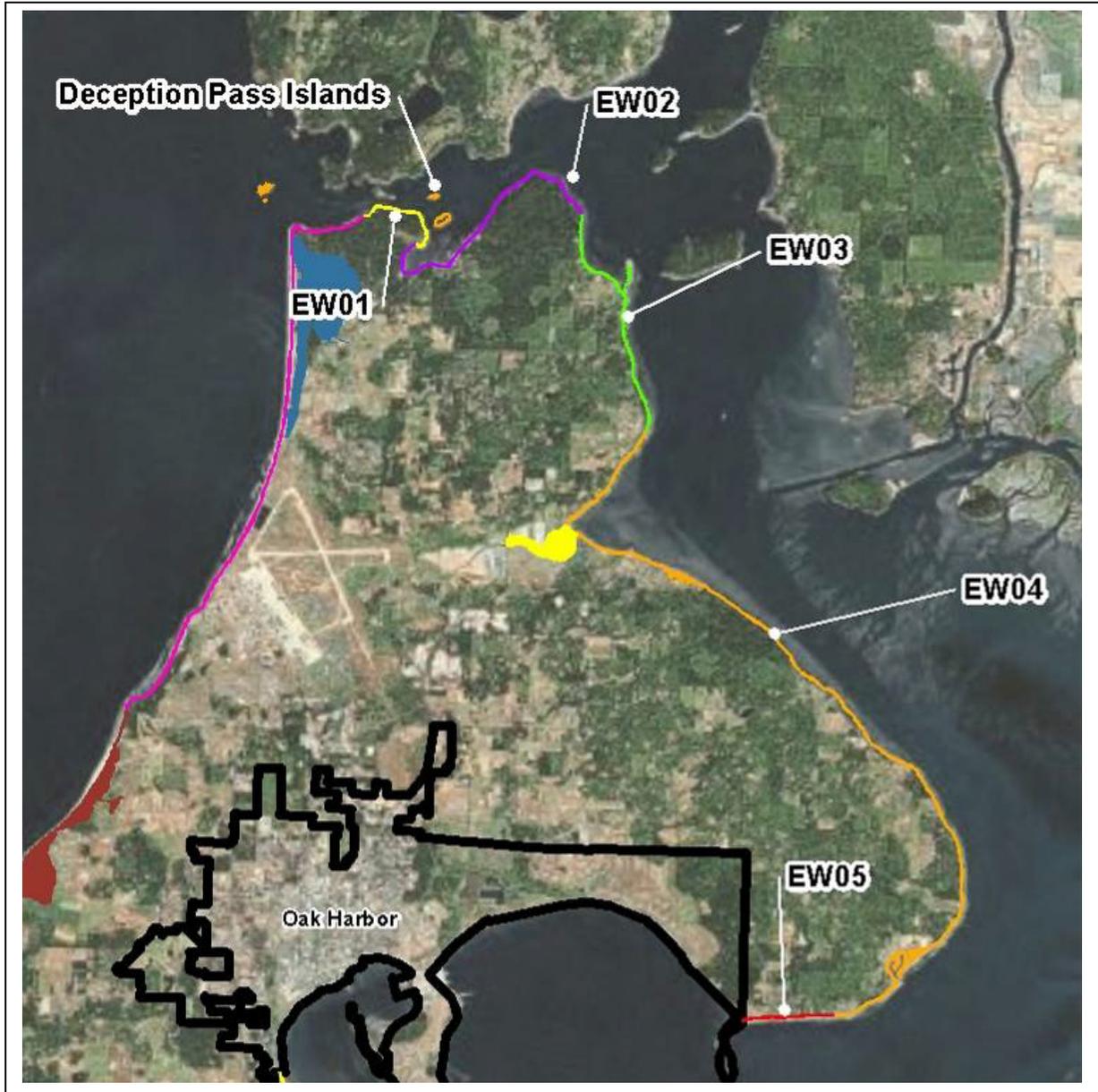


6.1.4 Reach Analysis

This section includes reach summaries (as reach information sheets) for East Whidbey Island's northeast marine shorelines, as depicted in Figure 6-1.

Figure 6-1. Northeast Whidbey marine reaches.





REACH Deception Pass Islands

Deception Pass Islands

SHORELINE LENGTH:

1.61 Miles

REACH AREA:

24 Acres

PSNERP PROCESS UNITS:

NA

REACH SUMMARY

Deception Island (Oblique Photo A), Strawberry Island (Oblique Photo C) and Ben Ure Island (Oblique Photo D) are all included within this reach. Deception Island is located to the west of Deception Pass. Ben Ure and Strawberry Islands are located to the east of the Pass and north of Cornet Bay. Located directly south of Deception Island is a small rocky outcropping locally known as Spy Island. All three main Deception Pass islands are mapped with rocky platform beach types, consistent with their primarily bedrock shorelines. Shoreline processes around the islands are primarily influenced by the bedrock and rocky beach shorelines and the strong marine currents through the Deception Pass.

The shorelines of Deception and Strawberry Islands are entirely undeveloped. Ben Ure is largely undeveloped, with some modification at the eastern and western ends associated with privately held properties on the island. Shoreline vegetation consists of conifer-dominated forest with shrub understories. The islands are important habitat for seabirds and provide Bald Eagle territorial habitat. All of the islands are part of Deception Pass State Park, except for privately held properties at the east and west ends of Ben Ure Island. Aquatic habitat includes red sea urchin and Dungeness crab habitat, as well as continuous kelp beds around all three.

Development on Ben Ure Island is focused on the northeast and southwest ends, with several structures apparent from aerial photography. A single pier extends from the western shoreline, with the associated float structure providing moorage for several watercraft.

GEOMORPHIC KEY INFORMATION

Geomorphic Shoretype (Map 9)

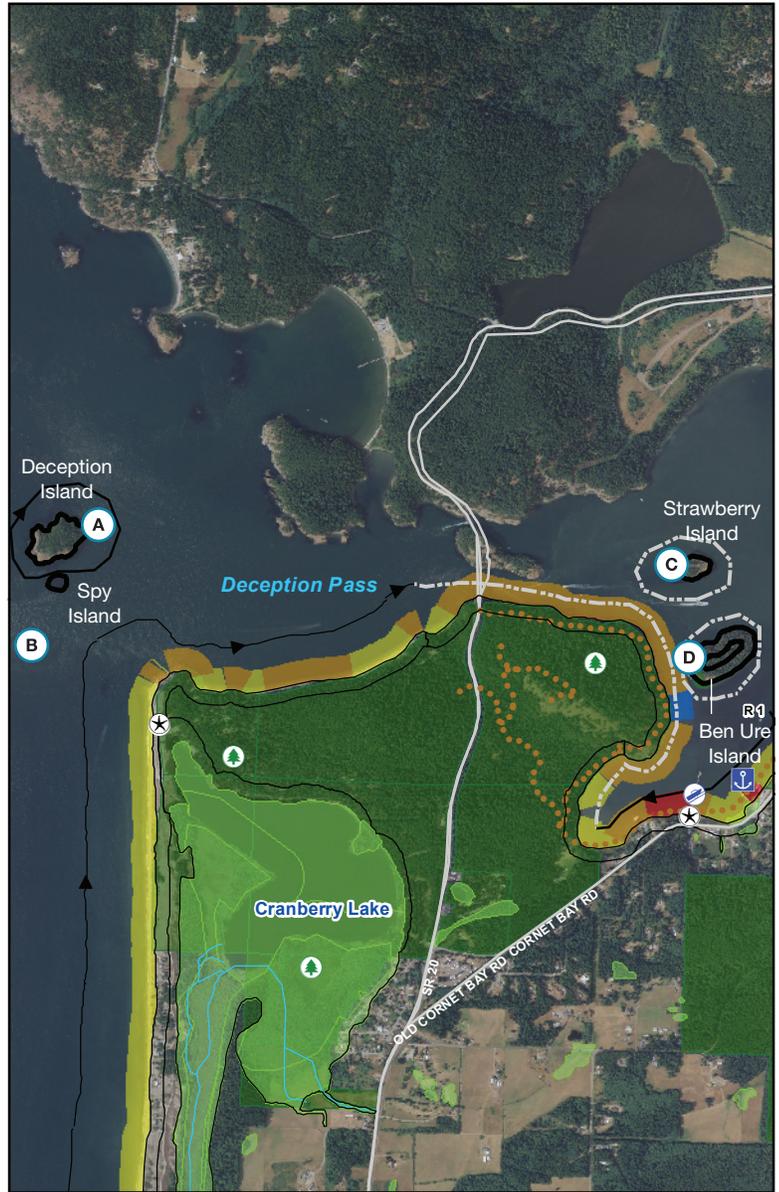
Not mapped for Deception Pass Islands - all are bedrock islands (as characterized by PSNERP Shoreform mapping)

Net Shore Drift (Map 8)

No Appreciable Drift on Deception, Ben Ure, and Strawberry Island shorelines due to bedrock.

Shoreform Current (Map 10)

Primarily Rocky Platform Beach (87%); Bluff-backed Beach (13%)



Overall Rating of Degradation

Least (100%)

Coastal Floodplain:

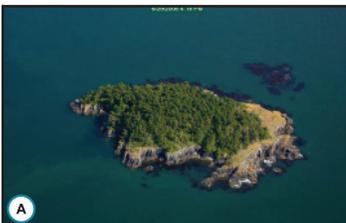
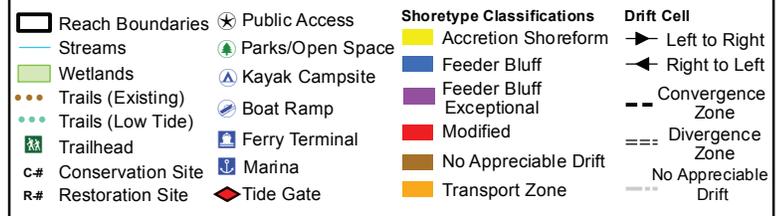
23%

Coastal Landslides & Toe Erosion:

None mapped (bedrock islands).

Steep Slopes

18%



Shoreline Oblique Photos (© Microsoft Bing Maps, 2010)

HABITATS & SPECIES

Significant & Unique Features (Maps 5-7)

Red Sea Urchin habitat around Deception Island; Dungeness crab habitat through Ben Ure and Strawberry aquatic areas; patchy kelp around all islands. Deception Pass area is designated as an Audubon Important Bird Area.

Coastal Lagoons None mapped	Coastal Stream Mouths None mapped	Wetlands (Map 4) None mapped
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Forage Fish

Sandlance None mapped **Smelt** None mapped
Herring None mapped

LAND & SHORELINE USE

Shoreline Modifications (Map 13)

Minimal modification to Ben Ure shoreline in area of development / pier; no other modification to islands.

Armoring (% of shoreline) (Map 13) None mapped

Zoning (Map 11)

Rural (100%)

Current Land Use (Map 12)

Number of Parcels 18 **Average Parcel Size** 0.67 Acres
 Deception Island and Strawberry Island are part of Deception Pass State Park with no structures. Ben Ure Island has partial lands devoted to Deception Pass State Park with a handful of private residences.

Shoreland Priority Habitats & Species (Map 5)

All listed under aquatic

Marine Priority Habitats & Species (Map 5)

Seabird colonies on all 3 islands; Eagles

Salmonid Fish Use (Map 5)

No streams on islands. Nearshore areas are designated ESA critical habitat for Chinook (Puget Sound ESU) and bull trout.

Public Access (Map 16)

None mapped - Strawberry and Deception Island are both part of State Park, however access is provided. Aerial photography shows a dock on Ben Ure Island.

Overwater Structures (Map 14)

Private pier/dock on Ben Ure Island (W shoreline); no overwater structures on Strawberry and Deception Islands.

Shellfish & Aquaculture (Map 15)

None mapped

KEY MANAGEMENT ISSUES

- Protection of aquatic and shoreline habitats through any future redevelopment, refurbishment, or expansion of State Park and (on Ben Ure) private residential uses.
- Restoration and protection of island vegetation community from potential impacts of invasive species.

RESTORATION OPPORTUNITIES

Restoration sites were identified in 2004 by Coastal Geologic Services (Appendix H).

Potential restoration sites were not identified; the shoreline is composed of bedrock and has not been developed or otherwise utilized.



REACH EW01

Deception Pass State Park (From Bridge to Cornet Bay)

SHORELINE LENGTH:

1.16 Miles

REACH AREA:

27 Acres

PSNERP PROCESS UNITS:

6061, 8056, 8057, 8041

REACH SUMMARY

Deception Pass State Park — from Bridge to Cornet Bay (Reach EW01) is entirely encompassed within the State Park at the northern tip of Whidbey. Strong marine currents through the Deception Pass waterway transport sediments along the primarily bedrock shorelines (plunging rock shoreline / rock platform beach shoreforms).

Shorelines in this reach are largely undeveloped, with high rocky bluffs, narrow rocky beaches and coniferous forest including stands of old growth. No wetlands are mapped within the shoreline area. Documented aquatic habitat includes Red Sea Urchin and Dungeness crab areas through mapped kelp and eelgrass areas.

Development within this portion of the State Park is limited to hiking trails within the generally forested setting. SR 20 provides a major access point between Whidbey Island and areas such as Anacortes to the north.

GEOMORPHIC KEY INFORMATION

Geomorphic Shoretype (Map 9)

Primarily Transport Zone (85%), with Accretion Shoreform (9%) and Feeder Bluff (6%) fronting Deception Pass State Park

Net Shore Drift (Map 8)

No Appreciable Drift occurs from Gun Point, just west of Deception Pass, to the north shore of Cornet Bay due to bedrock shorelines.

Shoreform Current (Map 10)

Rocky Platform Beach (52%); Plunging Rock Shoreline (35%); Pocket Beach (13%)

Overall Rating of Degradation

Least (100%)

Coastal Floodplain:

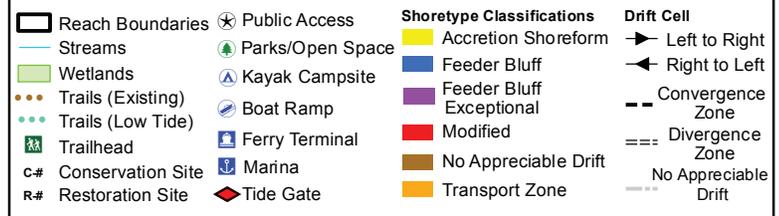
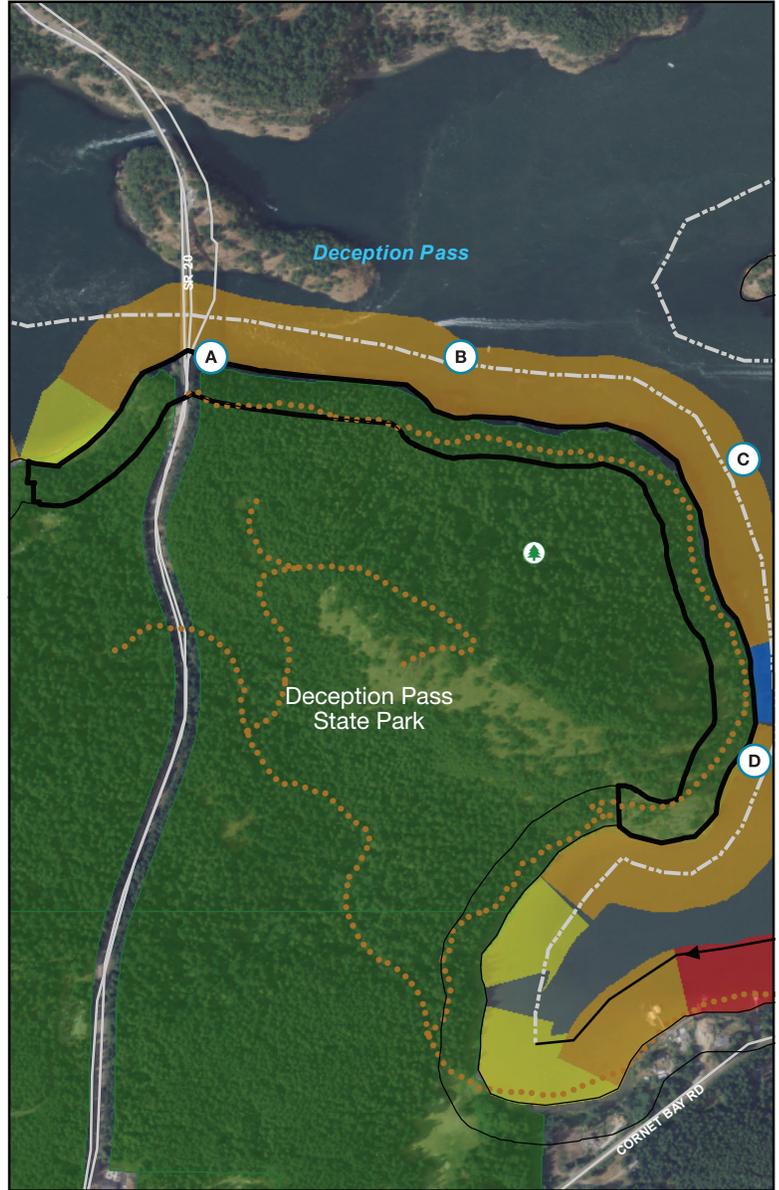
22%

Coastal Landslides & Toe Erosion:

Toe erosion and a landslide area at the north end of Cornet Bay (limited to this area along the bedrock shoreline).

Steep Slopes

71%



Shoreline Oblique Photos (2006)

HABITATS & SPECIES

Significant & Unique Features (Maps 5-7)

Red Sea Urchin habitat through west half; Dungeness crab habitat east of bridge; patchy kelp and continuous eelgrass. Deception Pass area is designated as an Audubon Important Bird Area. Pigeon Guillemot nesting colony located on Deception Pass shoreline.

Shoreland Priority Habitats & Species (Map 5)

Bald Eagle buffer; All others listed under aquatic; 4 acres of mapped Native Oaks and Grassland

Marine Priority Habitats & Species (Map 5)

None mapped

Salmonid Fish Use (Map 5)

No streams. Nearshore areas are designated ESA critical habitat for Chinook (Puget Sound ESU) and bull trout.

Coastal Lagoons None mapped **Coastal Stream Mouths** None mapped **Wetlands (Map 4)** None mapped

Forage Fish

Sandlance None mapped **Smelt** None mapped
Herring None mapped

LAND & SHORELINE USE

Shoreline Modifications (Map 13)

No mapped modification.

Public Access (Map 16)

Goose Rock area of Deception Pass State Park; area includes: Deception Pass Bridge right of way, largely undeveloped/unmodified shoreline area, network of hiking trails.

Armoring (% of shoreline) (Map 13) None mapped

Overwater Structures (Map 14)

Deception Pass (SR 20) Bridge - bridge footings are located on land; no other overwater structures.

Zoning (Map 11)

Parks (100%)

Current Land Use (Map 12)

Number of Parcels 2 **Average Parcel Size** 139.81 Acres

Entirety of reach is within Deception Pass State Park and there are no man made structures within reach.

Shellfish & Aquaculture (Map 15)

Unclassified as a growing area (except outer aquatic extent, which is inaccessible due to depth); no mapped or classified shellfish beaches.

KEY MANAGEMENT ISSUES

- Protection of aquatic and shoreline habitats through any future redevelopment, refurbishment, or expansion of the Deception Pass (SR 20) Bridge.
- Potential implications of sea level rise (SLR) on rocky platform beaches (loss of habitat).

RESTORATION OPPORTUNITIES

Restoration sites were identified in 2004 by Coastal Geologic Services (Appendix H).

Potential restoration sites were not identified; the shoreline is composed of bedrock and has not been developed or otherwise utilized.



REACH EW02

Cornet Bay, Deception Pass State Park (From Cornet Bay Eastward)

SHORELINE LENGTH:

2.98 Miles

REACH AREA:

73 Acres

PSNERP PROCESS UNITS:

6061, 6028, 8057

REACH SUMMARY

Cornet Bay, Deception Pass State Park — from Cornet Bay Eastward (Reach EW02) is dominated by forested state park lands, with limited development focused within Cornet Bay. Geomorphic processes are primarily influenced by a long east to west drift cell transporting sediments from the east into the bay, feeding accretion shoreforms in areas of no appreciable drift.

Shorelines in this reach are largely undeveloped, with high rocky bluffs and feeder bluffs backed by coniferous forest. There are very few associated wetlands mapped within the reach. Documented aquatic habitat includes Dungeness crab, kelp and eelgrass areas, as well as offshore pandalid shrimp.

Shoreline modifications are focused around Cornet Bay, where fill and armoring are associated with a public marina, boat launch and residences. There are numerous overwater structures (docks and piers) around the bay. The major public marina and boat launch facility associated with the State Park provide significant public access.

GEOMORPHIC KEY INFORMATION

Geomorphic Shoretype (Map 9)

Primarily Transport Zone (49%), with Accretion Shoreform (30%) along Cornet Bay and Feeder Bluff (16%) along Hoypus Point. Some Modified shoreline (6%) at Cornet Bay Marina

Net Shore Drift (Map 8)

A divergence zone, located at Hoypus Point, marks the origin of southwestward drift into Cornet Bay.

Shoreform Current (Map 10)

Primarily Bluff-backed Beach (82%), limited area of Open Coastal Inlet (10%)

Overall Rating of Degradation

Least (100%)

Coastal Floodplain:

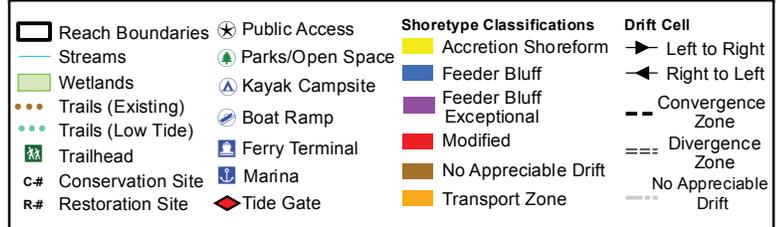
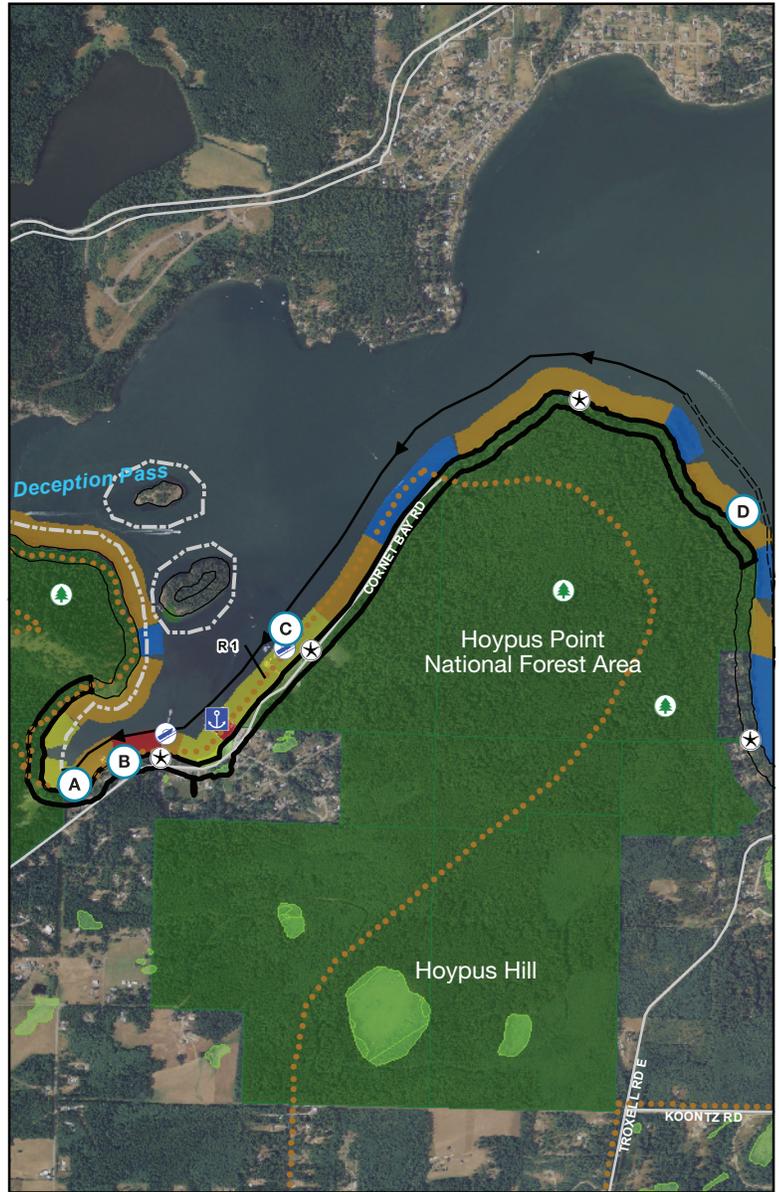
15%

Coastal Landslides & Toe Erosion:

Intermittent toe erosion and landslides mapped throughout reach.

Steep Slopes

10%



Shoreline Oblique Photos (2006)

HABITATS & SPECIES

Significant & Unique Features (Maps 5-7)

Dungeness crab habitat; continuous kelp and patchy eelgrass; offshore Pandalid shrimp area to northeast of shoreline.

Shoreland Priority Habitats & Species (Map 5)

Bald Eagle buffer

Marine Priority Habitats & Species (Map 5)

None mapped

Salmonid Fish Use (Map 5)

No mapped streams. Nearshore areas are designated ESA critical habitat for Chinook (Puget Sound ESU) and bull trout.

Coastal Lagoons None mapped **Coastal Stream Mouths** None mapped **Wetlands (Map 4)** 2%

Forage Fish
Sandlance 3% **Smelt** 33%
Herring None mapped

LAND & SHORELINE USE

Shoreline Modifications (Map 13)

Modification focused in Cornet Bay (including fill and hardening) associated with Marina as well public facilities (extensive modification at State Park boat launch facility); residential bulkheads to south of County dock; no modification east of Cornet Bay.

Public Access (Map 16)

Goose Rock and Hoypus Point Natural Forest areas of Deception Pass State Park; areas includes: major public marina and boat launch facility within Cornet Bay; otherwise largely undeveloped/unmodified shoreline areas, and network of hiking trails.

Armoring (% of shoreline) (Map 13) 20%

Zoning (Map 11)
Parks (83%); Rural (9.5%); Rural Village (7.5%)

Overwater Structures (Map 14)

10 piers along Cornet Bay (5 associated with state or County public facilities, including County dock and major launch facility in State Park); Cornet Bay Marina (extensive overwater coverage from floating docks off of 2 piers, several slips include sheds).

Current Land Use (Map 12)

Number of Parcels 42 **Average Parcel Size** 18.74 Acres

South side of Cornet Bay has residential development along shoreline with smaller docks and larger docks/marinas. Western portion of reach along Cornet Bay is vacant, undeveloped tideflat. The large undeveloped western flank is part of Deception Pass State Park and has Cornet Bay Rd running along the shoreline and ending at the tip of Whidbey Island.

Shellfish & Aquaculture (Map 15)

Unclassified as a growing area (except outer aquatic extent, which is inaccessible due to depth); no mapped or classified shellfish beaches.

KEY MANAGEMENT ISSUES

- Continued degradation of shoreline processes due to armoring (bulkheads).
- Disconnection of feeder bluff areas from shoreline due to toe armoring and / or development fronting bluff areas leading to greater down-drift erosion rates (issue is related to short portions of reach near Cornet Bay).
- Drinking water supply (aquifer) issues associated with additional development (subdivision / intensified use)—saltwater intrusion and potential exacerbation from sea level rise (SLR).
- Potential implications of sea level rise SLR on beaches (loss of habitat).
- Potential implications of SLR and coastal flooding on development within or near coastal floodplain areas (shoreline residential development).

RESTORATION OPPORTUNITIES

Restoration sites were identified in 2004 by Coastal Geologic Services (Appendix H).

R1: Remove bulkhead and associated intertidal and backshore alteration along Deception Pass State Park shore (southwest of the 2 existing piers).

Habitat restoration feasibility for Cornet Bay and Hoypus Point was assessed in 2009 by Washington State Parks and Recreation and the County’s Marine Resource Committee (WSPR and Island County, 2009).

Other Restoration Opportunity

Washington Parks and the Island County Marine Resource Committee are partnering to restore the shoreline in the Cornet Bay Day Use Area. Boat ramps will remain, but all creosote bulkhead and fill will be removed and replaced with natural-slope beach sediments and native plantings. Restoration is funded by the Salmon Recovery Fund Board and work is scheduled to be completed by the end of 2012.



REACH EW03

Ala Spit

SHORELINE LENGTH:

3.33 Miles

REACH AREA:

71 Acres

PSNERP PROCESS UNITS:

6061, 6026, 6027, 6028

REACH SUMMARY

The Ala Spit reach (EW03) contains undeveloped, forested lands within Deception Pass State Park and Island County park lands, as well as areas of private residential development extending south from Ala Spit. Geomorphic processes are dominated by two drift cells converging at Ala Spit. Several areas of feeder bluffs are present in the reach, mapped intermittently with transport zones. Ala Spit is a depositional area for transported sediment. Hope Island (in Skagit County) lies offshore of the spit.

Two short coastal streams drain to the shoreline within the reach; however, neither is used by salmon. Shoreline bluff areas are generally vegetated with mixed forest. Limited areas of wetland and a coastal lagoon are located immediately west of the spit. Aquatic areas provide forage fish, pandalid shrimp and Dungeness crab habitat.

The northern portion of the reach is the least developed, with coniferous forest and narrow sandy / gravel beaches. Near Ala Spit and continuing south, limited shoreline armoring is associated with rural residential areas and roads. Most residences have been constructed at the top of steep bluffs. Ala Spit County Park encompasses the entire spit and provides public shoreline access.

GEOMORPHIC KEY INFORMATION

Geomorphic Shoretype (Map 9)

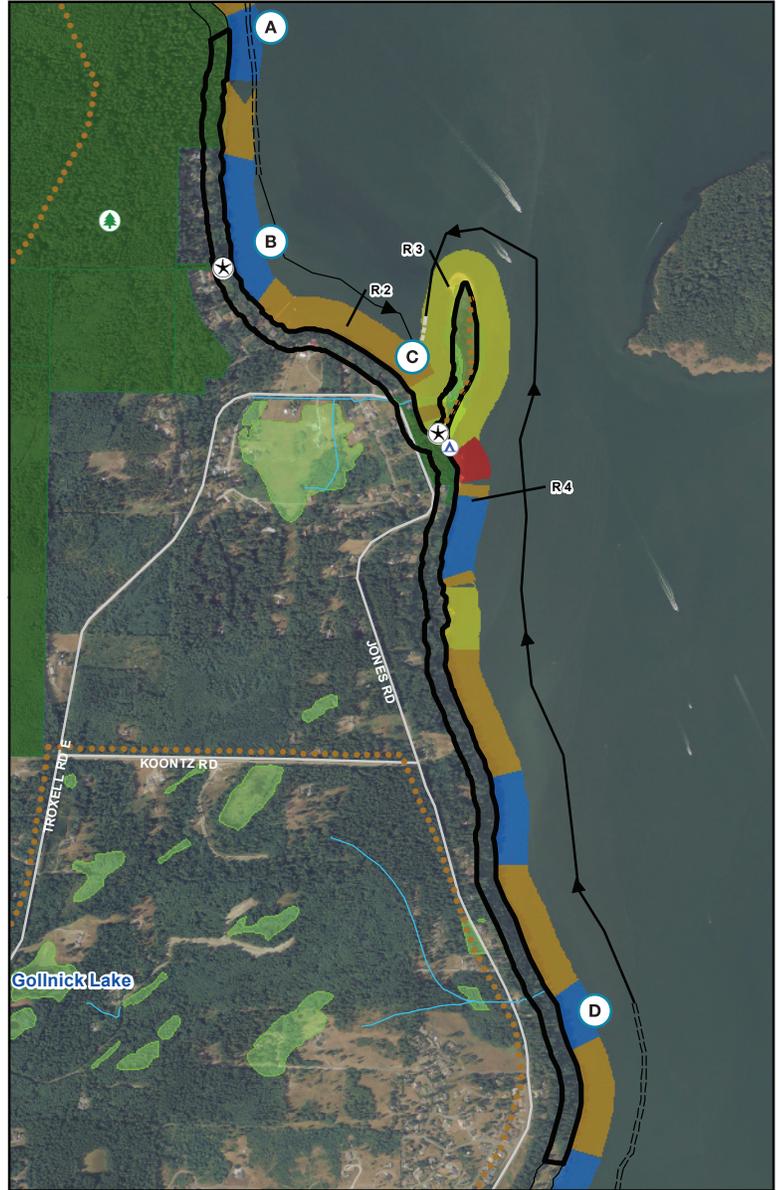
Transport Zone (42%) and Feeder Bluff (28%) along majority of reach, with Accretion Shoreform (28%) along Ala Spit. Minimal amount (2%) of Modified shoreline

Net Shore Drift (Map 8)

Northward drift originating south of Ala Spit converges with southward drift from the north end of the reach to the leeward shore of Ala Spit.

Shoreform Current (Map 10)

Primarily Bluff-backed Beach (78%), limited areas of Barrier Beach (11%) and Barrier Lagoon (11%)



Overall Rating of Degradation

Least (39%); Less (54%); Moderate (8%)

Coastal Floodplain:

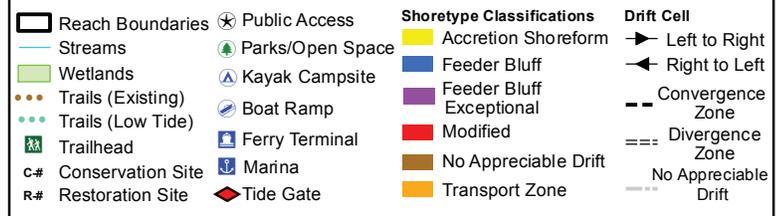
41%

Coastal Landslides & Toe Erosion:

Toe erosion intermittent south of Ala Spit.

Steep Slopes

53%



Shoreline Oblique Photos (2006)

HABITATS & SPECIES

Significant & Unique Features (Maps 5-7)

Pandalid shrimp offshore north of Spit; Dungeness crab and hardshell clam habitat wrapping around Spit and extending south into Dugualla Bay; eelgrass habitat throughout reach; patchy kelp around and north of Spit.

Shoreland Priority Habitats & Species (Map 5)

Bald Eagle buffer; Associated wetland area

Marine Priority Habitats & Species (Map 5)

None mapped

Coastal Lagoons 1 acre (1.7%)	Coastal Stream Mouths 2	Wetlands (Map 4) 4%
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Forage Fish

Sandlance 29%	Smelt 33%
Herring Spawning habitat	

Salmonid Fish Use (Map 5)

Nearshore areas are designated ESA critical habitat for Chinook (Puget Sound ESU) and bull trout.

LAND & SHORELINE USE

Shoreline Modifications (Map 13)

Armoring in vicinity of pier (associated with residential development) and extending south from Ala Spit (combination of hardening and fill for road infrastructure and armoring for residential development).

Public Access (Map 16)

Ala Spit County Park (12 acres; includes entire spit; shoreline access includes fishing, clamming, beach access, trails, and views); eastern-most portion of Hoyopus Point Nature Forest (part of Deception Pass State Park; entirely undeveloped shoreline within EW03).

Armoring (% of shoreline) (Map 13) 13%

Overwater Structures (Map 14)

Private pier to the northwest of Ala Spit.

Zoning (Map 11)

Rural (64%); Parks (25%); Rural Residential (11.5%)

Current Land Use (Map 12)

Number of Parcels 87 **Average Parcel Size** 6.43 Acres
Park use for the northern edge of reach (Deception Pass State Park) and Ala Spit. Residential development occurs north and south of Ala Spit with the majority of residences upland of steep bluffs. A few residences have been built on the shoreline.

Shellfish & Aquaculture (Map 15)

Unclassified as a growing area (except outer aquatic extent, which is inaccessible due to depth); several closed shellfish beaches, otherwise unclassified or unmapped.

KEY MANAGEMENT ISSUES

- Continued degradation of shoreline processes, particularly with expansion of armoring (bulkheads).
- Drinking water supply (aquifer) issues associated with additional development (subdivision / intensified use) — saltwater intrusion, potentially exacerbated by sea level rise (SLR).
- Slope stability, habitat and aesthetic implications of additional private shoreline access points on high bank shorelines (accessory to residential development).
- Potential increases in coastal flooding and rates of bluff erosion due to SLR or other factors.
- Potential use conflicts associated with public access to beaches and private residential property rights.
- Slope / bluff stability for existing and future land uses at the top or toes of slopes, (considering land uses and modifications such as clearing, creation of impervious surfaces, modified surface / ground-water dynamics).
- Subdivision and intensified use — additional modification of feeder bluff / steep slope areas and water quality implications (septic systems and road runoff) due to greater intensity of use.

RESTORATION OPPORTUNITIES

Restoration sites were identified in 2004 by Coastal Geologic Services (Appendix H).

- R2:** Remove approximately 6 derelict piles.
- R3:** Remove approximately 15 derelict piles.
- R4:** Remove rock groin and concrete bulkhead.

Other Restoration Project Underway

An Ala Spit restoration project currently being done by the County Public Health Department due for implementation in fall 2011. See Feasibility Study for restoration of Ala Spit (Island County, 2008).



REACH EW04

Dugualla Bay, Dugualla State Park, Mariner's Cove, Strawberry Point

SHORELINE LENGTH:

10.63 Miles

REACH AREA:

265 Acres

PSNERP PROCESS UNITS:

6024 - 6027

REACH SUMMARY

Dugualla Bay, Dugualla State Park, Mariner's Cove, Strawberry Point (Reach EW04) lies on the western shore of Skagit Bay. Geomorphic shoreline processes are primarily influenced the convergence of two drift cells within Dugualla Bay.

A stream enters the head of Dugualla Bay, running through diked agricultural fields, Dugualla Lake (historically a coastal lagoon) and under Dugualla Dike Road. This area is mapped as a wetland system and a waterfowl concentration area. Waterfowl use the pastures and open water area created by impoundment of the stream behind the dike. The stream has documented use by coho salmon and cutthroat trout. Marine aquatic areas provide forage fish, pandalid shrimp, hardshell clam and Dungeness crab habitat.

Shoreline development in this reach is focused along Dugualla Bay and within Mariner's Cove. Shorefront residences are located along the south side of Dugualla Bay. Dugualla Dike Road crosses the head of the bay. The dike was constructed in the early 1900s to allow farming of lowland areas surrounding Dugualla Lake. Mariner's Cove is a small residential community located on a Y-shaped boat channel. The channel has been armored and numerous piers and docks are present. Island County has a public boat launch at the cove. Development in the rest of the reach is limited to rural residential use at the top of the bluff.

GEOMORPHIC KEY INFORMATION

Geomorphic Shoretype (Map 9)

Transport Zone (37%), Accretion Shoreform (27%), Feeder Bluff (16%), No Appreciable Drift (10%), Feeder Bluff Exceptional (7%), and Modified (3%)

Net Shore Drift (Map 8)

A short drift cell with southward drift into Dugualla Bay converges with a longer drift cell with northward drift that originates just east of Polnell Point in Oak Harbor.

Shoreform Current (Map 10)

Primarily Bluff-backed Beach (70%); areas of Barrier Beach (20%) and Artificial shoreline (10%)

Overall Rating of Degradation

Least (3%); Less (3%); Moderate (12%);

Coastal Floodplain:

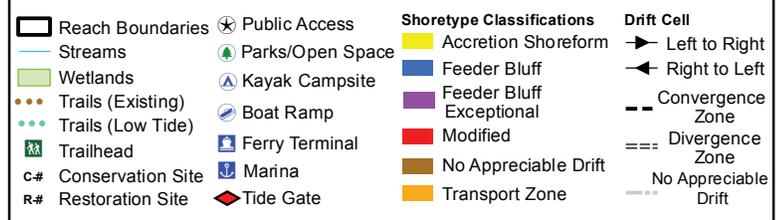
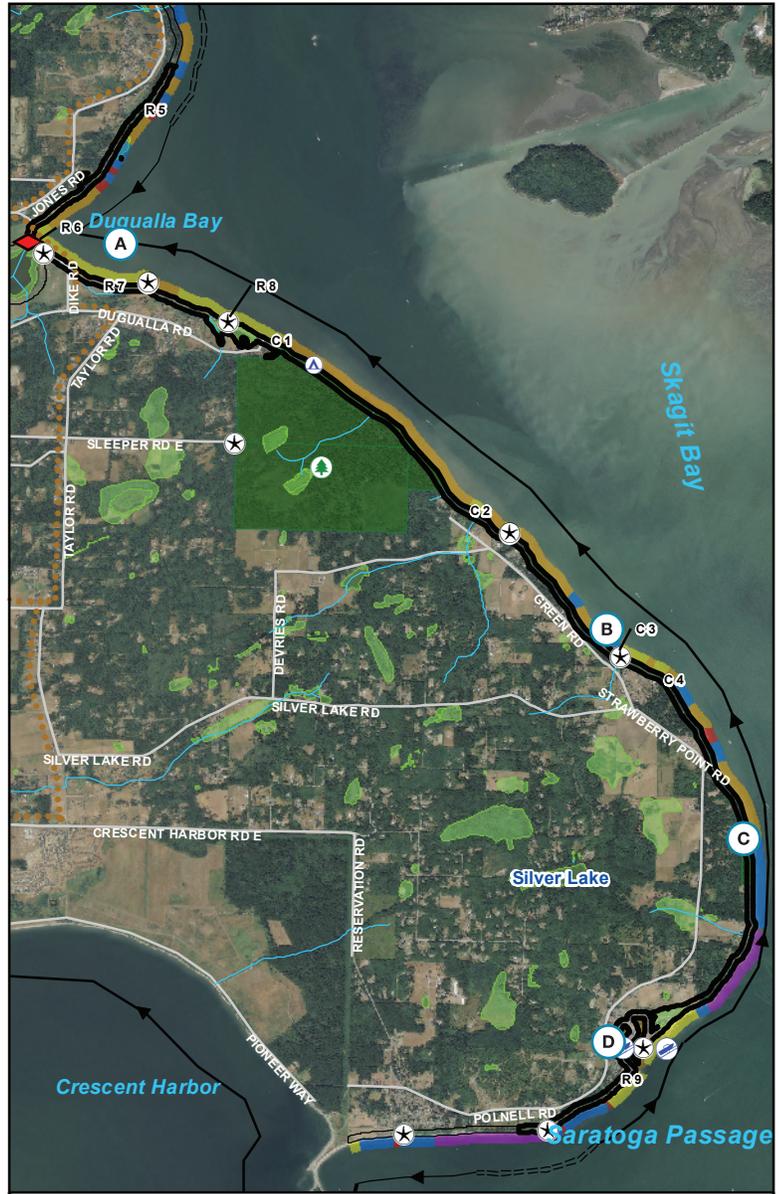
28%

Coastal Landslides & Toe Erosion:

Toe erosion primarily north of Dugualla Bay; minimal mapping stretching south from Bay.

Steep Slopes

31%



Shoreline Oblique Photos (2006)

HABITATS & SPECIES

Significant & Unique Features (Maps 5-7)

Dungeness crab habitat through Dugualla Bay and south end of reach (significant portion of Skagit Bay); hardshell clam habitat primarily in north end of reach (north shoreline of Dugualla Bay); eelgrass habitat throughout reach (patchy and continuous); patchy kelp focused in area fronting shoreline residential 'cove' community near south end of reach; Pigeon Guillemot colonies are located at Mariner's Cove, Crescent Harbor, Maylor's Point, and Forbes Point.

Coastal Lagoons	Coastal Stream Mouths	Wetlands (Map 4)
7 acres (3%)	7	10%

Forage Fish

Sandlance 9% **Smelt** 51%

Herring Spawning habitat

LAND & SHORELINE USE

Shoreline Modifications (Map 13)

Armoring focused in several short reaches, including development along Dugualla Bay's southern shoreline (bulkheads common) and 'cove' community near south end of reach (significant modification of shoreline in dense residential area focused on 'Y' shaped cove adjoining Skagit Bay - bulkheads common); other areas of reach are unmodified; tide gate located between Dugualla Bay and Dugualla Lake.

Armoring (% of shoreline) (Map 13) 27%

Zoning (Map 11)

Rural (56%); Parks (12.5%); Rural Residential (31%)

Current Land Use (Map 12)

Number of Parcels 404 **Average Parcel Size** 3.17 Acres

Low density residential development; high density area of shoreline development within Mariner's Cove. Park and open space exists within Mariner's Cove Park, Dugualla State Park, and Strawberry Point Trust Land.

Shoreland Priority Habitats & Species (Map 5)

Bald Eagle buffer

Marine Priority Habitats & Species (Map 5)

Waterfowl concentration within Dugualla Bay

Salmonid Fish Use (Map 5)

Mapped presence into Dugualla Lake. Nearshore areas are designated ESA critical habitat for Chinook (Puget Sound ESU) and bull trout.

Public Access (Map 16)

Dugualla State Park provides beach access via a hiking trail (access via end of Sleeper Road); Mariner's Cove Boat Launch at southern end of reach (County facility; < 1 acre); public lands and tidelands additionally front Dugualla Bay near and north from the mouth of Dugualla Lake.

Overwater Structures (Map 14)

Approximately 50 private residential piers/docks and 2 community piers/docks within 'cove' community at south end of reach (structures closely spaced in protected cove adjoining Skagit Bay); single pier northwest of N Borgman Rd end (appears to be private).

Shellfish & Aquaculture (Map 15)

Unclassified as a growing area (except outer aquatic extent, which is inaccessible due to depth); no mapped or classified shellfish beaches.

KEY MANAGEMENT ISSUES

- Continued degradation of shoreline processes due to armoring (bulkheads), particularly at Mariner's Cove and Dugualla Bay.
- Disconnection of feeder bluff areas from shoreline due to toe armoring and / or development fronting bluff areas leading to greater down-drift erosion rates (issue is related to short portions of reach where development fronts coastal bluffs).
- Drinking water supply (aquifer) issues associated with additional development (subdivision / intensified use) — saltwater intrusion and potential exacerbation from sea level rise (SLR).
- Potential implications of SLR and coastal flooding on development within or near coastal floodplain areas (agricultural uses, shoreline residential development).
- Potential use conflicts associated with public access to beaches and private residential property rights.
- Slope / bluff stability for existing and future land uses at the top or toes of slopes, (considering land uses and modifications such as clearing, creation of impervious surfaces, modified surface / ground-water dynamics).
- Management of shoreline steep slope areas extending outside of shoreline jurisdiction.
- Subdivision and intensified use — additional modification of feeder bluff / steep slope areas and water quality implications (septic systems, road runoff and agriculture) due to greater intensity of use.

RESTORATION OPPORTUNITIES

Restoration sites were identified in 2004 by Coastal Geologic Services (Appendix H).

- R5:** Remove rock revetment and rock groin extending into and over intertidal and backshore areas.
- R6:** Remove tide gate, pump system, & rip rap to restore connection to Dugualla Lake including restoration of tidal wetland, saltmarsh and beach areas (identified as a PSNERP Candidate Restoration Site in 2010), and in the Island County Estuarine Restoration Program report in 2001.
- R7:** Remove approximately 6 derelict piles.
- R8:** Remove tide gate and outfall and connect large lagoon with Skagit Bay to create estuarine / saltmarsh habitat.
- R9:** Remove approximately 15 derelict pilings.

CONSERVATION OPPORTUNITIES

- C1:** Conserve this approximately 5.2 mile stretch to the south of intact native vegetation along bluff and intermittent backshore for Skagit River and other salmon stocks.
- C2:** Conserve small stream mouth, surrounding backshore area and valley and trees. Check stream for salmon passage and barriers.
- C3:** Conserve small stream mouth, surrounding backshore area and low elevation valley.
- C4:** Conserve small stream mouth, surrounding backshore and riparian area.

Conservation sites C2-C4 are located along the Strawberry Point shoreline; recommendations for habitat conservation additionally provided by the Strawberry Point Assessment and Recommendations for Habitat Protection (Island County, 2009).



REACH EW05

Polnell Shores

SHORELINE LENGTH:

1.00 Miles

REACH AREA:

24 Acres

PSNERP PROCESS UNITS:

6023 - 6025

REACH SUMMARY

The Polnell Shores reach (EW05) is located just outside Crescent Harbor, east of Naval Air Station Whidbey Island property. The shore type in this reach is almost entirely feeder bluff, with some bluffs considered exceptional. A short stretch has been armored where an access road approaches the shoreline.

No mapped streams or wetlands are located within the Polnell Shores reach area. Aquatic areas provide documented smelt, hardshell clam and Dungeness crab habitat.

Land use within the reach is characterized by rural residential development behind steep forested bluffs. There are no public shoreline access points or public tidelands.

GEOMORPHIC KEY INFORMATION

Geomorphic Shoretype (Map 9)

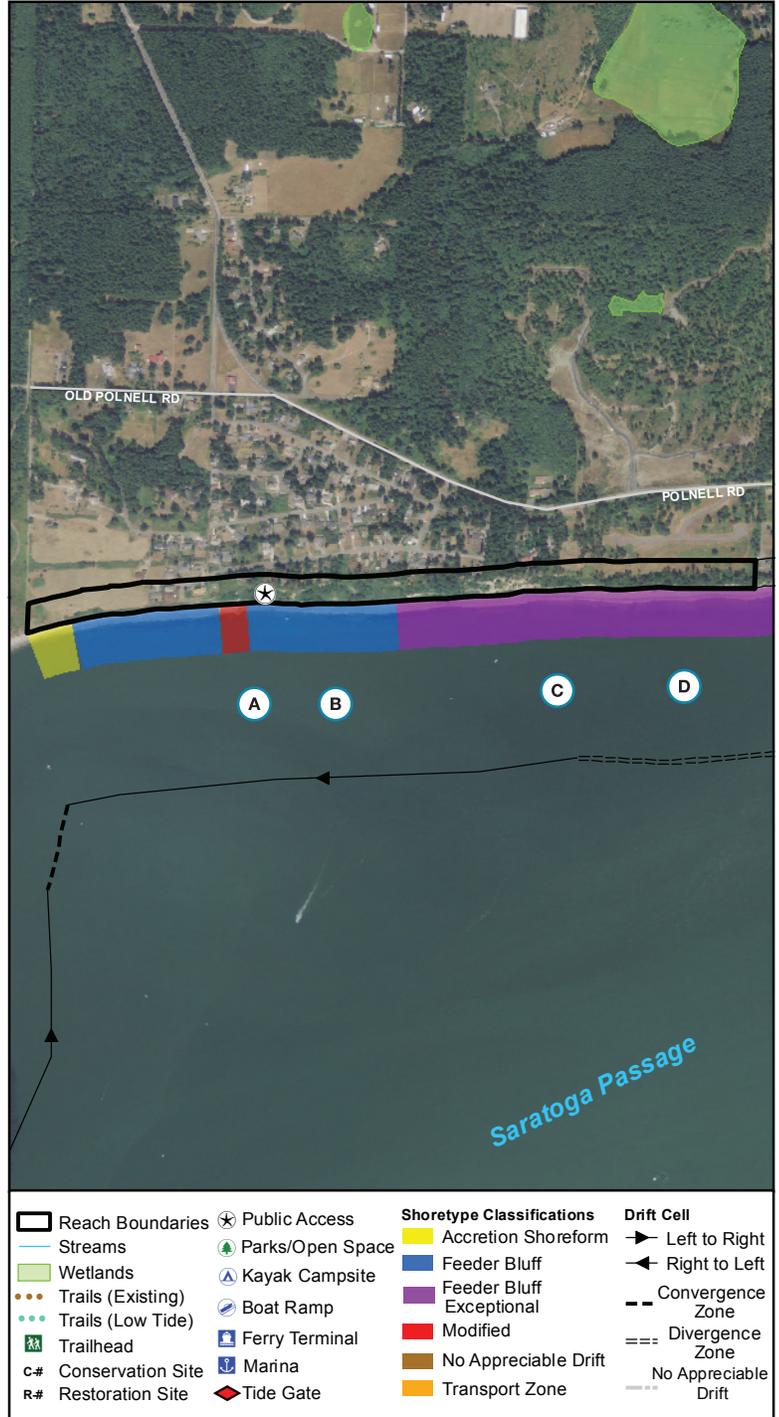
Primarily Feeder Bluff Exceptional (49%) and Feeder Bluff (41%) fronting residential development, with Accretion Shoreform (6%) and Modified shoreline (4%)

Net Shore Drift (Map 8)

Westward drift originates at a divergence zone east of Polnell Point.

Shoreform Current (Map 10)

Bluff-backed Beach (95%)



Overall Rating of Degradation

Least (79%); More (21%)

Coastal Floodplain:

17%

Coastal Landslides & Toe Erosion:

Toe erosion throughout reach, several landslide areas.

Steep Slopes

41%



Shoreline Oblique Photos (2006)

HABITATS & SPECIES

Significant & Unique Features (Maps 5-7)

Dungeness crab habitat throughout; hardshell clam habitat at east end of reach; eelgrass and kelp habitat throughout reach (patchy); Crescent Harbor marshes to the west designated as Audubon Important Bird Area.

Shoreland Priority Habitats & Species (Map 5)

Bald Eagle buffer; Cliff

Marine Priority Habitats & Species (Map 5)

None mapped

Salmonid Fish Use (Map 5)

Nearshore areas are designated ESA critical habitat for Chinook (Puget Sound ESU) and bull trout.

Coastal Lagoons None mapped **Coastal Stream Mouths** None mapped **Wetlands (Map 4)** None mapped

Forage Fish

Sandlance None mapped **Smelt** 28%
Herring None mapped

LAND & SHORELINE USE

Shoreline Modifications (Map 13)

No mapped modification.

Public Access (Map 16)

No mapped public lands or public tidelands; limited visual access provided from adjacent roadways.

Armoring (% of shoreline) (Map 13) None mapped

Overwater Structures (Map 14)

No overwater structures

Zoning (Map 11)

Rural Residential (83%); Rural (17%)

Current Land Use (Map 12)

Number of Parcels 49 **Average Parcel Size** 1.09 Acres

Low density residential development along top of bluff and E Polnell Shore Drive. Limited agricultural use at western edge of reach. Vacant, residential lots at eastern edge of reach. Abuts city limit of Oak Harbor.

Shellfish & Aquaculture (Map 15)

Unclassified as a growing area; no mapped shellfish beaches.

KEY MANAGEMENT ISSUES

- Continued degradation of shoreline processes if area of armoring (bulkheads) expands.
- Disconnection of feeder bluff areas from shoreline due to toe armoring and / or development fronting bluff areas leading to greater down-drift erosion rates (issue is related to short portions of reach where development fronts coastal bluffs).
- Drinking water supply (aquifer) issues associated with additional development (subdivision / intensified use) — saltwater intrusion and potential exacerbation from seal level rise (SLR).
- Slope stability, habitat and aesthetic implications of additional private shoreline access points on high bank shorelines (accessory to residential development).
- Potential increases in rates of bluff erosion due to SLR or other factors.
- Potential use conflicts associated with public access to beaches and private residential property rights.
- Slope / bluff stability for existing and future land uses at the top or toes of slopes (considering land uses and modifications such as clearing, creation of impervious surfaces, modified surface / ground-water dynamics).
- Subdivision and intensified use — additional modification of feeder bluff / steep slope areas and water quality implications (septic systems and road runoff) due to greater intensity of use.

RESTORATION OPPORTUNITIES

Restoration sites were identified in 2004 by Coastal Geologic Services (Appendix H).

No apparent restoration opportunities were identified along the EW05 shoreline. Opportunity for restoration may occur associated with private shoreline armoring and modification; however no specific sites were identified.