

Priority Marine Sites for Conservation in the Puget Sound

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David Palazzi
Phil Bloch

Aquatic Resources Division
Aquatic Reserves Program



WASHINGTON STATE DEPARTMENT OF
Natural Resources
Doug Sutherland - Commissioner of Public Lands

Table of Contents

Acknowledgements.....	ii
1.0 Introduction.....	1
DNR proprietary responsibilities	1
DNR Aquatic Reserves Program	2
National Marine Protected Areas Center	2
2.0 Selecting Priority Areas	3
Study Area	3
Committee meeting.....	4
Evaluation process	4
Aquatic Reserves Ecological Framework.....	4
Review of Existing Reports	5
3.0 Recommendations.....	7
South Puget Sound.....	7
Central Basin.....	8
Whidbey Basin.....	8
Admiralty Inlet.....	9
Hood Canal	9
Eastern Strait of Juan de Fuca.....	10
Western Strait of Juan de Fuca	10
San Juan Islands.....	11
Strait of Georgia.....	12
Appendices.....	13
Appendix A: Puget Sound Conservation Priorities Table	14
Appendix B: Site Maps.....	23



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Ronda Hamrick, WDNR

Committee Members

The Department of Natural Resources would like to acknowledge the contributions of their time and expertise for this report provided by the committee members:

- Brad Hanson, Ph.D. — NOAA-Northwest Fisheries Science Center. Marine mammal ecology.
- Roland Anderson, Ph.D. — Seattle Aquarium. Marine invertebrates and cephalopods
- Mark Plunket — Seattle Aquarium-Conservation Manager. Working with the City of Seattle on establishing marine protected areas
- Jacques White, Ph.D. — The Nature Conservancy – Washington Marine conservation and conservation planning
- Megan Dethier, Ph.D. — University of Washington Friday Harbor Labs. Shoreline Ecology
- Kurt Fresh — NOAA Fisheries, Northwest Fisheries Science Lab. Salmon Life History and Ecology; Estuarine Ecology
- Rich Osborne, Ph.D. — The Whale Museum/University of Washington Friday Harbor Labs. Marine mammals and birds
- Wayne Palsson — Washington Department of Fish and Wildlife. Groundfish/Marine Resources
- Terrie Klinger, Ph.D. — University of Washington School of Marine Affairs. Oceanography



1.0 Introduction

Over the last several years there has been an increasing call for protecting critical aquatic ecosystems around and world and in the Pacific Northwest. Coastal areas are under pressure from modifications due to increased population growth, recreational use, and commercial use.

Many sites around the world are being protected through various measures, including conservation areas. Marine conservation areas serve several functions—including the protection of rare and endangered native marine species and habitats—to serve as a standard for comparing how people affect the marine environment, and as ecological studies. At this time aquatic habitats in Puget Sound that have the most significant ecological function and services are being identified and prioritized for conservation. The Washington State Department of Natural Resources (DNR) believes it is important to raise the awareness of the importance of these sites to decision makers and resource users, and to conserve the utility of these aquatic resources before the opportunity is lost.

This report identifies and prioritizes marine habitats with high conservation value for nine sub-regions of Washington’s inland marine waters. DNR will use this report to identify marine sites to be considered for State Aquatic Reserve status and develop site priorities for the Aquatic Reserves Program to establish over the next decade. The sites that are recommended in this report will not be considered for reserve status unless they are reviewed and evaluated through the implementation process, and meet the criteria established for the Aquatic Reserves Program.

DNR will provide this information to government agencies, work groups, Tribes, marine resource committees, and non-governmental organizations that have management responsibilities, or that focus their interest on marine resources.

DNR proprietary responsibilities

The Washington State Department of Natural Resources manages more than 2.4 million acres of aquatic lands throughout the state. This includes saltwater bedlands and tidelands and freshwater shorelands. In 2002, DNR established the Aquatic Reserves Program to identify state-owned aquatic lands that warrant special management.

DNR Aquatic Reserves Program

The Aquatic Reserves Program is part of DNR' efforts to promote preservation, restoration, and enhancement of state-owned aquatic lands that provide benefits to the health of native aquatic habitat and species in the state of Washington.

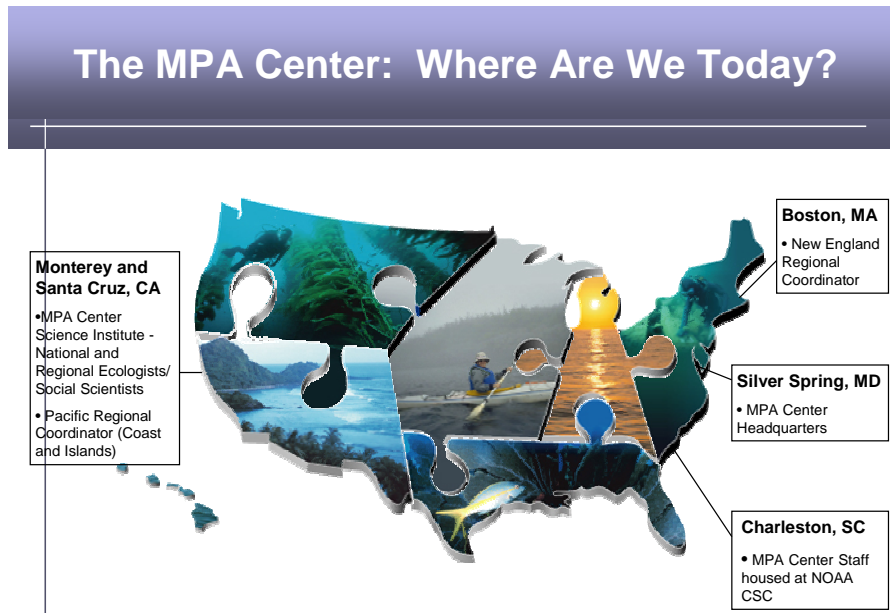
DNR is to establish aquatic reserves to protect important native aquatic ecosystems on selected state-owned aquatic lands throughout the state. These are to be aquatic lands of special educational or scientific interest, or lands of special environmental importance (WAC 332-30-151).

By examining past successes in site-based conservation throughout the country, the Program can help ensure that aquatic reserve status is applied when it is the most appropriate management tool.

DNR will manage existing and future reserves in a manner consistent with the goals of the type of reserve established (ecological, scientific, or educational) and the site-specific management plans for each site.

National Marine Protected Areas Center

This project to prioritize marine conservation sites in Puget Sound was funded by the National Marine Protected Areas Center (NMPAC), which was established by NOAA in 2001 in response to Executive Order 13158 on Marine Protected Areas. The center provides the information, tools, and strategies needed for the design and management of the national system of Marine Protection Areas. In relation to this project, the NMPAC supports local and regional efforts to identify important marine habitats that warrant conservation.



2.0 Selecting Priority Areas

Study Area

The study area includes all of Washington's inland marine waters extending from Neah Bay eastward and into Puget Sound. The inland waters are divided into nine sub-basins, which are defined primarily by oceanographic zones and sills (dramatic topographic changes in the sea floor that cause tidal entrainment and large and small scale mixing and upwelling of surface waters) (Ebbesmeyer et al. 1984). These nine sub-regions are: West Strait of Juan de Fuca, East Strait of Juan de Fuca, San Juan Archipelago, Strait of Georgia, Whidbey Basin, Admiralty Inlet, Hood Canal, Central Puget Sound, and South Puget Sound (Figure 1). The San Juan Archipelago was divided into west, north, and inside regions by the committee to better manage site selection in this sub-basin.

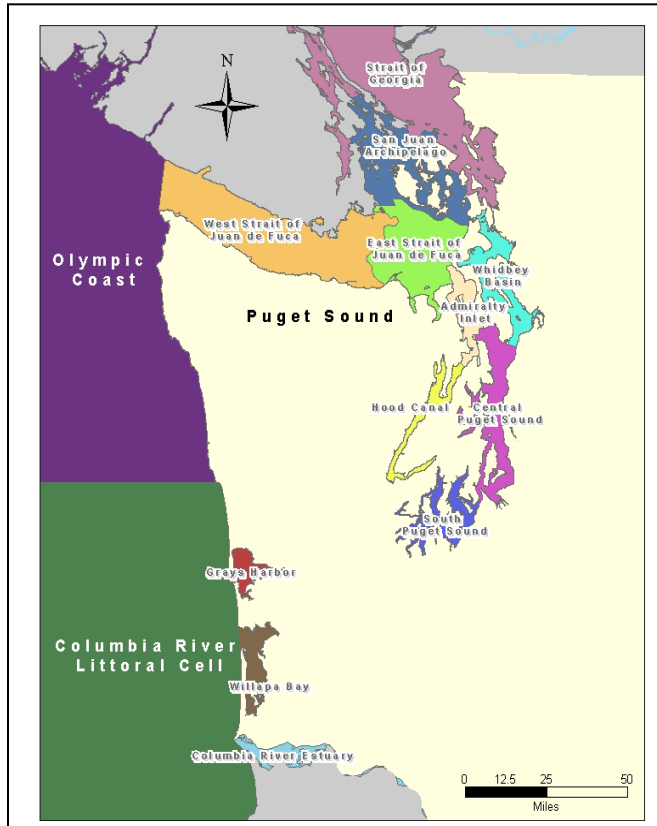


Figure1: Marine biogeographic regions of Washington State (Ebbesmeyer 1984)

Committee meeting

DNR invited participation by committee members made up of a demonstrated field of expertise. The committee members were highly qualified marine biologists and ecologists from academia, state and federal government, and non-government organizations (see Acknowledgements) with expertise, extensive research and professional experience, and familiarity with the project area. The committee did not provide DNR with specific scientific literature to support the recommendations in this report, but simply provided their best professional opinion based on their knowledge and years of scientific research conducted in Washington's inland marine waters.

The committee met for a day and a half to develop the recommendations and the specific site information for this report. They identified and prioritized ecologically significant habitat of common conservation concern, identified specific areas where this habitat and species use occurs, and identified threats to these sites for each of the nine sub-regions (Figure 1) of Washington's inland waters.

Evaluation process

Aquatic Reserves Ecological Framework

The following criteria are being used by DNR to evaluate candidate aquatic reserve sites. These criteria then were the ecologic framework used to guide the committee's discussion and final recommendations for this report:

1. Ecoregional habitat and the identification of specific areas and species to be considered for conservation should be characterized on the following scale:
 - a. Individual
 - b. Population
 - c. Community
 - d. Ecosystem
 - e. Landscape
2. Sites should exhibit high ecological quality. Lower quality sites could be considered if they warrant restoration or contribute to the restoration of significant habitat.
3. Conservation measures should be distributed across a diversity of habitats found in the area.
4. Habitat diversity should be a factor in prioritizing habitat and selecting sites.
5. Proposed sites should be large enough to capture habitats of interest, include sufficient habitat to support viable populations, and when possible, include necessary buffers to support the site.
6. Proposed sites should contain viable populations that are large enough to maintain target populations.
7. Site selection should promote ecological connectivity to support biodiversity within and beyond the proposed site.

Based on their professional expertise, the committee identified the follow priority habitats, functions, and features to be targeted during their effort to define priority areas for conservation:

Key critical habitats

- Submerged aquatic vegetation
- Rocky habitats (submerged and headlands)
- Geologically active areas (river deltas)
- Freshwater inputs
- Deep water habitat
- Mudflats and sandflats

Important Functions and Features

- “Unusual” spawning, nursery, or feeding areas
- Areas that include entire life history of a species (ex. rockfish, wolf eel, octopus)
- High habitat value or unique features
- Adjacent to upland conservation areas
- Lagoon systems (pocket estuaries)
- Scale of sites appropriately large to meet habitat and conservation goals

Review of Existing Reports

The committee reviewed the following four reports that were previously developed to identify specific marine habitat sites that warrant conservation measures. The committee discussed the goals, summary of findings, and shortcomings of each of the following reports in order to gain a perspective on how to accomplish their task:

The Puget Trough/Georgia Basin ecoregional plan. The Nature Conservancy, 2002

This process identifies conservation areas within ecoregions to capture the distribution and diversity of native species, natural communities, and ecological systems. Conservation areas identify the lands and waters needed to sustain the biological diversity of the region and a proposed strategy to conserve them.

Considerations for the Selection of Marine Preserves, Megan Dethier, 1989

Sites were identified based on their ranking for the following factors:

- a. Diversity within a site.
- b. Plant and animal biomass.
- c. Presence of rare species, or areas critical to rare species.
- d. Pristineness (low degree of alteration fro the natural state).
- e. Low degree of local water pollution, or likelihood of pollution in the future.
- f. Usefulness as a research or education site.
- g. Adequately buffered from adjacent land and water uses and direct human impact.
- h. Access to propagules or be readily open to sources of propagules.
- i. Degree of threat to specific habitat type.

-
- j. Direct and indirect functional values.

Research Natural Area Needs in the Pacific Northwest (“Yellow Book”), Dyrness et al., 1975

Research Natural Areas are primarily recognized for scientific and educational values and are defined as “a naturally occurring physical or biological unit where natural conditions are maintained insofar as possible.” Most of the sites selected are in as natural condition as can be found and are sufficiently large to protect the feature of interest for outside disturbances.

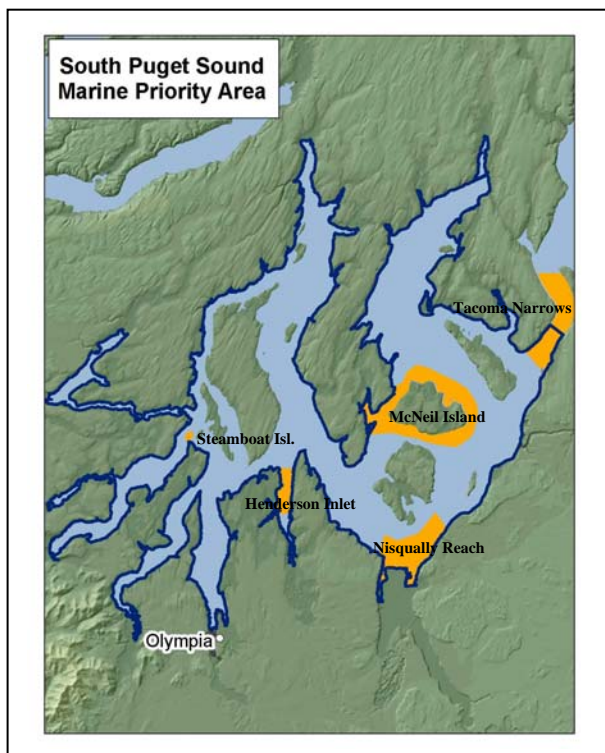
Puget Trough Coastal Wetland Sanctuaries, A Summary Report of Recommended Sites, Linda Kunze, January 1984

The study was conducted employing a botanical and ecological perspective for establishing conservation areas. Sites were evaluated in terms of the quality, representation, and the diversity of physical and biotic features. The criteria for site selection includes:

- a. Degree of human-related physical disruption.
- b. Presence and quality of an upland buffer.
- c. Dominance of three species of Spartina resulted in the elimination of the site from further consideration.
- d. An arbitrary minimum site limit of 10 acres.
- e. Severe water quality problems resulted in elimination of the site from consideration.

3.0 Recommendations

The following is an overview of the committee's recommendations. Detailed information about each site is provided in Appendix A and all of the sites are shown in Appendix B.



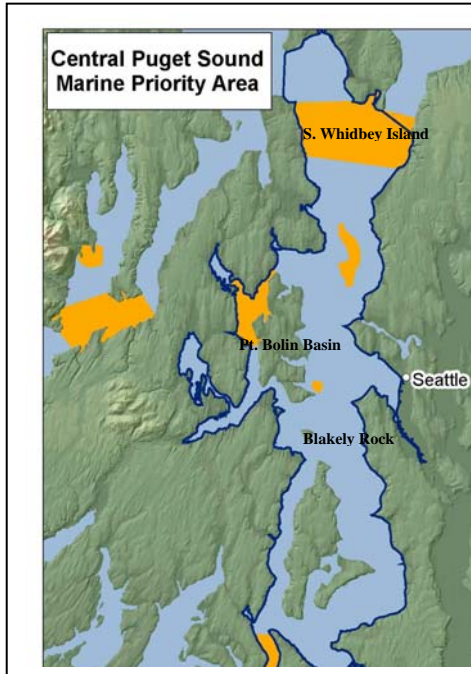
South Puget Sound

The **McNeil Island** site is the top priority site for the south Puget Sound sub-region. The area supports the major south sound harbor seal aggregation. There already exists a buffer due to the restrictions of entry around the prison that includes the intertidal areas of McNeil Island. This site includes Gertrude Island, a Washington Department of Fish and Wildlife (WDFW) Reserve and Eagle Island, which is a marine state park.

Nisqually Reach was the second choice because of its diverse habitat. Nisqually Delta is one of the largest mostly undeveloped estuarine areas in Puget Sound.

The **Tacoma Narrows** was the third choice as it connects all of south Puget Sound to all of the northern inland marine waters. The Narrows is also one of the major sills in the Puget Sound.

Henderson Inlet and Steamboat Island are recognized as important areas in the region as well, though not included as specific recommendations or priorities.

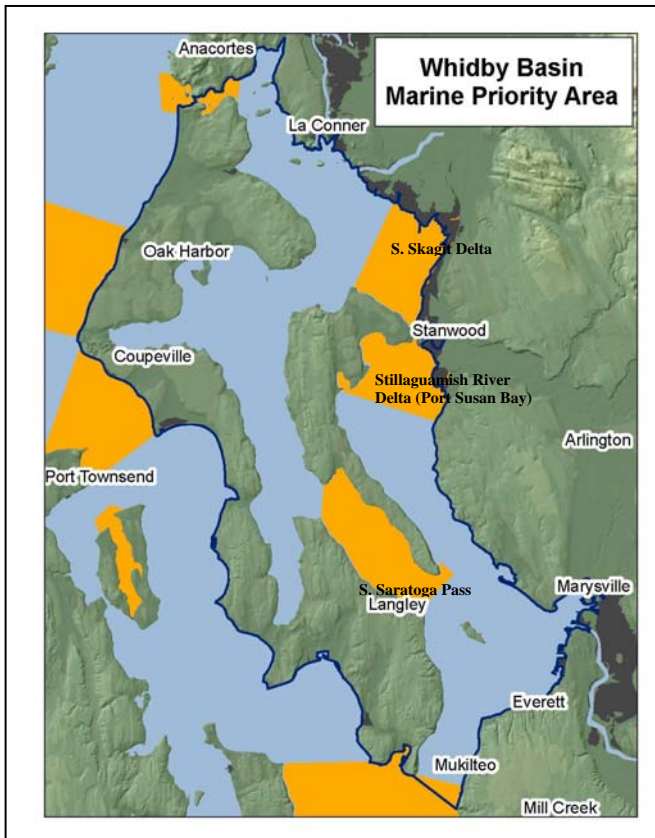


Central Basin

The **South Whidbey Island** site is the committee’s “runaway” priority site for the Central Basin. The area includes the most diverse intertidal habitat in the region, a number of deeper troughs, and has several freshwater systems that drain into the area. **Point No Point**, located on the northwest corner, is a valuable foraging and wintering area for marine birds.

Blakely Rock was the second choice due to its significant bird use and good regional representation of rocky reef habitat.

Point Bolin Basin was recognized for its historic cod aggregation and spawning area, smelt spawning, and high use by sea ducks.

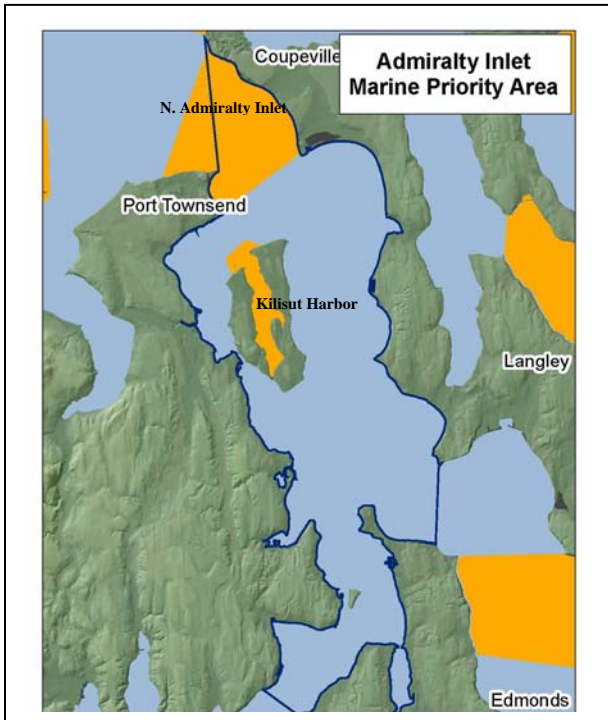


Whidbey Basin

Deception Pass was the top rated site for this region due to the protection of surrounding uplands by state parks and the areas dynamic current and tidal influence.

The South Skagit Delta and Stillaguamish River Delta Basin were identified as equal priorities after Deception Pass. The Skagit Delta is the largest estuary north of Mexico and a major waterfowl wintering area on the Pacific Flyway. The Stillaguamish Basin is more intact than the Skagit Delta and one of four areas in the Puget Sound that supports more than 20,000 shorebirds seasonally.

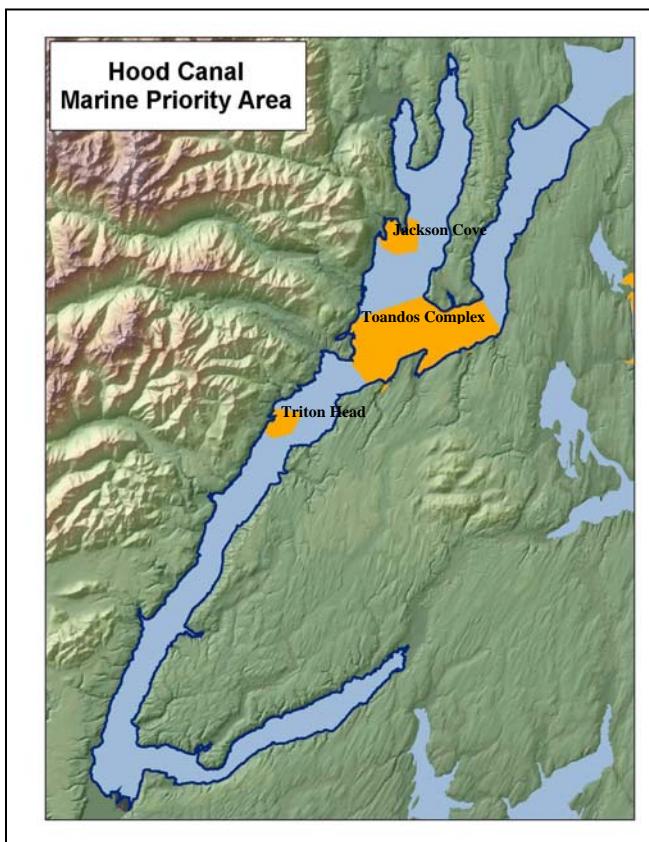
South Saratoga Passage is an area of little development and presently a gray whale feeding area. Baby Island and its adjacent deepwater zone is a major harbor seal and California sea lion area.



Admiralty Inlet

North Admiralty Inlet is the top rated site in this region. The area is a major marine mammal transit zone and corridor for other migratory species. The area includes diverse intact habitat.

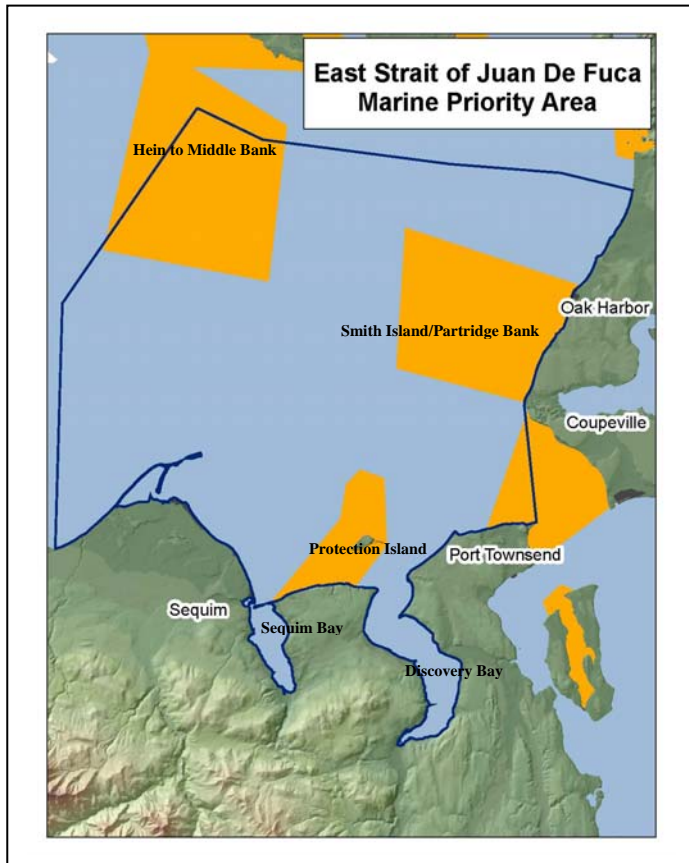
Kilisut Harbor is a historic cod spawning area and is a forage fish spawning area. The area is also identified as an important bird area by Audubon Washington.



Hood Canal

The **Toandos Complex** is recognized as the top spot in the Hood Canal region. This area is on the southern edge of the range of very deep rocky habitat and includes a high abundance of fish and invertebrates. Many large-scale oceanographic processes occur in this area.

Triton Head and **Jackson Cove** are two other important sites in the region. Triton Head includes unique rocky reef habitat. Jackson Cove is recognized for its excellent deep rocky habitat and is thought to have the oldest resident water (least exchange) in Puget Sound.



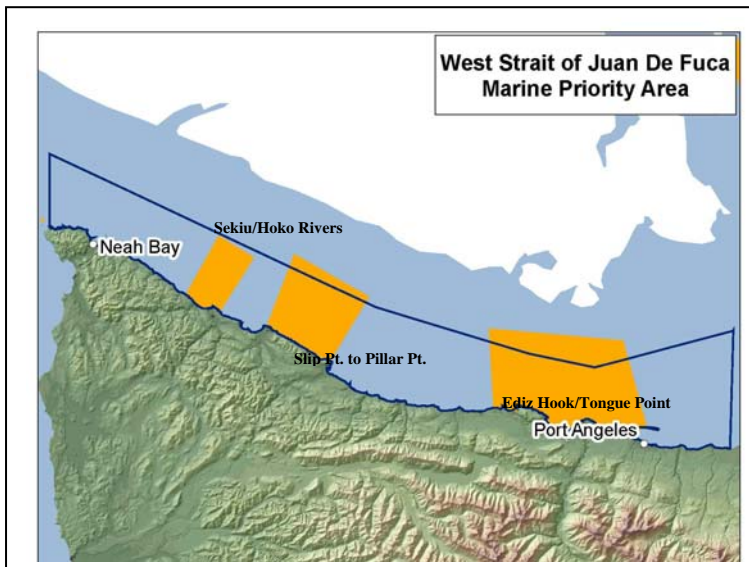
Eastern Strait of Juan de Fuca

The **Smith Island/Partridge Bank** site is the top site for this region. This area is an important marine bird breeding area and is regularly used by a variety of marine mammals. Significant oceanographic conditions occur at this site due to tidal divergence of three major water bodies, Rosario Strait, Strait of Juan de Fuca, and Admiralty Inlet.

Hein to Middle Bank is also an important bird and mammal use area and is a common minke whale sighting area. This site is the only spot in the inland waters for yelloweye rockfish, a long-lived fish that has declined over 80 percent from its initial level.

Protection Island includes extensive kelp and eelgrass areas. Seventy percent of the nesting seabird population of Puget Sound nest on **Protection Island**, which is a National Wildlife Refuge.

Discovery and **Sequim Bays** are also significant sites in this region.

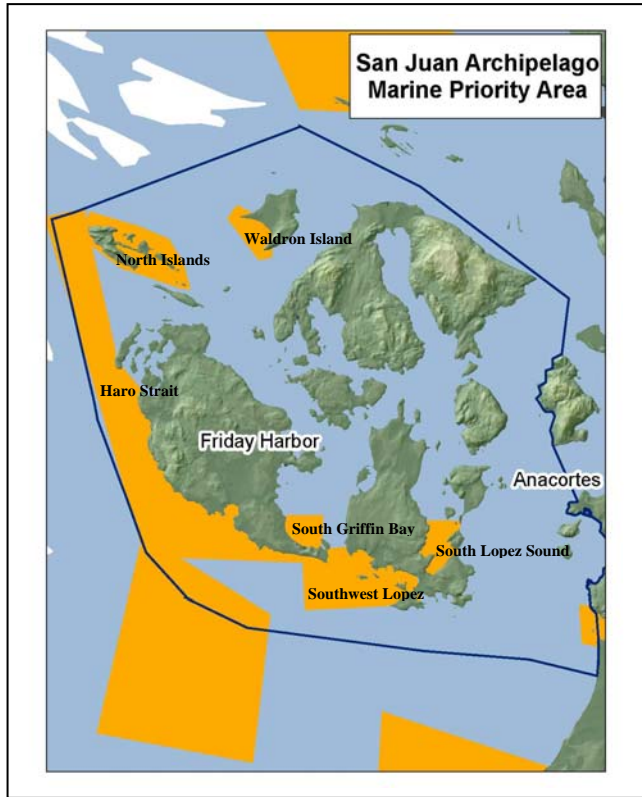


Western Strait of Juan de Fuca

The **Ediz Hook/Tongue Point** site is the priority area in the Western Strait region. The Elwha River and Freshwater Bay, included in this site, are important marine mammal utilization areas, particularly for harbor and dahls porpoise. The area is very rich biologically.

Slip Point to Pillar Point has had little to no anthropogenic impacts. The area includes significant populations of purple urchin.

The **Sekiu/Hoko Rivers** site is a major fall aggregation area for harbor porpoise. The area is highly dynamic with significant rocky reef habitat.



San Juan Islands

South and West

The **Southwest Lopez** site has the richest intertidal of the San Juan Islands. The area is a very important breeding and foraging area for birds and marine mammals.

The **Haro Strait** site is the most important cetacean area in the inside waters of Washington. This area is a major transit and foraging area for harbor porpoise and Orcas.

North

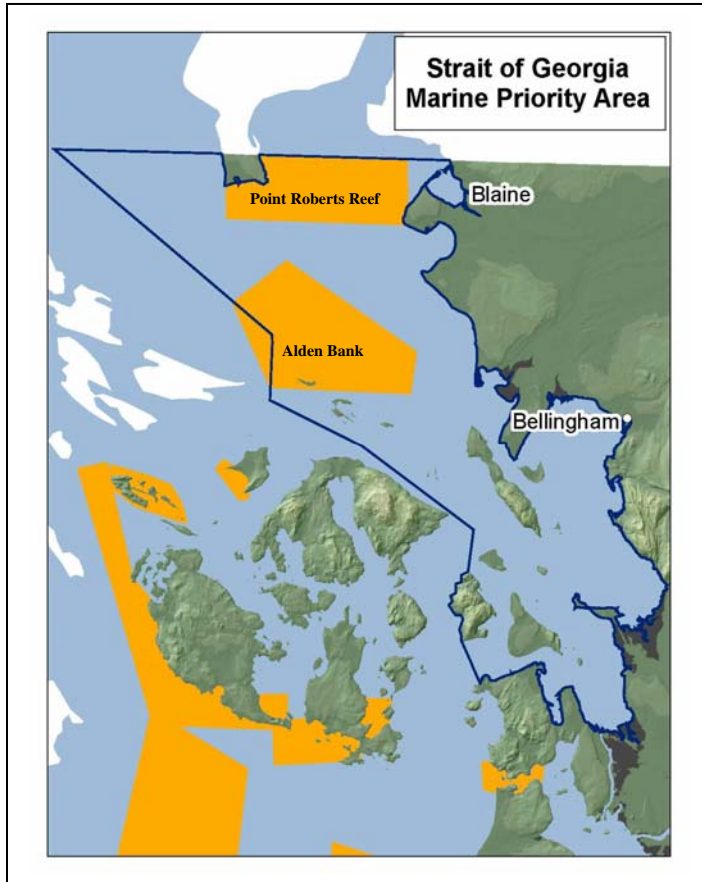
The north islands site is the top area in this region of the San Juans due to its high quality, undisturbed shore habitat, shallow rocky area, and extensive kelp beds.

Waldron Island is an important invertebrate area which includes several interesting assemblages. Harbor porpoise also use the area.

Inside

South Lopez Sound is a very rich biological mud bay.

South Griffin Bay is a muddy subtidal area with eelgrass in shallow waters and unusual invertebrates in deeper water.



Strait of Georgia

Point Roberts Reef is the top site in this region. This area is affected by the Frazier River plume, which provides rich plankton production to the area. The area is rich in ground fish and salmon migrate through the area. The site is part of a larger spatial use area (that includes Cherry Point) that is used by herring stocks that provide forage for a variety of birds, fish, and marine mammals.

Alden Bank is a unique shallow glacier grounding spot that is adjacent to an unusually deep basin.



Appendices

Appendix A: Puget Sound Conservation Priorities Table

Puget Sound Marine Conservation Priority Areas
June 2006

	A	B	C	D	E	F	G
1	REGION	NAME	BOUNDARY DESCRIPTION	Approximate Size (Acres)	IMPORTANT FEATURES	STATE OWNED AQUATIC LANDS	OTHER PROTECTED AREAS LOCATED IN OR ADJACENT TO THIS SITE
2							
3	South Sound Basin	1. McNeil Island	Zone around McNeil Island including Filucy Bay, Pitt Passage, Eagle Island and Gertrude Island. Pierce County.	5,271	Gertrude Island supports the major harbor seal aggregation in the South Sound with Pitt Passage and McNeil Island. A 300 yard protection prison buffer zone around McNeil Island provides protection to the nearshore area.	Large portion Western Pitt Passage, all of Eagle Island intertidal, and all subtidal.	All of McNeil Island and surrounding prison buffer area (300 yds.), including Gertrude Island is a WDFW Wildlife Reserve. Eagle Island is a state park.
4		2. Nisqually Reach	Subtidal and offshore area from Nisqually Head, including the shelf and deep hole northeast to Tatsolo Point. The waterward boundary extends to about the Pierce County Line. Thurston & Pierce Counties	3,494	Diverse habitats including delta marsh and associated intertidal habitats. One of the largest undeveloped estuarine areas in Puget Sound (Dyrness, 1975). This area is key to productivity in the South Sound. The Nisqually Delta is identified as an important bird area by Audubon Washington as resident, wintering, and migratory habitat for a wide range of waterfowl, shorebirds, and water birds (Cullinan 2001). Recognized for supporting one of the five best know examples of Washington-Oregon salt marsh in the Pacific Northwest. Major resting area for migratory waterfowl in southern Puget Sound. Occasionally visited by gray whales, Orcas, and sea lions (Murray, 1998). Thirty five species of fish are found in the Refuge's waters. Used to be a common place for killer whales to go in the 1970's. Good nearshore habitat. Identified as a high priority site in the "yellow book."	All of subtidal. No intertidal.	Adjacent to the Nisqually National Wildlife Refuge (2973 acres) USFWS. WDFW owns 620 acres of the Nisqually River delta.
5		3. Tacoma Narrows	Both shorelines, from Point Fosdick in the SW across to Days Island, north to Point Defiance. Pierce County	3,230	One of the major sills in the Puget Sound. Natural and impacted habitats consisting of coarse sediments and hardpan ridges and benches. Impacted habitats include bridge piers, anchor blocks, and bridge remnants. Fish include a diversity of sculpins, rockfishes, lingcod, and wolf-eel. Well developed area comprised by a high diversity of flora and fauna with rapid tidal currents including <i>Octopus dofleini</i> . Identified as a high priority site in the "yellow book."	Approximately 50% of the tidelands and all of the bedlands.	Tillow Beach Marine Preserve (13.4 acres). Managed by the Metropolitan Park District of Tacoma.
6		Henderson Inlet	Area includes the section from the north end of Henderson Inlet south to a line extending across from Woodard Bay. Thurston County.		Fairly intact representative of the six inlets in the south sound. Southwestern shoreline is included in the DNR Woodard Bay NRCA. Two freshwater drainages enter Woodard Bay. Native Olympia oysters. Productive area for oyster larva. This area is not as impacted by aquaculture or shoreline development as some of the other inlets in south sound. Seal rearing area. Important burrowing and nesting habitat for seabirds and waterfowl (Murray 1998)	All of the tidelands adjacent to the NRCA and the bedlands of the entire area.	Woodard Bay NRCA - DNR managed.
7		Steamboat Island	Subtidal are around Steamboat Island. Located at the top of Totten Inlet in Squaxin Passage. Thurston County.	79	The site includes some of the southern most extent of rockfish habitat. Represents both cobble, gravel, and hardpan scarps, ridges, and sea floor. Herring spawning in the area. Intertidal is in poor shape and the uplands are densely developed.		
8							

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1	REGION	NAME	BOUNDARY DESCRIPTION	Approximate Size (Acres)	IMPORTANT FEATURES	STATE OWNED AQUATIC LANDS	OTHER PROTECTED AREAS LOCATED IN OR ADJACENT TO THIS SITE
9	Central Basin	1. South Whidbey Island	Includes Cultis Bay from Scatched Head west to Point No Point south to Skagit Head, east to Browns Bay (Meadowdale) including the deep basin west of Edmonds, north to Picnic Point, northwest to Possession Point including Possession Bar. Kitsap, Island, and Snohomish Counties.	24,483	Intertidal at Possession Point is most diverse in the central sound. Possession Bar and surrounding area contains a diversity of geomorphic habitats including sand, pebble, and cobble substrates, boulder fields, and ridges and scarps composed of hardpan. Intertidal areas include sand and mud flats with eelgrass in the shallows, and subtidal areas contain some floating and submerged sea weeds. These habitats support a variety of fishes including rockfish, lingcod, flatfishes, and rattfishes, invertebrates including spot prawns, hard shell clams, Dungeness crab, and red rock crab. This area is a major milling and fishing area for salmon. Large bluffs on adjacent uplands. Historically a major area for killer whales and Dahls porpoise. The site includes a number of deeper troughs off of Scatched Head and can contain high abundances of Pacific hake. Several freshwater systems drain into the area. Audubon Washington identified the marine waters off of Point No Point (PNP) as an important bird area because it is a valuable foraging area for marine birds and wintering site for Bonaparte's Gulls. Rip tides at PNP bring pla	Small amount of intertidal ownership in Cultis Bay and south of Point No Point including all subtidal areas.	Possession Point owned by homeowners association (does that mean that the bluffs are provided some specific protection?)
10		2. Blakely Rock	Small island-rocky reef northeast of Restoration Point on Bainbridge Island. Kitsap County.	345	Large cormorant colony. Other significant bird use. Very viable area and good representative of rocky reef habitat in the Central Puget Sound. Highly diverse intertidal site. Nice tide channels and tidepools and rocky sandstones and shales, including <i>Airfaea</i> (boring clam) burrows. Heavy recreational fishing area. Significant clam bed. High educational value.	State ownership of all bedlands surrounding Blakely Rocks.	None
11		3. Point Bolin Basin	South from the narrows at Keyport (bottom of Liberty Bay), south to University Point, east to Fletcher Bay, north to the north end of Agate Passage. Includes all of Agate Passage and the shoreline south to Point Bolin and northwest back to Keyport. Kitsap County.	5,410	Historic cod aggregation and spawning area. Herring (Port Orchard/Madison stock) and smelt spawning ground. High use by sea ducks and other marine birds feeding on baitfish spawn. High concentration of sea run cutthroat. Protected inside area that is not very exposed compared to surrounding areas. High current area. Lots of recreational vessel traffic.	State ownership of tidelands along the western shore from the south end of the Naval Supply Center to Brownsville; along Point Bolin, and small sections in Agate Passage and along the shoreline northwest of Point Bolin.	None
12							

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13	Whidbey Basin	1. Deception Pass	Includes all of Deception Pass and Deception Island from a line from Rosario Head to West Point east to Hoypus Point. Island and Skagit Counties.	2,471	Major out migration route for all of Skagit River Salmon. Dynamic currents and tidal influence. Uplands are protected on both sides by state parks. The subtidal includes bedrock ridges, boulder fields, and coarse sediments including sand, cobble, and pebble. The scarps contain a high diversity of encrusting invertebrates. Many areas support rockfish, lingcod, and other rocky habitat species.	State ownership of approximately 90 percent of tidelands (managed by State Parks).	Adjacent to state parks with the exception of the northeastern shore.
14		2a. South Skagit Delta	The area east a line from Brown Point northeast to Hall Slough. Island, Skagit, and Snohomish Counties.	10,625	One of the largest marshes in this region. Skagit-Stillaguamish estuary is the largest estuary north of Mexico. Major waterfowl wintering area of the Pacific Flyway. Anadromous fish use (Murray 1998). <i>Spartina anglica</i> is spreading into Skagit Bay.	State owned tidelands adjacent to Skagit Wildlife Area managed by WDFW.	Adjacent to the Skagit Wildlife Area managed by the WDFW.
15		2b. Stillaguamish River Delta Basin	The area north of a line from Kayak Point on the eastern shore northwest to Triangle Cove. Island and Snohomish Counties.	9,092	More intact than the Skagit Delta. <i>Spartina anglica</i> problems. This northern portion of this site, including Port Susan Bay, Livingston Bay and the Stillaguamish River Delta is identified as an important bird area by Audubon Washington. The extensive estuaries and tidal mud flats at this site provide habitat for large numbers of shorebirds. Western Sandpipers and Dunlin utilize the area in winter, and semi-annual migration. One of four Puget Sound areas that supports more than 20,000 shorebirds seasonally (Cullinan 2001).	No state tideland ownership	TNC property WDFW Wildlife Area in the delta.
16		3. South Saratoga Passage	From Camano Head southwest to Sandy Point northwest to East Point and north across Saratoga Passage to Lowell Point. Island County.	12,198	Little development and intact oceanographic processes. East shore of Whidbey Island is presently a gray whale feeding area. Deep offshore waters included in this site to integrate the depth gradient and associated habitat types. Elger Bay salt marsh is in good shape. MRC is proposing some portion of Saratoga Pass as a marine reserve. The deep basin supports Pacific hake (ESA candidate species), flatfishes, and rattfish.	State ownership of a large percentage of tidelands on the western shore of this site, from Sandy Point to East Point.	Camano Island State Park borders the northwest corner of this site.
17		4. Baby Island	Located at the top of Holmes Harbor off of Rocky Point on Whidbey Island. Island County.		Shallow shelf with large shell deposits and coarse boulder field. Major harbor seal and California sea lion area. Spit connects to Rocky Point at low tide. Adjacent deep water zone could be added to this site.	No state tideland ownership	None
18							

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	A	B	C	D	E	F	G
1	REGION	NAME	BOUNDARY DESCRIPTION	Approximate Size (Acres)	IMPORTANT FEATURES	STATE OWNED AQUATIC LANDS	OTHER PROTECTED AREAS LOCATED IN OR ADJACENT TO THIS SITE
19	Admiralty Inlet	1. North Admiralty Inlet	The area from a line that follows the Keystone Ferry Lane (from the southeast corner of Port Townsend to Fort Casey State Park), northwest to a line from Point Partridge to near North Beach County Park on the northern edge of the Quimper Peninsula. Jefferson and Island Counties.	13,662	Both sides up and down the coast are important as a unit. Middle area is important deep water habitat. Good intertidal habitat throughout. Deep offshore. Diverse system of beaches and lagoonal system. Major marine mammal transit zone. Corridor for migratory species. Southern extent utilized by harbor porpoise. Shallow subtidal with diverse marine flora including extensive kelp beds, particularly adjacent of Poregos lagoon on Whidbey Island. Offshore rocky "thrust" ridges about 1/4 mile offshore that include large kelp beds. High currents through the area. High seabird abundance. Extensive adjacent eroding bluffs throughout the area. Good undisturbed intertidal areas. Subtidal contains a diversity of sea floor habitats that support rockfish, lingcod, ratfish, dogfish, and flatfishes.	Majority of tidelands are owned by the state. Others owned by TNC or federal government.	Mosaic of upland protection from national parks and state parks and private ownership. This is likely to expand throughout. Two WDFW reserves off of Fort Casey and Keystone.
20		2. Kilisnoe Harbor	Between Indian and Marrowstone Islands. Jefferson County.	2,710	Historic cod spawning area. Forage fish spawning area. Includes kelp and eelgrass. Lower value intertidal than any other site. This area is identified as an important bird area (IBA) by Audubon Washington. The area supports three percent of Washington's Harlequin Duck population during molting season, wintering Brant, and up to 13,500 winter waterfowl. Eelgrass beds are used by Brant and other waterfowl and seabirds (Cullinan 2001).	Little if any state tideland ownership.	Fort Flagler and Mystery Bay State Parks. All of Indian Island is a Naval Reservation.
21							
22	Hood Canal	1. Toandos Complex	South end of Toandos Peninsula from Hazel Point across the Hood Canal south to Warrentonville, along the shoreline including the estuary to Big Beef Creek to Slavis Bay, west across Hood Canal to the middle of Black Point to just north of the entrance to Pleasant Harbor across the entrance to Dabob Bay to Tskutsko Point on Toandos Peninsula. Jefferson and Kitsap Counties.	11,697	This area is the edge of the range of very deep rocky habitat areas. This reach has a high abundance of groundfish including deep-water rockfishes, dogfish, flatfishes, and ratfish, and invertebrates such as heart urchins and sea whips. Seabeck area has a high abundance of fish and invertebrates. The Seabeck Bay area and western side of this site are important bird area. Extensive eelgrass beds. Influenced by water movement out of and into Dabob Bay. Upwelling coming down the Strait of Juan de Fuca enters through the area. Lots of large scale processes occur at this site. Big Beef Creek contains established runs of chum and coho salmon and steelhead trout ("yellow book"). The area includes mouths of several other small, classic Puget Sound lowland streams.	State tideland ownership along most of the southwest half of Toandos Peninsula and a small portion in front of Scenic Beach State Park.	Scenic Beach State Park, University of Washington research station at the mouth of Big Beef Creek.
23		2a. Triton Head	Area around Triton Head. Jefferson and Mason Counties.	1,063	Triton Head to Triton pinnacle in the middle of the Hood Canal provides a unique rocky habitat that supports yelloweye and other rockfishes and lingcod.	No state tideland ownership.	None.
24		2b. Jackson Cove	Area includes all of Jackson Cove on the western shore of Dabob Bay from Pulali Point to Wawa Point. Jefferson County.	1,576	Excellent deep rocky habitat from Pulali Point south to Seal Rock. Incorporates deep water habitat that supports lingcod, rockfishes, Pacific hake, and spot prawns. Sea floor is heavily impacted near this area by the navy because it is an active torpedo range creates major impacts from copper wire and unknown propellants. Oldest resident water in Puget Sound with very little exchange. Dabob Bay is very rich in resources based on WDFW Tech. Rpt. 79.	State owned tidelands on the eastern shore of Jackson Cove and small section on the east side of Pulali Point.	None.

Puget Sound Marine Conservation Priority Areas
June 2006

1.	A REGION	B NAME	C BOUNDARY DESCRIPTION	D Approximate Size (Acres)	E IMPORTANT FEATURES	F STATE OWNED AQUATIC LANDS	G OTHER PROTECTED AREAS LOCATED IN OR ADJACENT TO THIS SITE
25	Eastern Strait of Juan de Fuca	1. Smith Island/Partridge Bank.	Includes shoreline on Whidbey Island from Joseph Whidbey State Park south to Point Partridge and extending directly out into the Strait of Juan de Fuca to include and to the west of Smith Island, and Partridge, Eastern, Coyote, and Dallas Banks. Island and Jefferson Counties.	30,169	Important marine bird breeding area. High marine mammal use of this area, Orcas, harbor seal haul out and breeding area. Identified as critical habitat by the Nature Conservancy WPG. All banks including Smith Island have significant kelp beds. Oceanographic situation is very important in this area. Incoming tide from the Strait divide into Admiralty Inlet and Rosario Strait and outgoing converge. Smith Island has highly diverse flora and fauna in intertidal and benthic areas. Rock, sand, and gravel with varying exposure to tidal currents. Protected from the general public ("yellow book").	The state owns nearly all of the tidelands along the Whidbey Island shoreline at this site and those surrounding Smith and Minor Islands.	Smith and Minor Islands are included in the San Juan Island National Wildlife Refuge. Adjacent uplands are protected as part of the Ebey's Landing National Historical Preserve.
26		2. Hein to Middle Bank	Area south of San Juan Island. San Juan County.	42,098	Important bird and mammal area. Only area with extensive rocky pinnacles in the Puget Sound that supports populations of yelloweye rockfishes in the inland waters. Hein Bank is unique for common sighting of minke whales. Hein bank contains boulder fields on the top that support floating and understory kelps, abalone, rockfishes, and lingcod.	This area is considered state owned bedlands.	None.
27		3. Protection Island	The area includes the tip of the Miller Peninsula from Rock Point to Thompson Spit north and beyond Protection Island. Jefferson and Clallam Counties.	8,772	Extensive kelp and eelgrass area. Important marine bird area. Seventy percent of the nesting seabird population of Puget Sound and the Strait of Juan de Fuca nest on Protection Island. One of the largest breeding populations of Rhinoceros Auklets in the world. Largest nesting colony of Glaucous-winged Gulls in Washington. Largest nesting population of tufted Puffins in the region (Cullinan 2001). High forage fish use area. Deep hole included in this area. Major settling area for kelp.	The state owns about 90 percent of the intertidal area on Miller Peninsula and around Protection Island.	Protection Island National Wildlife Refuge including the Zella Schultz Seabird Sanctuary.
28		4a. Discovery Bay	Jefferson and Clallam Counties		Important bird area including marbled murrelets, Herring stock. Deep bay composed of fine sediments throughout except for ballast dumps from past shipping practices and bottle dumps on the south end. The ballast piles support high concentrations of octopus and rockfish. Juvenile and adult spot prawn habitat as well as Dungeness crab. Reef off of Woodsmans Point. Clipper ship "Warhawk" sank in Discovery Bay in 1883. Recommended as a research area. Mud-gravel intertidal and shallow subtidal habitats with diverse invertebrate, fish, and bird faunas, and high productivity provided by eelgrass and macroalgae. Moderate fish abundance and diversity that once supported extensive commercial fishing activity. High clam abundances. Fish abundance and diversity. High clam abundances. Good baseline data (Dethier 1989).	No significant state intertidal ownership.	None
29		4b. Sequim Bay	Clallam County		Shallow Bay that has only minor human disturbance. Less impacted than Discovery Bay. Important bird area, including marbled murrelets. Extensive intertidal and sand/mud flats containing high abundances of Dungeness crabs, other invertebrates and the juvenile stages of many fishes including forage fishes. Spit at the northend is an extremely productive clam bed. Much of the nearshore is a herring spawning area and some of the shoreline supports smelt spawning habitat.	Small section of tidelands owned by the state along the middle of the western shore and a small section at Goose Point on the eastern shore.	Sequim Bay State Park in the southwest.

Puget Sound Marine Conservation Priority Areas
June 2006

	A REGION	B NAME	C BOUNDARY DESCRIPTION	D Approximate Size (Acres)	E IMPORTANT FEATURES	F STATE OWNED AQUATIC LANDS	G OTHER PROTECTED AREAS LOCATED IN OR ADJACENT TO THIS SITE
30	Western Strait of Juan de Fuca	1. Ediz Hook/Tongue Point	On the shoreline from Tongue Point/Crescent Beach east to Ediz Hook and extending out to the main channel west of the Victoria sill. Clallam County.	76,768	The Elwha and Freshwater Bay are important components of marine mammal utilization of the area. Harbor porpoise high use area. Dehls porpoise utilize the area in the fall. Little impact from upland property owners. Crescent Beach is identified in the "yellow book" as a high priority. Very rich biologically. Rocky intertidal region with good populations of three species of sea urchins and historically abalone. Semi-protected beach habitat. Offshore contains intermittent rocky ridges with sand, pebble, and cobble substrates in between. These habitats support rockfish, lingcod, halibut, and other flatfishes.	State ownership of the majority of tidelands with the exception of Crescent Bay and portions of Freshwater Bay.	Salt Creek County Park. Striped Peak State Forest. Freshwater Bay State Park.
31		2. Slip Point to Pillar Point	On the shoreline from Pillar Point west to Slip Point and extending out to the Canadian Border. Clallam County.	37,684	Not impacted except for extensive recreational fisheries. Great steep rocky intertidal area with excellent populations of purple urchin and exposed intertidal flora including extensive Nereocystis and Macrocystis beds and invertebrate fauna. Subtidal contains intermittent scarps and ridges composed of rocky ridges and boulder fields separated by sand, pebble, and cobble habitats. These habitats support populations of rockfishes, lingcod, halibut, migratory salmon, Pacific cod, Pacific hake, and walleye pollock. Slip Point identified as high priority in the "yellow book." This area represents a boundary or transitional area between coastal and estuarine waters.	State ownership of all tidelands.	Uplands of Slip Point controlled by the Coast Guard.
32		3. Sekiu/Hoko Rivers	Bay the includes the mouths of Sekiu and Hoko Rivers out to the international border. Clallam County.	18,667	Major fall (sept. and Oct.) aggregation site for harbor porpoise. They aggregate in the nearshore in the mornings and use the deep central basin during the daytime hours. These same animals move to the central basin later in the year. Great intertidal area. Macrocystis in the nearshore. Highly dynamic. Significant rocky habitat that supports rockfishes, lingcod, and halibut. Transitional area between the coastal and estuarine regimes. Pacific cod, hake, and walleye pollock populations offshore. Hwy 112 runs along the shore. One small pocket housing development is along the shoreline west of the Hoko River mouth.	State ownership of about 1/4 of the tidelands on the west of the Hoko River mouth.	None
33	San Juan Islands -	1. Southwest Lopez	Mackaye Harbor south to Iceberg Point, west to Whale Rocks, extended to Salmon Bank buoy, north to Cattle Point, including Cattle Pass. Includes Long and Charles Islands. San Juan County.	7,758	This area contains a diversity of intertidal and subtidal habitats composed of headlands and islets that give rise to scarps of bedrock and boulder fields. The deep channels are composed of coarse sand, pebble, and cobble substrates, and plunge pools and sand waves are found to the north and south of Cattle Pass. Rocky habitats sport extensive kelp beds, the richest intertidal zones in the San Juan Islands, and extensive rocky habitats that support rockfishes, lingcod, and abalone. Surf smelt and sand lance spawning habitat in Mackaye Harbor. Heavily impacted by drift nets. Very important breeding and foraging area for birds and marine mammals, including seals, Steller sea lions, and Orcas. Diverse intertidal rocky habitats. Unique subtidal faunal arrangements (Dethier 1989). State run net fisheries are moved offshore. Some of this area is off limits to net fishing.	The state owns the majority of the tidelands with the exception of the inside portion of Mackaye Harbor.	San Juan County Voluntary Reserves at Charles Island. DNR, BLM and USFWS own uplands at Cattle Point. Long and Charles Island are part of the San Juan Islands National Wildlife Refuge. Coast Guard Reserve at Iceberg Point.

Puget Sound Marine Conservation Priority Areas
June 2006

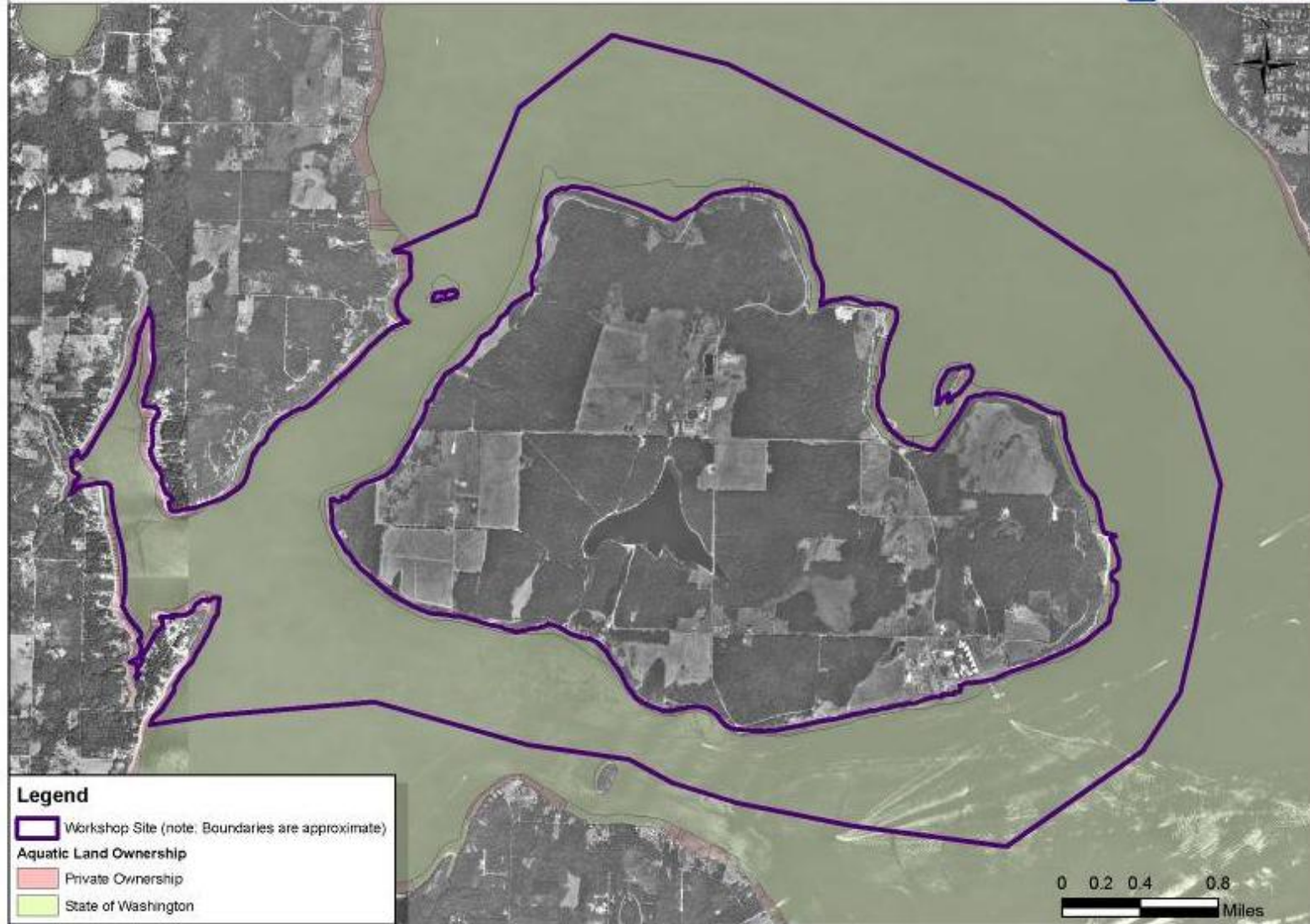
	A	B	C	D	E	F	G
1.	REGION	NAME	BOUNDARY DESCRIPTION	Approximate Size (Acres)	IMPORTANT FEATURES	STATE OWNED AQUATIC LANDS	OTHER PROTECTED AREAS LOCATED IN OR ADJACENT TO THIS SITE
34	South and West	2. Harro Strait	Includes most of the west side of San Juan Island from Cattle Point extending north to the offshore area of Turn Point on Stuart Island. Includes all the east side of Harro Strait out to the Canadian border. San Juan County	27,938	Most important cetacean area in the inside waters of Washington. Major transit and foraging area for southern populations of Dahls porpoise and Orcas. Area near Henry Island and west side of Stuart Island is the highest concentration of Dahls porpoise during the spring. Major Orca use area. Subtidal contains bedrock scarps and boulder fields, offshore pinnacles, and coarse sediments. Contains some of the deepest waters of the inland waters. This region contains the highest concentrations of rockfishes and lingcod. Turn Point has deep subtidal rock walls with high diversity of encrusted organisms. Important bird area. (note: The committee felt that this site was too big geographically to manage by DNR as an aquatic reserve. An area this large requires more of a community management.	The state owns the majority of tidelands along this reach.	The southern portion is a WDFW sea urchin/cucumber reserve. WDFW False Bay Marine Preserve is in the southern portion. The area is a potential Transboundary MPA (Orca Pass Initiative). San Juan County has two voluntary reserves along the shore. Cattle Point NRCA and American Camp are located on the uplands of Cattle Point at the southeast end of this site. Turn Point State Park is located at the north end.
35	San Juan Islands - North	1. North Islands	The area of Stuart, Satellite, Ripple, Cactus, Gossip and Johns Islands out to the Boundary Pass reef buoy.	4,588	Pigeon guillemots and oyster catcher nesting area. Abalone. General marine diversity. Important marine fish habitat. High quality shore habitat. Shallow rocky area with extensive kelp beds with subtidal bedrock scarps, ridges, and boulder fields and channels consisting of coarse sediments. These habitats support diverse concentrations of rockfishes, lingcod, abalone, and sea urchins. Undisturbed.	All state owned tidelands.	State parks at Turn Point and land north of Reid Harbor. Several of the small islands are included in the San Juan Islands National Wildlife Refuge.
36		2. Waldron Island	Cowlitz Bay out into the pinnacle off of Point Disney.	1,833	Important invertebrate area. Harbor porpoise area. Eelgrass and area used by marine birds. Diverse series of subtidal sand communities and sandy ridges. Contains several interesting assemblages (Dethier 1989). Anchoring area for Waldron Island.	Approximately 50 percent of Cowlitz Bay tidelands are owned by the state.	All private uplands. Point Disney is owned by the Nature Conservancy.

Puget Sound Marine Conservation Priority Areas
June 2006

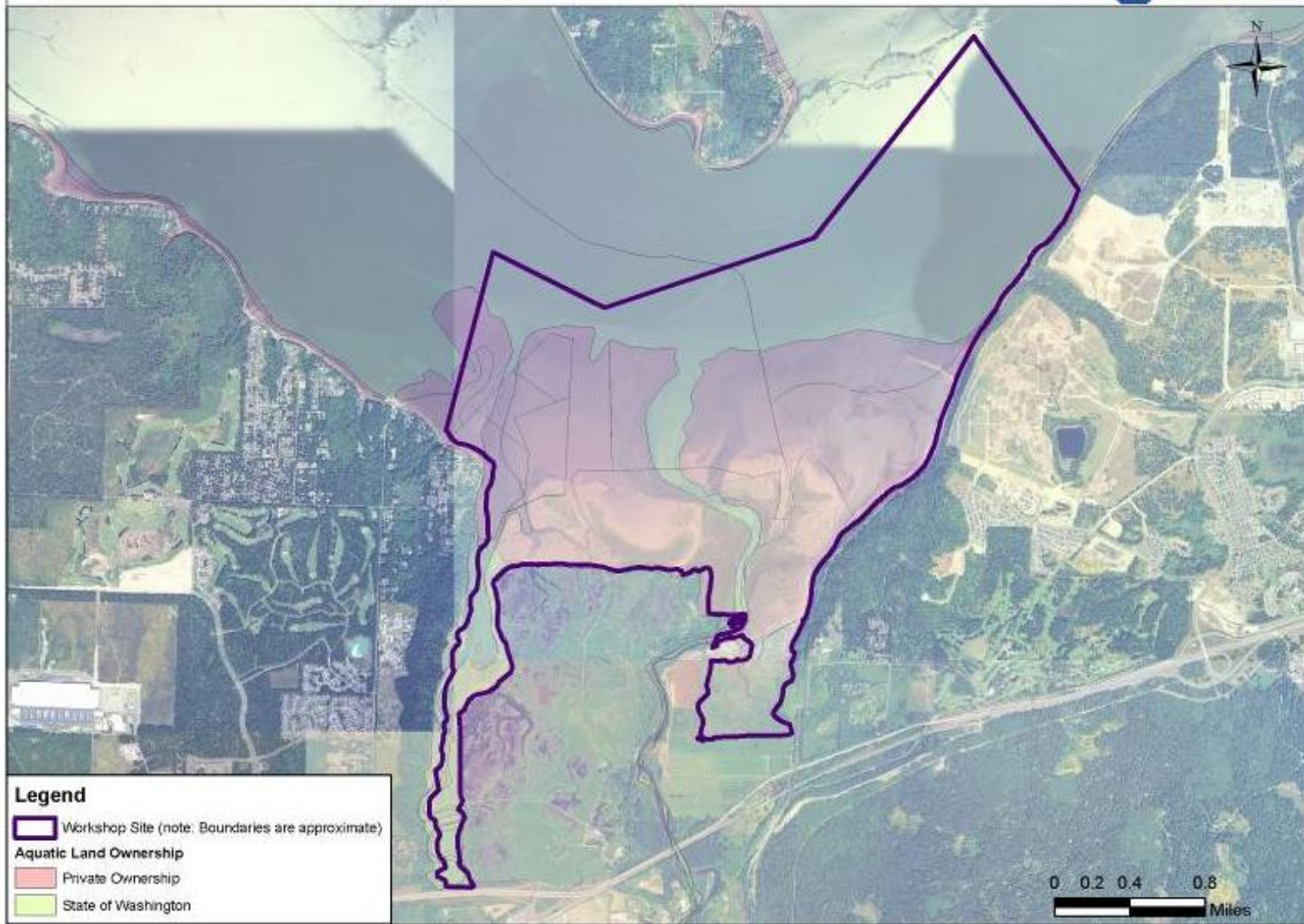
	A	B	C	D	E	F	G
1	REGION	NAME	BOUNDARY DESCRIPTION	Approximate Size (Acres)	IMPORTANT FEATURES	STATE OWNED AQUATIC LANDS	OTHER PROTECTED AREAS LOCATED IN OR ADJACENT TO THIS SITE
37	San Juan Islands - Inside	1. South Lopez Sound	All the area of southern Lopez Sound from Mud Bay to Lopez Pass in the north.	1,888	Mud bay is very rich biologically. Lots of shrimp. Important bird area. Subtidal contains fine sand and mud sediments that support high concentrations of shrimp and juvenile fishes including flatfishes. A high production area for crabs.	About 75 percent state ownership of tidelands.	Small islands are part of the San Juan Islands National Wildlife Refuge.
38		2. South Griffin Bay	From Low Point south to the park and out to Harbor Rock.	1,632	Park protected uplands in the southern portion. Threats due to de-salinity development. WDFW has lots of data for this area. Muddy subtidal area has eelgrass in shallows, and unusual invertebrates in deeper water. Subtidal habitats contain low and high relief rocky ridges and sand flats and waves. Rockfishes, lingcod, and flatfishes occur on these habitats as do sea urchins, sea cucumbers, and spot prawns.	State ownership of the majority of the tidelands with the exception of a section south of and including Low Point.	Adjacent to American Camp and DNR NRCA. Offshore rock formations part of the SJINWR.
39	Strait of Georgia	1a. Point Roberts Reef	From Point Roberts western point south to a line east from Birch Point in Semiahmoo Bay/Boundary Bay. Area includes Point Roberts reef. Commercial trawl area is omitted from this site. Whatcom County.	30,846	Very good north sound representation of shallow to deepwater habitat. Impacted by Frazier River plume which provides rich plankton production to the area. Deep basin offshore is critical to harbor porpoise and harbor seal populations. Inshore area is rich in groundfish including English soles and starry flounder and other flatfishes and high concentrations of Dungeness crab. Salmon migration area. Resident fish. Herring are a magnet to multiple species use of the area. Part of the large spatial use area used by local (Cherry Point) herring stocks. Committee felt this was a good northern bay to match Padilla Bay in the south.	Little tidelands proportional to much larger subtidal area associated with this site.	None
40		1b. Alden Bank	Northwest of Sucia Island. San Juan and Whatcom Counties.	42,464	Very unique glacier grounding spot resulting in a shallow area with lots of sand topped with boulders adjacent to an unusually deep basin (200 meters). Critical area for porpoise, Pacific cod and other groundfishes.	State owned subtidal	None

Appendix B: Site Maps

Puget Sound Priorities - McNeil Island



Puget Sound Priorities - Nisqually Reach



Puget Sound Priorities - Tacoma Narrows



Puget Sound Priorities - Henderson Inlet



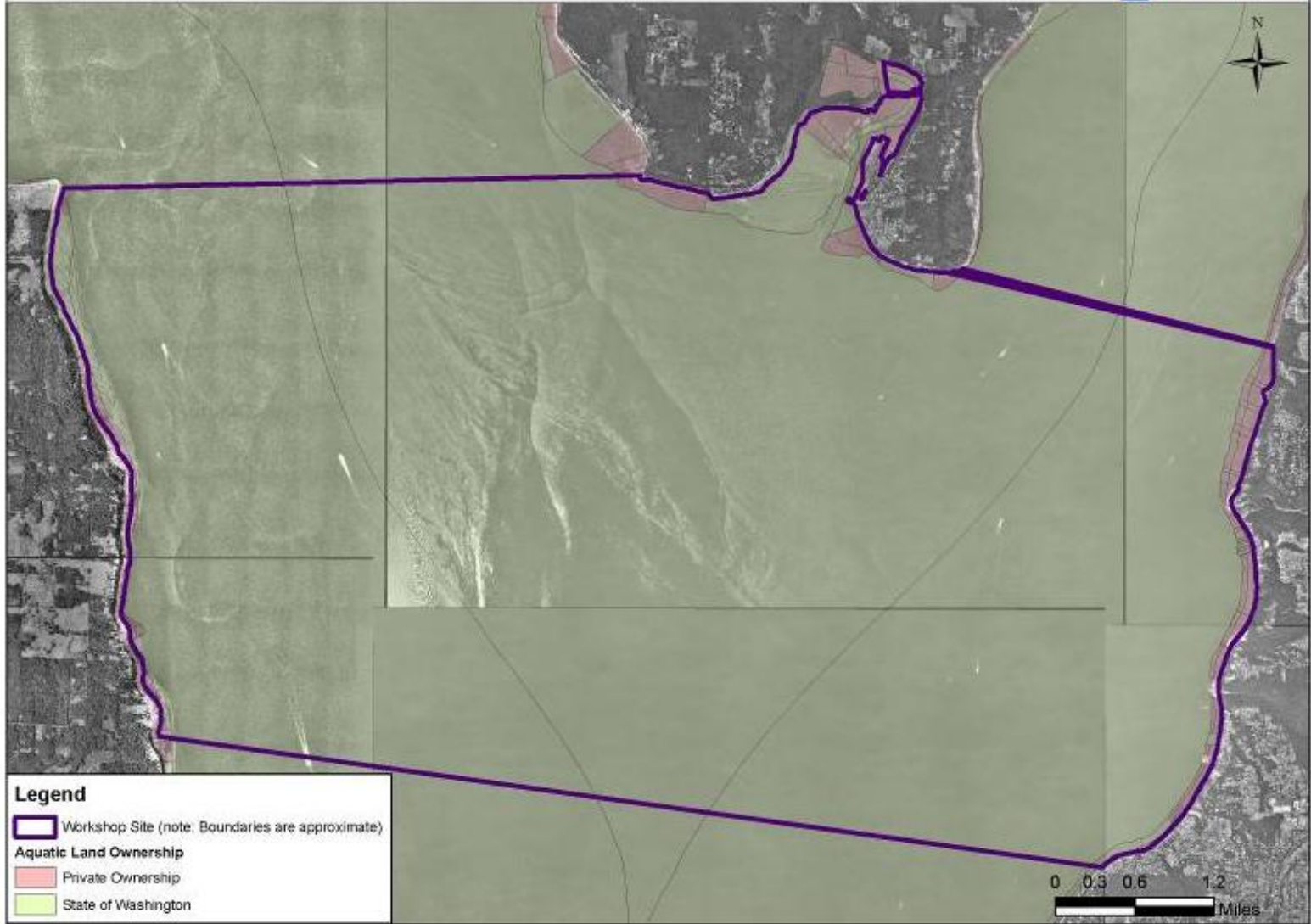
Legend

- Workshop Site (note: Boundaries are approximate)
- Aquatic Land Ownership**
 - Private Ownership
 - State of Washington

Puget Sound Priorities - Steamboat Island



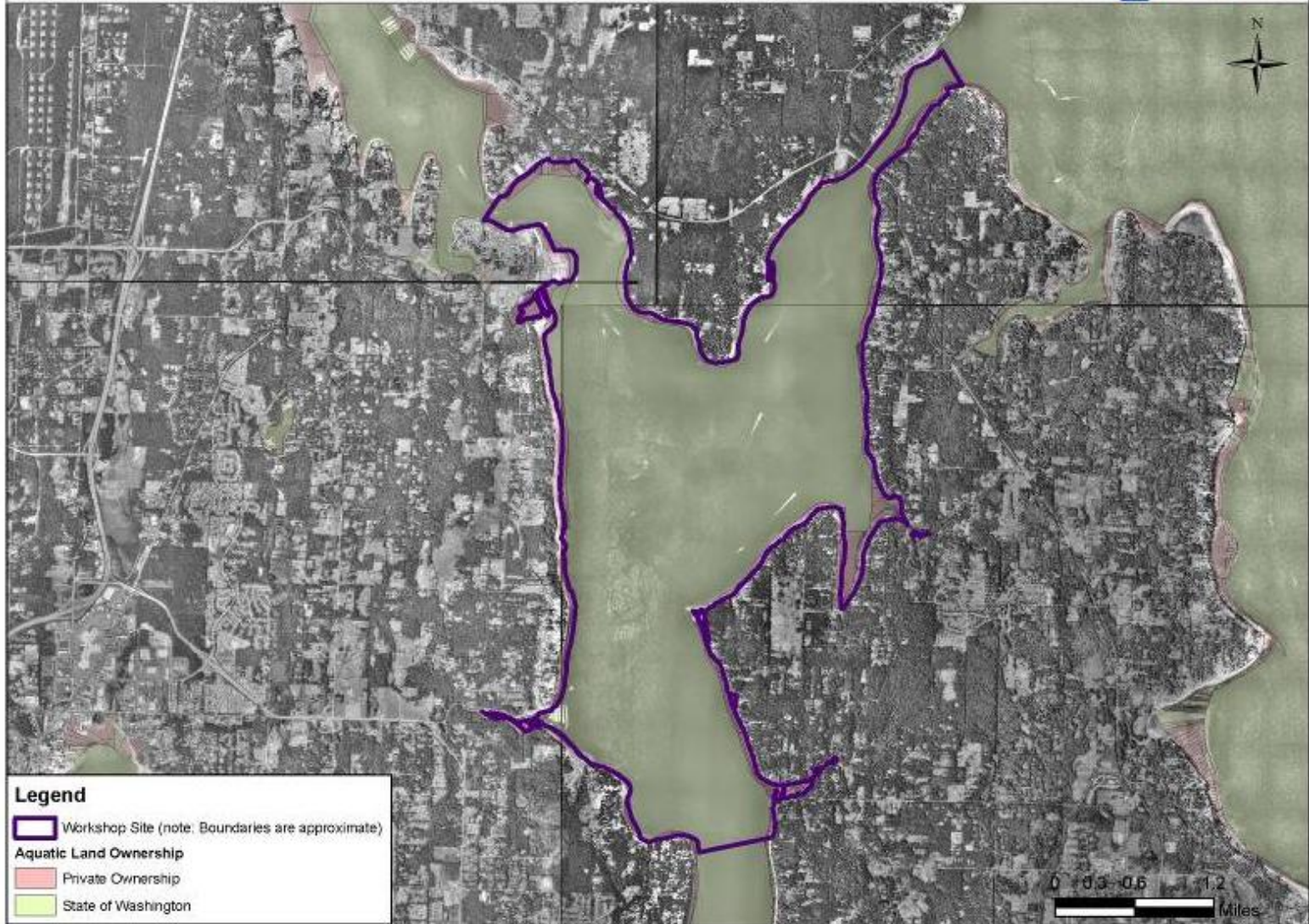
Puget Sound Priorities - South Whidbey Island



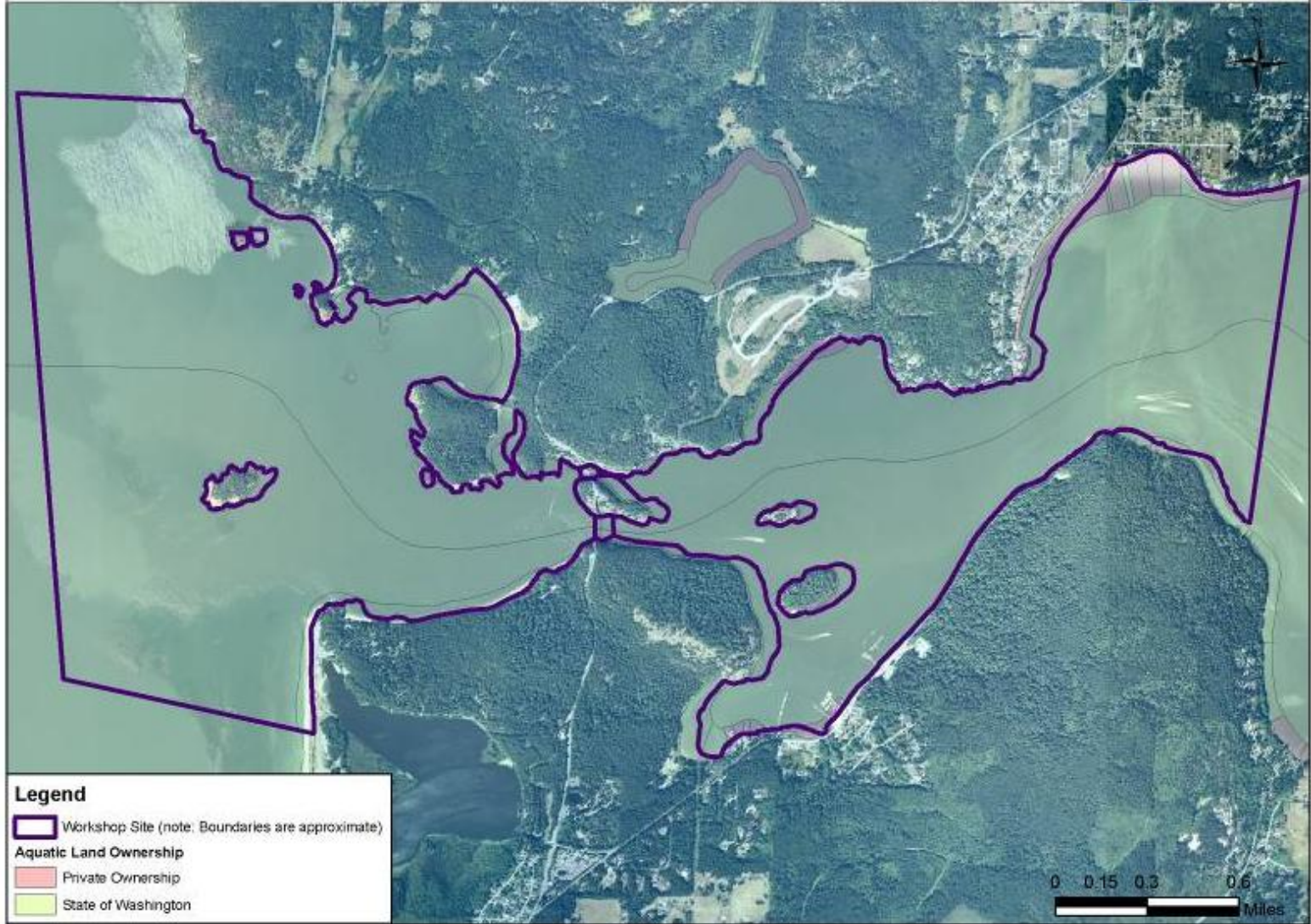
Puget Sound Priorities - Blakely Rock



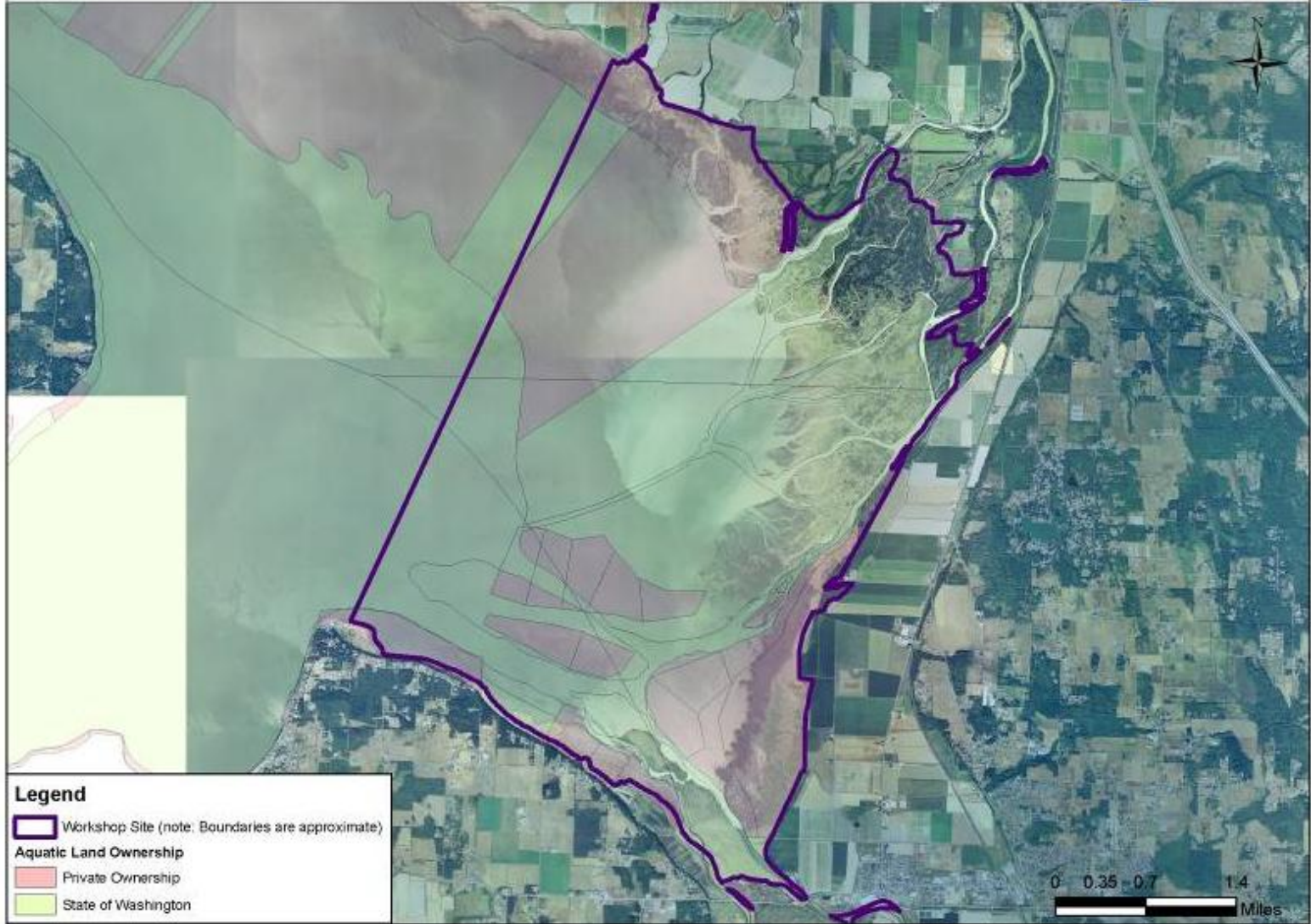
Puget Sound Priorities - Port Orchard/Point Bolin Basin



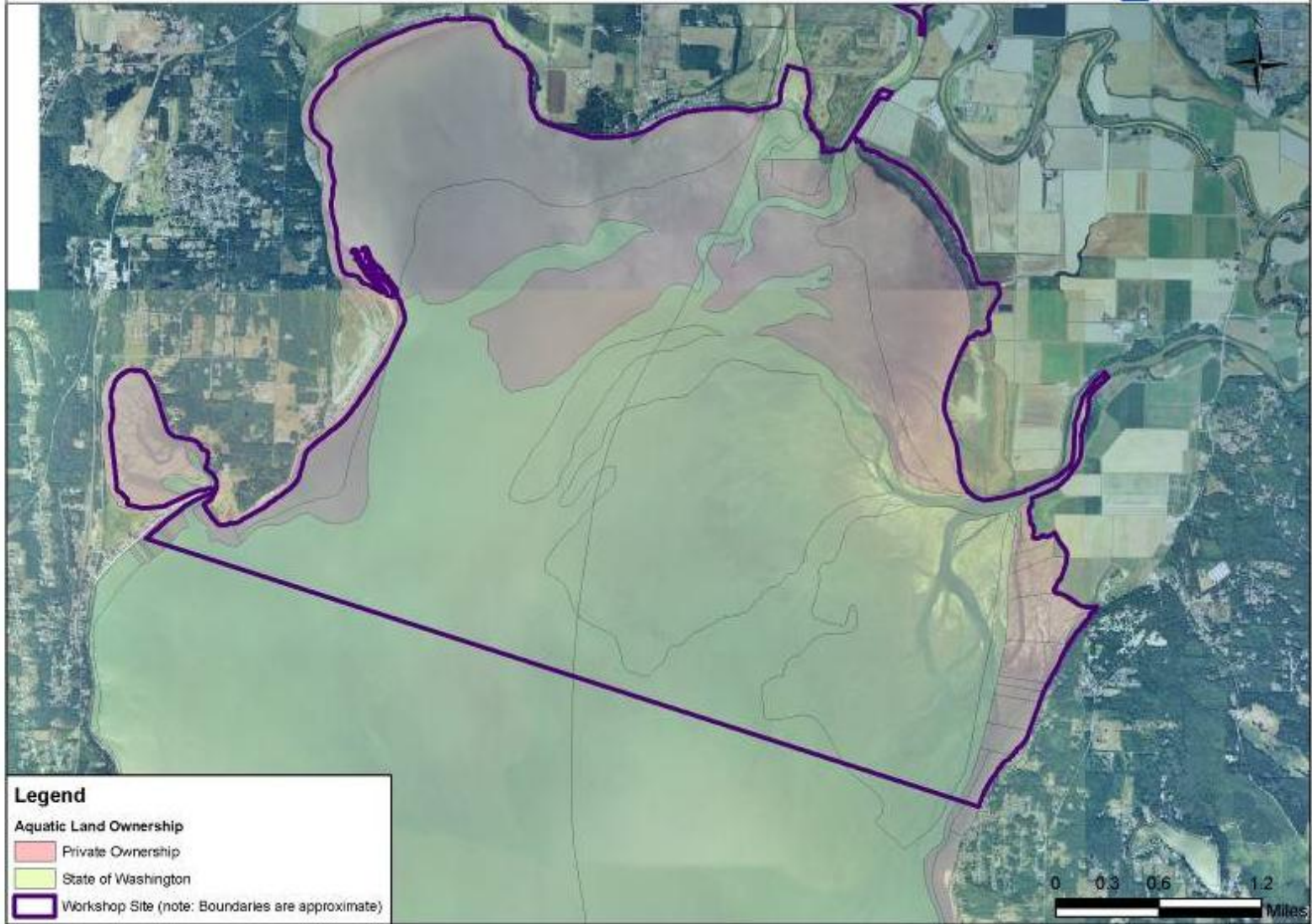
Puget Sound Priorities - Deception Pass



Puget Sound Priorities - South Skagit Delta



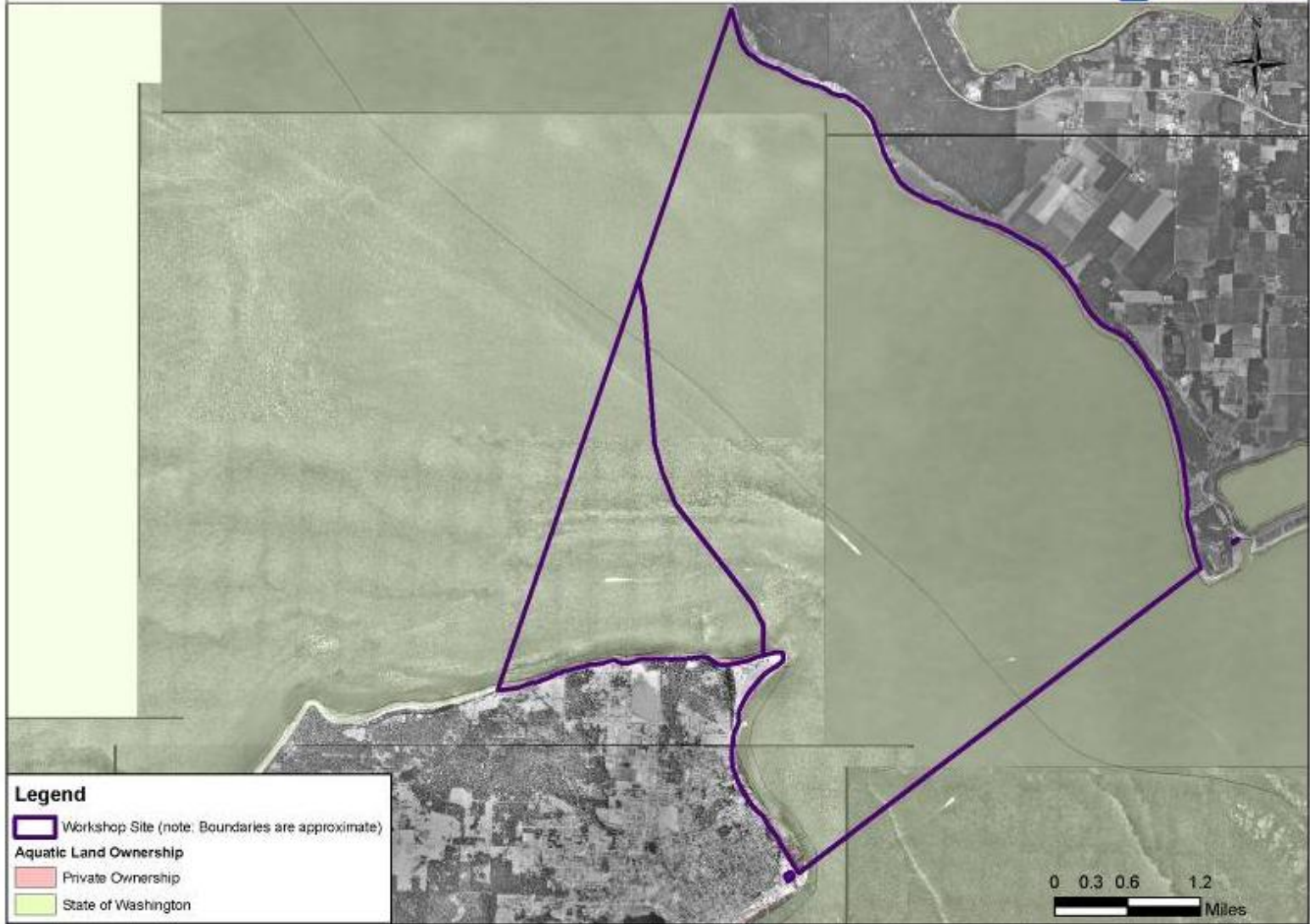
Puget Sound Priorities - Port Susan Bay



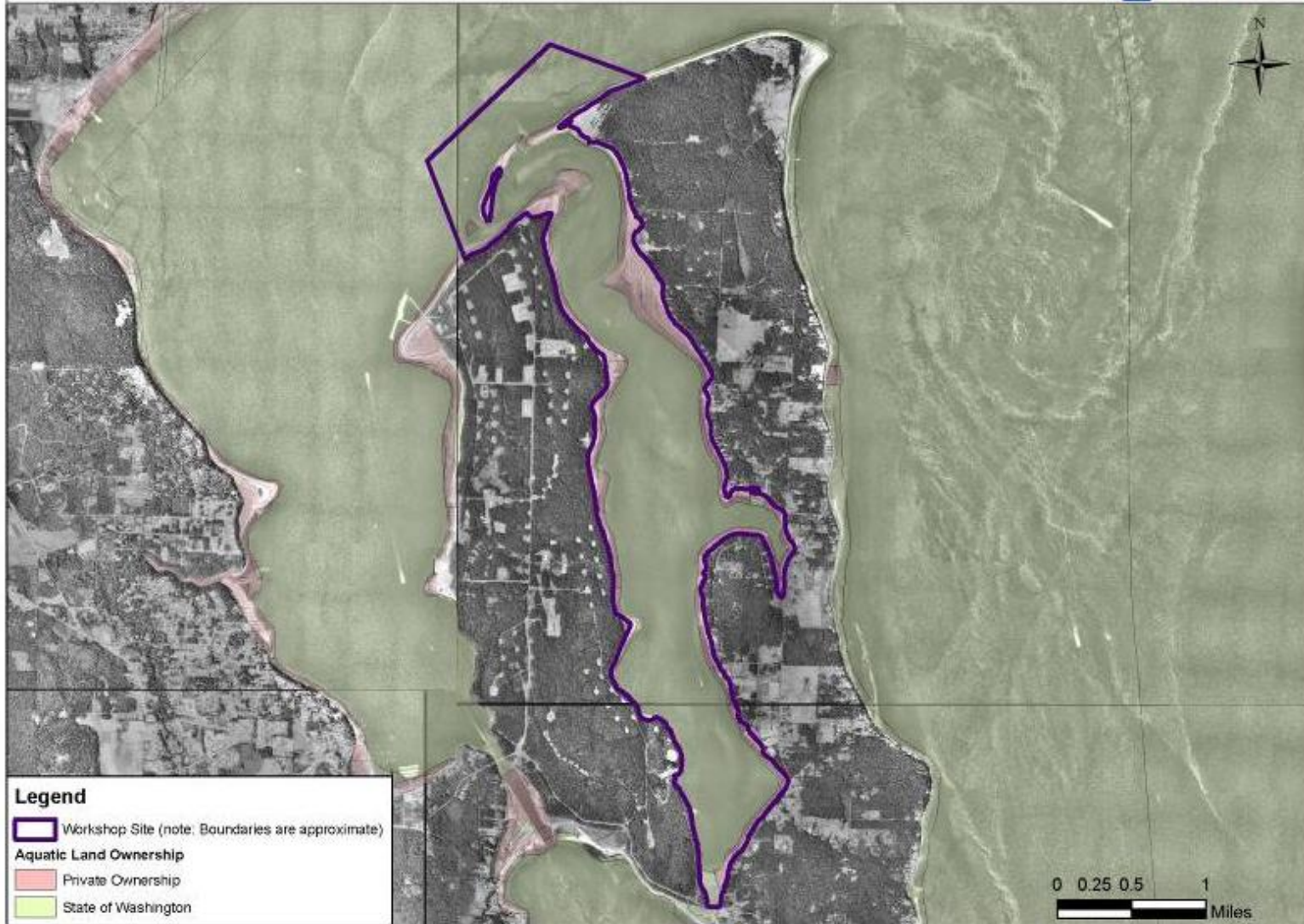
Puget Sound Priorities - Saratoga Passage



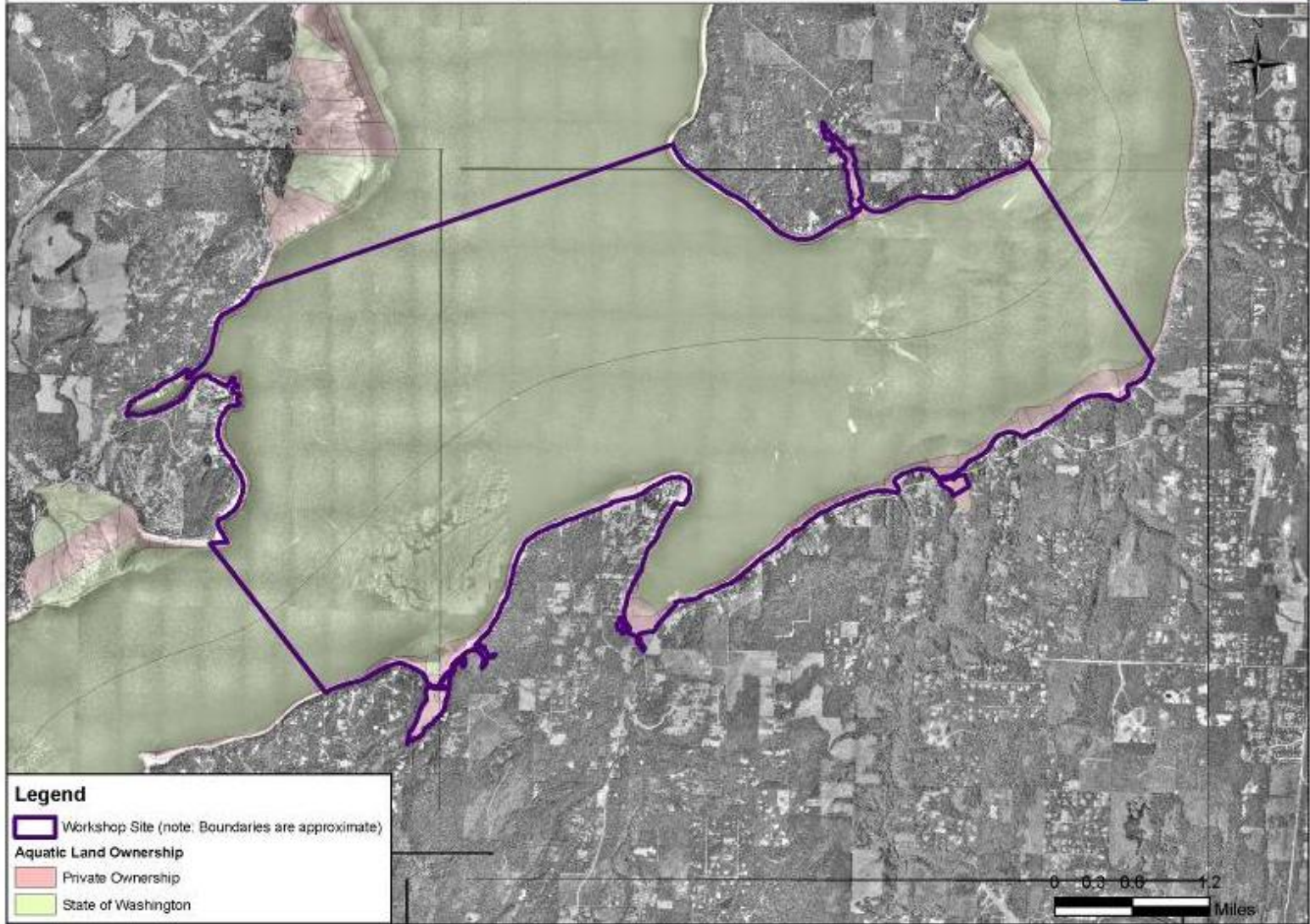
Puget Sound Priorities - North Admiralty Inlet



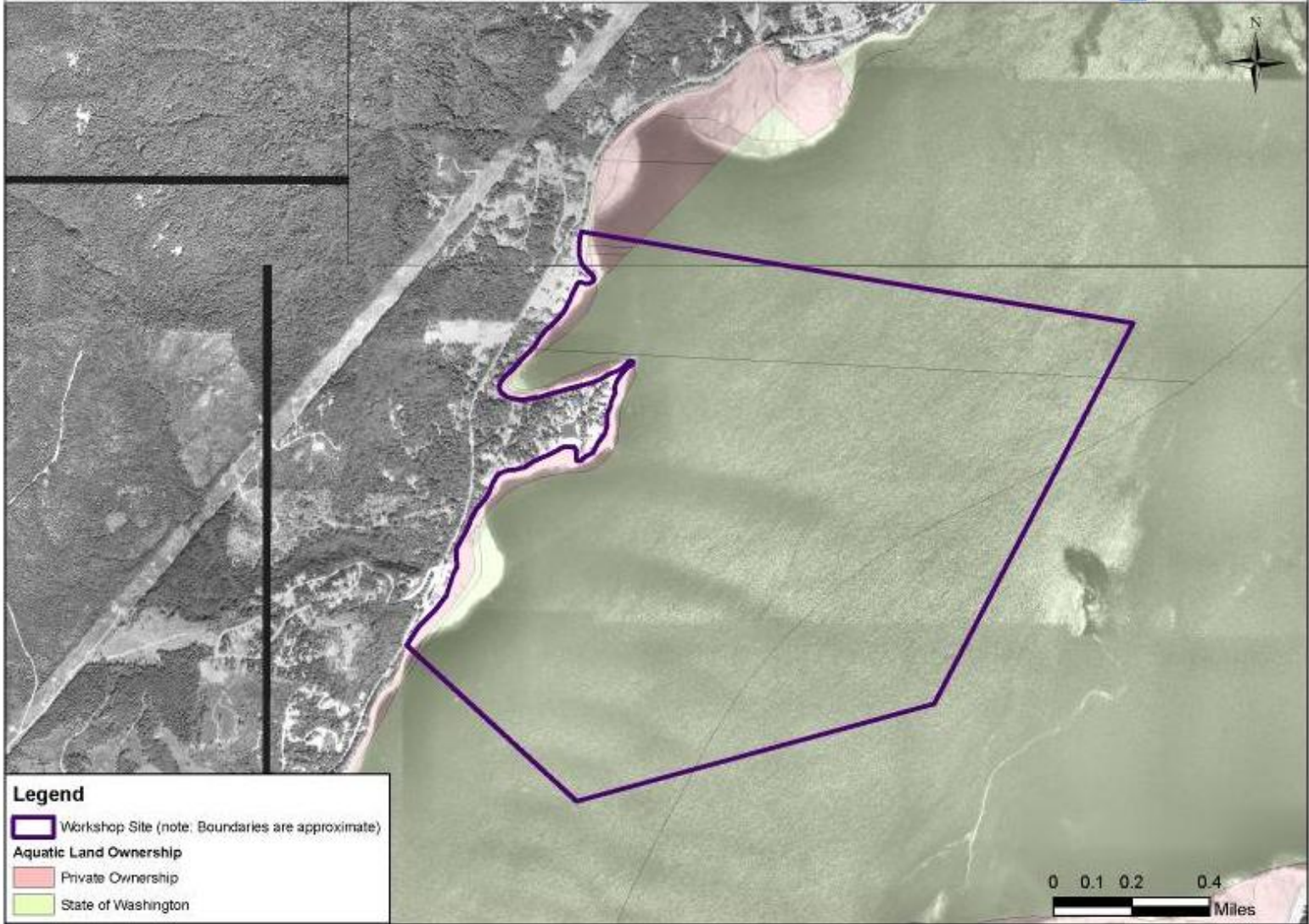
Puget Sound Priorities - Kilisut Harbor



Puget Sound Priorities - Toandos Complex



Puget Sound Priorities - Triton Head



Puget Sound Priorities - Jackson Cove



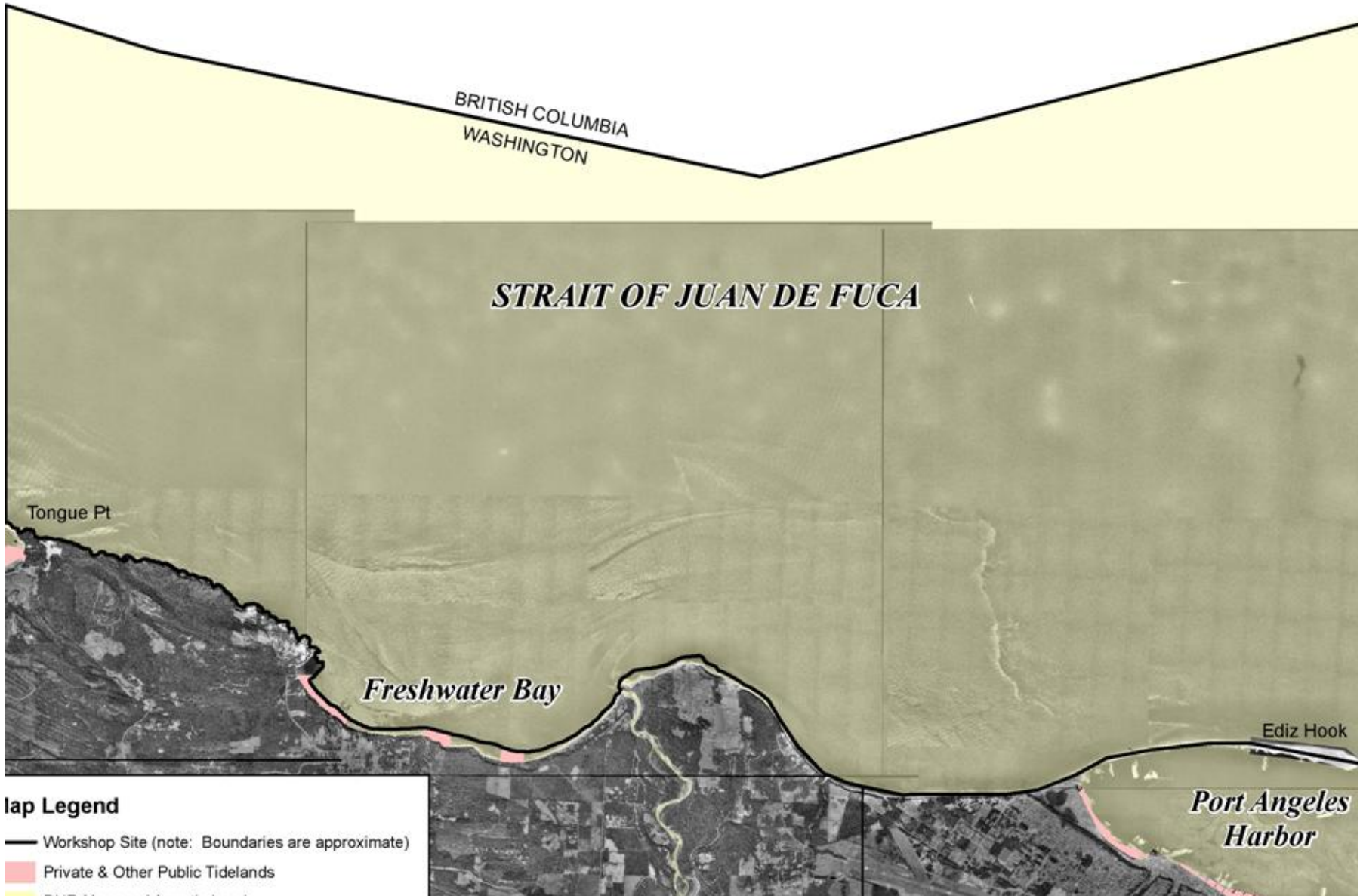
Puget Sound Priorities - Smith Island - Partridge Bank



Puget Sound Priorities - Protection Island



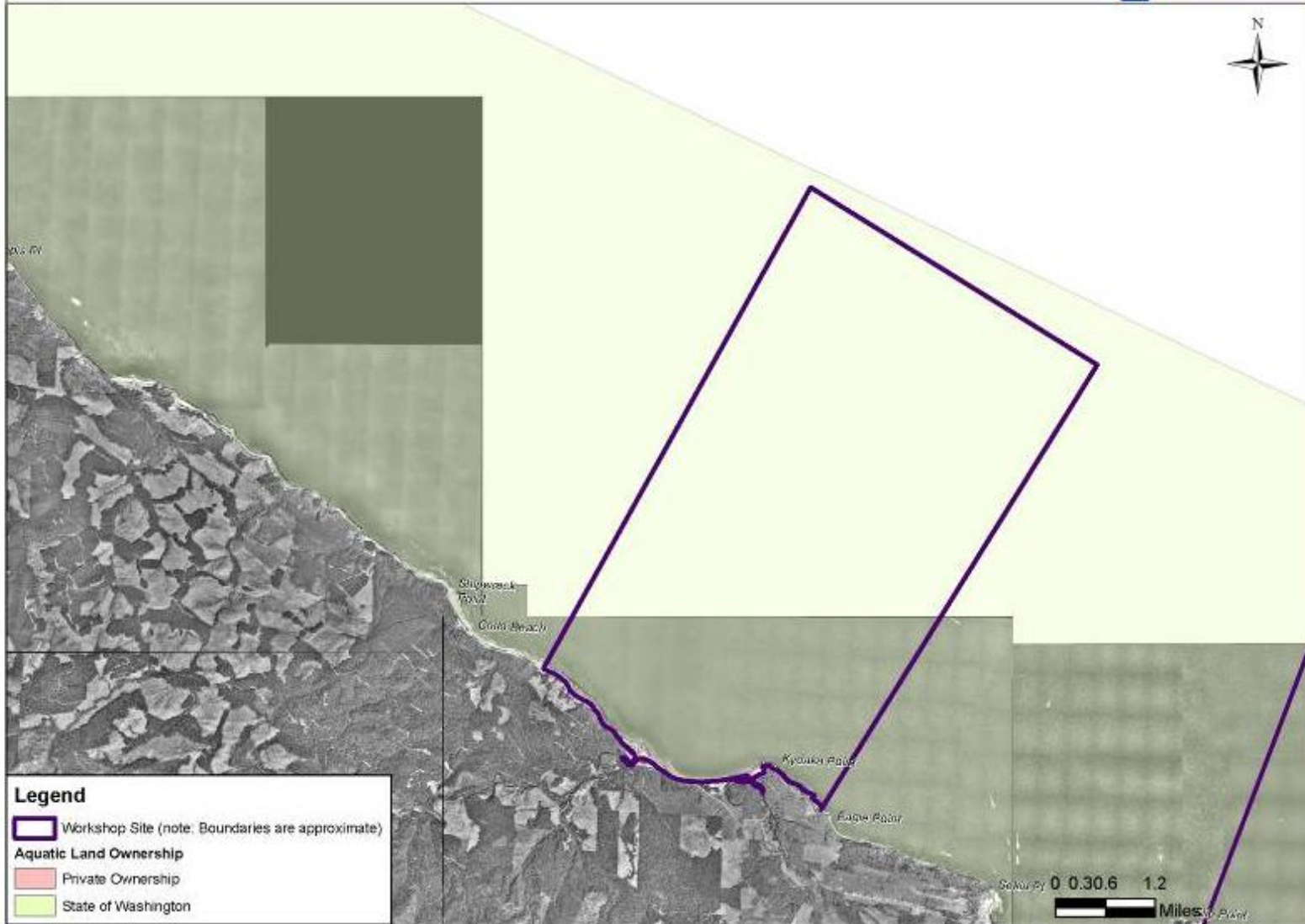
Puget Sound Priorities - Ediz Hook to Tongue Point



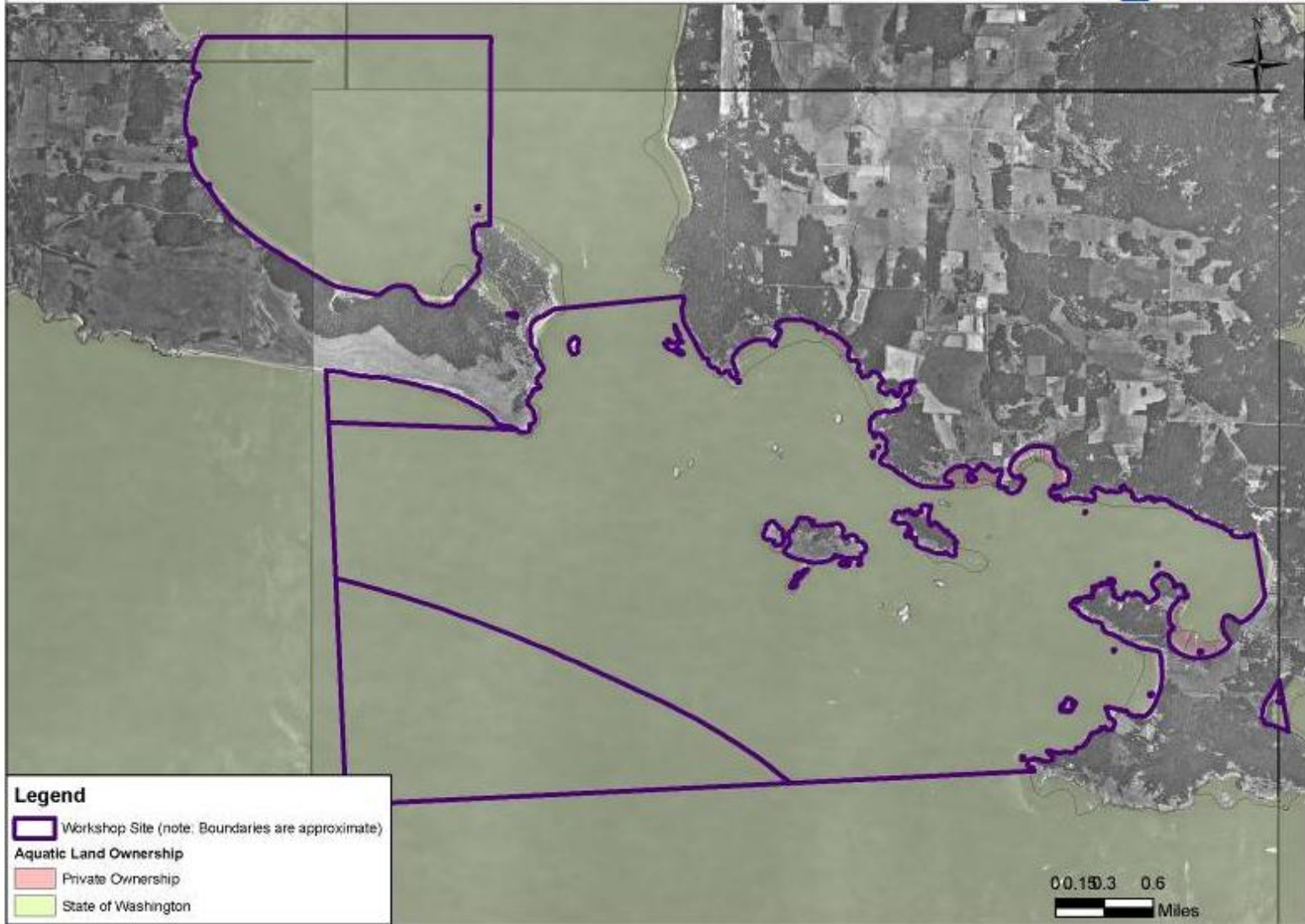
Puget Sound Priorities - Slip Point to Pilar Point



Puget Sound Priorities - Seiku and Hoko Rivers



Puget Sound Priorities - Southwest Lopez and South Griffin Bay



Puget Sound Priorities - Haro Strait



Puget Sound Priorities - North Islands and Waldron Island



Puget Sound Priorities - South Lopez Sound



Puget Sound Priorities - Point Robinson Reef and Alden Bank

