



# **CITY OF BAINBRIDGE ISLAND**

## **Water Quality and Flow Monitoring Program**

**Final  
SITE EVALUATION REPORT  
for  
Suitability Assessment of  
Potential Program Sampling  
and Monitoring Stations  
Bainbridge Island, Washington**

**April 2008**

**CoBI Contract No. – 250130**



**Site Evaluation Report**  
**for**  
**Suitability Assessment of Potential Program Sampling and Monitoring**  
**Stations**  
**Water Quality and Flow Monitoring Program**  
**City of Bainbridge Island**  
**Washington**

April 2008

*Prepared For:*  
**Department of Public Works**  
**Water Resources Program**  
**City of Bainbridge Island, Washington**

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## EXECUTIVE SUMMARY

This Site Evaluation Report (SER) characterizes the 12 Bainbridge Island watersheds, identifies 59 perennial and seasonal creeks, and assesses the suitability of selected sites for conducting programmatic sampling and monitoring tasks (including flow monitoring). These sites are presented as potential locations to conduct required program tasks associated with the City of Bainbridge Island (CoBI)'s Water Quality and Flow Monitoring Program (WQFMP). Potential sites were selected and are identified by their intended primary use grouping as either surface water, nearshore, marine, outfall, or stormwater Best Management Practice (BMP) structure locations. All of the sites identified and discussed in this SER are within the confines of the recognized project area for the CoBI WQFMP.

Bainbridge Island encompasses 17,472 acres, or approximately 28 square miles, with 53 miles of irregular coastline (Battelle, 2004). The primary land cover is tree-cover at 73%, or 12,760 acres. Grass/scrub, developed areas with impervious surfaces, and other coverages comprise 15%, 11% and 1%, respectively, with a combined coverage of 4,712 acres. Land use on Bainbridge Island is comprised of residential (75%), recreation land (7%), transportation corridors (6%), agricultural (6%), commercial/light manufacturing (2%), forest land (2%) and public facilities (2%), as a percentage of the total acreage on the island, (Kato and Warren, 2000).

There are 12 watersheds on Bainbridge Island (Figure 2-1). These are (clockwise from the northern tip of the island) Agate Passage, Port Madison, Sunrise, Murden Cove, North Eagle Harbor, Eagledale, Blakely Harbor, South Beach, Pleasant Beach, Gazzam Lake, Fletcher Bay and Manzanita Bay. By using Geographic Information System (GIS) mapping techniques, field verification, historic documentation and other means, 59 individual perennial and seasonal stream courses were identified across the watersheds. Eight combined stream systems, each consisting of two or more single convergent courses, were noted among the island surface water channels.

Site evaluations were completed from October 2005 to April 2006. These evaluations were completed by staff from the TEC Inc. Project Team (TEC) and with support from the CoBI Department of Public Works and Department of Community Planning and Development. Site assessment methods included visual observations, direct measurements, photographic documentation, and a combination of reviews of as-built construction plans (where available for the various storm sewer systems), and other documents and technical information.

### **Surface Water Sites:**

The evaluation of surface water sites was completed using six main criteria:

1. Site characteristics/logistics,
2. Health and safety,
3. Flow data acquisition,
4. Water quality monitoring/chemistry sampling,
5. Watershed characteristics, and
6. Equipment/site preparation.

During the evaluation of potential surface water sites, characteristics of each location, as defined by a set of matrix parameters (listed above), were ranked based on those criteria. Each

specific criteria was assigned a rank ranging from 0-5 and an overall site ranking number from 0-30 was calculated based on the summation of the criteria rankings. A higher overall score indicated a site was better suited for conducting flow monitoring and chemistry sampling, was uniquely representative of its watershed type, and presented advantageous qualities to utilize available monitoring equipment with favorable site preparation conditions. A lower overall score indicated the converse to the attributes above.

The CoBI and the TEC Team proposed 83 sites for consideration as potential surface water sampling and monitoring locations. Sites deemed to have access issues, that were tidally influenced at the proposed access point, were located in the upper reaches of a stream system (where other sites existed downstream), or that were noted to be highly seasonal or ephemeral were considered as potential alternates only. Twenty-eight sites were selected for more thorough and complete (secondary) field inspections. Of these 28 sites, four were determined to be better utilized as outfall locations, one was proposed as a nearshore site, and one as a BMP site. Therefore 22 surface water sites were proposed for use in the CoBI WQFMP. The remaining 55 sites (of the 83) are reserved for future program needs.

#### **Nearshore, Marine, Outfall, and BMP Sites:**

Nearshore, marine, outfall, and BMP sites were proposed for program use based on four main considerations. These main considerations were as follows:

1. Was there a previously established site (which was in current or rotating use by other agencies or other CoBI programs that could be used for purposes of the WQFMP?
2. Was there a need for a site that could provide water quality, water chemistry, sediment, flow monitoring, or other data type requirements at a critical program location where a site does not currently exist (mainly for nearshore and marine sites)?
3. Was there availability of physical structure(s) (e.g., BMP or outfall) that exists in an area of programmatic interest that exhibit favorable sampling and/or monitoring qualities?
4. Was there an advantage in the establishment of a single site that combines or otherwise includes multiple sites with a variety of program uses that enhances efficiency and effectiveness of the WQFMP? These type of sites were not graded similar to the surface water sites, but are presented in this SER as viable options.

Based on these considerations, 35 marine and 61 nearshore sites were considered for program use. Marine and nearshore sites were toured by boat in October 2005. General inspections were completed during the boat tour and additional site information was gained from document research, supplemental site visits, and mapping sources. The nearshore sites are comprised of 30 typical nearshore water quality locations, 25 CoBI Beach Seine Program sites, and 6 Washington State Department of Ecology (Ecology) BEACH Program sites. A site selection process, which will be completed by the CoBI in the near future, will co-locate groups of marine and nearshore sites in such a manner as to allow a single site to be utilized for multiple program purposes. This will ultimately reduce the number of sites required for monitoring to a total of less than what is presented above.

There are 178 outfall locations having greater than 4-inch diameter piping that have been identified (CoBI, 2004) around the island's shoreline areas. Five of these locations have been recommended for program use. Fifty-four publicly-owned BMP structures (i.e., stormwater retention ponds, oil-water separators, conveyance ditches, stormwater diversion, and secondary treatment structures, etc.) have been identified by the CoBI's Public Works Engineering Department. Two of these BMP structures, both CoBI-owned retention pond/decant features,

have been recommended for program use. BMP structures were toured with CoBI engineering staff. Access and other site characteristics were assessed during various tours.

Table ES-1 presents the surface water, outfall, and stormwater BMP sites that were proposed for possible use in the WQFMP, including each site's associated evaluation category as well as the overall ranking score.

Since the CoBI has acquired water quality and flow monitoring equipment to conduct WQFMP activities, all of the equipment recommendations were based on what the CoBI currently owns. At sites recommended for automated flow monitoring the CoBI has area/velocity meters (Marsh-McBirney Flo-Totes III™ or equivalent) or level loggers (KPSI™ Series 550 loggers or equivalent) at their disposal for possible installation. Flow at the remaining sites may be measured by similar or other methods. Flow at Springbrook Creek, the only active flow monitoring site at the writing of this report, would be best measured using its current weir/level logger approach (Isco™ 4110 Ultrasonic meter). Sites recommended for automated sampling use CoBI-owned Isco™ 6712 portable and programmable water sampling units. Water quality readings, either for spot measurements or long-term deployment, would best be recorded with CoBI multi-parameter datalogger and sonde system (YSI™ 650 and 6920, respectively).

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**Table ES-1. CoBI WQFMP Site Evaluation Matrix Summary**

Site ID	Site Description	Flow <sup>1</sup>	Sample Collection <sup>1</sup>	Logistics <sup>1</sup>	Health & Safety <sup>1</sup>	Watershed Characteristics <sup>2</sup>	Equip/Site Prep <sup>3</sup>	Total Score
<b>Surface Water Sites</b>								
SE1A	Ravine Creek at north side Winslow Ave crossing	5	5	4	4	5	4	27
SE35	Springbrook Creek at Fletcher Bay Road	5	5	3	4	4	5	26
SE27	Manzanita Creek at Peterson Hill Road	5	5	4	3	3	4	24
SE16	Murden Creek (Grisdale Creek) crossing at SR-305	5	4	4	3	4	3	23
SE38	Schel-Chelb Creek at Baker Hill Road	4	5	4	3	4	3	23
SE5A	Weaver Creek at Sheppard Road	4	3	4	4	4	3	22
SE62	Cooper Creek near Head-of-the-Bay well field	4	4	4	3	3	3	21
SE63	Sportsman's Club Creek at Wyatt Way	4	4	3	3	4	3	21
SE11	Hawley Creek West Fork at Wing Point Way	3	3	3	3	4	3	19
SE34	Issei Creek (East Fork)	3	4	3	3	2	4	19
SE45	Issei Creek West Fork	3	3	3	3	3	3	18
SE21	Dripping Water Creek at Sunrise Drive	3	3	3	3	2	3	17
SE41	Mac's Dam Creek at Country Club Road	3	3	3	3	2	3	17
SE42	Crane Lake Creek at Country Club Road.	2	3	3	3	4	2	17
SE52	Tani Creek at Country Club Road in Blakely Harbor Park	2	3	3	3	3	2	16
SE20	Manitou Beach Creek at Beach Crest Drive	2	3	2	3	2	3	15
SE24	Coho Creek at Hidden Cove Road.	3	3	2	3	2	2	15
SE55	Blakely Falls Creek at Halls Hill Road	2	3	3	3	2	2	15
SE12	Hawley Creek East Fork at Wing Point Way	1	2	2	3	3	3	14
SE10	Hawley Creek below confluence	1	2	2	2	4	2	13
SE47	McDonald Creek at road-end	2	2	2	3	2	2	13
SE80	Rose Creek at bottom of Rose Loop	2	2	2	3	2	2	13

**Table ES-1. CoBI WQFMP Site Evaluation Matrix Summary**

Site ID	Site Description	Flow <sup>1</sup>	Sample Collection <sup>1</sup>	Logistics <sup>1</sup>	Health & Safety <sup>1</sup>	Watershed Characteristics <sup>2</sup>	Equip/Site Prep <sup>3</sup>	Total Score
<b>Outfall Sites</b>								
OFL 169	Madrone Creek Stormwater Discharge	4	4	4	3	5	3	<b>23</b>
OFL 145	Madison Avenue South Discharge	3	3	3	4	5	3	<b>21</b>
OFL 178	Eagle Outfall at Ferncliff Road	3	3	3	3	4	2	<b>18</b>
OFL166	Point Monroe Lagoon Creeklet at Fay BI State Park	2	2	3	3	2	2	<b>14</b>
OFL 50	Outfall at Lynwood Center	1	1	2	3	4	1	<b>12</b>
<b>Stormwater BMP Sites</b>								
BMP1	Vincent Road Recycle Center Decant Pond Discharge	3	3	3	3	4	4	<b>20</b>
BMP2	CoBI O&M Yard Retention Pond Discharge	2	3	3	3	4	4	<b>19</b>

Notes:

1. Ranking Grade Key for Site Parameters: **0** = not feasible, disqualifying **1** = very low, poor **2** = below average, fair **3** = average **4** = above average **5** = excellent qualities
2. Ranking Grade Key for Watershed Characteristic Parameters: **1** = not desirable **3** = average land use/size/development % **5** = very desirable qualities for that specific WS type for its given evaluation parameters
3. Ranking Grade Key Cost Parameters: **1** = prohibitive, **3** = average, **5** = very effective

BMP = Best Management Practices

OFL = Outfall

WS = watershed

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## ACRONYMS AND ABBREVIATIONS

Battelle	Battelle Marine Sciences (Laboratory)
BEACH	Beach Environmental Assessment, Communication and Health
BMP	best management practice
CoBI	City of Bainbridge Island
CRK	Creek
CSE	confined space entry
CWA	Clean Water Act
DOH	Washington Department of Health
DQO	data quality objective
Ecology	Washington State Department of Ecology
USEPA	U.S. Environmental Protection Agency
ft	feet
GIS	Geographical Information System
GPS	Global Positioning System
HSP	health and safety plan
LU/LC	land use land cover
OFS	outfall
POC	point of contact
QAPP	quality assurance project plan
ROW	Right of Way
SAP	sampling and analysis plan
SER	site evaluation report
SR	State Route
TEC	TEC Inc.
TMDL	total maximum daily load
WQFMP	Water Quality and Flow Monitoring Program

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## 1.0 INTRODUCTION

The purpose of this Site Evaluation Report (SER) is to recommend sites for surface water, nearshore/marine and/or outfall/BMP sampling and monitoring tasks. The associated Sampling and Analysis Plan (SAP) (TEC 2006a) and Quality Assurance Project Plan (QAPP) (TEC 2006b) detail the procedures for conducting sampling and analysis of in-stream, nearshore, marine, outfall and storm water chemical and flow characteristics at the proposed sites.

### 1.1 REPORT ORGANIZATION

This SER provides an introduction and a brief description of the City of Bainbridge Island's Water Quality and Flow Monitoring Program Study Area (Section 1), a general description of the Bainbridge Island watersheds and streams (Section 2), a discussion of the proposed WQFMP site assessment locations (Section 3), site assessment methods and evaluation criteria (Section 4), site evaluation results (Section 5), site selection recommendations (Section 6), references (Section 7), and associated appendices (A through C). This SER, together with the SAP and QAPP, comprise the CoBI's WQFMP Monitoring Plan. Each of these three main plan document sections are supplemental to each other.

### 1.2 BACKGROUND

This SER characterizes the 12 Bainbridge Island watersheds, identifies 59 perennial and seasonal creeks, and assesses the suitability of select sites for conducting various programmatic sampling and monitoring tasks (including flow monitoring). Bainbridge Island and the boundary of the CoBI's WQFMP are illustrated on Figure 1-1.

These sites are presented as potential locations to conduct required program tasks associated with the CoBI's WQFMP. Typical program tasks could include collection of water quality measurements and other non-analytical measurements, collection of water, soil, sediment, or other substrate for analytical analysis, measurement of flow from natural or engineered systems, collection of rainfall or other weather data, site preparation and set-up and other related institutional or engineering control procedures. Potential sites were selected and identified by their intended primary use grouping as either surface water, nearshore, marine, outfall, or stormwater BMP structure locations. All of the sites identified and discussed in this SER are within the confines of the recognized project area for the CoBI WQFMP.

Site evaluations were completed from October 2005 to April 2006. These evaluations were completed by staff from the TEC Inc. (TEC) Project Team with support from the CoBI Department of Public Works and Department of Community Planning and Development. Site assessment methods included visual observations, direct measurements, photographic documentation, and a combination of reviews of as-built construction plans (where available for the various storm sewer systems), and other documents and technical information.

The WQFMP and all related tasks are being conducted in part with the aid of a Washington State Department of Ecology (Ecology) Centennial Clean Water Fund Grant (#G0500151). The CoBI Contract Number under which the City and the Department of Public Works (Water Quality Program) manages this project is 250130.

The SER is an integral part of the overall project Monitoring Plan. Water quality goals (tangible environmental changes for the better, to be achieved or directly addressed by the project) for the CoBI WQFMP are to:

- restore or otherwise protect designated beneficial uses of surface and receiving waters,
- restore 303(d) listed water bodies to water quality standards, and
- prevent healthy waters from being degraded.

Successful achievement of these goals will result from developing efficient and effective approaches through assignment of Total Maximum Daily (contaminant) Load (TMDL)s to further enhance the water quality of the Inlets and their watersheds. The CoBI WQFMP will provide valuable examples of how to partner with local stakeholders and how to develop innovative, cost-effective solutions to environmental problems, while meeting regulatory requirements, which may be applied to other CoBI environmental, engineering, and planning programs.

### **1.3 BAINBRIDGE ISLAND LAND COVER/LAND USE**

Bainbridge Island encompasses an area of 17,471 acres, or approximately 28 square miles. The island has 53 miles of irregular coastline (Battelle, 2004). The primary land cover is tree-cover at 73%, or 12,760 acres. Grass/scrub lands, developed areas with impervious surfaces and other coverages comprise 15%, 11% and 1%, respectively, with combined coverage of 4,712 acres. Figure 1-2 shows the distribution of the various land coverages across the island.

Land use type does not vary widely by any great degree across the island due to a low percentage of industrial or commercial land development and the lack of available or developed farm/range land. The island's land use is consequently dominated by residential uses (75%). Other land uses such as recreation land (7%), agricultural (6%), transportation corridors (6%), commercial/light manufacturing (2%), forest land-use (2%) and public facilities (2%), make up the remainder of the land use as a percentage of the total acreage on the island. With a total overall population of 20,500, the greatest population density occurs at the towns of Winslow, Island Center, Lynwood Center and around the coastline of the island (Kato and Warren, 2000 and Battelle, 2004). Outside of urbanized areas, the study area is generally characterized by scattered, small communities, homes on acreage, and large parcels of undeveloped land.



Figure 1-1  
Regional Location of Bainbridge Island and Boundary of the  
CoBI Water Quality and Flow Monitoring Program

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Figure 1-2  
Bainbridge Island Land Use/Land Cover

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## 2.0 BAINBRIDGE ISLAND WATERSHEDS AND STREAMS

This section discusses the watershed and stream characteristics of Bainbridge Island. The following landform descriptions are based on data derived from review of documents that were gathered during the initial phase of the WQFMP, from the CoBI's Public Works Department, Geographic Information Systems (GIS) analysis and field observations and measurements.

### 2.1 BAINBRIDGE ISLAND WATERSHEDS

Geologic and geomorphologic processes have created 12 distinct watersheds on Bainbridge Island. These are (clockwise from the northern tip of the island) Agate Passage, Port Madison, Sunrise, Murden Cove, North Eagle Harbor, Eagledale, Blakely Harbor, South Beach, Pleasant Beach, Gazzam Lake, Fletcher Bay and Manzanita Bay. Figure 2-1 shows the location of the these watersheds. Manzanita Bay, comprised of portions of the island's western, northwestern and central areas, is the largest watershed at 2,296 acres. Agate Passage, located along the northwestern and northern portions of the island, is the smallest watershed at 600 acres. Table 2-1 lists all of the island's watersheds along with their associated land cover and size statistics.

The WQFMP potential study area includes all 12 Bainbridge Island watersheds and the receiving waters of Port Madison Bay, Puget Sound, Rich Passage, Port Orchard Reach and Port Orchard Bay. The island has several large harbors, estuaries, and a diversity of bays, inlets, coves, lagoons and notable lakes. These include (but are not limited to) Eagle Harbor, Blakely Harbor, Schel-Chelb estuary, Fletcher Bay, Manzanita Bay, Port Madison Inlet/Hidden Cove, Murden Cove, Point Monroe Lagoon, Mac's Dam Lake and Gazzam Lake.

Port Orchard Bay and Port Orchard Reach are two inter-connected sub-estuaries of the Puget Sound estuarine system. Tides enter through the mouth of Agate Passage and Rich Passage and propagate to both Inlets from the State Route (SR) 305 Bridge to the north and the Pleasant Beach area from the south. The inlets receive freshwater inflow and land-based loadings from commercial and storm water discharges, sewage treatment systems, and runoff from the surrounding watersheds.

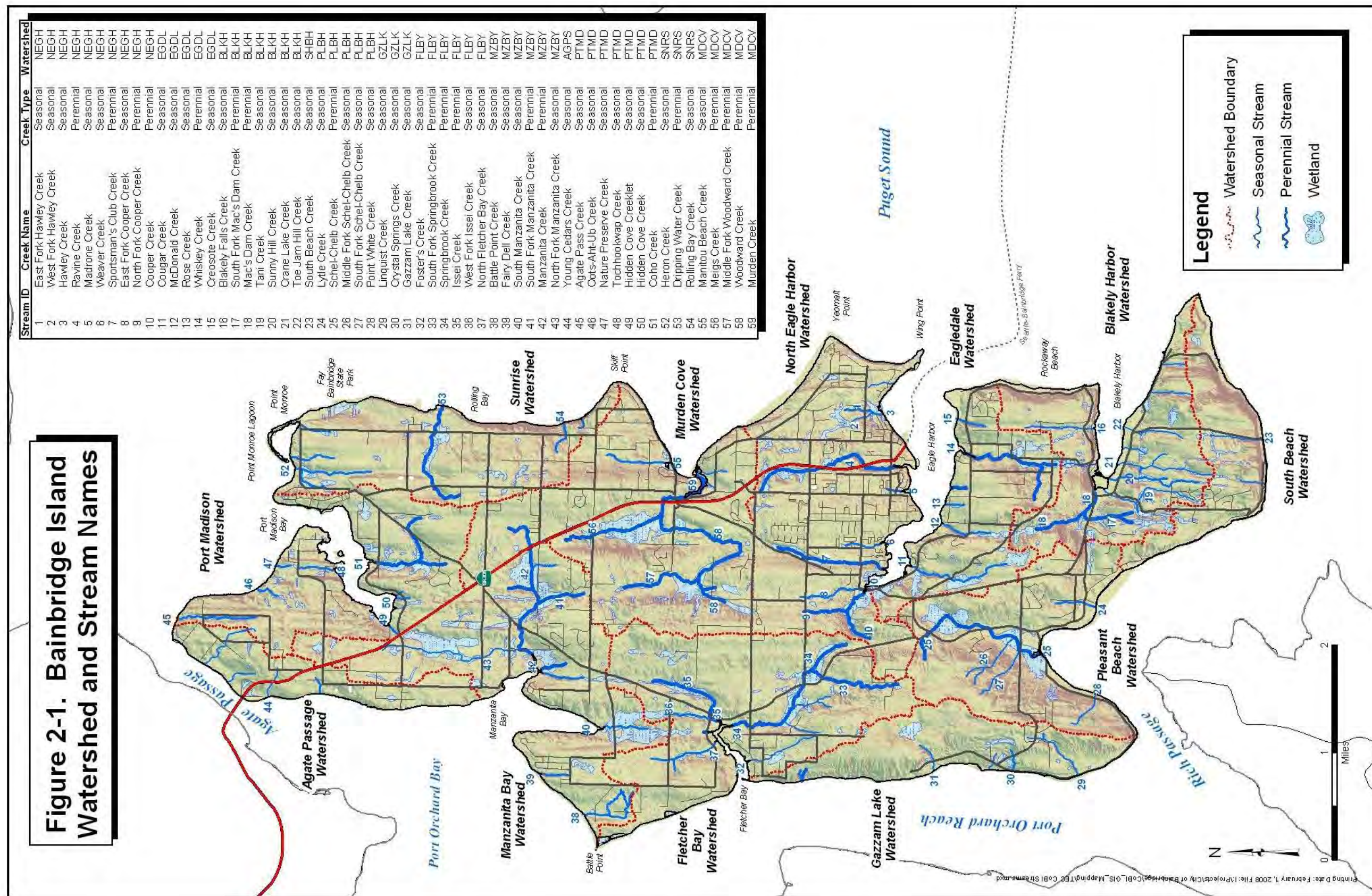
### 2.2 BAINBRIDGE ISLAND STREAMS

Through GIS mapping techniques, field verification, historic documentation, and other means, 59 individual perennial and seasonal stream courses were identified across the Island watersheds (Table 2-2). The naming conventions for the streams came from a number of sources. The guiding and most widely accepted stream naming document was *Streams of Bainbridge Island: Names, History, Folklore, and Culture* (Elfendahl, 1997). Other sources included GIS data from the CoBI, local vernacular, and several names that were assigned during the course of this field investigation.

Several streams (ID #s 12, 13, 28, 30, 45, and 49) were assigned new names (as their names were previously non-existent) during the site evaluation process. Names were assigned based on the closest geographically dominant feature adjacent to or in close proximity of the stream. All of these streams are smaller seasonal or creeklet (headland or ephemeral drainage courses) sized water courses. Other stream courses received a refinement in the naming of their major forks (ID #s 1, 2, 8, 9, 17, 26, 27, 33, 36, and 41). There are still more than a dozen unnamed seasonal streams around the Island. Some may actually be ephemeral or headwater courses that only flow during periods of precipitation. These smaller stream courses would have overland or runoff flows as their distinguishing factor from the larger, more established seasonal

and perennial streams where their dominant flow regimes are from baseflow. An interesting case exists with Madrone Creek (Stream ID #5), a seasonal course, which is entirely buried underground in culvert piping beneath central Winslow. This stream course is now combined with, and part of, the central Winslow stormwater drainage and outfall system.

Eight combined stream systems, each consisting of two or more single courses that are convergent, were noted among the island surface water channels. The largest combined single stream system is Murden Creek at 23,389 feet (ft) of flow course. The smallest combined single stream system is Hawley Creek at 3,230 ft of flow course. In addition to the grouping of combined stream systems the overall water course footage at each watershed was calculated. North Eagle Harbor has the greatest amount of overall stream flow footage, at 29,226 ft and Agate Passage has the least amount of overall stream flow footage at 1,613 ft. The combined stream system and the watershed total stream course footage listings and their associated ranking are presented in Table 2-3 and 2-4 respectively.



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**Table 2-1. CoBI Watershed Land Cover Statistics**

Watershed Name /Code	Watershed Area (Acres)	Watershed Size Ranking	Breakdown of Total Watershed Landcover (% of Total Area)								
			Forest	Wetlands	Natural	Grass & Turf	Bare Ground	% Total Impervious Area	Developed	Surface Water	Other
Agate Passage / AGPS	599.96	12	79.52	2.75	82.28	4.25	3.08	9.17	16.51	0.17	1.04
Blakely Harbor / BLKH	1,369.73	7	87.04	1.08	88.13	2.25	3.62	5.75	11.62	0.22	0.04
Eagledale / EGDL	1,094.12	9	65.10	2.95	68.04	8.83	4.36	18.45	31.63	0.33	0.00
Fletcher Bay / FLBY	2,114.01	3	75.83	1.09	76.92	8.60	6.04	7.89	22.52	0.56	0.00
Gazzam Lake / GZLK	886.45	10	83.96	0.79	84.74	3.96	1.86	7.82	13.64	1.62	0.00
Manzanita Bay / MZBY	2,296.34	1	72.25	1.92	74.18	9.76	6.76	8.85	25.37	0.46	0.00
Murden Cove / MDCV	2,046.36	4	73.65	2.34	75.99	7.65	6.46	9.48	23.58	0.43	0.00
North Eagle Harbor / NEGH	2,184.91	2	50.64	2.46	53.11	8.30	10.57	26.95	45.82	0.44	0.63
Pleasant Beach / PLBH	1,437.63	5	70.66	3.00	73.66	6.01	6.64	13.56	26.21	0.13	0.00
Port Madison / PTMD	1,388.31	6	81.85	1.18	83.03	6.26	3.75	6.36	16.37	0.30	0.31
South Beach / SHBH	711.89	11	76.59	1.20	77.79	4.16	10.88	6.54	21.58	0.63	0.00
Sunrise / SNRS	1,342.24	8	79.08	1.92	81.00	4.49	6.41	7.97	18.87	0.13	0.00
<b>TOTAL ACREAGE</b>	<b>17,471.95</b>		12,760.44	333.49	13,093.92	1,194.76	1,089.27	1,994.28	4,278.31	74.84	24.88

Notes:

\*\* Statistical sources include: Battelle GIS database, CoBI GIS data, and CoBI Level II Assessment (Kato & Warren, 2000)

**Table 2-2. CoBI Stream Identification List**

Stream ID No.	Stream Name	Alternate Names	Type	Watershed	Stream Length (FT)	Single Stream Length Ranking Out of 59 Total
1	East Fork Hawley Creek		<i>Seasonal</i>	NEGH	1,510	50
2	West Fork Hawley Creek		<i>Seasonal</i>	NEGH	1,202	52
3	Hawley Creek		<i>Seasonal</i>	NEGH	518	59
4	Ravine Creek	Winslow Ravine	<b>Perennial</b>	NEGH	8,008	5
5	Madrone Creek		<i>Seasonal</i>	NEGH	904	55
6	Weaver Creek	Strawberry or Cannery	<i>Seasonal</i>	NEGH	2,037	42
7	Sportsman's Club Creek	Hirakawa	<b>Perennial</b>	NEGH	5,665	9
8	East Fork Cooper Creek		<i>Seasonal</i>	NEGH	3,542	28
9	North Fork Cooper Creek		<b>Perennial</b>	NEGH	2,204	40
10	Cooper Creek	Head-of-the-Bay	<b>Perennial</b>	NEGH	3,636	24
11	Cougar Creek	Blueberry	<i>Seasonal</i>	EGDL	5,444	10
12	McDonald Creek		<i>Seasonal</i>	EGDL	2,553	37
13	Rose Creek		<i>Seasonal</i>	EGDL	911	54
14	Whiskey Creek		<b>Perennial</b>	EGDL	6,079	8
15	Creosote Creek	South Eagle Harbor	<i>Seasonal</i>	EGDL	1,525	49
16	Blakely Falls Creek		<i>Seasonal</i>	BLKH	3,595	26
17	South Fork Mac's Dam Creek		<b>Perennial</b>	BLKH	2,764	34
18	Mac's Dam Creek		<b>Perennial</b>	BLKH	3,810	21
19	Tani Creek	Yama	<i>Seasonal</i>	BLKH	5,153	13
20	Sunny Hill Creek		<i>Seasonal</i>	BLKH	5,221	12
21	Crane Lake Creek		<i>Seasonal</i>	BLKH	4,959	15
22	Toe Jam Hill Creek		<i>Seasonal</i>	BLKH	3,122	32
23	South Beach Creek		<i>Seasonal</i>	SHBH	2,662	35
24	Lytle Creek		<i>Seasonal</i>	PLBH	1,975	43
25	Schel-Chelb Creek	Edenharter	<b>Perennial</b>	PLBH	8,538	2
26	Middle Fork Schel-Chelb		<i>Seasonal</i>	PLBH	3,346	31
27	South Fork Schel-Chelb		<i>Seasonal</i>	PLBH	3,115	33
28	Point White Creek		<i>Seasonal</i>	PLBH	2,189	41
29	Linguist Creek		<i>Seasonal</i>	GZLK	3,517	29
30	Crystal Springs Creek		<i>Seasonal</i>	GZLK	1,191	53
31	Gazzam Lake Creek		<i>Seasonal</i>	GZLK	1,677	46
32	Foster's Creek		<i>Seasonal</i>	FLBY	3,599	25
33	South Fork Springbrook Creek		<b>Perennial</b>	FLBY	4,944	16

Table 2-2. CoBI Stream Identification List

Stream ID No.	Stream Name	Alternate Names	Type	Watershed	Stream Length (FT)	Single Stream Length Ranking Out of 59 Total
34	Springbrook Creek		Perennial	FLBY	8,328	4
35	Issei Creek	East Fork Issei	Perennial	FLBY	4,832	17
36	West Fork Issei Creek		Seasonal	FLBY	2,560	36
37	North Fletcher Bay Creek		Seasonal	FLBY	3,594	27
38	Battle Point Creek		Seasonal	MZBY	3,753	22
39	Fairy Dell Creek		Seasonal	MZBY	1,557	48
40	South Manzanita Creek		Seasonal	MZBY	2,246	39
41	South Fork Manzanita Creek		Perennial	MZBY	2,385	38
42	Manzanita Creek		Perennial	MZBY	8,517	3
43	North Fork Manzanita Creek		Seasonal	MZBY	7,783	6
44	Young Cedars Creek	Huhuhup-Piyots	Seasonal	AGPS	1,613	47
45	Agate Pass Creek		Seasonal	PTMD	4,115	19
46	Oots-Aht-Ub Creek		Seasonal	PTMD	1,268	51
47	Nature Preserve Creek	Bloedel	Seasonal	PTMD	801	56
48	Tochhookwap Creek		Seasonal	PTMD	1,948	44
49	Hidden Cove Creeklet		Seasonal	PTMD	762	57
50	Hidden Cove Creek		Seasonal	PTMD	686	58
51	Coho Creek	Port Madison	Perennial	PTMD	5,027	14
52	Heron Creek		Seasonal	SNRS	3,851	20
53	Dripping Water Creek		Perennial	SNRS	6,245	7
54	Rolling Bay Creek		Seasonal	SNRS	1,785	45
55	Manitou Beach Creek		Seasonal	MDCV	3,358	30
56	Meigs Creek		Perennial	MDCV	5,295	11
57	Middle Fork Woodward Creek		Perennial	MDCV	4,357	18
58	Woodward Creek		Perennial	MDCV	10,057	1
59	Murden Creek	Grisdale	Perennial	MDCV	3,680	23

Note: See Table 2-1 for Watershed code definitions.

**Table 2-3. Combined Stream Systems Statistics**

Combined Stream System	Combined Flow Length (FT)	Size Rank of Combined System
Murden	23,389	1
Manzanita	18,685	2
Schel-Chelb	14,999	3
Springbrook	13,272	4
Cooper	9,382	5
Issei	7,392	6
Mac's Dam	6,574	7
Hawley	3,230	8

**Table 2-4. Watershed Total Stream Course Footage**

Watershed	Stream Course Footage	Watershed Flow Course Ranking
NEGH	29,226	1
BLKH	28,624	2
FLBY	27,857	3
MDCV	26,747	4
MZBY	26,241	5
PLBH	19,163	6
EGDL	16,512	7
PTMD	14,607	8
SNRS	11,881	9
GZLK	6,385	10
SHBH	2,662	11
AGPS	1,613	12

### 3.0 PROPOSED WQFMP LOCATIONS

This section presents a general description of the main site types and locations that were considered for inclusion in the WQFMP. Sites discussed in this and subsequent sections are considered suitable for their suggested and recommended use(s) in the CoBI WQFMP. However, none of the locations have gained final approval from the CoBI. Final site selection, will undoubtedly be based on recommendations herein (Section 6), but will be made sometime in the future as decided by the CoBI.

These proposed sites are suggested on their scientific merit only without lending credence to other project management or other considerations. Certain sites have been proposed or located in areas which are common with other sites of similar use (by other existing sampling or monitoring programs), designation and proximity. This has been done in such a manner as to allow a single site to be potentially utilized for multiple program purposes in an effort to increase logistical efficiency and to aid in the conservation of project resources. This will ultimately reduce the number of sites required for monitoring to less than what is presented below.

#### 3.1 SURFACE WATER LOCATIONS

There were 83 potential sites proposed for consideration by the CoBI and the TEC Team for use as surface water sampling and monitoring locations. Figure 3-1 shows these sites and their distribution across Bainbridge Island.

Sites deemed to have access issues, that were tidally influenced at the proposed access point, were located in the upper reaches of a stream system (where other sites existed downstream), or that were noted to be highly seasonal or ephemeral (in their flow regime assessment) were considered as potential alternates. Twenty-eight sites were selected for more thorough and complete site evaluation field inspections. Of these 28 sites, four were determined to be better utilized as outfall locations (ID#s 3, 4, 26, and 66); one was proposed as a nearshore site (ID# 2); and one as a BMP site (ID# 58). Therefore, the remaining 22 locations were proposed for use as surface water sites in the CoBI WQFMP. The remaining 55 sites (of the original 83) were reserved for future program needs. These reserve sites were not re-visited, nor were detailed site assessments completed at these locations. Table 3-1 lists all of the original 83 surface water locations that were considered for program use.

Detailed notes, measurements, observations, drawings, and photographs were collected at the 28 sites noted above (bolded in Table 3-1) that were deemed to have qualifying and favorable program characteristics. A field inspection form was completed for each of these sites. Tables defining the various codes presented in the completed field inspection forms are contained in Appendix A (Appendices A-1 and A-2, respectively). Photographs of these sites are contained in Appendix B.

#### 3.2 NEARSHORE/MARINE SITES

A total of 61 nearshore and 35 marine sites were considered for potential WQFMP use. General inspections of nearshore and marine sites were mostly completed by boat (a few were accessible and inspected by land). Boat tour inspections were conducted in October 2005. Nearshore and marine site inspections conducted by land were completed through April 2006. Additional site information was gained from document research, supplementary site visits, and mapping sources. Because the nearshore and marine sites are so closely related in many program characteristics, they are grouped together as one general site type. Figure 3-2 shows

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the locations of the nearshore and marine locations island-wide. Figure 3-3 shows a close-up view of the nearshore and marine sites in Eagle Harbor and the surrounding areas.

The nearshore sites are comprised of 30 CoBI WQFMP locations that are suitable for the collection of water quality data, 25 CoBI Beach Seine Program sites (an on-going current program managed by the Department of Planning and Community Development) and 6 Ecology BEACH Program sites.

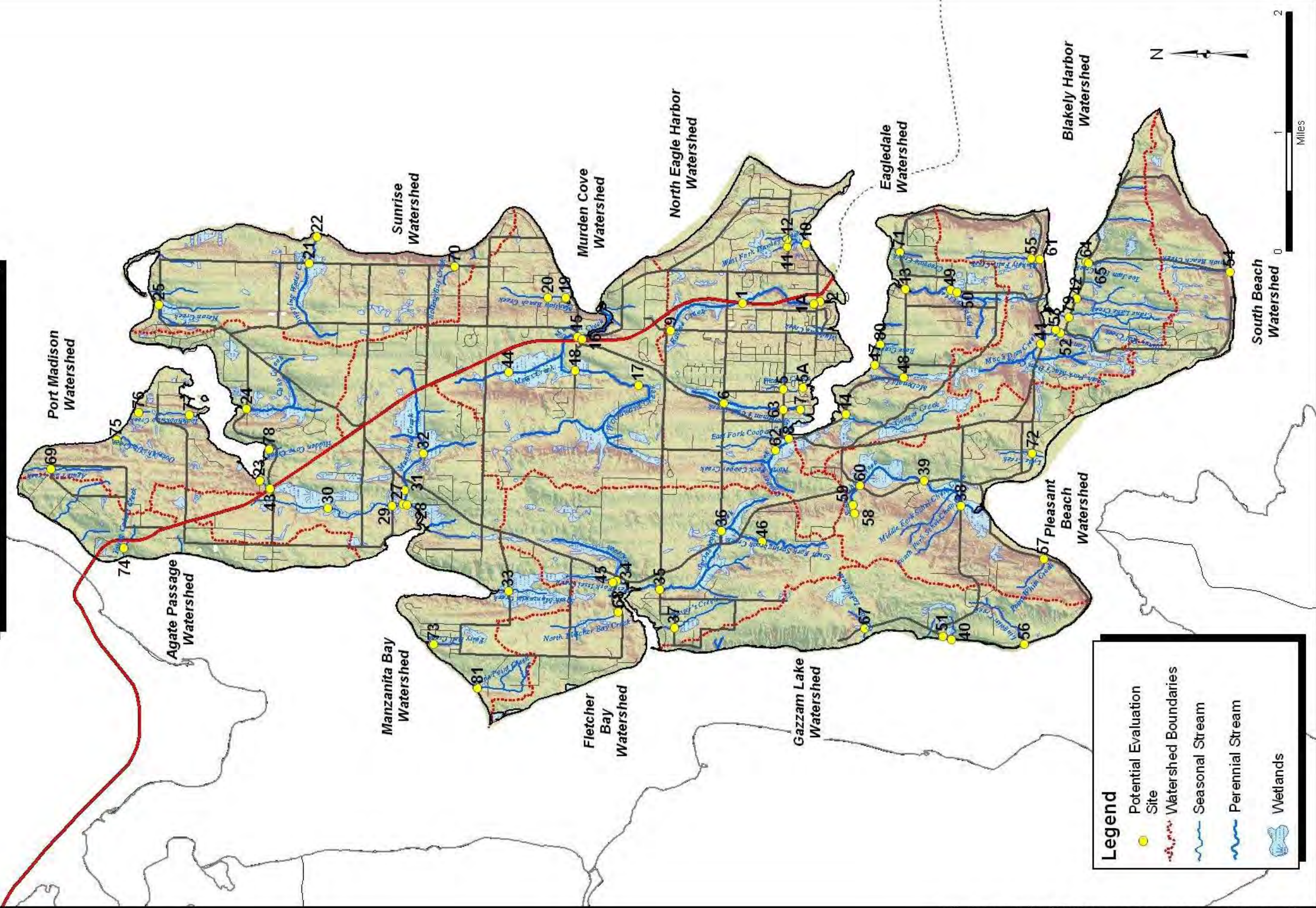
CoBI WQFMP nearshore/marine sites were proposed to address perceived data gaps in sampling coverage. Table 3-2 lists the site descriptions and provides coordinate information about the CoBI nearshore/marine sites. One of the nearshore locations, SE2 (which has been replaced by CoBI NS-2), was originally presented as a surface water site. This site was inspected by land and has a corresponding field inspection form in Appendix A. The majority of the nearshore and all of the marine sites were toured via boat and their locations and descriptions noted. A minor number of nearshore sites received a brief secondary visit and were access via land. These visits were conducted to assess access and general logistics. Several photographs are presented in Appendix B of the nearshore environments of Eagle Harbor (photo IDs 69-71) and Point Monroe Lagoon (photo ID 72).

Currently, Ecology conducts nearshore sampling activities associated with their BEACH Program, which has several locations at Eagle Harbor and at Fay Bainbridge State Park. The BEACH Program monitors for bacterial contamination. It would be advantageous to incorporate these sites in the WQFMP due to their known analytical history. The location and description of these sites is included in Table 3-3.

The ongoing CoBI Beach Seine program has 25 locations distributed around the shoreline of the island where water quality and other nearshore assessment data are collected. Many of these sites are in locations that may be beneficial for the WQFMP, which are also in close proximity to other nearshore sites. Table 3-4 provides description and location information regarding the CoBI Beach Seine sites.

The Washington Department of Health (DOH) has a network of marine monitoring stations that ring the island and which are used by the DOH to monitor water quality and bacterial contaminants. These sites have the longest running continuous data histories when compared to other marine programs conducted in the past. Co-locating CoBI WQFMP sites with the DOH marine sites and/or coordination with the DOH during their sampling events to share data would be beneficial to the program. No other secondary inspections of these sites were completed. Table 3-5 lists the 35 DOH marine sampling stations.

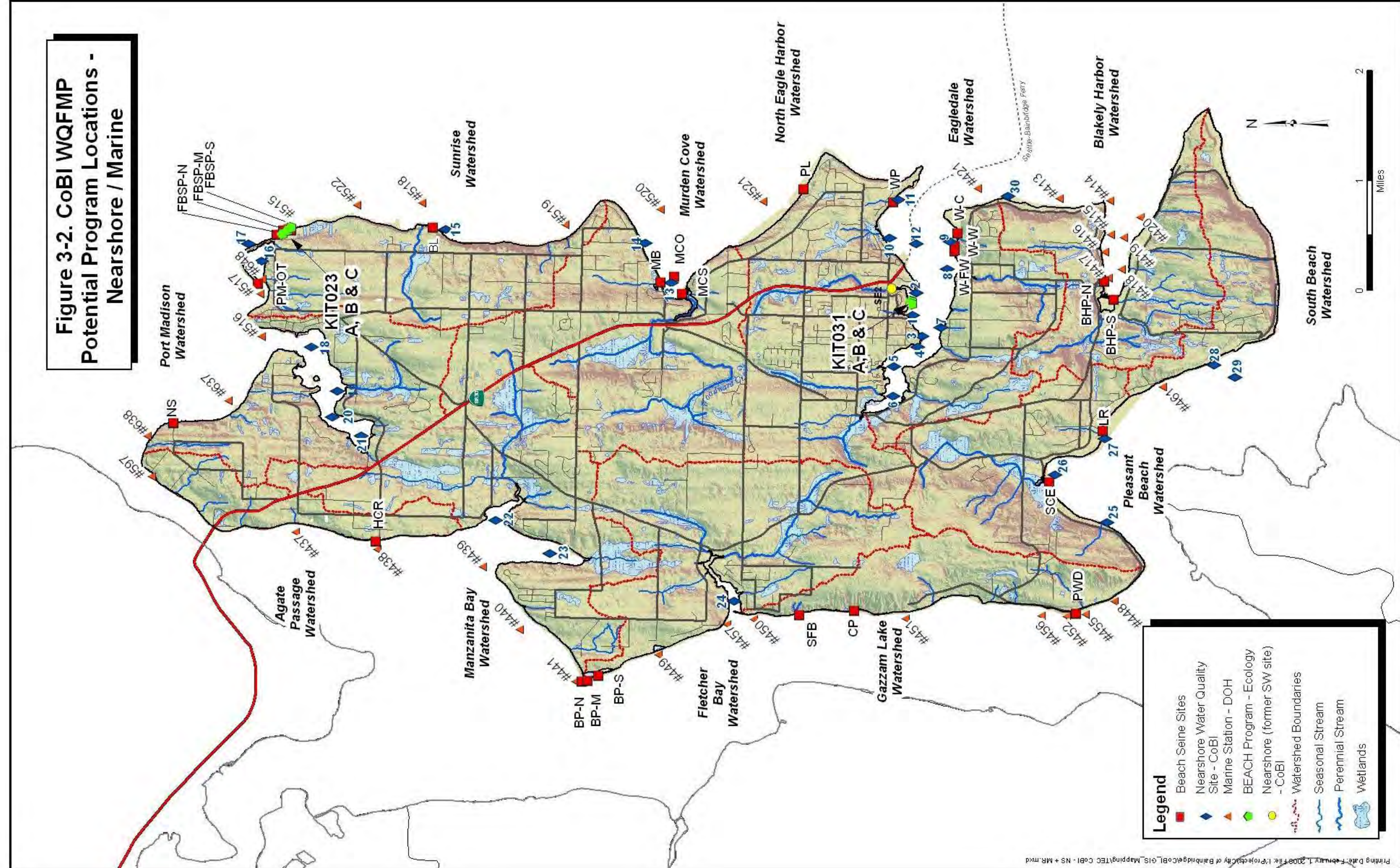
**Figure 3-1. CoBI WQFMP  
 Potential Program Locations-  
 Surface Water**



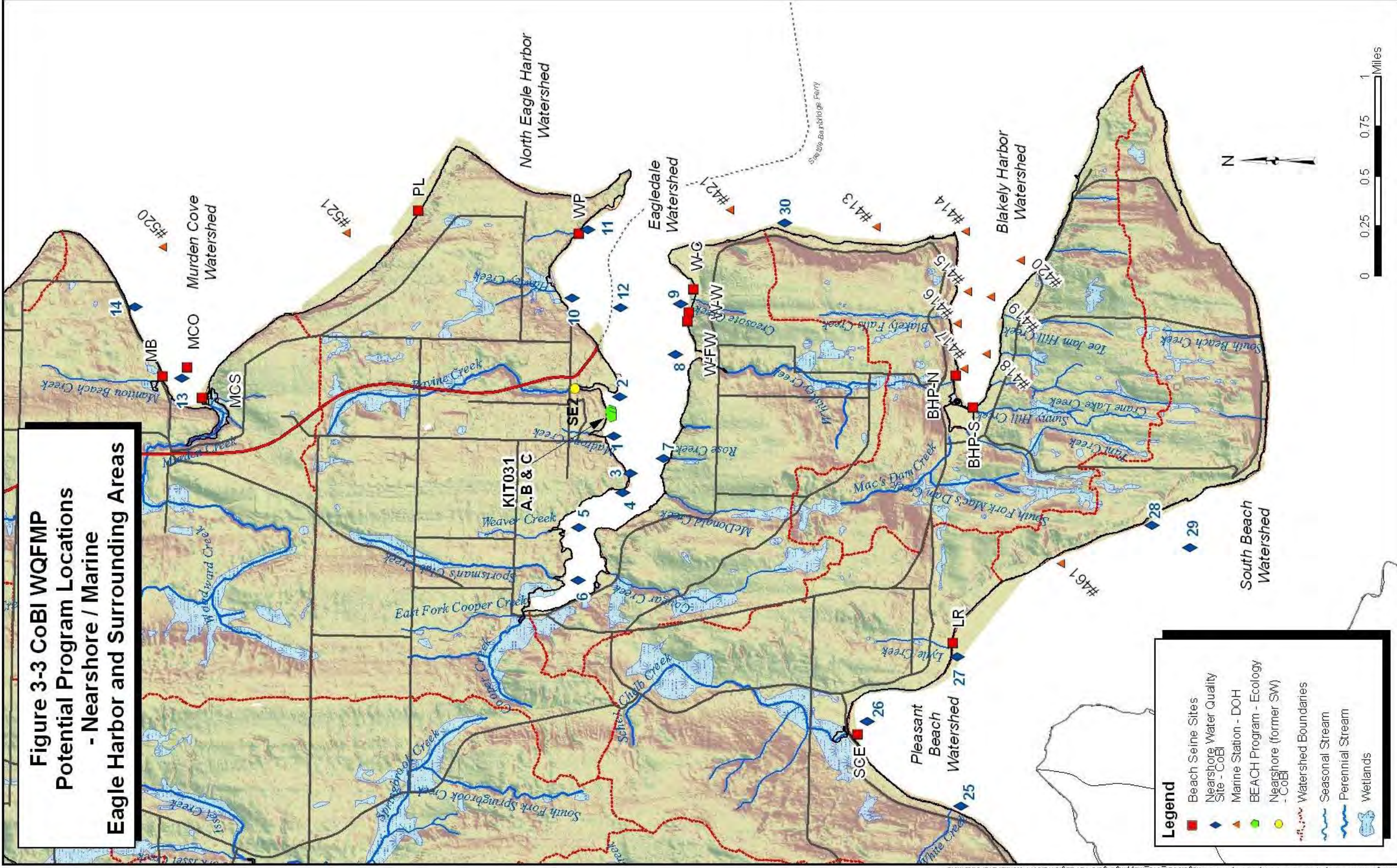
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**Figure 3-2. CoBI WQFMP  
 Potential Program Locations -  
 Nearshore / Marine**



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**Table 3-1. CoBI WQFMP Potential Program Site Locations - Surface Water**

Location ID	Site Description	Comments	Watershed Code	State Plane Coordinates <sup>1</sup>		Digital Photo ID (App B)
				Northing	Easting	
SE1	Ravine Creek at SR-305 below Safeway complex	Potentially good site for monitoring urban runoff. Stream location may be in pipe bypassing stormwater ponds. Access issue could exist (steep).	NEGH	235747.85	1225625.92	NA
SE1A	Ravine Creek at north side Winslow Ave crossing	Creek entrance to hexagonal box culvert on the north side of the Winslow Ave under-crossing.	NEGH	232586.82	1225586.74	1-4
SE2 (NS)	Winslow Ravine Creek near mouth	City owns property to east, which might provide access. Wetland around stream mouth. Site is best suited as nearshore location. Sample from footbridge.	NEGH	232311.95	1225689.49	5-7
SE3 (OFL)	Madison Avenue South Discharge	Piped system. Access at corner of Madison and Parfitt Way SE streets.	NEGH	231481.58	1224218.79	87-92
SE4 (OFL)	Lower Madison Brien-Bjune Stormwater Discharge	Completely piped stream. Manhole cover access.	NEGH	231941.18	1224455.60	93-97
SE5	Weaver Creek at Strawberry Plant	Site could be located anywhere downstream of Sheppard Rd.	NEGH	233944.25	1221824.71	NA
SE5A	Weaver Creek at Sheppard Rd.	Weaver Creek culvert outfall on south side of street, pipe carries combined creek flow and road/ditch runoff.	NEGH	233052.22	1221882.89	8-9
SE6	Sportsman's Club Creek at High School Rd.	Downstream of wetland, dammed pond, and stormwater pond.	NEGH	236569.21	1221194.88	NA
SE7	Sportsman's Club Creek at Gowen Rd.	Dammed pond near stream mouth. Access creek below weir outfall. Access to site restricted, private property and tidally influenced	NEGH	233169.62	1220928.59	10-11
SE8	Cooper Creek at Eagle Harbor Drive	Tidally influenced at this site.	NEGH	233694.44	1219638.62	NA
SE9	Ravine Creek at Madison Avenue North	Creek headwaters, carries only partial contaminant load, no highway impact.	NEGH	238919.46	1224420.29	NA
SE10	Hawley Creek below confluence	Site somewhere below confluence. Mostly wetland, may not have defined channel. Location intercepts east and west fork inputs.	NEGH	232916.31	1228241.31	12-14
SE11	Hawley Creek West Fork at Wing Point Way	Site may be difficult to access. Better access may exist from below through City property.	NEGH	233759.29	1228111.62	15-16
SE12	Hawley Creek East Fork at Wing Point Way	May be difficult access. Better access may be from below through City property.	NEGH	233759.29	1228457.46	17-18

**Table 3-1. CoBI WQFMP Potential Program Site Locations - Surface Water**

Location ID	Site Description	Comments	Watershed Code	State Plane Coordinates <sup>1</sup>		Digital Photo ID (App B)
				Northing	Easting	
SE13	Whiskey Creek at Eagle Harbor Drive	Likely best site for lower watershed. Steep ravine with only possible trail access on private property on upstream/west side. Previously monitored by Stream Team. May be accessed as a nearshore approach, sampled as either nearshore or SW location depending on station position relative to tide line. Access and tidal issues.	EGDL	228528.51	1226252.75	NA
SE14	Cougar Creek at Eagle Harbor Drive	Tidally influenced at public access point.	EGDL	231165.51	1220697.74	NA
SE15	Murden Creek Mouth	Difficult access. Site can be located along a ROW stretch south of Manitou Beach Rd. Likely tidally influenced - could be a nearshore location	MDCV	243054.85	1224147.82	NA
<b>SE16</b>	<b>Murden Creek (Grisdale Creek) crossing at SR-305</b>	<b>Creek, all three main stems combined plus highway runoff combined. Sampling stations at either east or west side of Rd. Hexagonal box culvert used for under-Rd. crossing.</b>	<b>MDCV</b>	<b>242820.63</b>	<b>1224019.52</b>	<b>19-24</b>
SE17	Woodward Creek below Sakai Intermediate School	Previously monitored by school. This point intercepts the main and middle fork branches of Woodward Creek, (2 of 3 main creek branches). Upland location.	MDCV	240351.80	1221994.63	NA
SE18	Woodward Creek at Wardwell Rd.	Location intercepts two of three main creek branches. Further downstream from SE17. Does not incorporate third branch, Megis Creek.	MDCV	243140.11	1222643.08	NA
SE19	Manitou Beach Creek near mouth	Tidally influenced wetland area. Upper reach may be good site, but may be on private property.	MDCV	243572.41	1225863.68	NA
<b>SE20</b>	<b>Manitou Beach Creek at Beach Crest Drive</b>	<b>Perennial stream. Narrow public access and non-tidal location.</b>	<b>MDCV</b>	<b>244350.54</b>	<b>1225863.68</b>	<b>25-27</b>
<b>SE21</b>	<b>Dripping Water Creek at Sunrise Drive</b>	<b>City access along road. shoulder, non-tidal.</b>	<b>SNRS</b>	<b>254898.56</b>	<b>1227398.33</b>	<b>28-30</b>
SE22	Dripping Water Creek near mouth	Driveway parallels creek on north side. Site below horse farm. Private property. Access issue.	SNRS	254552.73	1228565.53	NA
SE23	Hidden Cove Creeklet near mouth	Accessible alongside driveway (public ROW) just upstream of mouth. Tidally influenced.	PTMD	257103.40	1217772.04	NA
<b>SE24</b>	<b>Coho Creek at Hidden Cove Rd..</b>	<b>There were several sites along this creek that were previously sampled - see reports for locations. Trails provide access to upstream location. Station could be established below footbridge.</b>	<b>PTMD</b>	<b>257686.87</b>	<b>1220935.51</b>	<b>31-32</b>

**Table 3-1. CoBI WQFMP Potential Program Site Locations - Surface Water**

Location ID	Site Description	Comments	Watershed Code	State Plane Coordinates <sup>1</sup>		Digital Photo ID (App B)
				Northing	Easting	
SE25	Heron Creek at Larayette Avenue	Low flow seasonal stream.	SNRS	261555.92	1225561.07	NA
<b>SE26 (OFL)</b>	<b>Point Monroe Lagoon Creeklet at Fay Bainbridge State Park</b>	<b>Tidal influence through culvert under Point Monroe Drive, but ends just a few feet upstream.</b>	<b>SNRS</b>	<b>261629.93</b>	<b>1227770.81</b>	<b>98-101</b>
<b>SE27</b>	<b>Manzanita Creek at Peterson Hill Rd.</b>	<b>Recent culvert replacement here. Good location to capture all main flow branches. City access and non-tidal.</b>	<b>MZBY</b>	<b>250748.52</b>	<b>1216742.24</b>	<b>33-36</b>
SE28	Manzanita Creek below confluence	Private property, access issue.	MZBY	250581.39	1216687.69	NA
SE29	Manzanita Creek North Fork at Bergman Rd.	Downstream north fork location, carries only partial system load (NF only).	MZBY	251240.46	1216658.39	NA
SE30	Manzanita Creek North Fork in Manzanita Park	Site may be difficult to access - north fork branch only.	MZBY	254077.20	1216547.70	NA
SE31	Manzanita Creek at Waterfall Gardens B&B	Private property, but owner is dedicated stream steward. Could be a potential access issue at difficult crucial times. South fork only.	MZBY	250703.53	1217360.46	NA
SE32	Manzanita Creek at Lovgreen Rd.	Up-stream south fork location. Would carry only partial pollutant load. Upland location.	MZBY	249862.31	1218968.56	NA
SE33	South Manzanita Creek	Low flow seasonal stream.	MZBY	246101.34	1212894.80	NA
<b>SE34</b>	<b>Issei Creek (East Fork)</b>	<b>Sample downstream of large culvert outfall. Carries stream load emerging from Bainbridge Forest.</b>	<b>FLBY</b>	<b>241324.47</b>	<b>1213348.71</b>	<b>37-39</b>
<b>SE35</b>	<b>Springbrook Creek at Fletcher Bay Rd.</b>	<b>Previously monitored (Health District, ENVVEST, City). Sampling and flow monitoring station currently established at this site.</b>	<b>FLBY</b>	<b>239400.75</b>	<b>1212938.03</b>	<b>40-41</b>
SE36	Springbrook Creek at High School Rd.	Mid creek course, carries only partial pollutant load.	FLBY	236655.67	1215553.42	NA
SE37	Foster's Creek at Foster Rd.	Seasonal most years. Access issues.	FLBY	238752.31	1211252.08	NA
<b>SE38</b>	<b>Schel-Chelb Creek at Baker Hill Rd.</b>	<b>Previously monitored.</b>	<b>PLBH</b>	<b>226064.42</b>	<b>1216655.78</b>	<b>42-44</b>
SE39	Schel-Chelb Creek at Lynwood Center Rd.	Pond downstream of road. Mid-creek course, carries only partial load.	PLBH	227707.14	1217779.75	NA
SE40	Crystal Springs Creek at Crystal Springs Drive	Low flow seasonal stream.	GZLK	226475.10	1210754.94	NA
<b>SE41</b>	<b>Mac's Dam Creek at Country Club Rd.</b>	<b>Drains Island Wood campus. May have been previously monitored (Island Wood Schools). Sample at either side of the road. - culverted under-road crossing.</b>	<b>BLKH</b>	<b>222541.21</b>	<b>1223831.89</b>	<b>45-47</b>
<b>SE42</b>	<b>Crane Lake Creek at Country Club Rd.</b>	<b>Principle drainage out of "The Summit" subdivision.. Naming confusion, originally tagged as Sunny Hill Creek.</b>	<b>BLKH</b>	<b>220963.33</b>	<b>1225842.07</b>	<b>48</b>

**Table 3-1. CoBI WQFMP Potential Program Site Locations - Surface Water**

Location ID	Site Description	Comments	Watershed Code	State Plane Coordinates <sup>1</sup>		Digital Photo ID (App B)
				Northing	Easting	
SE43	SR-305 Stormwater Discharge at Hidden Cove Rd. Intersection	Need to search for sampling location. Ephemeral, overland drainage. Difficult access.	PTMD	256649.36	1217412.29	NA
SE44	Meigs Creek in Meigs Farm Park	May be difficult to access. Will need Steve Morse to provide directions. Upland location, carries only single branch of system.	MDCV	246098.50	1222582.12	NA
<b>SE45</b>	<b>Issei Creek West Fork</b>	<b>Forks converge short distance downstream of outfall.</b>	<b>FLBY</b>	<b>241471.29</b>	<b>1213280.90</b>	<b>49</b>
SE46	Springbrook Creek at Johnson Farm	Dammed pond on private property. Creek headlands, partial load and flow only.	FLBY	234869.93	1215075.11	NA
<b>SE47</b>	<b>McDonald Creek at Road.-end</b>	<b>Access down path on public ROW. Ditch culvert outfalls to creek prior to mouth. Sample site on private property. Stream location may be tidally influenced.</b>	<b>EGDL</b>	<b>229886.75</b>	<b>1222895.19</b>	<b>50-53</b>
SE48	McDonald Cree at Eagle Harbor Drive	Agricultural activities upstream of this site. Access issue.	EGDL	228600.33	1222353.54	NA
SE49	Whiskey Creek at Taylor Avenue	May be good site for upper watershed. Alternate site just around corner. Private property - no coordinated access.	EGDL	226535.29	1226212.79	NA
SE50	Whiskey Creek at Taylor Avenue	May be good site for upper watershed. Alternate site just around corner. Private property - no coordinated access.	EGDL	226264.47	1226111.23	NA
SE51	Pipe discharge at Crystal Springs Drive near Baker Hill Rd.	Perennial discharge, likely spring. Site access issues.	GZLK	226883.46	1210888.21	NA
<b>SE52</b>	<b>Tani Creek at Country Club Rd. in Blakely Harbor Park</b>	<b>Secondary drainage from "The Summit" subdivision, culverted beneath Country Club Rd.</b>	<b>BLKH</b>	<b>221691.68</b>	<b>1224306.73</b>	<b>54-56</b>
SE53	Tani Creek in Blakely Harbor Park	Could be alternate location to road. crossing upstream. Tidally influenced.	BLKH	221892.23	1224462.71	NA
SE54	South Beach Creek at corner of Toe Jam Hill Rd. and South Beach Drive	Previously Monitored (Health District). Low flow seasonal stream.	SHBH	214182.28	1227025.27	NA
<b>SE55</b>	<b>Blakely Falls Creek at Halls Hill Rd.</b>	<b>Possible alternative location would be down stream on Seaborn Drive. City access and non-tidal at this location.</b>	<b>BLKH</b>	<b>222949.64</b>	<b>1227586.28</b>	<b>57-59</b>
SE56	Lindquist Creek at Crystal Springs Drive near Pt. White Dock	Seasonal flows and tidally influenced at public access point.	GZLK	223262.14	1210523.78	NA
SE57	Point White Creek at Pt White Drive	Small wetland upstream of road., seasonal and tidally influenced at public access point.	PLBH	222415.36	1214311.46	NA
<b>SE58 (BMP)</b>	<b>Vincent Rd. Landfill Discharge</b>	<b>Site at base of slide. Possible alternate site located down stream. BMP sampling location.</b>	<b>PLBH</b>	<b>230778.49</b>	<b>1216315.44</b>	<b>73-80</b>

**Table 3-1. CoBI WQFMP Potential Program Site Locations - Surface Water**

Location ID	Site Description	Comments	Watershed Code	State Plane Coordinates <sup>1</sup>		Digital Photo ID (App B)
				Northing	Easting	
59	Vincent Rd. Landfill Discharge	Site on private property. Alternate site downstream.	PLBH	230845.47	1216690.44	NA
SE60	Schel-Chelb Creek at Lynwood Center Rd. near Fletcher Bay Rd. intersection	This site could be used as an alternate for the Vincent Rd. Landfill discharge. Upland location.	PLBH	230532.97	1217544.61	NA
SE61	Blakely Falls Creek at Seaborn Rd.	Alternate location to upstream site at Halls Hill Rd. Access unknown and tidally influenced.	BLKH	222574.64	1227565.44	NA
<b>SE62</b>	<b>Cooper Creek near Head-of-the-Bay well field</b>	<b>Site could be at well field or somewhere upstream accessible by trail. Does not capture north fork.</b>	<b>NEGH</b>	<b>234282.97</b>	<b>1219107.11</b>	<b>60-63</b>
<b>SE63</b>	<b>Sportsman's Club Creek at Wyatt Way</b>	<b>Alternate location to Gowen Rd. site. City access, non-tidal.</b>	<b>NEGH</b>	<b>233938.51</b>	<b>1220904.99</b>	<b>64-65</b>
SE64	Toe Jam Hill Creek at Country Club Rd.	Alternate site located just upstream at Toe Jam Hill Rd. Low flow seasonal stream.	BLKH	220527.42	1227447.29	NA
SE65	Toe Jam Hill Creek at Toe Jam Hill Rd.	Alternate site located just downstream at County Club Rd. Likely tidally influenced.	BLKH	220423.25	1227384.79	NA
<b>SE66 (OFL)</b>	<b>Eagle Outfall at Ferncliff Rd.</b>	<b>Piping system carrying surface and road runoff.</b>	<b>NEGH</b>	<b>232483.23</b>	<b>1226980.02</b>	<b>102-104</b>
SE67	Gazzam Lake Creek	Low flow seasonal stream.	GZLK	230331.49	1211220.00	NA
SE68	North Fletcher Bay Creek	Low flow seasonal stream.	FLBY	241225.88	1211956.63	NA
SE69	Agate Pass Crk	Northern tip of the Island, low flow seasonal stream.	PTMD	266339.17	1218276.15	NA
SE70	Rolling Bay Creek	South of Dripping Water Creek and north of Skiff Point. Low flow seasonal stream.	SNRS	248480.34	1227246.88	NA
SE71	Creosote Creek (South Eagle Harbor Creek)	Easternmost creek along the south shore of Eagle Harbor (west of Wyckoff site), access unknown (likely private) and tidal at sample point.	EGDL	228782.92	1227886.98	NA
SE72	Lytle Creek	South central shoreline of Pleasant Beach watershed. Tidal at sample location.	PLBH	222933.85	1218991.39	NA
SE73	Fairy Dell Creek	Small creek flowing north into Port Orchard Bay discharging at Arrow Point. Low flow seasonal stream, tidally influenced at mouth.	MZBY	249406.36	1210522.14	NA
SE74	Young Cedars Creek	Central Agate Passage watershed, just to the south of SR-305 (road crosses creek). Empties into Port Orchard Bay. Low seasonal flow, private property and likely tidal at sample point.	AGPS	263130.95	1214806.23	NA
SE75	Oots-Aht-Ub Creek	Next creek south-southeast of Agate Pass Creek, wetlands near nature preserve. Low seasonal flow, private property and likely tidal at sample point.	PTMD	263441.11	1219555.56	NA

**Table 3-1. CoBI WQFMP Potential Program Site Locations - Surface Water**

Location ID	Site Description	Comments	Watershed Code	State Plane Coordinates <sup>1</sup>		Digital Photo ID (App B)
				Northing	Easting	
SE76	Nature Preserve Creek (Bloedel Creek)	Creek flowing from West Port Madison Nature Preserve, north of Gordon Dr. NE. Access issue and low seasonal flow.	PTMD	262452.48	1220776.82	NA
SE77	Tochhookwap Creek	Small creek flowing south into Port Madison Bay, south of NE Country Park Rd. Access issue and low seasonal flow.	PTMD	260203.81	1220679.89	NA
SE78	Hidden Cove Creek	Small creek that flows north into Hidden Cove (Pt Madison Bay back end) north of Hidden Cove Rd. near Running Springs Place NE. Difficult access and low seasonal flow.	PTMD	256685.43	1219167.86	NA
SE79	Sunny Hill Creek	Seasonal stream between Tani Creek and Crane Lake Crk. Public access at Country Club Rd. Low flows.	BLKH	221295.77	1224996.86	NA
<b>SE80</b>	<b>Rose Creek at bottom of Rose Loop</b>	<b>Creek crosses beneath Rose Loop via culvert, sample at downstream side. Difficult access and logistics.</b>	<b>EGDL</b>	<b>229636.38</b>	<b>1223794.26</b>	<b>66-68</b>
SE81	Battle Point Creek	North of Olallie Lane NE, east of NE of Battle Point. Low flow seasonal stream, difficult access.	MZBY	247458.16	1208583.64	NA

Notes:

- 1. Coordinates are WA State Plane - north 4601 - (NAD 83)
- BOLD TEXT = Those sites where detailed inspections were completed.
- BMP = stormwater best management practice structure site
- NS = nearshore site
- ROW = right of way

### 3.3    **OUTFALL AND STORMWATER BMP STRUCTURE SITES**

There are 178 outfall locations having greater than 4-inch diameter piping identified around the island's shoreline areas (CoBI 2004). A review of available data, access considerations, and site visits during the boat tour and from land inspections yielded five locations that were considered for program use. Four outfall locations (ID#s 3, 4, 26 and 66) were originally on the proposed surface water sites list. All of these sites were visited during both boat and land inspections. Field inspection forms and photographs for these sites are provided in Appendices A and B, respectively. Site ID# 50 is the fifth outfall location considered for program use. Its outfall is located in the inter-tidal zone and access and tides prevented a second inspection. Table 3-6 lists the five proposed outfall locations and provides summary information. Figure 3-4 identifies the outfalls that are proposed for program use and shows the other outfalls that exist along the shoreline. Appendix C, Table C-1, provides summary information for the remaining 173 reserve outfall sites that were not proposed for use as program sites.

Fifty-four publicly-owned stormwater BMP structures (i.e., stormwater retention ponds, oil-water separators, conveyance ditches, stormwater diversion and secondary treatment structures, etc.) have been identified by the CoBI's Public Works – Engineering Department. Two of these BMP structures, both CoBI owned retention pond/decant features, were considered for program use and were subsequently inspected. BMP structures were toured by the TEC Team along with CoBI engineering staff. Access and other site characteristics were assessed during this tour. Table 3-7 provides details regarding the proposed BMP structures. Figure 3-4 shows the location of these two BMPs. Appendix C, Table C-2, provides summary information for the remaining 52 reserve publicly-owned sites that were not selected for program use.

**Table 3-2. CoBI WQFMP Potential Program Site Locations – Nearshore/Marine**

CoBI WQFMP Nearshore / Marine Sites			
Nearshore Sample Site Description	Site ID#	SPCS Northing	SPCS Easting
Winslow City Dock and Public Boat Ramp (Eagle Harbor)	CoBI NS-1	231289.211	1224418.343
WSDOT Maintenance Yard (Eagle Harbor)	CoBI NS-2	231135.957	1225474.088
Winslow Marina (Eagle Harbor)	CoBI NS-3	230863.507	1223430.710
Eagle Harbor Marina (Eagle Harbor)	CoBI NS-4	231050.816	1222919.865
Eagle Harbor Live-Aboard Area (Eagle Harbor)	CoBI NS-5	232208.731	1222000.345
Inner Eagle Harbor	CoBI NS-6	232225.759	1220604.037
Eagledale Marina (Eagle Harbor)	CoBI NS-7	229961.015	1223839.386
Hall Cove (Eagle Harbor)	CoBI NS-8	229654.508	1226597.946
Wykoff Point (Eagle Harbor)	CoBI NS-9	229518.283	1227926.142
Hawley Wetland Beach (Eagle Harbor)	CoBI NS-10	232396.040	1228079.396
Wing Point (Eagle Harbor)	CoBI NS-11	231987.365	1229901.408
Outer Eagle Harbor	CoBI NS-12	231118.929	1227823.973
Murden Cove	CoBI NS-13	242740.643	1225967.905
Manitou Beach Nearshore	CoBI NS-14	243975.184	1227858.030
Brackenwood Nearshore (Rolling Bay)	CoBI NS-15	253417.295	1228488.071
Point Monroe Lagoon	CoBI NS-16	262144.223	1226972.566
Point Monroe Nearshore	CoBI NS-17	262757.236	1227823.973
Port Madison Bay	CoBI NS-18	259777.310	1222902.837
Seattle Yacht Club Marina (Port Madison)	CoBI NS-19	258551.283	1220825.403
Port Madison Marina (Port Madison)	CoBI NS-20	258772.649	1219599.376
Hidden Cove (Port Madison)	CoBI NS-21	257410.396	1218713.912
Little Manzanita (Mosquito) Bay	CoBI NS-22	251067.410	1214712.296
Big Manzanita Bay	CoBI NS-23	248479.130	1213128.678
Fletcher Bay	CoBI NS-24	239769.230	1210863.933
Point White Nearshore (Public Pier)	CoBI NS-25	222085.494	1214610.127
Lynwood Center Nearshore	CoBI NS-26	224571.604	1216857.843
Pleasant Beach Nearshore	CoBI NS-27	222187.663	1218577.686
Fort Ward Nearshore	CoBI NS-28	217019.619	1222051.430
Fort Ward Net-Pens	CoBI NS-29	216031.986	1221472.472
Rockaway Beach Nearshore (CoBI Park)	CoBI NS-30	226768.236	1230071.689

Notes: Coordinates are WA State Plane - north 4601 - (NAD 83)

**Table 3-3. CoBI WQFMP Potential Program Site Locations - Ecology BEACH Program**

Ecology BEACH Program Sites				
User Location ID	Location Name	User Study ID	Latitude	Longitude
KIT023A	Fay Bainbridge State Park	BEACH	47.7037	122.5073
KIT023B	Fay Bainbridge State Park	BEACH	47.7031	122.5066
KIT023C	Fay Bainbridge State Park	BEACH	47.7026	122.5062
KIT031A	Eagle Harbor Waterfront Park	BEACH	47.6219	122.5175
KIT031B	Eagle Harbor Waterfront Park	BEACH	47.6218	122.5177
KIT031C	Eagle Harbor Waterfront Park	BEACH	47.6218	122.5181

**Table 3-4. CoBI WQFMP Potential Program Site Locations - Beach Seine**

<b>CoBI Beach Seine Sites</b>			
<b>Site ID</b>	<b>Site Name</b>	<b>SPCS Northing</b>	<b>SPCS Easting</b>
NS	North Street NE	266310.724	1219326.924
FBSP-N	Fay Bainbridge State Park - North	261426.081	1228258.799
FBSP-M	Fay Bainbridge State Park - Middle	261108.681	1228448.291
FBSP-S	Fay Bainbridge State Park - South	260744.823	1228460.828
BL	Brackenwood Lane	254015.510	1228604.831
MB	Manitou Beach	243244.566	1226010.837
MCS	Murden Cove Spit	242209.332	1225439.261
PL	Pleasant Lane	236464.683	1230414.617
WP	Wing Point Road	232220.671	1229809.776
BHP-N	Blakely Harbor Park-N	222229.615	1226046.211
LR	Lytle Road	222305.984	1218941.873
SCE	Schel-Chelb Estuary	224827.799	1216521.780
PWD	Point White Dock	223573.868	1210289.136
SFB	South of Fletcher Bay	236667.711	1210230.284
BP-N	Battle Point - North	246965.287	1207078.405
BP-S	Battle Point - South	246175.977	1207345.465
BP-M	Battle Point - Middle	246710.097	1207084.340
HCR	Hidden Cove Road	256722.028	1213712.343
MCO	Murden Cove Open Water	242595.656	1226262.608
W-W	Wycoff - West	229302.712	1227722.377
W-C	Wycoff - Central	229181.069	1228330.593
CP	Close Property	234067.983	1210408.050
W-FW	Wyckoff - Far West	229333.769	1227481.580
PM-OT	Point Monroe - Outside Tip	262318.385	1225944.172
BHP-S	Blakely Harbor Park - South	221772.113	1225184.022

Notes: Coordinate System is SPCS NAD 1983 WA North 4601

**Table 3-5. CoBI WQFMP Potential Program Site Locations - Marine**

<b>WA DOH Marine Stations</b>		
<b>Agate Passage</b>		
<b>Station #</b>	<b>Latitude</b>	<b>Longitude</b>
597	47.71997	-122.55452
<b>Port Blakely</b>		
<b>Station #</b>	<b>Latitude</b>	<b>Longitude</b>
413	47.60285	-122.49721
414	47.59635	-122.49743
415	47.59611	-122.50393
416	47.59679	-122.50733
417	47.59626	-122.51224
418	47.59465	-122.51058
419	47.5944	-122.50444
420	47.5923	-122.50046
421	47.61348	-122.49568
<b>Port Madison</b>		
<b>Station #</b>	<b>Latitude</b>	<b>Longitude</b>
515	47.70352	-122.50587
516	47.70606	-122.52704
517	47.7064	-122.51895
518	47.6856	-122.50074
519	47.66695	-122.50435
520	47.65465	-122.50096
521	47.64132	-122.49908
522	47.6941	-122.50139
638	47.72059	-122.54678
637	47.7102	-122.53964
648	47.7061	-122.51608
<b>Port Orchard Passage</b>		
<b>Station #</b>	<b>Latitude</b>	<b>Longitude</b>
437	47.70111	-122.56465
438	47.69046	-122.56754
439	47.67674	-122.57043
440	47.67176	-122.58243
441	47.66434	-122.59211
448	47.59456	-122.5744
449	47.6536	-122.58662
450	47.64134	-122.57939
451	47.62166	-122.57867
452	47.60072	-122.57758
455	47.59832	-122.577
456	47.60399	-122.57751
457	47.64486	-122.58055
461	47.5889	-122.53293

Coordinate Source – WA DOH

**Table 3-6. CoBI WQFMP Potential Site Locations - Outfalls**

CoBI Potential Outfall Sites							
CoBI Outfall ID	Previous SW Location ID	Site Description	Comments	Watershed Code	SPCS Northing	SPCS Easting	Digital Photo ID (App B)
OFL 50	NA	Outfall at Lynwood Center	Lynwood Center outfall, previously considered as an ENVVEST location	PLBH	225058.74	1216539.97	86
OFL 145	SE3	Madison Avenue South Discharge	Piped system. Access at corner of Madison and Parfitt Way SE streets	NEGH	231481.58	1224218.79	87-92
OFL 166	SE26	Point Monroe Lagoon Creeklet at Fay Bainbridge State Park	Tidal influence through culvert under Point Monroe Drive, but ends just a few feet upstream.	SNRS	261629.93	1227770.81	98-101
OFL 169	SE4	Lower Madison Brien Bjune Stormwater Discharge	Completely piped historic stream with additional stormwater inputs. Manhole cover access.	NEGH	231941.18	1224455.60	93-97
OFL 178	SE66	Eagle Outfall at Ferncliff Road	Piping system carrying surface and road runoff	NEGH	232483.23	1226980.02	102-104

Notes: \*\*\* Outfalls 3, 4, 26 and 66 (listed above) were originally on the CoBI Potential Sites List as Surface Water locations. Coordinates are WA SPCS North 4601 (NAD 1983)

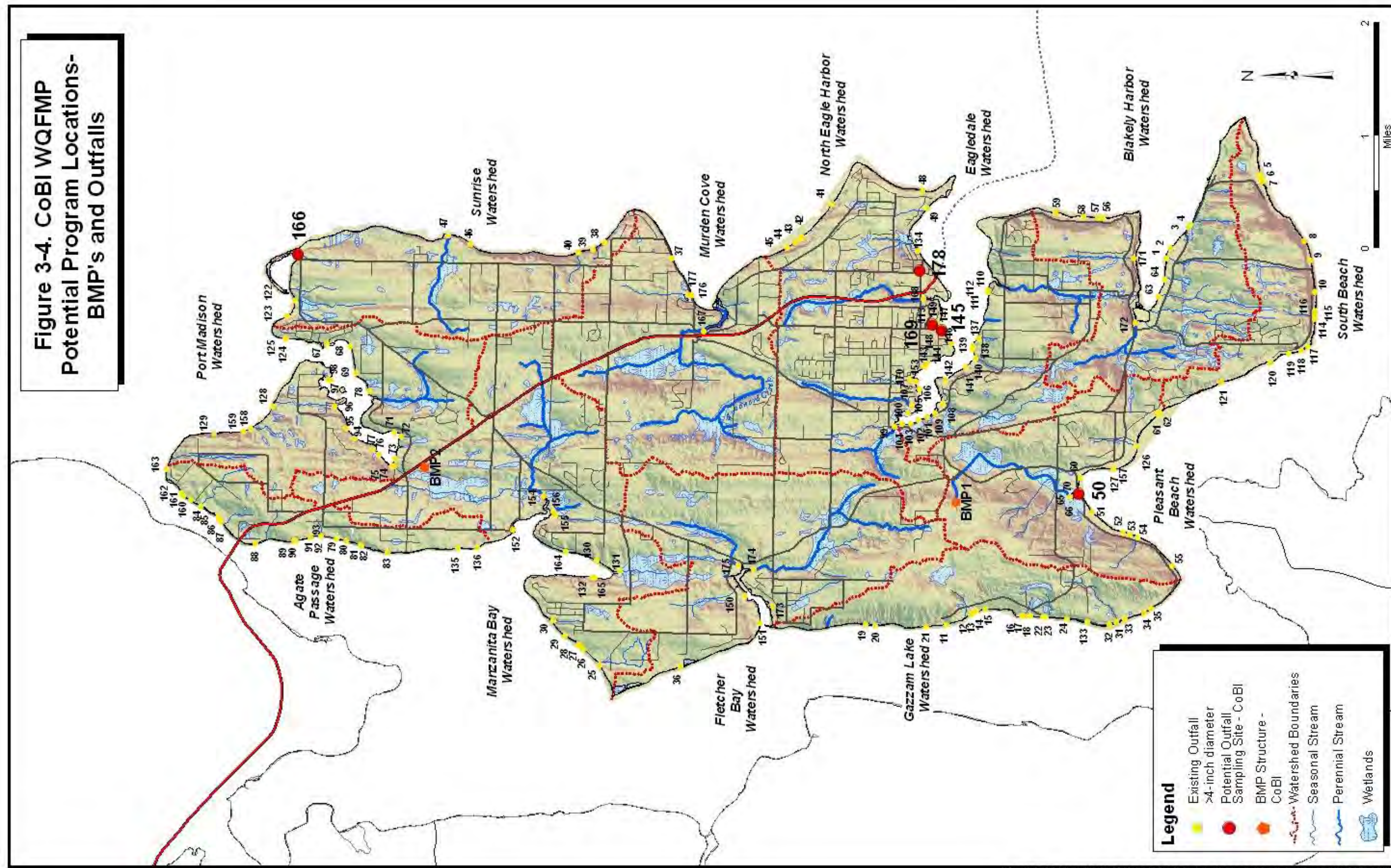
**Table 3-7. CoBI WQFMP Potential Program Site Locations - Stormwater BMPs**

CoBI Stormwater BMP Sites				
BMP ID	BMP Description	BMP Coordinates		Digital Photo ID (App B)
		SPCS Northing	SPCS Easting	
BMP1	Vincent Rd Decant and Recycle Center - 7215 NE Vincent Rd. (former SE#58)	230855.93	1216172.77	73-80
BMP2	CoBI Operation and Maintenance Yard Facility - near intersection of Hidden Cove Rd. and SR305	255736.94	1217787.98	81-85

Notes: Coordinates are WA SPCS North 4601 (NAD 1983)

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**Figure 3-4. CoBI WQFMP  
 Potential Program Locations-  
 BMP's and Outfalls**



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