Totten/Adams Cove Property

RCO Project Number 09-1550A

Acquisition Stewardship Plan

Photo: Department of Ecology

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INTRODUCTION

1. Report summary

This report serves as the stewardship plan for the Totten Inlet property, and was compiled using data from a variety of sources, including documents prepared earlier for the grant application process, state and federal government information, and on-sight visits to the property. A list of references is provided at the end of this document.

The Totten Inlet property consists of 34.08 acres of estuarine habitat, tidal sloughs, freshwater springs, and associated forested uplands. The property encompasses most an approximately 2-acre pocket estuary known locally as Adams Cove, as well as 1,400-feet of undeveloped shoreline and associated freshwater and estuarine wetlands. Approximately half of the 1,400-foot unarmored shoreline is flanked by high feeder bluffs that provide an outstanding example of historical bluff conditions, now lost throughout much of Puget Sound. The uplands consist of mature Pacific Northwest lowland forest with several freshwater tributaries that connect the forested wetland mosaic to the estuary below. The site provides intact habitat for five salmonid species: Eld Inlet fall chum; Puget Sound/Strait of Georgia coho; Puget Sound fall chinook; native Puget Sound winter steelhead; and anadromous coastal cutthroat trout. Large numbers of juvenile salmonid smolts produced in McLane Creek use the waters along the property for feeding and transitioning to life at sea. Forage fish species (Surf smelt and Sand lance) use this location as well. Numerous waterfowl, shorebird, waterbird and landbird species also utilize the property's unique coastal habitat.

2. Purpose of acquisition

This property was purchased in 2011 by Capitol Land Trust using grant funds from the Washington State Recreation and Conservation Office (SRFB grant #09-1550A) and the US Fish & Wildlife Service's National Coastal Wetlands Conservation Grant (C-72-L-1). The purpose of this acquisition is to keep the property in a natural, undisturbed state so as to protect the numerous conservation values described in this report. The State of Washington holds a deed of right to use the property for salmon recovery and conservation purposes in perpetuity. Additionally, the US Fish & Wildlife Service and the Washington State Department of Ecology hold a Restrictive Covenant over the property that ensures it is permanently dedicated to conservation. Regular property monitoring will be conducted by the Capitol Land Trust, with stewardship decisions and activities carried out by Capitol Land Trust.

3. Relationship to other plans

Conservation of this property furthers the goals of the following plans by protecting key habitats, freshwater processes and saltwater processes from physical or biological disruptions; protecting freshwater and saltwater quality; protecting freshwater; and reducing the risk and damage from catastrophic events:

- Puget Sound Chinook ESA Salmon Recovery Plan. US Fish & Wildlife, 2007.

- Salmon Habitat Protection and Restoration Plan for Water Resource Inventory Area 13, Deschutes. Thurston Conservation District Lead Entity, 2005.
- Chinook & Bull Trout Recovery Approach for the South Puget Sound Nearshore. South Puget Sound Salmon Recovery Group, May 2005.

The conservation of the property, which contains a significant quantity of marine shoreline and wetlands, is also consistent with CLT's strategic goals #1 and #2: to protect marine shorelines and estuaries, and to protect wetlands and riparian areas. Keeping these environmental features functioning in their natural state is vital to sustaining the unique communities of plants and animals specially adapted for life at the margin of the sea, and wetlands provide habitat and spawning grounds for birds and fish, as well as control pollution and flooding, and recharge the ground water for household and commercial uses.

4. Maintenance and Monitoring Schedule

Regular monitoring of the property will include annual boundary line inspection to detect encroachment, trespass and other management issues; GPS photo-point documentation of conditions; and monitoring of wildlife use and vegetation cover. Periodic monitoring will be done to: 1) assess wildlife usage, and 2) monitor ecosystem health for functionality. These activities are a regular part of CLT's land stewardship activities. See Management Strategies section (page 19) for additional maintenance tasks.

5. *Vicinity Map*

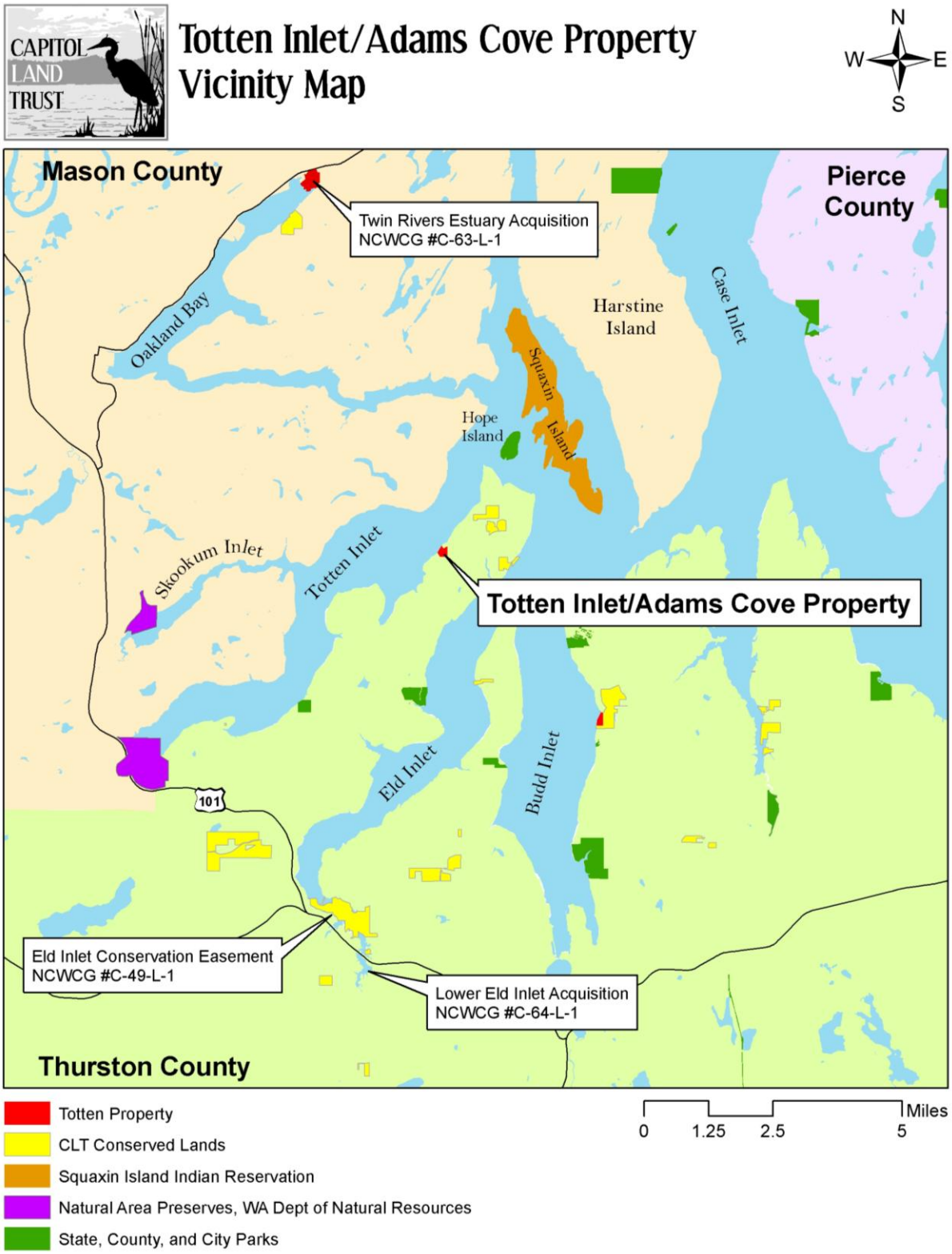


Figure 1: Vicinity map. Source: Thurston County

BACKGROUND INFORMATION

1. Location

The 34.6-acre property is located at 8717 Adams Lane NW, on the Totten Inlet side of Steamboat Peninsula, approximately 18 miles from downtown Olympia. It lies in the Southwest quarter of Section 05, Township 19N, Range 2W. The tax parcel number is 12905430200.

Directions: From Olympia, take I-5 to exit #104, US-101 north. Take the Steamboat Island Rd. exit, and drive north on Steamboat Island Rd. Turn left on 90th Ave NW, which turns into Adams Lane. Drive to the end of Adams Lane to the property boundary.

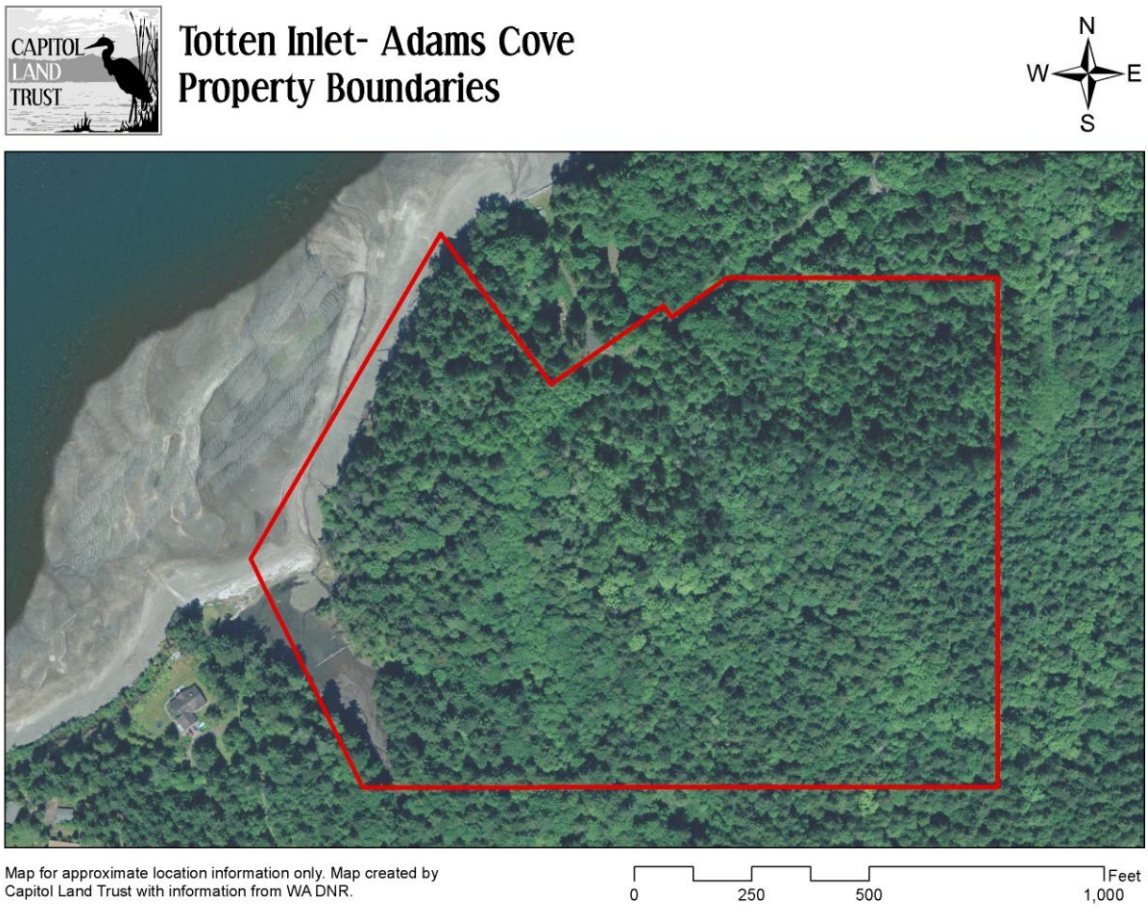
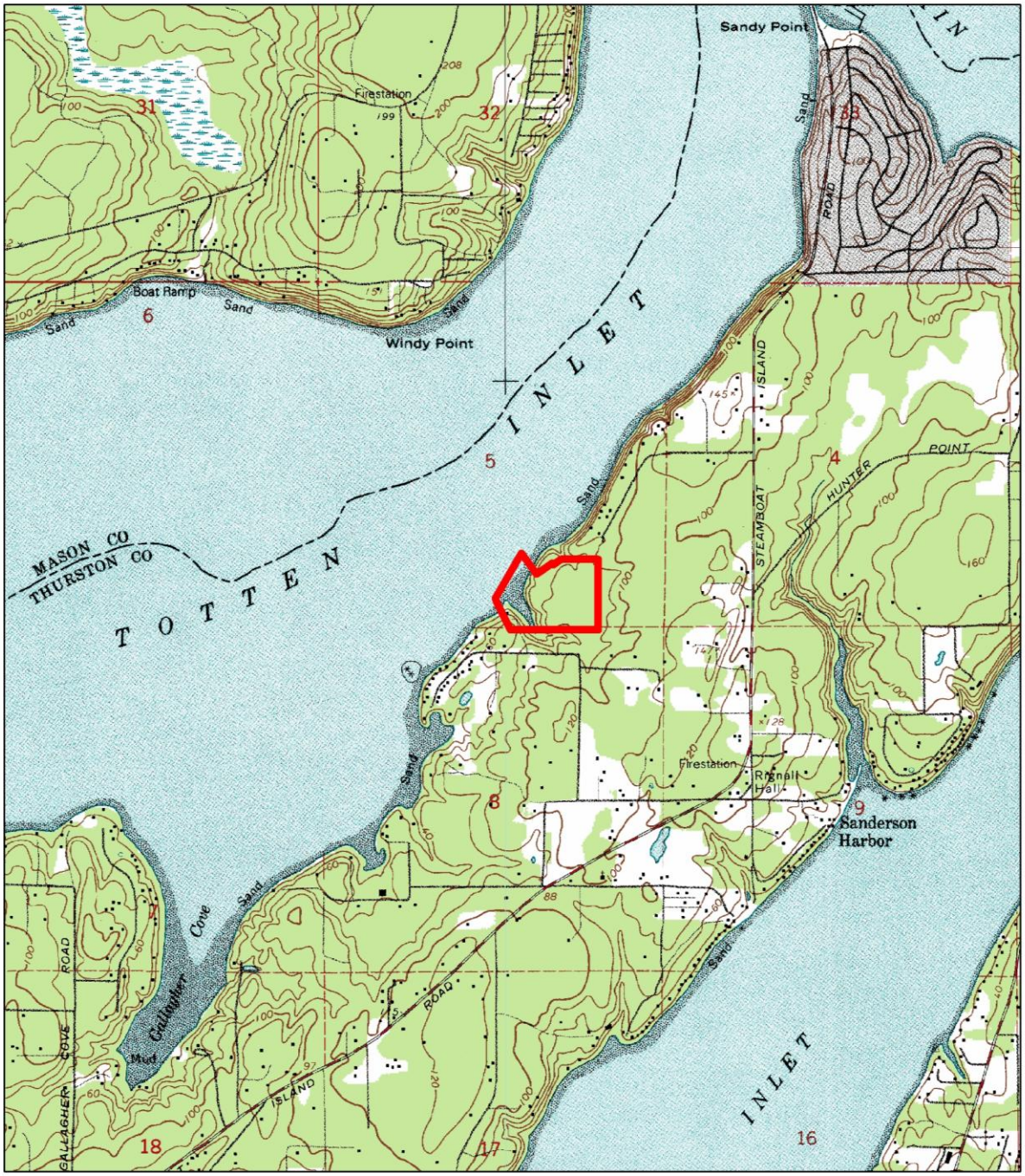


Figure 2. Aerial photo with property boundary outline. Source: Thurston County

Totten Inlet- Adams Cove Property
USGS Map



Map for approximate location information only. Map created by Capitol Land Trust with information from USGS.

0 0.25 0.5 1 Miles

Figure 3. Property boundary outline on a USGS quadrangle map. Source: USGS

2. *Property use*

The property was owned jointly by the Evans and Askers families. They purchased it, along with the adjacent parcel and two shoreline parcels (not part of this property) as a real estate/development investment in 2005. The property does not have any structures or improvements on it, nor is there any evidence of such in the past. The property is not being managed or used for agricultural or timber production. There are no roads, structures, shoreline modifications or maintained trails on the property, although there are game trails. Adams Lane also runs down part of the northeastern property boundary. The property is difficult to access, especially outside of the dry summer months, due to extensive wetlands and dense vegetation.

PHYSICAL FEATURES

1. *Geology*

Figure 4. LIDAR topography map of Totten property. Source: Puget Sound LIDAR consortium

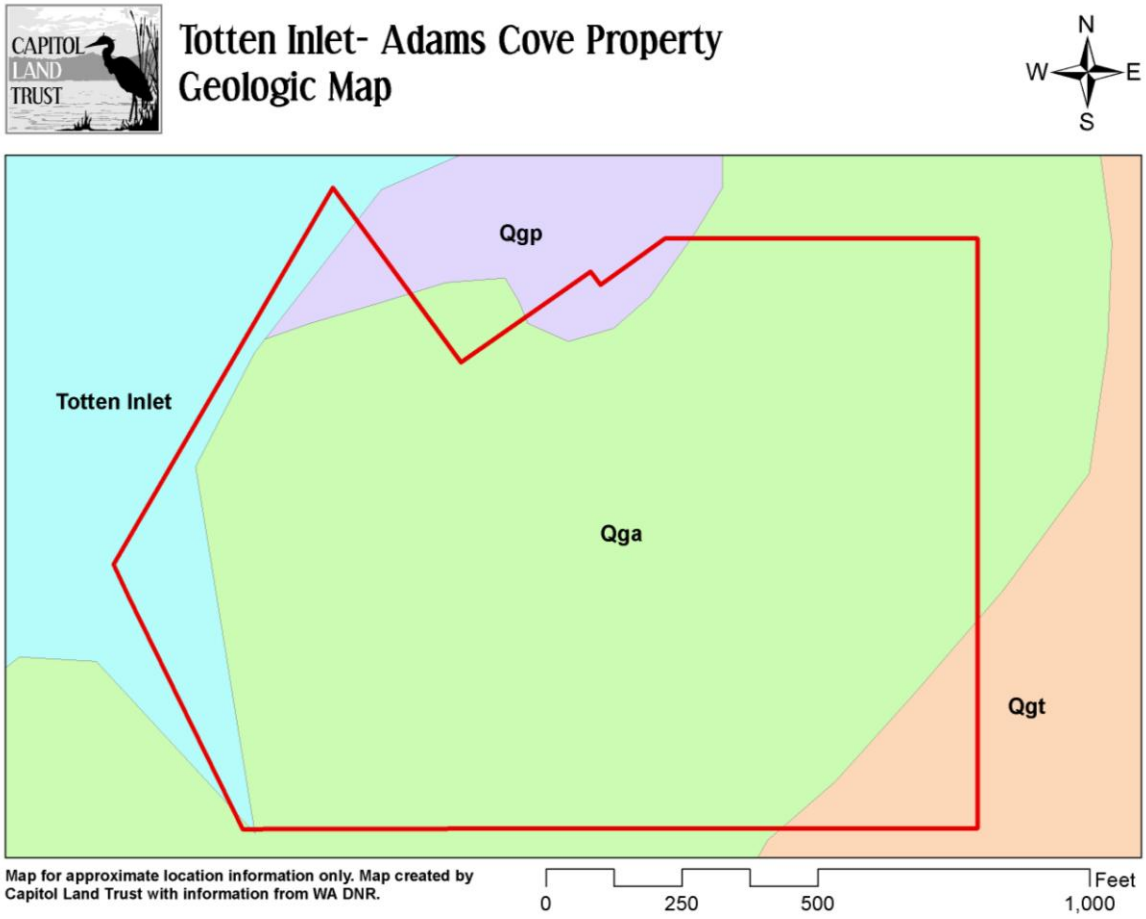


Figure 5. Geologic map of the property. Source: WA DNR Geology Division

The geology of this property consists of three types of glacial deposits: Alpine outwash (Qga), which is characterized by stratified sand, gravel, and cobbles, pre-Fraser continental glacial drift (Qgp), and Vashon Glacial till (Qgt), which is characterized by glaciofluvial sand and gravel and lacustrine clay, silt, and sand deposited during the advance of glaciers. Appendix A provides more detail on the geologic units of the property and the area immediately surrounding the property.

2. Soils

The dominant soil type on this property is Kapowsin silt loam (0 to 3 percent slopes). This moderately deep, moderately well drained soil is located on till plains. It formed in compact glacial till. The native vegetation is mainly conifers and hardwoods. Douglas-fir is the main woodland species on this soil unit. Among the trees of limited extent are red alder, western redcedar, western hemlock, and bigleaf maple. On the basis of a 100-year site curve, the mean site index for Douglas-fir is 161. On the basis of a 50-year site curve, it is 123. The highest average growth rate of an unmanaged, even-aged stand of Douglas-fir is 171 cubic feet per acre per year at 65 years of age. The main limitation affecting the harvesting of timber is the muddiness caused by seasonal wetness.

Bellingham silty clay loam is also found on the eastern side of the property. This very deep, poorly drained soil formed in alluvium and lacustrine sediments. Slopes are 0 to 3 percent. The native vegetation is mainly hardwoods and conifers. Permeability is slow in the Bellingham soil. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 18 to 36 inches from October to March. Runoff is very slow, and the hazard of water erosion is slight.

Dystric Xerochrepts are found in the western and southwestern portions of the property on 60 to 90 percent slopes. These moderately deep to very deep, well drained soils are on escarpments. They formed in glacial till and colluvium. The native vegetation is mainly conifers and hardwoods. No single profile is typical of these soils, but in one of the more common ones the surface is covered with a mat of leaves and twigs about 2 inches thick.

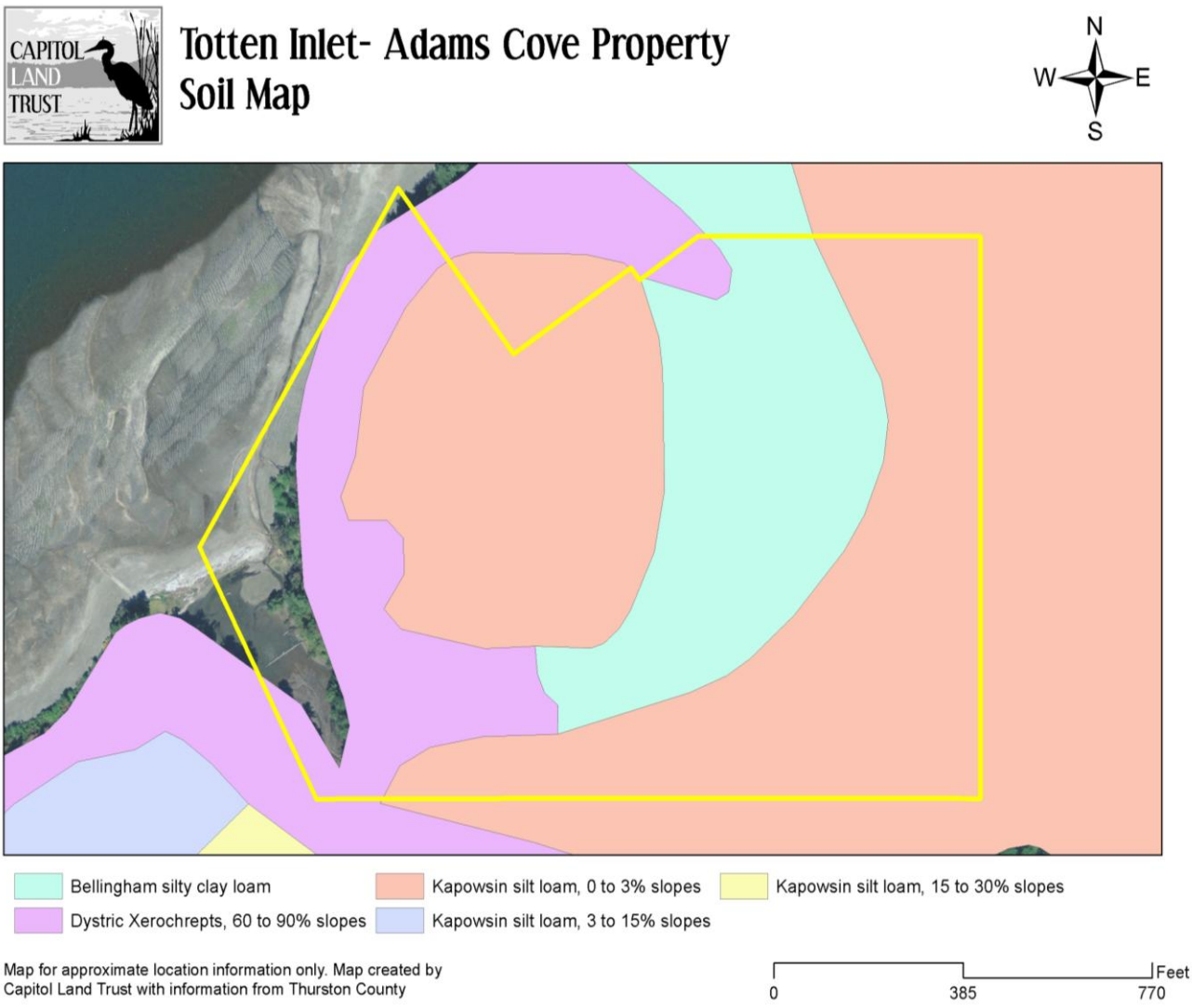


Figure 6. Soil map of the Totten Inlet property. Source: NRCS

3. Hydrology

The main hydrologic feature on the property is the 1.8 acre pocket estuary in the southwestern corner of the property. Parts of the estuary are on neighboring parcels. The estuary is fed by three small streams, two of which are seasonal and drain the forested wetlands on the upper part of the property. These drainages are visible on the Figure 4 topography map and on the hydrology map below. The largest of the three streams enters the estuary from the south and is not on our parcel. The property has extensive wetland features (about 50% of the property), as shown on the map below. Approximately 12 acres of the property are forested wetlands, and 2.5 acres are estuarine, tidelands and shoreline. The remaining 20 acres are uplands.

The majority of the wetlands is classified as Palustrine (freshwater), and contains trees and shrubs (PFO/SS). The property also contains estuarine wetlands consisting of unconsolidated shore of cobble-gravel (E2US1), mud (E2US3) and estuarine emergents (E2EM). A more detailed description of wetland types found on the property is presented in Appendix C.

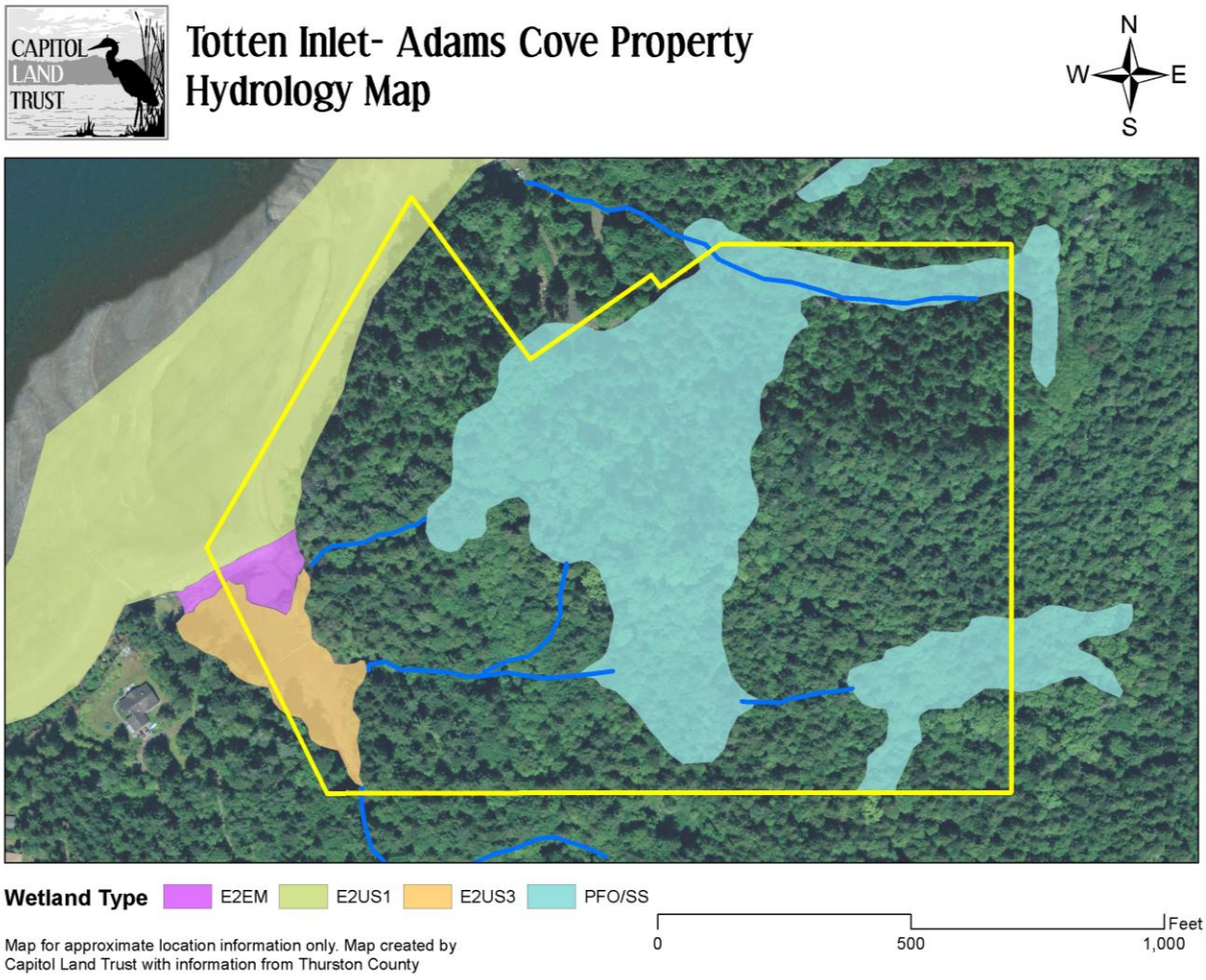


Figure 7. Wetlands inventory map. Source: National Wetlands Inventory, Thurston County GIS

BIOLOGICAL RESOURCES

1. Vegetation / Habitat

The property is divided into four distinct habitat types, based on different plant communities and physical features observed on the property. A description of each is provided below with approximate acreages and a list of species observed. The observed species list was compiled during visits to the property in September and November of 2010 and should not be considered an exhaustive list. The remaining 2 acres are non-vegetated sandy beaches and are not listed as a distinct habitat type.

Mixed Hardwood Forest (29.25 ac) – This habitat zone includes forested wetlands, uplands and riparian areas. It is dominated by Big leaf maple, Doulas-fir, red alder, Western redcedar and common witch's hair in the canopy; and sword fern in the understory. The trees vary in age and are mostly naturally regenerated second growth. Fungi are abundant and very diverse. Turkey tail mushrooms were the only identified mushroom. The habitat is highly functioning with a minimum of disturbance. There were few invasive species, with English holly scattered sparsely throughout the forest, and one large patch of English ivy. The English ivy is locally abundant and has reached the top canopy on at least ten second-growth trees. Those ten trees are in poor health, and if they all died, a substantial sized break would open up in the canopy.

Common Name	Scientific Name	Common Name	Scientific Name
big leaf maple	*Acer macrophyllum*	Sitka willow	*Salix sitchensis*
red alder	*Alnus rubra*	Self heal	*Prunella vulgaris*
English holly	*Ilex aquifolium*	evergreen huckleberry	*Vaccinium ovatum*
salmon berry	*Rubus spectabilis*	Western redcedar	*Thuja plicata*
beaked hazelnut	*Corylus cornuta*	swordfern	*Polystichum munitum*
red huckleberry	*Vaccinium parvifolium*	trailing blackberry	*Rubus ursinus*
baldhip rose	*Rosa gymnocarpa*	salal	*Gaultheria shallon*
Douglas-fir	*Pseudotsuga menziesii*	licorice fern	*Polypodium glycyrrhiza*
sticky bedstraw	*Galium aparine*	witch's hair lichen	*Alectoria Ach.*
English ivy	*Hedera helix*	low Oregon grape	*Mahonia nervosa*
ocean spray	*Holodiscus discolor*	wild ginger	*Asarum L.*
red elderberry	*Sambucus racemosa*	piggyback plant	*Tolmiea menziesii*
slough sedge	*Carex obnupta*	Sedges	*Carex spp.*

Mixed Forest/Marsh Wetland (1.5 ac) – This habitat zone is dominated by red alder and big leaf maple in the canopy and slough sedge in the understory. Trailing blackberry dominates the understory in the transition zone between the wetland and the surrounding mixed hardwood forest. The trees were located on high spots within the wetland, and the sedges were growing in standing water. There were very few conifer individuals present in this habitat zone.

Common Name	Scientific Name	Common Name	Scientific Name
slough sedge	*Carex obnupta*	red alder	*Alnus rubra*
jewelweed	*Impatiens capensis*	stinging nettle	*Urtica dioica L.*
Pacific water parsley	*Oenanthe sarmentosa*	Sword fern	*Polystichum munitum*
Miner's lettuce	*Claytonia perfoliata*	grasses	*varies*
salmon berry	*Rubus spectabilis*	beaked hazenut	*Corylus cornuta*
Western redcedar	*Thuja plicata*	big leafed maple	*Acer macrophyllum*

Salt Marsh Estuary (0.25 ac) – This habitat zone was found around the edges of Adams Cove. There were no trees present, and the vegetation was segregated based on elevation and saltwater exposure/flooding. Pickleweed dominated the lower elevations, while unidentifiable sedges and marsh jaumea dominated the higher elevations.

Common Name	Scientific Name	Common Name	Scientific Name
few-flower Shootingstar	*Dodecatheon pulchellum*	western dock	*Rumex aquaticus L.*
western lilaeopsis	*Lilaeopsis occidentalis*	Entire-leaved gumweed	*Grindelia integrifolia*
pickleweed	*Salicornia L.*	marsh jaumea	*jaumea carnosa*
sedges	*Carex spp.*	grasses	*varied*

Bluff Shoreline (1 ac) – This habitat zone was found at the top of the forested coastal bluff, and growing out of the bluff itself. Species composition was very different from the mixed forested wetland, with Madrone dominating the canopy and pearly everlasting combined with evergreen huckleberry dominating the understory. There is high species diversity in the trees, shrubs and herbaceous plants growing out of the bluff wall. Numerous trees appear poised to topple onto the beach, and there are three large logs currently crossing the beach.

Common Name	Scientific Name	Common Name	Scientific Name
coltsfoot	*Petasites frigidus var. palmatus*	Douglas-fir	*Pseudotsuga menziesii*
evergreen huckleberry	*Vaccinium ovatum*	red alder	*Alnus rubra*
salal	*Gaultheria shallon*	salmonberry	*Rubus spectabilis*
Edible Thistle	*Cirsium edule*	Madrone	*Arbutus menziesii*
fireweed	*Epilobium angustifolium*	pearly everylasting	*Anaphalis margaritacea*
oceanspray	*Holodiscus discolor*	sword fern	*Polystichum munitum*
bald hip rose	*Rosa gymnocarpa*	thimbleberry	*Rubus parviflorus*
Western redcedar	*Thuja plicata*	big leafed maple	*Acer macrophyllum*
hookers willow	*Salix hookeriana*		

2. Wildlife Species

The Totten Adams Cove provides habitat to a large number of species, including endangered or threatened species, as listed below. On field visits to the property in 2010, Capitol Land Trust staff directly observed evidence of deer, western red squirrel, a king fisher, seagulls, crows, Olympia oyster, and a jellyfish.

Fish resources

This property provides direct benefits to five salmonid species, as well as habitat for forage fish and intertidal shellfish (see table below.)

Fish Species Common name, *Scientific name*
Summer Chum (Puget Sound /Strait of Georgia) (O*ncorhynchus keta)*
Coho salmon (Puget Sound /Strait of Georgia) (*Oncorhynchus kisutch)* Fed Species of Concern
Winter steelhead (Puget Sound) (*Oncorhynchus mykiss)* Federal threatened
Sea-run cutthroat trout *(Oncorhynchus clarki clarki)*
Fall Chinook salmon (Puget Sound) *(Oncorhynchus tshawytscha)* Federal Threatened
Olympia oyster *(Ostrea conchaphila)*State Candidate
Surf smelt *(Hypomesus pretiosus)*
Sand lance (*Ammodytes hexapterus)*

Birds

The property provides critical breeding, staging, foraging, wintering, and summering habitat for the birds listed below in the following table. Many of the birds found on the project site are listed as species of concern either regionally or nationally, and are found in one or more of the conservation plans listed in the table below. Capitol Land Trust consulted with Joseph Buchanan, Wildlife Biologist with the Washington Department of Fish and Wildlife, to compile this comprehensive list of birds which are likely to occur on the site, many of which have been identified on site.

Bird species Common name, *Scientific name*	
Waterfowl	
American wigeon *Anas americana* Barrow's goldeneye *Bucephala islandica* Blue-winged teal *Anas discors* Bufflehead *Bucephala albeola* Canada goose *Branta canadensis* Canvasback *Aythya valisneria* Cinnamon teal *Anas cyanoptera* Common goldeneye *Bucephala clangula* Common merganser *Mergus merganser* Gadwall *Anas strepera* Greater scaup *Aythya marila* Green-winged teal *Anas crecca*	Hooded merganser *Lophodytes cucullatus* Lesser scaup *Aythya affinis* Long-tailed duck *Clangula hyemalis* Mallard *Anas platyrhynchos* Northern pintail *Anas acuta* Northern shoveler *Anas clypeata* Red-breasted merganser *Mergus serrator* Ruddy duck *Oxyura jamaicensis* Surf scoter *Melanitta perspicillata* Trumpeter Swan *Cygnus buccinator* Tundra swan *Cygnus columbianus*

	White-winged scoter *Melanitta fusca*
Shorebirds	
Black-bellied plover *Pluvialis squatarola* Dunlin *Calidris alpine* Greater yellowlegs *Tringa melanoleuca* Killdeer *Charadrius vociferus* Least sandpiper *Calidris minutilla* Long-billed dowitcher *Limnodromus scolopaceus*	Red phalarope *Phalaropus fulicarius* Red-necked phalarope *Phalaropus lobatus* Short-billed dowitcher*Limnodromus griseus* Spotted sandpiper *Actitis macularia* Western sandpiper *Calidris mauri*
Migratory or Coastal-dependent Waterbirds	
American coot *Fulica americana* Bonaparte's gull *Larus philadelphia* California gull *Larus californicus* Caspian tern *Sterna caspia* Common loon *Gavia immer* Common tern *Sterna hirundo* Double-crested cormorant *Phalacrocorax auritus* Eared grebe P*odiceps nigricollis* Glaucous gull *Larus hyperboreus* Glaucous-winged gull *Larus glaucescens* Great blue heron *Ardea herodias* Green heron *Butorides virescens* Heermann's gull *Larus heermanni*	Herring gull *Larus argentatus* Horned grebe *Podiceps auritus* Marbled murrelet *Brachyramphus marmoratus* Mew gull *Larus canus* Pacific loon *Gavia pacifica* Parasitic jaeger *Stercorarius parasiticus* Pied-billed grebe *Podilymbus podiceps* Red-necked grebe *Podiceps grisegena* Red-throated loon *Gavia stellata* Rhinoceros auklet *Cerorhinca monocerata* Ring-billed gull *Larus delawarensis* Thayer's gull *Larus thayeri* Western grebe *Aechmophorus occidentalis* Western gull *Larus occidentalis*
Migratory or Coastal-dependent Landbirds (including neotropical migrants)	
American crow *Corvus brachyrhynchos* American Goldfinch *Carduelistristis* American robin *Turdus migratorius* Bald eagle *Haliaeetus leucocephalus* Band-tailed pigeon *Columba fasciata* Barn swallow *Hirundo rustica* Belted kingfisher *Ceryle alcyon* Bewick's wren *Thryomanes bewickii* Black swift *Cypseloides niger* Black-capped chickadee *Poecile atricapillus* Black-headed Grosbeak *Pheucticus melanocephalus* Black-throated gray warbler *Dendroica nigrescens* Brewer's Blackbird *Euphagus cyanocephalus* Brown creeper *Certhia Americana*	Mourning dove *Zenaida macroura* Northern flicker *Colaptes auratus* Northern pygmy owl *Glaucidium gnoma* Northern Rough-winged swallow *Stelgidopteryx serripennis* Northern saw-whet owl *Aegolius acadicus* Northwestern crow *Corvus caurinus* Olive-sided flycatcher *Contopusborealis* Orange-crowned warbler *Vermivora celata* Osprey *Pandion haliaetus* Pacific-slope flycatcher *Empidonax difficilis* Peregrine falcon *Falco peregrines* Pileated woodpecker *Dryocopus pileatus* Pine siskin *Carduelis pinus* Purple finch *Carpodacus purpureus* Purple martin *Progne subis*

Brown-headed Cowbird *Molothrus ater*	Red crossbill *Loxia curvirostra*
Bushtit *Psaltriparus minimus*	Red-breasted nuthatch *Sitta canadensis*
Cassin's vireo *Vireo cassinii*	Red-breasted sapsucker *Sphyrapicus ruber*
Cedar waxwing *Bombycilla cedrorum*	Red-tailed hawk *Buteo jamaicensis*
Chestnut-backed chickadee *Poecile rufescens*	Ruby-crowned kinglet *Regulus calendula*
Chipping sparrow *Spizella passerina*	Rufous hummingbird *Selasphorus rufus*
Cliff swallow *Pterochelidon pyrrhonota*	Sharp-shinned hawk *Accipiter striatus*
Common Nighthawk *Chordeiles minor*	Song sparrow *Melospiza melodia*
Common raven *Corvus corax*	Spotted towhee *Pipilo erythrophthalmus*
Common yellowthroat *Geothlypis trichas*	Steller's jay *Cyanocitta stelleri*
Cooper's hawk *Accipiter cooperi*	Swainson's thrush *Catharus ustulatus*
Dark-eyed junco *Junco hyemalis*	Townsend's warbler *Dendroica townsendi*
Downy woodpecker *Picoides pubescens*	Tree swallow *Tachycineta bicolor*
Evening Grosbeak *Coccothraustes vespertinus*	Turkey vulture *Cathartes aura*
Fox sparrow *Passerella iliaca*	Varied thrush *Ixoreus naevius*
Golden-crowned kinglet *Regulus satrapa*	Vaux's Swift *Chaetura vauxi*
Golden-crowned Sparrow *Zonotrichia atricapella*	Violet-green swallow *Tachycineta thalassina*
Gray Jay *Perisoreus canadensis*	Warbling vireo *Vireo gilvus*
Great horned owl *Bubo virginianus*	Western screech owl *Otus kennicottii*
Hairy woodpecker *Picoides villosus*	Western tanager *Piranga ludoviciana*
Hammond's flycatcher *Empidonax hammondii*	White-crowned sparrow *Zonotrichia leucophrys*
Hermit thrush *Catharus guttatus*	Willow flycatcher *Empidonax traillii*
House finch *Carpodacus mexicanus*	Wilson's warbler *Wilsonia pusilla*
Hutton's vireo *Vireo huttoni*	Winter wren *Troglodytes troglodytes*
Lincoln's sparrow *Melospiza lincolnii*	Yellow warbler *Dendroica petechia*
MacGillivray's warbler *Oporornis tolmiei*	Yellow-rumped warbler *Dendroica coronata*
Merlin *Falco columbarius*	

AGRICULTURAL RESOURCES

There is no evidence of past or current agricultural activity on this property.

FORESTRY RESOURCES

There are approximately 18 acres of merchantable timber growing on the uplands of the property, but it is not being actively managed for timber production. Most of the timber on the property appears to be naturally regenerated second-growth, although in some locations there are larger remnant Douglas-fir and Western redcedar trees. According to Patrick McHale, the property owner from 1979 through 2005, the property was logged in the mid-1970s, but it seems most likely to have been selectively cut at that time, given the age of the remaining timber. In

addition to the Douglas-fir and Western redcedar, there is red alder, big leaf maple, and madrone closer to the shoreline.

STEWARDSHIP AND MANAGEMENT STRATEGIES

1. Purpose and Goals of Management

a. Ecological Goals

This property consists of intact, functional coastal bluff, estuary, wetland and forested upland habitat. Capitol Land Trust's goal for the Totten/Adams Cove property, in keeping with the purpose of acquisition, is to preserve the land in a natural, undisturbed state so as to protect the numerous conservation values described in this report. Capitol Land Trust will allow nature to take its course into the future.

b. Programmatic Goals

The State of Washington holds a deed of right to use the property for salmon recovery and conservation purposes in perpetuity. Additionally, the US Fish & Wildlife Service and Washington Department of Ecology hold a Restrictive Covenant over the property that ensures it is permanently dedicated to conservation.

c. Stewardship Policies

The Totten/Adams Cove property will be managed in accordance with Capitol Land Trust's Stewardship Policy (adopted May 2010) and with the Stewardship Program Procedures (approved May 2010).

2. Management Concerns

a. Improvements

The property does not have any structures or improvements on it, nor is there any evidence of such in the past. The property has been surveyed and has stakes installed along property boundary lines. See Figure 8 in Appendix D.

b. Real Estate/Taxes/Funding

The Totten property is in the exempt tax classification under RCW 84.36.260. This allows properties used for conservation purposes to be exempt from ad valorem property taxes. There are specific stewardship funds associated with the property.

c. Threats/issues of special concern

Potential threats to this property include invasive plant species and the potential of human trespass via the shoreline beach or the private access drive. Capitol Land Trust will assess the presence of these threats during annual monitoring of the Totten/Adams Cove property. If noxious weeds requiring removal, such as Tansy Ragwort (*Senecio jacobaea),* are present, Capitol Land Trust will take the appropriate steps to remove the plants. In anticipation of potential human trespass, Capitol Land Trust will install "Land Under Conservation" signs at strategic points along the property boundary. In addition to discouraging trespass, these signs will indicate that the property is actively maintained, provide information on how to contact Capitol Land Trust and will discourage activities that would harm the ecological values of the property.

3. Management Strategies

a. Restoration

The Totten/Adams Cove property consists of high quality habitats that provide a broad range of ecosystem services to native species. The presence of invasive species is minimal. As such, there is little to no need for restoration activities on the property. The presence of a few scattered invasive species such as English holly should be removed upon contact during monitoring visits. There is a concentrated infestation of English ivy present on the property that threatens to kill ten or more substantially sized trees. The removal of this ivy is a high restoration priority. If the trees die and fall due to ivy, the disturbance will cause a substantial gap to open up in the canopy that may invite the entrance of additional invasive plant species.

b. Productive Use

As described above, there are 18 acres of harvestable timber growing on the property. However, there will be no active management of such timber, or other active use of the Totten/Adams Cove property. This will maintain the goal of conservation: to preserve the land in a natural, undisturbed state so as to protect the numerous conservation values described in this report.

c. Public Use

In the course of daily activities, it is likely that neighboring landowners walk across the Totten/Adams Cove beach or on the adjacent tidelands. This is standard cultural practice on coastal properties in Washington State. With the acknowledgement of that practice, it is recommended that the neighbors be made aware of the conservation status of the property, so that they can serve as stewards. In general, no ongoing public access of this property will be allowed. Use will be allowed on a case by case basis in accordance with Capitol Land Trust goals and policies. This will ensure that over the long term the quality and significance of the property will not be damaged. Capitol Land Trust will oversee any potential public use.

d. Five-year plan

To be updated regularly as tasks are completed or as priorities evolve:

Year one: Capitol Land Trust will complete the purchase of the property, install land under conservation signs along property boundaries, monitor the property and remove invasive English ivy from native trees.
Year two: Capitol Land Trust will monitor the property.
Year three: Capitol Land Trust will monitor the property.
Year four: Capitol Land Trust will monitor the property.
Year five: Capitol Land Trust will monitor the property.

e. Annual Obligations

Monitoring: Regular monitoring of the property will include annual boundary line inspection to detect encroachment, trespass and other management issues; GPS photo-point documentation of conditions; and monitoring of wildlife use and vegetation cover. Periodic monitoring will be done to: 1) assess wildlife usage, and 2) monitor ecosystem health for functionality. These activities are a regular part of Capitol Land Trust's land stewardship activities and will be accurately recorded in accordance with Capitol Land Trust policies.

Financial: Capitol Land Trust has obtained a property tax exemption on the Totten/Adams Cove property, and therefore does not have annual property tax obligations. Minor assessments (storm water, noxious weed patrol and conservation district) will be paid annually at a cost of approximately $100/year for all parcels. Liability insurance will be covered by Capitol Land Trust's umbrella policy for all properties. There are no other annual financial obligations on the Totten/Adams Cove Property.

Work Plan: After the installation of "land under conservation" signs along property boundaries and removal of invasive English ivy the property will be left as-is, and will not be actively managed. No work plan is necessary at this time. Capitol Land Trust will annually assess whether changing circumstances deem a work plan necessary.

REFERENCES

Map Data
-Puget Sound LIDAR Consortium pugetsoundlidar.ess.washington.edu/
-Natural Resource Conservation Service (NRCS): available at www.nrcs.usda.gov
-National Wetlands Inventory: available at www.fws.gov/nwi
-Thurston County GIS: www.geodata.org/
-USGS Topographic Maps available at Washington State Geospatial Data Archive: wagda.lib.washington.edu/

Geologic Unit Data
Original Map – Logan, R. L., 2003, Geologic map of the Squaxin 1:100,000 quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 2003-15, 1 sheet, scale 1:100,000. Digital Geology – J. E. Schuster digitized and attributed the geologic data.

Fish, Bird and Property Descriptions
Totten Inlet Estuarine Habitat Acquisition, 2010 National Coastal Wetlands Conservation Grant Program Proposal by Capitol Land Trust and Washington Department of Ecology. Copy available at Capitol Land Trust.

Soil Data
Soil Survey of Thurston County, Washington, by Russell F. Pringle, Soil Conservation Service. Soils surveyed by Russell F. Pringle and Carl J. McMurphy, Soil Conservation Service, and Ken Schlichte, Nick Comerford, Gerry Richardson, Norman Mofield, Chien-Lu Ping, and Harry Anderson, Washington State Department of Natural Resources.

Wetland Data
U. S. Fish and Wildlife Service. January 22, 2010. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. http://www.fws.gov/wetlands/

Appendix A. Totten/Adams Cove Property Geologic Units

PLEISTOCENE GLACIAL DEPOSITS
Deposits of Continental Glaciers—Cordilleran Ice Sheet

Qgt, Vashon till—Unstratified and, in most exposures, highly compacted mixture of clay, silt, sand, and gravel deposited directly by glacier ice; gray where fresh and light yellowish brown where stained; unsorted and, in most exposures, of very low permeability; most commonly matrix-supported but may be clast-supported; matrix generally has a more gritty feel than outwash sands when rubbed between fingers, due to being more angular than water-worked sediments; cobbles and boulders commonly faceted and (or) striated; ranges in thickness from wispy, discontinuous layers less than 1 in. to more than 30 ft thick; thicknesses of 2 to 10 ft are most common; mapped till commonly includes outwash clay, silt, sand, gravel, or ablation till that is too thin to substantially mask the underlying, rolling till plain; erratic boulders are commonly associated with till plains but may also occur as lag deposits where the underlying deposits have been modified by meltwater; typically, weakly developed modern soil has formed on the cap of loose gravel, but the underlying till is unweathered; local textural features in the till include flow banding and apophyses commonly extending 10 to 15 ft downward into underlying sand and gravel that are oriented transverse to ice flow direction.

Qgp, Pre-Vashon gravel—Gravel and sand of northern provenance; stratigraphically underlies Vashon Drift; most commonly exposed beneath unit Qps; gravelly portions are relatively resistant to erosion; commonly tinted orange with iron-oxide staining; moderately to poorly sorted; commonly cross bedded but may lack primary sedimentary structures; inferred to be of glacial origin because interglacial conditions do not appear conducive to streams with sufficient competency to deposit widespread gravels in most of the Puget Lowland, and because the majority of the exposures include northern-source clasts.

Qga, Advance Outwash, late Wisconian (Pleistocene) – Glaciofluvial sand and gravel and lacustrine clay, silt, and sand deposited during the advance of glaciers; sandy units commonly thick, well sorted, and fine grained, with interlayered coarser sand, gravel, and cobbles, and silt rip-up lag deposits at their base; may contain nonglacial sediments; generally overlain by till.

Appendix B. Totten/Adams Cove Property Soil Types

Kapowsin silt loam, 0 to 3 percent slope. This moderately deep, moderately well drained soil is on till plains. It formed in compact glacial till. The native vegetation is mainly conifers and hardwoods. Elevation is 50 to 600 feet. The average annual precipitation is 35 to 50 inches, the average annual air temperature is about 50 degrees F. and the average frost-free period is 150 to 200 days.

Typically, the surface layer is dark brown silt loam about 4 inches thick. The upper 14 inches of the subsoil is dark yellowish brown silt loam, the next 4 inches is dark yellowish brown, mottled loam, and the lower 8 inches is dark yellowish brown, mottled gravelly loam. The substratum to a depth of 60 inches or more is a grayish brown, weakly cemented hardpan. The hardpan is strongly compacted and crushes to gravelly loam. It is at a depth of about 20 to 30 inches.

This unit is used for hayland, pasture, cropland, woodland, or homesites. The main limitations affecting hay and pasture are the seasonal high water table and the soil depth, which is limited by the hardpan. Sweet corn, corn silage, oats, and strawberries are commonly grown on this soil. The main limitations affecting cropland are the seasonal high water table and the soil depth, which is limited by the hardpan. Artificial drainage improves the timeliness of fieldwork and increases yields of perennial crops. Applying animal manure and returning crop residue to the soil help to maintain the organic matter content, fertility, and tilth. In most years irrigation is needed for maximum production. Sprinkler irrigation is the best method of applying water.

Douglas-fir is the main woodland species on this unit. Among the trees of limited extent are red alder, western redcedar, western hemlock, and bigleaf maple. On the basis of a 100-year site curve, the mean site index for Douglas-fir is 161. On the basis of a 50-year site curve, it is 123. The highest average growth rate of an unmanaged, even-aged stand of Douglas-fir is 171 cubic feet per acre per year at 65 years of age. The main limitation affecting the harvesting of timber is the muddiness caused by seasonal wetness.

Logging roads require suitable surfacing material for year round use. Rock for road construction is not readily available on this unit. Reforestation can be accomplished by planting Douglas-fir seedlings. If the stand includes seed trees, natural reforestation by red alder occurs readily in cutover areas. Common forest understory plants are cascade Oregongrape, western brackenfern, western swordfern, vine maple, and salal.

The main limitation affecting homesites is the seasonal high water table. A drainage system should be installed on sites for buildings with basements or crawl spaces.
The main limitations affecting septic tank absorption fields are the wetness and the hardpan. Because of the restrictive layer, onsite sewage disposal systems often fail or do not function properly during periods of heavy rainfall. The effluent from septic tank absorption fields can surface in downslope areas and thus create a health hazard. This map unit is in capability subclass IIIw.

Bellingham silty clay loam, 0 to 3 percent. This very deep, poorly drained soil formed in alluvium and lacustrine sediments. Slopes are 0 to 3 percent. The native vegetation is mainly hardwoods and conifers. Typically, the surface layer is black silty clay loam about 5 inches thick. The upper part of the subsoil is gray, mottled silty clay about 9 inches thick. The lower part to a depth of 60 inches or more is gray and dark gray, mottled silty clay and clay. Included in this unit are small areas of Norma, McKenna, Mukilteo, and Skipopa soils and Bellingham soils that have not been drained. Permeability is slow in the Bellingham soil. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 18 to 36 inches from October to March. Runoff is very slow, and the hazard of water erosion is slight.

This unit is used mainly for hay land, pasture, or woodland. It is also used for home sites. The main limitation affecting hay and pasture is the high water table. All forage crops commonly produced in the survey area can be grown if the drainage system is adequate. Grazing when the soil is wet damages the plants and results in compaction of the surface layer. Periodic mowing helps to maintain uniform growth, discourages selective grazing, and controls weeds. Rotation grazing helps to maintain the quality of forage. In undrained areas this unit is suited to woodland. The main limitation affecting the harvesting of timber is the muddiness caused by seasonal wetness. The seasonal high water table limits the use of equipment to dry periods. Use of wheeled and tracked equipment when the soil is wet results in ruts and soil compaction.

Unsurfaced roads and skid trails are sticky and can be impassable when wet. Logging roads require suitable surfacing material for year-round use. The main limitations affecting urban development are the seasonal wetness and the shrink-swell potential. A drainage system is needed if roads or buildings are constructed. A drainage system also is needed for best results with most lawn grasses, shade trees, ornamental trees, shrubs, vines, and vegetable gardens. Excess water can be removed by suitably designed drainage ditches. On sites for buildings and roads, the effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has a low shrink-swell potential.

Dystric Xerochrepts, 60 to 90 percent slopes. These moderately deep to very deep, well drained soils are on escarpments. They formed in glacial till and colluvium. The native vegetation is mainly conifers and hardwoods. Elevation is 0 to 1,000 feet. The average annual precipitation is 40 to 60 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is 150 to 200 days. No single profile is typical of these soils, but in one of the more common ones. the surface is covered with a mat of leaves and twigs about 2 inches thick. The surface layer is brown *very* gravelly sandy loam about 4 inches thick. The subsoil is yellowish brown very gravelly sandy loam about 26 inches thick. The substratum to a depth of 60 inches or more is compact glacial till. Depth to the glacial till ranges from 20 to more than 60 inches.

Included in this unit are small areas of Alderwood, Everett, Hoogdal, Indianola, and Skipopa soils on ridgetops. Also included are areas of soils that are poorly drained to moderately well drained. Included areas make up about 25 percent of the total acreage. Permeability is moderate above the dense glacial till in the Dystric Xerochrepts and very slow through the till. Available water capacity is low or moderate. Effective rooting depth is 20 to more than 60 inches. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used as woodland. Douglas-fir is the main woodland species. Among the trees of limited extent are red alder, bigleaf maple, western redcedar, and Pacific madrone. On the basis of a 100-year site curve, the mean site index for Douglas-fir is 150. On the basis of a 50-year site curve, it is 115. The estimated growth rate of an unmanaged, even-aged stand of Douglas-fir is 158 cubic feet per acre per year at 60 years of age. The main limitation affecting the harvesting of timber is slope. Cable yarding systems generally are used on this unit.

Un-surfaced roads and skid trails are soft and can be impassable when wet. Logging roads require suitable surfacing material for year-round use. Rounded pebbles and cobbles for road construction are readily available. Establishing a plant cover on steep slopes that have been cut or filled reduces the hazard of erosion. Steep yarding paths, skid trails, and firebreaks are subject to rilling and gullying unless they are protected by a plant cover or adequate water bars are provided. Land slumping and road failure can occur following clearcut harvesting.

Harvesting systems that lift logs entirely off the ground reduce the disturbance of the protective layer of duff. Seedling mortality is the main concern in the production of timber. Reforestation can be accomplished by planting Douglas-fir seedlings. If the stand includes seed trees, natural reforestation by red alder occurs readily in cutover areas. Droughtiness in the surface layer reduces the seedling survival rate. When openings are made in the canopy, invading brushy plants can delay the establishment of planted Douglas-fir seedlings. Because the rooting depth is restricted by the compact till, trees are subject to occasional windthrow. This map unit is in capability subclass VIIe.

Appendix C. Totten/Adams Cove Property Wetland Types

E2EM - [E] Estuarine, [2] Intertidal, [EM] Emergent
[E] Estuarine - The Estuarine System describes deepwater tidal habitats and adjacent tidal wetlands with low energy and variable salinity, influenced and often semi-enclosed by land.
(2) Intertidal - This is defined as the area from extreme low water to extreme high water and associated splash zone.
[EM] Emergent - Characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants.

E2US - [E] Estuarine, [2] Intertidal, [US] Unconsolidated Shore
[E] Estuarine - The Estuarine System describes deepwater tidal habitats and adjacent tidal wetlands with low energy and variable salinity, influenced and often semi-enclosed by land.
(2) Intertidal - This is defined as the area from extreme low water to extreme high water and associated splash zone.
[US] Unconsolidated Shore - Includes all wetland habitats having three characteristics:

1. unconsolidated substrates with less than 75% areal cover of stones, boulders, or bedrock;
2. less than 30% areal cover of vegetation other than pioneering plants; and
3. any of the following water regimes: irregularly exposed, regularly flooded, irregularly flooded, seasonally flooded, temporarily flooded, intermittently flooded, saturated, seasonal-tidal, temporary-tidal, or artificially flooded.

Intermittent or intertidal channels of the Riverine System or intertidal channels of the Estuarine System are classified as Streambed. Landforms such as beaches, bars, and flats are included in the Unconsolidated Shore class.

PFO/SS - [P] Palustrine, [FO] Forested/[SS] Scrub-Shrub,
[P] Palustrine - The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 ppt. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics:

1. are less than 8 hectares (20 acres);
2. do not have an active wave-formed or bedrock shoreline feature;
3. have at low water a depth less than 2 meters (6.6 feet) in the deepest part of the basin;
4. have a salinity due to ocean-derived salts of less than 0.5 ppt.

[FO] Forested - Characterized by woody vegetation that is 6 m tall or taller.
[SS] Scrub-Shrub - Includes areas dominated by woody vegetation less than 6 m (20 feet) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions.

Appendix D. Totten/Adams Cove Survey (BLA) Map

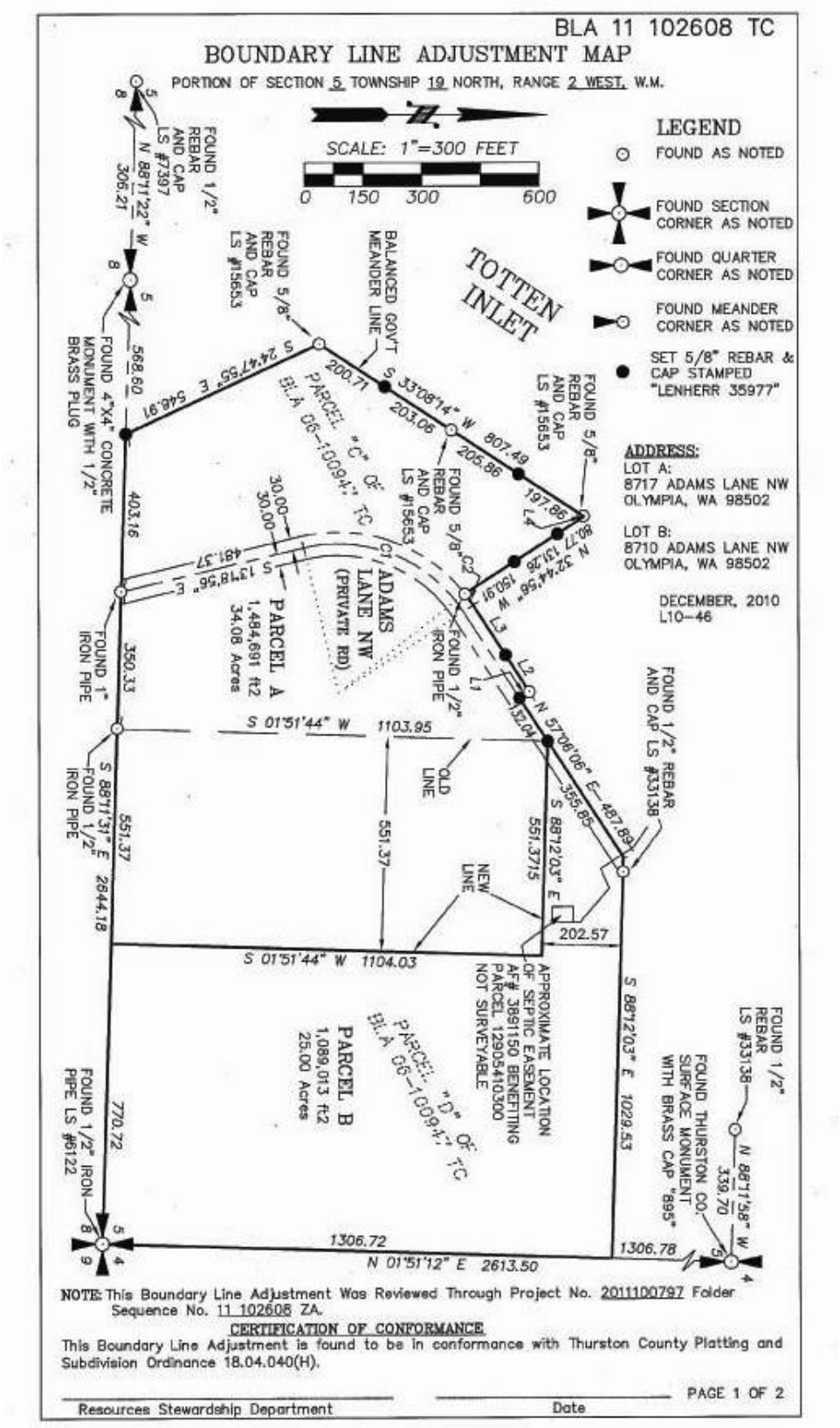


Figure 8. Totten Inlet Adams Cove survey map. Source: Thurston County