negative. Reasons for these changes could be related to conversion of the North Bay salt ponds (CDFW) to managed open water and tidal marsh and longer-term climatic cycles and trends.

Hunting Periods

The regular waterfowl hunting season extends from approximately mid-October through late-January, with specific opening and closing dates determined by CDFW Regulations. These regulations can be found at <https://www.wildlife.ca.gov/hunting/waterfowl>, or a booklet can be obtained each season at sporting goods stores or California Department of Fish and Wildlife offices.

Hunting Access

Waterfowl hunting on the Refuge is allowed from both motorized and non-motorized boats. Motorized boating is accommodated through boat launches in the City of Vallejo, Black Point Boat Launch and Hudeman Slough. No motorized boat ramp facilities, docking or boat mooring will be available within the Refuge. Boats will be permitted to travel within the sloughs and open Bay without speed limitation, but should minimize speed while in the Cullinan Ranch Unit and Dickson Ranch Unit to reduce erosive effects of waves to the shorelines and levees as well as to minimize disturbance to wildlife in the area.

At Cullinan Ranch, a non-motorized boat launch facility (floating dock) was constructed near the existing CDFW parking lot to allow access onto the Refuge by canoes, kayaks and other human-powered watercraft. Regulations pertaining to boating in Cullinan Ranch and maps of the adjoining sloughs are available at a kiosk located near the parking lot.

At Sears Point, a non-motorized gravel boat ramp was constructed at the Dickson Ranch Unit of Sears Point to allow access onto the Refuge by canoes, kayaks and other human-powered watercraft. However this ramp is best used during higher tides due to sediment accreting at the base of the ramp. Regulations pertaining to boating in the Dickson Ranch Unit and maps of the adjacent areas are available at a kiosk located near the new parking lot.

D. Justification for the permit, if one is required

No Refuge permit is required. Requirements for waterfowl hunting include: following California and Refuge Waterfowl Hunting Regulations, a California hunting license, a California Duck Validation, a Federal Duck Stamp, and a Harvest Information Program Validation.

E. Consultation and Coordination with the State.

To assure that hunted bird populations are sustainable, the California Fish and Game Commission, in consultation with the CDFW, annually review the population censuses to establish season lengths and harvest levels. The Refuge follows all guidance resulting in this annual State review. More information can be found at:

<https://www.wildlife.ca.gov/hunting/waterfowl>

The Service manages the Refuge's land, habitats, and facilities. Both the Service and CDFW participate in enforcing applicable Federal and State laws and Refuge regulations. The Refuge conducts an annual pre waterfowl hunt meeting with CDFW to review the upcoming season.

F. Law Enforcement

Enforcement of Refuge violations normally associated with management of the Refuge is the responsibility of Refuge Law Enforcement Officers. Other Special Agents and State game wardens often assist the Refuge's law enforcement officers.

The hunting program is managed in strict accordance with all applicable Federal laws (Code of Federal Regulations, Title 50 subchapter C) and to the extent practicable, consistent with applicable State laws.

Law enforcement would continue to be provided by the law enforcement staff stationed at San Francisco Bay National Wildlife Refuge Complex and CDFW wardens. Refuge staff and law enforcement officers will work cooperatively with local laws enforcement officers and CDFW wardens to enforce CFR and Refuge-specific regulations to provide a quality experience for all visitors.

The Refuge does not have any check-in stations. An important method of control is keeping the hunter well informed. The following methods are used to control and enforce hunting regulations:

- Refuge and hunt area boundaries will be clearly posted;
- The Refuge will provide waterfowl hunting regulations and maps updated annually that show hunt areas;
- Refuge law enforcement staff will randomly check hunters for compliance with Federal and State Laws, as well as Refuge-specific regulations pertinent to hunting, including compatibility stipulations;
- Refuge law enforcement will coordinate with CDFW wardens and other law enforcement agencies;
- Information will be made available at the Refuge headquarters and website; and
- Refuge manager and staff will be available to communicate with hunters.

G. Funding and Staffing Requirements

Existing funds and staff are currently adequate to offer the hunt program to the public. There are no hunters fees associated with hunting on the refuge. Hunting areas will not have blinds to incur additional operations and maintenance needs. Staffing activities includes law enforcement, sign posting, updating the website, holding annual pre-hunt meetings, and responding to public inquiries. It is anticipated that funding would continue to be sufficient to continue the hunting program at the Refuge in the future.

VI. Measures Taken to Avoid Conflicts with Other Management Objectives

A. Biological Conflicts

Biological conflicts will be minimized by the following:

1. No hunting will be allowed during the waterfowl breeding season which is generally from February through July. Hunting will be allowed only during designated seasons for waterfowl as determined by CDFW.
2. The areas closed to hunting activities (~9,300 acres) (47%) will provide adequate sanctuaries for wildlife and endangered species.
3. Law enforcement presence will help minimize excessive harvest and other infractions (take of non-game species, littering, etc.).
4. Firearms are permitted on the Refuge for public hunting under the provisions of 50 CFR Part 32. Persons may carry unloaded firearms on the Refuge that are dismantled or cased in vehicles (50 CFR 27.42). In addition, 50 CFR 27.42(e) states persons may possess, carry, and transport concealed, loaded, and operable firearms within a national wildlife refuge in accordance with the laws of the state in which the wildlife refuge is located, except as otherwise prohibited by applicable Federal law.
5. A Section 7 consultation on the Final CCP/EIS (U.S. Fish and Wildlife Service 2011) which

includes hunting of waterfowl was completed to determine effects of the CCP on threatened and endangered species. An Amended Section 7 was prepared for opening the two units.

B. Public Use Conflicts

Conflicts between hunting and other public uses will be minimized by the following:

1. Physically separate non-hunting and hunting acres to divide spatially the activities though some hunt areas can be seen from public trails.
2. Many of the ponds closed to hunting are open to other public use activities during the hunting season.
3. Boundary and hunting area signs will be maintained to define clearly the designated hunting areas.
4. Hunting dogs must be under control at all times.
5. The hunting program will be managed in strict accordance with all applicable Federal laws (50 CFR Subchapter C) and to the extent practicable, consistent with applicable State laws.
6. Field checks by refuge law enforcement officers and CDFW game wardens will be planned to maintain compliance with regulations.
7. Information about the Refuge hunting program will be provided through signs, kiosks, brochures, and the Refuge's website (http://www.fws.gov/refuge/San_Pablo_Bay/activities.html)
8. No camping will be allowed on the Refuge.

C. Administrative Conflicts

There are no administrative conflicts with hunting activities at this time. As the program expands, there may be conflicts associated with the cost of the program. Refuge management sets priorities, allowing staff sufficient time to administer the hunting program. Currently, the Refuge employs two full-time Refuge Officers for the San Francisco Bay NWR Complex. Additional assistance is sought from state game wardens, when deemed necessary.

VII. Conduct of the Hunting Program

Listed below are refuge-specific regulations that pertain to San Pablo Bay NWR as of the date of this plan. These regulations may be modified as conditions change or if refuge expansion continues/occurs.

A. Refuge-Specific Waterfowl Hunting Regulations

Special regulations for Waterfowl Hunting on the San Pablo Bay National Wildlife Refuge are included in 50 CFR 32.24, California Refuge-Specific Regulations. Information on hunting regulations can be found at: <https://www.wildlife.ca.gov/Hunting> and https://www.fws.gov/refuge/san_pablo_bay/.

B. Anticipated Public Reaction to the Hunting Program

Waterfowl hunting is a historic recreational activity that occurred prior to the Refuge's establishment and is an activity that has been ongoing since the Refuge was created. Based on yearly contact with hunters on the Refuge, most hunters support the hunting program on the Refuge. During the scoping comment periods and public scoping sessions for the CCP, no comments were brought up about the Refuge's hunting program.

C. Hunter Application and Registration Procedures (if applicable)

No Refuge-specific permit or registration is needed. Hunters will have to possess a valid State of California waterfowl hunting license.

D. Media Selection for Announcing and Publicizing the Hunting Program

The Refuge has a standard list of local media contacts for news releases. The Service will utilize the Refuge’s website, kiosks, brochures, and flyers to provide current and accurate information regarding the Refuge’s hunt program. Special announcements and articles may be released in conjunction with hunting seasons.

E. General Requirements

General information regarding hunting and other wildlife-dependent public uses can be obtained at San Pablo Bay NWR office at 2100 Sears Point Road, Sonoma CA 95476 or by calling (707) 769-4200. Information, hunt dates, forms, maps, and directions will be available at: https://www.fws.gov/refuge/san_pablo_bay/.

F. Hunter Requirements

Age

- Youth hunters are 15 years of age or younger and must be accompanied by an adult.
- Junior hunters are 16-17 years of age, may hunt alone but may not accompany a youth hunter.
- Adult hunters are 18 years of age or older, may accompany a junior or youth hunter.

Junior/Youth Hunter Summary

| | 15 yrs old, or under <i>(youth)</i> | 16-17 yrs old, w/Jr license <i>(junior)</i> | 18 yrs old, w/Jr license <i>(junior)</i> | 18 yrs old, w/adult license <i>(adult)</i> |
|----------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------|
| Participate in <u>In-Season Junior Hunt</u> ? | Yes | Yes | Yes | No |
| Participate in <u>Post-Season Youth Hunt</u> ? | Yes | Yes | No | No |
| Needs a Hunting License? | Yes | Yes | Yes | Yes |
| Needs a HIP Validation? | Yes | Yes | Yes | Yes |
| Needs a Federal Duck Stamp? | No | Yes | Yes | Yes |
| Needs a State Duck Stamp? | No | No | No | Yes |
| Needs an Upland Bird Stamp? (only if hunting Pheasants) | No | No | No | Yes |
| Needs an Adult accompanying them on regular hunt days? | Yes | No | No | No |
| Needs an Adult accompanying them at a Junior or Youth Hunt? | Yes | Yes | Yes | N/A |

Hunter Education - Hunters are required to complete successfully a hunter education course in order to purchase a State hunting license.

Equipment - The Refuge will permit the use of legal sporting arms, including shotguns fired from the shoulder no larger than 10 gauge firing shot, holding no more than 3 shells in accordance with State regulations.

Fires on the refuge – open fires are not permitted on the refuge

VIII. Compatibility Determination

Hunting and all associated program activities proposed in this plan are compatible with purposes of the refuge. Since restoration of Cullinan Ranch and Dickson Ranch Units, the compatibility determination for waterfowl hunting provided in the CCP of 2011 has been revised and included as an Appendix in this amended hunt plan.

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U.S. Fish and Wildlife Service. 2011. San Pablo Bay National Wildlife Refuge comprehensive conservation plan and environmental assessment. U.S. Fish and Wildlife Service, Pacific Southwest Region.

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Table 1. Waterfowl and coot species present in the San Francisco and San Pablo Bays based on mid-winter waterfowl surveys. Mid-winter surveys from January 2012 and 2016 are presented here. Cullinan Ranch and Dickson Ranch Units were not flooded during the 2012 survey.

| Common name | Scientific name | SPBNWR 2012 | SPBNWR 2016 |
|-----------------------------|----------------------------------|----------------|----------------|
| American coot | <i>Fulica americana</i> | 11,757 | 8,629 |
| American wigeon | <i>Anas americana</i> | 3,966 | 9,194 |
| Blue-winged teal | <i>Anas discors</i> | 0 | 0 |
| Brant | <i>Branta bernicla</i> | 0 | 0 |
| Bufflehead | <i>Bucephala albeola</i> | 407 | 599 |
| Cackling goose | <i>Branta hutchinsii</i> | 0 | 0 |
| Canada goose | <i>Branta canadensis</i> | 10 | 33 |
| Canvasback | <i>Aythya valisineria</i> | 14,610 | 9,094 |
| Cinnamon teal | <i>Anas cyanoptera</i> | 5 | 0 |
| Common goldeneye | <i>Bucephala clangula</i> | 0 | 0 |
| Common merganser | <i>Mergus merganser</i> | 0 | 0 |
| Gadwall | <i>Anas strepera</i> | 1,675 | 1,620 |
| Greater scaup | <i>Aythya marila</i> | 20,263 | 6,716 |
| Greater white-fronted goose | <i>Anser albifrons</i> | 0 | 0 |
| Green-winged teal | <i>Anas crecca</i> | 770 | 1,536 |
| Harlequin duck | <i>Histrionicus histrionicus</i> | 0 | 0 |
| Lesser scaup | <i>Aythya affinis</i> | 0 | 0 |
| Long-tailed duck | <i>Clangula hyemalis</i> | 0 | 0 |
| Mallard | <i>Anas platyrhynchos</i> | 697 | 171 |
| Red-breasted merganser | <i>Mergus serrator</i> | 0 | 1 |
| Northern pintail | <i>Anas acuta</i> | 8,220 | 2,169 |
| Northern Shoveler | <i>Anas clypeata</i> | 13,711 | 7,706 |
| Redhead | <i>Aythya americana</i> | 385 | 57 |
| Ring-necked duck | <i>Aythya collaris</i> | 0 | 0 |
| Ross's goose | <i>Chen rossii</i> | 0 | 0 |
| Ruddy duck | <i>Oxyura jamaicensis</i> | 4,882 | 15,280 |
| Snow goose | <i>Chen caerulescens</i> | 0 | 0 |
| Surf scoter | <i>Melanitta perspicillata</i> | 12 | 293 |
| Tundra swan | <i>Cygnus columbianus</i> | 2 | 35 |
| White-winged scoter | <i>Melanitta deglandi</i> | 0 | 0 |
| Wood duck | <i>Aix sponsa</i> | 0 | 0 |

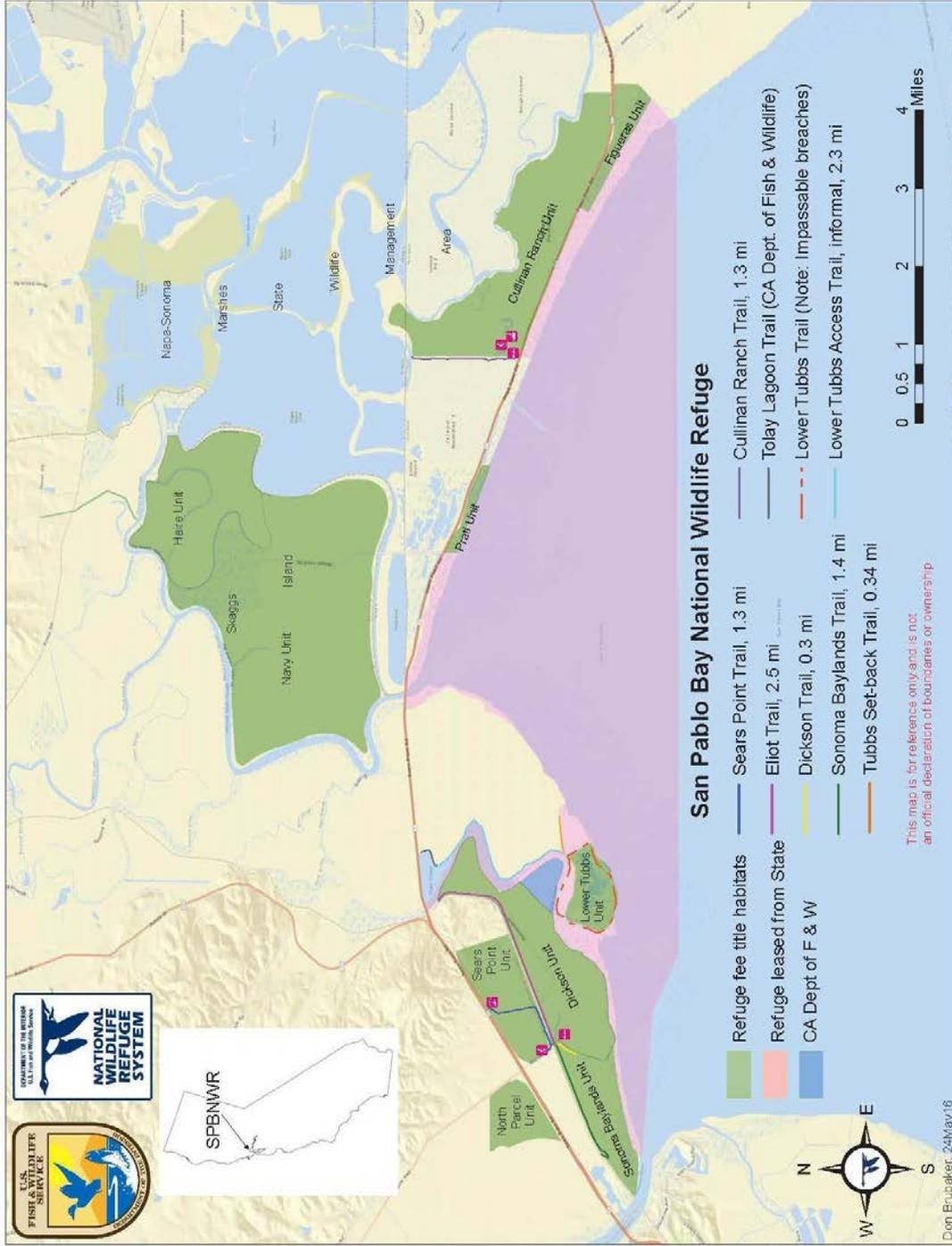


Figure 1. San Pablo Bay National Wildlife Refuge situated on the top end of San Pablo Bay. Opening both Cullinan Ranch Unit and Dickson Ranch Units to waterfowl hunting is being propose. This would increase current waterfowl hunting opportunities by over 1,700 acres, and recreational sport fishing by over 2,100 acres. Waterfowl Hunting Plan, San Pablo Bay NWR, October 2017.

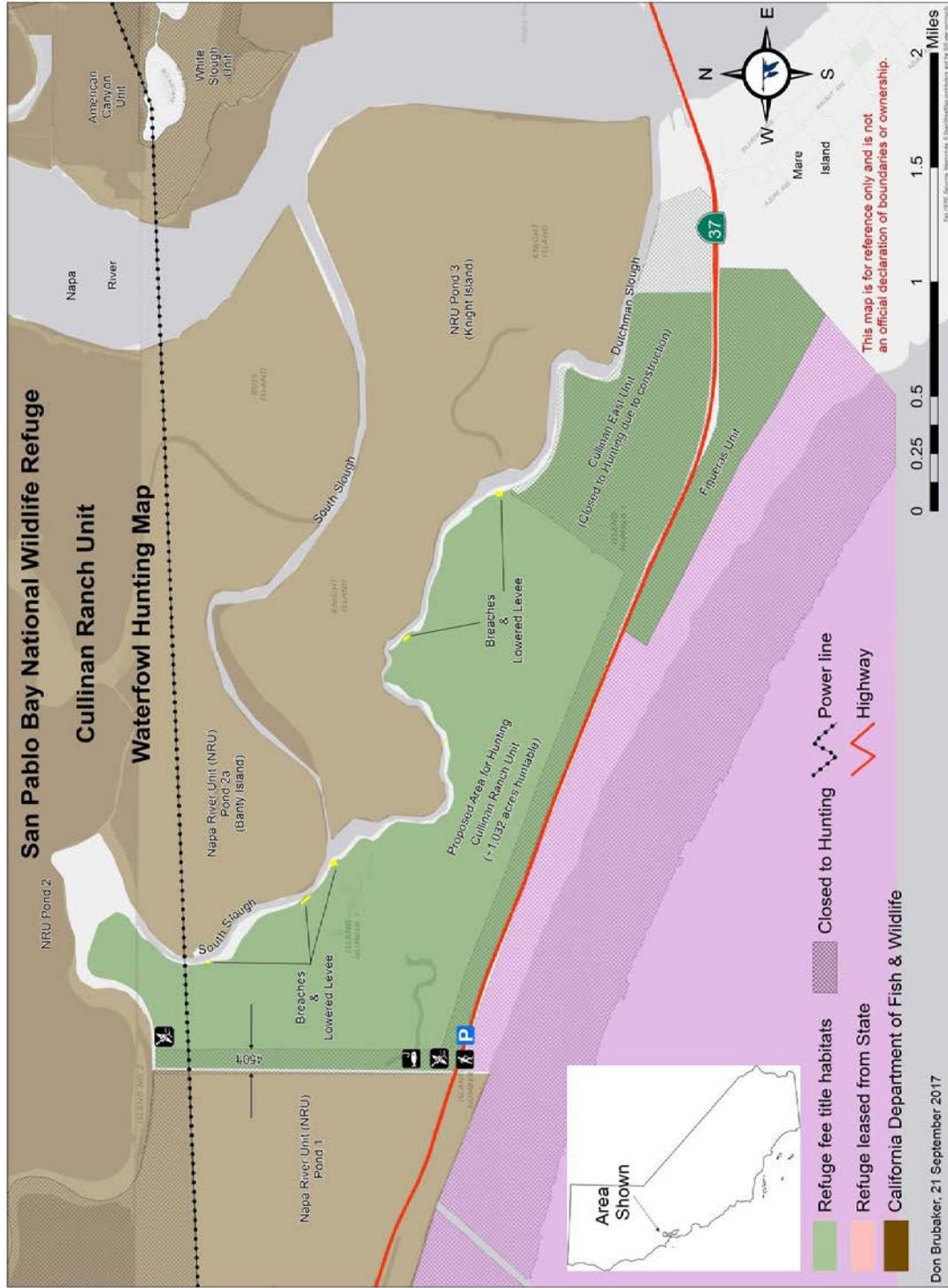


Figure 2. Cullinan Ranch Unit of San Pablo Bay NWR proposed for opening to waterfowl hunting in addition to the State leased lands already open to hunting. Shaded areas are closed to hunting and are either salt marsh habitat or a 'no hunt zone' buffer. Waterfowl Hunting Plan, San Pablo Bay NWR, October 2017.

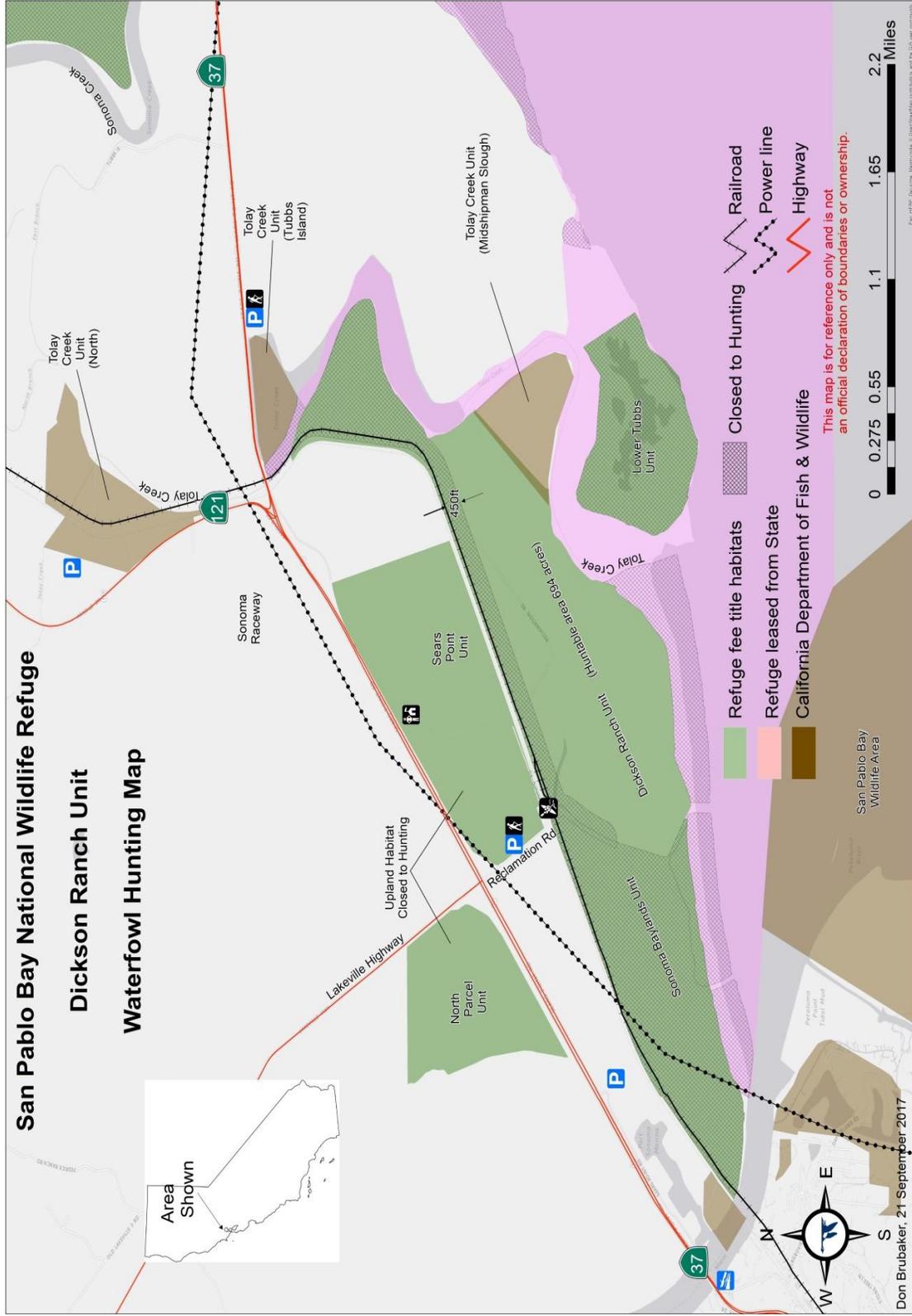


Figure 3. Dickson Ranch Unit of San Pablo Bay NWR proposed for opening to waterfowl hunting in addition to the State leased lands already open to hunting. Shaded areas are closed to hunting and are either salt marsh habitat or a 'no hunt zone' buffer. Waterfowl Hunting Plan, San Pablo Bay NWR, October 2017.