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# Island County Estuarine Restoration Program



**Prepared For**

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# ISLAND COUNTY ESTUARINE RESTORATION PROGRAM

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## ISLAND COUNTY ESTUARINE RESTORATION PROGRAM

The Estuarine Restoration Program was developed in concert with Island County Public Works Department to provide County staff with information that can be used to protect and restore estuarine habitats on Whidbey and Camano Islands. This plan provides information that will be used to prioritize sites for acquisition and restoration. The plan provides baseline information on each site and conceptual plans that can provide the basis for developing the details for each project that is selected.

A preliminary report on six prioritized sites was prepared in December 1999 and is entitled, "Data Summary for Island County Estuarine Restoration Program, Six Selected Sites" (Sheldon & Associates). The six site summaries included in that document have been updated and are included as part of this larger report. The focus of these enhancement efforts continues to be on improving the resources and habitats for salmonid use. These efforts include improving fish access to estuaries and associated streams, restoring ditched stream channels to more natural meanders, restoring vegetation in stream channels and riparian buffers, restoring diked marsh areas to open tidal exchange, enhancing wetland buffers, improving water quality, educating local landowners and the general public, and providing long-term protection for these aquatic habitats.

The following sites were assessed for inclusion in this program; those marked with an asterisk were not included in this plan for lack of potential for salmonid enhancement:

### **Whidbey Island:**

Cultus Bay  
Maxwelton Estuary  
Deer Lagoon  
Holmes Harbor\*  
Crockett Lake  
Lake Hancock  
Greenbank Farm\*

Race Lagoon  
Harrington Lagoon  
Kennedy Lagoon  
Grasser's Lagoon  
Crescent Harbor Marsh  
Swantown Lake  
Dugualla Bay

### **Camano Island:**

Elger Bay  
Triangle Cove  
Livingston Bay  
English Boom  
Arrowhead Point

\* indicates site not included in plan

This list of sites was provided by Island County Public Works. These sites were identified for inclusion in the Estuarine Restoration Program as a result of the data collected in the process of compiling the report entitled, "Salmon Habitat Limiting Factors, Water Resource Inventory Area 6 Island County" (Washington State Conservation Commission 2000). Sheldon & Associates investigated each site in preparing this plan and concluded that two of the sites on the list, Holmes Harbor and Greenbank Farm lacked significant potential for enhancement of salmonid habitat. Those sites that are noted in the site summaries as being among the top five priority sites for estuarine restoration in Island County were selected by Island County Public Works and Washington Department of Fish and Wildlife staff based on their size, the presence of a stream large enough to support salmon, and their location relative to major salmon producing rivers in the vicinity.

This notebook includes summaries for a total of 17 sites in Island County, twelve on Whidbey Island and five on Camano Island. The location of each site is shown on the location map on page 3. The sites are included in the plan in order of geographic location, starting with the south end of Whidbey Island and proceeding north, and then again starting with the south end of Camano Island and proceeding north. For each site, we have included a one-page text summary that provides a general description and summarizes the goals, major actions, and preliminary studies needed to develop more detailed plans. Then there is a two-page data form that includes all the data we collected during our visits to each site. This is followed by a site sketch showing existing conditions, and for most sites, a sketch showing the proposed recommendations. Finally, photos of the sites are included as part of each site summary. For

those sites for which no significant on-the-ground changes are proposed, we have not provided a second site sketch.

**Organization of Site Summaries:**

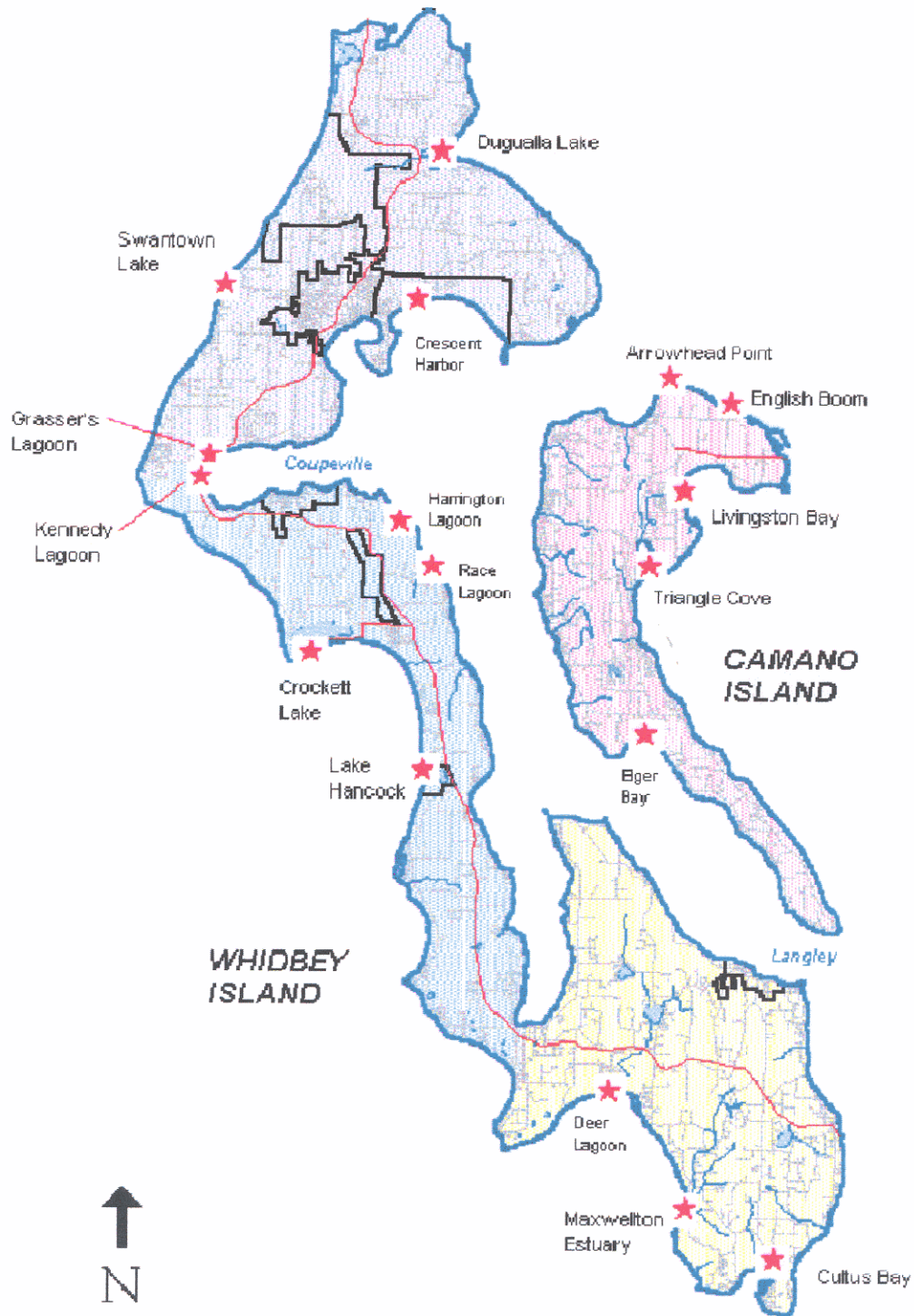
- Text summary of site with goals, major actions, and preliminary studies
- Two-page data form with all of data collected during fieldwork
- Site sketch of Existing Conditions
- Site sketch of Proposed Recommendations (only for those sites w/on-the-ground changes)
- Site photos with explanatory captions

A few abbreviations or codes have been used in the data forms; these include:

- WL = wetlands
- Wetland/Buffer Functions: L = low; M = moderate; H = high; NA = not applicable

In order to collect the data, we walked each site, accessing as much of the site as possible, given the constraints of private ownership. We also referenced the "Salmon Habitat Limiting Factors, WRIA 6 Island County" report (Washington State Conservation Commission 2000) to gain additional information on site background, known salmonid use, and limiting factors for salmonid use. Concepts for recommended site modifications were developed in the field and then refined in the office and in consultation with Janet Kearsley of Island County Public Works and Rich Johnson of Washington Department of Fish and Wildlife. The recommendations that are provided in this plan are conceptual and will need further study to design the details and to determine the feasibility of construction, cost, extent of landowner cooperation and participation, and a number of other variables. Detailed designs will eventually need to be developed for the projects that are selected for construction, and the necessary environmental permits obtained. These data summaries represent an early step in the planning process that will eventually result in improved access and habitat for salmonid species in the estuaries and stream systems of Island County.

# LOCATION MAP OF SITES INCLUDED IN PLAN



## SWANTOWN LAKE

Swantown Lake is located on the west shore of north Whidbey Island, to the west of Oak Harbor and south of Ault Field. The wetland is roughly 100 acres in size, and includes freshwater marsh, saltmarsh, mudflats, and open water. Swantown Lake is fed by a creek that enters the southeast corner of the marsh. The origins of the marsh are unknown but it currently receives saltwater via two culverts with flapgates and a tidegate. Salmonid access is blocked by the tidegate. The buffer of the marsh has largely been cleared for farming and livestock grazing, as well as for West Lake Road. Historic farm ditches can still be seen in the marsh. Houses line the entire beach berm between the lake and Admiralty Inlet. Swantown Lake currently provides habitat primarily for waterfowl and shorebirds. The creek that flows into Swantown Lake originates on the Whidbey Golf & Country Club. This creek has been straightened and channelized, and its riparian vegetation has largely been cleared.

The goals that have been established for restoration of Swantown Lake and the adjoining creek include:

1. Provide long-term protection for large wetland/stream system
2. Restore open saltwater flow to wetland
3. Restore anadromous fish access to marsh and enhance the fish and wildlife habitat of both wetland and stream.

Major actions are listed in detail on the following data form, but in brief they include:

- acquire or gain conservation easements for portions of marsh and riparian corridor not currently owned by Island County
- remove culverts, tidegate and other drainage structures near main wetland outlet
- restore open connection to saltwater by creating open channel between lake and saltwater
- install box culvert or conspan or bridge West Lake Road
- locate open channel where outlet culvert and tidegate currently lie, or near southwest corner of lake
- fill in ditches that parallel West Lake Road and other ditches in marsh
- plant wetland buffer
- post interpretive signs in wetland buffer
- assess hydrology of wetland and install structures to prevent downcutting of outlet channel
- develop plan for restoring creek between golf course and Swantown Lake and managing for salmonid use

Prior to developing more detailed plans and applying for environmental permits, a variety of data and background information will need to be collected. The preliminary tasks that would need to be performed to collect this information include:

1. Conduct topographic survey of marsh area to determine potential extent of flooding
2. Conduct hydraulic and flooding analysis to determine extent of area that could potentially be flooded following beach berm breaching, best angle and location for opening, and whether existing houses on beach berm will need protection from flooding
3. Conduct water quality study to determine how livestock grazing is affecting the wetland, whether septic systems from beach berm houses are affecting water quality, and quality of creek flowing into lake
4. Collect streamflow data in creek and assess potential for spawning habitat
5. Evaluate potential effects of existing seawalls on outer beach with regards to maintaining proposed channel mouth
6. Evaluate stability of West Beach Road given expected higher flood levels in lake

Swantown Lake				
<b>Location/Ownership</b>				
Watershed: 14 - Swantown		Road Shop: 3 - Oak Harbor		
Township/Range/Section: T33N/ R1E/ S31 & 32				
Location Description: East of West Beach Road, west of Swantown Road, due west of Oak Harbor, south of Ault Field				
Current Ownership: Island County and private owners				
Approximate Wetland Size: 100 acres		Wetland Area on Current Island County Ownership: Info. not provided		
<b>Wetland Vegetation</b>				
Cowardin Wetland Classes: E2EM - estuarine emergent, E2UB - estuarine unconsolidated bottom, PEM - palustine emergent				
Major WL Plant Communities: <i>Scirpus maritimus</i> is dominant wetland species. Around edge of OW: <i>Scirpus maritimus</i> , <i>Salicornia virginica</i> / <i>Distichlis spicata</i> / <i>Atriplex patula</i> Along westernmost ditch and berm: <i>Salicornia virginica</i> / <i>Distichlis spicata</i> / <i>Potentilla anserina</i> / <i>Atriplex patula</i> . North extension of wetland: <i>Potentilla anserina</i> , <i>Scirpus acutus</i> / <i>Typha latifolia</i> , <i>Epilobium watsonii</i> / <i>Juncus effusus</i> Area at southwest corner of OW, east of ditches: primarily <i>Scirpus maritimus</i>				
Percent of Wetland as Freshwater Marsh: 30		Saltmarsh: 40	Mudflat: 20	Open Water: 10
Major Invasive Species: None Observed		Percent Cover by Invasive Species:		
Major Buffer Plant Communities: Pasture grasses, <i>Rosa</i> sp. along south and west buffer				
<b>Wetland Soil</b>				
Mapped Soil Types: Tacoma peat, Coveland loam, Coupeville silt loam, Townsend sandy loam, Coastal beach, Hoypus gravelly sandy loam				
Observed Substrate: mud, silt, peat				
<b>Site Hydrology</b>				
Water Source/Drainage Patterns: Lake receives surface runoff and flow from ditched stream. Stream flows into SE corner of wetland and runs along the south edge, entering ditch along west side (by road). Two parallel saltwater ditches run along west side of wetland. Westernmost ditch apparently not connected to open water of wetland by surface water, but probable seepage through berm. Tidegate at northwest corner of wetland, at north end of west ditch - 2 culverts with tidegates. Upstream of WL, riparian zone of stream has been cleared of vegetation.				
Diked: No	Ditched: Yes	Tidegate: Yes	Armored Beach: Yes	Road on Dike: No
Road on Beach Berm: Yes		Houses on Beach Berm: Yes	Impervious Surface in Estuary: ~2%	
Approximate Width of Opening to Salt Water: pipe about 3 foot diameter				
<b>Wetland/Buffer Functions</b>				
Stormwater Storage: M	Flood Abatement: L	Groundwater Recharge: L	Water Quality Improvement: M	
Shoreline Protection: L	Wildlife Habitat: M	Educational Oppor.: M	Recreational Opportunities: M	
Significant Habitat Features: Extensive open water, saltmarsh, adjacent to marine shoreline, numerous waterfowl on open water				
Known Salmonid Use: No existing surface water connection between wetland and saltwater. Potential for chum, coho & cutthroat.				
Existing Wetland and Buffer Disturbances: Buffer historically cleared and cultivated - still farmed in some portion. Road and houses in buffer. Extensive ditching in WL. Tidegate and ditches have drained open water area to much smaller than historic size.				
<b>Rating and Land Use</b>				
Island County Wetland Rating: A		Criteria: wetland > 1/4 acre, predominantly native vegetation		
Percent of Surrounding Square Mile in:		Agricultural: 45	Forest: 25	Impervious Surface: 5

**Swantown Lake (Continued)**

**Site History:** Wetland and buffer have been farmed for many years. The site was historically a freshwater peat bog. The culvert and tidegate was installed probably in the early 1900s to drain the lake and allow farming in the wetland. Upon installation of the tidegate, the open water area of the lake was significantly reduced in size. 1871 topo map shows little change in the lake except for the tidegate, ditches and reduced size.

**Limiting Factors for Salmonid Use/Production:** Tidegate precludes salmonid access and limits saltwater exchange. Culvert from lake to saltwater is undersized and too long to allow good fish passage. Drainage ditches connected to tidegate currently not directly surface connected to open water area of wetland. Ditched stream flowing into lake lacks riparian vegetation - degraded spawning habitat. Could be usable habitat all the way up to the golf course (about 1.5 mile), but the stream needs restoration - re-construct channel to meander, and vegetate buffer. Could then potentially be used by chum, coho, and cutthroat.

**Restoration/Enhancement Recommendations**

**Primary Goals:**

- Provide long-term protection for large wetland/stream system
- Restore open saltwater flow to wetland
- Restore anadromous fish access to marsh and enhance the fish and wildlife habitat of both wetland and stream

**Major Actions:**

- Acquire or gain conservation easements for those portions of marsh and riparian corridor not currently owned by Island County
- Remove culverts, tidegate and other drainage structures near the main wetland outlet
- Restore open connection to saltwater by creating an open channel between lake and saltwater
- Install large box culvert or conspan under road, or bridge road
- Options for locations of connecting channel are: 1) public easement where the outlet culvert and tidegate currently lie, or 2) near the southwest corner of the lake where Island County currently owns property
- The second option may not be feasible due to the higher elevations in this portion of the wetland, but it is worth exploring because the public easement at the existing tidegate is narrow and it would be difficult to fit a channel between the neighboring properties
- Under Option 2, it would be necessary to remove concrete bulkheads and footings from the beach
- Fill in ditches that parallel West Lake Road and other ditches left from farming activities/ allow tidal channels to form - Plant native tree and shrub species in the buffer of the wetland all along West Lake Road
- Post interpretive signs addressing purpose of project, history of site, and ecology of saltmarsh
- Assess hydrology of wetland and install structures (e.g., weirs, riprap) to prevent downcutting of outlet channel
- Develop plan for restoring creek between golf course and lake

**Data Needs for Further Analysis:**

Elevations in Estuary: Yes	Estuary Circulation Patterns: Yes	Offshore Current Patterns: Yes	Salmonid Use Data: Yes	Streamflow Data: Yes
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Tidegate Records: Other: Evaluate potential effects of existing sea walls on outer beach with regards to maintaining proposed channel mouth; evaluate water quality of stream draining to wetland, evaluate flood potential as upstream development continues, evaluate stability of West Beach Road (apparently built on peat).

**Concerns & Limitations:** Channel under Option 1 would be constructed in narrow area between existing houses - limits channel width. Concern for tidal surge flooding of farmed land and houses around edge of wetland. Concern for stability of West Beach Road due to peat base.

**Effect on Primary Functions:** Increase plant species richness, enhance wildlife habitat, restore salmonid access to system, increase educational/recreational opportunities

**Permits Required**

Federal: Section 404 permit

State: Hydraulic Project Approval, Section 401 Water Quality Certification

Local: County Use Approval Plan, Shoreline permit





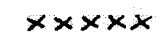


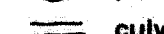

**Additional Notes:**

- This wetland is the lower end of a long stream/wetland complex that flows down from the hills to the south of the golf course - actions in Swantown Lake should be considered as part of effort to eventually restore entire system.
- There is the potential for Island Co. to purchase more land adjacent to their current ownership in the SW corner of the lake to create the connecting channel - probably easier than acquiring one of the house adjoining the existing tidegate.
- Observed northern harrier, short-eared owl, and small number of waterfowl



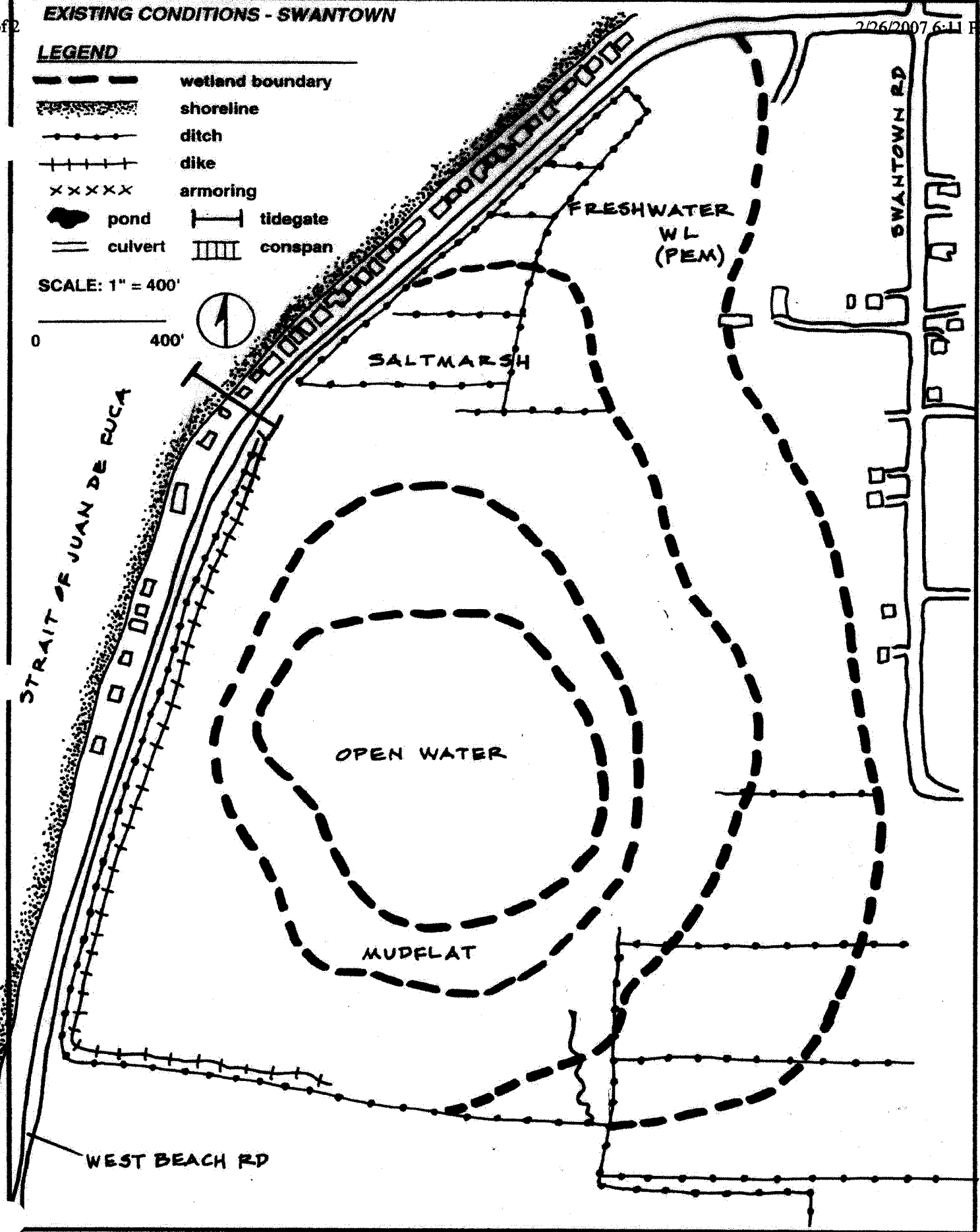
# EXISTING CONDITIONS - SWANTOWN

## LEGEND

-  wetland boundary
-  shoreline
-  ditch
-  dike
-  armoring
-  pond
-  tidegate
-  culvert
-  conspan




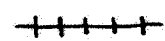
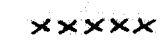




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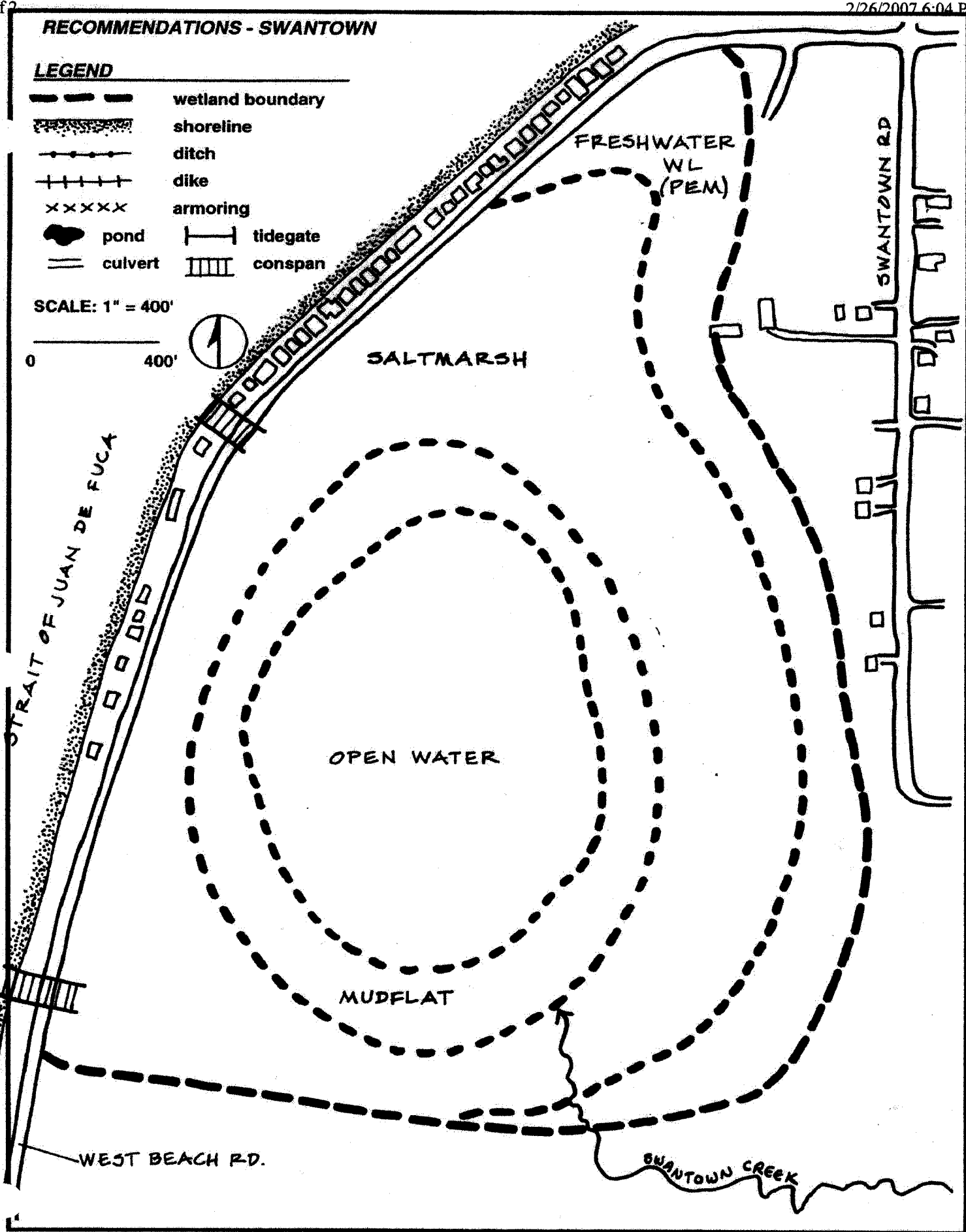
# RECOMMENDATIONS - SWANTOWN

## LEGEND

-  wetland boundary
-  shoreline
-  ditch
-  dike
-  armoring
-  pond
-  culvert
-  tidegate
-  conspan

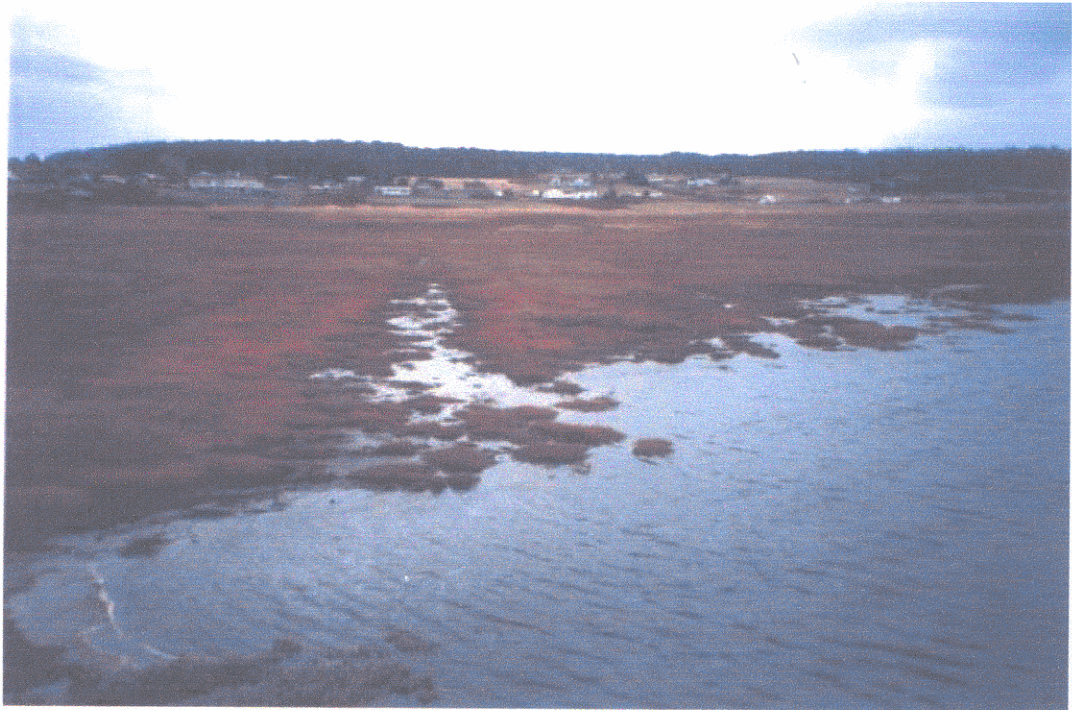
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Looking north along West Beach Rd. at Strait of Juan de Fuca. Note concrete bulkheads jutting from beach.



Looking east-northeast from main outlet of marsh.

Red-hued vegetation in this area indicates saltmarsh species (*Salicornia/Distichlis*).

## SWANTOWN LAKE



**Looking west from Swantown Road at marsh. Note potential for flooding of houses in foreground.  
Houses on beach berm are in background.**

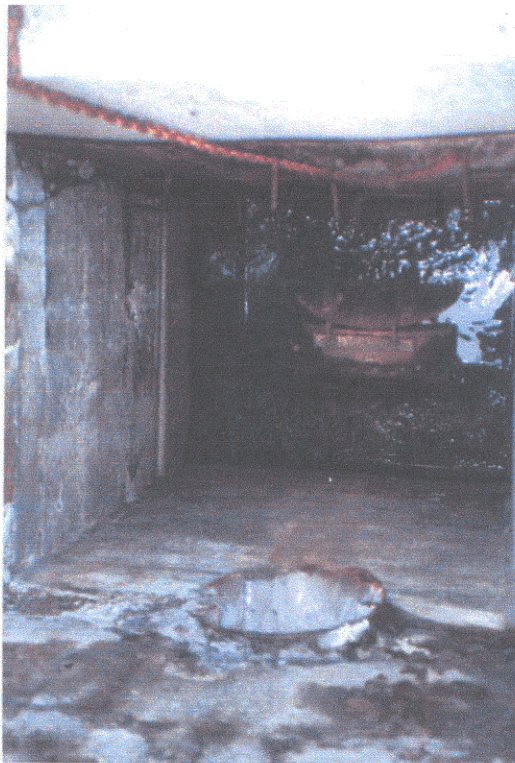


**Looking south from north end of estuary at freshwater marsh in foreground.**

## **SWANTOWN LAKE**

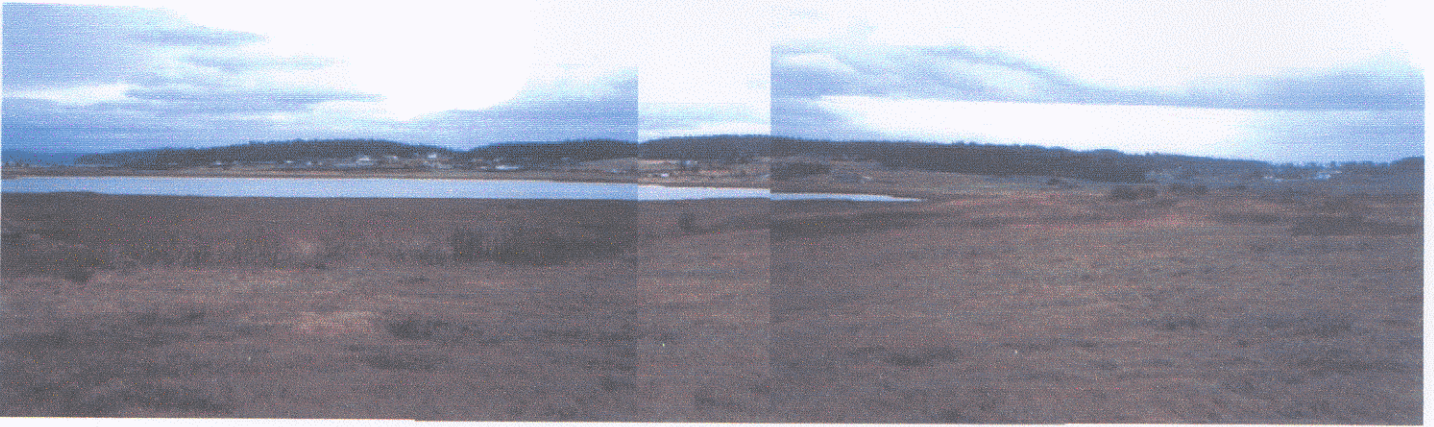


**Looking north along West Beach Road at west portion of marsh.**



**Tidegate at ebb tide – appears stuck open due to sediment deposition.**

**SWANTOWN LAKE**



Looking north and northeast at marsh. Red-hued vegetation at lower elevations is *Scirpus maritimus*.

Stream enters system from right edge of photo.



Outlet of system – 3-foot diameter pipe. Note grill of trash rack.

Suspended pipe in background not active. Tidegate is behind car on beach berm.

## SWANTOWN LAKE