

2006 SHORELINE SURVEY OF THE HOLMES HARBOR SHELLFISH GROWING AREA

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Summary

The purpose of this report is to serve both as the routine shoreline survey for the existing APPROVED portions of the Holmes Harbor growing area, and as the initial survey of the entire shoreline of the Harbor in response to a commercial harvest request from the Tulalip Tribe. The Washington State Department of Health, Office of Food Safety and Shellfish (DOH) identified 17 different drainage/discharge points, 165 developed parcels, and four agricultural sites along the 16 marine shoreline miles and upland areas of the Holmes Harbor shellfish growing area. NO DIRECT OR INDIRECT IMPACTS were identified that could be attributed directly to the developed parcels evaluated. Of the 165 parcels evaluated, 81 were determined to have the potential to impact the growing area, 81 were determined to have no impact, and three were not surveyed.

Based on water quality data and unknown industrial impacts from Nichols Brothers Boat Builders (NBBBI), the southernmost part of Holmes Harbor including Freeland County Park (BIDN 240440), should be PROHIBITED/CLOSED to commercial and recreational shellfish harvest until the impacts are identified and remediated.

Introduction

Between July and December 2005, DOH, in cooperation with the Island County Health Department (ICHHD), conducted an evaluation of the existing and requested shoreline of Holmes Harbor, including the recreational beach at Freeland County Park. *Figure 1 on page 3* illustrates the existing APPROVED portions of the shellfish growing area, marine water stations, and area surveyed for both the existing and proposed growing area.

According to the *Soil Survey of Island County, Washington* published by the United States Department of Agriculture, Soil Conservation Service the typical soil types around Holmes Harbor are as follows:

Whidbey gravelly sandy loam, 5 to 15 percent slopes
Whidbey gravelly sandy loam 15 to 30 percent slopes
Hoypus gravelly loamy sand, 5 to 15 percent slopes
Hoypus gravelly loamy sand, 15 to 30 percent slopes

Traditionally, these soil types provide good treatment and disposal of on-site septic system effluent. However, depth of the soils along the shoreline of Holmes Harbor are unknown. Appropriate depth is required for adequate treatment and disposal.

Cathy Barker and Kim Zabel-Lincoln of DOH surveyed the shoreline shown in *Figure 1 on page 5*. DOH evaluated drainage discharges, on-site sewage systems, agricultural activities, and other practices that could potentially have an adverse effect on the classification of the area. Each of the actual and potential sources were defined according to the following categories:

DIRECT IMPACT – a pollution source that is defined by the National Shellfish Sanitation Program (NSSP) as any waste discharge that has an immediate adverse effect on the growing area.

INDIRECT IMPACT – a pollution source that is defined by the NSSP as any waste discharge that reaches the growing area in a roundabout way.

POTENTIAL SOURCE – a pollution source that may influence the water quality in the area. Inadequate setbacks, neglect or abuse of sewage disposal systems, overgrazed pastures and a large number of wildlife are examples that could cause a site to be identified as a potential source of contamination.

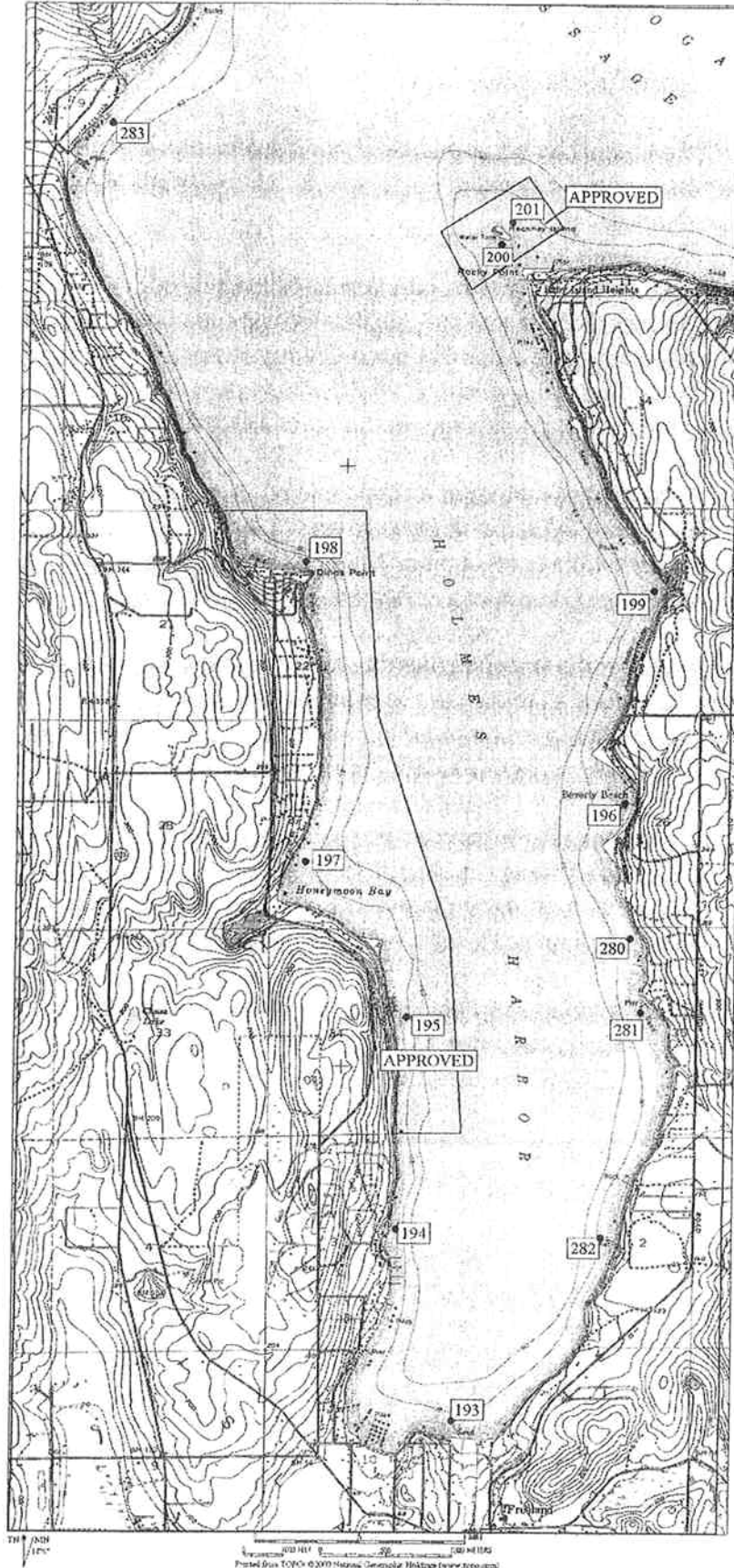
NO IMPACT – the potential source is managed via proper on-site practices or treatment methods so that there is no negative impact on water quality.

At the conclusion of each parcel review the evaluation is considered either:

COMPLETE - the location of the on-site sewage system was identified via the property owner, county records, or returned survey forms.

LIMITED - staff made visual observations, however, the property owner was not interviewed or the exact location of the on-site sewage system could not be verified.

Figure 1
Holmes Harbor Shellfish Growing Area,
Currently Approved Portions, Marine Water
Stations & Area Surveyed



Results

Drainages & Shoreline Discharges

DOH identified 17 drainage/discharge points. The coordinates and a general description of each site were recorded and are listed in *Appendix A*. The location of each site is shown in *Figure 2 on page 9*.

A May 2004 report by Herrera Environmental Consultants (Herrera), prepared for the Island County Public Works Department, details the drainage located at Site 062b (*Figure 2 on page 9*) that flows on to the beach at Freeland County Park. The intent of the report, titled *Freeland Water Quality Improvement Project*, was to provide a detailed analysis of existing water quality and flooding problems in the Freeland drainage basin.

Table 1 on page 5 summarizes the water quality data from Herrera Station 3 located approximately 100 feet upland from the Stewart Road culvert that discharges on to the beach at Site 062b. The drainage is an open ditch drainage system that is culverted under Stewart Road and discharges on the beach at Freeland County Park.

The Herrera report states that the watershed associated with Station 3 drains 531 acres of the Freeland drainage basin and that land use is primarily rural property (54 percent), low density residential (18 percent), and commercial (16 percent). A full listing of all parameters and a map of the stations are located in *Appendix B*.

The state water quality standard for fecal coliform bacteria concentrations in the Freeland drainage basin is a geometric mean less than 100fc/100ml, with no more than 10 percent of all samples obtained for calculating the geometric mean value exceeding 200fc/100ml. Or, if fewer than 10 sample points exist, no single sample shall exceed 200fc/100ml.

DOH and the ICHD collected water samples, and estimated flows, for six of the 17 drainages identified. The results can be seen in *Table 2 on page 6*.

Table 1
Herrera Environmental Consulting
Freeland Open Ditch Drainage Station 3

| Date | Fecal coliform per 100 ml | Cubic feet per sec. | Gallon Per Minute | Fecal Coliform Loading/day |
|----------|---------------------------|---------------------|-------------------|----------------------------|
| 1/8/02 | 110 | .080 | 36 | 2.15E+08 |
| 4/29/02 | 2 | .040 | 18 | 1.96E+06 |
| 11/5/02 | 120 | | | |
| 1/22/03 | 1360 | 1.410 | 633 | 4.69E+10 |
| 3/12/03 | 400 | 1.730 | 777 | 1.69E+10 |
| 4/13/03 | 440 | .630 | 283 | 6.78E+09 |
| 4/24/03 | 1420 | .490 | 220 | 1.70E+10 |
| 10/20/03 | 251 | .560 | 251 | 4.1E+10 |
| 11/10/03 | 520 | .019 | 9 | 2.4E+08 |
| 11/16/03 | 340 | .340 | 153 | 2.83E+09 |
| 11/18/03 | 500 | .960 | 431 | 1.17E+10 |

Marine water quality data collected by ICDH for the Washington State Swimming Beach Program (BEACH Program) at Freeland County Park Site C (located nearest to the outfall at Site 62b and Herrera Station 3) can be seen in *Table 3 on page 7*. For all Freeland County Park Sites sampled by the BEACH Program in 2005, see *Appendix B*. The marine samples are collected at Sites A and C by wading knee-deep into the marine water and dipping the bottle six inches below the surface. At Site B, the sample is collected from the end of the dock, dipping down at least six inches. The samples are collected and shipped using Standard Methods and are analyzed for enterococci (ec/100ml) at a state certified laboratory. The *BEACH Program Guidance* for MINIMUM ADVISORY LEVEL states that a single sampling station shall not exceed 104ec/100ml or 200fc/100ml; or a geometric mean based on a minimum of five samples shall not exceed 35ec/100ml or 200fc/100ml. The CRITICAL WARNING LEVEL definition states that a single sample station shall not exceed 276ec/100ml or 400fc/100. The 2005 marine water quality data, at Freeland County Park Site C, collected by ICHD for the BEACH Program, exceeded the CRITICAL WARNING LEVEL twice, and exceeded the MINIMUM ADVISORY LEVEL six of the 16 sampling events. The results for Site C ranged from < 10 to > 2,000ec/100ml.

Table 2
Holmes Harbor Water Quality Data
Collected by DOH & ICHD

| Site | Description | Date | FC/100ml |
|-------------|--|-------------|-----------------|
| 53 | LARGE DRAINAGE AT HARBOR ESTATES | 10/18/2005 | 540 |
| | | 11/3/2005 | 1600 |
| | Influenced by marine water | 11/9/2005 | 350 |
| | Influenced by marine water | 12/20/2005 | 4 |
| 56 | DRAINAGE AT HONEYMOON BAY | 10/18/2005 | 13 |
| | | 11/3/2005 | 240 |
| | Influenced by marine water | 11/9/2005 | 2 |
| | Influenced by marine water | 12/20/2005 | 4.5 |
| 61a | NICHOLS BROTHERS WEST-24" CULVERT | 10/18/2005 | 540 |
| | | 11/3/2005 | 2400 |
| | Influenced by marine water | 11/9/2005 | 1.8 |
| | Influenced by marine water | 12/20/2005 | 240 |
| 61b | NICHOLS BROTHERS EAST-24" CULVERT | 10/18/2005 | 170 |
| | | 11/3/2005 | 2400 |
| | No sample tide over outfall | 11/9/2005 | |
| | Influenced by marine water | 12/20/2005 | 170 |
| 62b | DRAINAGE FROM SEDIMENT TRAP ON BEACH AT FREELAND COUNTY PARK(near swimming beach Station C and Herrera Station 3) | 10/18/2005 | 2400 |
| | | 11/3/2005 | 1600 |
| | Influenced by marine water | 11/9/2005 | 49 |
| | Influenced by marine water | 12/20/2005 | 7.8 |
| 62a | DRAINAGE EAST OF PARK TO BEACH | 10/18/2005 | 350 |
| | | 11/3/2005 | 240 |
| | Influenced by marine water | 11/9/2005 | 1.8 |
| | Influenced by marine water | 12/20/2005 | 350 |

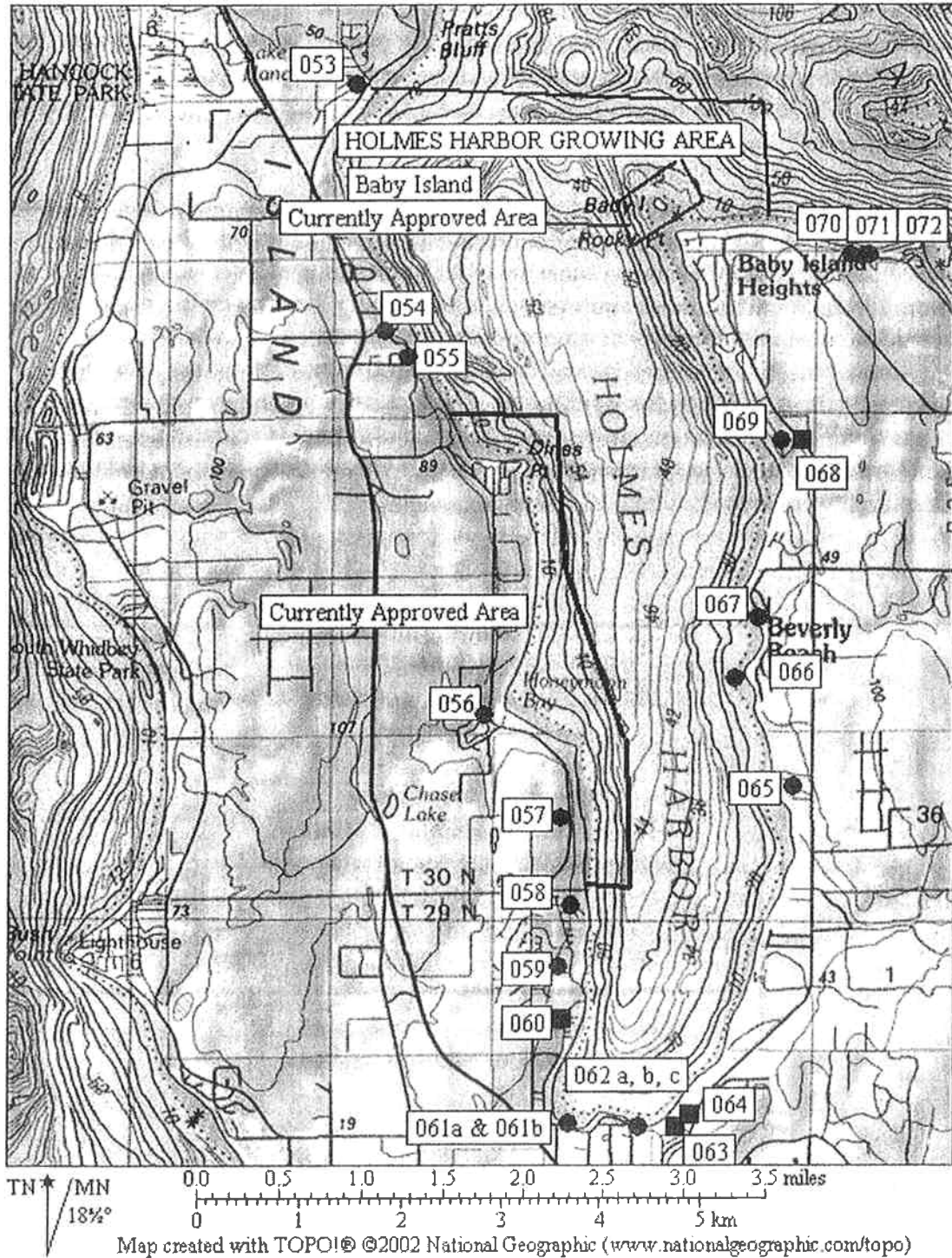
Table 3
BEACH Program
Marine Water Quality Data 2005 - Site C
Collected by ICHD

| Date | Site | enterococci colonies forming units per 100 ml of water |
|-------------|--|---|
| 6/6/2005 | Freeland County Park / Holmes Harbor Site C | <10 |
| 6/13/2005 | Freeland County Park / Holmes Harbor Site C | <10 |
| 6/20/2005 | Freeland County Park / Holmes Harbor Site C | 87 |
| 6/27/2005 | Freeland County Park / Holmes Harbor Site C | 31 |
| 7/4/2005 | Freeland County Park / Holmes Harbor Site C | 10 |
| 7/13/2005 | Freeland County Park / Holmes Harbor Site C | <10 |
| 7/18/2005 | Freeland County Park / Holmes Harbor Site C | 88 |
| 7/25/2005 | Freeland County Park / Holmes Harbor Site C | 10 |
| 8/1/2005 | Freeland County Park / Holmes Harbor Site C | 238 |
| 8/8/2005 | Freeland County Park / Holmes Harbor Site C | 10 |
| 8/15/2005 | Freeland County Park / Holmes Harbor Site C | >2000 |
| 8/22/2005 | Freeland County Park / Holmes Harbor Site C | 306 |
| 8/22/2005 | Freeland County Park / Holmes Harbor Site C | 226 |
| 8/29/2005 | Freeland County Park / Holmes Harbor Site C | 42 |
| 9/5/2005 | Freeland County Park / Holmes Harbor Site C | 111 |
| 9/14/2005 | Freeland County Park / Holmes Harbor Site C | 10 |

Rainfall data during and prior to the DOH/ICHD shoreline sampling events, as recorded by Washington State University Extension Office on Whidbey Island, is shown below in *Table 4*. Data was collected from both the northern portion of the area at Greenbank and southern portion at East Point. This information includes the rainfall recorded the day of the sampling event and for each of the five days prior to the sampling event. Rainfall did not appear to impact the water quality results for the samples taken during the survey.

| <p style="text-align: center;">Table 4 2005 Rainfall in Inches As recorded by the WSU Extension Office</p> | | |
|--|------------------|-------------------------|
| Date | Greenbank | East Pt/Saratoga |
| | | |
| Oct 13 | .00 | .00 |
| Oct 14 | .01 | .07 |
| Oct 15 | .42 | .40 |
| Oct 16 | .04 | .09 |
| Oct 17 | .13 | .03 |
| Oct 18 | .17 | .00 |
| | | |
| Oct 29 | .12 | .02 |
| Oct 30 | .06 | .00 |
| Oct 31 | .04 | .28 |
| Nov 1 | .70 | .74 |
| Nov 2 | .07 | .00 |
| Nov 3 | .48 | .47 |
| | | |
| Nov 4 | .17 | .13 |
| Nov 5 | .21 | .66 |
| Nov 6 | .96 | .65 |
| Nov 7 | .00 | .05 |
| Nov 8 | .07 | .00 |
| Nov 9 | .00 | .00 |
| | | |
| Dec 15 | .00 | .00 |
| Dec 16 | .00 | .00 |
| Dec 17 | .00 | .00 |
| Dec 18 | .00 | .00 |
| Dec 19 | .02 | .06 |
| Dec 20 | .16 | .06 |

Figure 2
 Holmes Harbor
 Area Surveyed, Drainage Points, &
 Agricultural Sites



| Key | |
|------------------------|---------------------------|
| ● - Drainage/Discharge | ■ - Agricultural Activity |

On-site Sewage Practices

DOH identified 165 developed parcels along the shoreline of the survey area, all using on-site sewage systems as the method of waste treatment and disposal. Of the 165 parcels identified, 28 were considered COMPLETE, 134 were LIMITED, and three were not surveyed due to the inability to access the developed area or inspection refusal by the homeowner. The assumed use of these sites, based on site characteristics and interviews, is listed in *Table 5 on page 11*.

DOH identified no DIRECT OR INDIRECT IMPACTS to the growing area that could be directly attributed to the on-site septic systems on the developed shoreline parcels evaluated. However, failing on-site sewage systems may be contributing to the elevated fecal coliform levels found in four shoreline discharges. A more detailed pollution study will be needed to positively identify the sources of bacteria present in those drainages. Eighty-one of the 162 developed parcels evaluated utilized on-site sewage systems defined as POTENTIAL SOURCES of pollution. These systems were typically designated as such due to their age, location, and/or type. Specific information regarding each of these on-site sewage systems can be found in *Appendix D*. Parcels for which addresses could be identified were located within the following ranges:

2837 – 2929 North Bluff Road
2303 – 2325 Hidden Cove
3716 – 3723 Fisherman's Alibi
A – I Harbor Drive
3721 – 3728 Arcadia
1328 – 1332 Dines Point
1633 – 1689 Hazen Shores Court
4250 – 5256 South Maple Avenue
5127 – 5349 Bercot
1367 – 1371 Shoreview Drive
1605 – 1621 Washington Drive
4110 – 4160 Beach Road
1824 – 4092 Beverly Beach Road
4325 – 4387 Honeymoon Bay Road

Table 5
Developed Parcel Use

| Use | Total Evaluated | Percentage |
|-----------------------|-----------------|------------|
| Full-Time Residential | 93 | 58% |
| Part-Time Residential | 65 | 40% |
| Commercial | 3 | <2% |
| Recreational | 1 | <1% |
| TOTAL | 162 | 100% |

Agricultural Practices

Four agricultural sites were identified during the shoreline survey. One site (060), may have the potential to impact the growing during heavy rainfall. Three other sites are high bank and were determined to have NO IMPACT. Location of these sites can be seen in *Figure 2 on page 9* and are located at the following address or roads:

- Site 060 Bercot Road-small parcel, one horse
- Site 063 1689 Hazen Road-high bank
- Site 064 5360 East Harbor Road-high bank
- Site 068 East Harbor Road- high bank

Wildlife

No wildlife was observed during the survey. The *Atlas of Seal and Sea Lion Haulout Sites in Washington, February 2000* published by Washington Department of Fish and Wildlife (WDFW), reports that a seal population of less than 100 resides on the beaches and intertidal area around Baby Island.

Other

Freeland County Park is located within the Holmes Harbor growing area. According to the WDFW, this beach had 4,877 recreational harvesters in 2005, and is part of the WDFW Shellfish Enhancement Program. The Park itself was determined to have NO IMPACT to the growing area.

Nichols Brothers Boat Builders Incorporated (NBBBI) operates a shipyard just west of Freeland County Park, along the shoreline of Holmes Harbor. According to the DOE *Fact Sheet for State Waste Discharge Permit ST-7396 Nichols Brothers Boat Builders, Inc., (Fact Sheet)* the shipyard has been operating since 1964. Prior to this operation, the site was used as sawmill and a machine shop from the 1920's through the 1940's. The *Fact Sheet* states that all aspects of boat and ship repair and construction are performed including fabrication, pressure washing, abrasive blasting, and painting. Under the