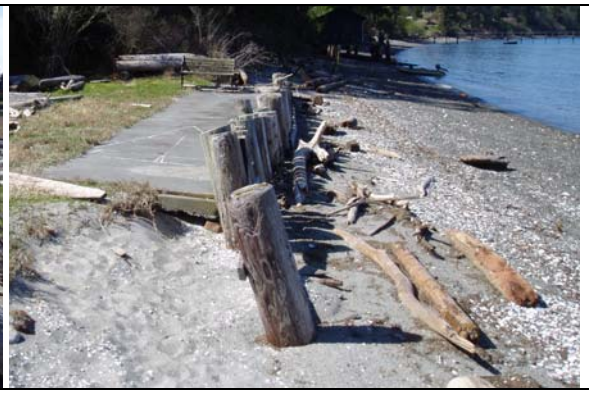
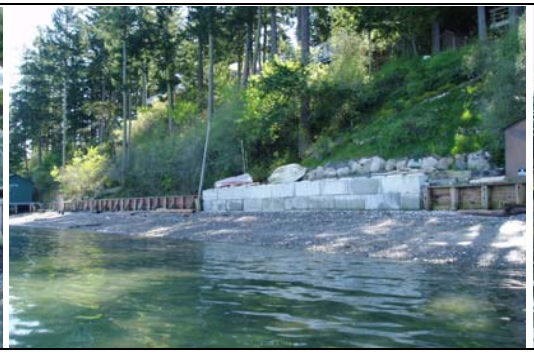
Soft Shore Protection/Structure Removal Blueprint for San Juan County Forage Fish Beaches

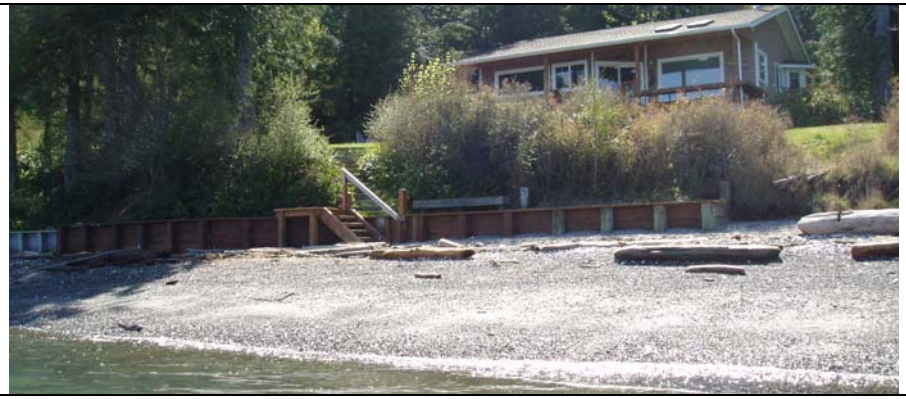
Appendix 2: Recommendations for sites scoring below the top ten, sorted by island (east to west)

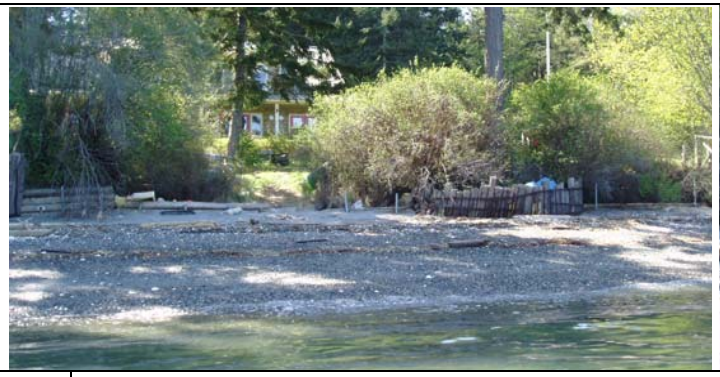
Blakely Island, N Thatcher Bay					
					
Restoration Recommendation:	Remove 20+ creosote piles and dolphins in Bay. Remove concrete debris, steel cables and boulders on beach adjacent to the ramp (that have fallen from damaged rock revetment).				
Rank Score (total score)	na	Beach restoration feasibility score:	na	Habitat enhancement value	na

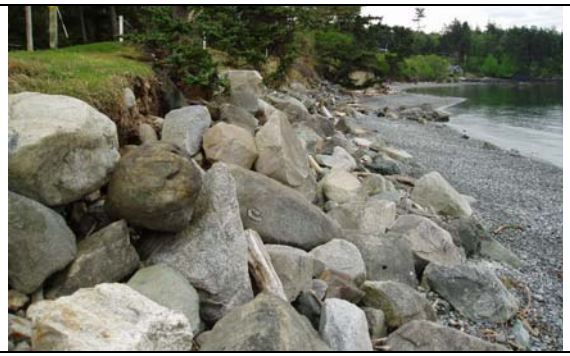
Lopez Island – Aleck Bay-north					
					
Restoration Recommendation:	Redesign/reconfigure current beach access. Remove (threatened) cement wall and rockery protecting access. Cut notch into bank for new simple stairway to limited quantity of retained rock (keyed 2+ ft below grade) at base only. Install protective cobble-pebble berm along upper-most beach surrounding beach access. Anchored driftwood should also be used to deflect direct wave energy around beach access. Riparian vegetation should be planted atop the bluff, which will help to slow erosion rates along this community owned shore.				
Rank Score (total score)	5.2 (33)	Beach restoration feasibility score:	4.8	Habitat enhancement value	5.6

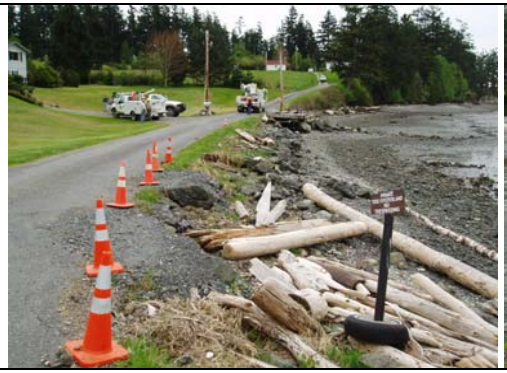
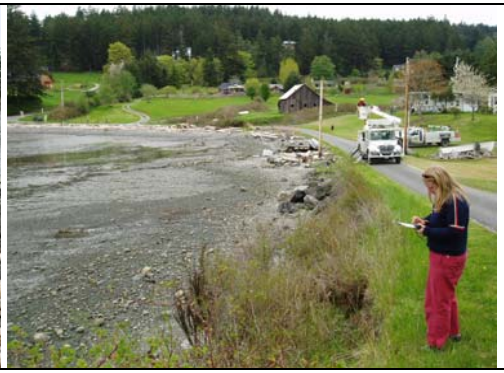
Lopez Island – East Shoal Bay-spit					
 					
Restoration Recommendation:	Remove cement platform, and relict solider pile bulkhead (especially creosoted wood). Import small quantity gravel and sand for berm along upper-most beach, plant dune vegetation to help absorb wave energy and recreate lost habitat.				
Rank Score (total score)	5.6 (35)	Beach restoration feasibility score:	6.8	Habitat enhancement value	4.4

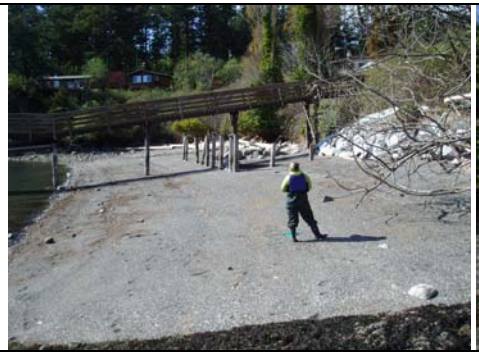
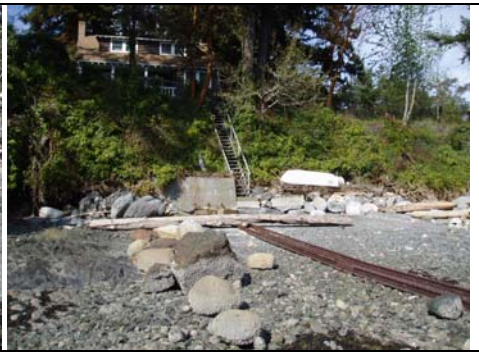
Lopez Island – East Shoal Bay - east					
  					
Restoration Recommendation:	Remove bulkheads and overwater structure over time. If shore protection is truly required, avoid creosoted wood and have structures against bank toe.				
Rank Score (total score)	4.9 (31)	Beach restoration feasibility score:	4.5	Habitat enhancement value	5.3

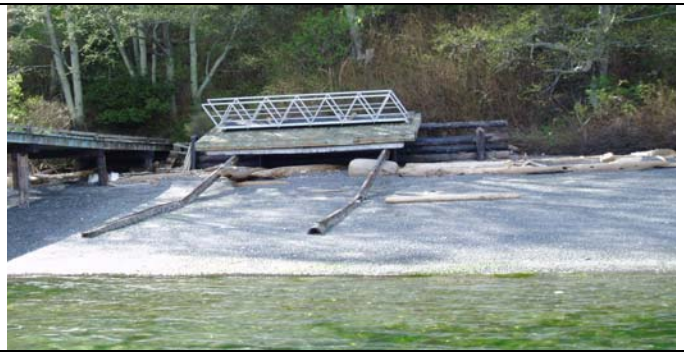
Lopez Island – East Shoal Bay-central					
					
Restoration Recommendation:	Plant additional riparian vegetation along bank on ends, and maintain central vegetation (the modified is located above MHHW.)				
Rank Score (total score)	4.8 (30)	Beach restoration feasibility score:	4.5	Habitat enhancement value	5.0

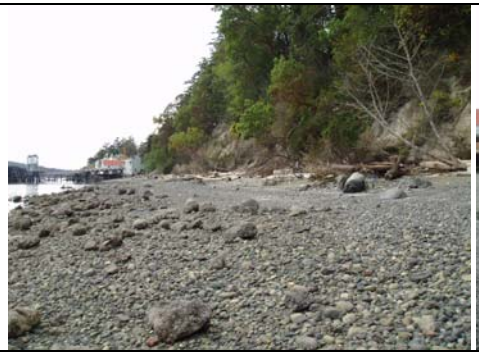
Lopez Island – East Shoal Bay-west					
 					
Restoration Recommendation:	Remove “home-made” erosion control structures that do not substantially slow bank erosion, but make habitat unavailable. Use alternative erosion control techniques including possibly narrow protective berm along upper-most beach with composite structures (e.g. anchored driftwood), plant dune vegetation to help absorb wave energy and recreate lost habitat.				
Rank Score (total score)	5.4 (34)	Beach restoration feasibility score:	5.8	Habitat enhancement value	5.0

Lopez Island, Agate Bay					
	 				
Restoration Recommendation:	Decommission road that runs adjacent to beach and relocate road or use alternate road that runs landward of homes. Remove riprap from bank and beach install soft shore protection design. A large volume of material should be distributed across the upper beach with composite structures designed to provide additional protection to the toe of the bank during high water storm events. Requires further work.				
Rank Score (total score)	na	Beach restoration feasibility score:	na	Habitat enhancement value	na

Orcas Island, Buck Bay					
	 				
Restoration Recommendation:	Remove rockery and broken concrete from beach. Relocate road landward to avoid beach narrowing. Nourish upper beach with mix of sediment defined by sampling adjacent unmodified reference beach. Install protective berm with composite materials (including driftwood/root wads), to help absorb wave energy. Plant native vegetation (shrubs and conifers) along bank to enhance bank stability and overhanging marine riparian vegetation.				
Rank Score (total score)	2.7 (16)	Beach restoration feasibility score:	2.6	Habitat enhancement value	2.8

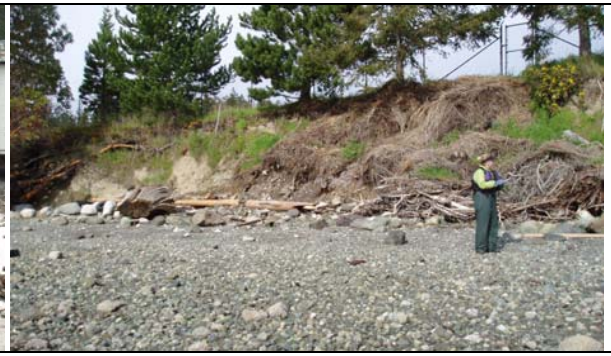
Orcas Island, Olga residences					
 					
Restoration Recommendation:	Remove creosote piles from intertidal habitat, eradicate invasive species and remove steel debris and boulders from the intertidal.				
Rank Score (total score)	na	Beach restoration feasibility score:	na	Habitat enhancement value	na

Orcas Island, White Beach					
					
Restoration Recommendation:	Remove (dock-related) heavily-creosoted structure from backshore as it is toxic to fish and other species.				
Rank Score (total score)	na	Beach restoration feasibility score:	na	Habitat enhancement value	na

Orcas Island, Ferry landing					
	 				
Restoration Recommendation:	Move shore protection landward as it is repaired/replaced and remove if road in no longer needed. Eradicate invasive species on bluff including *Cytisus scoparius* and *Rubus Discolor.*				
Rank Score (total score)	2.7 (16)	Beach restoration feasibility score:	2.6	Habitat enhancement value	2.8

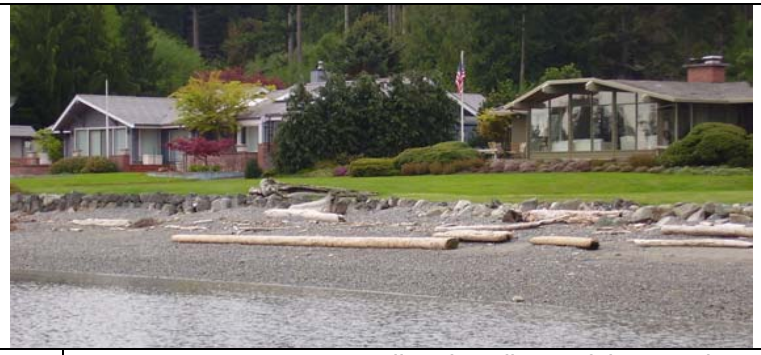
Orcas Island, West Sound, on leeward side of Double Island					
	   				
Restoration Recommendation:	Remove rockery along lot located between 2 homes, nourish upper beach profile and create higher berm with driftwood and dune vegetation in place of rock.				
Rank Score (total score)	na	Beach restoration feasibility score:	na	Habitat enhancement value	na

Orcas Island – North Pole Pass – northern property					
 					
Restoration Recommendation:	Remove rockery and nourish the upper beach with mix of sediment defined by sampling adjacent unmodified (reference) beach. Beach nourishment design could include the installation of berm with driftwood/root wads, to help absorb wave energy. Plant native vegetation (shrubs and conifers) along bank to enhance bank stability, prevent erosion exacerbated by run-off and enhance overhanging marine riparian buffer.				
Rank Score (total score)	3.3 (21)	Beach restoration feasibility score:	5.5	Habitat enhancement value	1.3

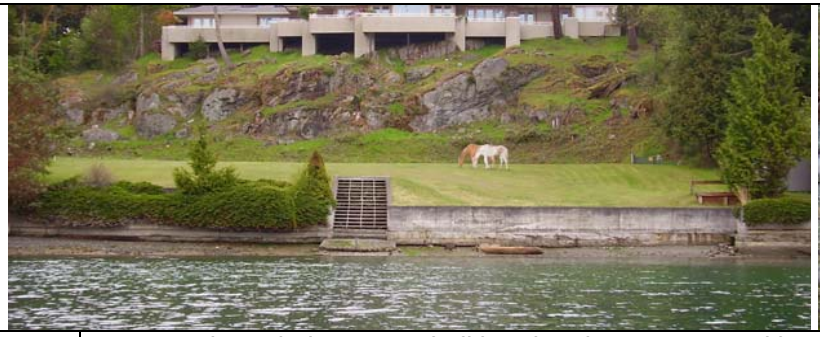
Orcas Island – North Pole Pass Cove and North Pole Pass – (all restoration opportunities are on single residential property)					
  					
Restoration Recommendation:	Remove toppling rockery, as it provides minimal function as erosion control and merely precludes access to intertidal habitat. Eradicate invasive species, and cease dumping yard waste onto the beach. Plant riparian buffer in backshore and bluff slope to reduce erosion rates and enhance habitat. Beach nourishment optional near/around structures (low erosion rate would nt threaten large uplands). Very good habitat potential. Site visit and consultation with Jim Johannessen recommended.				
Rank Score (total score)	4.6 (29)	Beach restoration feasibility score:	6.5	Habitat enhancement value	2.8

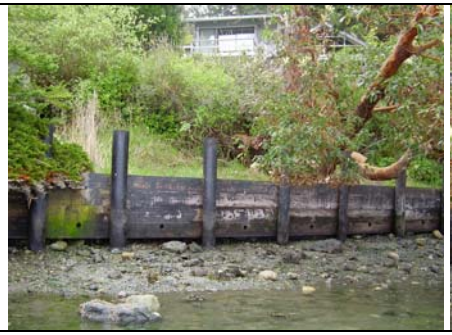
San Juan Island – Turn Point marsh (eastern corner of Bay)					
					
Restoration Recommendation:	Remove small intertidal rockery along marsh front. Rockery is not at all necessary along this accretionary beach. This will free upper beach habitat as well as enable natural berm, and possibly inlet channel to reform. This would add clear habitat benefits and could be termed true restoration.				
Rank Score (total score)	5.1 (32)	Beach restoration feasibility score:	7.4	Habitat enhancement value	2.8

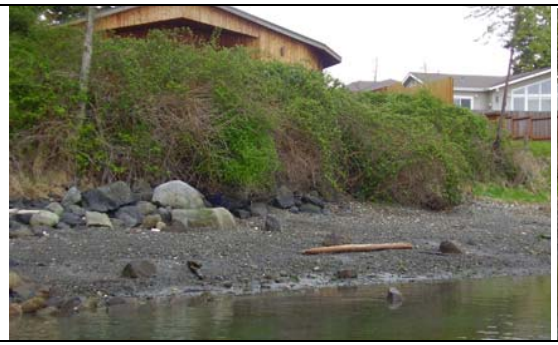
San Juan Island – Turn Pt – east and central properties					
	   				
Restoration Recommendation:	Remove rockeries and nourish upper beach profile with mix of sediment defined by sampling adjacent (east) unmodified reference beach. Install driftwood/root wads to help absorb wave energy (and ferry wake). Plant native vegetation (shrubs and conifers) along bank to enhance bank stability and overhanging marine riparian vegetation.				
Rank Score (total score)	2.9-3.0 (18-19)	Beach restoration feasibility score:	5.2-5.5	Habitat enhancement value	0.6-0.9

San Juan Island – Turn Pt – western properties (including county-owned property)					
 					
Restoration Recommendation:	Remove unnecessary small rock wall. Nourish upper beach from MHHW to extreme high water (EHW), plant dune vegetation and some native shrubs. Place anchored drift logs in former location of rock to buffer wave attack during storms. Clear out culvert that flows out onto beach near county property's southern boundary. Best solution would be to remove culvert and daylight small creek around house and recreate mini-estuary at shore for habitat.				
Rank Score (total score)	3.7-3.5 (22-23)	Beach restoration feasibility score:	5.5-6.1	Habitat enhancement value	0.9-1.9

San Juan Island – Friday Harbor South – north and central properties					
   					
Restoration Recommendation:	Remove rockery, rock groin and non-native angular beach sediment that are inappropriate for beach habitat. Nourish upper beach profile with mix of sediment defined by sampling adjacent unmodified (reference) beach. Install protective berm with composite materials (including driftwood/root wads), to help absorb minor wave energy (and ferry wake). Plant native vegetation (shrubs and conifers) along bank to enhance bank stability and overhanging marine riparian vegetation.				
Rank Score (total score)	3.7 (23)	Beach restoration feasibility score:	5.2	Habitat enhancement value	2.2

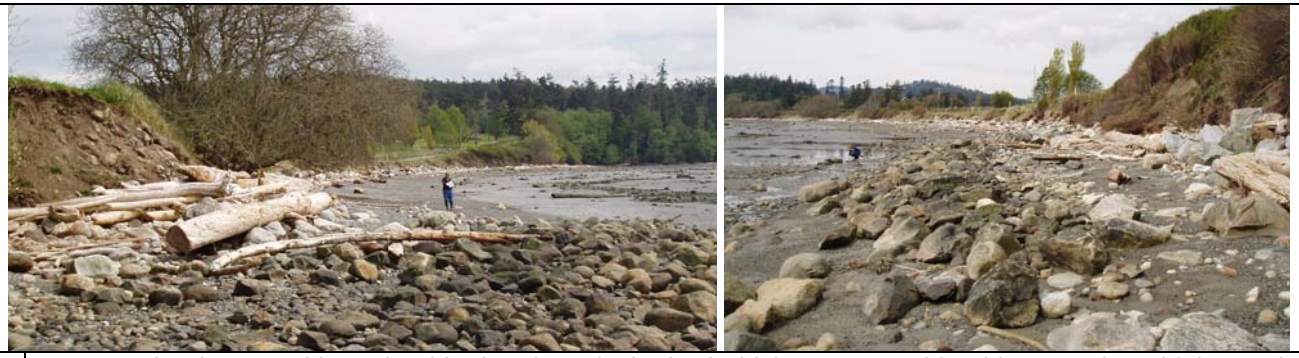
San Juan Island – Friday Harbor South –central					
	 				
Restoration Recommendation:	Remove degraded concrete bulkhead and restore natural bank. should be nourished with a mix sand and gravel to be determined by sampling nearby reference beach. Large logs should be integrated into the nourishment design to help dissipate wakes, as well as terminal groins to maintain beach sediment. Additional alternative erosion control methods could also be utilized to curb erosion (if necessary) including vegetation and storm water management. Native shrubs and trees should be planted restore marine riparian bluffer, which will also aid in reducing bank erosion.				
Rank Score (total score)	3.7 (23)	Beach restoration feasibility score:	5.2	Habitat enhancement value	2.2

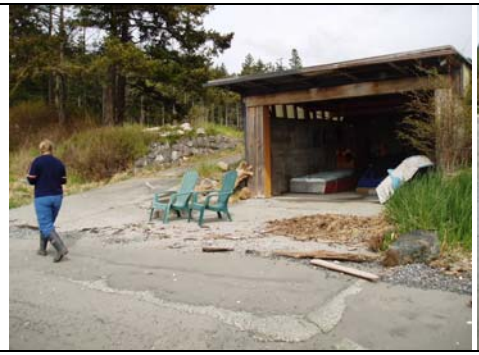
San Juan Island, Friday Harbor South – southern property					
	 				
Restoration Recommendation:	Remove creosote bulkhead and restore natural bank. Beach should be nourished with a mix sand and gravel to be determined by sampling nearby reference beach. Large logs should be integrated into the nourishment design to help dissipate wakes. Drift logs should also be utilized as terminal groins to maintain beach sediment. Additional alternative erosion control methods could also be utilized to curb erosion (if necessary) including vegetation and storm water management. Native shrubs and trees should be planted to enhance marine riparian bluffer.				
Rank Score (total score)	3.8 (24)	Beach restoration feasibility score:	4.8	Habitat enhancement value	2.8

San Juan Island, Friday Harbor West- southern properties					
 					
Restoration Recommendation:	Restore natural bank by removing riprap and allowing natural beach profile to reform. Beach should be nourished with a mix sand and gravel to be determined by sampling nearby reference beach. Additional alternative erosion control methods should be considered to curb erosion (if necessary) including vegetation and needed storm water management. Native shrubs and trees should be planted to restore marine riparian bluffer.				
Rank Score (total score)	4.1 (26)	Beach restoration feasibility score:	6.5	Habitat enhancement value	1.9

San Juan Island – Friday Harbor West – central properties					
  					
Restoration Recommendation:	Remove rockery, solider pile and creosote bulkhead and other misc. materials below MHHW. Install limited beach nourishment with driftwood/root wads, to help absorb minor wave energy (and ferry wake). Plant native vegetation along bank to enhance bank stability and overhanging marine riparian vegetation. Some limited bank regarding may be required.				
Rank Score (total score)	3.7 (23)	Beach restoration feasibility score:	5.2	Habitat enhancement value	2.2

San Juan Island – Friday Harbor West – northern properties					
					
Restoration Recommendation:	Remove rockery, solider pile and creosote bulkhead and other misc. materials below MHHW. Install limited beach nourishment with driftwood/root wads, to help absorb minor wave energy (and ferry wake). Plant native vegetation along bank to enhance bank stability and overhanging marine riparian vegetation. Some limited bank regrading may be required.				
Rank Score (total score)	5.6 (35)	Beach restoration feasibility score:	6.5	Habitat enhancement value	4.7

San Juan Island, False Bay Rd					
					
Restoration Recommendation:	Remove the riprap and large boulder lag deposits both of which cover considerable upper intertidal area, including valuable habitat. Relocating the False Bay Road and nourishing the beach (and the aforementioned removal of rockery and lag deposits) will enhance habitats that are degraded under current conditions, as well as enabling beaches to naturally translate (migrate landward) under sea level rise scenarios. Relocating the road will also (likely) provide additional area for marine riparian restoration. Need s additional study for implications and details.				
Rank Score (total score)	4.4 (26)	Beach restoration feasibility score:	2.6-3.7	Habitat enhancement value	5.0-5.9

San Juan Island, Yacht Haven					
  					
Restoration Recommendation:	Remove boat ramp/paved intertidal and nourish beach (assuming it is not in use). Failing bulkhead in the southern portion of the beach should be relocated landward or removed. Relict concrete footings should also be removed. Remove infringing rockery from intertidal as it not only precludes access to upper beach substrate in forage fish spawning area, but is obstructing net shore-drift.				
Rank Score (total score)	na	Beach restoration feasibility score:	na	Habitat enhancement value	na

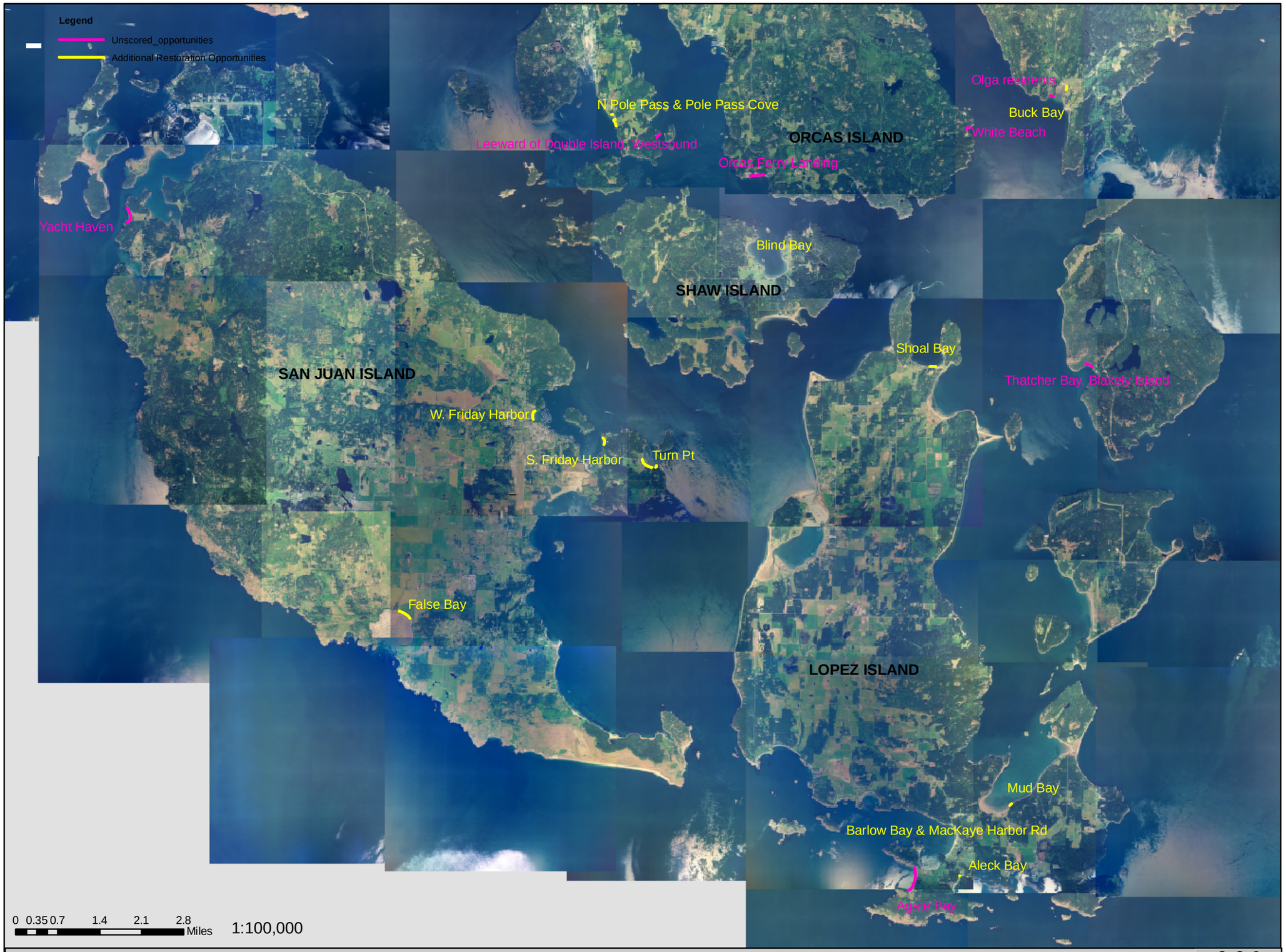


Figure 30. Restoration opportunities found throughout San Juan County

San Juan County Soft Shore Protection/Bulkhead Removal Blueprint

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