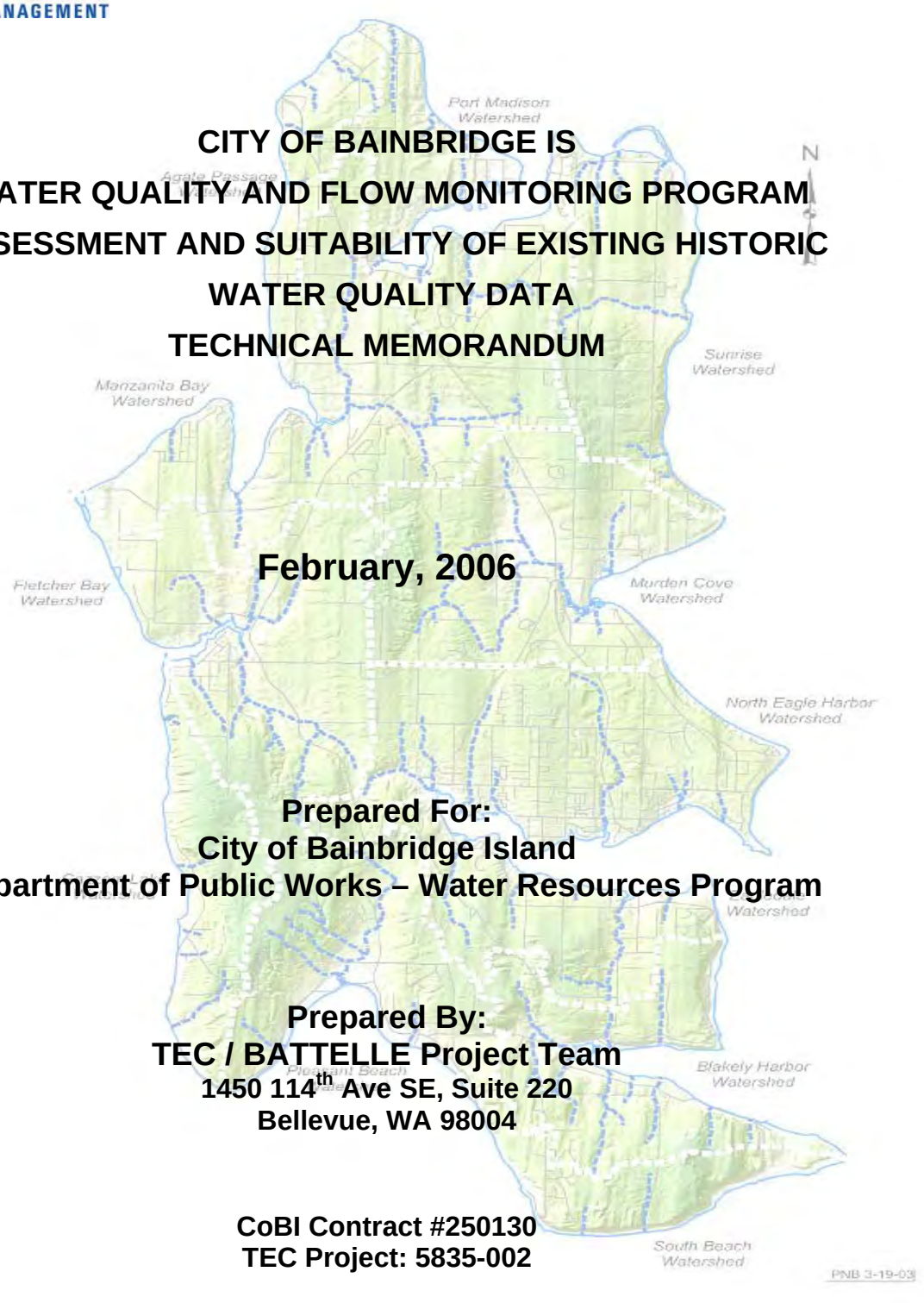
CITY OF BAINBRIDGE IS
WATER QUALITY AND FLOW MONITORING PROGRAM
ASSESSMENT AND SUITABILITY OF EXISTING HISTORIC WATER QUALITY DATA
TECHNICAL MEMORANDUM



February, 2006

Prepared For:
City of Bainbridge Island
Department of Public Works – Water Resources Program

Prepared By:
TEC / BATTELLE Project Team
1450 114th Ave SE, Suite 220
Bellevue, WA 98004

CoBI Contract #250130
TEC Project: 5835-002

FINAL REPORT

Assessment and Suitability of Existing Historic Water Quality Data
Technical Memorandum
City of Bainbridge Is. Water Quality and Flow Monitoring Program

February 2006

Prepared For:
City of Bainbridge Is Department of Public Works
Water Resources Program
Water Quality and Flow Monitoring Program

Prepared By:
TEC Inc. Project Team
1450 114th Ave SE, Suite #220
Bellevue, WA, 98004

[This Page Intentionally Left Blank]

PROJECT ACKNOWLEDGEMENT

This *Assessment and Suitability of Existing Historic Water Quality Data Technical Memorandum* was crafted as per requirements stipulated in the scope of work for the City of Bainbridge Island (CoBI)'s Water Quality and Flow Monitoring Program (WQFMP). CoBI's Department of Public works – Water Resources Program is the lead division responsible for the management and direction of the WQFMP. The CoBI Department of Planning and Community Development has also provided valuable oversight and comments regarding this document. The CoBI project number for the WQFMP is 250130

The CoBI's WQFMP is a cooperative effort between the City and the WA State Department of Ecology (Ecology). The WQFMP has been funded in part by an Ecology Centennial Clean Water Fund Grant (#G0500151).

Project tasks have been executed by the TEC Project Team. The TEC Project Team is a partnering arrangement between TEC Inc. and Battelle.

This final document version incorporates comments received from the CoBI based on a review of the draft iteration. A complete set of *Response to Comments* has been provided in the following section. Comments have been incorporated as appropriate in this final document version.

The project Team management is comprised of the following individuals:

Jalyn Cummings – CoBI Project Manager

Peter Namtvedt Best – CoBI QA/QC Manager

Sarah Davenport-Smith – Ecology Project Manager

Dave Metallo – TEC Inc. Project Team Manager

Dr. Chris May – Battelle, Senior Project Scientist

Jill Brandenberger – Battelle, Project Chemist

Response to City Comments
Regarding the Draft Historical Data Synthesis Technical Memorandum
City of Bainbridge Island
Water Quality and Flow Monitoring Program
TEC Project #5835

The comments listed below are in regard to the Draft version (now being submitted in its Final version) of the Historical Data Synthesis Technical Memorandum. The draft was dated as January, 2006.

This document was reviewed by Ms Jalyn Cummings (Manager, Water Resources Program) and Mr. Peter Namtvedt Best (Senior Planner, Planning and Community Development). Since the reviewers' comments were similar, a combined response to their comments are provided below. Responses are provided by the TEC Project Team Manager, Mr. Dave Metallo. These responses have been incorporated into the final iteration of the Historical Data Synthesis Technical Memorandum.

Comments received from CoBI:

Provided by: Ms Cummings and Mr. Namtvedt Best, 07 February, 2006.

Comment No.	Comment
1	Please include a table of contents
Response: *Comment accepted, a table of contents will be added.*	
2	The City would like to review the electronic files.
Response: *The City currently has all files that comprise the data sets from which summaries, graphs and comments were made in the Technical Memorandum (TM) in their possession. These data are retained and included the Historic Data Library. Upon completion of the scheduled project database, the City will have full access to the same data in a query-able fashion.*	
3	The document did not include WQ information (water temperature, dissolved oxygen, secchi disc depth, salinity) from the BI Beach Seining Database, which was collected over several years, and provided in database format to TEC with the GIS data.
Response: *TEC has now extracted the Beach Seine Database information, as listed above, and has included a summary of these data in the TM.*	
4	The document needs a list of acronyms (FC, TS, TSS, DOH, DOE, etc.) and should avoid shortened terms like "physio-chem" and "fecal col".
Response: *An acronyms page was added to the final version of the TM. Shortened terms, where used, are properly identified with their first usage in the document.*	
5	"Ecology" and "DOE" are used in different places to refer to the WA Dept of Ecology. Pick one and use it consistently. The City would prefer "Ecology" since DOE can be confused with the US Dept of Energy
Response: *The term "Ecology" was used throughout the final version of the TM.*	

Comments received from CoBI:

Provided by: Ms Cummings and Mr. Namtvedt Best, 07 February, 2006.

Comment No.	Comment
6	The data does not appear to include the B-IBI samples that Chris May was involved with. Maybe the City missed it. Is it Index item #66?
Response: *The B-IBI data has been included and discussed in the final version of the TM.*	
7	Page 4, bullet 2: spelling corrections "Fay Bainbridge State Park" (no "e" on Fay), Crystal Springs Public Fishing Pier is "Point White Dock"
Response: *Spelling corrections made. Reference to Point White Dock removed, as was Fort Ward State Park. A review of the data from the WADOH BEACH Program showed that samples were collected from Fay Bainbridge State Park and Eagle Harbor only, for 2004 and 2005. This was confirmed with a check of the EIM database and with a conversation with the BEACH Program Manager, Ms Lynn Schneider. Samples collected in this program were analyzed solely for Enterococci bacteria.*	
8	Page 5, bullet 4: say "when BI became an all-island city", instead of "when BI incorporated as a city" as the City of Winslow annexed the island and then changed its name to City of Bainbridge Island (CoBI).
Response: *Comment accepted, change was made accordingly.*	
9	Page 5-6, bullet 5: If I recall correctly, the Hidden Cove WQ study identified zinc in excess of WQ Standards. Is this true, is it something to note ?
Response: *Upon further review of the Hidden Cove data there were no exceedances for zinc in either the water or sediment samples collected and reported as compared with WAC 173-201A-240 for Toxic Substances for water or with WAC 173-204-320 for sediments. The Hidden Cove documentation reported an increase in zinc concentrations at a single monitoring station, 1A (Main Creek Outfall). The 2000 Hidden Cove Sampling report stated "Zinc concentrations increased in the sediment samples at the downstream creek station, however, all other development-related metals showed no change beyond that reasonably expected of natural variability. Therefore, the zinc values are not interpreted as released to (from) Hidden Cove Estates". Subsequent sampling efforts in 2001 showed no exceedances to the WAC-standards or even elevated zinc values as compared to the 2000 results. Therefore zinc concentrations do not appear to be an issue that would require any immediate or further attention at this time.*	
10	Page 6, bullet 7: Did you get additional reports from EPA, WSDOT and Herrera to make a complete record of the Schel-Chelb and the EH Ferry Maintenance facility ?
Response: *Sampling reports for years 1998, 2001 and 2003 regarding the Schel-Chelb estuary are included in the CoBI WQFMP Library. There may be other WSDOT or EPA documents pertaining to Schel-Chelb estuary sampling events, however, only those listed above were obtained from the various agencies contacted during the data acquisition phase of the project. TEC is not aware of any other reports for this area. These reports appear to be the most current data involving this area. All of these reports were contracted by WSDOT.* *TEC has assembled the most relevant documents completed by Herrera Consultants (as contractors for WSDOT on the Ferry Maintenance Facility) after a review of the available report set, based on first order priorities of obtaining surface, nearshore and marine surface water sampling. The Ferry Maintenance Facility reports include data on surface water sampling from Ravine Creek and sediments from the nearshore environment adjacent to the creek mouth. A complete record of the pertinent surface water and sediment data from this project has been assembled and is summarized in the TM and included in the CoBI data base. Sediment data from Eagle Harbor sampling projects, including various EPA projects and the WSDOT Ferry Maintenance Facility project, was obtained from the Ecology SEDQUAL database, is summarized in this TM and included in the CoBI database .*	

Comments received from CoBI:

Provided by: Ms Cummings and Mr. Namtvedt Best, 07 February, 2006.

Comment No.	Comment
11	Rename "Springbrook Creek", which was a misnomer originally, to "Fletcher Creek"
Response: *In subsequent discussions with the City it has been decided to refer to any creek on Bainbridge Island as per its name as listed in "Streams of Bainbridge Island" (G. Elfendahl, 1996). In this document the name Springbrook is used – thus all references to this creek will remain as such.*	
12	Page A-2: What is "XL" data? Is this Microsoft Excel?
Response: *"XL" does refer to MS excel. The excel data set are those data that were extracted from the various assembled documents that comprise the CoBI Library and were placed into spreadsheet format. After data was formatted in MS excel spreadsheets, various sort and filtering functions could be completed allowing graph preparation, statistical analysis and ultimately prepared the data for entry in the CoBI database. In the final version of the TM Appendix A, as presented in the draft TM, has been removed. Summary of the extracted data sets has been included in the main body of the report.*	
13	Page B-2: I think that "Kitsap County Natural Resources Conservation District" is really the "Kitsap County Conservation District". If so, please change the name to avoid confusion.
Response: *The document in question is titled as such. TEC recommends that the title be kept as it originally appears on its cover page. To help avoid any potential confusion, this document is grouped together with KC Conservation District documents under a common folder in the CoBI Document Library.*	
14	Index #25: this covered more than just Manzanita Bay.
Response: *Agreed; this data set covered various creeks (water quality reading data) from a variety of watersheds around Bainbridge Is. It has been not been fully codified in the Library Index (ID'ed only as a Manzanita Bay document). However, all data from this document has been extracted and included in the MS excel spreadsheet data titled as "CoBI Data / Creeks".*	
15	Index #27: wasn't this island-wide and not just Fletcher Bay?
Response: *This document was assigned a CoBI Site Area Code of Fletcher Bay. The City reviewer is correct in that this document also contains information pertaining to other areas of BI. Document #27 is the 2000 Kato and Warren Level II Groundwater Assessment. No data of interest to the CoBI WQFMP was extracted from this report.*	
16	Index #29: didn't this cover more than just Fletcher Bay?
Response: *This document did cover more than Fletcher Bay and is in fact duplicate data to document #26. Data from these documents has been included in the MS excel spreadsheets for entry into the CoBI database and summarized in the TM.*	
17	Index #30: This covered all watersheds and nearshore areas as far as LULC goes. Shouldn't LULC be a monitoring variable?
Response: *Land Use / Land Cover data is considered to be a monitoring variable. LULC is included in the decision matrix of the WQFM Program monitoring Plan. LULC data has now been included and summarized in this TM.*	
18	Index 31#: This covered all nearshore areas.

Comments received from CoBI:

Provided by: Ms Cummings and Mr. Namtvedt Best, 07 February, 2006.

Comment No.	Comment
Response: *This document covers all nearshore areas of the island. There was no surface water data to be extracted from this report. However, considerations to nearshore structures are made in sampling site selection. These considerations are presented in the upcoming Site Evaluation Report.*	
19	Index #68-77, 114: Isn't there a sampling design that provides QC info so that this data can be rated better than Q4? Is there the same for the Port Blakely data?
Response: *Specific comments pertaining to these documents are contained in the rating matrix index. The majority of the problems seem to be in that there was either limited or missing QC data for the rating review. In some instances there were noted data problems in the text of the reports. In a few cases reported marine water readings indicated malfunctioning instrumentation. Many of the reports not only had missing QC data, but did not list methods, instruments, etc.. Perhaps if a QAPP was available for review during the rating period these may have ranked higher. However, all available and pertinent data to the program was extracted, analyzed and summarized in this TM. The Private Property data set was also included in the CoBI database and its findings will aid in sampling site and monitoring parameter determination (regardless of its ranking in the index).*	
20	Index #91-107: Why is WADOH data so poorly rated ?
Response: *Similar to question 19 – specific comments about this document set are contained in the rating matrix index. Again, these documents ranked low due to missing or lack of QC information. However, in general the WADOH is a recognized scientific organization with experience and expertise in this field. The ranking of their data from the view point of the information at hand. Their data is considered by the TEC Project Team to be of good quality and their results are known to be reliable. Their data has been extracted from these documents, included in the CoBI database and summarized, trended and graphed in this TM.*	
21	Page C-6: Distinguish site codes by nearshore/marine and freshwater by using separate tables or by adding 2 columns (one for each type).
Response: *An updated index spreadsheet has been included in the final TM. The "CoBI Watershed" column was mislabeled as such. In the final version it has been correctly identified as "CoBI Site Area Code". The Area Codes cover and codified not only terrestrial watersheds but include nearshore and marine sampling areas as well. The codes list in the index defines these CoBI Area Codes. The index also contains a column named "Document Type", which defines whether a specific document reports primarily on surface water, nearshore or marine environments or a combination thereof. Specific codes classifying sampling locations as to their specific site type are also contained in the CoBI database. Therefore the Ranking Index does not need to be modified.*	
22	Page C-6: What is "background" and "other non-program sites"?
Response: *Background sites are those areas (surface water, sediment, nearshore, marine, etc.) either on-island or elsewhere used for comparative information (i.e. to establish background conditions for certain parameters or system types). Non-program designations would be used for locations of interest to the WQFM Program, but not included in the program for a specific use. These differ from background sites because of the non-programmatic use stipulation.*	
23	What is the purpose of including Appendix D, if none of the other data is going to be included. I'd suggest that you just remove Appendix D and leave it in the electronic data.
Response: *Appendix D (now Appendix C) was provided as a location to present statistical and/or graphical submissions to the TM. Only a selected group of data (WADOH) was originally provided due to the large size of the entire data set. The final version of the TM includes more graphs and analysis sheets, so Appendix C remains in the final TM.*	

Comments received from CoBI:

Provided by: Ms Cummings and Mr. Namtvedt Best, 07 February, 2006.

Comment No.	Comment
24	Where is the analysis? What were the trends and exceedances? What did we learn by looking at the historic data that would inform our sampling design – what to sample for or what may not be an issue? Wasn't there going to be some sort of power analysis? Shouldn't there be graphs that summarize data and maps that show spatial density and absence?
Response: *Additional statistical analysis has been included in the final TM. Numerous trends and exceedances are presented in the report. Summaries of the data set have been considered during the drafting of the Sampling and Analysis Plan. Issues of parameters of concern and the logic behind those decisions made in the SAP have been discussed in that document.*	

Please contact the TEC Project Manager, Dave Metallo, at (425) 453-4040, or via email (dcmetallo@tecinc.com) with any questions or comments regarding the above responses. Thank You.

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

%TIA	Percent total impervious area
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
ABC	Association of Bainbridge Communities
BEACH	Beach Monitoring Program – Department of Ecology
BH	Blakely Harbor Watershed
BI	Bainbridge Island
BIBI	Benthic- invertebrate index of biological integrity
BMSL	Battelle Marine Science Laboratory
CoBI	City of Bainbridge Island
Col	colonies
DL	download
DNR	Department of Natural Resources
EC	Enterococci bacteria
Ecology	Washington State Department of Ecology
EH	Eagle Harbor Watershed
EIM	Environmental Information Management (System)
ENVVEST	Project ENVVEST – US Navy
EPA	Environmental Protection Agency
FB	Fletcher Bay Watershed
FC	Fecal coliform
GZ	Gazzam Lake Watershed
KCHD	Kitsap County Health District
LULC	Land use / land cover
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mL	milliliters
MZ	Manzanita Bay Watershed
NTU	Nephelometric Turbidity Units
^{o}C	Degrees Celsius
PB	Pleasant Beach Watershed
PCB	Polychlorinated biphenols
Physio-chem	Physiological chemical parameters (i.e. pH, temperature, etc.)

LIST OF ACRONYMS AND ABBREVIATIONS, continued

ppm	parts per million
PSAMP	Puget Sound Ambient Monitoring Program
QA	Quality Assurance
QC	Quality Control
SBC	Springbrook Creek
SEDQUAL	Sediment Quality Information System (Database)
SR	Sunrise Watershed
TDS	Total dissolved solids
TEC	TEC Inc.
TEC	TEC Inc.
TPH	Total Petroleum Hydrocarbons
TPH	Total petroleum hydrocarbons
TSP-Kit	Tacoma Smelter Project – Kitsap County
TSS	Total suspended solids
WAC	Washington Administrative Code
WADOH	Washington Department of Health
WADOT	Washington Department of Transportation
WQ	Water quality
WQFMP	Water Quality and Flow Monitoring Program
WSDOT	Alternate designation to WADOT

1.0 INTRODUCTION

This *Assessment and Suitability of Existing Historic Water Quality Data Technical Memorandum* (referred to hereafter as the Tech Memo) details the contents, assessment and suitability and quality of assembled historic (existing) water quality documents, data, database downloads and other associated data sets pertaining to surface water locations on Bainbridge Island and its surrounding nearshore and marine environments. The TEC Project Team critically reviewed historic data for its quality control characteristics and suitability for inclusion into the City of Bainbridge Island's (CoBI) Water Quality and Flow Monitoring Program (WQFMP) database. This critical data review will also aid in the creation of the Water Quality and Flow Monitoring Program (WQFMP) Plan regarding what data sets could be useful in the determination of monitoring site and analytical parameter selection. Main tasks associated with the historic data collection, review and assessment process include the following elements: assembly of historic water quality information; listing of preliminary findings; creation of a CoBI WQFMP Documents and Data Sets Library, ascertainment of water quality data usability, CoBI site area code assignment; and finally a summary of water quality data and water quality related reports that were reviewed for quality assurance (QA), trend analysis, and for value as baseline water quality data.

This data review and Tech Memo were completed in support of the CoBI WQFMP, as detailed in the July 2005 Scope of Work, Attachment A, Section 2. The WQFMP is a cooperative effort between the CoBI, WA State Department of Ecology (Ecology) and the TEC Inc Project Team. The CoBI WQFMP is funded in part by an Ecology Centennial Clean Water Fund Grant (Grant # G0500151). The CoBI Contract number assigned to the WQFMP is #250130.

2.0 ASSEMBLY OF HISTORIC WATER QUALITY INFORMATION

All available sources of historic water quality information (including documents, formatted data sets, raw field data and database downloads) have been investigated to a reasonable and appropriate degree. Data from these sources has been gathered and compiled. This compilation resulted in the creation of a hard copy and electronic CoBI WQFMP Library. This library of historic data and documents has been indexed and a bibliography has been created which briefly describes each document or data set. An agencies contact list was also created to provide details about the sources of information that were utilized to gather historic data. The library compilation, including the index, bibliography and agencies contact list, was submitted to the CoBI Project Manager in final format in mid-January 2006. The documents and data (files) within the CoBI Library were organized according to the agency that provided the information – which is reflected in the document index. Each document and/or data set was assigned a unique document number (document ID), which can be used to reference, locate, sort and track each within the CoBI WQFMP database. Reference to these document IDs is used throughout this Tech Memo. A listing of the documents IDs is included in Appendix A.

Once all of the available historic documents and data sets were assembled the task of reviewing and extracting data was undertaken. Each document and data set was reviewed for information that was deemed useful to the COBI WQFMP. Relative usefulness was based on program priorities; surface water (terrestrial, nearshore or marine) quality and sampling data was of first order priority (i.e. water chemistry measurements, analytical water testing results, flow measurements, weather data), then sediment sampling data, basin information (i.e. land use / land cover), followed by all other data types (i.e. tissue data, other biological data, etc.). If such information was noted in a particular document it was extracted and placed into a spreadsheet format. These spreadsheets were organized into 13 main data extraction information sets, organized mainly by organization of origin or by similar site type (i.e. harbors, private property). The actual extracted data files are too large to include in this Tech Memo. A brief summary of the information contained within each file has been included in Table 1.

Table 1. Summary of Extracted Elements from the CoBI Historic Data Set

CoBI Library Document # / Data Set	Summary of Info. Contents
Database Downloads	
112 – Ecology Marine Water Quality	Download from the WA Department of Ecology's Marine water Quality database. Information included in this download pertains to marine environment sampling conducted in Eagle Harbor.
115 – WA BEACH Prgm	Download from the WA Ecology / DOH BEACH Monitoring Program. File includes the 2004 and 2005 beach front / nearshore sampling data for Eagle Harbor and Fay Bainbridge State Park (2005-only) from the EIM database. The BEACH program data includes enterococci bacteria sampling results.
116 – EIM TSP-Kit	EIM down load of terrestrial soil and sediment data from Tacoma Smelter Project. Metals data for soil samples collected during the project include arsenic and lead.
117 – CoBI SEDQUAL DL	Downloaded information from SEDQUAL database for on-island CoBI locations and associated marine environments. Reporting mainly on sites within Eagle Harbor and Wyckoff sediment sampling locations. Various years from 80's, 90's and 2002-2003.
118 – ENVVEST	File records downloaded from the ENVVEST DB contain all available collected sampling and flow information from the Springbrook Creek (SBC) site and Marine sites M1, M2, M9, M10 and M11. The SBC flow data includes measurements from March 2004 through mid-August 2005.
NA - CoBI Beach Seine Database DL	Download of water chemistry and secchi disc measurements from the active CoBI Beach Seine Program. Information includes water temperature, dissolved oxygen, and salinity readings as well as secchi disc depth measurements. Data set extracted from the Beach Seine database.

Table 1. Summary of Extracted Elements from the CoBI Historic Data Set

CoBI Library Document # / Data Set	Summary of Info. Contents
Data Extracted from CoBI Library Documents	
CoBI Data	This is data that was extracted from various documents provided by CoBI. Information included is from Eagle harbor and island wide creeks. There is also sampling data from the Azalea Road catch basin event in 2003. Data parameters are mainly physiological-chemical (physio-chem) and fecal coliform (FC) data. CoBI library document references and stations descriptions are provided in the extraction spreadsheet.
DOH	This file contains data from the local health departments; Bremerton-Kitsap County Health District and from the re-formatted Kitsap County Health District, that report on surface water (streams), nearshore and some marine locations in and around BI. The data set features physio-chem, flow, FC and a few conventional parameters such as total suspended solids and total dissolved solids (TSS, TDS).
Harbors	This files contains information from the WA DOH – Ecology (including info from the Marine Water Quality Database) and Herrera Consultants. The DOH data covers all of the major ports, passages and harbors around the island. DOH parameters include mainly physio-chem and FC measurements, with a select few density and depth readings. Data from Herrera Consultants reports on sampling efforts from the WA State Ferry Terminal Maintenance Facility Project, which includes sites within Eagle Harbor, mouth of Ravine Creek and two background stations. Parameters from this extracted data set include physio-chem, flow, conventionals, and metals.
Private Property	This file contains data from the Hidden Cove Estates project, the Summit at Blakely Harbor and from sampling completed in and around Blakely Harbor (obtained from the Port Blakely Mill Co.). Hidden Cove Estates, in the Port Madison Bay watershed, has data that reports on physio-chem, flow, oil & grease, total petroleum hydrocarbons (TPH), nutrients, conventionals, metals, FC and other parameters. Other data include metals and pesticide results from sediment sampling. The Port Blakely Mill Co. sampling provides physio-chem data. Other Port Blakely data on metals, nutrients, oil & grease, FC and general flow conditions is also provided. There are two additional data groupings that provide duplicate Hidden Cove Estate data for metals, pesticide, herbicide and PCBs but in a different format. The Summit at Blakely Harbor data contains some physio-chem parameters, FC, conventionals and select metals.
Bainbridge Island School District	The Woodard Middle School stream monitoring project information is presented in this data set. The majority of the data is physio-chem measurements, however, there are a few FC and TPH data as well. The project was conducted at four stations along Woodward Creek (Murden Creek system) near Woodward Middle School. Time span for the monitoring data is from late 1998 through 2004.

Table 1. Summary of Extracted Elements from the CoBI Historic Data Set

CoBI Library Document # / Data Set	Summary of Info. Contents
Precip Green Spot Place	Rainfall and weather record for a location in the Murden Cove watershed (Green Spot Place) which covers a time span from 1993 through mid-2003.
Biomonitoring / LULC	There were several files and documents collected in the CoBI Library that report on macroinvertebrate and benthic biological monitoring results from various Kitsap County locations. This information set also includes scores from benthic index of biological integrity analyses. A summary of stream LULC data for a select group of CoBI creeks is included in this data group. Data was also obtained reporting on general LULC information for each CoBI watershed basin.

3.0 PRELIMINARY FINDINGS REGARDING HISTORIC DATA

After assembly of the historic data the different information sets were examined and evaluated for various characteristics. Some of these characteristics included data set origin, parameter type, spatial and temporal information, analytical coverage and other pertinent data. Details on the preliminary finding of the historic data sets are provided in Section 3.1, below.

3.1 SUMMARY OF PRELIMINARY FINDINGS – COBI HISTORIC WATER QUALITY DATA

119 primary historic documents and data sets from a variety of 14 governmental agency and private property owner sources were assembled as part of the creation of the CoBI WQFMP Library. The historic data sources include the Association of Bainbridge Communities (ABC), Bainbridge Island school District, City of Bainbridge Island, County-State Health Departments, Department of Ecology (Ecology), Journal Articles, Kitsap County Natural Resources Conservation District, Kitsap County Stream Team, Navy-Project ENVVEST, Private Property Owners, Tribes, US EPA, WA DNR – PSAMP and WA DOT. All of the above sources provide at least one pertinent document of interest to the CoBI WQFMP. Many of these sources provide multiple documents and data sets. Among the data sets were five downloads from other established database sources. These established data sources were; Ecology's Marine Water Quality Monitoring database, Ecology's Sediment Quality Information System (SEDQUAL), Ecology/WADOH Beach Environmental Assessment Communication and Health (BEACH) Program database, Ecology's Environmental Information Management (EIM) System database and the Navy's Project ENVVEST database. Each of the documents and data sets were thoroughly reviewed, and, where applicable, relevant water quality, analytical, flow, sediment, weather and tissue data were extracted.

Data sets that cover the terrestrial portion of the island included information from the ENNVEST site at Springbrook Creek (Fletcher Bay watershed), several private property sites scatter around the island and the long-term monitoring site/s along Woodward Creek and other select sites in the Murden Cove watershed (Woodward Middle School program). The private property locations include monitoring at the Hidden Cove Estates complex (Port Madison watershed), Port Blakely Mill Company sites (Blakely Harbor watershed), Green Spot Place Property (Murden Cove watershed), Stream Team Results (island-wide), and from the Summit-at-Blakely Harbor (Blakely Harbor watershed). Other notable terrestrial sites include the Ravine Creek area sampling in Winslow (North Eagle Harbor watershed) and from WA DOT sites at the Schel-Chelb estuary (Pleasant Beach watershed). A vast majority of this information is standard physio-chemical data (i.e. pH, temperature, specific conductivity, turbidity, etc.) and other physical measurements such as stream flow and rainfall. However, there are data from these locations that report analytical concentrations for fecal coliform, a variety of metals, total petroleum hydrocarbons, pesticides / herbicides, organic compounds, PCBs, and other biological parameters.

A large amount of historic data reports findings from nearshore and marine sites. Data exists from nearly all of the major harbors, coves and prominent beach areas around Bainbridge island. However, the majority of available marine and nearshore data exists for sites in and around Eagle Harbor. Most of the marine and nearshore data are physio-chemical readings and fecal coliform concentrations. There are some metals, semi-volatile (sediments), PCB (sediments), organic compound and other biological parameters reported for various marine and nearshore sampling locations. Historic marine data gathered for the CoBI WQFMP was collected mainly from the Navy's ENVVEST program, the WA DOH, CoBI programs and from WA DOT.

4.0 WATER QUALITY DATA USABILITY AND ASSOCIATED CODES

Battelle Marine Science Laboratory (BMSL) has completed a critical review of the 119 documents that are contained in the CoBI Library. The documents contained watershed information and water quality data for Bainbridge Island and associated nearshore and marine locations. A peer review of the water quality data reported in each document was conducted to determine the usability of each data set. Many of the documents and data sets contained data for multiple water quality parameters. The parameters were reviewed and qualified independently. Qualification of each parameter was determined based on the availability of the following information:

1. Sample collection information,
2. Field conditions at the time of sampling,
3. Sample custody documentation,
4. Laboratory or entity performing sampling and/or water quality analyses,
5. Laboratory accreditations held by each laboratory performing water quality analyses,
6. Documentation of methods used to determine reported water quality data,

7. Sample holding times observed for each water quality parameter reported,
8. Calibration information for water quality probes and laboratory instrumentation,
9. Use of appropriate methods for the quantification of each parameter (i.e. fecal coliform, metals, pesticides, etc.), and
10. Quality control samples analyzed with each data set.

Each water quality parameter reported in a document was assigned a data usability code according to the descriptions listed in Table 2 (below). The usability codes and their descriptions were created based on guidance from the Washington Department of Ecology (ECOLOGY) Environmental Information Management (EIM) Data Dictionary (2005). The definitions of the codes, also listed in Table 2, are taken directly from the EIM database valid values (Study QA Planning Level). However, in the EIM database the codes are M1 thru M4 and apply to marine waters. The codes designed for the CoBI data usability assessment are Q1 through Q4, where a ranking of Q1 is superior to Q2, and so forth. Since the Bainbridge Island database includes both fresh water and marine water, the EIM codes were altered to the Q1 thru Q4 reported in this data review. The documents were not assigned a quality assurance assessment code (Level 1 thru Level 5) as defined in the EIM data dictionary. The review conducted was strictly a peer review since there was insufficient information available in the historical documents to subject each parameter to an independent data validation process. There were several recent documents with previously assigned quality assurance codes, which are noted and will be included in the database.

Table 2. Data Usability Codes Assigned to Bainbridge Island Water Quality Data.

Usability Code	Descriptions
Q1	State of the art method, adequate QC
Q2	Less precise method or QC
Q3	Known or suspected data problems
Q4	Unknown method and/or QC

A majority of the documents did not contain sufficient quality assurance/quality control (QA/QC) and method information that would have possibly enabled them to rank higher then they did. Data reported from Ecology accredited laboratories were assigned a Q2 code if there was limited QA/QC information. However, the quality of the data sets are considered good since they were reported from an accredited laboratory. The usability codes for each parameter and document were appended to the Bainbridge Island library document index. A version of this original Library index, along with additional columns that detail various data quality criteria rankings and associated comments, has been provided as Attachment B.

5.0 REVIEW OF DATA FOR QA, TREND ANALYSIS, REGULATORY EXCEEDANCE AND POTENTIAL USE AS BASELINE WATER QUALITY INFORMATION

Water-quality (WQ) data and WQ-related reports were reviewed for quality assurance (QA), trend analysis, regulatory exceedances and for their value as baseline WQ data. A summary of each data or information set is included below. If a dataset or report is not listed here, it is because it did not meet required QA standards or it did not contain any useful WQ or WQ-related data. Tables 3 and 4 are provided as a reference to the WA Surface Water Criteria regulations (WAC 173-201A) for fresh and marine surface water bodies. Additional compounds of interest (Toxic Substances) are included in Section 240 of WAC 173-201A. Exceedance of these compounds, as compared with results contained in the project data sets are noted where applicable. Sediment values and exceedances were evaluated in conjunction with WAC 173-204-320, Sediment Quality Chemical Criteria Quality Standards. A full listing of these regulations can be found on the Ecology websites listed here:
(http://www.ecy.wa.gov/pubs/wac173201a.pdf),
(http://www.ecy.wa.gov/programs/tcp/smu/sed_chem.htm).
Figure 1 illustrates the various watersheds located on Bainbridge and is provided for reference to the discussion included below.

5.1 Data Set #1 - Washington Departments of Health (WA-DOH) and Ecology Marine WQ Data

This dataset includes various physio-chemical parameter data from 1994 through 2005 as collected by the WA State Departments of Health and Ecology's marine WQ monitoring programs. The WA-DOH also collected fecal coliform data during in the commission of their sampling program.

The WA-DOH monitoring program focuses on shellfish growing and harvesting areas along the shoreline of Bainbridge Island, sampling primarily for bacterial pollution. In addition, monitoring for marine biotoxins is also conducted on a routine basis. The WA-DOH fecal coliform dataset is considered high-quality data from the perspective of long-term WQ trend analysis. Locations for the CoBI WQFMP monitoring in marine waters will be selected by using the WA-DOH sample locations as a baseline. Specifically, the CoBI WQFMP should focus on areas not already routinely monitored by WA-DOH. Multiple sampling locations in several CoBI embayments likely will be selected for marine sample locations. Potential locations include Eagle Harbor, Port Madison Bay, Point Monroe lagoon, Murden Cove, Manzanita Bay, Fletcher Bay, Pleasant Beach (Lynwood) Cove, and Blakely Harbor.

Ecology's Marine Water Quality Program focuses mainly on physio-chemical measurement collection at established (historic) locations in and around Puget Sound and at other marine locations. Ecology collects data in a rotating fashion from the their various program sites. The Marine WQ Program has one such monitoring location in Eagle Harbor, which had measurements collected in 1997 and 1998.

Statistical analysis of the most current WA-DOH fecal coliform and temperature data was performed. A summary table of the results from the statistical analysis performed on the WA-DOH data set, for all sites in the data set, includes: #of samples, range minimum value, range maximum value, geomean value, 90th percentile value and # of results in the data set exceeding the 90th percentile. This summary statistics page has been provided in the Appendix C-1. Graphs of each WA-DOH data set have also been provided in the same Appendix.

The minimum average fecal coliform value for the WA-DOH sites was 1.7 col/100ml and the average maximum value was 203 col/100ml. Although there were single value exceedances for fecal coliform none of the WA-DOH sites exceeded the geomean value limit of 14 col/100ml. There were single point temperature exceedances in all of the marine locations. However, these can be attributed to seasonal fluctuations. On average the temperature trends were steady, with only slight upwards or downwards variation at those locations that showed any discernable movement.

The Ecology Marine WQ data, although comprised of data from two separate calendar years, essentially provides data from an 11-month period (11-97 through 9-98). Therefore any discussion pertaining to trends is limited to one seasonal rotation. Fluctuations due to seasonal effects have a profound influence on the trend analysis of this data set. The following physio-chem parameters were examined: dissolved oxygen, pH, salinity and temperature. Dissolved oxygen showed a steady trend in the winter months, a subsequent rise in the spring and summer and a decrease in the fall. 10 of 11 measurements exceeded the WAC standard for this parameter. Temperature showed an upwards trend, lower in the winter and rising through the spring and summer months. Three measurements of the 11 collected exceeded the WAC standard. pH showed a relatively steady trend. Six of the 11 measurements were above the WAC standard. Salinity showed an upwards trend. There was a decline in the winter and a rise in the summer months. Five of the 11 measurements during this period exceeded the WAC standard.

In general, bacterial pollution levels are low, with no sites currently in violation of WAC-water quality standards. However, the Eagle Harbor area is closed for shellfish harvesting due to periodic high bacterial pollution levels. This embayment receives stormwater runoff from the Winslow area, as well as being the location of multiple marinas and live-aboard boats. Eagle Harbor is one area where the CoBI WQFMP will likely focus on with additional sampling stations for microbial pollution and other WQ parameters. Current information on shellfish closures can be found on the WA-DOH web site:(http://www.doh.wa.gov/ehp/sf/recshell.htm)

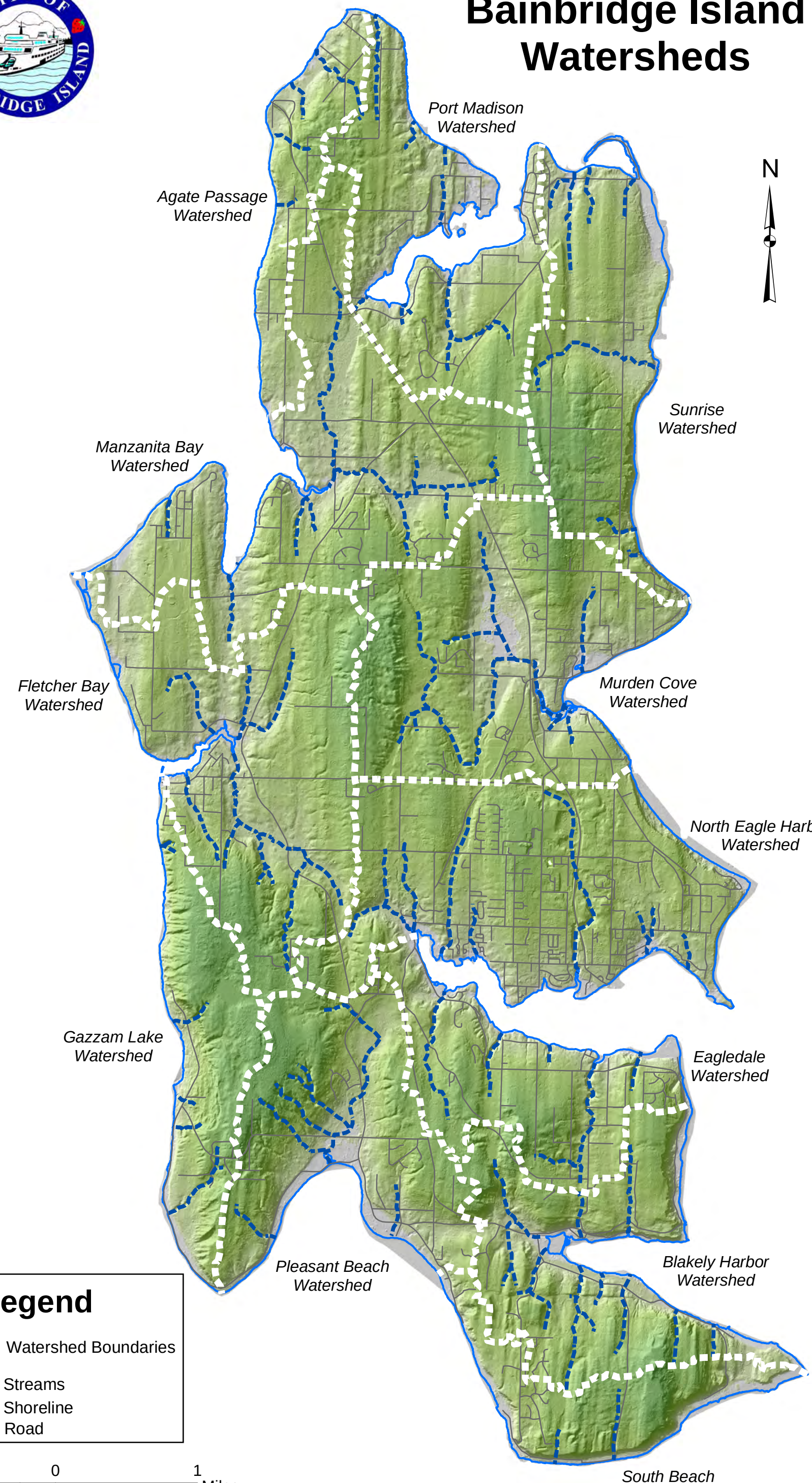
Table 3. Water Quality Criteria Standards – Fresh Water

Surface Water Protection Criteria WAC 173-201A 200			
Fresh Water (Protection of Aquatic Life and Water Contact Recreation)			
Parameter	**Criteria**	**Value**	**Units**
Temperature	7-DADMax	16	^{o}C
Dissolved Oxygen	1-DayMin	9.5	mg/L
Turbidity	Max	Value not to exceed 5NTU over background measurements when background is ≤ 50NTU, or a 10% increase over background measurements when background is > 50NTU	
Total Dissolved Gas	Max	110	percent (%)
pH	Range	6.5 - 8.5	pH units
Fecal Coliform	Extraordinary Primary Contact	FC organism levels must not exceed a geometric mean value of 50 colonies / 100ml, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 100 colonies / 100ml.	
Fecal Coliform	Primary Contact	FC organism levels must not exceed a geometric mean value of 100 colonies / 100ml, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies / 100ml.	
Fecal Coliform	Secondary Contact	FC organism levels must not exceed a geometric mean value of 200 colonies / 100ml, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 400 colonies / 100ml.	

Table 4. Water Quality Criteria Standards – Marine Water

Surface Water Protection Criteria WAC 173-201A 210			
Marine Water (Protection of Aquatic Life and Water Contact Recreation)			
Parameter	**Criteria**	**Value**	**Units**
Temperature (highest 1-Dmax)	Extraordinary quality	13	^{o}C
	Excellent quality	16	^{o}C
Dissolved Oxygen (lowest 1-Dmax)	Extraordinary quality	7.0	mg/L
	Excellent quality	6.0	mg/L
Turbidity (Max)	Extraordinary quality	Value not to exceed 5NTU over background measurements when background is ≤ 50NTU, or a 10% increase over background measurements when background is > 50NTU	
	Excellent quality	Same as Above	
pH (Max - range)	Extraordinary quality	7-8.5	Human caused variation within listed range < 0.2 units
	Excellent quality	7-8.5	Human caused variation within listed range < 0.5 units
Fecal Coliform	Primary Contact	FC organism levels must not exceed a geometric mean value of 14 colonies / 100ml, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 41 colonies / 100ml.	
Fecal Coliform	Secondary Contact	Enterococci organism levels must not exceed a geometric mean value of 70 colonies / 100ml, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 208 colonies / 100ml.	

Bainbridge Island Watersheds



Legend

- Watershed Boundaries
- Streams
- Shoreline
- Road

1 0.5 0 1 Miles

PNB 3-19-03

5.2 Data Set #2 - Washington Department of Health (WA-DOH) BEACH Program WQ Data

This dataset includes enterococci bacteria (EC) measurements from 2004 and 2005. This monitoring program focuses on recreational (swimming, boating, & fishing) areas along the shoreline of Bainbridge Island, sampling primarily for bacterial pollution. The sites monitored on Bainbridge Island include Fay Bainbridge State Park (2005-only) (3 beach front locations) and Eagle Harbor (3 beach front locations). This dataset is considered high-quality data due to its collection source and management. The WA-DOH Beach Monitoring Program dataset for CoBI only includes sampling from 2004 and 2005.

Statistical analysis similar to the calculations completed on data set #1 were performed. The minimum average EC value for all the BEACH Program sites was 10 col/100ml. The average maximum value for the Fay Bainbridge State Park sites was 209 col/100ml. The maximum average range for single value measurements at the Eagle Harbor sites was 573 col/100ml and 292 col/100ml, for 2004 and 2005 respectively. Although there were single value exceedances for EC (WAC standard is 208col/100ml) none of the BEACH Program sites exceeded the geomean value limit of 70 col/100ml.

There was only one single measurement (out of 48) from the Fay Bainbridge State Park sites that exceeded the WAC standard for bacteria secondary contact. There were only two (out of 93) single measurement exceedances for the Eagle Harbor sites. All three of these single measurement violations occurred in the summer during months. All of the EC trends at each of the BEACH Program sites were relatively steady.

Any additional beach sampling locations selected for the CoBI WQFMP should be coordinated with the existing Beach Monitoring Program. Current information on recreational beach closures can be found on the WA-DOH web site:
(http://www.doh.wa.gov/ehp/ts/WaterRec/beach/default.htm).

5.3 Data Set #3 - Washington Department of Ecology (Ecology) Sediment Quality (SEDQUAL) Survey Data

This dataset includes sediment sampling results from a number of locations within the nearshore environment of Bainbridge Island, specifically Eagle Harbor. This dataset is considered high-quality data from the perspective of long-term WQ trend analysis and its collection and management source. In addition, this dataset is considered to be comprehensive.

The structure of this data did not lend itself readily to trending analysis. There are nine studies that make up the SEDQUAL data set download (those projects within SEDQUAL that were completed on CoBI), having numerous locations within each individual project.

There were not enough single locations with multiple collections for a unique compound to develop any meaningful trend relations. However, the data set was sorted by compound and then compared to the WAC 173-204-320 regulations (WA State Sediment Quality Standards). Those compounds that were detected during one of the particular sediment sampling projects, and are listed on the 173-204-320 inventory were examined for exceedances. 17 compounds; 1,2,4-trichlorobenze, 2,4-dimethylphenol, 2-methylnaphthalene, 2-methylphenol, 4-methylphenol, acenaphthene, benzoic acid, benzyl alcohol, copper, dibenzofuran, fluoranthene, hexachlorobenze, mercury, naphthalene, phenanthrene, phenol and zinc; showed one or more exceedance to the WAC regulations. Many of these compounds are polycyclic aromatic hydrocarbons, cresols, phenols, and metals used in creosote-coating and wood preserving processes. Since the occurrence of these compounds in the natural environment is extremely rare, it is highly likely that their appearance in the sediment record is a direct result of previous commercial and industrial activities in and around Eagle Harbor (i.e. Wyckoff wood preservation plant and the WSDOT Ferry Maintenance Facility). A complete spreadsheet listing of the compounds and their associated exceedances is presented in Appendix C-3.

Any additional sediment sampling locations selected for the CoBI WQFMP should be coordinated with this program. Because of the logistics and sediment sampling QA requirements, it is likely that sediment sampling within the proposed CoBI WQFMP will be targeted on specific sites of interest rather than based on a routine sampling scheme.

Current information on SEDQUAL sediment sampling and analysis can be found on the WA-DOH web site: (http://www.ecy.wa.gov/programs/tcp/smu/sedqualfirst.htm).

5.4 Data Set #4 - Kitsap County Health District (KCHD) WQ Data

Historically, the KCHD sampled the freshwater streams and marine nearshore waters of Bainbridge Island. This sampling program ended when CoBI became an all-island city. The last field sampling efforts, including water quality data collection, was completed in 1996. Reporting efforts stemming from these 1996 field events were completed in and finalized in 1997. The most recent comprehensive surface water and nearshore sampling report was the *Bainbridge Island Watershed Non-Point Source Pollution Water Quality Assessment Project Report* (KCHD, 1997 - CoBI document #55). This report contains an extensive stream WQ database (physio-chem conventional parameters), especially fecal coliform bacterial pollution data that will be useful as a baseline dataset to which future monitoring results can be compared. This is a fresh-water fecal data set, which differs from other data sets in the COBI Library in that many of those reports are for marine and nearshore environments. Graphs of the various creeks in the 1997 KCHD study, as well as for fresh-water outfall locations in Eagle Harbor, are presented in Appendix C-4.

Bacterial pollution (FC) data from the KCHD WQ monitoring database (1995-97) was analyzed for trends and levels of pollution for the streams and Eagle Harbor locations sampled on Bainbridge Island. Based on the last KCHD WQ Report in 1997,

Springbrook Creek (FB01), North Fletcher Bay Creek (FB02), Mac's Dam Creek (BH01A), Cooper Creek (EH2), Gazzam Creek (GZ01), Manzanita Creek (MZ01), Lytle Creek (PB02) and Dripping Water Creek (SR01) all were in exceedance of the fecal coliform bacterial geomean (50 col/100ml). It is interesting to note that when the data from these creeks was analyzed via dry season results versus wet season results, the majority of the violations occurred during the dry season, with half of the creeks showing acceptable fecal concentrations during the wet season. A comparison of the fecal geomean values versus turbidity values was also performed. There seems to be no discernable correlation between these two parameters. For the remainder of the physio-chem parameters there were only a few minor mean value exceedance for dissolved oxygen (BH01A and Murden Creek) and turbidity (FB02). Of the 24 Eagle Harbor outfall sites four sites (EH06, EH07, EH09, EH10) had geomean value exceedance for fecal coliform. It is likely that the concentration value situation has changed at all of these creek and outfall locations since the 1997 report.

The report also contains shellfish tissue quality data, sediment sampling data from shellfish-harvest areas, and the results of marine-shoreline sanitary (bacterial pollution) surveys for Bainbridge Island. Additional sanitary-survey fecal coliform data is available in two 1993 KCHD reports for Port Madison and Port Blakely. In total, these KCHD reports and WQ data will provide a baseline for comparison of new WQ data developed during the proposed BIWQ sampling program.

The proposed CoBI WQ Monitoring Program will include all major streams, as well as some small streams and tributaries for monitoring of selected conventional WQ parameters (temperature, pH, Conductivity, Turbidity, and fecal coliform) on a routine basis, similar to the current KCHD WQ sampling scheme conducted in other parts of Kitsap County. The goal of this component of the CoBI WQFMP will be to develop a long-term record of WQ characteristics for the freshwater resources of Bainbridge Island. Specifically, bacterial pollution levels and trends will be one important focal area. Current information on the KCHD WQ Monitoring Program can be found on the KCHD web site:
(http://www.kitsapcountyhealth.com/environmenta_health/water_quality/wq_index.htm**).**

5.5 Data Set #5 - Private (Property) Developers Water Quality Data

In recent years, the City of Bainbridge Island has been requiring that developers monitor water quality of any surface waters that could potentially be impacted by major development projects. These monitoring programs typically cover both pre- and post-development conditions. Traditionally these water quality monitoring efforts provide data on specific developments and specific streams or nearshore areas. Water quality data from these reports has been included in the CoBI WQFMP database. The water quality data reports reviewed for inclusion in the CoBI database include the following:

- 2004 Summit at Blakely Harbor WQ Monitoring Report
- 2005 Summit at Blakely Harbor WQ Monitoring Report
- 1992 Port Blakely Baseline Stream WQ Report
- 1990 Port Blakely Baseline Aquatic Resources Report
- 1992-2001 Hidden Cove Estates WQ Monitoring Reports

These reports were analyzed with respect to water quality data and quality assurance. No significant violations of WAC water quality standards were noted. In addition to the standard water quality criteria parameters (including fecal coliform) metals, pesticides, hydrocarbon compounds and conventional analytes were analyzed among the various private property sampling projects. No significant exceedances to other WAC regulations were noted, including zinc (which was a question raised by the City, see the *Response to Comments* #9)

Data from these private developer reports is of limited usefulness in developing the CoBI WQFMP Sampling and Analysis Plan. There is not enough data to conduct any meaningful trend analysis, beyond the comparison of pre- and post-development conditions. However, as baseline data for comparison with future water quality sampling results for these same locations, the data is useful.

5.6 Data Set #6 - Bainbridge Island School District Water Quality Data

Woodward Middle School has been collecting water quality data (conventional parameters) on a monthly basis using students and volunteer-citizens from Murden Creek from 1998 through 2004. This water quality data may not have the level of quality assurance generally associated with sampling programs run by professionals, however the data appear to be valid and accurate. These reports were analyzed with respect to water quality data and quality assurance. No significant violations of WAC water quality standards were noted and no significant trends were observed. The averages for pH, dissolved oxygen (via mg/L and %saturation), temperature and turbidity have been provided in Appendix C-5, along with graphs of the same information. These averages are for each individual site covering the entire monitoring time span. All of the average values are within acceptable WAC water criteria standard limits. Included in the data set were 36 fecal coliform and a few total petroleum hydrocarbon results (less than 1% of the total data set). However, the fecal coliform geomean was 5.12 colonies/100ml – well within acceptable ranges. pH and dissolved oxygen showed generally steady trends, as did turbidity and temperature.

This dataset has been incorporated into the CoBI WQFMP database. These types of volunteer programs can provide valuable long-term water quality monitoring data, as well as educating those involved. Expansion of these types of programs to other areas of Bainbridge Island or to other tasks with the CoBI WQFMP will be considered in developing the CoBI WQ monitoring plan.

5.7 Data Set #7 - City of Bainbridge Island Water Quality Data

Several water quality datasets exist within the jurisdictional records of the City. CoBI water quality data includes a great deal of information covering the Eagle Harbor area (including data from the WSDOT Ferry Maintenance Terminal Facility), some of the more prominent bays around the island, watershed reports and related information, nearshore assessment reports, and collected data for island-wide creeks. The Eagle Harbor Harbormaster water quality data also covers the Eagle harbor area. A series of

reports to the city from WSDOT on the Ferry Maintenance Facility and Schel-Chelb estuary also has some useful WQ data included. Reports from Herrera Consultants covers the WSDOT Ferry Maintenance Facility. Data reports on sampling efforts from the WA State Ferry Terminal Maintenance Facility Project includes surface water sites within Eagle Harbor, mouth of Ravine Creek and two background stations. Parameters from this extracted data set include physio-chem, flow, conventionals, and metals. These reports also include some useful and relevant seep and groundwater quality, sediment and tissue data. The WSDOT Ferry Maintenance Facility surface water data is included in a table in Appendix C-6.

Trend and statistical analysis was conducted on the Eagle Harbor freshwater outfall sampling site data (document #100, CoBI Eagle Harbor Water Quality Survey Results, 2005) and the Bainbridge Island Stream Water Chemistry Survey (Clairborne, 2003). These data are some of the most recent sampling information available. The Eagle Harbor outfall data reported on fecal coliform concentrations. All of the results were below the WAC single value exceedance criteria (100col/100ml), as well as the geomean exceedance value (50col/100ml). The geomean for the data set was 5.21col/100ml. The BI Stream Water Chemistry results were averaged for the physio-chem parameters measured, which included; temperature, pH, dissolved oxygen, conductivity and turbidity. Nine creeks (Hidden Cove, Dripping Water, Manzanita, Issei, Springbrook, Schel-Chelb, Mac's Dam, Cooper and Wardwell Road) were monitored in June and July, 2003. The following creeks showed exceedances to the WAC-standards: five of nine for temperature and nine of nine for dissolved oxygen. Turbidity background levels have not been officially established for these creeks, however, the averages ranged from 4.53 NTU to 0.80 NTU, which is low and healthy. Graphs and tables are provided in Appendix C-6.

In general, the water quality records held by the city provide a good body of data for use as a baseline for future monitoring. However, this data is in most cases spotty (infrequent sampling). The proposed CoBI WQFMP will rectify these data needs and requirements.

5.8 Data Set #8 Project ENVVEST – Navy Water Quality and Flow Monitoring Data

The US Navy's Project ENVVEST was a comprehensive watershed and marine receiving waters study that was conducted from 2000 through 2005. Several marine and nearshore locations were routinely sampled over the course of these years. Most of these locations coincide with established WA DOH or Ecology marine monitoring positions covering the western and southern sides of the Bainbridge Island. One of the most consistently sampled ENVVEST land sites on the island is Springbrook Creek (BI-SBC). BI-SBC was sampled for conventional parameters (i.e. total solids, total suspended solids, total organic carbon, hardness and alkalinity), fecal coliform, nutrients, total and dissolved metals, and organic compounds (i.e. PCBs, pyrene, chrysene) from 2002 through mid-2005. Certain parameters where phased in and out during the course of the ENNVEST project. Not all of the above parameters were sampled during every event throughout the period of performance, however, within those dates, parameter

coverage was completed accordingly. Pesticides were also sampled at this location during a single event in 2005. Data from the ENVVEST database has been included in the CoBI database. Because the ENVVEST marine sites are common to the WADOH sites additional graphing was not completed for this data set.

The ENVVEST data also provides the most extensive and current flow measurement record of any creek site on Bainbridge Island. The flow measurement station at BI-SBC is still actively gauging stream flow and rainfall information to date. This automated system has gathered data and provided a nearly consistent record since March of 2004. Graphs of the flow regime measured at BI-SBC have been provided in Appendix C-7. The ENVVEST analytical and flow data is considered to be of the highest quality and will be incorporated appropriately into the CoBI WQFMP.

5.9 Data Set #9 - CoBI Beach Seine Water Quality Data

The CoBI conducts routine nearshore beach seining activities, which incorporates the collection of certain surface water quality parameters (dissolved oxygen, water temperature, salinity and secchi disc depth readings). Data collected during these beach seine activities is managed in the CoBI Beach Seine Database. TEC obtained a download from this database that included the above listed water quality parameters. A table and graphs of the downloaded data set are included in Appendix C-8. Results from the 16 seine sites was grouped together according to parameter of interest and graphed. Overall results showed some minor amounts of water temperature exceedance to the WAC standards. Approximately half of the dissolved oxygen values were in exceedance of the WAC standards, with a slightly decreasing trend – indicating the possibility of more exceedances in the future. Trends for temperature and salinity were steady. This data was added to the CoBI WQFMP database.

5.10 Data Set #10 – Biomonitoring and Land Use Land Cover (LULC) Data

Throughout the assembled records of the CoBI database there are several documents that contain data regarding biomonitoring and land use – land cover (LULC). There are documents that report on analytical testing results of tissue and taxonomy sampling. These specific data are available by reference only (document review) and have not been uploaded to the CoBI database. However, it is quite valuable to have data that summarizes an eco-system's biological health with an index value that can be applied and compared between various systems. The mean benthic-invertebrate index of biological integrity (BIBI) is such an indicator. Developed specifically for northwest stream systems, the BIBI is used to assess stream health based on insect sampling results.

LULC data is also presented in various documents throughout the CoBI library, although there is not one main source or standard source for this information. Biological stream system integrity and LULC have been shown to be in direct correlation with one another – therefore, as a dataset they grouped together. Correspondingly, LULC has an index,

percent total impervious area (%TIA), that is a general indicator of land cover quality in a particular basin.

Although relatable, these two main parameters (LULC and BIBI) do have independent uses within the WQFMP and are used accordingly for various program elements (i.e. characterization of current sites, aiding in the selection of new program sites and guidance in parameter choice at new sites). Select graphs and tables presenting BIBI scores and LULC information are included in Appendix C-9.

6.0 REFERENCES

References:

City of Bainbridge Is (CoBI), 2006. CoBI Water Quality and Flow Monitoring Program Historic Data and Document Library. Bibliographic information regarding documents referred to in this Tech Memo are presented in the CoBI Annotated Library Bibliography (included in the electronic version of this document).

Washington Department of Ecology, 2005. EIM Import Module V.1.0 Data Dictionary. http://www.ecy.wa.gov/eim/EIM_Database_Search_V2005_Data_Dictionary.pdf

APPENDIX A

CoBI LIBRARY DOCUMENT INDEX

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Library Index **Last Update: 2/24/2006**

Document No.	[1]Agency	Document Date	Document Title	[2]Document Type	Author	[3]CoBI Site Area Code	Info from Document Included in CoBI Database ?	Document Media Type (H, E, H-E)	Comments
001	Kitsap Conservation / NRC District	May, 1999	Inventory Evaluation and Alternatives for E. Bailey 6910 NE Day Rd, BI WA 98110	Other	Stahl, Brian and Drecksel, Ken	MZBY	No	E	Inventory evaluation
002	Kitsap Conservation / NRC District	1999	Resource Inventory Evaluation and Alternatives for Hutchison Property, 12364 Miller Rd, BI, WA 98110	Other	Stahl, Brian and Drecksel, Ken	MZBY	No	E	Inventory evaluation
003	Association of Bainbridge Communities	1995	ABC: Final Report, Eagle Harbor Clean Water Project	NS	Jim Jarosz	EGDL	Yes	H-E	Shoreline survey
004	BI School District	2000-2001	Woodward MS '00-'01 Murden Crk Stream Habitat Assessment Data	SW / RP	Gagnon and Fermanis	MDCV	No	H-E	Stream habitat worksheets and maps
005	BI School District	2000-2001	Woodward MS '00-'01 Woodward Crk Water Quality data sheets and lab reports	SW	Various	MDCV	No	H-E	Field sheets and data tables
006	BI School District	2001-2002	Woodward MS '01-'02 WW Crk WQ & FC Data shts	SW	Various	MDCV	No	H-E	Field sheets and data tables
007	BI School District	2002	Woodward MS '02-'03 Stream WQ Grps-Sum Tbls	SW	Various	MDCV	Yes	H-E	Summary tables and graphs
008	BI School District	2002-2003	Woodward MS '02-'03 WW Crk WQ & FC-TPH Data	SW	Various	MDCV	No	H-E	Field sheets and data tables
009	BI School District	2003-2004	Woodward MS '03-'04 WQ Data Sheets & Summary	SW	Various	MDCV	Yes	H-E	Field sheets and data tables
010	BI School District	2004	Woodward MS '04 WQ Mon Day Bio Stuff	Bio	Stream Team	MDCV	No	H-E	Monitoring day protocols
011	BI School District	2004	Woodward MS '04 WQ Mon Day Info	SW	Watershed Education	FLBY	No	H-E	Monitoring day work plan
012	BI School District	2004	Woodward MS '04 WW Crk FC & TPH Data	SW	Watershed Education	MDCV	Yes	E	TWISS Analytical lab results
013	BI School District	1998-2003	Woodward MS '98-'03 WW Crk WQ data Summary	SW	Various	MDCV	Yes	H-E	Data summary report and tables
014	BI School District	1998-1999	Woodward MS '98-'99 WW Crk WQ Data shts	SW	Various	MDCV	No	H-E	Field sheets and summary tables
015	BI School District	2002	Woodward MS Riparian Zone Info Shts_2002	RP	Various	MDCV	No	H-E	Info sheets
016	BI School District	2004	Watershed Watch Article 2004 & Misc. Info	SW	Various	MDCV	No	H-E	Articles
017	BI School District	2003-2004	Enviromental Education Partnerships Program Aug2003-Aug2004	SW	Various	MDCV	Yes	H-E	Summary of monitoring program for Woodward MS

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Library Index **Last Update: 2/24/2006**

Document No.	[1]Agency	Document Date	Document Title	[2]Document Type	Author	[3]CoBI Site Area Code	Info from Document Included in CoBI Database ?	Document Media Type (H, E, H-E)	Comments
018	BI School District	2002	Report to the CoBI Environmental ED. Partnerships Program Jan to Aug 2002	SW	CoBI	MDCV	Yes,Bio	H-E	Summary of monitoring program for Woodward MS
019	BI School District	2000-2001	00-'01 Strm Mon Data	SW	Various	MDCV	Yes	E	Excel data
020	BI School District	2001-2002	01-'02 Strm Mon Data	SW	Various	MDCV	Yes	E	Excel data
021	BI School District	2002-2003	02-'03 Strm Mon Data	SW	Various	MDCV	Yes	E	Excel data
022	BI School District	2003-2004	03-'04 Strm Mon Data	SW	Various	MDCV	Yes	E	Excel data
023	BI School District	2000-2004	Master Data 00-04	SW	Various	MDCV	No	E	Excel data
024	CoBI	2003	Azalea Stormwater Catch Basin 2003	Other	TWISS Analytical	UNKN	Yes	H-E	Lab Analytical Data (pesticide data)
025	CoBI	2003	BI Stream Water Chemistry Survey (Clairborne)_2003	SW	Clairborne	Island-wide	Yes	E	Excel data
026	CoBI	1998-1999	BI WS WQ Data 1998-1999	SW	Various	MZBY, FLBY, MDCV	Yes	E	Excel data
027	CoBI	2000	K&W_Level_II_Assess_Dec2000	SW	Kato&Warren, Robinson&Noble	Island-wide	No	E	Monitoring report
028	CoBI	2005	BAS Stream Riparian Areas 10-24-05	RP	Herrera Environmental	Island-wide	No	E	Report of recommendations
029	CoBI	1998-2000	BI Stream WQ Monitoring Data 1998-2000	SW	Various	FLBY	No, same data as #026	H-E	Lab and field data sheets
030	CoBI	2004	BI_Nearshore Assessment Rpt_2004	NS	Williams et al.	Island-wide	No	E	Report
031	CoBI	2003	Nearshore_StrINV_2003	NS	Best	Island-wide	No	E	Report
032	CoBI	2004	Summit at Blakely Harbor Aug 04 Smpl Rpt	SW	OASIS Environmental	BLKH	Yes	E	Monitoring report
033	CoBI	2005	Summit at Blakely Harbor Sep 05 Smpl Rpt	SW	OASIS Environmental	BLKH	Yes	E	Monitoring report

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Library Index **Last Update: 2/24/2006**

Document No.	[1]Agency	Document Date	Document Title	[2]Document Type	Author	[3]CoBI Site Area Code	Info from Document Included in CoBI Database ?	Document Media Type (H, E, H-E)	Comments
034	CoBI	1997-1998	Fletcher Bay Watershed Maps, field sheets, & Tables 1997-1998	SW	Various	FLBY	Yes	H-E	Field sheets and data tables
035	CoBI	1998	Fletcher Bay Part2_1998	SW	Various	FLBY	No	E	Field sheets and Data tables
036	CoBI	1998	Manzanita Watershed Field Sheets & Excel Tables 1998	SW	Various	MZBY	No	H-E	Field sheets and Data tables
037	CoBI	1998	Manzanita Watershed Part 2_1998	SW	Various	MZBY	Yes	E	Field sheet and data tables
038	CoBI	1998-1999	MZBY Restoration Project Articles_1998-1999	SW	Various	MZBY	No	H-E	Articles
039	CoBI	1999	MZBY Restoration Project Evaluation_1999	SW	Watershed Education	MZBY	No	H-E	Project evaluation report
040	CoBI	1999	MZBY Restoration Project Summary_1999	SW	PSWQAT	MZBY	No	H-E	Summary report
041	CoBI	1999	MZBY Restoration Publicity _1999	SW	Watershed Education	MZBY	No	H-E	Neighborhood meeting info
042	CoBI	1998	MZBY Restoration Training Material	SW	G. Elfendahl	MZBY	No	H-E	Monitoring training protocol
043	CoBI	1999	MZBY Restoration Stream Naming_1999	SW	Various	MZBY	No	H-E	Stream naming info
044	CoBI	1999	MZBY Restoration Watershed Tour_1999	SW	Various	MZBY	No	H-E	Tour itinerary
045	CoBI	1998	Schel-Scheb Estuary Fieldsheets&Excel Table_1998	SW	Various	PLBH	Yes	H-E	Field sheets and data tables
046	CoBI	2003	Eagle Harbor Mooring Water Parameters June 24th, 2003	MR	CoBI Harbor Master	EGLH	Yes	E	Data table
047	CoBI	2003	Eagle Harbor Mooring Water Parameters July 13th, 2003	MR	CoBI Harbor Master	EGLH	Yes	E	Data table
048	CoBI	2003	Eagle Harbor Mooring Water Parameters October 8, 2003	MR	CoBI Harbor Master	EGLH	Yes	E	Data table
049	CoBI	1997-1998	Head of Bay, Eagle Harbor Field Data Sheets & Excel Sheets_1997-98	SW/NS	Various	EGLH	Yes	H-E	Field sheets and excel tables

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Library Index **Last Update: 2/24/2006**

Document No.	[1]Agency	Document Date	Document Title	[2]Document Type	Author	[3]CoBI Site Area Code	Info from Document Included in CoBI Database ?	Document Media Type (H, E, H-E)	Comments
050	CoBI	1997-2000	Murden Cove Field Sheets, Benthic Monitoring Sites & Spreadsheets_97-2000	SW	Various	MDCV	Yes	H-E	Field sheets and excel tables
051	CoBI	1997-1999	Taylor Creek Tables, Field Sheets, Maps _1997-'99	SW	Various	EGDL	Yes	HE	Field sheets and excel tables
052	Brem-KC HD	1992	KC_Boat_Waste_1992	NS	S.Daniels	EGLH	No	E	Monitoring report
053	Brem-KC HD	1995	BI_Non-Point_WP 1995	SW/NS	S. Forsyth	MZB, FLBY, EGLH, PLBH, MDCV, SHBH, BLKH	No	E	Work plan
054	Brem-KC HD	1995	BI_Non-Point_RPT 1995	SW/NS	W. Fisher	MZB, FLBY, EGLH, PLBH, MDCV, SHBH, BLKH	Yes	E	Monitoring report
055	Brem-KC HD	1997	BI_Non-Point_RPT 1997	SW/NS	Grellner et al	MDCV, EGDL, RBPM	Yes	E	Monitoring report
056	Brem-KC HD	1998	Brem-KC HD_WQ_RPT_1998	MR/BIO	Brem-KC HD	EGLH	No	E	Monitoring report
057	Brem-KC HD	1999	Brem-KC HD CoBI 2000 SOW 1999	SW	W. Fisher	MDCV, MZBY, FLBY, EGDL	No	H-E	Statement of work
058	Brem-KC HD	1996-1999	BI_Watershed Monitoring Project_1996-1999	SW	Various	FLBY	Yes	H-E	Misc doc for Fletcher Bay monitoring
059	KC HD	1983-2001	KCHD BI Docs	Other	Various	EGLH, FLBY, MDCV, BLKH	No	E	Bibliography Index
060	WA DOH	2003-2005	Agate Passage Marine Water Quality_2003-2005	NS	DOH	AGPS	Yes	E	Data table
061	WA DOH	2002	Agate Passage Map_2002	Other	DOH	AGPS	No	E	Map
062	Ecology	1997	Kitsap Basin 1997	Other	Economic & Engineering Svc. Inc.	Kitsap-BI Wide	No	E	Report
063	Ecology	2005	WADOE Water Resources WRIA 15 Index	Other	Sally Lawrence/ WADOE	NA	No	E	Document index from ecology
064	Ecology	2000	Sed Qual in Puget Sound_2000	MR/BIO	WADOE	EGLH	No	E	Data report, reference document
065	Journal Articles	2003	Trainer_PSP_2003final (Paralytic Shellfish Toxins in Puget Sound)	Bio	V. Trainer	Puget Sound	No	E	Report

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Library Index **Last Update: 2/24/2006**

Document No.	[1]Agency	Document Date	Document Title	[2]Document Type	Author	[3]CoBI Site Area Code	Info from Document Included in CoBI Database ?	Document Media Type (H, E, H-E)	Comments
066	Kitsap County Stream Team	2004	Biomonitoring Scores_2004	Bio	Stream Team	Kitsap County	No	H-E	Macroinvert. Data
067	Kitsap County Stream Team	1997-2000	Stream Team Analytical results 1997-2000	SW	Twiss Analytical	EGDL, FLBY, MDCV, MZBY, EGLH, BLKH	Yes	E	Analytical Lab results
068	Private Property - Hidden Cove	1993	Beak_Hidden Cove Property_Winter_1992	SW	Beak Consultants	PTMB	Yes	H-E	Monitoring report
069	Private Property - Hidden Cove	1994	Beak_Hidden Cove_1994-Winter '93	SW	Beak Consultants	PTMB	Yes	E	Monitoring report
070	Private Property - Hidden Cove	1995	Entranco_Hidden Cove Estates_1996	SW	Entranco	PTMB	No	H-E	Monitoring report
071	Private Property - Hidden Cove	1992	Hidden_Cove_Summer1992	SW	Beak Consultants	PTMB	Yes	H-E	Monitoring report
072	Private Property - Hidden Cove	1995	Triad Associates_Hidden Cove Post Construction1995	SW	Triad Associates	PTMB	No	H-E	Monitoring report
073	Private Property - Hidden Cove	1996	Beak_Hidden Cove_1996	SW	Beak Consultants	PTMB	Yes	H-E	Monitoring report
074	Private Property - Hidden Cove	1996-2000	AES Inc_Hidden Cove 1996-2000	SW	AES Inc.	PTMB	Yes	H-E	Monitoring report
075	Private Property - Hidden Cove	2001	AC Kindig&Co_Hidden Cove_May 2001	SW	AC Kindig&Co.	PTMB	Yes	H-E	Monitoring report
076	Private Property - Hidden Cove	2001	AC Kindig&Co_Hidden Cove_September 2001	SW	AC Kindig & Co.	PTMB	Yes	H-E	Monitoring report
077	Private Property - Hidden Cove	2000	CoBI Hidden Cove Hydrograph_2000	Other	CoBI Public Works Dept.	PTMB	No	H-E	Drainage plans, hydrograph and flow data
078	Private Property - Port Blakely Mill Co.	1990	Aquatic_Resources_PT_Blakely_Oct1990	NS	Jones & Stokes	BLKH	Yes, Bio and water	E	Report
079	Private Property - Port Blakely Mill Co.	1992	Water_Quality_Report_PT_Blakely_Mar1992	NS	Jones & Stokes	BLKH	Yes	E	Report
080	Private Property	1993-2000	Meigs Farm Deep Well Static Water Levels 1993-2000	Other	Unknown	MDCV	No	H-E	Data and methods, groundwater level info and pumping rates
081	Private Property	1993-2003	Monthly Precipitation at Green Spot Place 1993-2003	Other	V. Mattson	MDCV	Yes	H-E	Rainfall data

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Library Index **Last Update: 2/24/2006**

Document No.	[1]Agency	Document Date	Document Title	[2]Document Type	Author	[3]CoBI Site Area Code	Info from Document Included in CoBI Database ?	Document Media Type (H, E, H-E)	Comments
082	USEPA	1992	Wyckoff_1992	MR	USEPA	EGLH	No	E	Record of Decision
083	USEPA	2002	App A of Wyckoff 5-Yr Review	MR	USEPA	EGLH	No	E	Appendix A, National Pollution Discharge Elimination System Requirements
084	USEPA	2000	Wyckoff_Eagle_Harbor_EPA_Report_Sep2000	MR	USEPA	EGLH	No	E	Biological assessment
085	USEPA	2002	5 Yr Rev_Wyckoff2002	MR	USEPA	EGLH	No	E	Report
086	WADNR-PSAMP	2003-2004	PSAMP Puget Sound Submerged Vegetation Monitoring Report 2003-2004	Bio/SW	Dowty et al	MDCV	No	E	Report
087	WADOT	1998	Schel Chelb Estuary 1998	SW/RP	F. Bergdolt	PLBH	No	E	Monitoring report
088	WADOT	2000	EH_Eelgrass_Restoration_2000	Bio	Southard et al.	EGLH	No	E	Monitoring and evaluation report
089	WADOT	2001	Schel Chelb Estuary 2001 Annual Report	Bio/MR	WADOT	PLBH	No	E	Monitoring report
090	WADOT	2004	Schel Chelb Estuary 2003	Bio	WADOT	PLBH	No	E	Report
091	WADOH	1989-2005	Port Blakely Marine Water Quality_1989-2005	NS	WADOH	BLKH	Yes	E	Data table
092	WADOH	1993	Sanitary Survey of Port Blakely 1993	Other	WADOH	BLKH	No	H-E	Survey report
093	WADOH	1994-1999	Port Blakely Water Quality Data 1994-1999	NS	WADOH	BLKH	Yes	H-E	Data table
094	WADOH	2005	Port Blakely Map 2005	Other	WADOH	BLKH	No	E	Map
095	WADOH	1996-1999	Port Orchard Passage Water Quality Data 1996-1999	NS	WADOH	PORH	No	H-E	Data tables, info included in document #096
096	WADOH	1994-2005	Port Orchard Marine Water Quality_1994-2005	MR	WADOH	PORH	Yes	E	Data table
097	WADOH	2005	Port Orchard Passage Map_2005	Other	WADOH	PORH	No	E	Map

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Library Index **Last Update: 2/24/2006**

Document No.	[1]Agency	Document Date	Document Title	[2]Document Type	Author	[3]CoBI Site Area Code	Info from Document Included in CoBI Database ?	Document Media Type (H, E, H-E)	Comments
098	WADOH	2005	Port Orchard Passage Map2_2005	Other	WADOH	PORH	No	E	Map
099	WADOH	1988	Kitsap_County_Eagle_Harbor_1988	NS	Brem-KC HD	EGLH	No	E	Report, fecal data
100	WADOH	2005	Eagle Harbor WQ Survey Results_2005	NS	WADOH	EGLH	Yes	E	Excel table
101	WADOH	2005	Eagle_Harbor_Marina_Map_2005	Other	WADOH	EGLH	No	E	Map
102	WADOH	1989-2005	Port Madison Marine Water Quality_1989-2005	NS	WADOH	PTMB	Yes	E	Data table
103	WADOH	1993	Sanitary Survey of Port Madison 1993	Other	WADOH	PTMB	No	H-E	Survey report
104	WADOH	1994-1999	Port Madison Water Quality Data 1994-1999	NS	WADOH	PTMB	No	H-E	Data tables, info included from document #102 upload
105	WADOH	2005	Port Madison Map_2005	Other	WADOH	PTMB	No	E	Map
106	WADOH	2005	Port Madison Marine Station Coordinates	NS	Unknown	PTMB	No	E	Coordinates
107	WADOH	1991-1999	Fecal Coliform COCs,Lab Data, Invoices,etc_1991-1999	NS	Various	EGLH	Yes	H-E	Data tables
108	WADOT	2005	Year 7(2004) 4th Quarter Data Rpt&Annual Summary	SW	Herrera Environmental	EGLH	Yes	H-E	Summary report
109	WADOT	2005	Year 8 (2005) 2nd Quarter Data Rpt	Other	Herrera Environmental	EGLH	No	H-E	Quarterly report
110	Tribes (Vol II DVD)	2004	State of our Watersheds Report	Other	NW Indian Fisheries Commission	ONPS	No	E	WRIA report
111	WADOE	1997	BI Watershed Action Plan	SW	WADOE	BKGD	No	H-E	Report
112	WADOE	1997-1998	Long-term Marine water quality data_1997-1998	NS	WADOE	EGLH	Yes	E	Excel data
113	Private Property - Hidden Cove	1993	Hidden Cove_Summer1993	SW	Beak Consultants	PTMB	Yes	H-E	Report

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Library Index **Last Update: 2/24/2006**

Document No.	[1]Agency	Document Date	Document Title	[2]Document Type	Author	[3]CoBI Site Area Code	Info from Document Included in CoBI Database ?	Document Media Type (H, E, H-E)	Comments
114	Private Property - Hidden Cove	1997-2001	Hidden Cove_Results_1997-2001	SW	Beak Consultants	PTMB	Yes	E	Summary reports and tables
115	WADOE	2004	CoBI DL WA Bch Mon Prg	NS	WADOE	EGLH	Yes	E	Nearshore marine Entero. Sampling data, excel tables, database download
116	WADOE	2004	CoBI DL EIM TSP Data	Other	WADOE	Various, Island-wide	Yes	E	EIM database download of Tacoma Smelter Plume Sampling Project data (also map of sampling locations included as Doc #116a)
117	WADOE	1989-2002	CoBI DL SEDQUAL Database	NS, MR	WADOE	EGLH	Yes	E	Nearshore and marine sediment sampling data from sites within Eagle Harbor.
118	US Navy	2002-2005	Project ENVVEST Data 2002-2005	SW, NS, MR	Navy - Project ENVVEST	FLBY and various marine sites	Yes	E	Database download from the Project ENVVEST records. Contains land site info for Springbrook Creek and various neasrshore and marine sites.
119	CoBI	Oct, 2003	Bainbridge Is Nearshore Assessment Summary of Best Available Science	NS, MR	Battelle	Various, Island-wide	No	H-E	Document provides baseline characterization of BI nearshore environments, identifies restoration and preservation opportunities, provides ranking strategy and management framework.
120	Various	NA	CoBI WQFMP Guidance Documents	SW, NS, MR	Various	Various, Island-wide	No	E	Collection of Federal, State, County and Local guidance documents that are used for reference material in the creation of the overall CoBI WQFMP

CoBI WQFMP Library Codes Lists

[1]Agency Codes

NRC = Natural Resource Conservation District

[2]Document Type Codes

SW	Primarily a surface water data report
NS	Primarily a nearshore data report
MR	Primarily a marine data report
BIO	Primarily biological data report
Other	Other type of report
RP	Ripirian Area data

[3]CoBI SITE AREA CODES (Site_Area_Code)

Agate Passage	AGPS
Background	BKGD
Blakely Harbor	BLKH
Eagle Dale	EGDL
Eagle Harbor	EGLH
Fletcher Bay	FLBY
Gazzam Lake	GZLK
Manzanita Bay	MZBY
Murden Cove	MDCV
North Eagle Harbor	NEGH
Other Non-Program Sites	ONPS
Pleasant Beach	PLBH
Point White-Battle Point	PWBP
Port Madison	PTMD
Port Madison Bay	PTMB
Port Orchard Bay	POBY
Port Orchard Reach	PORH
Puget Sound	PGSD
Rich Passage	RIPS
Rolling Bay-Point Monroe	RBPM
Rockaway Beach	RWBH
South Beach	SHBH
Sunrise	SNRS
Unknown	UNKN

APPENDIX B
CoBI WQFMP DOCUMENT WATER QUALITY DATA CRITERIA USABILITY RATING CODES

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Index and Water Quality Data Criteria Usability Rating Codes

Last update : 2/24/2006

Document Information							*[4] Water Quality Data Criteria Assessment Information*									
Document No.	**[1]Agency**	**Document Date**	**Document Title**	**[2]Document Type**	**Author**	**[3]CoBI Site Area Code**	**Data Quality Code physical chem (temp., DO, pH, turbity, conductivity, TSS, TDS, etc.)**	**Data Quality Code FC**	**Data Quality Code TPH**	**Data Quality Code Metals**	**Data Quality Code Pesticides/ organics**	**Data Quality Code Nutrients**	**Data Quality Code Macroinvert**	**MSL Comments**	**Parameters Measured**	**Method or QC comments**
001	Kitsap Conservation / NRC District	May, 1999	Inventory Evaluation and Alternatives for E. Bailey 6910 NE Day Rd, BI WA 98110	Other	Stahl, Brian and Drecksel, Ken	MZBY								No water quality information		
002	Kitsap Conservation / NRC District	1999	Resource Inventory Evaluation and Alternatives for Hutchison Property, 12364 Miller Rd, BI, WA 98110	Other	Stahl, Brian and Drecksel, Ken	MZBY								No water quality information		
003	Association of Bainbridge Communities	1995	ABC: Final Report, Eagle Harbor Clean Water Project	NS	Jim Jarosz	EGDL						Q2		Some useful FC data		
004	BI School District	2000-2001	Woodward MS '00-'01 Murden Crk Stream Habitat Assessment Data	SW / RP	Gagnon and Fermanis	MDCV								No water quality information		
005	BI School District	2000-2001	Woodward MS '00-'01 Woodward Crk Water Quality data sheets and lab reports	SW	Various	MDCV	Q4	Q2	Q2					FC analyzed on the day collected	pH, DO, Temp., turbidity, FC, TPH	Twiss Analytical lab did FC and TPH, no QC data reported for TPH
006	BI School District	2001-2002	Woodward MS '01-'02 WW Crk WQ & FC Data shts	SW	Various	MDCV	Q4	Q2	Q2					FC analyzed on the day collected, copies of computer entries were hard to read	pH, DO, Temp., turbidity, FC, TPH	Twiss Analytical lab did FC and TPH, no QC data reported for TPH
007	BI School District	2002	Woodward MS '02-'03 Stream WQ Grps-Sum Tbls	SW	Various	MDCV	Q4	Q4	Q4						pH, DO, Temp., turbidity, FC, TPH	No method or QC information
008	BI School District	2002-2003	Woodward MS '02-'03 WW Crk WQ & FC-TPH Data	SW	Various	MDCV	Q4	Q2	Q2						pH, DO, Temp., turbidity, FC, TPH	Twiss Analytical lab did FC and TPH, no QC data reported for TPH
009	BI School District	2003-2004	Woodward MS '03-'04 WQ Data Sheets & Summary	SW	Various	MDCV	Q4								pH, DO, Temp., turbidity,	No calibration info for probes.
010	BI School District	2004	Woodward MS '04 WQ Mon Day Bio Stuff	Bio	Stream Team	MDCV	Q4							some useful macroinvert data	Macroinvert, pH, DO, Temp.	No calibration info for probes.
011	BI School District	2004	Woodward MS '04 WQ Mon Day Info	SW	Watershed Education	FLBY								No Data		
012	BI School District	2004	Woodward MS '04 WW Crk FC & TPH Data	SW	Watershed Education	MDCV		Q1	Q1						TPH, FC	
013	BI School District	1998-2003	Woodward MS '98-'03 WW Crk WQ data Summary	SW	Various	MDCV	Q4	Q4	Q4						pH, DO, Temp., turbidity, FC, TPH	No method or QC information
014	BI School District	1998-1999	Woodward MS '98-'99 WW Crk WQ Data shts	SW	Various	MDCV	Q4							Several pages cut off, data not readable	pH, DO, Temp., turbidity,	
015	BI School District	2002	Woodward MS Riparian Zone Info Shts_2002	RP	Various	MDCV								No Data		
016	BI School District	2004	Watershed Watch Article 2004 & Misc. Info	SW	Various	MDCV								No Data		
017	BI School District	2003-2004	Enviromental Education Partnerships Program Aug2003-Aug2004	SW	Various	MDCV	Q4							No FC or TPH data reported in the document sent. Appears that there could be an Appendix B that was not included.	pH, DO, Temp., turbidity	uncalibrated DO probe or Hach kit for DO.
018	BI School District	2002	Report to the CoBI Environmental ED. Partnerships Program Jan to Aug 2002	SW	CoBI	MDCV	Q4	Q2	Q2					No QC data provided for TPH or discusion of probe calibration for DO. No discussion of FC methods. No review of the invertebrate data completed	pH, DO, Temp., turbidity, FC, TPH	TPH analysis done by TWISS Lab and likely conducted per acceptable methods
019	BI School District	2000-2001	00-'01 Strm Mon Data	SW	Various	MDCV	Q4							Looks like decimal errors on the first four DO meter samples. No calibration information.	pH, DO, Temp., turbidity	
020	BI School District	2001-2002	01-'02 Strm Mon Data	SW	Various	MDCV	Q4	Q4	Q4					Data entry error and no calibration information	pH, DO, Temp., turbidity, FC, TPH	
021	BI School District	2002-2003	02-'03 Strm Mon Data	SW	Various	MDCV	Q4	Q4	Q4					Data entry error and no calibration information	pH, DO, Temp., turbidity, FC, TPH	
022	BI School District	2003-2004	03-'04 Strm Mon Data	SW	Various	MDCV	Q4							No QC information	pH, DO, Temp., turbidity	
023	BI School District	2000-2004	Master Data 00-04	SW	Various	MDCV	Q4							No QC information	pH, DO, Temp., turbidity	
024	CoBI	2003	Azalea Stormwater Catch Basin 2003	Other	TWISS Analytical	NEGH					Q2			Outside holding time and limited QC information	Pesticides	
025	CoBI	2003	BI Stream Water Chemistry Survey (Clairborne)_2003	SW	Clairborne	MZBY	Q2								pH, DO, Temp., turbidity	No calibration information for the YSI
026	CoBI	1998-1999	BI WS WQ Data 1998-1999	SW	Various	MZBY, FLBY, MDCV	Q4							Data could be OK, but no information on the collection method (probe, test stripes, or kit?)	pH, DO, Temp., turbidity, flow	
027	CoBI	2000	K&W_Level_II_Assess_Dec2000	SW	Kato&Warren, Robinson&Noble	FLBY								Groundwater quality information, but no surface water data.		
028	CoBI	2005	BAS Stream Riparian Areas 10-24-05	RP	Herrera Environmental	Island-wide								No Data		
029	CoBI	1998-2000	BI Stream WQ Monitoring Data 1998-2000	SW	Various	FLBY	Q4	Q2						Field measurments look the same as document 26	FC, pH, DO, Temp., turbidity, flow	Twiss Analytical lab conducted analysis, but no QC is reported.
030	CoBI	2004	BI_Nearshore Assessment Rpt_2004	NS	Williams et al.	AGPS, BLKH, EGLH, RBPM, RIPS, PWBP, MZBY, MDCV, PTMB								No surface water quality data		
031	CoBI	2003	Nearshore_StrINV_2003	NS	Best	EGLH								No surface water quality data		
032	CoBI	2004	Summit at Blakely Harbor Aug 04 Smpl Rpt	SW	OASIS Environmental	BLKH	Q2	Q4		Q4				Data appear acceptable, but are not supported by QC or method specific information for some of the parameters.	Temp, DO, pH, turbidity, metals, FC, hardness	OASIS Environmental analyzed, but no method information was provided.
033	CoBI	2005	Summit at Blakely Harbor Sep 05 Smpl Rpt	SW	OASIS Environmental	BLKH	Q2	Q4		Q4				Data appear acceptable, but are not supported by QC or method specific information for some of the parameters. Detection limits for metals are very high and should be used only for comparison to WQ standards	Temp, DO, pH, turbidity, metals, FC, hardness	OASIS Environmental analyzed, but no method information was provided.
034	CoBI	1998	Fletcher Bay Watershed Maps, field sheets, & Tables 1998	SW	Various	FLBY	Q4	Q4							Temp, DO, pH, FC, Flow	No method or QC information listed.
035	CoBI	1998	Fletcher Bay Part2_1998	SW	Various	FLBY	Q4							FC samples collected, but no data reported in this file	Temp, DO, pH, FC, Flow	No calibration information for probes
036	CoBI	1998	Manzanita Watershed Field Sheets & Excel Tables 1998	SW	Various	MZBY	Q4								Temp, DO, pH, Flow	No calibration information for probes
037	CoBI	1998	Manzanita Watershed Part 2_1998	SW	Various	MZBY	Q4	Q4						FC data reported on last	Temp, DO, pH, Flow, FC	No method information on FC or calibration information for probes
038	CoBI	1998-1999	MZBY Restoration Project Articles_1998-1999	SW	Various	MZBY								No data		

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Index and Water Quality Data Criteria Usability Rating Codes

Last update : 2/24/2006

Document Information							*[4] Water Quality Data Criteria Assessment Information*									
Document No.	**[1]Agency**	**Document Date**	**Document Title**	**[2]Document Type**	**Author**	**[3]CoBI Site Area Code**	**Data Quality Code physical chem (temp., DO, pH, turbity, conductivity, TSS, TDS, etc.)**	**Data Quality Code FC**	**Data Quality Code TPH**	**Data Quality Code Metals**	**Data Quality Code Pesticides/ organics**	**Data Quality Code Nutrients**	**Data Quality Code Macroinvert**	**MSL Comments**	**Parameters Measured**	**Method or QC comments**
039	CoBI	1999	MZBY Restoration Project Evaluation (Preliminary)_1999	SW	Watershed Education	MZBY								No data.		
040	CoBI	1999	MZBY Restoration Project Summary_1999	SW	PSWQAT	MZBY								No Data		
041	CoBI	1999	MZBY Restoration Publicity _1999	SW	Watershed Education	MZBY								No Data		
042	CoBI	1998	MZBY Restoration Training Material	SW	G. Elfendahl	MZBY	Q4								Temp, DO, pH, flow	No calibration information
043	CoBI	1999	MZBY Restoration Stream Naming_1999	SW	Various	MZBY								No Data		
044	CoBI	1999	MZBY Restoration Watershed Tour_1999	SW	Various	MZBY								No Data		
045	CoBI	1998	Schel-Scheb Estuary Fieldsheets&Excel Table_1998	SW	Various	PLBH	Q4	Q4							pH, Temp, DO, FC	
046	CoBI	2003	Eagle Harbor Mooring Water Parameters June 24th, 2003	MR	CoBI Harbor Master	EGLH	Q4	Q4						No method or QC information	pH, Temp, DO, Turbidity, TDS, FC	No information
047	CoBI	2003	Eagle Harbor Mooring Water Parameters July 13th, 2003	MR	CoBI Harbor Master	EGLH	Q4	Q4						No method or QC information	pH, Temp, DO, Turbidity, TDS, FC	No information
048	CoBI	2003	Eagle Harbor Mooring Water Parameters October 8, 2003	MR	CoBI Harbor Master	EGLH	Q4	Q4						No method or QC information	pH, Temp, DO, Turbidity, TDS, FC	No information
049	CoBI	1997-1998	Head of Bay, Eagle Harbor Field Data Sheets & Excel Sheets_1997-98	SW/NS	Various	EGLH	Q4	Q4							pH, Temp, DO, flow, FC	
050	CoBI	1999-2000	Murden Cove Field Sheets, Benthic Monitoring Sites & Spreadsheets_99-2000	SW	Various	MDCV	Q4	Q2							pH, Temp, DO, Turbidity, FC	Twiss Lab analyzed FC, but not QC information or method
051	CoBI	1997-1999	Taylor Creek Tables, Field Sheets, Maps _1997-'99	SW	Various	EGDL	Q4	Q2						No method or QC information	pH, Temp, DO, flow, FC	Twiss Lab analyzed FC, but not QC information or method
052	Brem-KC HD	1992	KC_Boat_Waste_1992	NS	S.Daniels	EGLH		Q4						No method or QC information	FC	No method or QC information
053	Brem-KC HD	1995	BI_Non-Point_WP 1995	SW/NS	S. Forsyth	MZB, FLBY, EGLH, PLBH, MDCV, SHBH, BLKH								No data reported, but data associated to this project should be high quality based on the QAPP instructions		
054	Brem-KC HD	1995	BI_Non-Point_RPT 1995	SW/NS	W. Fisher	MZB, FLBY, EGLH, PLBH, MDCV, SHBH, BLKH	Q2	Q2						No QC information was reported, but there appears to be a corresponding QAPP	pH, Temp, DO, Turbidity, TSS, FC, conductivity, flow	
055	Brem-KC HD	1997	BI_Non-Point_RPT 1997	SW/NS	Grellner et al	MDCV, EGDL, RBPM	Q2	Q2		Q1				No QC information was reported, but there appears to be a corresponding QAPP (NOTE metals data is tissue)	pH, Temp, DO, Turbidity, TSS, FC, conductivity, flow	
056	Brem-KC HD	1998	Brem-KC HD_WQ_RPT_1998	MR/BIO	Brem-KC HD	EGLH	Q4	Q4							pH, Temp, DO, Turbidity, FC, conductivity, flow	
057	Brem-KC HD	1999	Brem-KC HD CoBI 2000 SOW 1999	SW	W. Fisher	MDCV, MZBY, FLBY, EGDL								No water quality data.		
058	Brem-KC HD	1996-1999	BI_Watershed Monitoring Project_1996-1999	SW	Various	FLBY	Q4	Q4						NOTE: Tissue data is the same as report 55	pH, Temp, DO, Turbidity, TSS, FC, conductivity, flow	
059	KC HD	1983-2001	KCHD BI Docs	Other	Various	EGLH, FLBY, MDCV, BLKH								No water quality data.		
060	WA DOH	2003-2005	Agate Passage Marine Water Quality_2003-2005	NS	DOH	AGPS	Q4	Q4							FC, Temp, salinity	
061	WA DOH	2002	Agate Passage Map_2002	Other	DOH	AGPS								No water quality data.		
062	Ecology	1997	Kitsap Basin 1997	Other	Economic & Engineering Svc. Inc.	Kitsap-BI Wide								No water quality data. (hydrological cycle for Kitsap County)		
063	Ecology	2005	WADOE Water Resources WRIA 15 Index	Other	Sally Lawrence	NA								No water quality data.		
064	Ecology	2000	Sed Qual in Puget Sound_2000	MR/BIO	WADOE	EGLH				Q1	Q1			All data are Q1, but they are sediment not surface water.		
065	Journal Articles	2003	Trainer_PSP_2003final (Paralytic Shellfish Toxins in Puget Sound)	Bio	V. Trainer	Puget Sound								Paralytic shellfish poisoning information. Data from WHOH would be Q1.		
066	Kitsap County Stream Team	2004	Biomonitoring Scores_2004	Bio	Stream Team	Kitsap County							Q1	Reviewed macroinvert data		
067	Kitsap County Stream Team	1997-2000	Stream Team Analytical results 1997-2000	SW	Twiss Analytical	EGDL, FLBY, MDCV, MZBY, EGLH, BLKH	Q4	Q2						data from p35 is outside holding time and would need a Q3 flag	FC, Temp, pH, DO	Twiss Lab analyzed FC, but not QC information or method
068	Private Property - Hidden Cove	1992	Beak_Hidden Cove Property_Winter_1992	SW	Beak Consultants	PTMB	Q4	Q4	Q4	Q4		Q4			pH, temp, DO, FC, TSS, conductivity, nutrients, TPH, TOC, metals	Limited QC available
069	Private Property - Hidden Cove	1994	Beak_Hidden Cove_1994	SW	Beak Consultants	PTMB	Q4	Q4	Q4	Q4		Q4		pH in marine waters is too low, likely equipment error.	pH, temp, DO, FC, TSS, conductivity, nutrients, TPH, TOC, metals	Limited QC available
070	Private Property - Hidden Cove	1995	Entranco_Hidden Cove Estates_1995	SW	Entranco	PTMB								No water quality data.		
071	Private Property - Hidden Cove	1995	Hidden_Cove_Estates_Sep1995	SW	Entranco	PTMB	Q4	Q4	Q4	Q4		Q4		First 23 pages are the same as #70. Page 72 starts a duplicate of document #68	pH, temp, DO, FC, TDS, TSS, conductivity, nutrients, TPH, TOC, metals, pesticides, organics	Limited QC available
072	Private Property - Hidden Cove	1995	Triad Associates_Hidden Cove Post Construction1995	SW	Triad Associates	PTMB								No water quality data.		
073	Private Property - Hidden Cove	1996	Beak_Hidden Cove_1996	SW	Beak Consultants	PTMB	Q4	Q4	Q4	Q4	Q4	Q4			pH, temp, DO, FC, TDS, TSS, conductivity, nutrients, TPH, TOC, total phosphorus, ortho-phosphorus, metals, pesticides, organics, tubidity, chloride, surfactants,	Limited QC available
074	Private Property - Hidden Cove	1996-2000	AES Inc_Hidden Cove 1996-2000	SW	AES Inc.	PTMB	Q4	Q4	Q4	Q4	Q4	Q4		pH in marine waters is too low, likely equipment error. One 1996 report supported by limited QC	pH, temp, DO, FC, TSS, conductivity, nutrients, TPH, TOC, metals, organics	
075	Private Property - Hidden Cove	2001	AC Kindig&Co_Hidden Cove_May 2001	SW	AC Kindig&Co.	PTMB	Q4	Q4	Q4	Q4	Q4	Q4			pH, temp, DO, FC, TSS, conductivity, nutrients, TPH, TOC, metals, organics	No QC information

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Index and Water Quality Data Criteria Usability Rating Codes

Last update : 2/24/2006

Document Information							*[4] Water Quality Data Criteria Assessment Information*									
Document No.	**[1]Agency**	**Document Date**	**Document Title**	**[2]Document Type**	**Author**	**[3]CoBI Site Area Code**	**Data Quality Code physical chem (temp., DO, pH, turbity, conductivity, TSS, TDS, etc.)**	**Data Quality Code FC**	**Data Quality Code TPH**	**Data Quality Code Metals**	**Data Quality Code Pesticides/ organics**	**Data Quality Code Nutrients**	**Data Quality Code Macroinvert**	**MSL Comments**	**Parameters Measured**	**Method or QC comments**
076	Private Property - Hidden Cove	2001	AC Kindig&Co_Hidden Cove_September 2001	SW	AC Kindig&Co.	PTMB	Q4	Q4	Q4	Q4	Q4	Q4			pH, temp, DO, FC, TSS, conductivity, nutrients, TPH, TOC, metals, organics	No QC information
077	Private Property - Hidden Cove	2000	CoBI Hidden Cove Hydrograph_2000	Other	CoBI Public Works Dept.	PTMB	Q2 (Flow data)							Reviewed flow data and calculations as presented	Flow	Methodology seems to be sound
078	Private Property - Port Blakely Mill Co.	1990	Aquatic_Resources_PT_Blakely_Oct1990	NS	Jones & Stokes	BLKH	Q4							Insufficient habitat or biota data to conduct review on this portion.	Habitat, DO, Temp, pH	No instrument information
079	Private Property - Port Blakely Mill Co.	1992	Water_Quality_Report_PT_Blakely_Mar1992	NS	Jones & Stokes	BLKH		Q4	Q4	Q4		Q4			nutrients, organics, FC, metals	Followed standard methods for water (APHA) and EPA. No specific methods listed for the parameters.
080	Private Property	1993-2000	Meigs Farm Deep Well Static Water Levels 1993-2000	Other	Unknown	MDCV				Q4				Cl and TDS in well water	metals	Twiss Lab analyzed, but not QC information or method
081	Private Property	1993-2003	Monthly Precipitation at Green Spot Place 1993-2003	Other	V. Mattson	MDCV	Q4							Reviewed precipitation data	Precipitation	Data only, no instrumentation or methodology discussion with document
082	USEPA	1992	Wyckoff_1992	MR	USEPA	EGLH								No water quality data.		
083	USEPA	2002	App A of Wyckoff 5-Yr Review	MR	USEPA	EGLH								No water quality data.		
084	USEPA	2000	Wyckoff_Eagle_Harbor_EPA_Report_Sep2000	MR	USEPA	EGLH								No water quality data.		
085	USEPA	2002	5 Yr Rev_Wyckoff2002	MR	USEPA	EGLH								No water quality data.		
086	WADNR-PSAMP	2003-2004	PSAMP 03-04 Submerged Veg Rpt Murden Cove	Bio/SW	Dowty et al	MDCV	Q1							Temp data of high quality. Eel grass data may also be of value.	Temp, other biota	
087	WADOT	1998	Schel Chelb Estuary 1998	SW/RP	F. Bergdolt	PLBH	Q2/Q3 (DO)							Method information provided, but no calibration information, DO data is not reliable and Q3 should be applied to the DO data	Temp, DO, salinity	
088	WADOT	2000	EH_Eelgrass_Restoration_2000	Bio	Southard et al.	EGLH							Q1(eel grass)	Eel grass data collected by reputable source and by approved methods.	Eel grass	This data may be of limited value to the WQFMP
089	WADOT	2001	Schel Chelb Estuary 2001 Annual Report	Bio/MR	WADOT	PLBH							Q1(eel grass)	Eel grass data collected by reputable source and by approved methods.	Biological surveys	This data may be of limited value to the WQFMP
090	WADOT	2003	Schel Chelb Estuary 2003	Bio	WADOT	PLBH							Q1(eel grass)	Eel grass data collected by reputable source and by approved methods.	macroinverts and biota studies	This data may be of limited value to the WQFMP
091	WADOH	1989-2005	Port Blakely Marine Water Quality_1989-2005	NS	WADOH	BLKH	Q4	Q4							FC, Temp, salinity	
092	WADOH	1993	Sanitary Survey of Port Blakely 1993	Other	WADOH	BLKH								No water quality data.		
093	WADOH	1994-1999	Port Blakely Water Quality Data 1994-1999	NS	WADOH	BLKH	Q4	Q4						No method or collection information.	FC, Temp, salinity	
094	WADOH	2005	Port Blakely Map 2005	Other	WADOH	BLKH								No water quality data.		
095	WADOH	1996-1999	Port Orchard Passage Water Quality Data 1996-1999	NS	WADOH	PORH	Q4	Q4						No method or collection information.	FC, Temp, salinity	
096	WADOH	1994-2005	Port Orchard Marine Water Quality_1994-2005	MR	WADOH	PORH	Q4	Q4						No method or collection information.	FC, Temp, salinity	Probably analyzed by state accredited lab, but no information
097	WADOH	2005	Port Orchard Passage Map_2005	Other	WADOH	PORH								No water quality data.		
098	WADOH	2005	Port Orchard Passage Map2_2005	Other	WADOH	PORH								No water quality data.		
099	WADOH	1988	Kitsap_County_Eagle_Harbor_1988	NS	Brem-KC HD	EGLH		Q2						Limited QC data reported	FC	Twiss Lab
100	WADOH	2005	Eagle Harbor WQ Survey Results_2005	NS	WADOH	EGLH		Q4							FC	
101	WADOH	2005	Eagle_Harbor_Marina_Map_2005	Other	WADOH	EGLH								No water quality data		
102	WADOH	1989-2005	Port Madison Marine Water Quality_1989-2005	NS	WADOH	PTMB	Q4	Q4							FC, Temp, salinity	
103	WADOH	1993	Sanitary Survey of Port Madison 1993	Other	WADOH	PTMB		Q4						p17 a few points	FC	
104	WADOH	1994-1999	Port Madison Water Quality Data 1994-1999	NS	WADOH	PTMB	Q4	Q4							FC, Temp, salinity	
105	WADOH	2005	Port Madison Map_2005	Other	WADOH	PTMB								No water quality data		
106	WADOH	2005	Port Madison Marine Station Coordinates	NS	Unknown	PTMB								No water quality data		
107	WADOH	1991-1999	Fecal Coliform COCs,Lab Data, Invoices,etc_1991-1999	NS	Various	EGLH		Q2						Data meet holding times, but no other QC information	FC	Analyzed by Twiss Labs
108	WADOT	2005	Year 7 (2004) Fourth Quarter Data Report and Annual Summary / West Harbor Operable Unit Wyckoff/Eagle Harbor Superfund Site		Herrera Environmental		Q1			Q1	Q1			Data all meet Level 3 EIM QC data assessment	pH, Temp, Hardness, salinity, tubidity, DO, Metals, TSS, organics	
109	WADOT	2005	Year 8 (2005) 2nd Quarter Data Report and Annual Summary / West Harbor Operable Unit Wyckoff/Eagle Harbor Superfund Site		Herrera Environmental		Q1			Q1	Q1			Data all meet Level 3 EIM QC data assessment	pH, Temp, Hardness, salinity, tubidity, DO, Metals, TSS, organics	
110	Tribes (Vol II DVD)	2004	State of our Watersheds Report	Other	NW Indian Fisheries Commission	ONPS								No Water quality data.		
111	WADOE	1997	BI Watershed Action Plan	SW	WADOE	BKGD								No Water quality data.		
112	WDOE	1997-1998	Long-term Marine Water Quality data_1997-1998	NS/MR	WADOE	EGLH	Q2	Q2				Q2		Data probably downloaded from reputable website and would get a higer rating,however limited QC	FC, temp, DO, salinity, pH, nutrients	

City of Bainbridge Island Water Quality and Flow Monitoring Program Document Index and Water Quality Data Criteria Usability Rating Codes

Last update : 2/24/2006

Document Information							*[4] Water Quality Data Criteria Assessment Information*									
Document No.	**[1]Agency**	**Document Date**	**Document Title**	**[2]Document Type**	**Author**	**[3]CoBI Site Area Code**	**Data Quality Code physical chem (temp., DO, pH, turbity, conductivity, TSS, TDS, etc.)**	**Data Quality Code FC**	**Data Quality Code TPH**	**Data Quality Code Metals**	**Data Quality Code Pesticides/ organics**	**Data Quality Code Nutrients**	**Data Quality Code Macroinvert**	**MSL Comments**	**Parameters Measured**	**Method or QC comments**
113	Private Property - Hidden Cove	1993	Hidden Cove_Summer1993	SW	Beak Consultants	PTMB	Q2	Q2	Q2	Q2	Q2	Q2		QC is discussed briefly and precision data is available.	pH, temp, DO, FC, TSS, conductivity, nutrients, TPH, TOC, metals, BOD, COD	Winkler method for DO
114	Private Property - Hidden Cove	1997-2001	Hidden Cove_Results_1997-2001	SW	Beak Consultants	PTMB	Q4	Q4	Q4	Q3	Q4	Q3		See page 41 of the PDF for comments on problems with the data reported from January 15 to May 13, 1999. Other data may be Ok	pH, temp, DO, FC, TDS, TSS, conductivity, nutrients, TPH, TOC, total phosphorus, ortho-phosphorus, metals, pesticides, organics, tubidity, chloride, surfactants,	No QC information provided. Some noted data problems in the text.
115	WADOE	2004	CoBI DL WA Bch Mon Prg	NS	WADOE	EGLH		Q1						WDOE Data Level 4 QA QAPP assessment	Enterococci	
116	WADOE	2004	CoBI DL EIM TSP Data	Other	WADOE	Various, Island-wide				Q2				Analyses performed by Accredited lab, but not QC information provided in EIM download. Level 1 QA assessment from WDOE	As, Pb (metals)	Analyses by STL lab
117	WADOE	1989-2002	CoBI DL SEDQUAL Database	NS, MR	WADOE	EGLH				Q2	Q2			Use QA qualifiers from sedqual database. There was no QC information for me to review, but assume it as a QC designation from WDOE	metals, pesticides, grain size, organics	
118	US Navy	2002-2005	Project ENVVEST Data 2002-2005	SW, NS, MR	Navy - Project ENVVEST	FLBY and various marine sites	Q1	Q1		Q1	Q1	Q1		This includes at least some of the FC and pesticides data from WDOE.	metals, alkalinity, hardness, TSS, TS, DOC, TOC, nutrients, pesticides, organics (PCB/PAH)	Analyses conducted by MSL, CAS, and WDOE Manchester lab
119	CoBI	Oct, 2003	Bainbridge Is Nearshore Assessment Summary of Best Available Science	NS, MR	Battelle	Various, Island-wide								No Water quality data.		
120	Various	NA	CoBI WQFMP Guidance Documents	SW, NS, MR	Various	Various, Island-wide								Guidance documents, no data		

CoBI WQFMP Data Assessment Codes

[1]Agency Codes

NRC = Natural Resource Conservation District

[2]Document Type Codes

Primarily a surface water data report	**SW**
Primarily a nearshore data report	**NS**
Primarily a marine data report	**MR**
Primarily biological data report	**BIO**
Other type of report	**Other**
Ripirian Area data	**RP**

[3]CoBI SITE AREA CODES (Site_Area_Code)

Agate Passage	**AGPS**
Background	**BKGD**
Blakely Harbor	**BLKH**
Eagle Dale	**EGDL**
Eagle Harbor	**EGLH**
Fletcher Bay	**FLBY**
Gazzam Lake	**GZLK**
Manzanita Bay	**MZBY**
Murden Cove	**MDCV**
North Eagle Harbor	**NEGH**
Other Non-Program Sites	**ONPS**
Pleasant Beach	**PLBH**
Point White-Battle Point	**PWBP**
Port Madison	**PTMD**
Port Madison Bay	**PTMB**
Port Orchard Bay	**POBY**
Port Orchard Reach	**PORH**
Puget Sound	**PGSD**
Rich Passage	**RIPS**
Rolling Bay-Point Monroe	**RBPM**
Rockaway Beach	**RWBH**
South Beach	**SHBH**
Sunrise	**SNRS**
Unknown	**UNKN**

[4]Data Quality Codes:

State of the art method, adequate QC	**Q1**
Less precise method or QC	**Q2**
Known or suspected data problems	**Q3**
Unknown method and/or QC	**Q4**

APPENDIX C
DATA SETS – STATISTICAL ANALYSIS

C-1: Data Set #1 - WADOH and Ecology Marine WQ Data

C-2: Data Set #2 - Washington Department of Health (WA-DOH) BEACH Program WQ Data

C-3: Data Set #3 - Washington Department of Ecology (Ecology) Sediment Quality (SEDQUAL) Survey Data

C-4: Data Set #4 - Kitsap County Health District (KCHD) WQ Data

C-5: Data set #6 - Bainbridge Is School District Water Quality Data

C-6: Data Set #7 - CoBI Water Quality Data

C-7: Data set #8 - Project ENVVEST- Navy Water Quality and Flow Monitoring Data

C-8: Data Set #9 - CoBI Beach Seine Water Quality Data

C-9: Data Set #10 – Biomonitoring and Land Use Land Cover (LULC) Data

APPENDIX C-1

Data Set #1 – Washington Department of Health (WA-DOH) Marine WQ Data

WA Dept of Health Marine Water Quality Data Set - Fecal Colifom Statistical Analysis

**values listed are reported in fecal colonies (col) / 100ml*

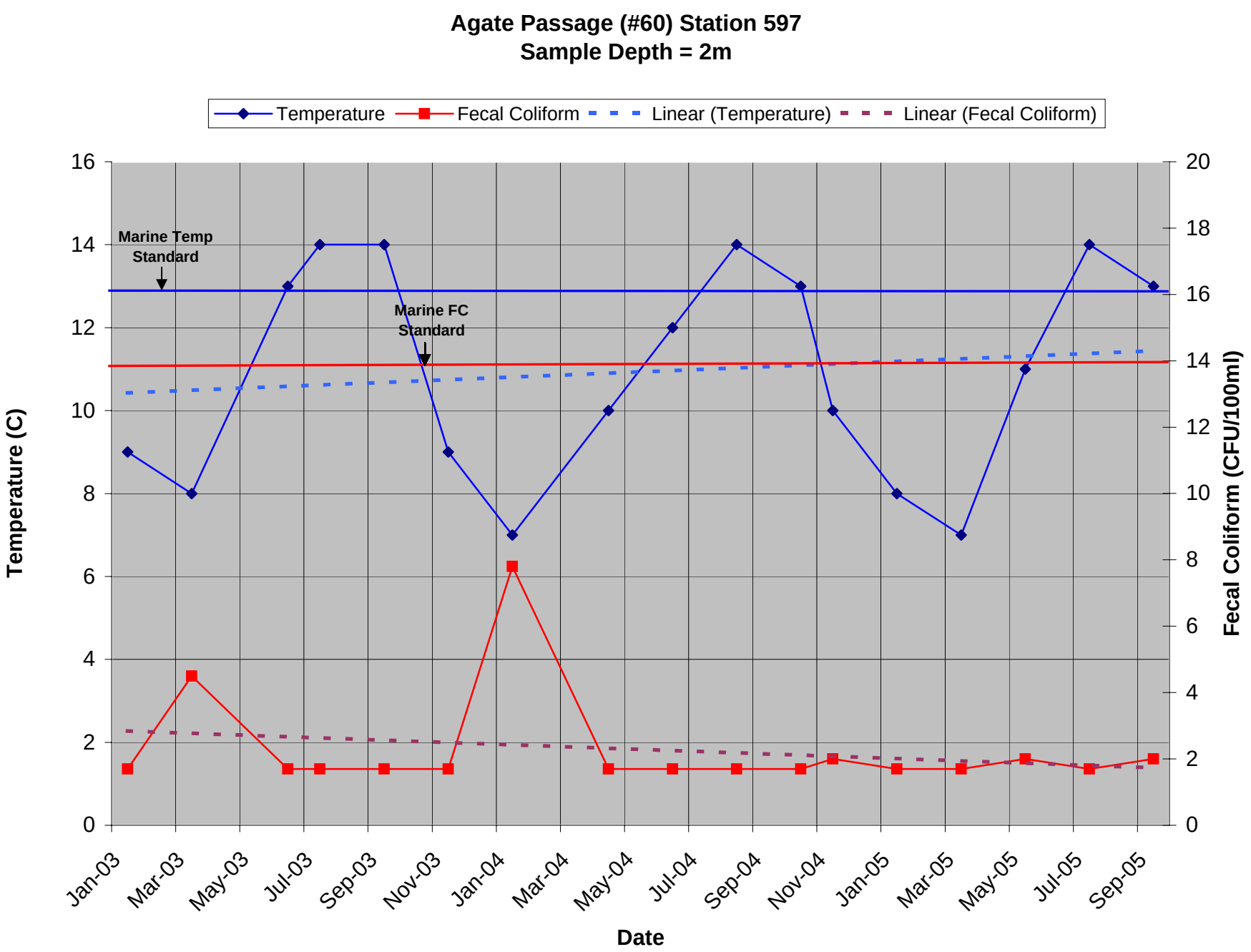
Monitoring Station	597	598	413	414	415	416	417	418	419	420	421
Nearshore Area	AGPS	AGPS	BLKH	BLKH	BLKH	BLKH	BLKH	BLKH	BLKH	BLKH	BLKH
CoBI Document No.	60	60	91	91	91	91	91	91	91	91	91
Statistical Parameter	Statistical Analysis Result										
# of samples	17	17	113	115	115	111	99	99	99	99	51
range-min	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
range-max	7.8	17	9.3	6.8	130	49	79	220	70	130	23
geomean	2.03	2.36	2.25	2.40	2.71	3.04	3.98	3.90	3.69	2.51	2.18
90th percentile	3	4.5	4.5	5.46	9.72	7.8	14	13	17	4.96	5.81
Values ≥90 percentile	2	3	17	12	12	22	13	14	13	10	4

Monitoring Station	437	438	439	440	441	448	449	450	451	452	455
Nearshore Area	PORH	PORH	PORH	PORH	PORH	PORH	PORH	PORH	PORH	PORH	PORH
CoBI Document No.	96	96	96	96	96	96	96	96	96	96	96
Statistical Parameter	Statistical Analysis Result										
# of samples	97	97	99	100	99	99	91	91	92	92	45
range-min	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
range-max	27	49	13	240	110	33	46	2500	1600	920	7.8
geomean	2.21	2.59	2.15	2.20	2.09	2.38	2.40	2.74	2.71	2.43	2.04
90th percentile	4.5	7.2	4.5	4.5	2.5	7.8	7.8	7.8	7.8	6.57	4.50
Values ≥90 percentile	15	10	15	13	10	11	10	10	12	10	6

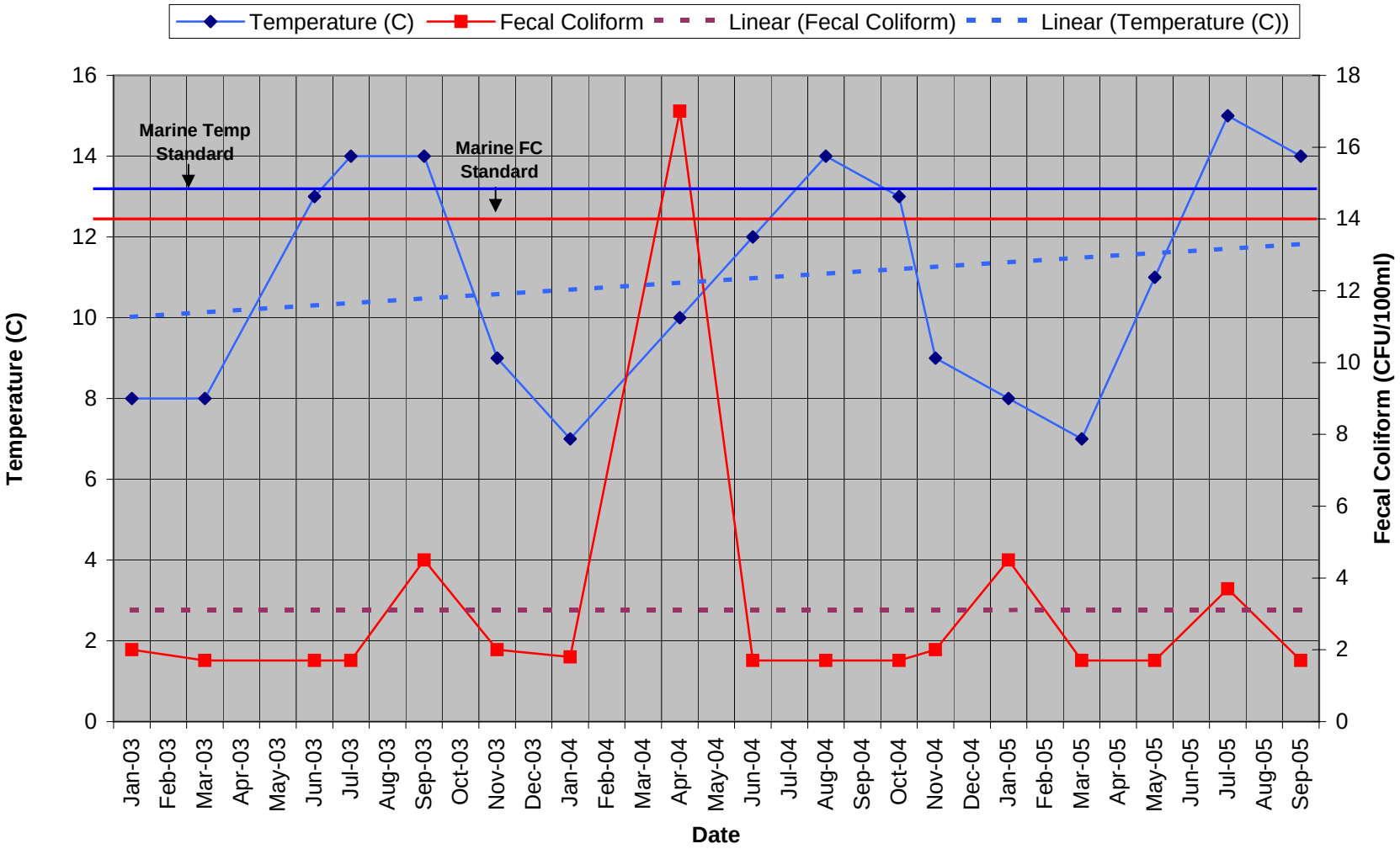
Monitoring Station	456	457	461	515	516	517	518	519	520	521	522
Nearshore Area	PORH	PORH	PORH	PTMB	PTMB	PTMB	PTMB	PTMB	PTMB	PTMB	PTMB
CoBI Document No.	96	96	96	102	102	102	102	102	102	102	102
Statistical Parameter	Statistical Analysis Result										
# of samples	45	42	38	97	99	71	67	67	67	67	46
range-min	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
range-max	70	49	130	79	79	33	33	170	70	23	7.8
geomean	3.03	2.61	2.77	2.44	3.00	2.84	2.22	2.36	2.16	2.17	1.99
90th percentile	9.72	7.8	11	4.5	11.2	13	4.5	7.2	4.2	5.42	3.00
Values ≥90 percentile	5	6	5	18	10	8	10	7	7	7	5

Monitoring Station	637	638	648
Nearshore Area	PTMB	PTMB	PTMB
CoBI Document No.	102	102	102
Statistical Parameter	Statistical Analysis Result		
# of samples	44	44	48
range-min	1.7	1.7	1.7
range-max	130	33	130
geomean	2.59	2.21	3.50
90th percentile	6.81	4.5	11
Values ≥90 percentile	5	7	7

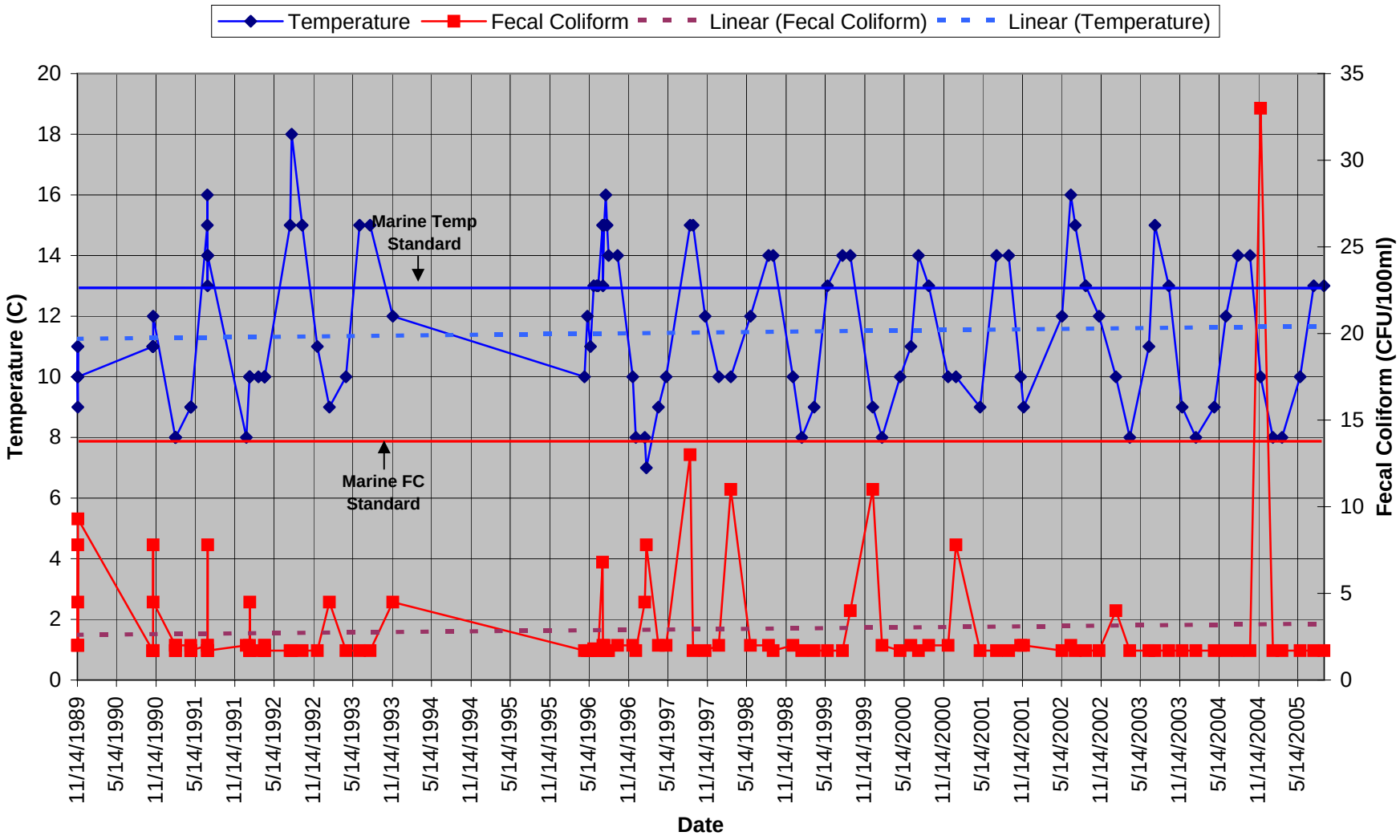
WA WAC 173-201A WQ Standard for fecal coliform (geomean) = 14 col / 100ml, and for single exceedances = 41 col / 100ml

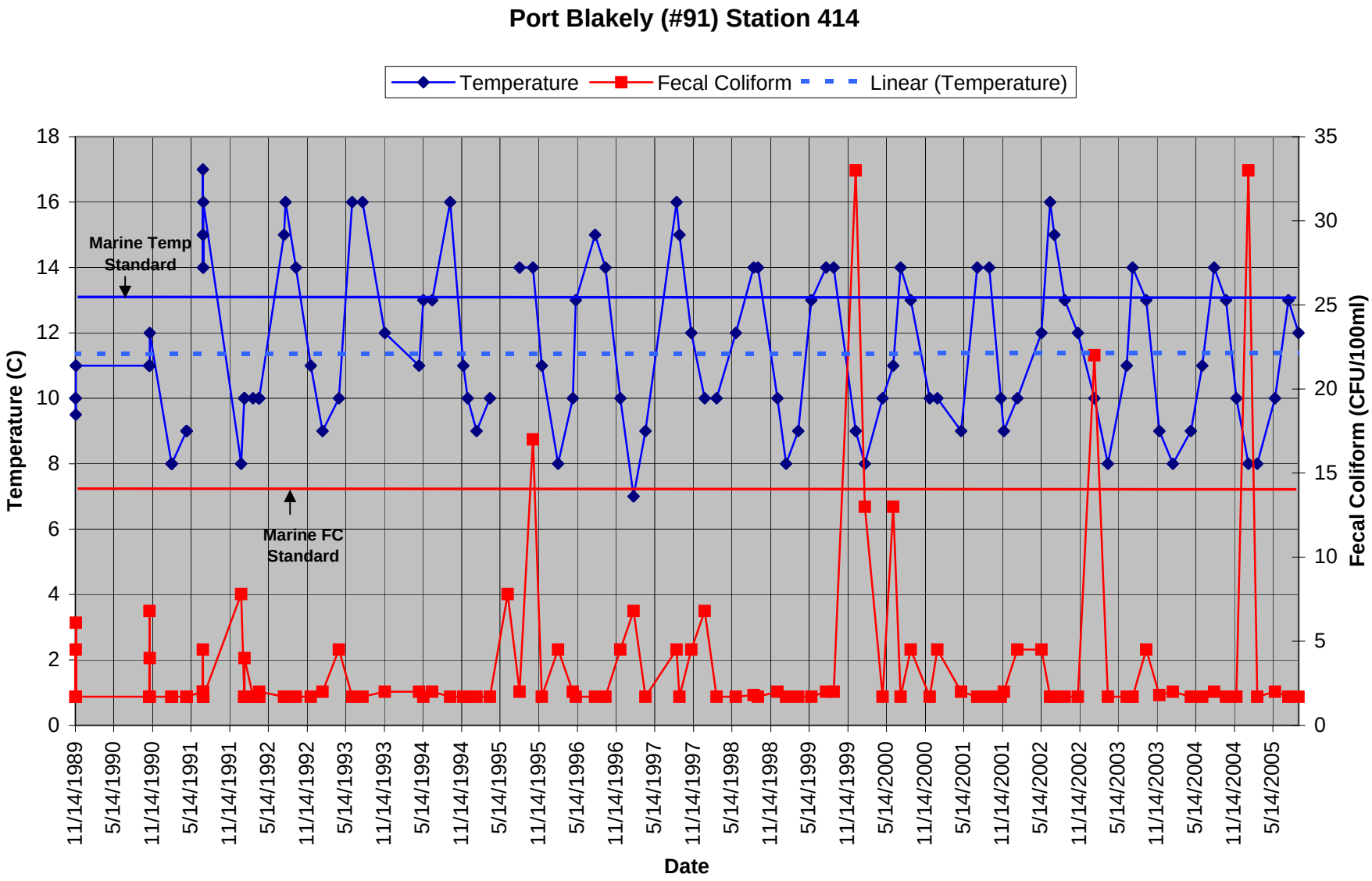

Agate Passage (#60) Station 597
Sample Depth = 2m
Temperature
Fecal Coliform
Linear (Temperature)
Linear (Fecal Coliform)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
20
Jan-03
Mar-03
May-03
Jul-03
Sep-03
Nov-03
Jan-04
Mar-04
May-04
Jul-04
Sep-04
Nov-04
Jan-05
Mar-05
May-05
Jul-05
Sep-05

Agate Passage (#60) Station 598
Sample Depth = 2m

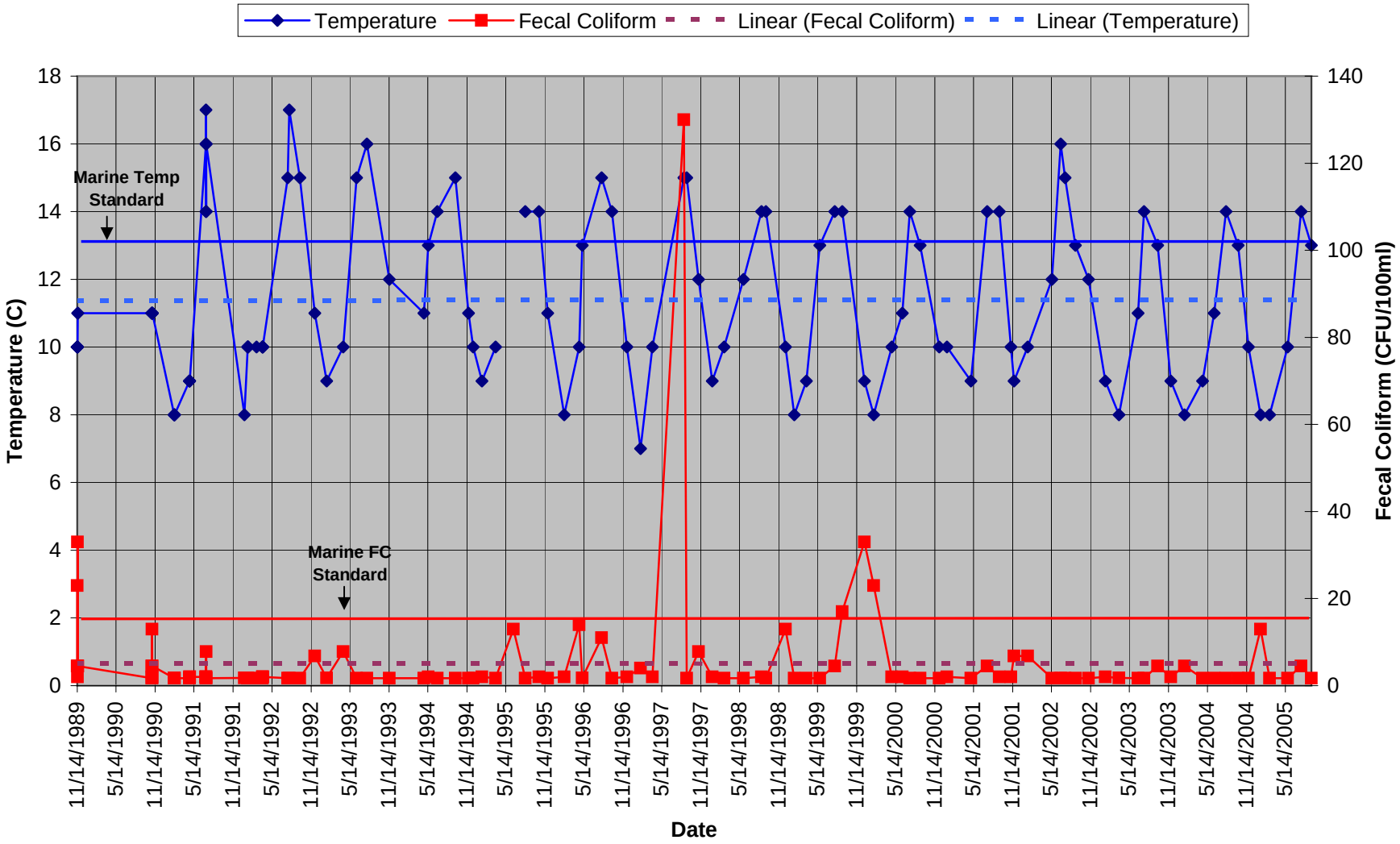


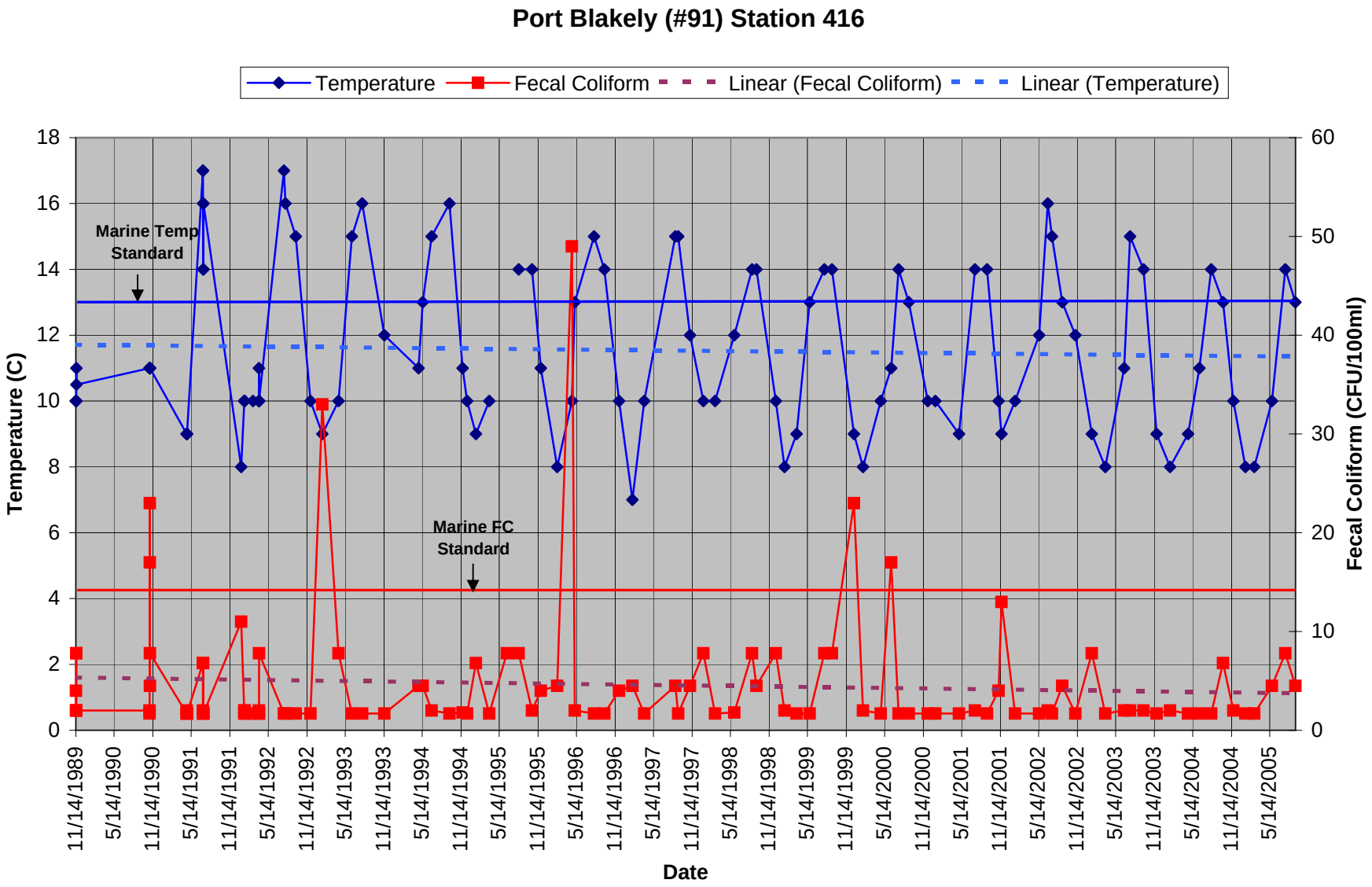
Port Blakely (#91) Station 413

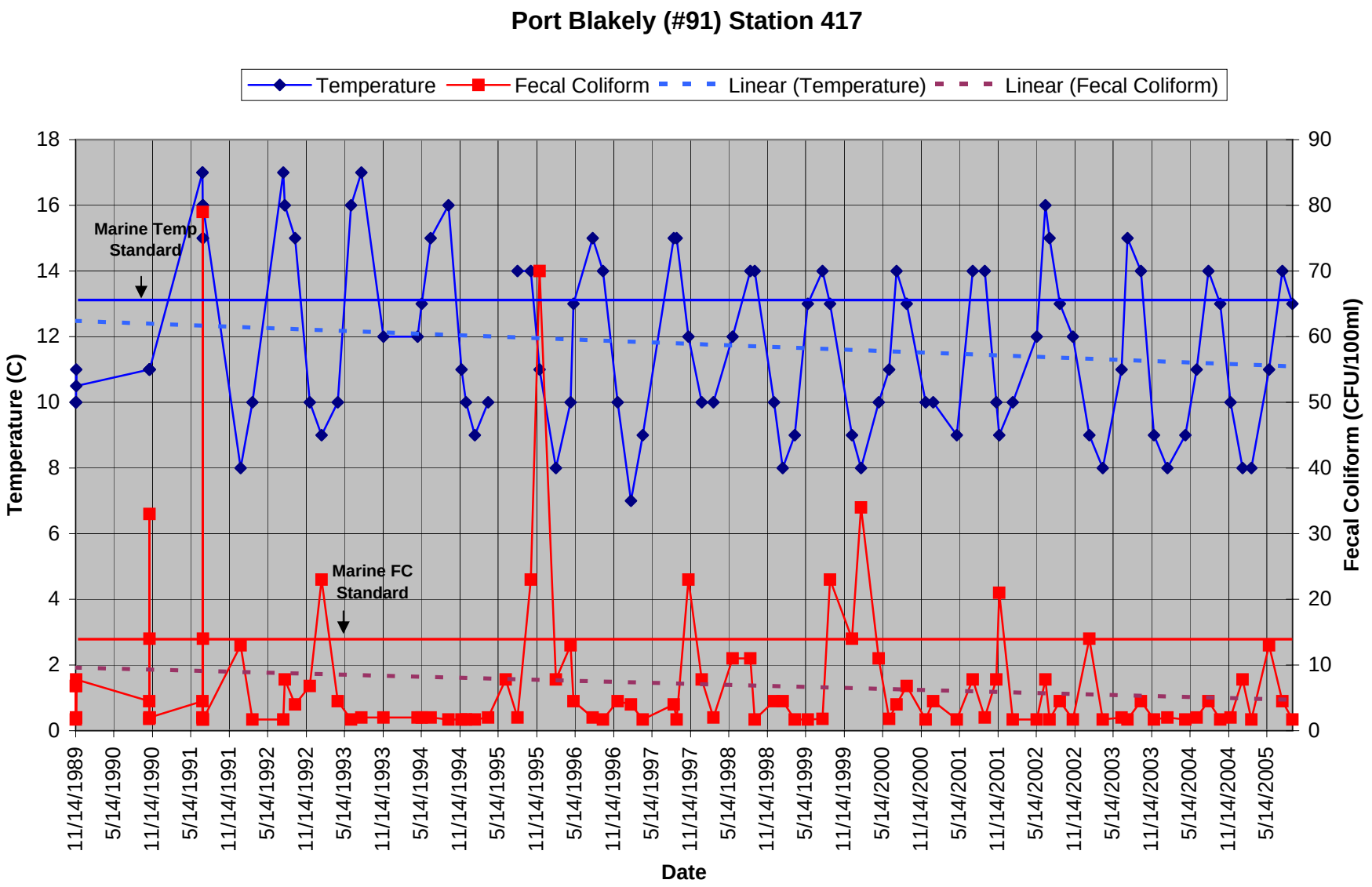



Port Blakely (#91) Station 414
Temperature
Fecal Coliform
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
0
5
10
15
20
25
30
35
11/14/1989
5/14/1990
11/14/1990
5/14/1991
11/14/1991
5/14/1992
11/14/1992
5/14/1993
11/14/1993
5/14/1994
11/14/1994
5/14/1995
11/14/1995
5/14/1996
11/14/1996
5/14/1997
11/14/1997
5/14/1998
11/14/1998
5/14/1999
11/14/1999
5/14/2000
11/14/2000
5/14/2001
11/14/2001
5/14/2002
11/14/2002
5/14/2003
11/14/2003
5/14/2004
11/14/2004
5/14/2005

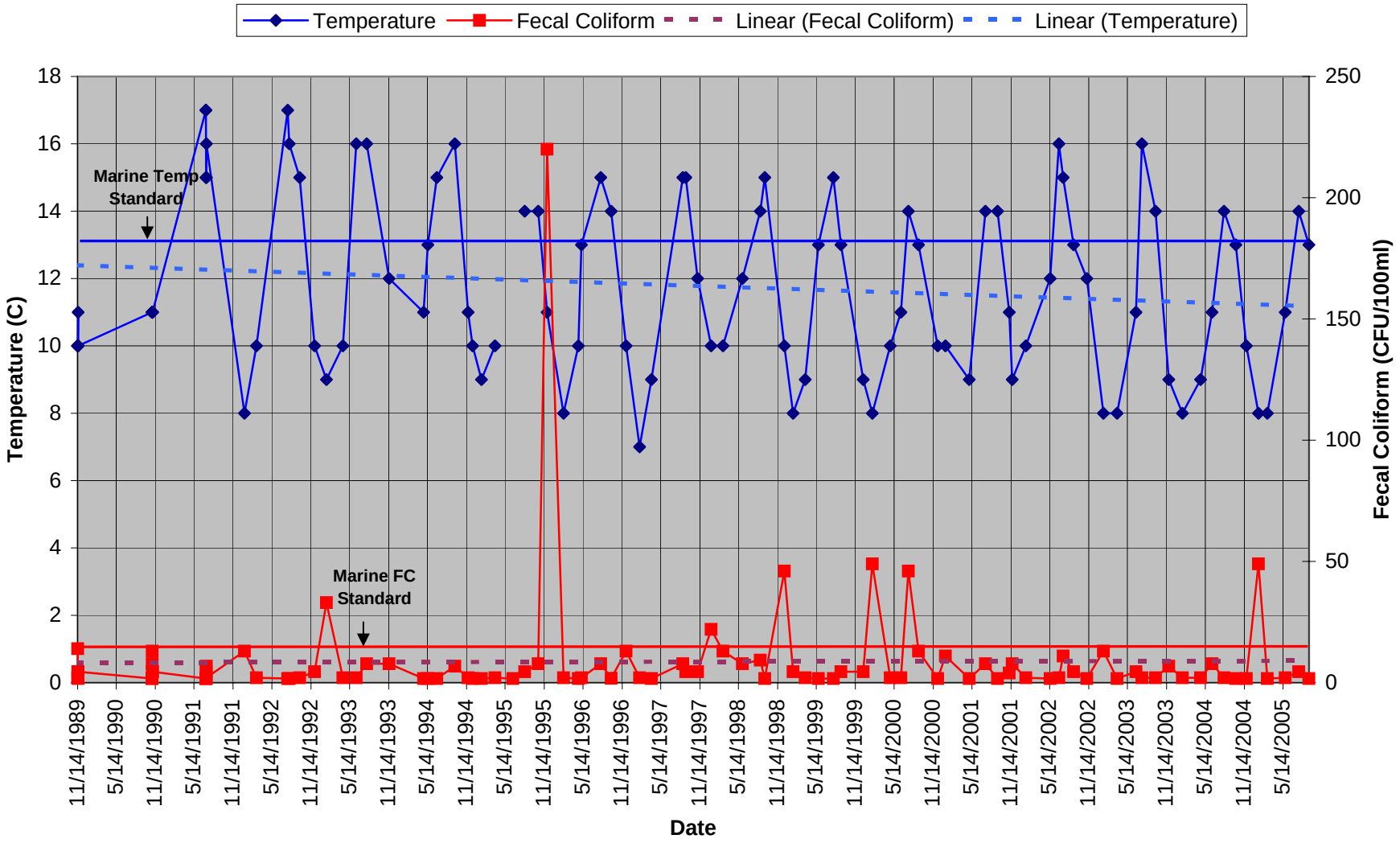
Port Blakely (#91) Station 415

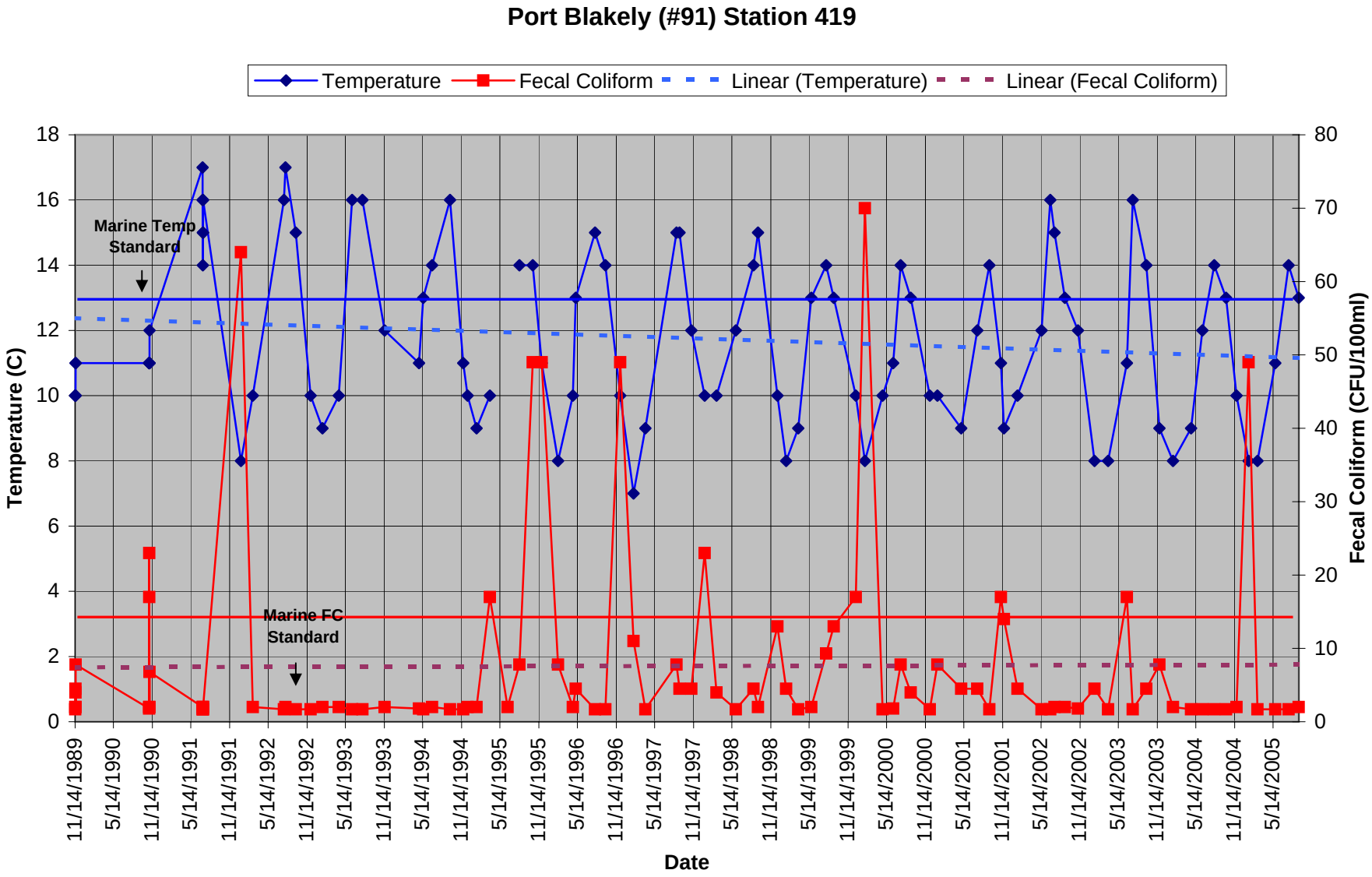



Port Blakely (#91) Station 416
Temperature
Fecal Coliform
Linear (Fecal Coliform)
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
0
10
20
30
40
50
60
11/14/1989
5/14/1990
11/14/1990
5/14/1991
11/14/1991
5/14/1992
11/14/1992
5/14/1993
11/14/1993
5/14/1994
11/14/1994
5/14/1995
11/14/1995
5/14/1996
11/14/1996
5/14/1997
11/14/1997
5/14/1998
11/14/1998
5/14/1999
11/14/1999
5/14/2000
11/14/2000
5/14/2001
11/14/2001
5/14/2002
11/14/2002
5/14/2003
11/14/2003
5/14/2004
11/14/2004
5/14/2005

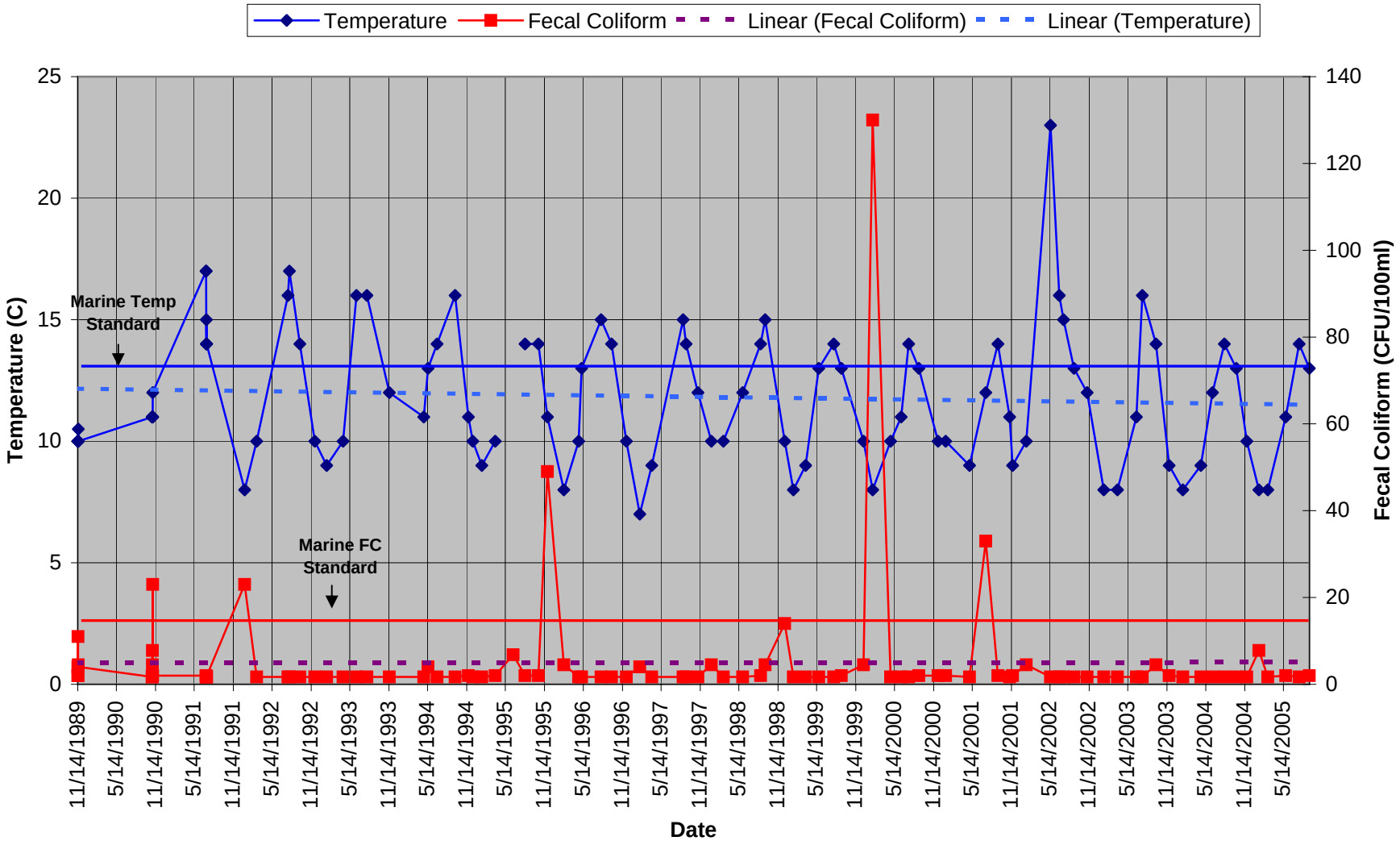

Port Blakely (#91) Station 417
Temperature
Fecal Coliform
Linear (Temperature)
Linear (Fecal Coliform)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
0
10
20
30
40
50
60
70
80
90
11/14/1989
5/14/1990
11/14/1990
5/14/1991
11/14/1991
5/14/1992
11/14/1992
5/14/1993
11/14/1993
5/14/1994
11/14/1994
5/14/1995
11/14/1995
5/14/1996
11/14/1996
5/14/1997
11/14/1997
5/14/1998
11/14/1998
5/14/1999
11/14/1999
5/14/2000
11/14/2000
5/14/2001
11/14/2001
5/14/2002
11/14/2002
5/14/2003
11/14/2003
5/14/2004
11/14/2004
5/14/2005

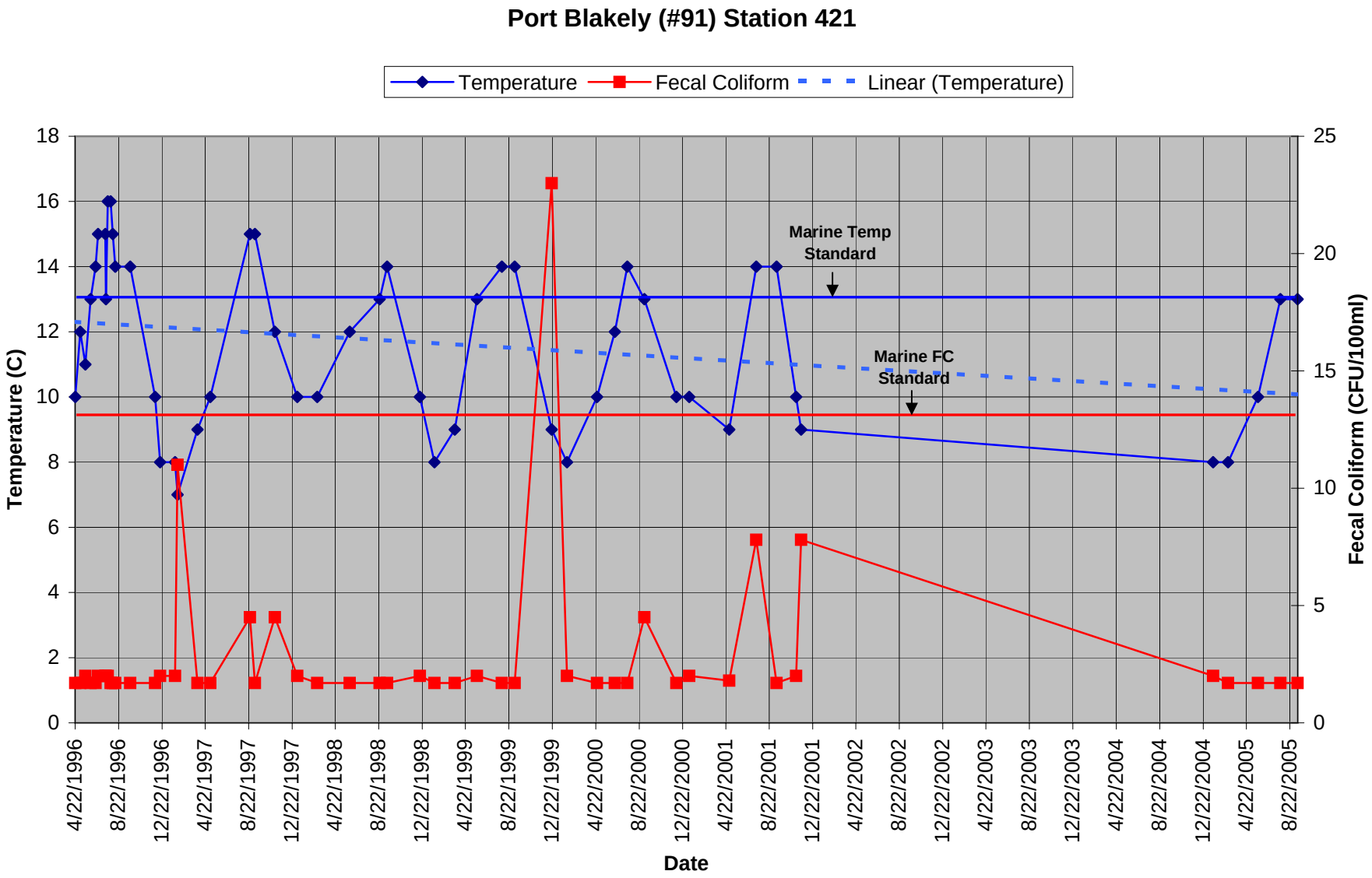
Port Blakely (#91) Station 418

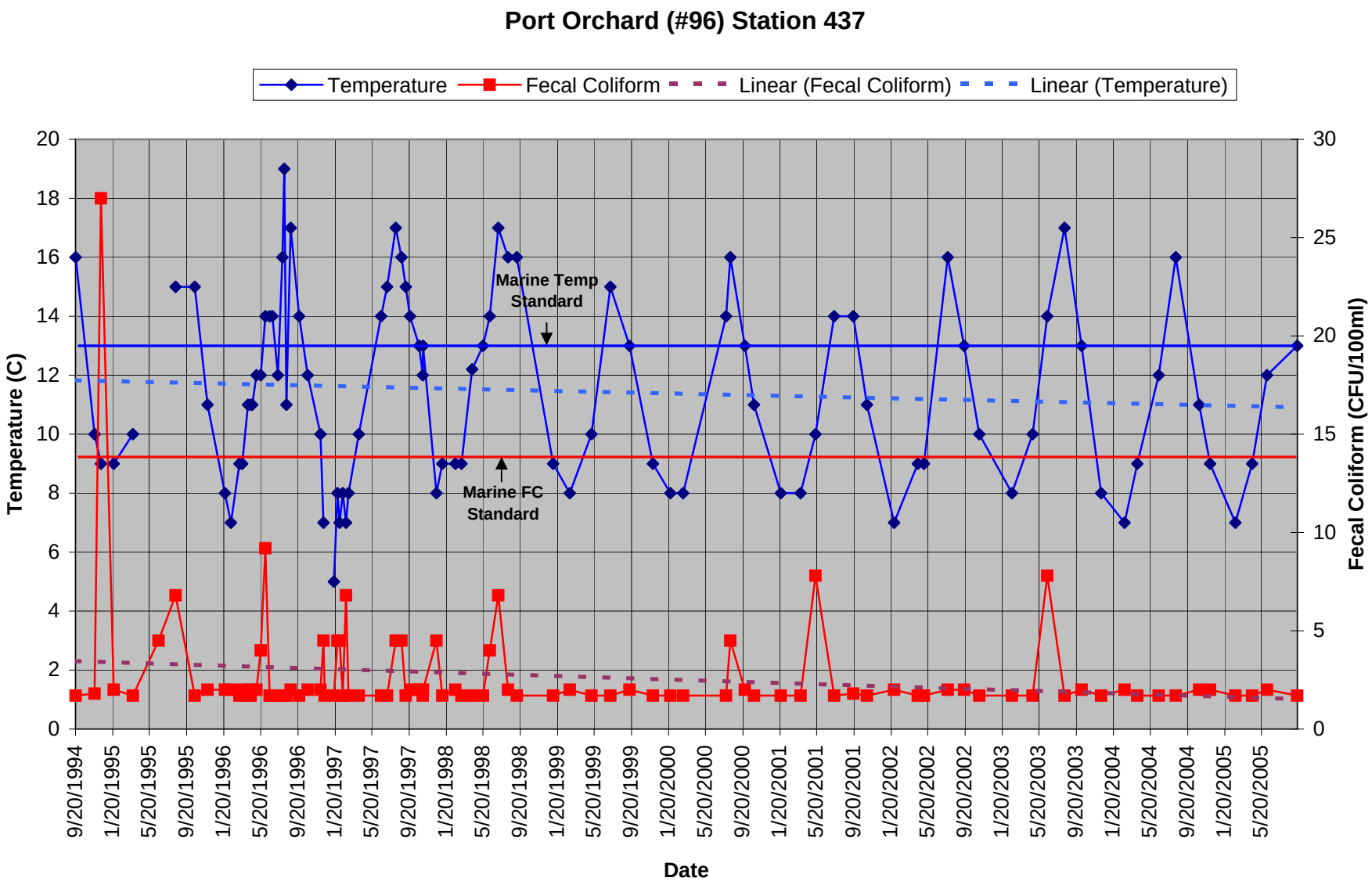


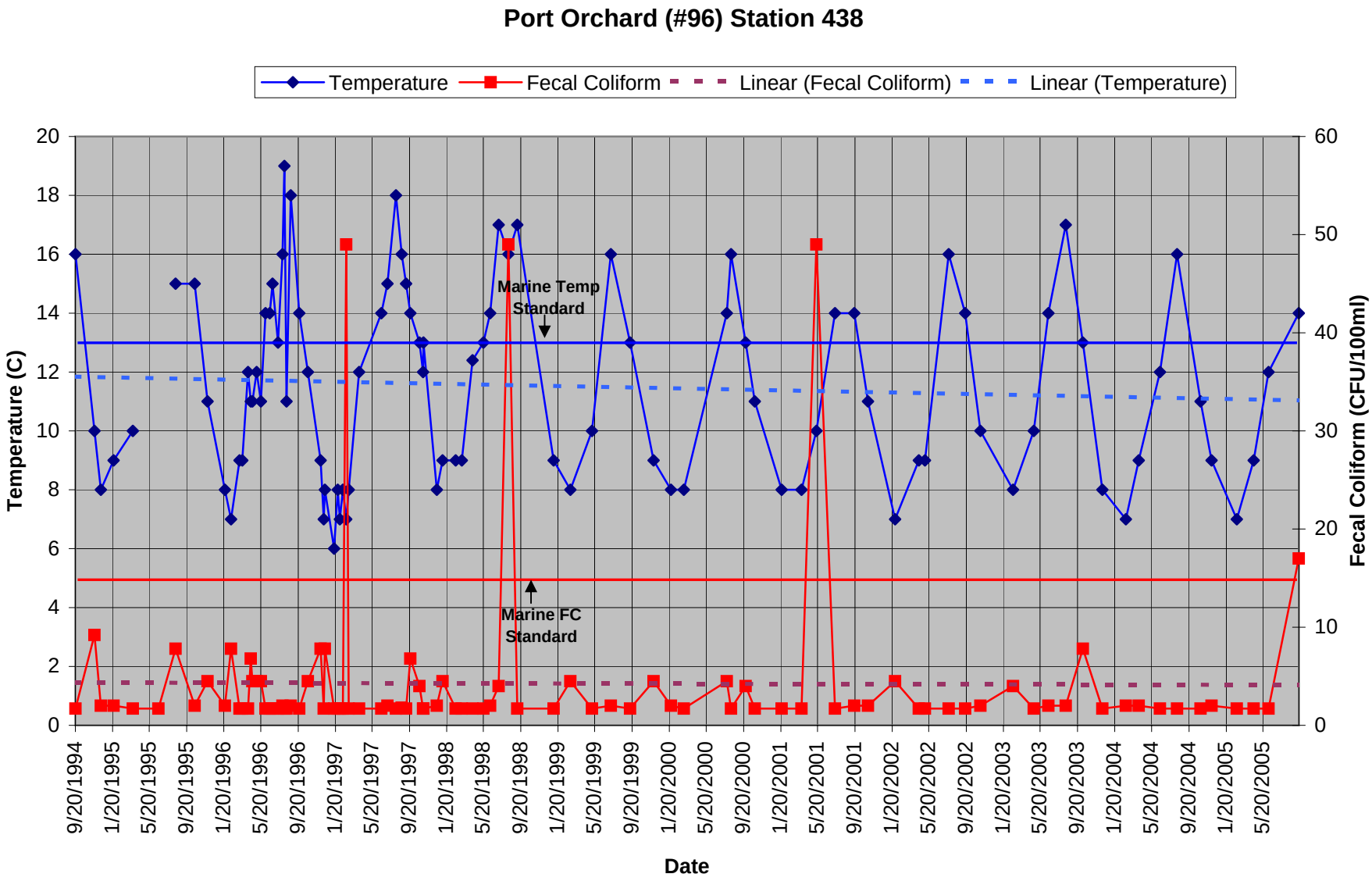

Port Blakely (#91) Station 419
Temperature
Fecal Coliform
Linear (Temperature)
Linear (Fecal Coliform)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
0
10
20
30
40
50
60
70
80
11/14/1989
5/14/1990
11/14/1990
5/14/1991
11/14/1991
5/14/1992
11/14/1992
5/14/1993
11/14/1993
5/14/1994
11/14/1994
5/14/1995
11/14/1995
5/14/1996
11/14/1996
5/14/1997
11/14/1997
5/14/1998
11/14/1998
5/14/1999
11/14/1999
5/14/2000
11/14/2000
5/14/2001
11/14/2001
5/14/2002
11/14/2002
5/14/2003
11/14/2003
5/14/2004
11/14/2004
5/14/2005

Port Blakely (#91) Station 420

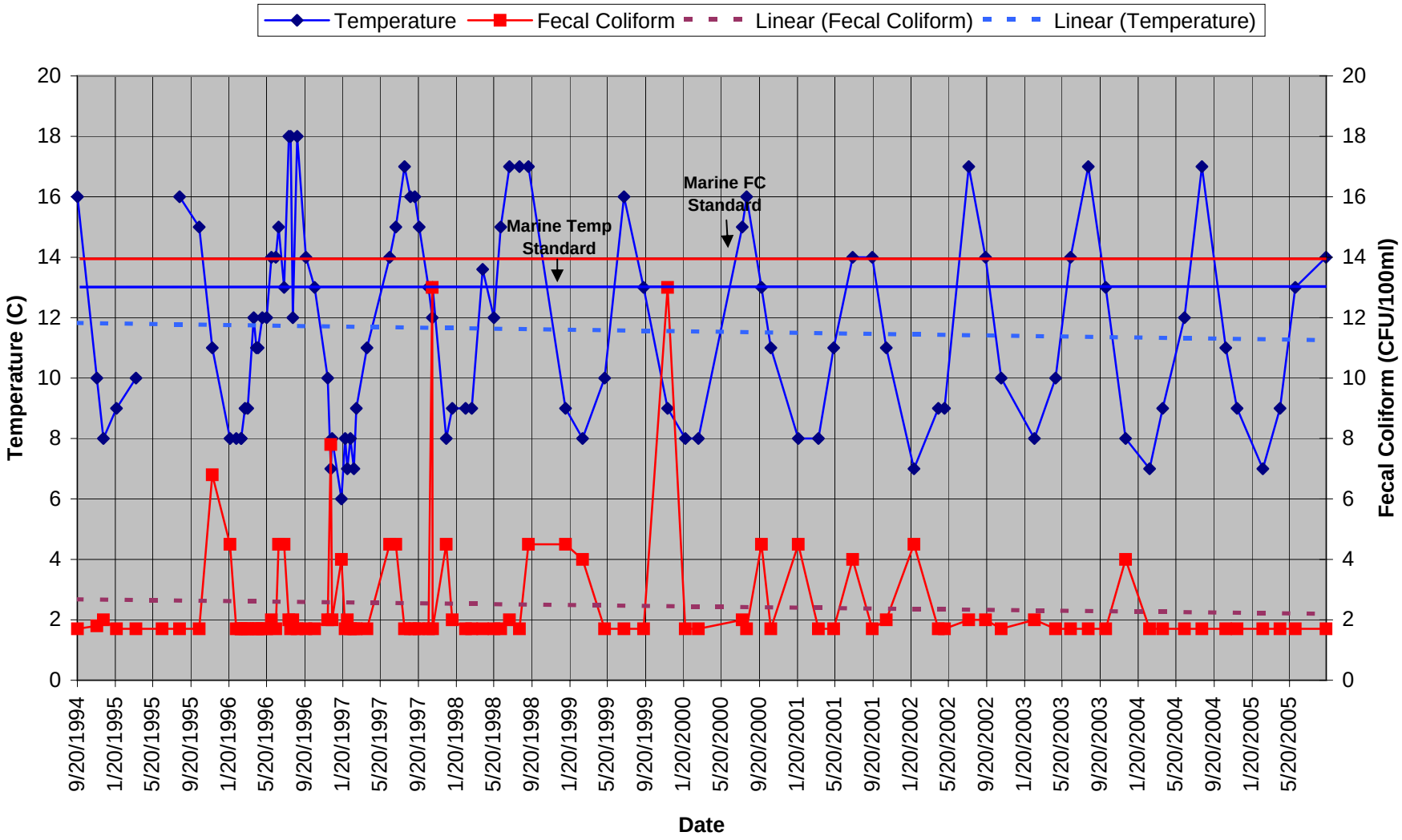


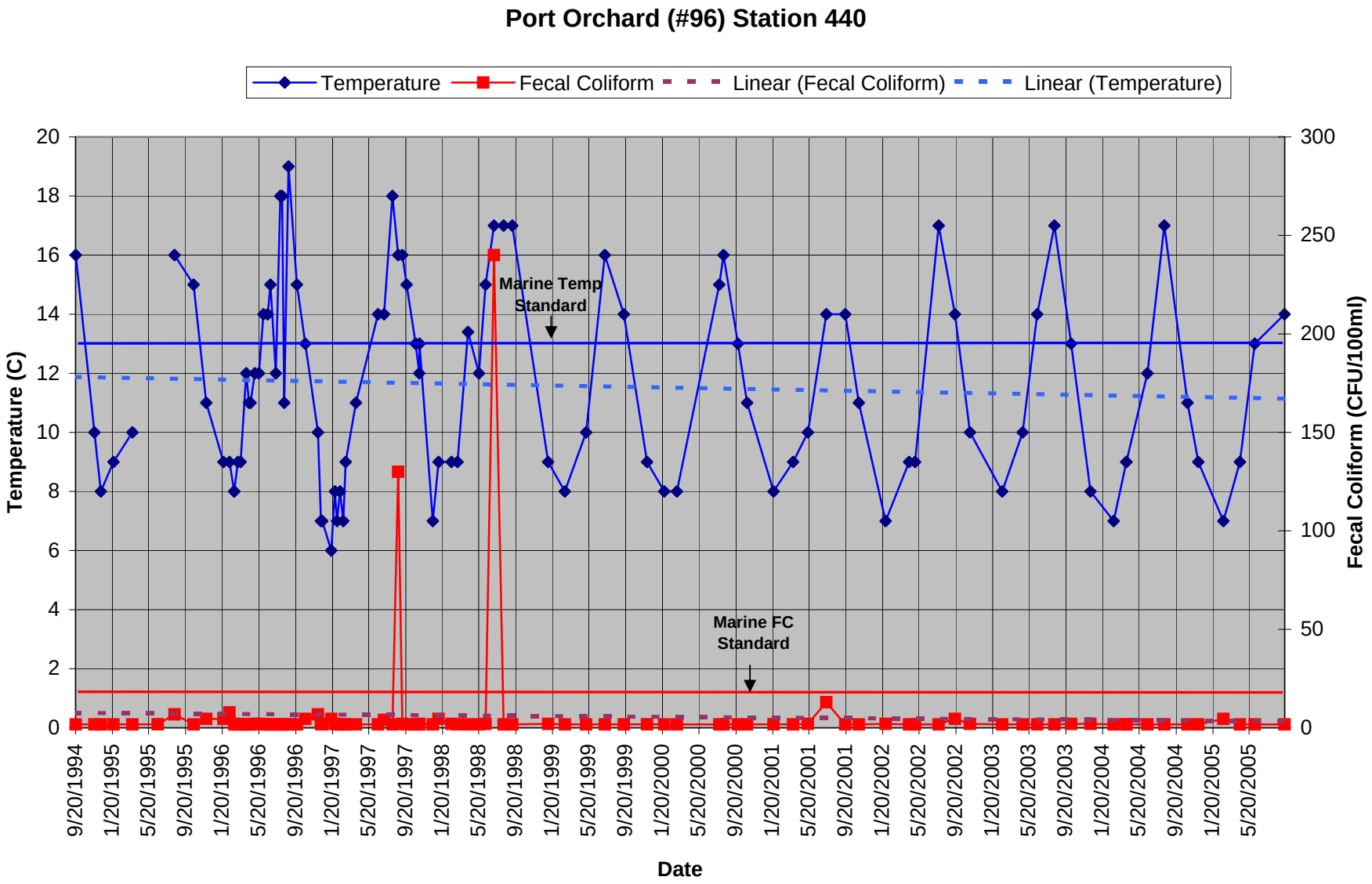

Port Blakely (#91) Station 421
Temperature
Fecal Coliform
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
0
5
10
15
20
25
4/22/1996
8/22/1996
12/22/1996
4/22/1997
8/22/1997
12/22/1997
4/22/1998
8/22/1998
12/22/1998
4/22/1999
8/22/1999
12/22/1999
4/22/2000
8/22/2000
12/22/2000
4/22/2001
8/22/2001
12/22/2001
4/22/2002
8/22/2002
12/22/2002
4/22/2003
8/22/2003
12/22/2003
4/22/2004
8/22/2004
12/22/2004
4/22/2005
8/22/2005


Port Orchard (#96) Station 437
Temperature
Fecal Coliform
Linear (Fecal Coliform)
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
20
0
5
10
15
20
25
30
9/20/1994
1/20/1995
5/20/1995
9/20/1995
1/20/1996
5/20/1996
9/20/1996
1/20/1997
5/20/1997
9/20/1997
1/20/1998
5/20/1998
9/20/1998
1/20/1999
5/20/1999
9/20/1999
1/20/2000
5/20/2000
9/20/2000
1/20/2001
5/20/2001
9/20/2001
1/20/2002
5/20/2002
9/20/2002
1/20/2003
5/20/2003
9/20/2003
1/20/2004
5/20/2004
9/20/2004
1/20/2005
5/20/2005

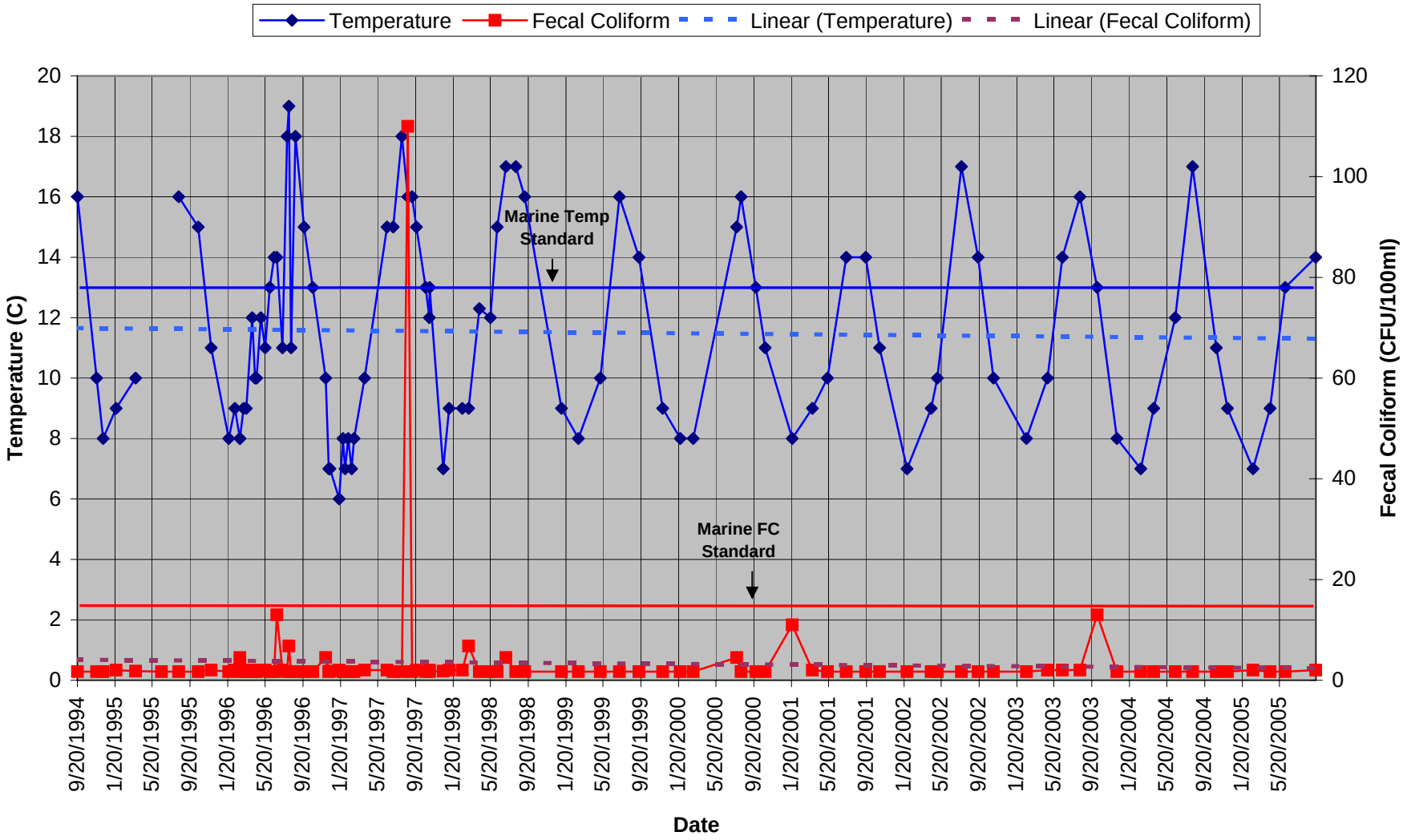

Port Orchard (#96) Station 438
Temperature
Fecal Coliform
Linear (Fecal Coliform)
Linear (Temperature)
Temperature (C)
Fecal Coliform (CFU/100ml)
Marine Temp Standard
Marine FC Standard
Date
0
2
4
6
8
10
12
14
16
18
20
0
10
20
30
40
50
60
9/20/1994
1/20/1995
5/20/1995
9/20/1995
1/20/1996
5/20/1996
9/20/1996
1/20/1997
5/20/1997
9/20/1997
1/20/1998
5/20/1998
9/20/1998
1/20/1999
5/20/1999
9/20/1999
1/20/2000
5/20/2000
9/20/2000
1/20/2001
5/20/2001
9/20/2001
1/20/2002
5/20/2002
9/20/2002
1/20/2003
5/20/2003
9/20/2003
1/20/2004
5/20/2004
9/20/2004
1/20/2005
5/20/2005

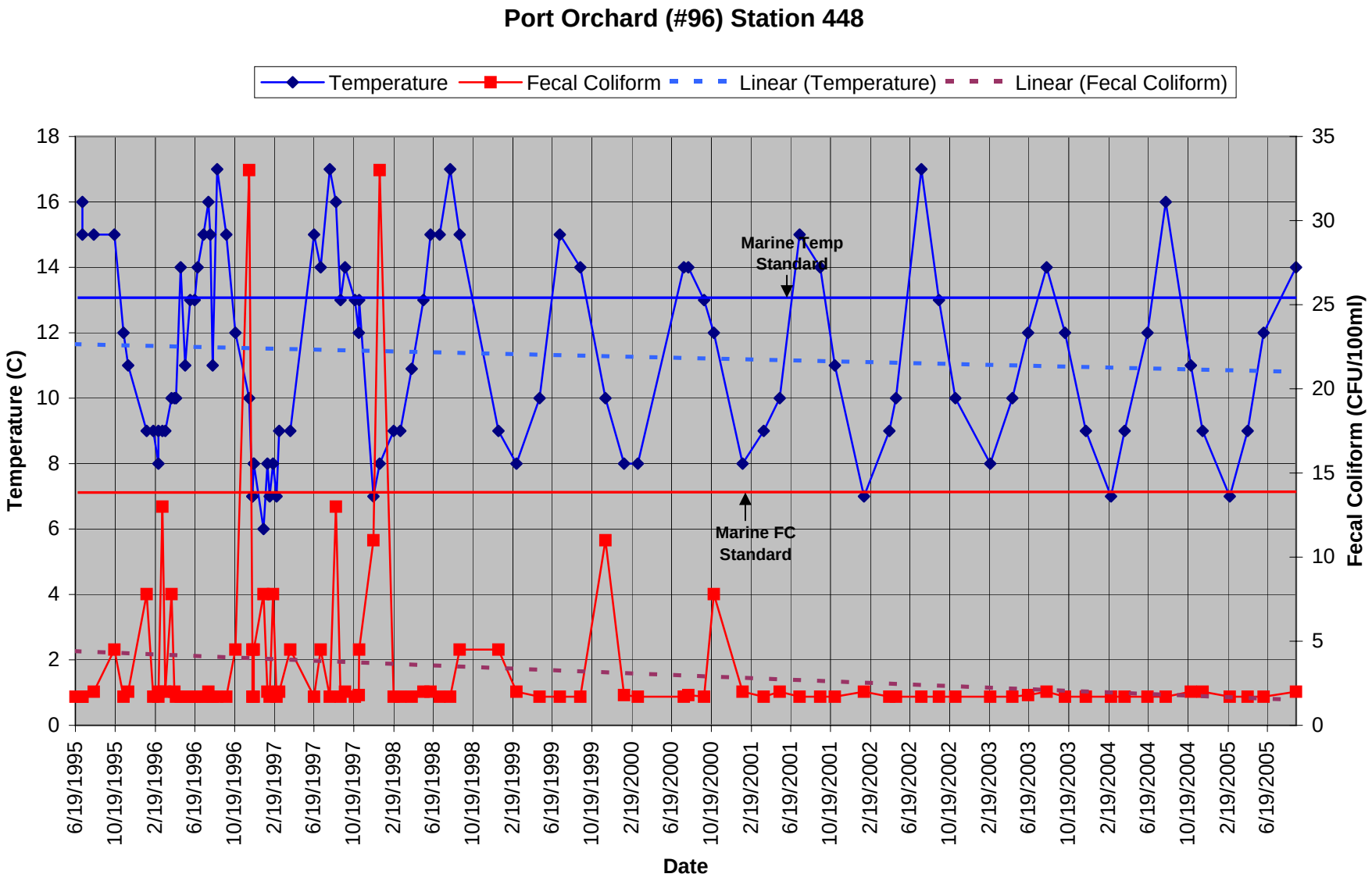
Port Orchard (#96) Station 439

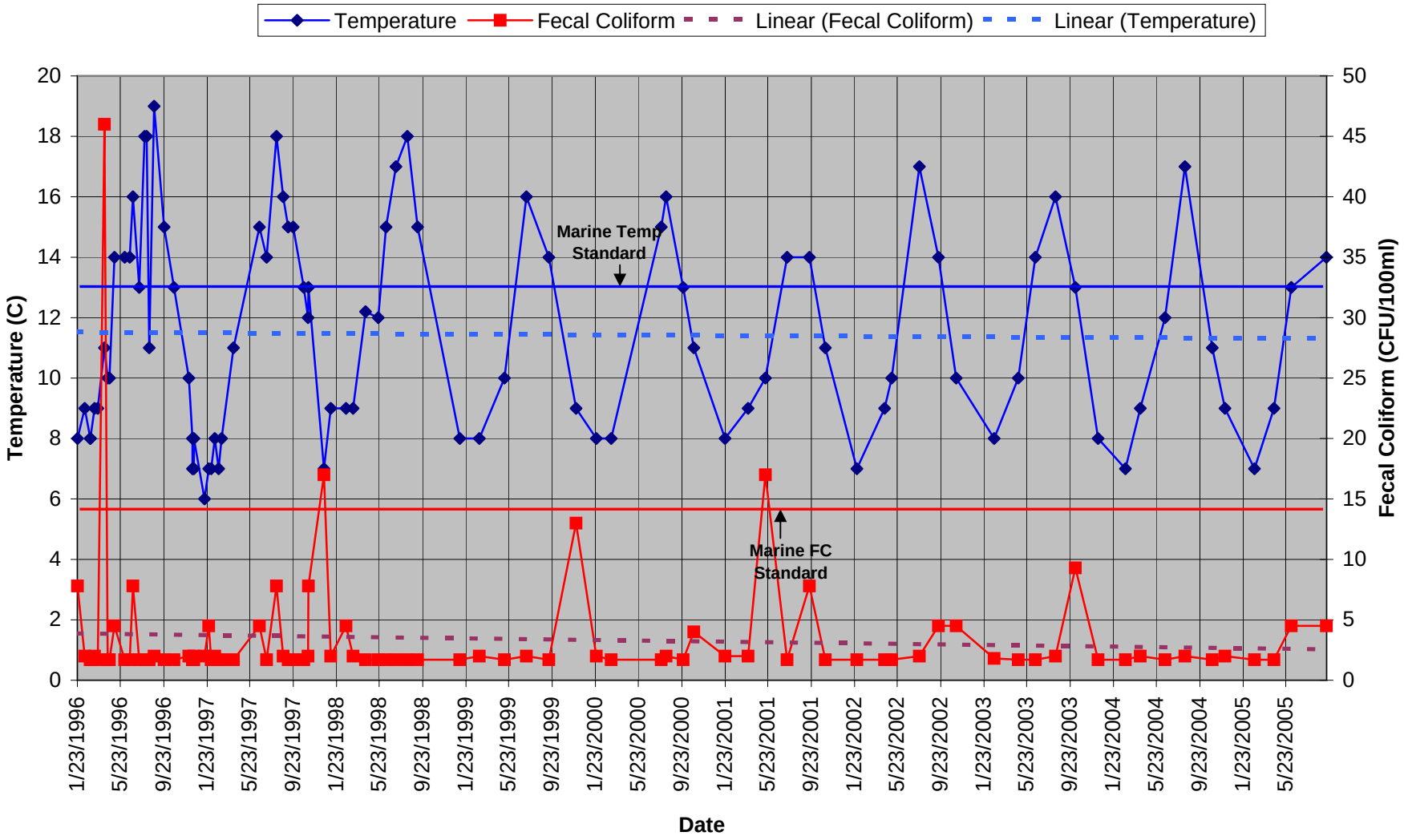


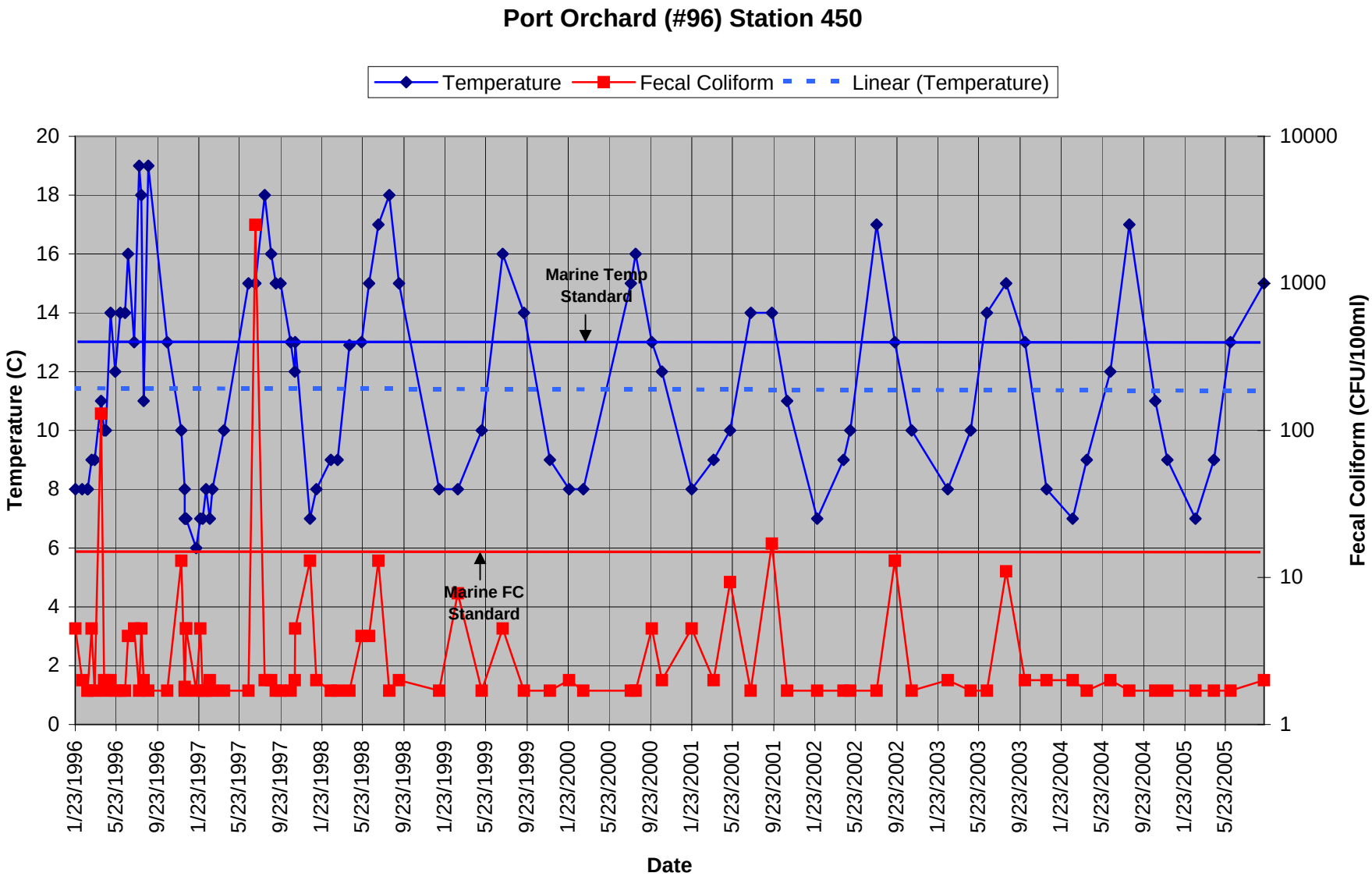

Port Orchard (#96) Station 440
Temperature
Fecal Coliform
Linear (Fecal Coliform)
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
20
0
50
100
150
200
250
300
9/20/1994
1/20/1995
5/20/1995
9/20/1995
1/20/1996
5/20/1996
9/20/1996
1/20/1997
5/20/1997
9/20/1997
1/20/1998
5/20/1998
9/20/1998
1/20/1999
5/20/1999
9/20/1999
1/20/2000
5/20/2000
9/20/2000
1/20/2001
5/20/2001
9/20/2001
1/20/2002
5/20/2002
9/20/2002
1/20/2003
5/20/2003
9/20/2003
1/20/2004
5/20/2004
9/20/2004
1/20/2005
5/20/2005

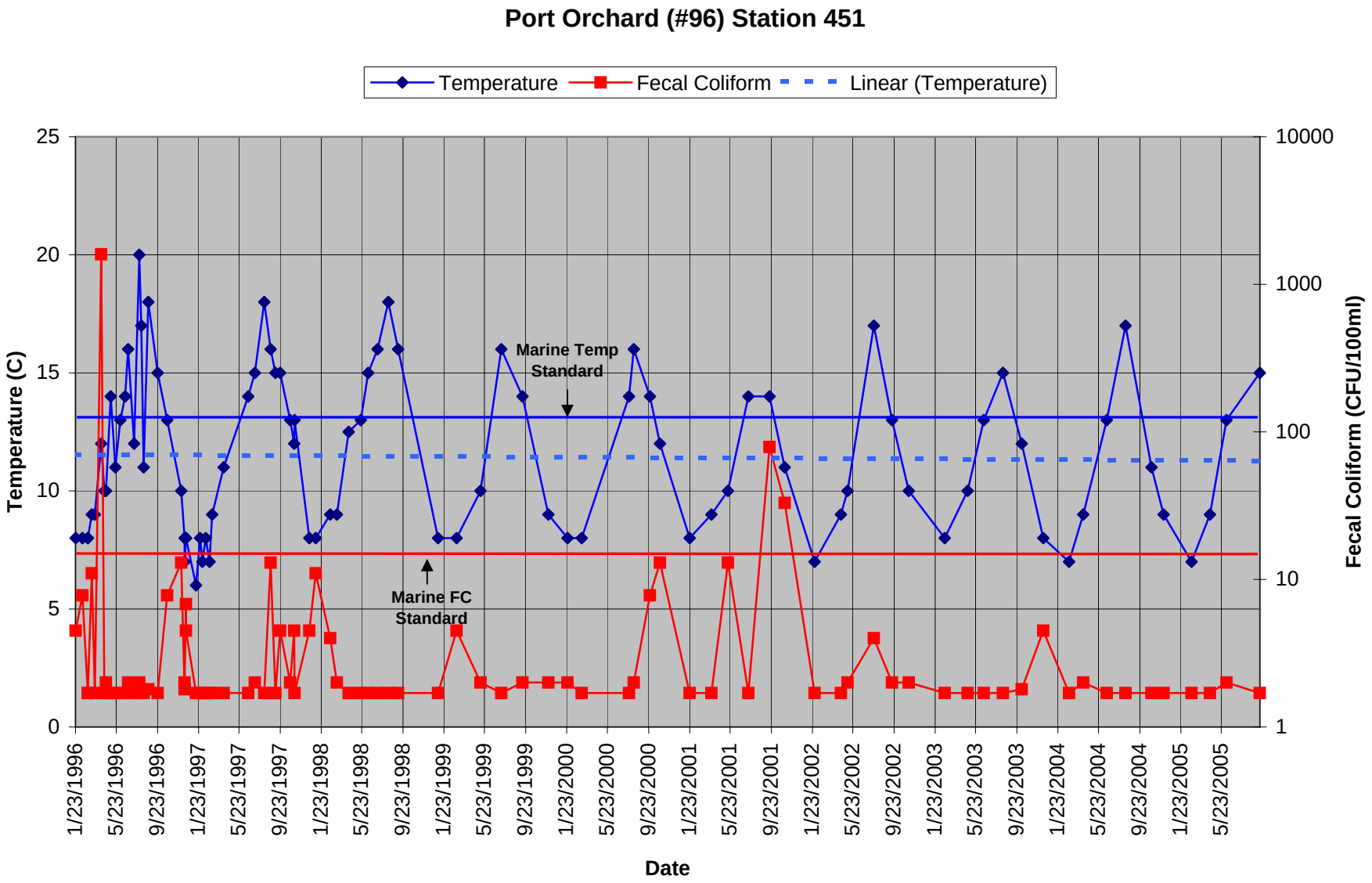
Port Orchard (#96) Station 441

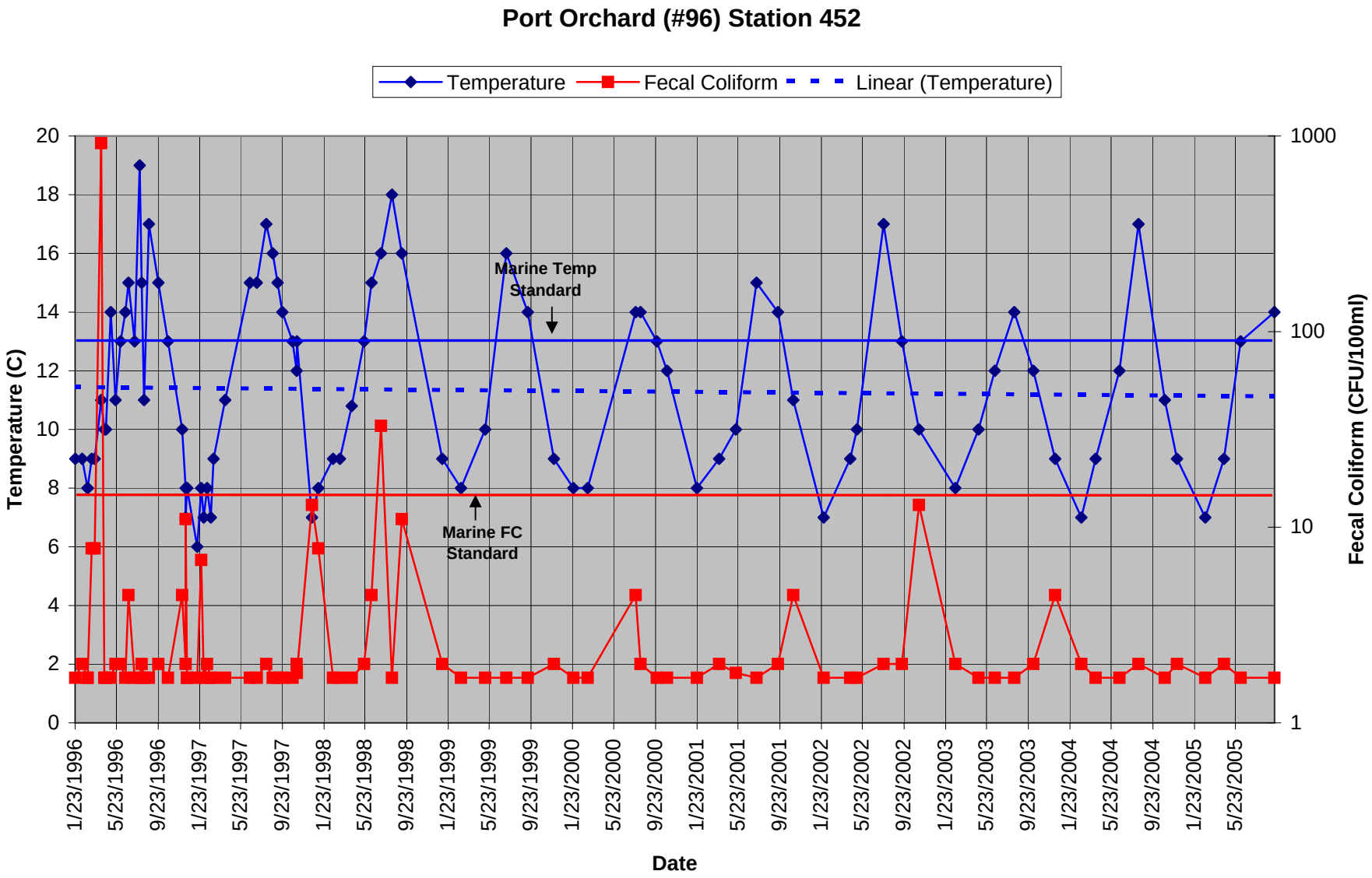



Port Orchard (#96) Station 448
Temperature
Fecal Coliform
Linear (Temperature)
Linear (Fecal Coliform)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
0
5
10
15
20
25
30
35
6/19/1995
10/19/1995
2/19/1996
6/19/1996
10/19/1996
2/19/1997
6/19/1997
10/19/1997
2/19/1998
6/19/1998
10/19/1998
2/19/1999
6/19/1999
10/19/1999
2/19/2000
6/19/2000
10/19/2000
2/19/2001
6/19/2001
10/19/2001
2/19/2002
6/19/2002
10/19/2002
2/19/2003
6/19/2003
10/19/2003
2/19/2004
6/19/2004
10/19/2004
2/19/2005
6/19/2005

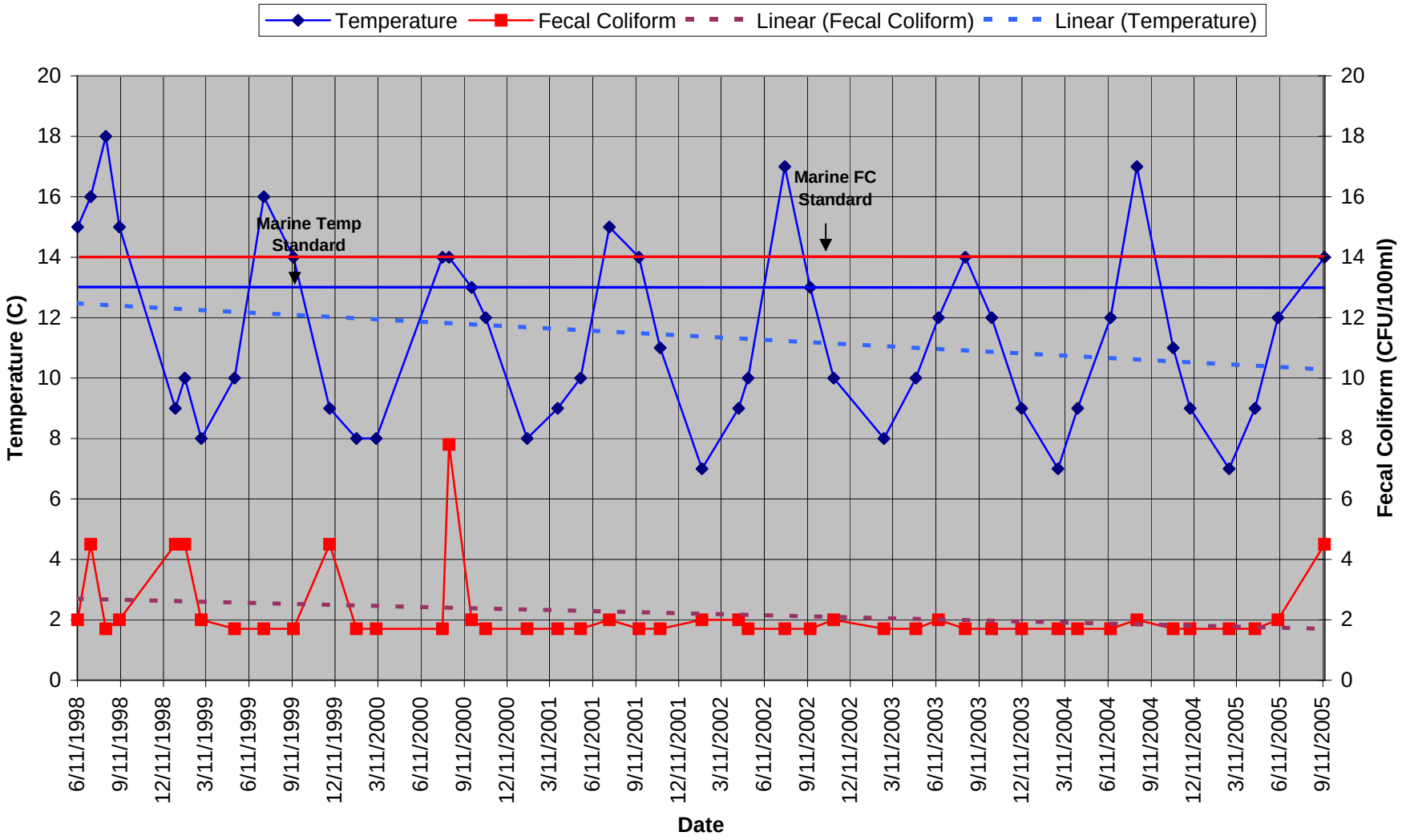

Port Orchard (#96) Station 449
Temperature
Fecal Coliform
Linear (Fecal Coliform)
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
20
0
5
10
15
20
25
30
35
40
45
50
1/23/1996
5/23/1996
9/23/1996
1/23/1997
5/23/1997
9/23/1997
1/23/1998
5/23/1998
9/23/1998
1/23/1999
5/23/1999
9/23/1999
1/23/2000
5/23/2000
9/23/2000
1/23/2001
5/23/2001
9/23/2001
1/23/2002
5/23/2002
9/23/2002
1/23/2003
5/23/2003
9/23/2003
1/23/2004
5/23/2004
9/23/2004
1/23/2005
5/23/2005

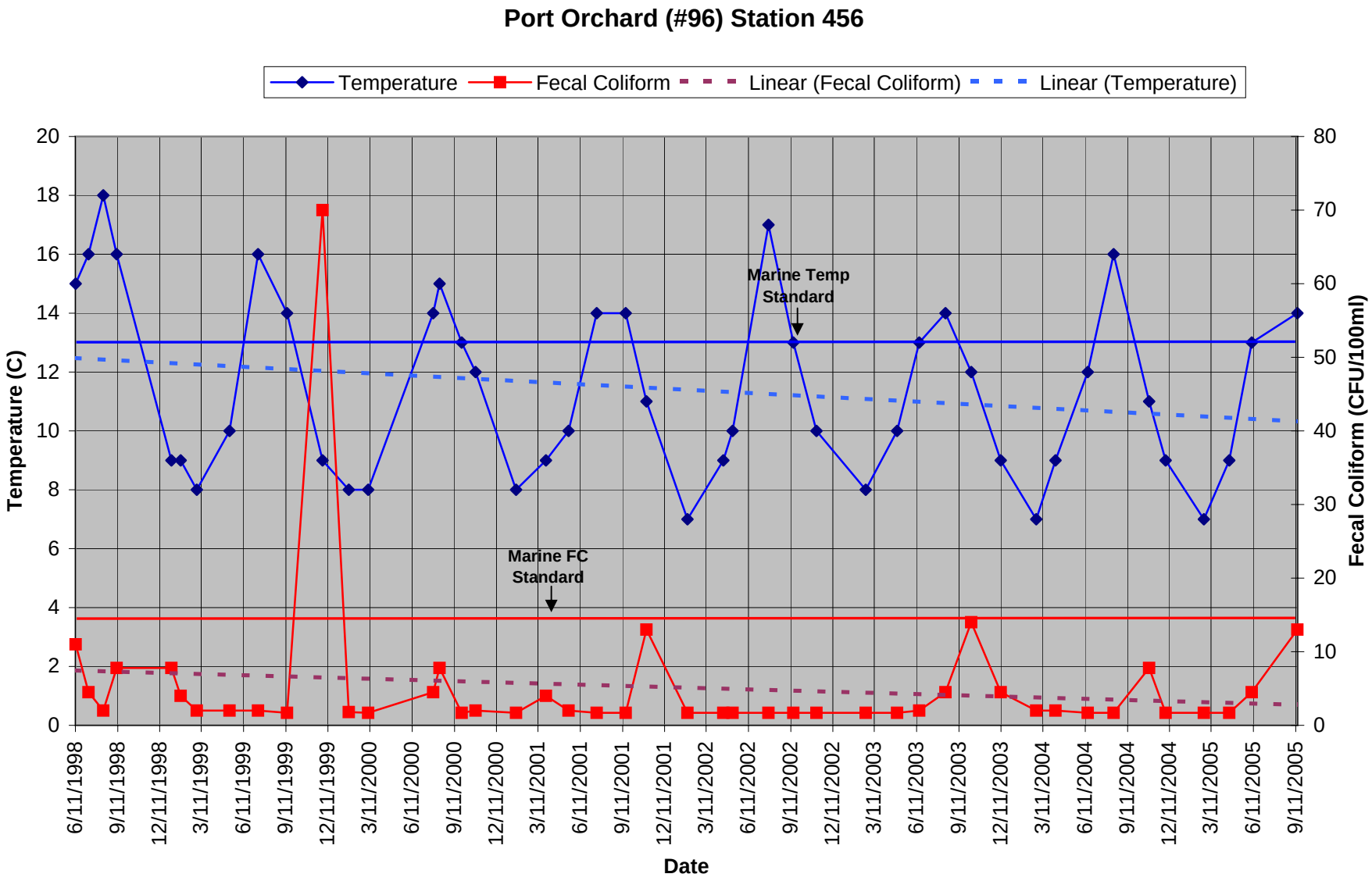

Port Orchard (#96) Station 450
Temperature
Fecal Coliform
Linear (Temperature)
Temperature (C)
Fecal Coliform (CFU/100ml)
Marine Temp Standard
Marine FC Standard
Date
0
2
4
6
8
10
12
14
16
18
20
1
10
100
1000
10000
1/23/1996
5/23/1996
9/23/1996
1/23/1997
5/23/1997
9/23/1997
1/23/1998
5/23/1998
9/23/1998
1/23/1999
5/23/1999
9/23/1999
1/23/2000
5/23/2000
9/23/2000
1/23/2001
5/23/2001
9/23/2001
1/23/2002
5/23/2002
9/23/2002
1/23/2003
5/23/2003
9/23/2003
1/23/2004
5/23/2004
9/23/2004
1/23/2005
5/23/2005

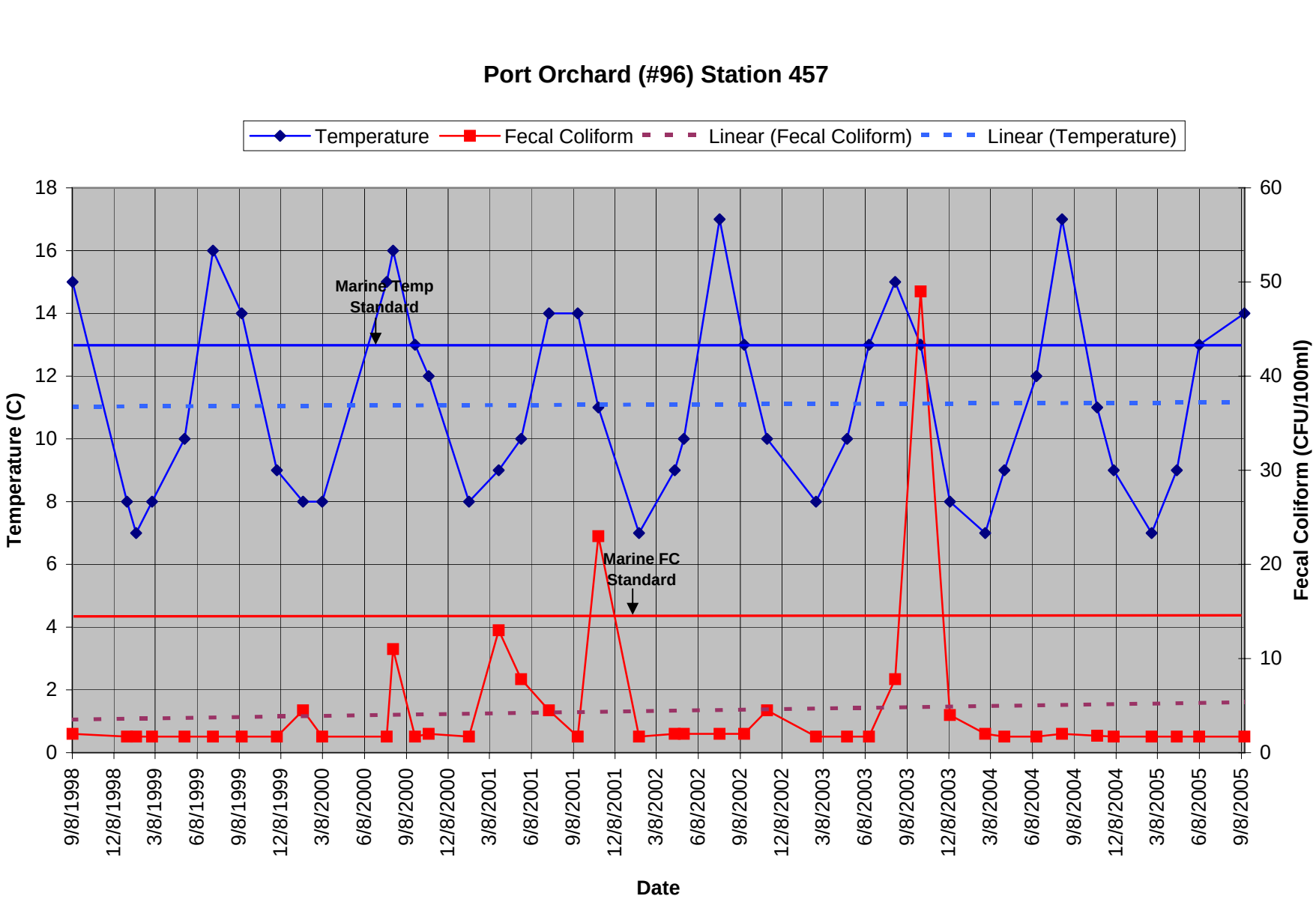

Port Orchard (#96) Station 451
Temperature
Fecal Coliform
Linear (Temperature)
Temperature (C)
Fecal Coliform (CFU/100ml)
Marine Temp Standard
Marine FC Standard
Date
25
20
15
10
5
0
10000
1000
100
10
1
1/23/1996
5/23/1996
9/23/1996
1/23/1997
5/23/1997
9/23/1997
1/23/1998
5/23/1998
9/23/1998
1/23/1999
5/23/1999
9/23/1999
1/23/2000
5/23/2000
9/23/2000
1/23/2001
5/23/2001
9/23/2001
1/23/2002
5/23/2002
9/23/2002
1/23/2003
5/23/2003
9/23/2003
1/23/2004
5/23/2004
9/23/2004
1/23/2005
5/23/2005

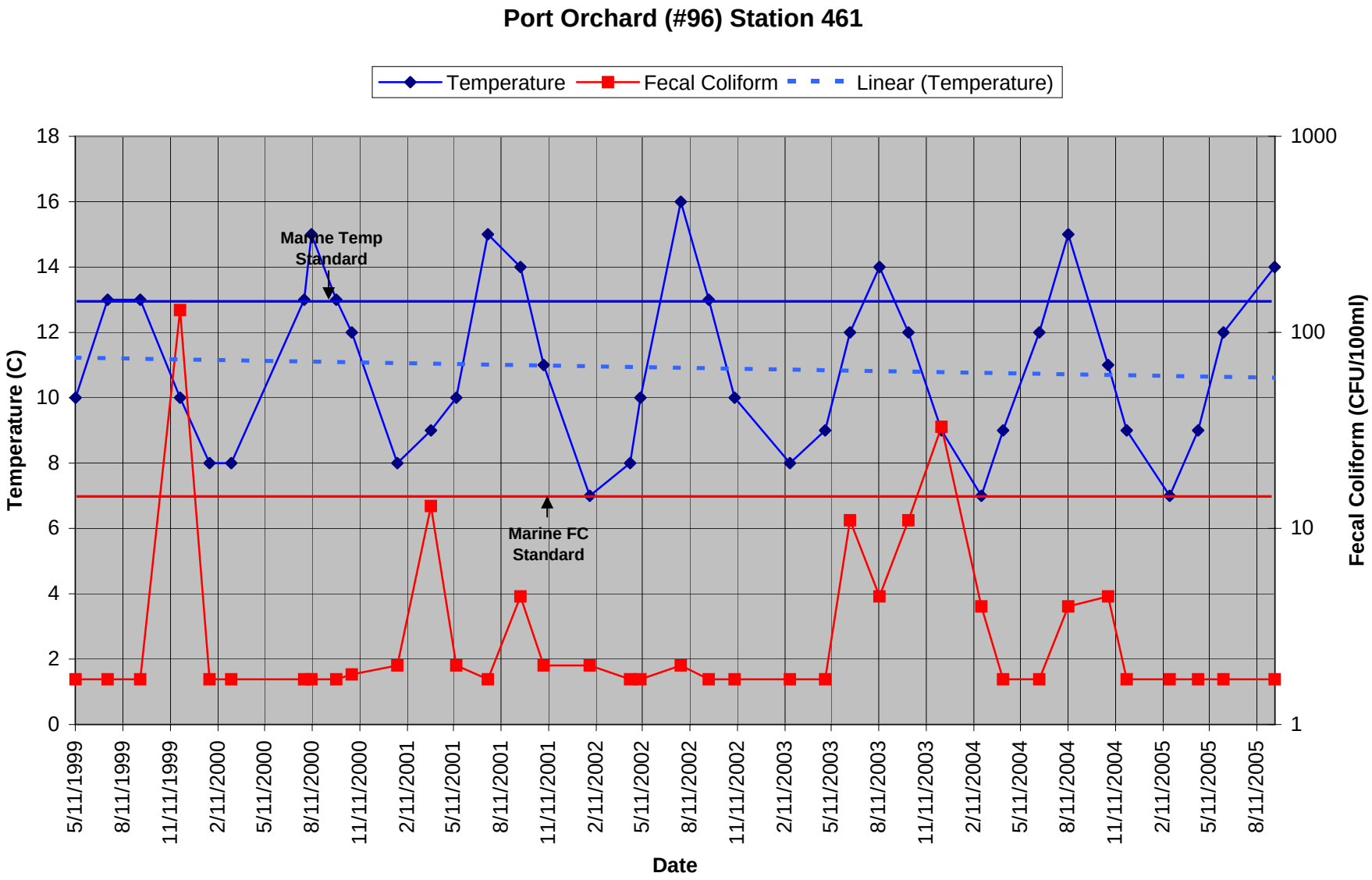

Port Orchard (#96) Station 452
Temperature
Fecal Coliform
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
20
1
10
100
1000
1/23/1996
5/23/1996
9/23/1996
1/23/1997
5/23/1997
9/23/1997
1/23/1998
5/23/1998
9/23/1998
1/23/1999
5/23/1999
9/23/1999
1/23/2000
5/23/2000
9/23/2000
1/23/2001
5/23/2001
9/23/2001
1/23/2002
5/23/2002
9/23/2002
1/23/2003
5/23/2003
9/23/2003
1/23/2004
5/23/2004
9/23/2004
1/23/2005
5/23/2005

Port Orchard (#96) Station 455

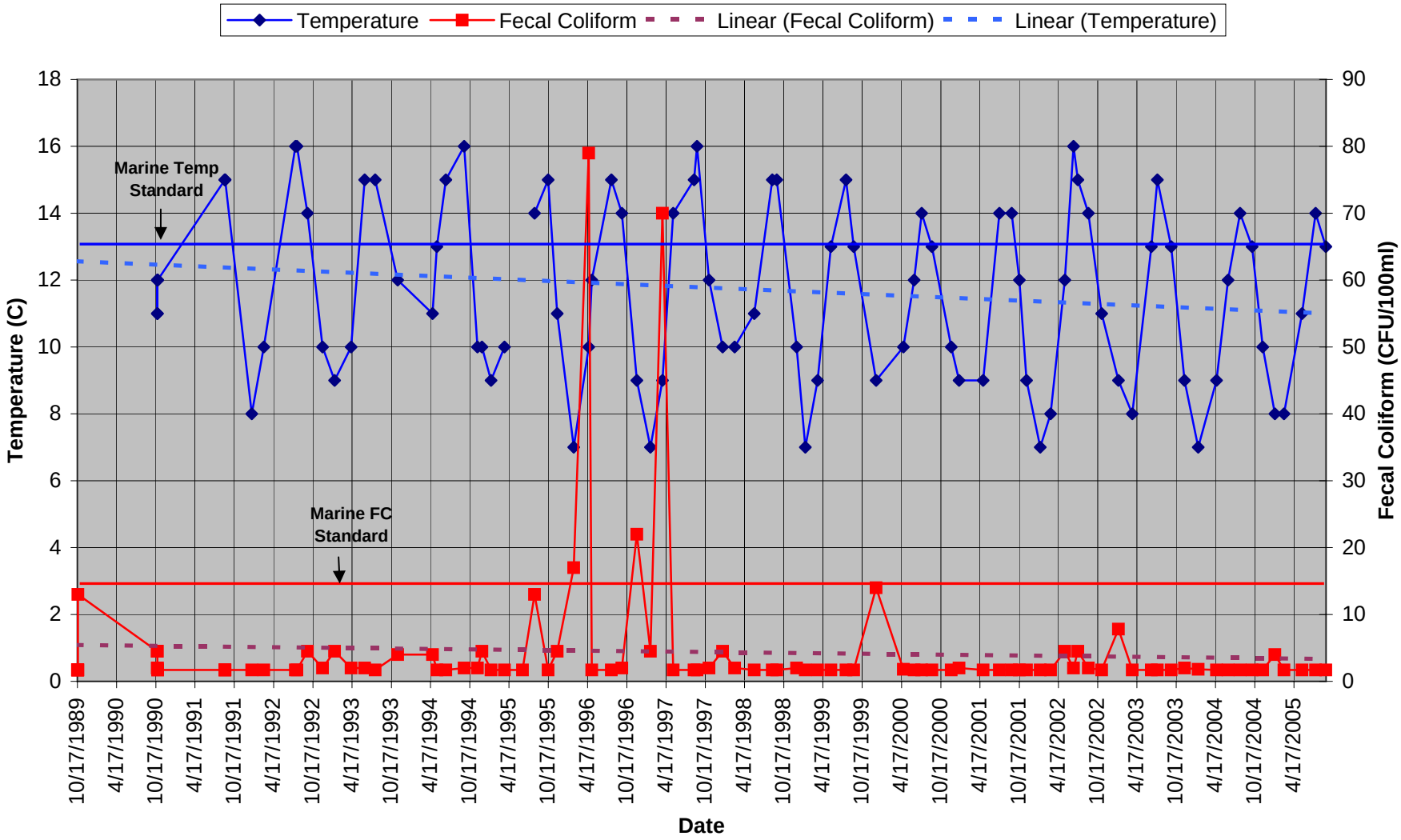


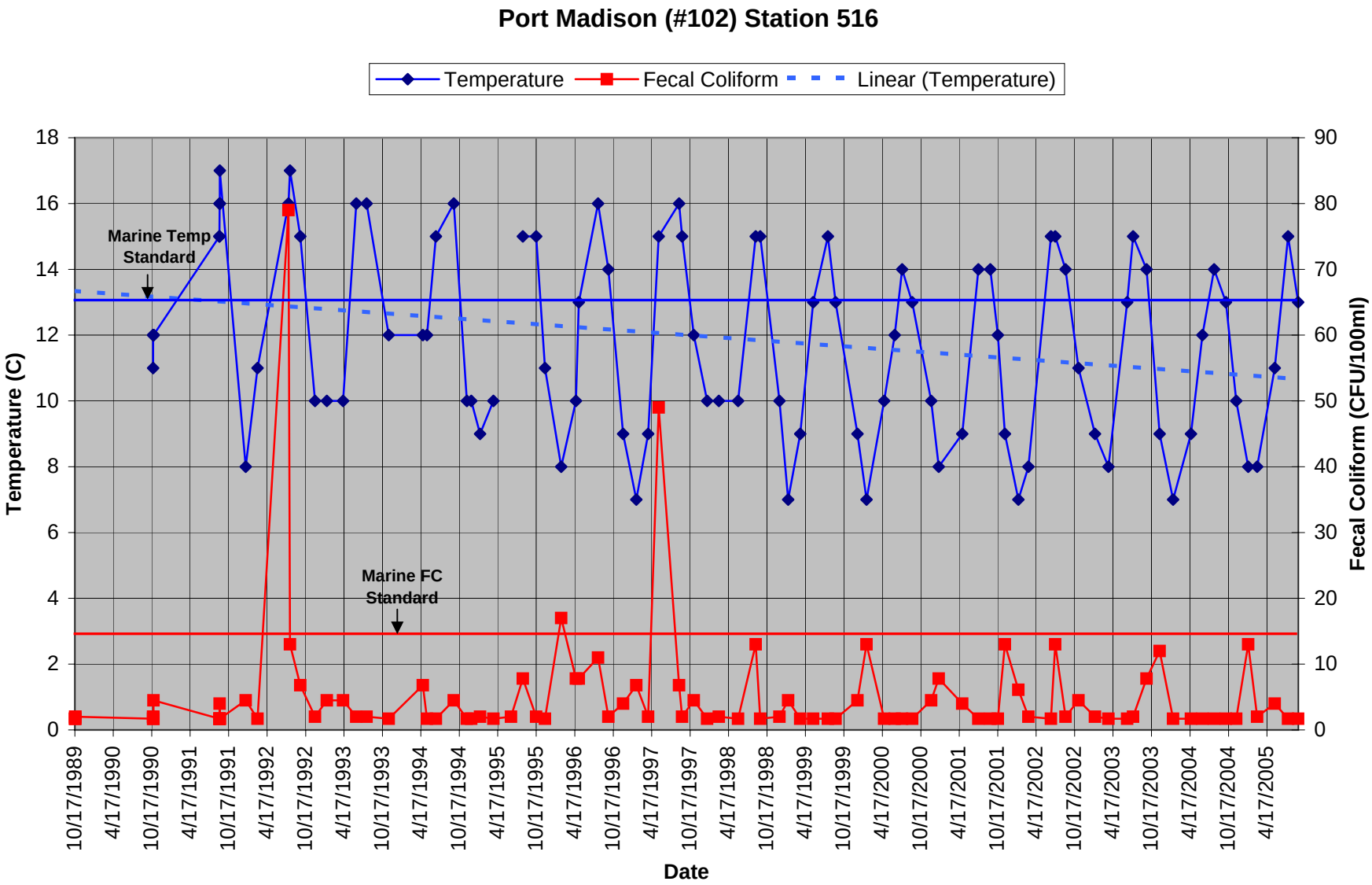

Port Orchard (#96) Station 456
Temperature
Fecal Coliform
Linear (Fecal Coliform)
Linear (Temperature)
Temperature (C)
Fecal Coliform (CFU/100ml)
Marine Temp Standard
Marine FC Standard
Date
0
2
4
6
8
10
12
14
16
18
20
0
10
20
30
40
50
60
70
80
6/11/1998
9/11/1998
12/11/1998
3/11/1999
6/11/1999
9/11/1999
12/11/1999
3/11/2000
6/11/2000
9/11/2000
12/11/2000
3/11/2001
6/11/2001
9/11/2001
12/11/2001
3/11/2002
6/11/2002
9/11/2002
12/11/2002
3/11/2003
6/11/2003
9/11/2003
12/11/2003
3/11/2004
6/11/2004
9/11/2004
12/11/2004
3/11/2005
6/11/2005
9/11/2005

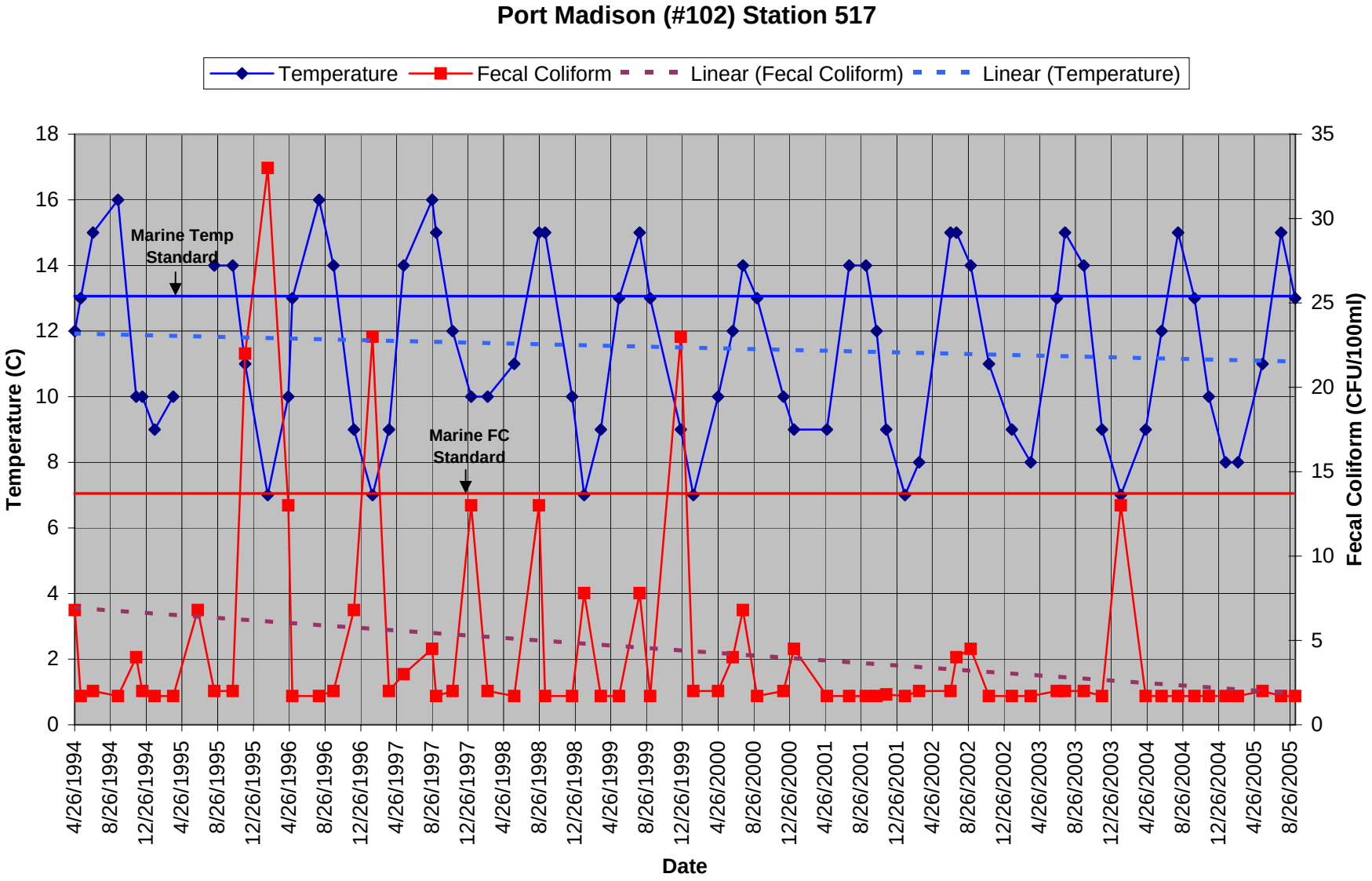

Port Orchard (#96) Station 457
Temperature
Fecal Coliform
Linear (Fecal Coliform)
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
0
10
20
30
40
50
60
9/8/1998
12/8/1998
3/8/1999
6/8/1999
9/8/1999
12/8/1999
3/8/2000
6/8/2000
9/8/2000
12/8/2000
3/8/2001
6/8/2001
9/8/2001
12/8/2001
3/8/2002
6/8/2002
9/8/2002
12/8/2002
3/8/2003
6/8/2003
9/8/2003
12/8/2003
3/8/2004
6/8/2004
9/8/2004
12/8/2004
3/8/2005
6/8/2005
9/8/2005

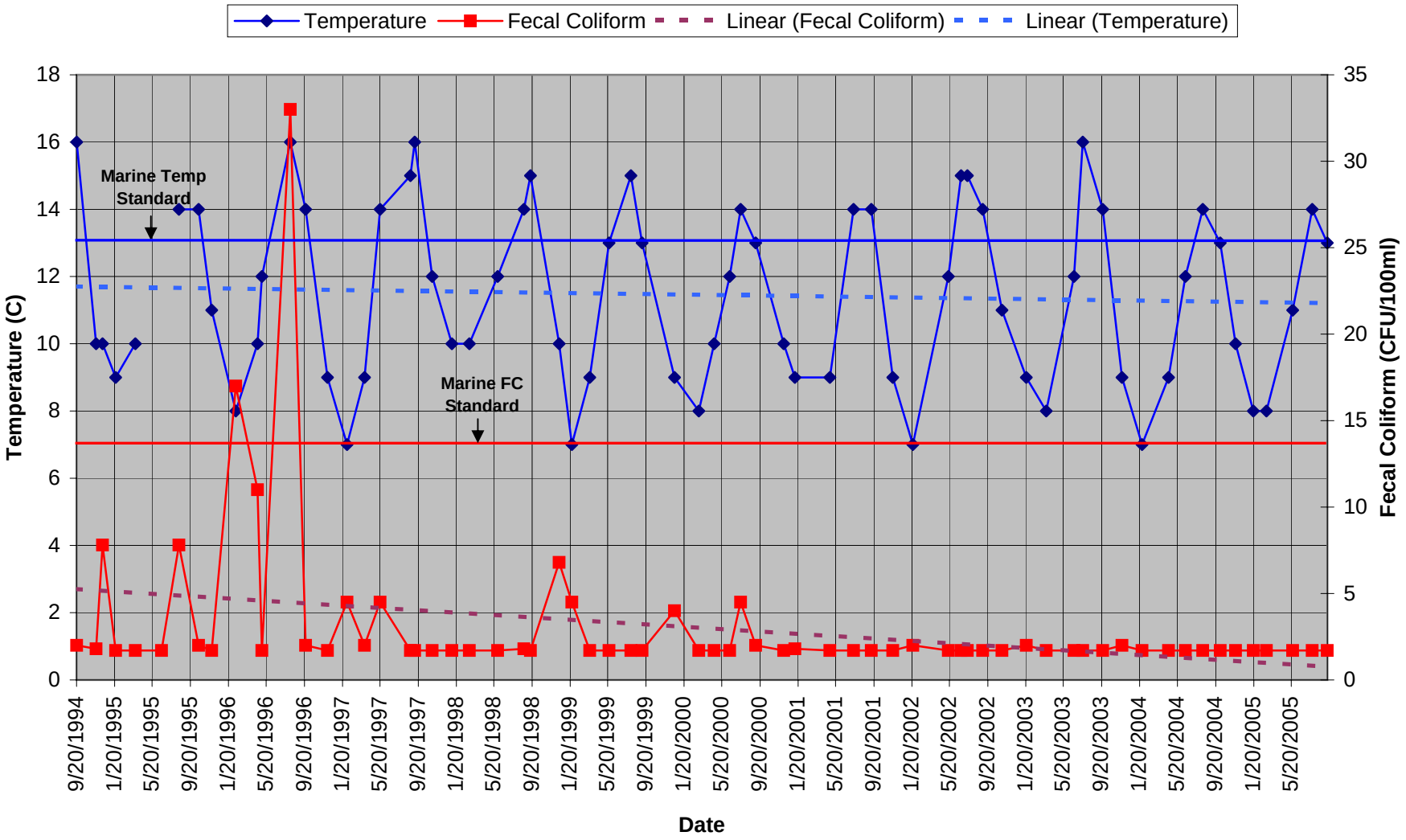

Port Orchard (#96) Station 461
Temperature
Fecal Coliform
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
1
10
100
1000
5/11/1999
8/11/1999
11/11/1999
2/11/2000
5/11/2000
8/11/2000
11/11/2000
2/11/2001
5/11/2001
8/11/2001
11/11/2001
2/11/2002
5/11/2002
8/11/2002
11/11/2002
2/11/2003
5/11/2003
8/11/2003
11/11/2003
2/11/2004
5/11/2004
8/11/2004
11/11/2004
2/11/2005
5/11/2005
8/11/2005

Port Madison (#102) Station 515

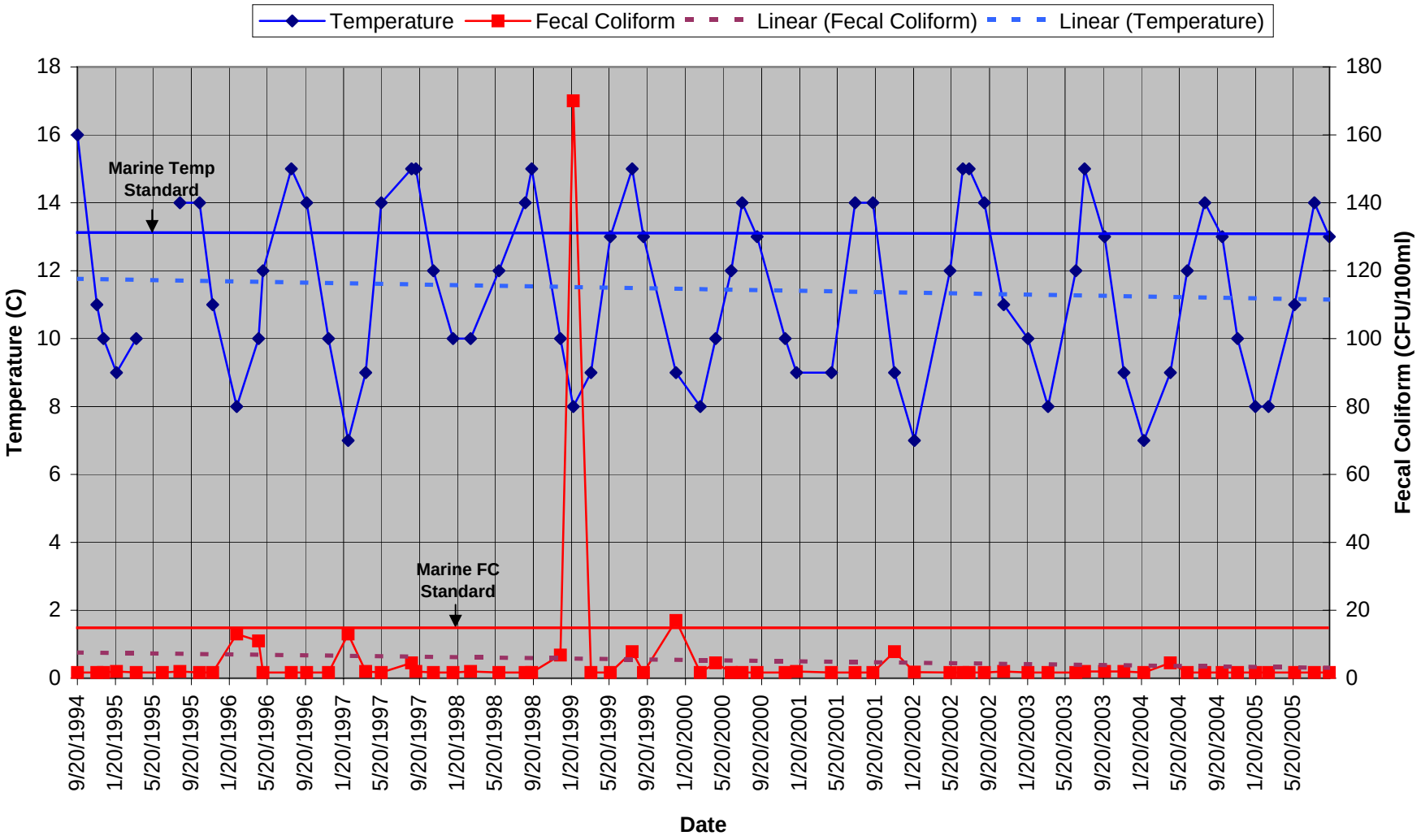



Port Madison (#102) Station 516
Temperature
Fecal Coliform
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
0
10
20
30
40
50
60
70
80
90
10/17/1989
4/17/1990
10/17/1990
4/17/1991
10/17/1991
4/17/1992
10/17/1992
4/17/1993
10/17/1993
4/17/1994
10/17/1994
4/17/1995
10/17/1995
4/17/1996
10/17/1996
4/17/1997
10/17/1997
4/17/1998
10/17/1998
4/17/1999
10/17/1999
4/17/2000
10/17/2000
4/17/2001
10/17/2001
4/17/2002
10/17/2002
4/17/2003
10/17/2003
4/17/2004
10/17/2004
4/17/2005

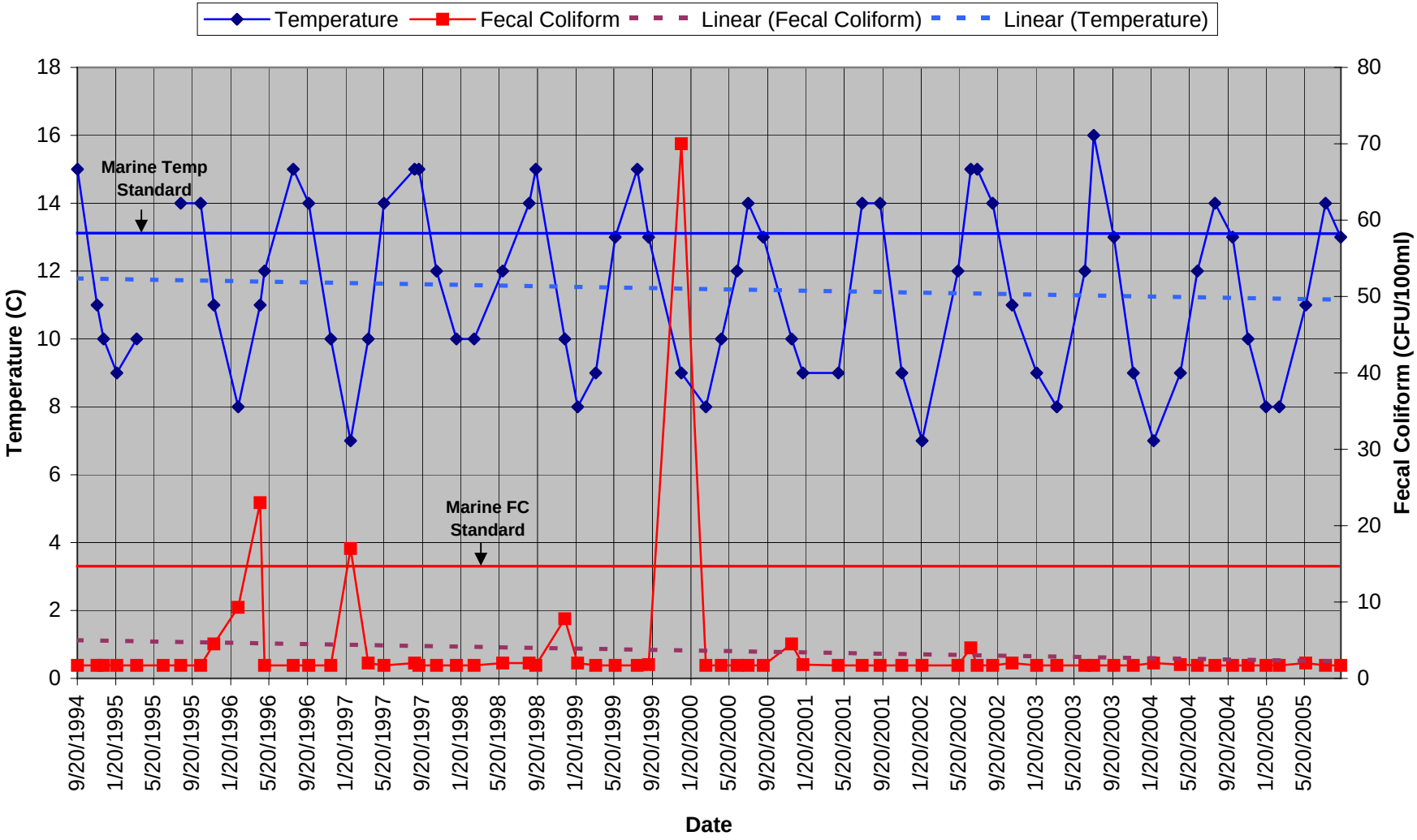

Port Madison (#102) Station 517
Temperature
Fecal Coliform
Linear (Fecal Coliform)
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
0
5
10
15
20
25
30
35
4/26/1994
8/26/1994
12/26/1994
4/26/1995
8/26/1995
12/26/1995
4/26/1996
8/26/1996
12/26/1996
4/26/1997
8/26/1997
12/26/1997
4/26/1998
8/26/1998
12/26/1998
4/26/1999
8/26/1999
12/26/1999
4/26/2000
8/26/2000
12/26/2000
4/26/2001
8/26/2001
12/26/2001
4/26/2002
8/26/2002
12/26/2002
4/26/2003
8/26/2003
12/26/2003
4/26/2004
8/26/2004
12/26/2004
4/26/2005
8/26/2005


Port Madison (#102) Station 518
Temperature
Fecal Coliform
Linear (Fecal Coliform)
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
0
5
10
15
20
25
30
35
9/20/1994
1/20/1995
5/20/1995
9/20/1995
1/20/1996
5/20/1996
9/20/1996
1/20/1997
5/20/1997
9/20/1997
1/20/1998
5/20/1998
9/20/1998
1/20/1999
5/20/1999
9/20/1999
1/20/2000
5/20/2000
9/20/2000
1/20/2001
5/20/2001
9/20/2001
1/20/2002
5/20/2002
9/20/2002
1/20/2003
5/20/2003
9/20/2003
1/20/2004
5/20/2004
9/20/2004
1/20/2005
5/20/2005

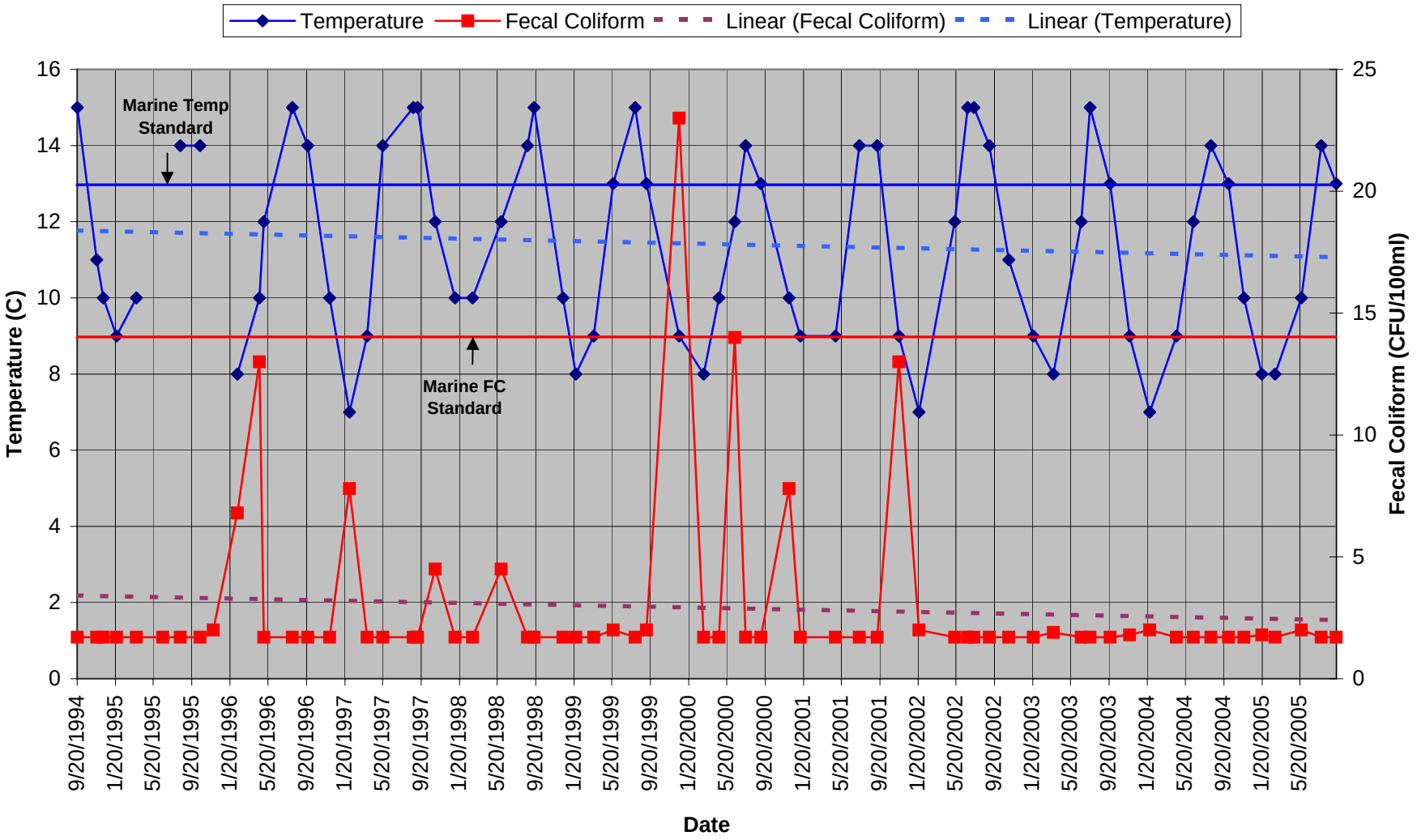
Port Madison (#102) Station 519



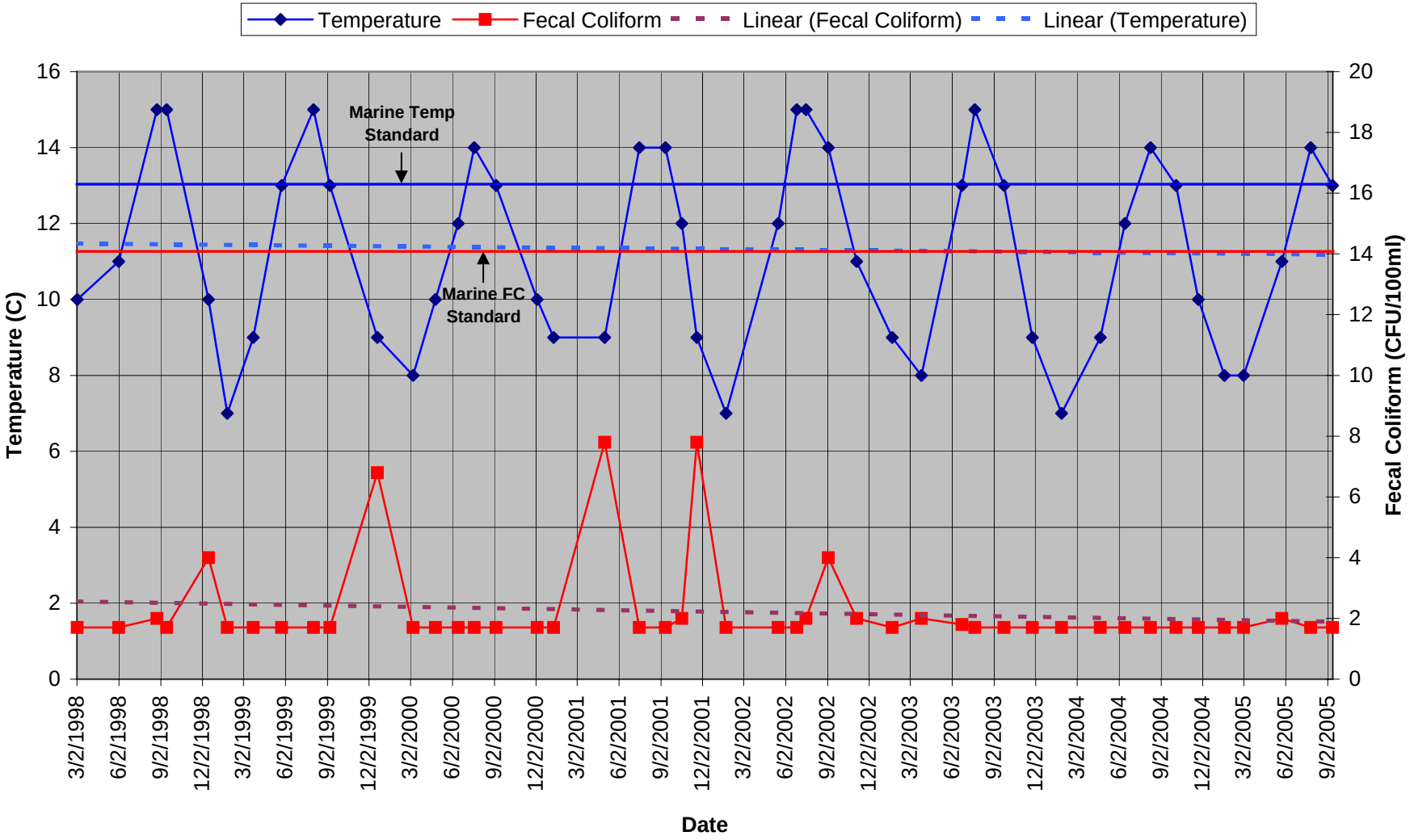
Port Madison (#102) Station 520

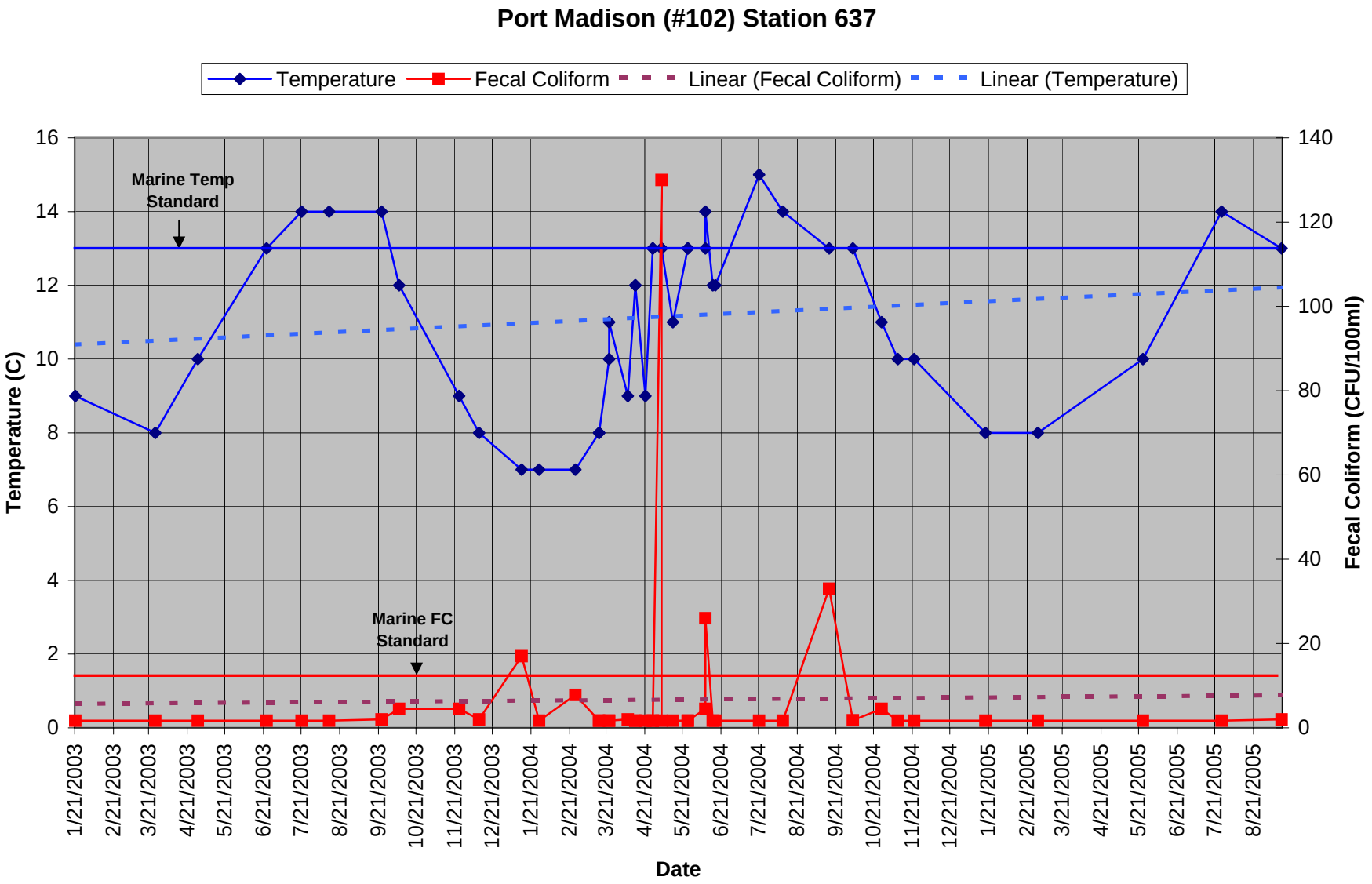


Port Madison (#102) Station 521

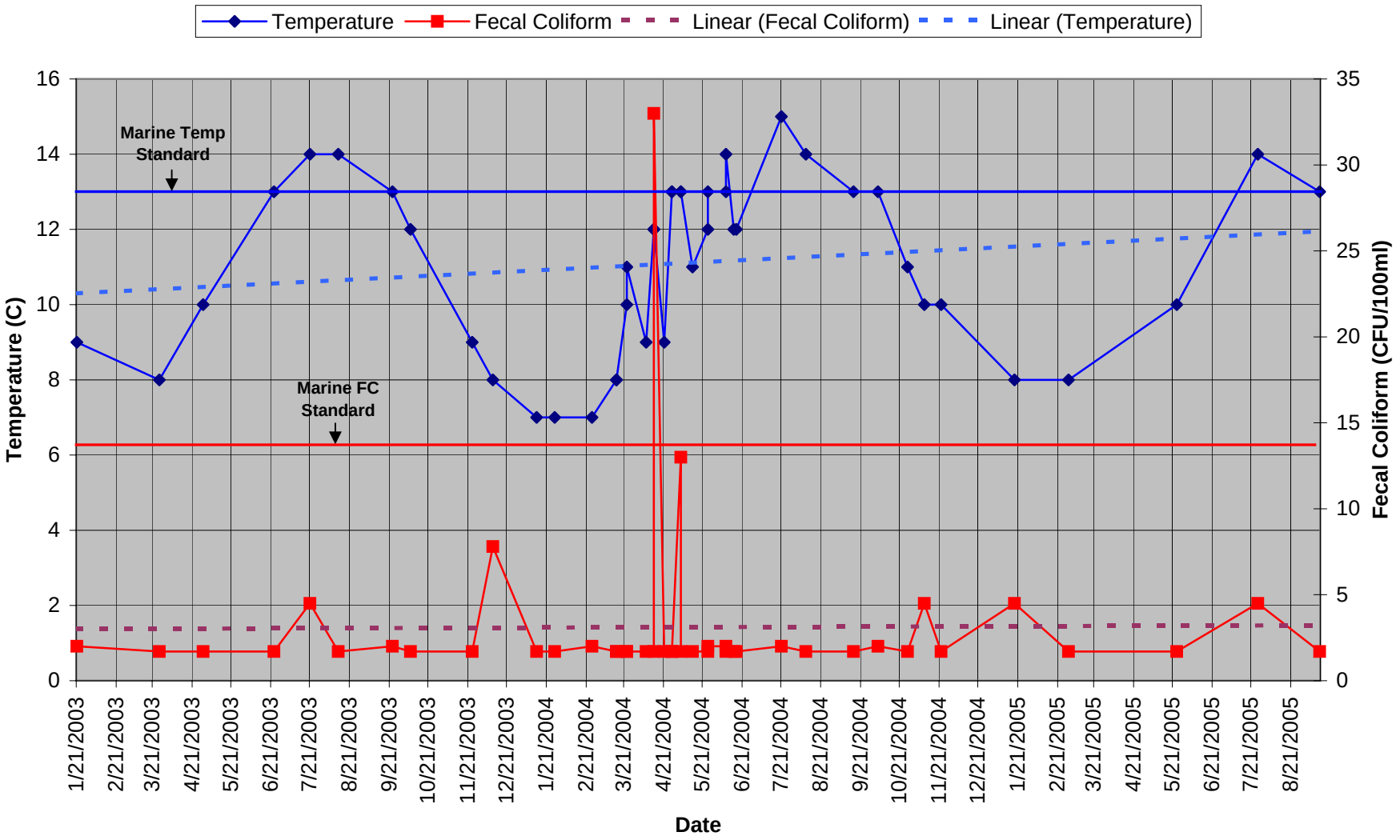


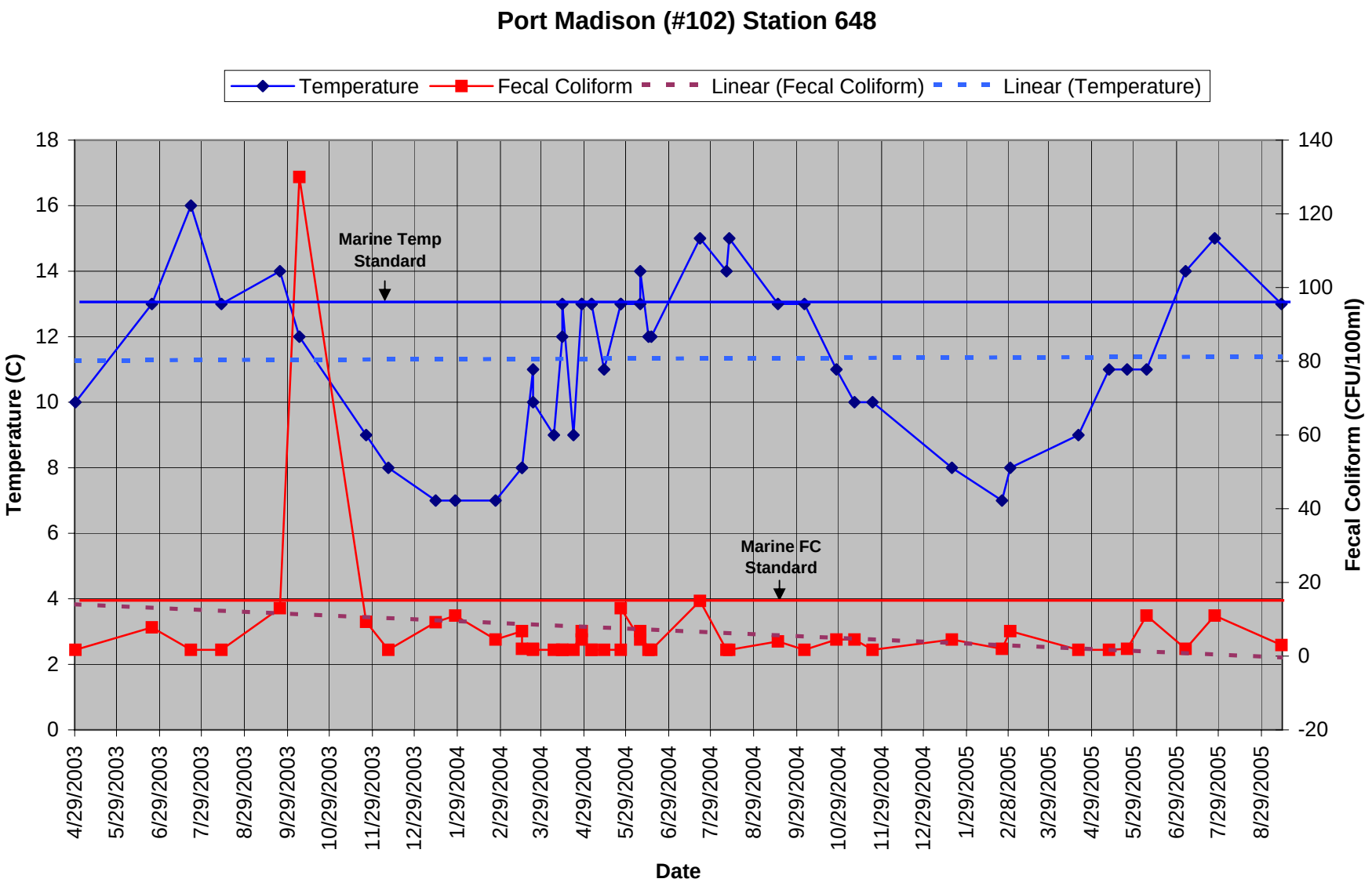
Port Madison (#102) Station 522

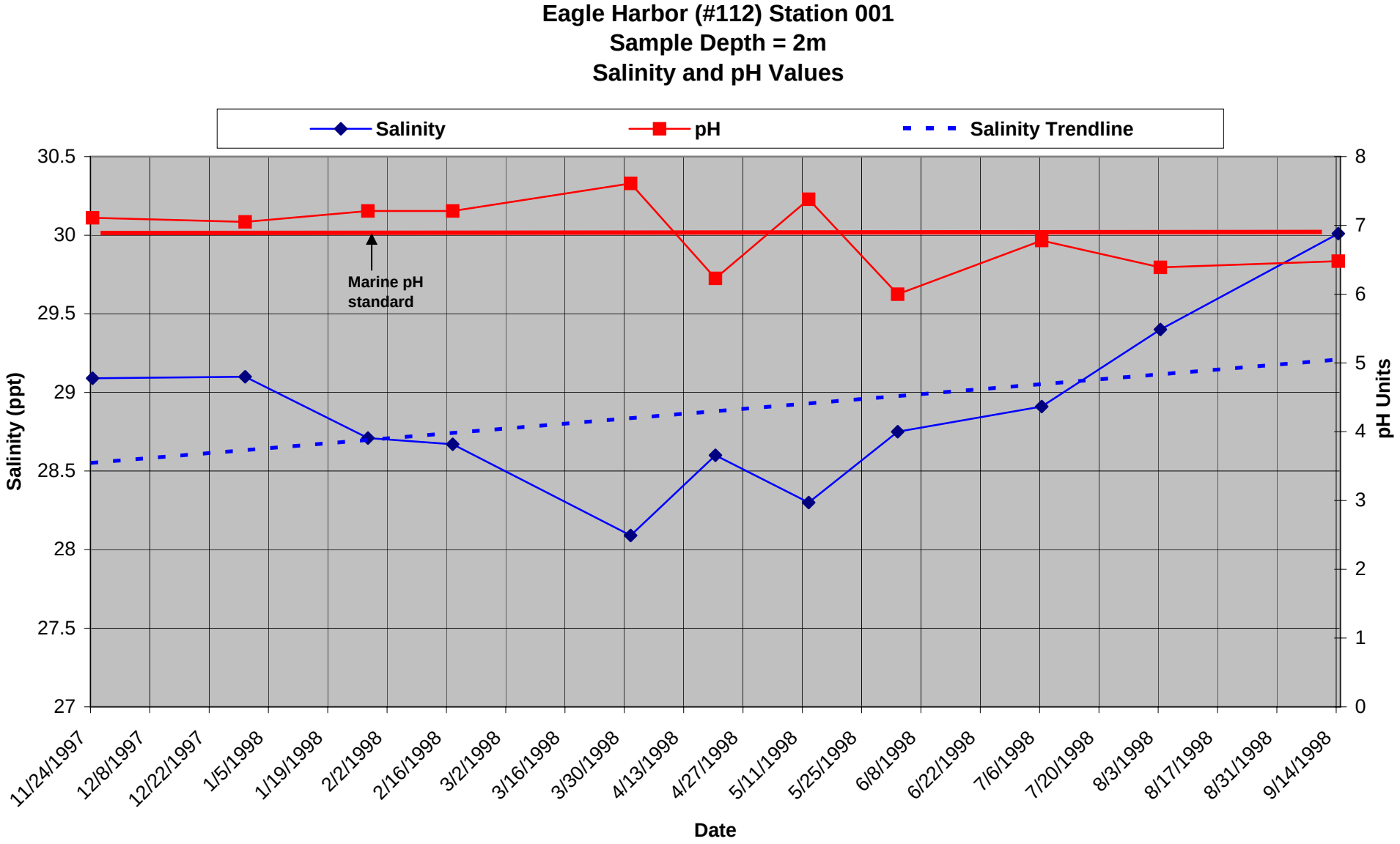



Port Madison (#102) Station 637
Temperature
Fecal Coliform
Linear (Fecal Coliform)
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
0
20
40
60
80
100
120
140
1/21/2003
2/21/2003
3/21/2003
4/21/2003
5/21/2003
6/21/2003
7/21/2003
8/21/2003
9/21/2003
10/21/2003
11/21/2003
12/21/2003
1/21/2004
2/21/2004
3/21/2004
4/21/2004
5/21/2004
6/21/2004
7/21/2004
8/21/2004
9/21/2004
10/21/2004
11/21/2004
12/21/2004
1/21/2005
2/21/2005
3/21/2005
4/21/2005
5/21/2005
6/21/2005
7/21/2005
8/21/2005

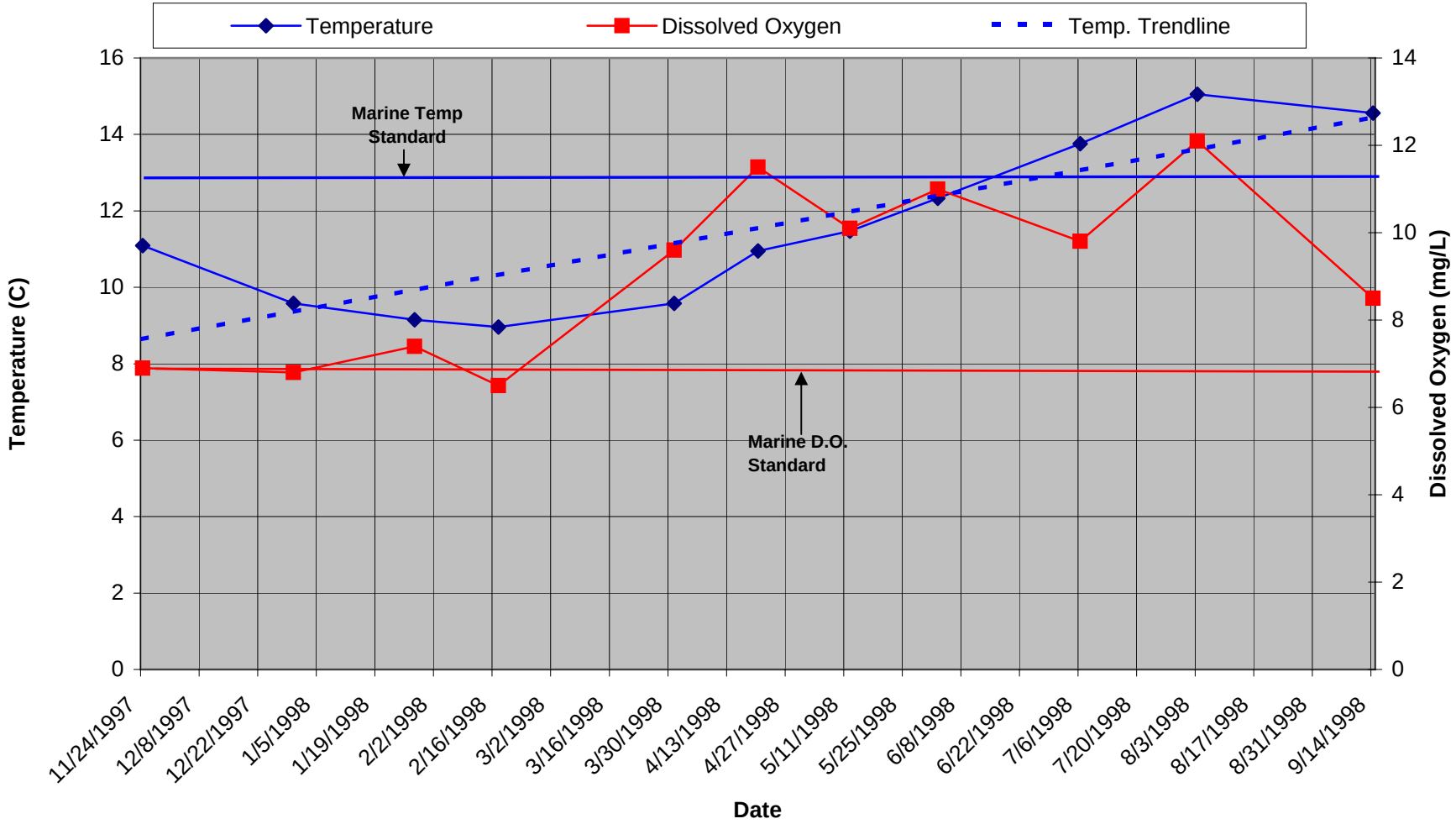
Port Madison (#102) Station 638




Port Madison (#102) Station 648
Temperature
Fecal Coliform
Linear (Fecal Coliform)
Linear (Temperature)
Marine Temp Standard
Marine FC Standard
Temperature (C)
Fecal Coliform (CFU/100ml)
Date
0
2
4
6
8
10
12
14
16
18
-20
0
20
40
60
80
100
120
140
4/29/2003
5/29/2003
6/29/2003
7/29/2003
8/29/2003
9/29/2003
10/29/2003
11/29/2003
12/29/2003
1/29/2004
2/29/2004
3/29/2004
4/29/2004
5/29/2004
6/29/2004
7/29/2004
8/29/2004
9/29/2004
10/29/2004
11/29/2004
12/29/2004
1/29/2005
2/28/2005
3/29/2005
4/29/2005
5/29/2005
6/29/2005
7/29/2005
8/29/2005


Eagle Harbor (#112) Station 001
Sample Depth = 2m
Salinity and pH Values
Salinity
pH
Salinity Trendline
Marine pH standard
Salinity (ppt)
pH Units
Date
30.5
30
29.5
29
28.5
28
27.5
27
8
7
6
5
4
3
2
1
0
11/24/1997
12/8/1997
12/22/1997
1/5/1998
1/19/1998
2/2/1998
2/16/1998
3/2/1998
3/16/1998
3/30/1998
4/13/1998
4/27/1998
5/11/1998
5/25/1998
6/8/1998
6/22/1998
7/6/1998
7/20/1998
8/3/1998
8/17/1998
8/31/1998
9/14/1998

Eagle Harbor (#112) Station 001
Sample Depth = 2m
Temperature and Dissolved Oxygen



APPENDIX C-2

Data Set #2 - Washington Department of Health (WA-DOH) BEACH Program WQ Data

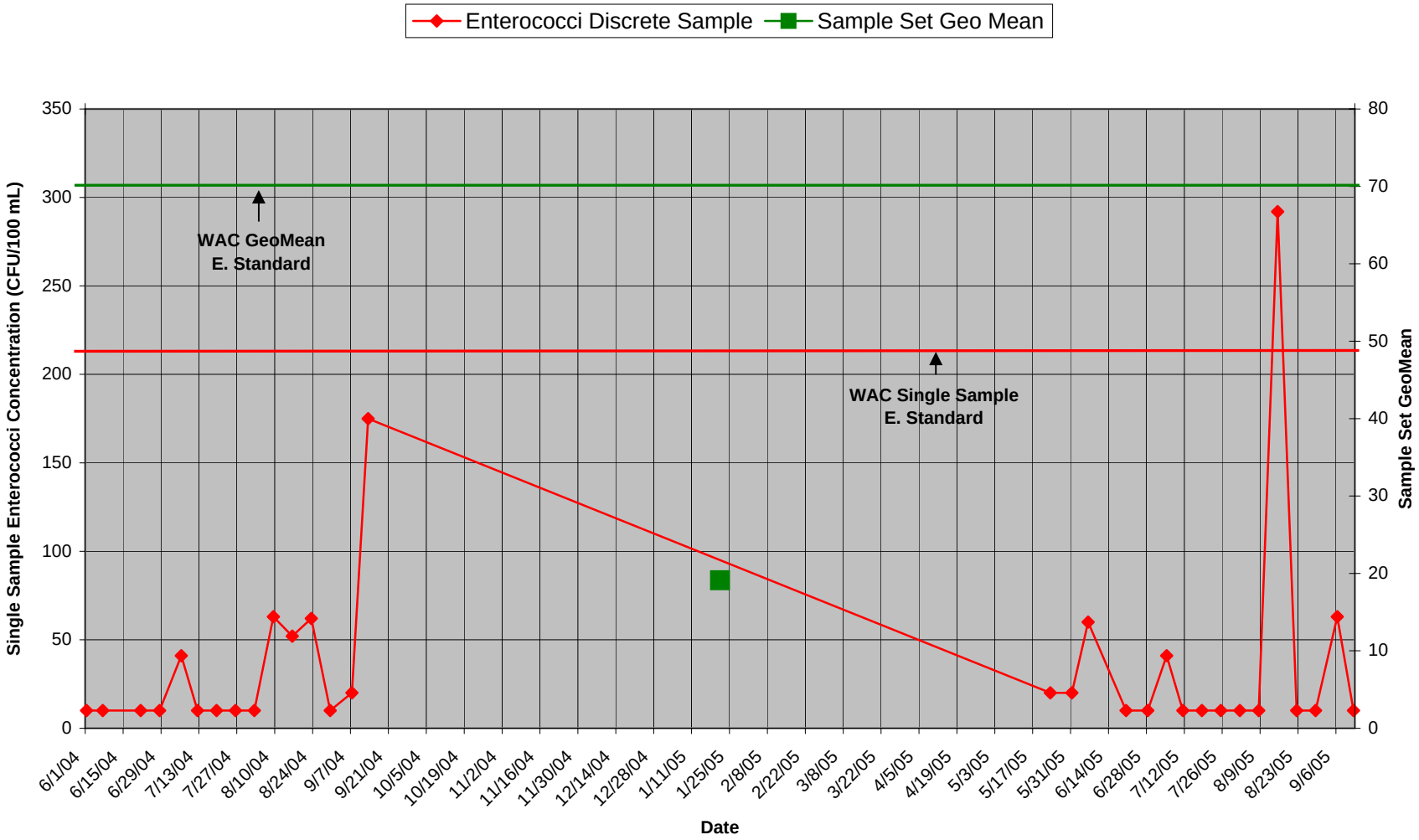
WA Dept of Health BEACH Program Water Quality Data Set - Enterococci Organisms Statistical Analysis

**values listed are reported in entero colonies (col) / 100ml*

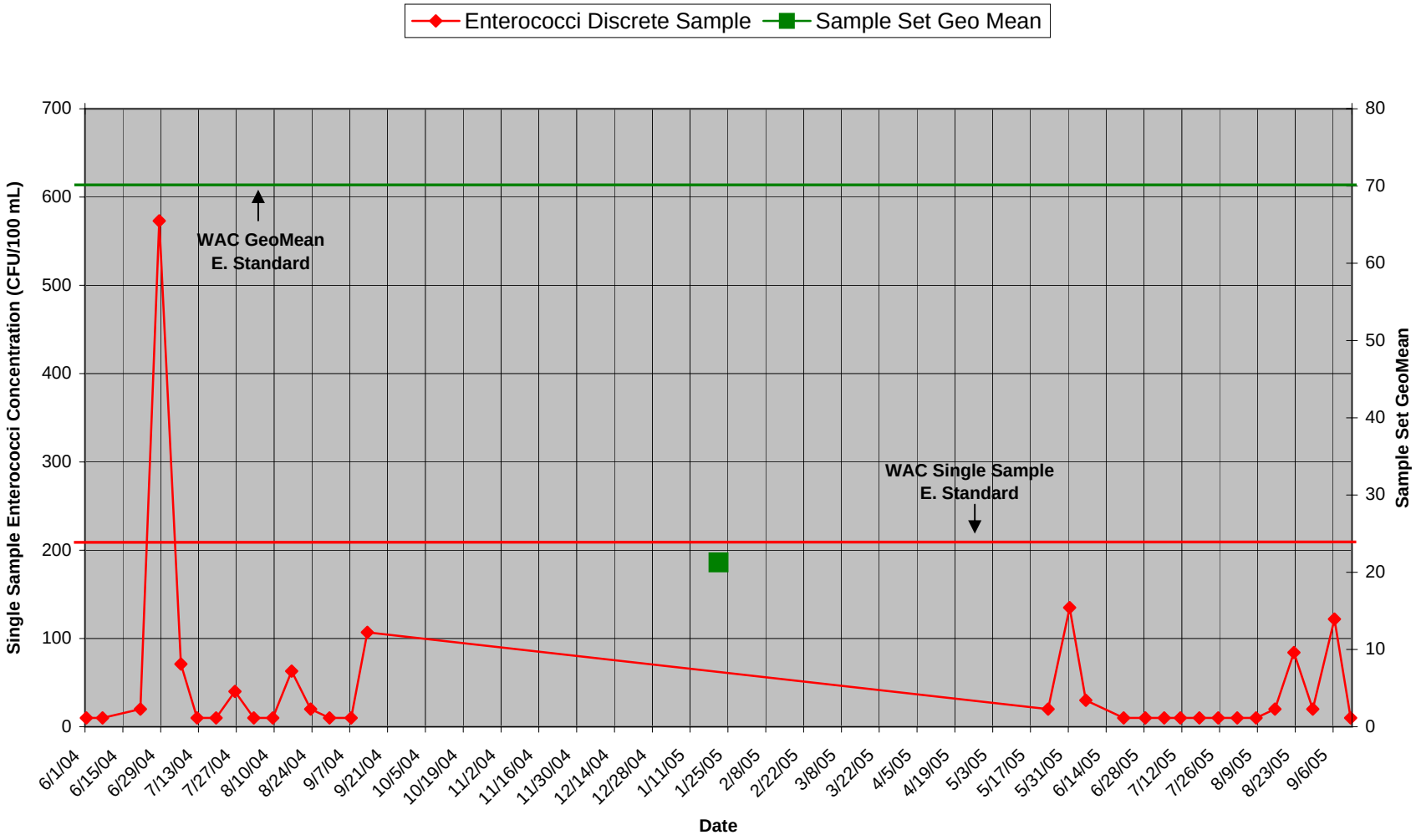
Monitoring Stations	**KIT023 A-C**	**KIT031 A-C**	**KIT031 A-C**
Monitoring Year	2005	2004	2005
Nearshore Area	SNRS	EGLH	EGLH
Sampling Site	Fay Bainbridge SP	Eagle Harbor	Eagle Harbor
CoBI Document No.	115	115	115
Statistical Parameter	**Statistical Analysis Result**		
# of samples	48	45	48
range-min	10	10	10
range-max	209	573	292
geomean	12.45	17.91	17.26
90th percentile	20	67.8	63
Values ≥90 percentile	7	5	6

WA State WQ Standard: 70 Entero / 100ml

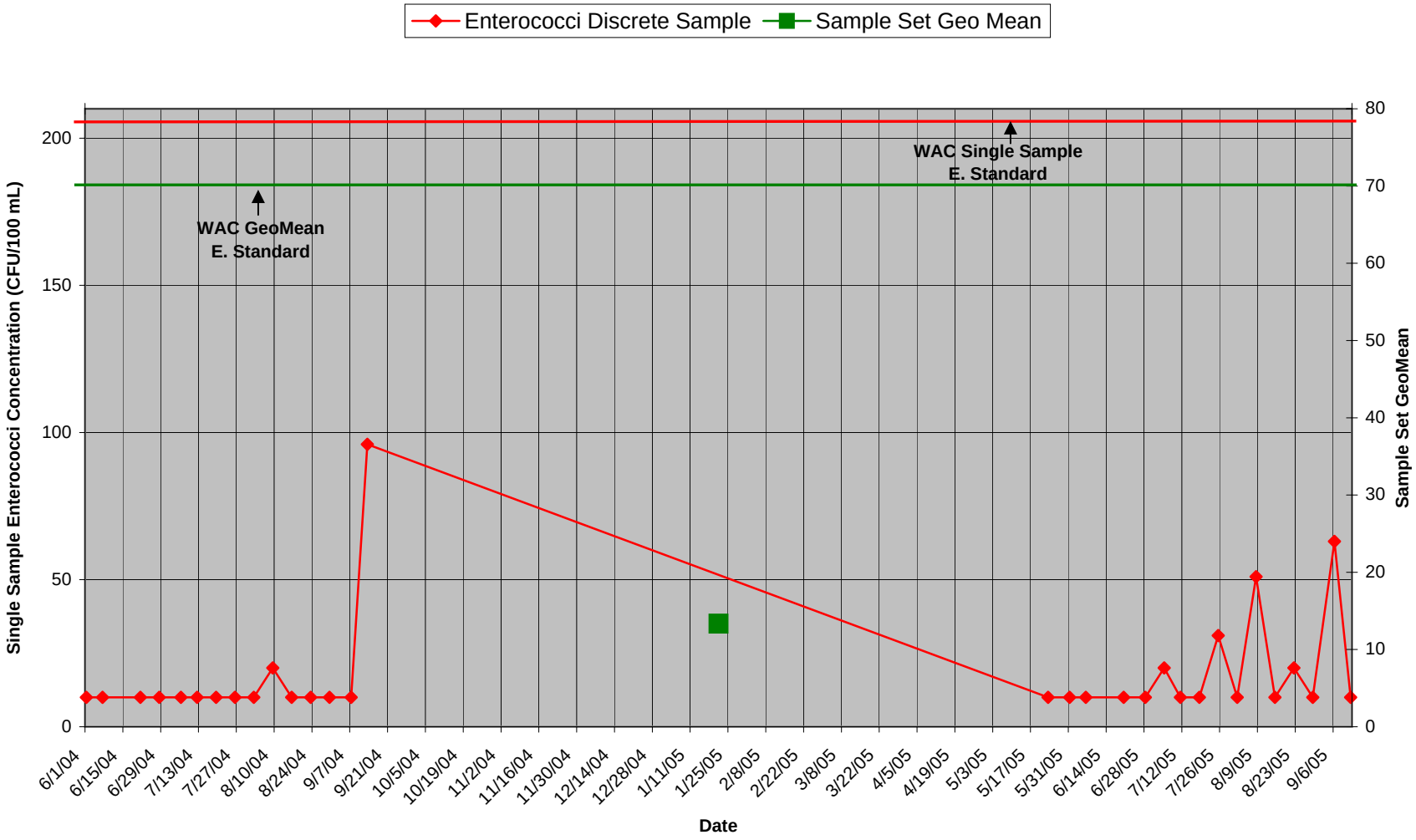
Eagle Harbor Waterfront Park
Enterococci Concentrations Station KIT013A



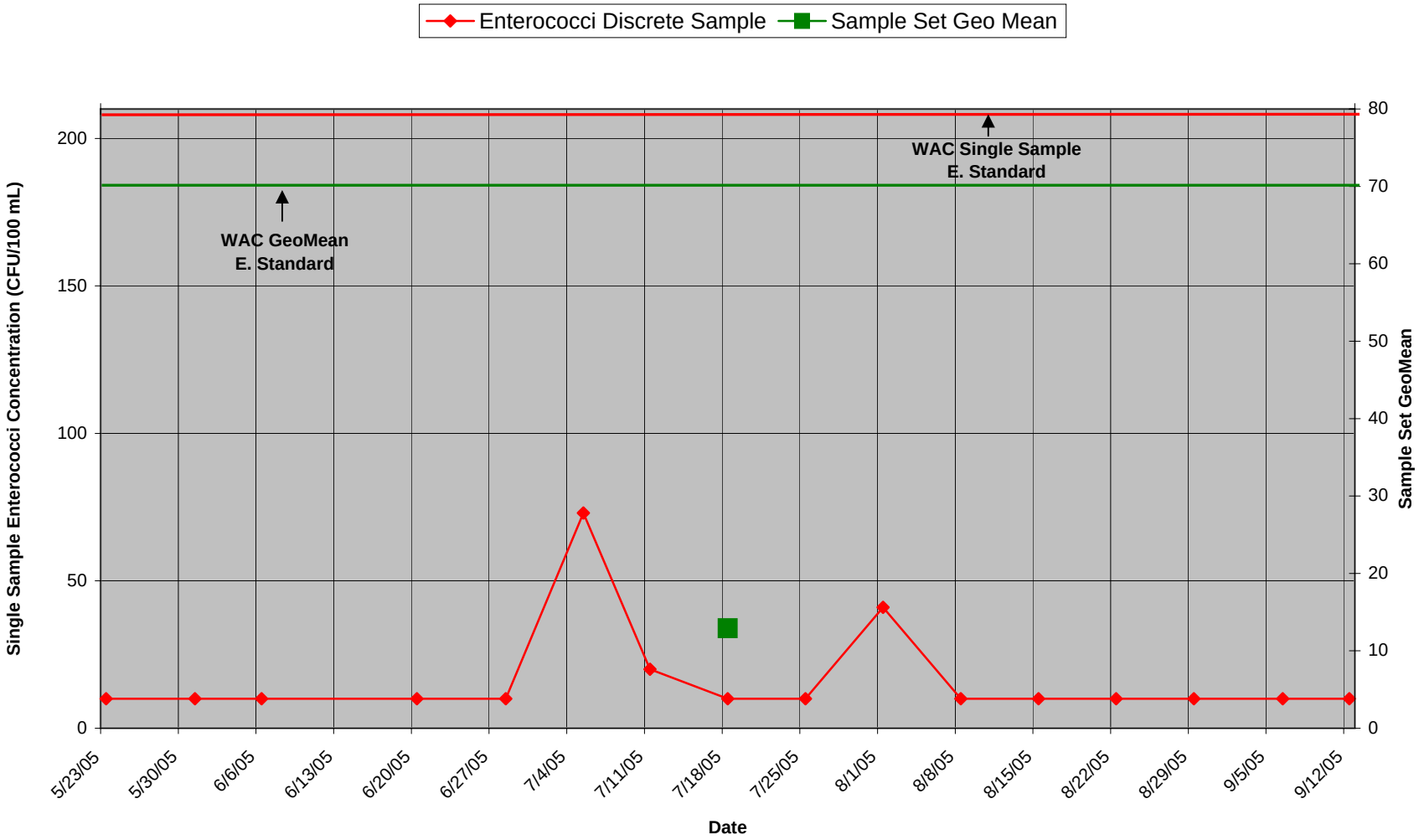
Eagle Harbor Waterfront Park
Enterococci Concentrations Station KIT013B



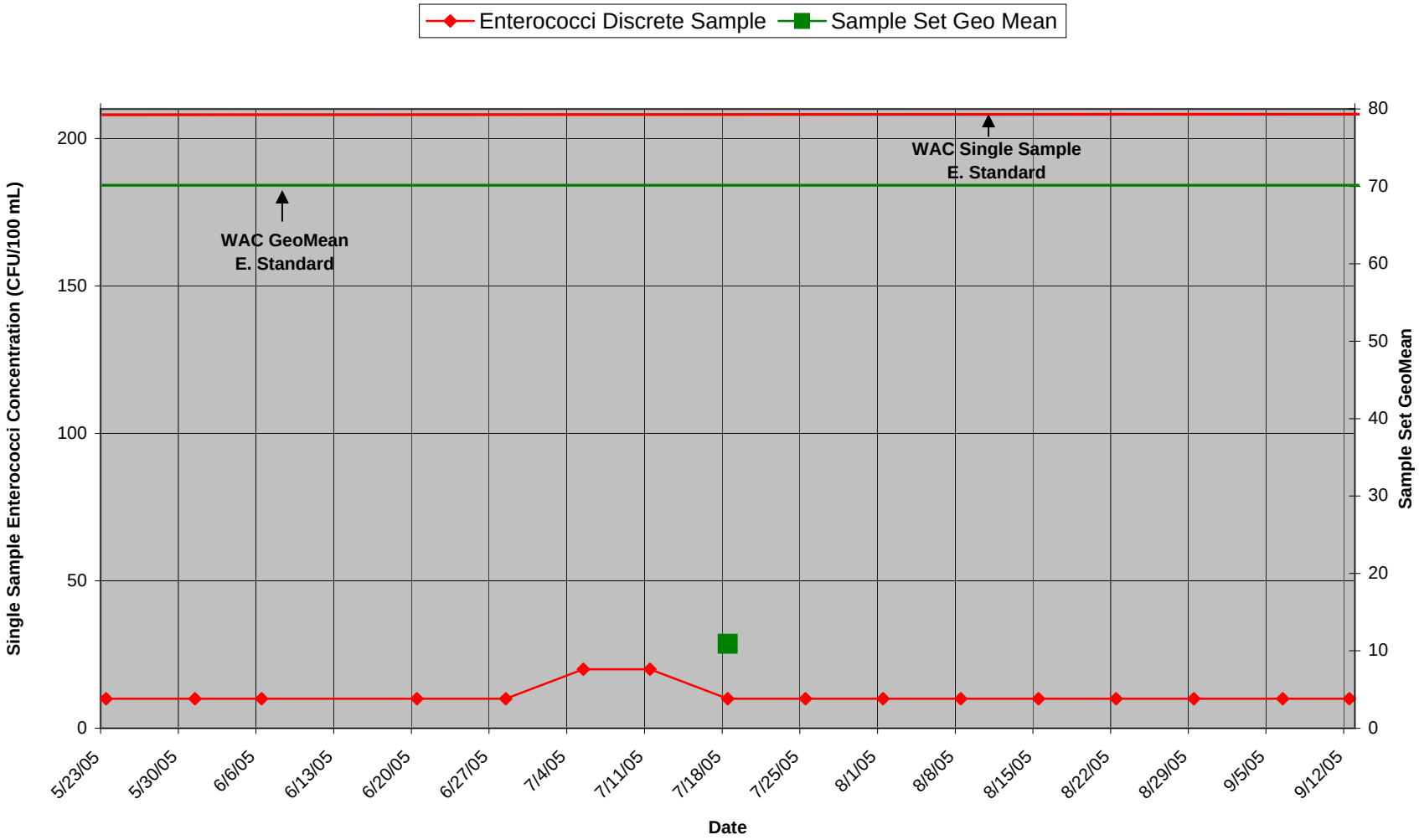
Eagle Harbor Waterfront Park
Enterococci Concentrations Station KIT013C



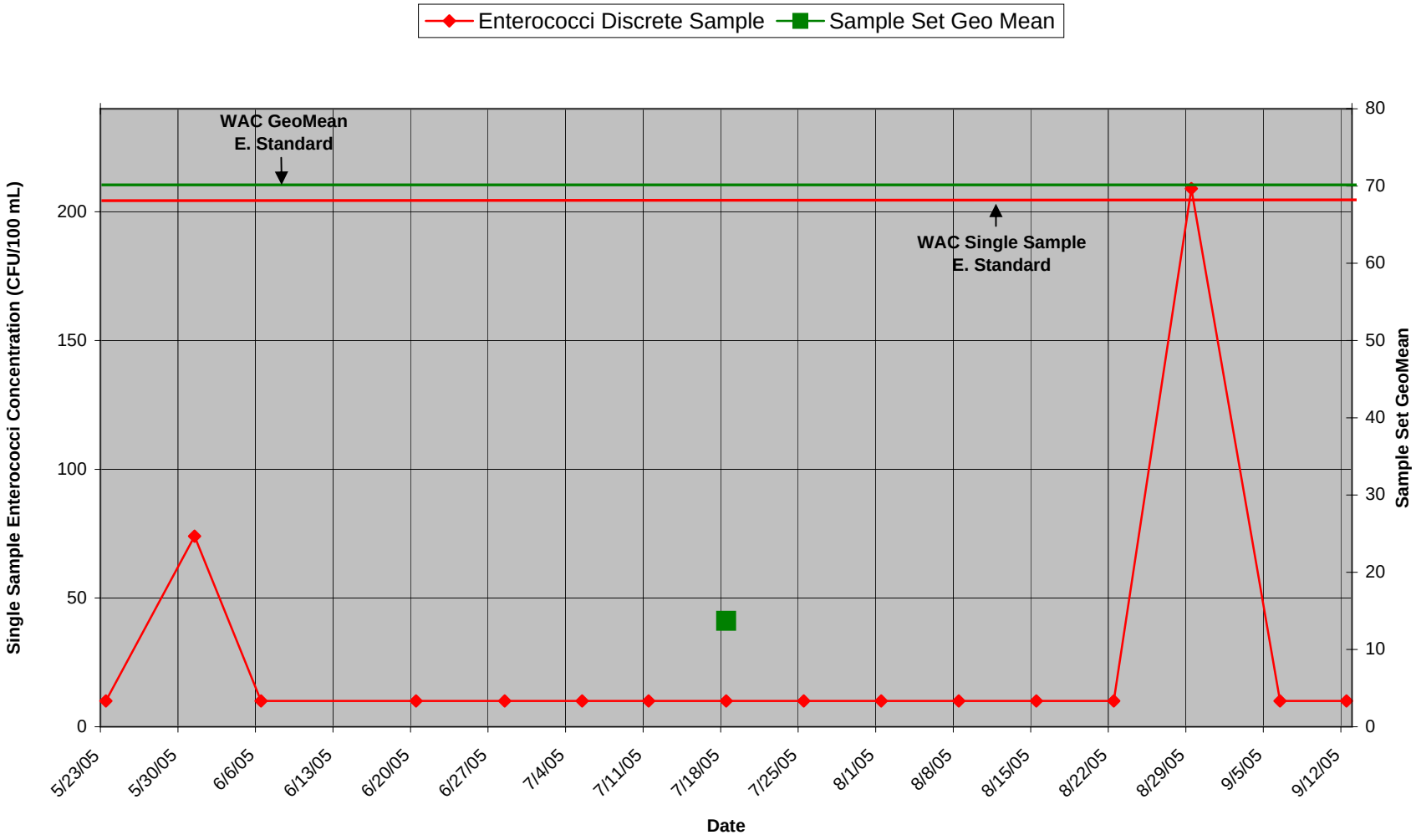
Fay Bainbridge State Park
Enterococci Concentrations Station KIT023A



Fay Bainbridge State Park
Enterococci Concentrations Station KIT023B



Fay Bainbridge State Park
Enterococci Concentrations Station KIT023C



APPENDIX C-3

Data Set #3 - Washington Department of Ecology (Ecology) Sediment Quality (SEDQUAL) Survey Data

CoBI Data Set #3 - WA Dept of Ecology SEDQUAL Database Download

Compounds in Exceedance of WAC 173-204-320

[1]Study	Station ID	Chemical Name	Concentration	Unit	Measurement Basis	Exceedance Values WAC173-204	Unit
EHCHEM	EH-15	1,2,4-Trichlorobenzene	1000	PPB	DRY	810	PPB
EHCHEM	BH-01	2,4-Dimethylphenol	160	PPB	DRY	29	PPB
EHCHEM	EH-01	2,4-Dimethylphenol	160	PPB	DRY	29	PPB
EHCHEM	EH-02	2,4-Dimethylphenol	160	PPB	DRY	29	PPB
EHCHEM	EH-03	2,4-Dimethylphenol	320	PPB	DRY	29	PPB
EHCHEM	EH-04	2,4-Dimethylphenol	74	PPB	DRY	29	PPB
EHCHEM	EH-05	2,4-Dimethylphenol	59	PPB	DRY	29	PPB
EHCHEM	EH-06	2,4-Dimethylphenol	250	PPB	DRY	29	PPB
EHCHEM	EH-07	2,4-Dimethylphenol	200	PPB	DRY	29	PPB
EHCHEM	EH-08	2,4-Dimethylphenol	250	PPB	DRY	29	PPB
EHCHEM	EH-08	2,4-Dimethylphenol	74	PPB	DRY	29	PPB
EHCHEM	EH-09	2,4-Dimethylphenol	150	PPB	DRY	29	PPB
EHCHEM	EH-10	2,4-Dimethylphenol	200	PPB	DRY	29	PPB
EHCHEM	EH-11	2,4-Dimethylphenol	200	PPB	DRY	29	PPB
EHCHEM	EH-12	2,4-Dimethylphenol	120	PPB	DRY	29	PPB
EHCHEM	EH-13	2,4-Dimethylphenol	280	PPB	DRY	29	PPB
EHCHEM	EH-14	2,4-Dimethylphenol	730	PPB	DRY	29	PPB
EHCHEM	EH-15	2,4-Dimethylphenol	72	PPB	DRY	29	PPB
EHCHEM	EH-16	2,4-Dimethylphenol	250	PPB	DRY	29	PPB
EHCHEM	EH-16	2,4-Dimethylphenol	250	PPB	DRY	29	PPB
EHCHEM	EH-17	2,4-Dimethylphenol	30	PPB	DRY	29	PPB
EHCHEM	EH-18	2,4-Dimethylphenol	250	PPB	DRY	29	PPB
EHCHEM	EH-19	2,4-Dimethylphenol	95	PPB	DRY	29	PPB
EHCHEM	EH-20	2,4-Dimethylphenol	210	PPB	DRY	29	PPB
EHCHEM	EH-21	2,4-Dimethylphenol	320	PPB	DRY	29	PPB
EHCHEM	EH-22	2,4-Dimethylphenol	280	PPB	DRY	29	PPB
EHCHEM	EH-23	2,4-Dimethylphenol	550	PPB	DRY	29	PPB
EHCHEM	EH-24	2,4-Dimethylphenol	2300	PPB	DRY	29	PPB
EHCHEM	RB-01	2,4-Dimethylphenol	63	PPB	DRY	29	PPB
EHCHEM	RB-02	2,4-Dimethylphenol	160	PPB	DRY	29	PPB
EHCHEM	RB-03	2,4-Dimethylphenol	60	PPB	DRY	29	PPB
EHCHEM	RB-04	2,4-Dimethylphenol	62	PPB	DRY	29	PPB
EHCHEM	RB-05	2,4-Dimethylphenol	120	PPB	DRY	29	PPB
EHCHEM	RB-06	2,4-Dimethylphenol	47	PPB	DRY	29	PPB
EHCHEM	RB-07	2,4-Dimethylphenol	59	PPB	DRY	29	PPB
EHCHEM	WP-01	2,4-Dimethylphenol	51	PPB	DRY	29	PPB
EHYR8M03	C-9SSS0	2,4-Dimethylphenol	288	PPB	DRY	29	PPB
EHYR8M03	F10SSS0	2,4-Dimethylphenol	144	PPB	DRY	29	PPB
EHYR8M03	F-7SCS0	2,4-Dimethylphenol	171	PPB	DRY	29	PPB
EHYR8M03	F-7SSS0	2,4-Dimethylphenol	223	PPB	DRY	29	PPB
EHYR8M03	F-9SCS0	2,4-Dimethylphenol	169	PPB	DRY	29	PPB
EHYR8M03	G-8SCS0	2,4-Dimethylphenol	131	PPB	DRY	29	PPB
EHYR8M03	G-8SSS0	2,4-Dimethylphenol	176	PPB	DRY	29	PPB
EHYR8M03	G-9SSS0	2,4-Dimethylphenol	175	PPB	DRY	29	PPB
EHYR8M03	H-10SCS0	2,4-Dimethylphenol	133	PPB	DRY	29	PPB
EHYR8M03	H-10SSS0	2,4-Dimethylphenol	147	PPB	DRY	29	PPB
EHYR8M03	H-5SSS0	2,4-Dimethylphenol	164	PPB	DRY	29	PPB
EHYR8M03	H-9SCS0	2,4-Dimethylphenol	139	PPB	DRY	29	PPB
EHYR8M03	H-9SSS0	2,4-Dimethylphenol	156	PPB	DRY	29	PPB
EHYR8M03	I-10SCS0	2,4-Dimethylphenol	126	PPB	DRY	29	PPB
EHYR8M03	I-10SSS0	2,4-Dimethylphenol	160	PPB	DRY	29	PPB
EHYR8M03	I-8SCS0	2,4-Dimethylphenol	176	PPB	DRY	29	PPB
EHYR8M03	I-8SSS0	2,4-Dimethylphenol	215	PPB	DRY	29	PPB
EHYR8M03	I-9SCS0	2,4-Dimethylphenol	131	PPB	DRY	29	PPB
EHYR8M03	I-9SSS0	2,4-Dimethylphenol	145	PPB	DRY	29	PPB
EHYR8M03	J10E5ISS	2,4-Dimethylphenol	137	PPB	DRY	29	PPB
EHYR8M03	J-10SCS0	2,4-Dimethylphenol	133	PPB	DRY	29	PPB

CoBI Data Set #3 - WA Dept of Ecology SEDQUAL Database Download

Compounds in Exceedance of WAC 173-204-320

[1]Study	Station ID	Chemical Name	Concentration	Unit	Measurement Basis	Exceedance Values WAC173-204	Unit
EHYR8M03	J-10SCS0	2,4-Dimethylphenol	135	PPB	DRY	29	PPB
EHYR8M03	J-10SSS0	2,4-Dimethylphenol	152	PPB	DRY	29	PPB
EHYR8M03	J11A5ISS	2,4-Dimethylphenol	132	PPB	DRY	29	PPB
EHYR8M03	J11D2ISS	2,4-Dimethylphenol	135	PPB	DRY	29	PPB
EHYR8M03	J-11SSS0	2,4-Dimethylphenol	138	PPB	DRY	29	PPB
EHYR8M03	J-4SSS0	2,4-Dimethylphenol	207	PPB	DRY	29	PPB
EHYR8M03	J-9SSS0	2,4-Dimethylphenol	151	PPB	DRY	29	PPB
EHYR8M03	K9D3ISS0	2,4-Dimethylphenol	202	PPB	DRY	29	PPB
EHYR8M03	L9B4ISS0	2,4-Dimethylphenol	159	PPB	DRY	29	PPB
EHYR8M03	M10D4ISS	2,4-Dimethylphenol	352	PPB	DRY	29	PPB
EHYR8M03	M10E4ICS	2,4-Dimethylphenol	220	PPB	DRY	29	PPB
EHYR8M03	M10E4ICS	2,4-Dimethylphenol	134	PPB	DRY	29	PPB
EHYR8M03	M10E4ISS	2,4-Dimethylphenol	153	PPB	DRY	29	PPB
EHYR8M03	M11E1ISS	2,4-Dimethylphenol	159	PPB	DRY	29	PPB
EHYR8M03	M-3SSS0	2,4-Dimethylphenol	176	PPB	DRY	29	PPB
EHYR8M03	M9A3ISS0	2,4-Dimethylphenol	167	PPB	DRY	29	PPB
EHYR8M03	N10A4ICS	2,4-Dimethylphenol	1140	PPB	DRY	29	PPB
EHYR8M03	N10A4ISS	2,4-Dimethylphenol	162	PPB	DRY	29	PPB
EHYR8M03	N10A5ISS	2,4-Dimethylphenol	158	PPB	DRY	29	PPB
EHYR8M03	N10B4ICS	2,4-Dimethylphenol	148	PPB	DRY	29	PPB
EHYR8M03	N10B4ISS	2,4-Dimethylphenol	151	PPB	DRY	29	PPB
EHYR8M03	N10B5ISS	2,4-Dimethylphenol	155	PPB	DRY	29	PPB
EHYR8M03	N11A1ISS	2,4-Dimethylphenol	162	PPB	DRY	29	PPB
EHYR8M03	N11A1ISS	2,4-Dimethylphenol	165	PPB	DRY	29	PPB
EHYR8M03	N11A2ICS	2,4-Dimethylphenol	145	PPB	DRY	29	PPB
EHYR8M03	N11A2ISS	2,4-Dimethylphenol	153	PPB	DRY	29	PPB
EHYR8M03	N11A5ISS	2,4-Dimethylphenol	184	PPB	DRY	29	PPB
EHYR8M03	N11B2ICS	2,4-Dimethylphenol	97.8	PPB	DRY	29	PPB
EHYR8M03	N11B2ISS	2,4-Dimethylphenol	155	PPB	DRY	29	PPB
EHYR8M03	N11B3ISS	2,4-Dimethylphenol	68.5	PPB	DRY	29	PPB
EHYR8M03	N11B4ISS	2,4-Dimethylphenol	170	PPB	DRY	29	PPB
EHYR8M03	N11B5ICS	2,4-Dimethylphenol	144	PPB	DRY	29	PPB
EHYR8M03	N11B5ISS	2,4-Dimethylphenol	155	PPB	DRY	29	PPB
EHYR8M03	N11C2ISS	2,4-Dimethylphenol	171	PPB	DRY	29	PPB
EHYR8M03	N11C4ISS	2,4-Dimethylphenol	162	PPB	DRY	29	PPB
EHYR8M03	N11C5ICS	2,4-Dimethylphenol	133	PPB	DRY	29	PPB
EHYR8M03	N11C5ISS	2,4-Dimethylphenol	167	PPB	DRY	29	PPB
EHYR8M03	N11D5ICS	2,4-Dimethylphenol	156	PPB	DRY	29	PPB
EHYR8M03	N11D5ISS	2,4-Dimethylphenol	162	PPB	DRY	29	PPB
EHYR8M03	N12B4ISS	2,4-Dimethylphenol	160	PPB	DRY	29	PPB
PSAMP_LT	30	2,4-Dimethylphenol	38.1	ppb	DRY	29	ppb
WYCKO_Q4	30MTR03X	2,4-Dimethylphenol	37.4	PPB	DRY	29	PPB
WYCKO_Q4	3MTR02XX	2,4-Dimethylphenol	36.8	PPB	DRY	29	PPB
EHYR8M03	M10E4ICS	2-Methylnaphthalene	42000	PPB	DRY	38000	PPB
EHYR8M03	M11E1ISS	2-Methylnaphthalene	630000	PPB	DRY	38000	PPB
EHYR8M03	N11B5ICS	2-Methylnaphthalene	47600	PPB	DRY	38000	PPB
EHYR8M03	C-9SSS0	2-Methylphenol	288	PPB	DRY	63	PPB
EHYR8M03	F10SSS0	2-Methylphenol	144	PPB	DRY	63	PPB
EHYR8M03	F-7SCS0	2-Methylphenol	171	PPB	DRY	63	PPB
EHYR8M03	F-7SSS0	2-Methylphenol	223	PPB	DRY	63	PPB
EHYR8M03	F-9SCS0	2-Methylphenol	169	PPB	DRY	63	PPB
EHYR8M03	G-8SCS0	2-Methylphenol	131	PPB	DRY	63	PPB
EHYR8M03	G-8SSS0	2-Methylphenol	176	PPB	DRY	63	PPB
EHYR8M03	G-9SSS0	2-Methylphenol	175	PPB	DRY	63	PPB
EHYR8M03	H-10SCS0	2-Methylphenol	133	PPB	DRY	63	PPB
EHYR8M03	H-10SSS0	2-Methylphenol	147	PPB	DRY	63	PPB
EHYR8M03	H-5SSS0	2-Methylphenol	164	PPB	DRY	63	PPB

CoBI Data Set #3 - WA Dept of Ecology SEDQUAL Database Download

Compounds in Exceedance of WAC 173-204-320

[1]Study	Station ID	Chemical Name	Concentration	Unit	Measurement Basis	Exceedance Values WAC173-204	Unit
EHYR8M03	H-9SCS0	2-Methylphenol	139	PPB	DRY	63	PPB
EHYR8M03	H-9SSS0	2-Methylphenol	156	PPB	DRY	63	PPB
EHYR8M03	I-10SCS0	2-Methylphenol	126	PPB	DRY	63	PPB
EHYR8M03	I-10SSS0	2-Methylphenol	160	PPB	DRY	63	PPB
EHYR8M03	I-8SCS0	2-Methylphenol	176	PPB	DRY	63	PPB
EHYR8M03	I-8SSS0	2-Methylphenol	215	PPB	DRY	63	PPB
EHYR8M03	I-9SCS0	2-Methylphenol	131	PPB	DRY	63	PPB
EHYR8M03	I-9SSS0	2-Methylphenol	145	PPB	DRY	63	PPB
EHYR8M03	J10E5ISS	2-Methylphenol	137	PPB	DRY	63	PPB
EHYR8M03	J-10SCS0	2-Methylphenol	133	PPB	DRY	63	PPB
EHYR8M03	J-10SCS0	2-Methylphenol	135	PPB	DRY	63	PPB
EHYR8M03	J-10SSS0	2-Methylphenol	152	PPB	DRY	63	PPB
EHYR8M03	J11A5ISS	2-Methylphenol	132	PPB	DRY	63	PPB
EHYR8M03	J11D2ISS	2-Methylphenol	135	PPB	DRY	63	PPB
EHYR8M03	J-11SSS0	2-Methylphenol	138	PPB	DRY	63	PPB
EHYR8M03	J-4SSS0	2-Methylphenol	207	PPB	DRY	63	PPB
EHYR8M03	J-9SSS0	2-Methylphenol	151	PPB	DRY	63	PPB
EHYR8M03	K9D3ISS0	2-Methylphenol	202	PPB	DRY	63	PPB
EHYR8M03	L9B4ISS0	2-Methylphenol	159	PPB	DRY	63	PPB
EHYR8M03	M10D4ISS	2-Methylphenol	125	PPB	DRY	63	PPB
EHYR8M03	M10E4ICS	2-Methylphenol	226	PPB	DRY	63	PPB
EHYR8M03	M10E4ICS	2-Methylphenol	134	PPB	DRY	63	PPB
EHYR8M03	M10E4ISS	2-Methylphenol	153	PPB	DRY	63	PPB
EHYR8M03	M11E1ISS	2-Methylphenol	159	PPB	DRY	63	PPB
EHYR8M03	M-3SSS0	2-Methylphenol	176	PPB	DRY	63	PPB
EHYR8M03	M9A3ISS0	2-Methylphenol	167	PPB	DRY	63	PPB
EHYR8M03	N10A4ICS	2-Methylphenol	1680	PPB	DRY	63	PPB
EHYR8M03	N10A4ISS	2-Methylphenol	162	PPB	DRY	63	PPB
EHYR8M03	N10B4ICS	2-Methylphenol	148	PPB	DRY	63	PPB
EHYR8M03	N10B4ISS	2-Methylphenol	151	PPB	DRY	63	PPB
EHYR8M03	N10B5ISS	2-Methylphenol	155	PPB	DRY	63	PPB
EHYR8M03	N11A1ISS	2-Methylphenol	165	PPB	DRY	63	PPB
EHYR8M03	N11A2ISS	2-Methylphenol	153	PPB	DRY	63	PPB
EHYR8M03	N11A5ISS	2-Methylphenol	184	PPB	DRY	63	PPB
EHYR8M03	N11B2ISS	2-Methylphenol	155	PPB	DRY	63	PPB
EHYR8M03	N11B4ISS	2-Methylphenol	170	PPB	DRY	63	PPB
EHYR8M03	N11B5ICS	2-Methylphenol	144	PPB	DRY	63	PPB
EHYR8M03	N11B5ISS	2-Methylphenol	155	PPB	DRY	63	PPB
EHYR8M03	N11C2ISS	2-Methylphenol	171	PPB	DRY	63	PPB
EHYR8M03	N11C4ISS	2-Methylphenol	162	PPB	DRY	63	PPB
EHYR8M03	N11C5ICS	2-Methylphenol	133	PPB	DRY	63	PPB
EHYR8M03	N11C5ISS	2-Methylphenol	167	PPB	DRY	63	PPB
EHYR8M03	N11D5ICS	2-Methylphenol	156	PPB	DRY	63	PPB
EHYR8M03	N11D5ISS	2-Methylphenol	162	PPB	DRY	63	PPB
EHYR8M03	N12B4ISS	2-Methylphenol	160	PPB	DRY	63	PPB
EHYR8M03	N10A4ICS	4-Methylphenol	3670	PPB	DRY	670	PPB
EHCHEM	EH-08	Acenaphthene	23000	PPB	DRY	16000	PPB
EHYR8M03	M10D4ISS	Acenaphthene	66500	PPB	DRY	16000	PPB
EHYR8M03	M10E4ICS	Acenaphthene	21100	PPB	DRY	16000	PPB
EHYR8M03	M10E4ICS	Acenaphthene	21800	PPB	DRY	16000	PPB
EHYR8M03	M11E1ISS	Acenaphthene	327000	PPB	DRY	16000	PPB
EHYR8M03	N10A5ISS	Acenaphthene	16600	PPB	DRY	16000	PPB
EHYR8M03	N11B5ICS	Acenaphthene	19400	PPB	DRY	16000	PPB
EHYR8M03	C-9SSS0	Benzoic acid	1440	PPB	DRY	650	PPB
EHYR8M03	F10SSS0	Benzoic acid	722	PPB	DRY	650	PPB
EHYR8M03	F-7SCS0	Benzoic acid	854	PPB	DRY	650	PPB
EHYR8M03	F-7SSS0	Benzoic acid	1210	PPB	DRY	650	PPB

CoBI Data Set #3 - WA Dept of Ecology SEDQUAL Database Download

Compounds in Exceedance of WAC 173-204-320

[1]Study	Station ID	Chemical Name	Concentration	Unit	Measurement Basis	Exceedance Values WAC173-204	Unit
EHYR8M03	F-9SCS0	Benzoic acid	847	PPB	DRY	650	PPB
EHYR8M03	G-8SCS0	Benzoic acid	653	PPB	DRY	650	PPB
EHYR8M03	G-8SSS0	Benzoic acid	879	PPB	DRY	650	PPB
EHYR8M03	G-9SSS0	Benzoic acid	874	PPB	DRY	650	PPB
EHYR8M03	H-10SCS0	Benzoic acid	667	PPB	DRY	650	PPB
EHYR8M03	H-10SSS0	Benzoic acid	734	PPB	DRY	650	PPB
EHYR8M03	H-5SSS0	Benzoic acid	820	PPB	DRY	650	PPB
EHYR8M03	H-9SCS0	Benzoic acid	694	PPB	DRY	650	PPB
EHYR8M03	H-9SSS0	Benzoic acid	780	PPB	DRY	650	PPB
EHYR8M03	I-10SCS0	Benzoic acid	630	PPB	DRY	650	PPB
EHYR8M03	I-10SSS0	Benzoic acid	801	PPB	DRY	650	PPB
EHYR8M03	I-8SCS0	Benzoic acid	881	PPB	DRY	650	PPB
EHYR8M03	I-8SSS0	Benzoic acid	1180	PPB	DRY	650	PPB
EHYR8M03	I-9SCS0	Benzoic acid	655	PPB	DRY	650	PPB
EHYR8M03	I-9SSS0	Benzoic acid	726	PPB	DRY	650	PPB
EHYR8M03	J10E5ISS	Benzoic acid	685	PPB	DRY	650	PPB
EHYR8M03	J-10SCS0	Benzoic acid	664	PPB	DRY	650	PPB
EHYR8M03	J-10SCS0	Benzoic acid	761	PPB	DRY	650	PPB
EHYR8M03	J-10SSS0	Benzoic acid	759	PPB	DRY	650	PPB
EHYR8M03	J11A5ISS	Benzoic acid	662	PPB	DRY	650	PPB
EHYR8M03	J11D2ISS	Benzoic acid	674	PPB	DRY	650	PPB
EHYR8M03	J-11SSS0	Benzoic acid	688	PPB	DRY	650	PPB
EHYR8M03	J-4SSS0	Benzoic acid	1060	PPB	DRY	650	PPB
EHYR8M03	J-9SSS0	Benzoic acid	914	PPB	DRY	650	PPB
EHYR8M03	K9D3ISS0	Benzoic acid	1010	PPB	DRY	650	PPB
EHYR8M03	L9B4ISS0	Benzoic acid	794	PPB	DRY	650	PPB
EHYR8M03	M10D4ISS	Benzoic acid	799	PPB	DRY	650	PPB
EHYR8M03	M10E4ICS	Benzoic acid	760	PPB	DRY	650	PPB
EHYR8M03	M10E4ICS	Benzoic acid	669	PPB	DRY	650	PPB
EHYR8M03	M10E4ISS	Benzoic acid	765	PPB	DRY	650	PPB
EHYR8M03	M11E1ISS	Benzoic acid	793	PPB	DRY	650	PPB
EHYR8M03	M-3SSS0	Benzoic acid	880	PPB	DRY	650	PPB
EHYR8M03	M9A3ISS0	Benzoic acid	836	PPB	DRY	650	PPB
EHYR8M03	N10A4ICS	Benzoic acid	788	PPB	DRY	650	PPB
EHYR8M03	N10A4ISS	Benzoic acid	811	PPB	DRY	650	PPB
EHYR8M03	N10A5ISS	Benzoic acid	788	PPB	DRY	650	PPB
EHYR8M03	N10B4ICS	Benzoic acid	738	PPB	DRY	650	PPB
EHYR8M03	N10B4ISS	Benzoic acid	754	PPB	DRY	650	PPB
EHYR8M03	N10B5ISS	Benzoic acid	776	PPB	DRY	650	PPB
EHYR8M03	N11A1ISS	Benzoic acid	810	PPB	DRY	650	PPB
EHYR8M03	N11A1ISS	Benzoic acid	827	PPB	DRY	650	PPB
EHYR8M03	N11A2ICS	Benzoic acid	724	PPB	DRY	650	PPB
EHYR8M03	N11A2ISS	Benzoic acid	766	PPB	DRY	650	PPB
EHYR8M03	N11A5ISS	Benzoic acid	922	PPB	DRY	650	PPB
EHYR8M03	N11B2ICS	Benzoic acid	659	PPB	DRY	650	PPB
EHYR8M03	N11B2ISS	Benzoic acid	774	PPB	DRY	650	PPB
EHYR8M03	N11B3ISS	Benzoic acid	801	PPB	DRY	650	PPB
EHYR8M03	N11B4ISS	Benzoic acid	852	PPB	DRY	650	PPB
EHYR8M03	N11B5ICS	Benzoic acid	719	PPB	DRY	650	PPB
EHYR8M03	N11B5ISS	Benzoic acid	775	PPB	DRY	650	PPB
EHYR8M03	N11C2ISS	Benzoic acid	854	PPB	DRY	650	PPB
EHYR8M03	N11C4ISS	Benzoic acid	808	PPB	DRY	650	PPB
EHYR8M03	N11C5ICS	Benzoic acid	667	PPB	DRY	650	PPB
EHYR8M03	N11C5ISS	Benzoic acid	833	PPB	DRY	650	PPB
EHYR8M03	N11D5ICS	Benzoic acid	780	PPB	DRY	650	PPB
EHYR8M03	N11D5ISS	Benzoic acid	812	PPB	DRY	650	PPB
EHYR8M03	N12B4ISS	Benzoic acid	799	PPB	DRY	650	PPB

CoBI Data Set #3 - WA Dept of Ecology SEDQUAL Database Download

Compounds in Exceedance of WAC 173-204-320

[1]Study	Station ID	Chemical Name	Concentration	Unit	Measurement Basis	Exceedance Values WAC173-204	Unit
EHYR8M03	C-9SSS0	Benzyl alcohol	577	PPB	DRY	57	PPB
EHYR8M03	F10SSS0	Benzyl alcohol	289	PPB	DRY	57	PPB
EHYR8M03	F-7SCS0	Benzyl alcohol	707	PPB	DRY	57	PPB
EHYR8M03	F-7SSS0	Benzyl alcohol	661	PPB	DRY	57	PPB
EHYR8M03	F-9SCS0	Benzyl alcohol	442	PPB	DRY	57	PPB
EHYR8M03	G-8SCS0	Benzyl alcohol	348	PPB	DRY	57	PPB
EHYR8M03	G-8SSS0	Benzyl alcohol	352	PPB	DRY	57	PPB
EHYR8M03	G-9SSS0	Benzyl alcohol	452	PPB	DRY	57	PPB
EHYR8M03	H-10SCS0	Benzyl alcohol	267	PPB	DRY	57	PPB
EHYR8M03	H-10SSS0	Benzyl alcohol	294	PPB	DRY	57	PPB
EHYR8M03	H-5SSS0	Benzyl alcohol	328	PPB	DRY	57	PPB
EHYR8M03	H-9SCS0	Benzyl alcohol	442	PPB	DRY	57	PPB
EHYR8M03	H-9SSS0	Benzyl alcohol	312	PPB	DRY	57	PPB
EHYR8M03	I-10SCS0	Benzyl alcohol	263	PPB	DRY	57	PPB
EHYR8M03	I-10SSS0	Benzyl alcohol	321	PPB	DRY	57	PPB
EHYR8M03	I-8SCS0	Benzyl alcohol	352	PPB	DRY	57	PPB
EHYR8M03	I-8SSS0	Benzyl alcohol	430	PPB	DRY	57	PPB
EHYR8M03	I-9SCS0	Benzyl alcohol	359	PPB	DRY	57	PPB
EHYR8M03	I-9SSS0	Benzyl alcohol	290	PPB	DRY	57	PPB
EHYR8M03	J10E5ISS	Benzyl alcohol	274	PPB	DRY	57	PPB
EHYR8M03	J-10SCS0	Benzyl alcohol	343	PPB	DRY	57	PPB
EHYR8M03	J-10SCS0	Benzyl alcohol	489	PPB	DRY	57	PPB
EHYR8M03	J-10SSS0	Benzyl alcohol	304	PPB	DRY	57	PPB
EHYR8M03	J11A5ISS	Benzyl alcohol	265	PPB	DRY	57	PPB
EHYR8M03	J11D2ISS	Benzyl alcohol	270	PPB	DRY	57	PPB
EHYR8M03	J-11SSS0	Benzyl alcohol	275	PPB	DRY	57	PPB
EHYR8M03	J-4SSS0	Benzyl alcohol	413	PPB	DRY	57	PPB
EHYR8M03	J-9SSS0	Benzyl alcohol	301	PPB	DRY	57	PPB
EHYR8M03	K9D3ISS0	Benzyl alcohol	404	PPB	DRY	57	PPB
EHYR8M03	L9B4ISS0	Benzyl alcohol	318	PPB	DRY	57	PPB
EHYR8M03	M10D4ISS	Benzyl alcohol	319	PPB	DRY	57	PPB
EHYR8M03	M10E4ICS	Benzyl alcohol	657	PPB	DRY	57	PPB
EHYR8M03	M10E4ICS	Benzyl alcohol	268	PPB	DRY	57	PPB
EHYR8M03	M10E4ISS	Benzyl alcohol	306	PPB	DRY	57	PPB
EHYR8M03	M11E1ISS	Benzyl alcohol	317	PPB	DRY	57	PPB
EHYR8M03	M-3SSS0	Benzyl alcohol	352	PPB	DRY	57	PPB
EHYR8M03	M9A3ISS0	Benzyl alcohol	335	PPB	DRY	57	PPB
EHYR8M03	N10A4ICS	Benzyl alcohol	344	PPB	DRY	57	PPB
EHYR8M03	N10A4ISS	Benzyl alcohol	324	PPB	DRY	57	PPB
EHYR8M03	N10A5ISS	Benzyl alcohol	315	PPB	DRY	57	PPB
EHYR8M03	N10B4ICS	Benzyl alcohol	490	PPB	DRY	57	PPB
EHYR8M03	N10B4ISS	Benzyl alcohol	302	PPB	DRY	57	PPB
EHYR8M03	N10B5ISS	Benzyl alcohol	310	PPB	DRY	57	PPB
EHYR8M03	N11A1ISS	Benzyl alcohol	324	PPB	DRY	57	PPB
EHYR8M03	N11A1ISS	Benzyl alcohol	331	PPB	DRY	57	PPB
EHYR8M03	N11A2ICS	Benzyl alcohol	300	PPB	DRY	57	PPB
EHYR8M03	N11A2ISS	Benzyl alcohol	306	PPB	DRY	57	PPB
EHYR8M03	N11A5ISS	Benzyl alcohol	369	PPB	DRY	57	PPB
EHYR8M03	N11B2ICS	Benzyl alcohol	264	PPB	DRY	57	PPB
EHYR8M03	N11B2ISS	Benzyl alcohol	309	PPB	DRY	57	PPB
EHYR8M03	N11B3ISS	Benzyl alcohol	320	PPB	DRY	57	PPB
EHYR8M03	N11B4ISS	Benzyl alcohol	341	PPB	DRY	57	PPB
EHYR8M03	N11B5ICS	Benzyl alcohol	287	PPB	DRY	57	PPB
EHYR8M03	N11B5ISS	Benzyl alcohol	310	PPB	DRY	57	PPB
EHYR8M03	N11C2ISS	Benzyl alcohol	402	PPB	DRY	57	PPB
EHYR8M03	N11C4ISS	Benzyl alcohol	323	PPB	DRY	57	PPB
EHYR8M03	N11C5ICS	Benzyl alcohol	358	PPB	DRY	57	PPB

CoBI Data Set #3 - WA Dept of Ecology SEDQUAL Database Download

Compounds in Exceedance of WAC 173-204-320

[1]Study	Station ID	Chemical Name	Concentration	Unit	Measurement Basis	Exceedance Values WAC173-204	Unit
EHYR8M03	N11C5ISS	Benzyl alcohol	333	PPB	DRY	57	PPB
EHYR8M03	N11D5ICS	Benzyl alcohol	724	PPB	DRY	57	PPB
EHYR8M03	N11D5ISS	Benzyl alcohol	325	PPB	DRY	57	PPB
EHYR8M03	N12B4ISS	Benzyl alcohol	319	PPB	DRY	57	PPB
PSAMP_LT	30	Benzyl alcohol	60	ppb	DRY	57	ppb
PSAMP_LT	30	Benzyl alcohol	75	ppb	DRY	57	ppb
PSAMP_LT	30	Benzyl alcohol	95.24	ppb	DRY	57	ppb
EHCHEM94	HC-I-21	Copper	1760	PPM	DRY	390	PPM
EHCHEM94	HC-I-23	Copper	8910	PPM	DRY	390	PPM
EHCHEM94	HC-I-24	Copper	526	PPM	DRY	390	PPM
EHCHEM94	HC-I-27	Copper	802	PPM	DRY	390	PPM
EHCHEM94	HC-I-30	Copper	398	PPM	DRY	390	PPM
EHCHEM94	HC-I-31	Copper	499	PPM	DRY	390	PPM
EHCHEM94	HC-S-121	Copper	860	PPM	DRY	390	PPM
EHYR8M03	M10D4ISS	Dibenzofuran	23200	PPB	DRY	15000	PPB
EHYR8M03	M11E1ISS	Dibenzofuran	197000	PPB	DRY	15000	PPB
EHYR8M03	K9D3ISS0	Fluoranthene	160000	PPB	DRY	160000	PPB
EHYR8M03	N11B3ISS	Fluoranthene	165000	PPB	DRY	160000	PPB
EHCHEM	WP-01	Hexachlorobenzene	600	PPB	DRY	380	PPB
EHCHEM	EH-18	Mercury	0.61	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-129	Mercury	0.68	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-129	Mercury	0.71	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-130	Mercury	10.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-130	Mercury	1.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-130	Mercury	3.2	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-131	Mercury	0.99	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-131	Mercury	2.8	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-20	Mercury	18	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-21	Mercury	10.1	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-21	Mercury	2.8	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-22	Mercury	3.7	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-22	Mercury	6.4	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-22	Mercury	8.7	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-22	Mercury	2.6	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-22	Mercury	0.23	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-23	Mercury	10.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-23	Mercury	29.3	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-23	Mercury	8.9	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-24	Mercury	3.8	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-24	Mercury	2.6	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-24	Mercury	6.6	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-24	Mercury	1.3	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-25	Mercury	0.94	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-25	Mercury	32.3	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-25	Mercury	3.2	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-26	Mercury	19.4	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-26	Mercury	0.63	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-26	Mercury	1.7	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-27	Mercury	1.8	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-28	Mercury	1.7	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-29	Mercury	0.96	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-29	Mercury	1	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-30	Mercury	0.91	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-30	Mercury	5.8	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-30	Mercury	0.96	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-31	Mercury	3.7	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-31	Mercury	2.5	PPM	DRY	0.41	PPM

CoBI Data Set #3 - WA Dept of Ecology SEDQUAL Database Download

Compounds in Exceedance of WAC 173-204-320

[1]Study	Station ID	Chemical Name	Concentration	Unit	Measurement Basis	Exceedance Values WAC173-204	Unit
EHCHEM94	HC-I-31	Mercury	0.45	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-32	Mercury	1.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-33	Mercury	0.93	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-34	Mercury	0.85	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-34	Mercury	0.88	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-34	Mercury	0.79	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-35	Mercury	0.63	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-37	Mercury	2.1	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-38	Mercury	0.51	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-38	Mercury	4.6	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-39	Mercury	1.3	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-41	Mercury	1.8	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-60	Mercury	0.64	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-61	Mercury	1.8	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-62	Mercury	1.2	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-63	Mercury	1.4	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-64	Mercury	1	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-72	Mercury	3.1	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-72	Mercury	1.9	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-72	Mercury	2.1	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-72	Mercury	23.7	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-72	Mercury	2	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-72	Mercury	5.2	PPM	DRY	0.41	PPM
EHCHEM94	HC-I-81	Mercury	1.3	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-100	Mercury	0.56	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-100	Mercury	3.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-101	Mercury	0.46	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-104	Mercury	0.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-105	Mercury	0.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-106	Mercury	0.7	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-107	Mercury	1	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-108	Mercury	0.78	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-109	Mercury	0.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-110	Mercury	0.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-111	Mercury	0.6	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-112	Mercury	0.6	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-113	Mercury	0.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-114	Mercury	0.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-117	Mercury	0.7	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-118	Mercury	1.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-119	Mercury	1.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-120	Mercury	0.9	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-121	Mercury	2	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-121	Mercury	0.82	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-121	Mercury	2.1	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-122	Mercury	0.48	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-122	Mercury	1.3	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-123	Mercury	0.92	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-124	Mercury	1.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-125	Mercury	0.95	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-125	Mercury	0.83	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-126	Mercury	0.66	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-127	Mercury	1.8	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-128	Mercury	3.4	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-132	Mercury	5.4	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-133	Mercury	2.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-134	Mercury	0.68	PPM	DRY	0.41	PPM

CoBI Data Set #3 - WA Dept of Ecology SEDQUAL Database Download

Compounds in Exceedance of WAC 173-204-320

[1]Study	Station ID	Chemical Name	Concentration	Unit	Measurement Basis	Exceedance Values WAC173-204	Unit
EHCHEM94	HC-S-135	Mercury	3.8	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-136	Mercury	1	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-137	Mercury	0.7	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-138	Mercury	2.3	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-40	Mercury	1	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-65	Mercury	1.1	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-66	Mercury	1.4	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-67	Mercury	2.1	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-67B	Mercury	1.8	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-68	Mercury	1.2	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-69	Mercury	1.1	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-70	Mercury	1.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-71	Mercury	1.1	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-73	Mercury	1.9	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-74	Mercury	1.8	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-75	Mercury	1.9	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-77	Mercury	0.9	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-78	Mercury	24	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-79	Mercury	7.6	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-82	Mercury	0.54	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-83	Mercury	0.73	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-84	Mercury	0.65	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-85	Mercury	0.6	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-86	Mercury	0.55	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-87	Mercury	0.59	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-88	Mercury	1	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-89	Mercury	0.83	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-90	Mercury	0.52	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-91	Mercury	0.5	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-92	Mercury	1.3	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-93	Mercury	0.73	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-94	Mercury	0.94	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-95	Mercury	0.43	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-96	Mercury	0.7	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-97	Mercury	1	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-98	Mercury	0.7	PPM	DRY	0.41	PPM
EHCHEM94	HC-S-99	Mercury	0.68	PPM	DRY	0.41	PPM
EHYR8M03	M10E4ICS	Naphthalene	110000	PPB	DRY	99000	PPB
EHYR8M03	M10E4ICS	Naphthalene	140000	PPB	DRY	99000	PPB
EHYR8M03	N11B5ICS	Naphthalene	123000	PPB	DRY	99000	PPB
EHYR8M03	M11E1ISS	Phenanthrene	339000	PPB	DRY	100000	PPB
EHCHEM	EH-03	Phenol	1300	PPB	DRY	420	PPB
EHCHEM	EH-08	Phenol	950	PPB	DRY	420	PPB
EHCHEM	EH-09	Phenol	590	PPB	DRY	420	PPB
EHCHEM	EH-11	Phenol	590	PPB	DRY	420	PPB
EHCHEM	EH-13	Phenol	1100	PPB	DRY	420	PPB
EHCHEM	EH-15	Phenol	670	PPB	DRY	420	PPB
EHCHEM	EH-16	Phenol	650	PPB	DRY	420	PPB
EHCHEM	EH-20	Phenol	1200	PPB	DRY	420	PPB
EHCHEM	EH-21	Phenol	1200	PPB	DRY	420	PPB
EHCHEM	EH-23	Phenol	3600	PPB	DRY	420	PPB
EHCHEM	EH-24	Phenol	2300	PPB	DRY	420	PPB
EHCHEM	RB-05	Phenol	600	PPB	DRY	420	PPB
EHCHEM	WP-01	Phenol	450	PPB	DRY	420	PPB
EHYR8M03	M11E1ISS	Phenol	982	PPB	DRY	420	PPB
EHYR8M03	N10A4ICS	Phenol	3010	PPB	DRY	420	PPB
EHCHEM94	HC-I-130	Zinc	854	PPM	DRY	410	PPM

CoBI Data Set #3 - WA Dept of Ecology SEDQUAL Database Download

Compounds in Exceedance of WAC 173-204-320

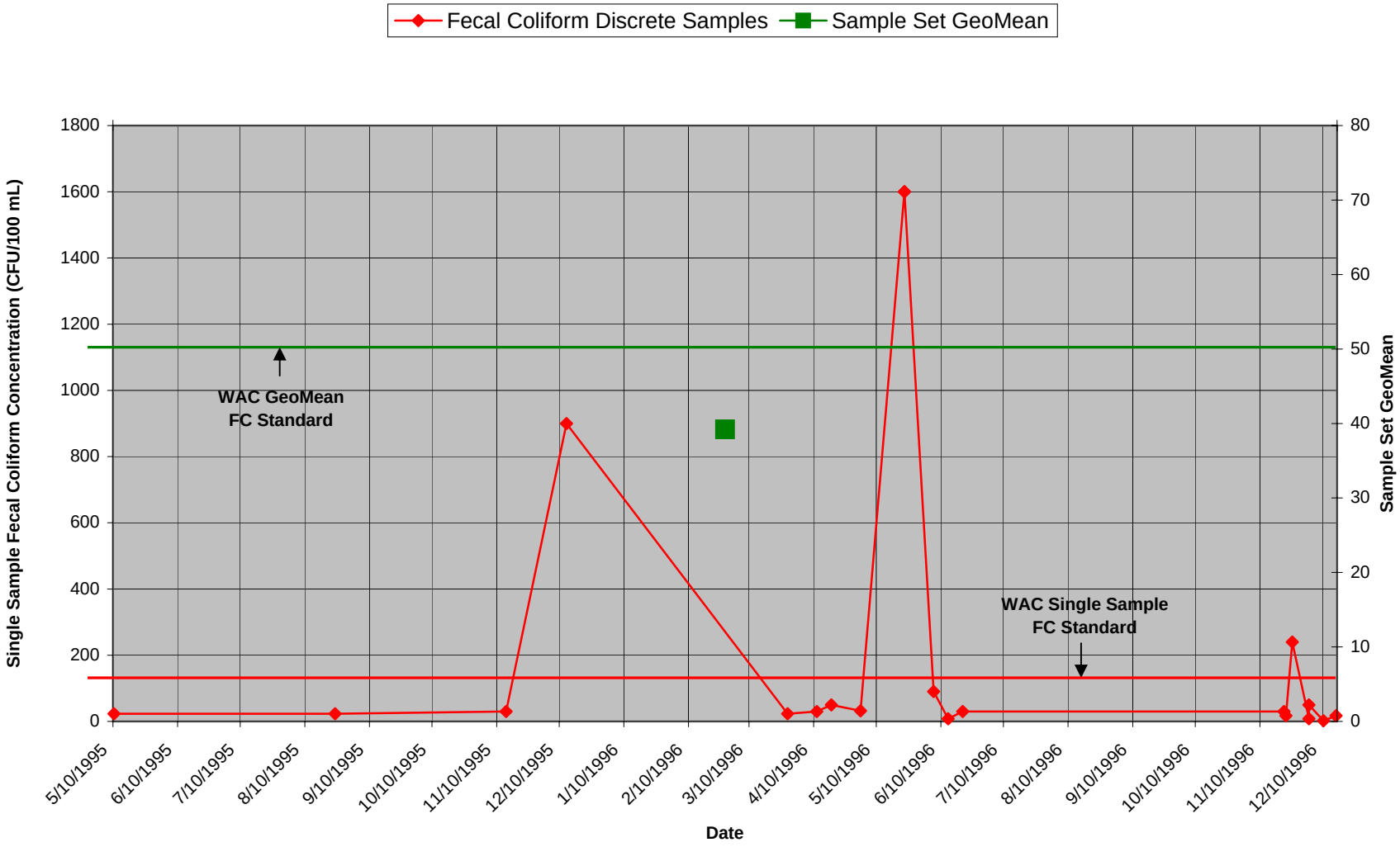
[1]Study	Station ID	Chemical Name	Concentration	Unit	Measurement Basis	Exceedance Values WAC173-204	Unit
EHCHEM94	HC-I-20	Zinc	3810	PPM	DRY	410	PPM
EHCHEM94	HC-I-21	Zinc	947	PPM	DRY	410	PPM
EHCHEM94	HC-I-22	Zinc	1470	PPM	DRY	410	PPM
EHCHEM94	HC-I-23	Zinc	4440	PPM	DRY	410	PPM
EHCHEM94	HC-I-23	Zinc	654	PPM	DRY	410	PPM
EHCHEM94	HC-I-24	Zinc	348	PPM	DRY	410	PPM
EHCHEM94	HC-I-25	Zinc	916	PPM	DRY	410	PPM
EHCHEM94	HC-I-26	Zinc	3490	PPM	DRY	410	PPM
EHCHEM94	HC-I-27	Zinc	560	PPM	DRY	410	PPM
EHCHEM94	HC-I-30	Zinc	424	PPM	DRY	410	PPM
EHCHEM94	HC-S-121	Zinc	1170	PPM	DRY	410	PPM
EHCHEM94	HC-S-122	Zinc	1550	PPM	DRY	410	PPM
EHCHEM94	HC-S-128	Zinc	2540	PPM	DRY	410	PPM
EHCHEM94	HC-S-133	Zinc	2520	PPM	DRY	410	PPM
EHCHEM94	HC-S-78	Zinc	21000	PPM	DRY	410	PPM
EHCHEM94	HC-S-79	Zinc	990	PPM	DRY	410	PPM

[1]Study	Survey Name	Begin Date	End Date
EHCHEM94	Eagle Harbor PreDesign Sediment Sampling	6/29/1994	11/5/1994
EHCHEM	Eagle Harbor sediment chemistry survey	6/1/1985	6/1/1985
EHYR8M03	Eagle Harbor Year 8 Monitoring	10/23/2002	6/12/2003
PSAMP_LT	PSAMP Sediment Monitoring	1/1/1989	5/5/2001
WYCKO_Q1	Wyckoff Effluent Investigation: 1st Qtr.	4/23/1990	4/23/1990
WYCKO_Q2	Wyckoff Effluent Investigation: 2nd Qtr.	7/27/1990	7/27/1990
WYCKO_Q3	Wyckoff Effluent Investigation: 3rd Qtr.	10/19/1990	10/19/1990
WYCKO_Q4	Wyckoff Effluent Investigation: 4th Qtr.	1/11/1991	1/11/1991
WYCKO_BL	Wyckoff Effluent Investigation: Baseline	12/10/1989	12/10/1989

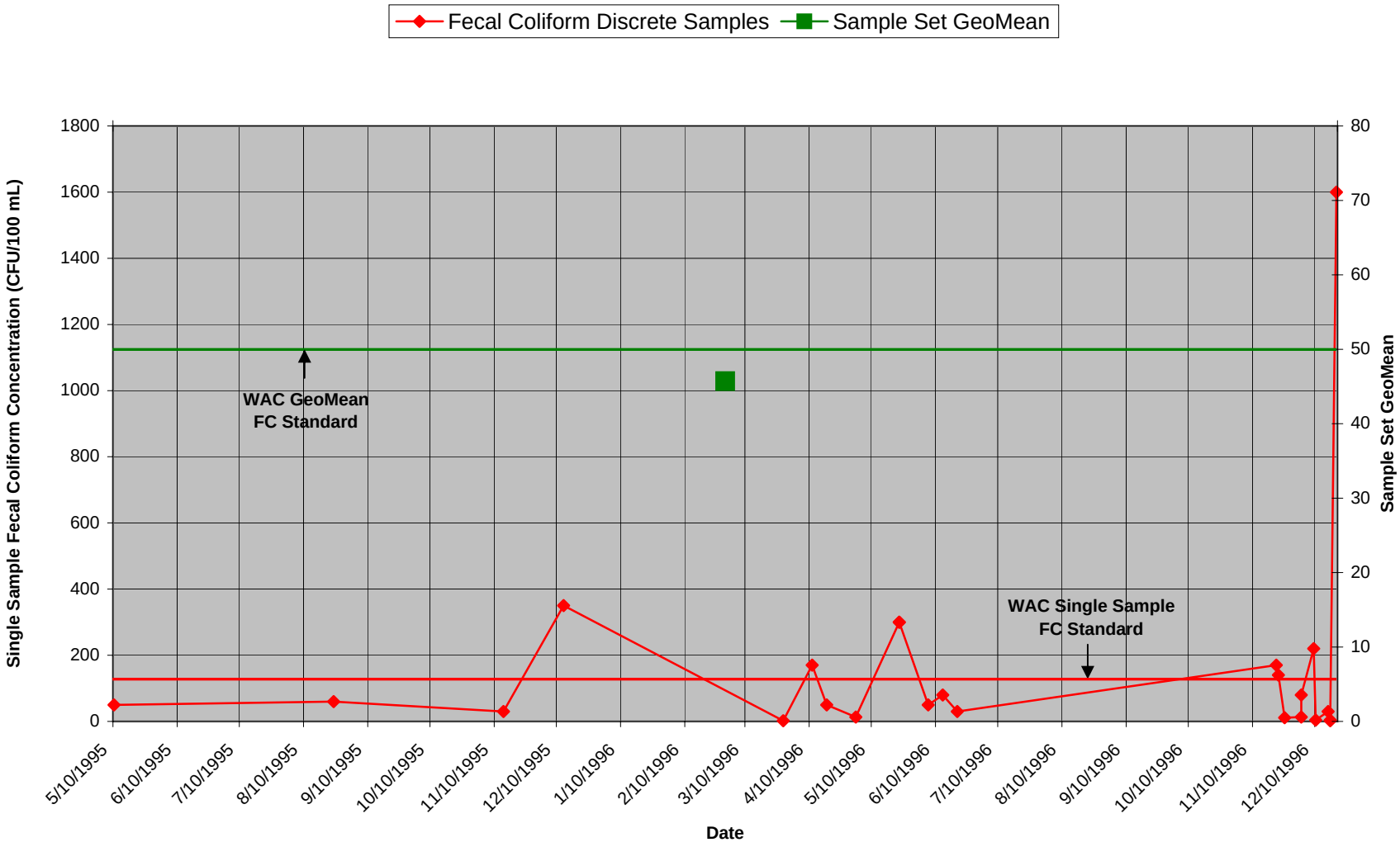
APPENDIX C-4

Data Set #4 - Kitsap County Health District (KCHD) WQ Data

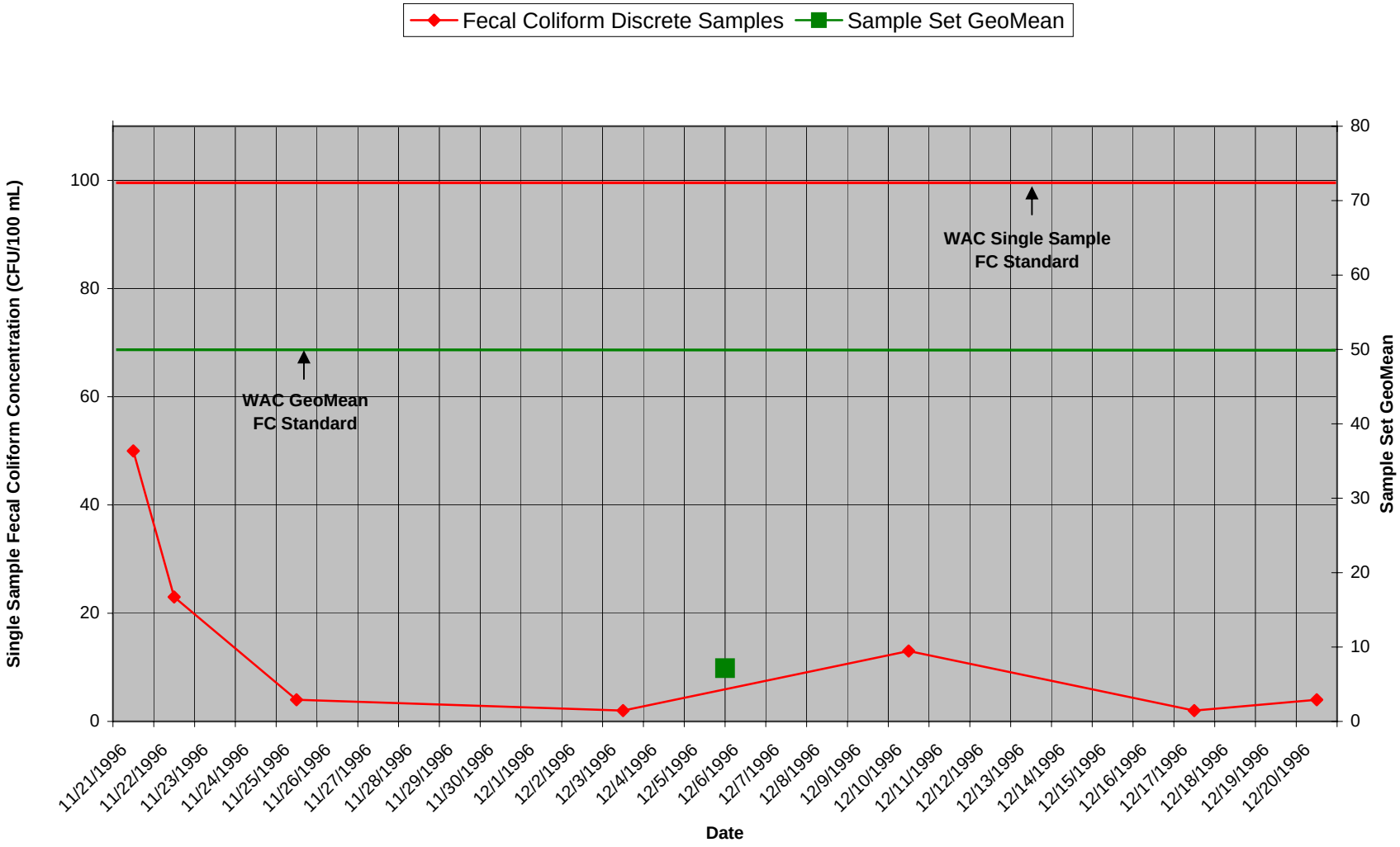
Eagle Harbor Station 01
Fecal Coliform Concentrations



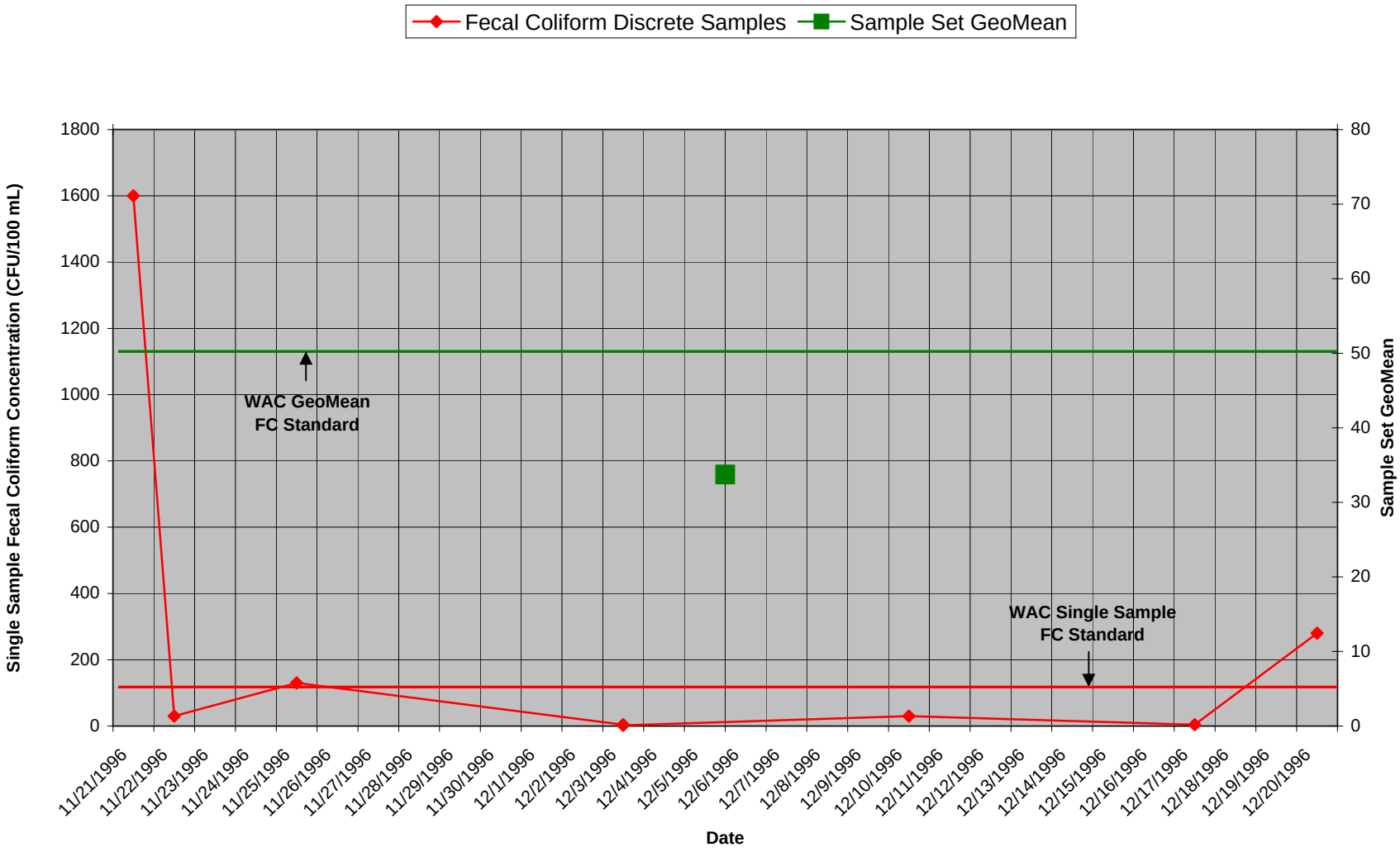
Eagle Harbor Station 02
Fecal Coliform Concentrations



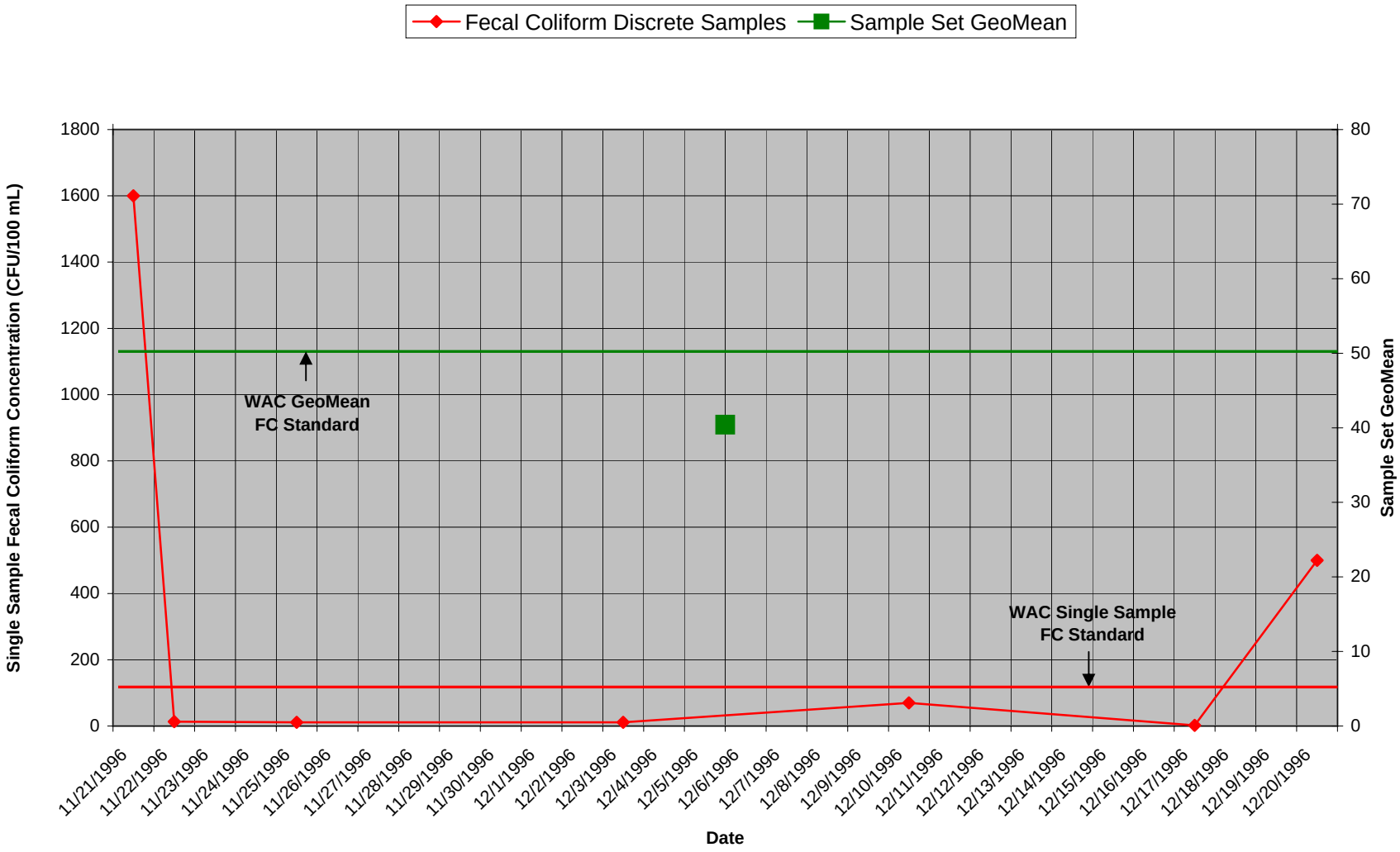
Eagle Harbor Station 03
Fecal Coliform Concentrations



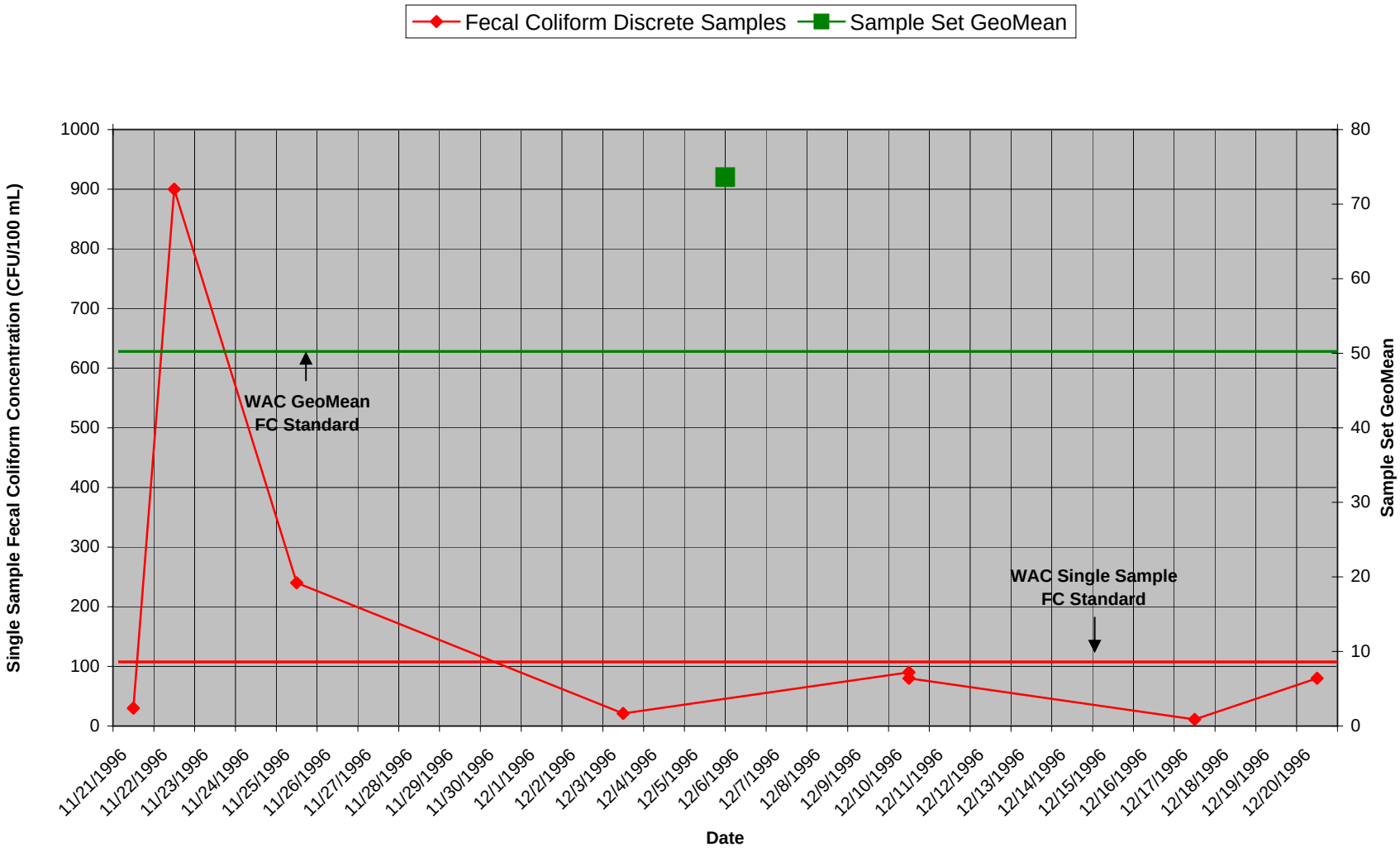
Eagle Harbor Station 04
Fecal Coliform Concentrations

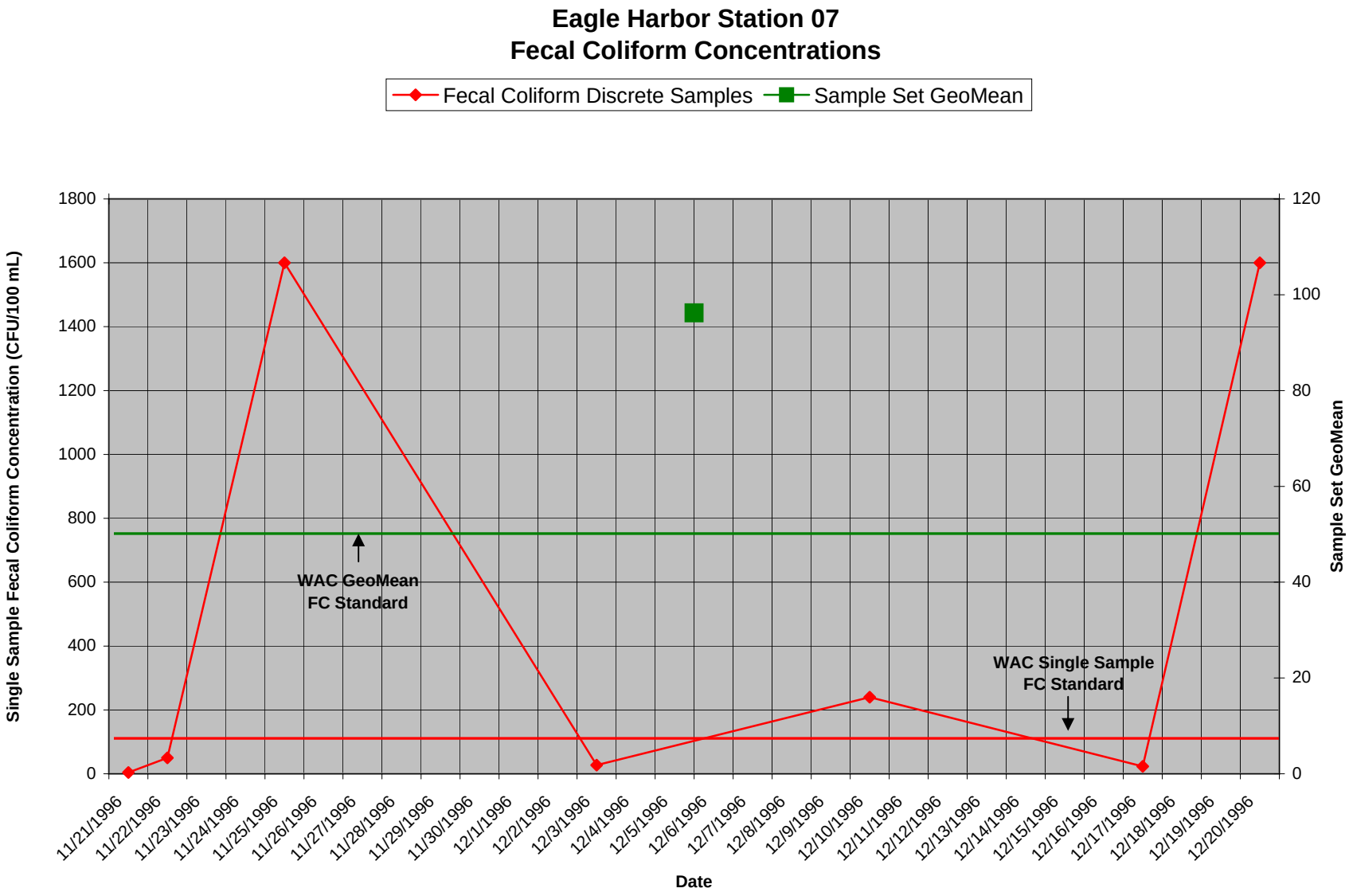


Eagle Harbor Station 05
Fecal Coliform Concentrations

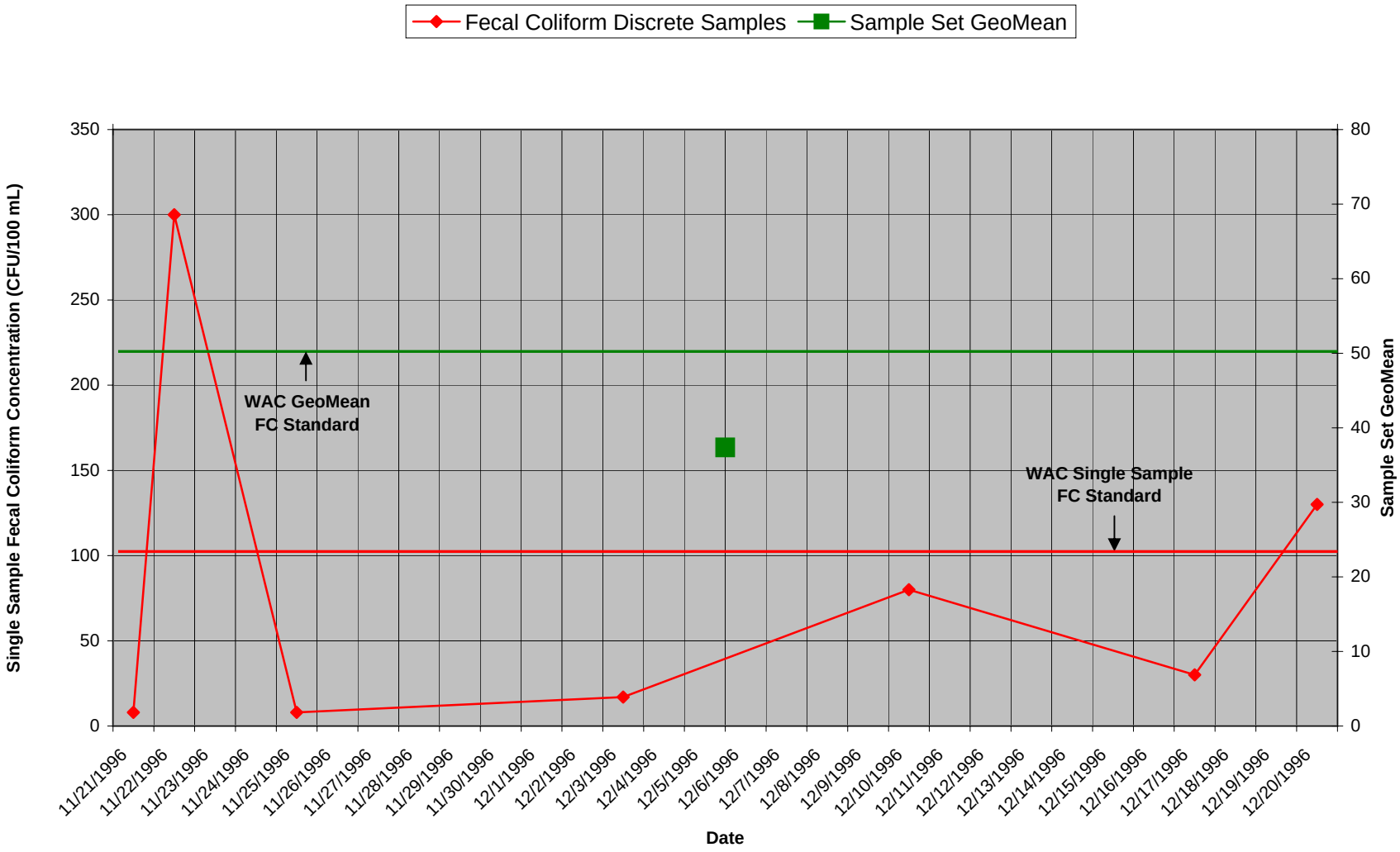


Eagle Harbor Station 06
Fecal Coliform Concentrations

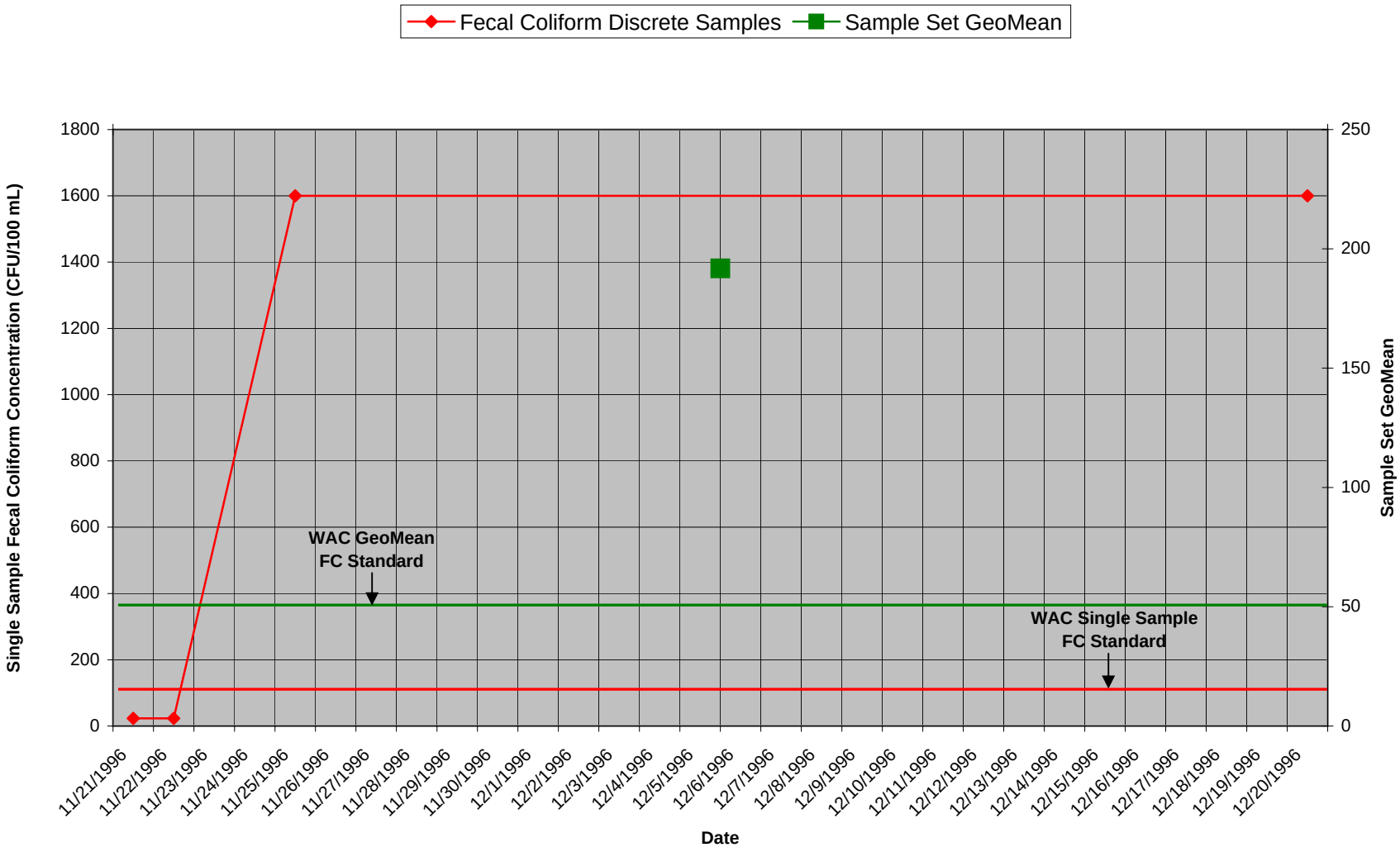



Eagle Harbor Station 07
Fecal Coliform Concentrations
Fecal Coliform Discrete Samples
Sample Set GeoMean
Single Sample Fecal Coliform Concentration (CFU/100 mL)
Sample Set GeoMean
Date
WAC GeoMean
FC Standard
WAC Single Sample
FC Standard
0
200
400
600
800
1000
1200
1400
1600
1800
0
20
40
60
80
100
120
11/21/1996
11/22/1996
11/23/1996
11/24/1996
11/25/1996
11/26/1996
11/27/1996
11/28/1996
11/29/1996
11/30/1996
12/1/1996
12/2/1996
12/3/1996
12/4/1996
12/5/1996
12/6/1996
12/7/1996
12/8/1996
12/9/1996
12/10/1996
12/11/1996
12/12/1996
12/13/1996
12/14/1996
12/15/1996
12/16/1996
12/17/1996
12/18/1996
12/19/1996
12/20/1996

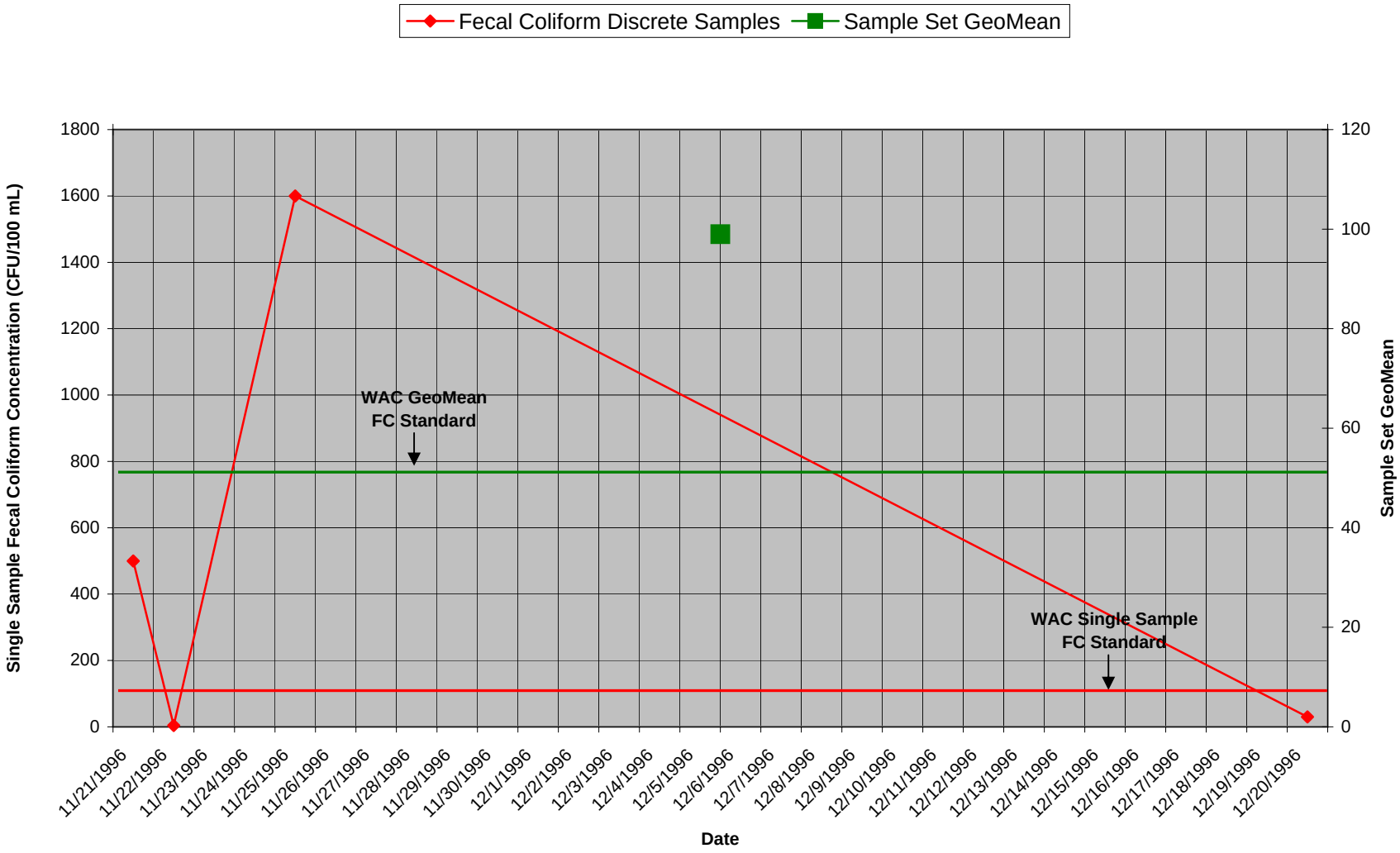
Eagle Harbor Station 08
Fecal Coliform Concentrations



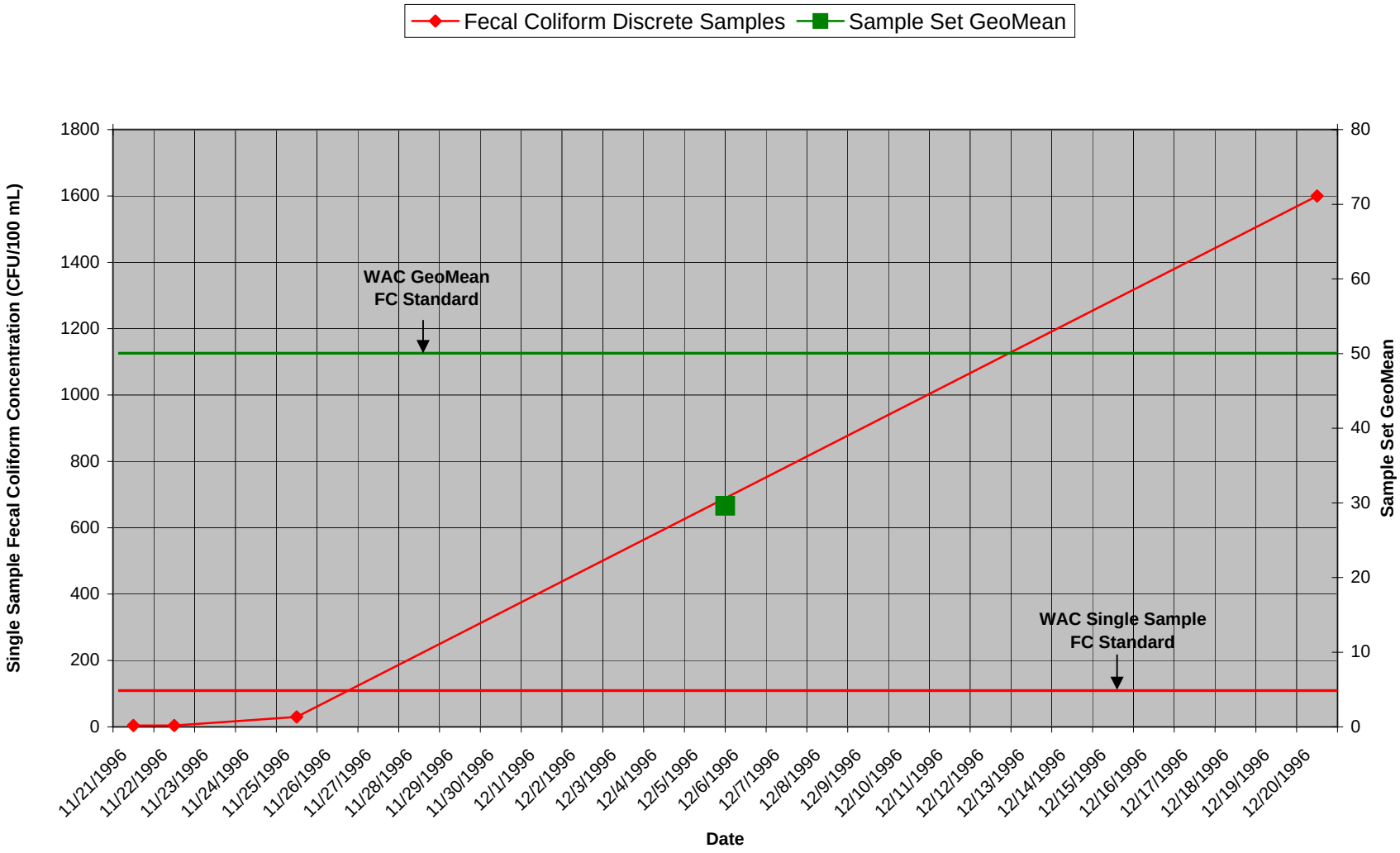
Eagle Harbor Station 09
Fecal Coliform Concentrations



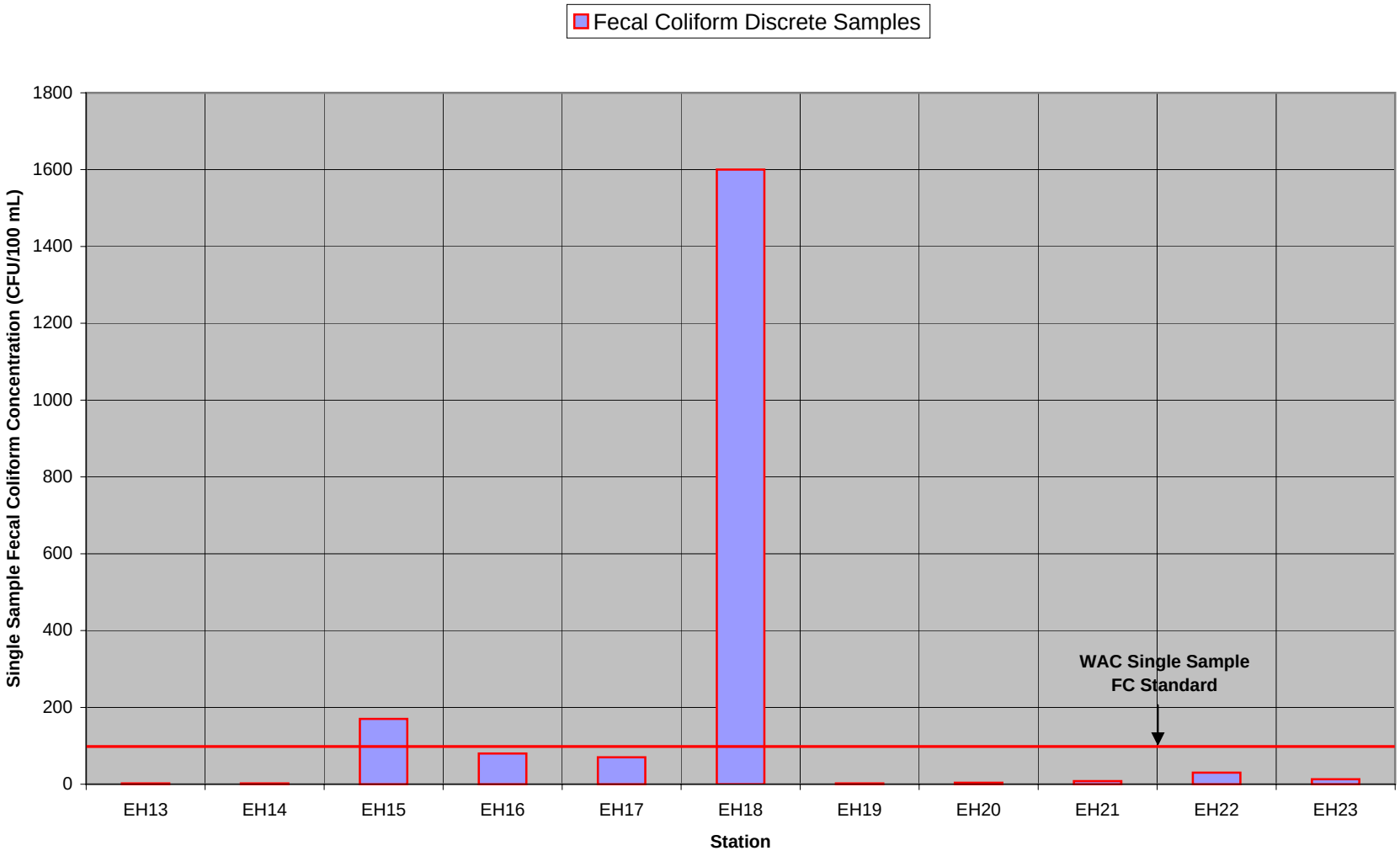
Eagle Harbor Station 10
Fecal Coliform Concentrations



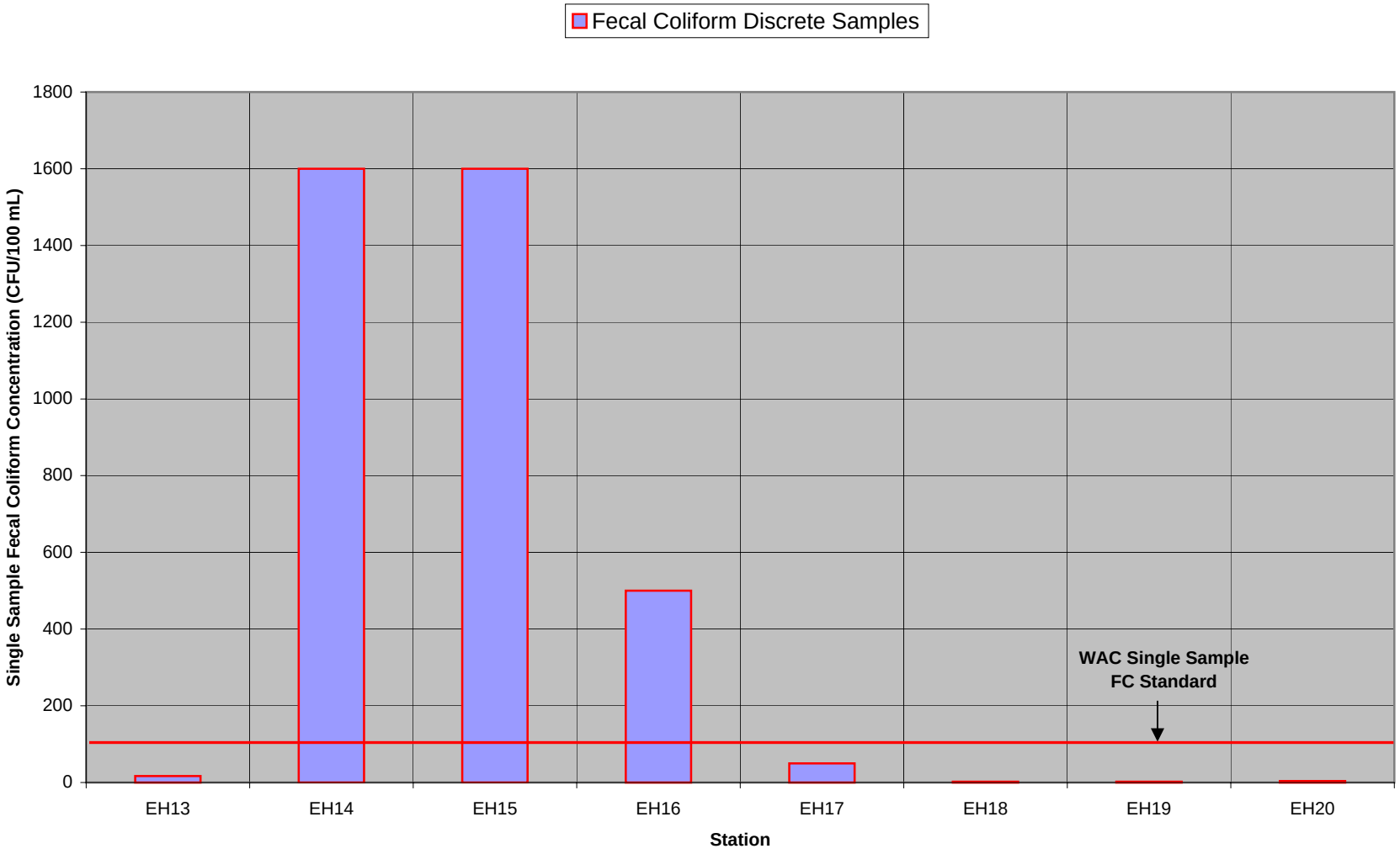
Eagle Harbor Station 11
Fecal Coliform Concentrations

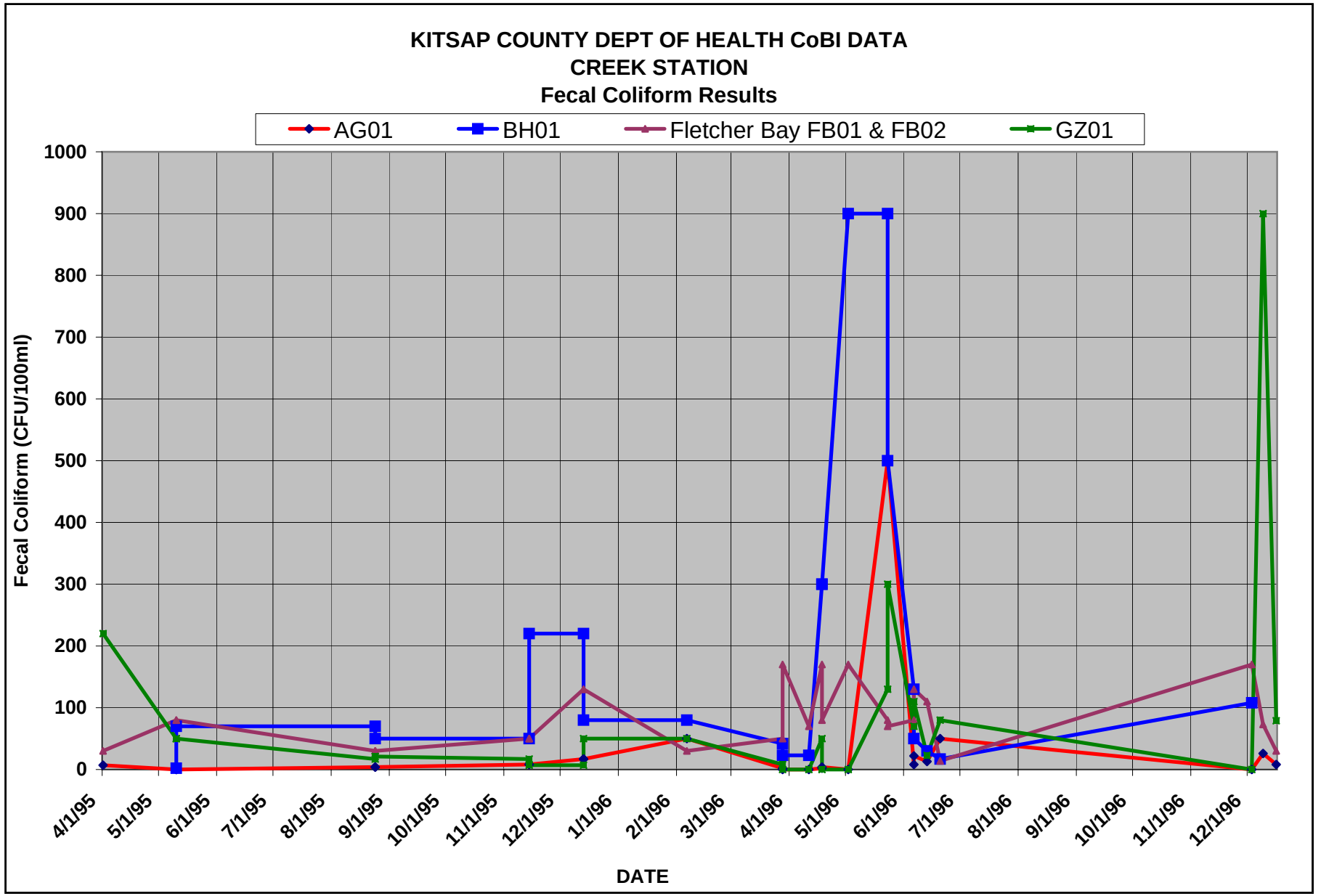


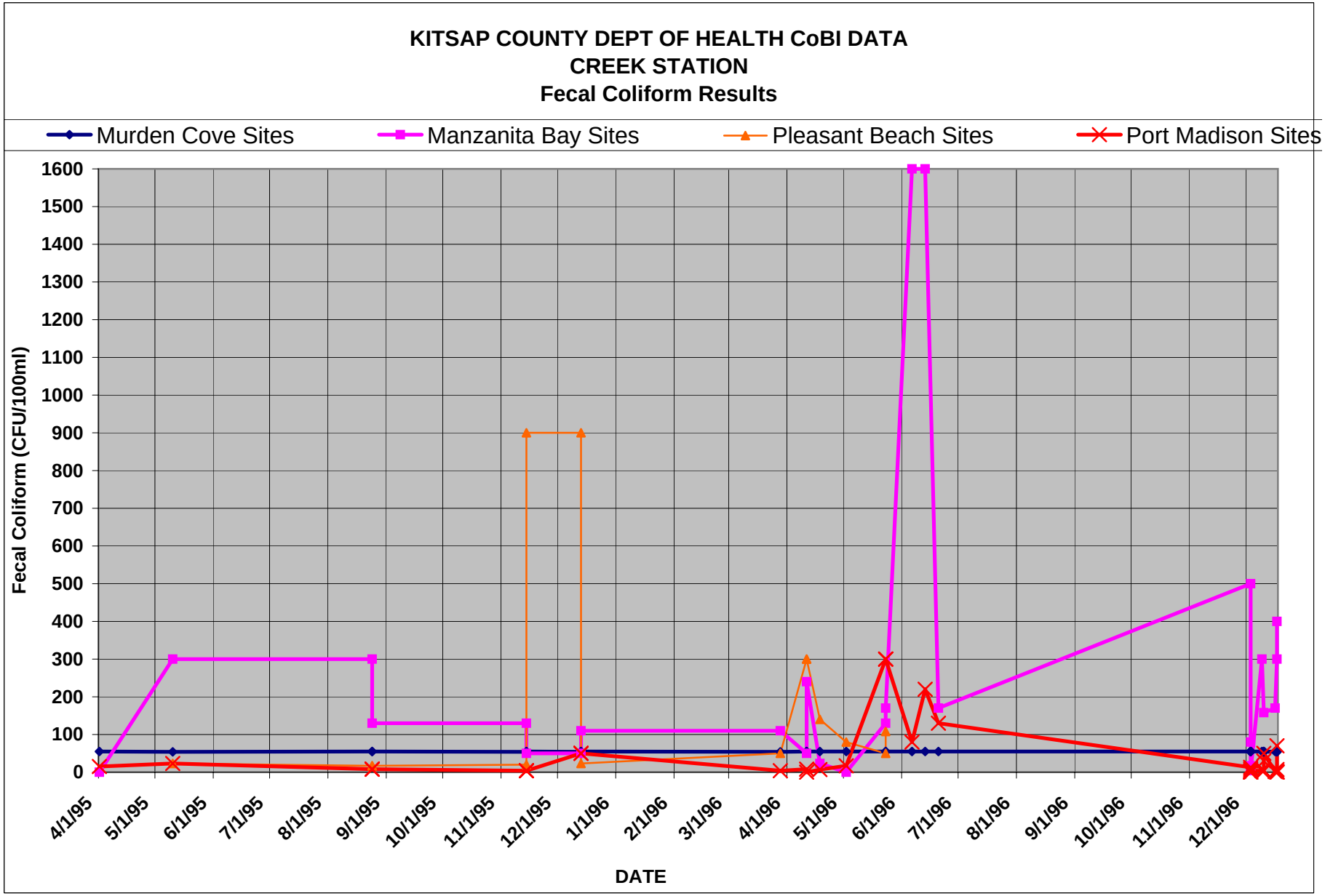
Eagle Harbor Station 22 Nov 1996
Fecal Coliform Concentrations



Eagle Harbor Station 25 Nov 1996
Fecal Coliform Concentrations




KITSAP COUNTY DEPT OF HEALTH CoBI DATA
CREEK STATION
Fecal Coliform Results
AG01
BH01
Fletcher Bay FB01 & FB02
GZ01
Fecal Coliform (CFU/100ml)
1000
900
800
700
600
500
400
300
200
100
0
4/1/95
5/1/95
6/1/95
7/1/95
8/1/95
9/1/95
10/1/95
11/1/95
12/1/95
1/1/96
2/1/96
3/1/96
4/1/96
5/1/96
6/1/96
7/1/96
8/1/96
9/1/96
10/1/96
11/1/96
12/1/96
DATE


KITSAP COUNTY DEPT OF HEALTH CoBI DATA
CREEK STATION
Fecal Coliform Results
Murden Cove Sites
Manzanita Bay Sites
Pleasant Beach Sites
Port Madison Sites
Fecal Coliform (CFU/100ml)
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
4/1/95
5/1/95
6/1/95
7/1/95
8/1/95
9/1/95
10/1/95
11/1/95
12/1/95
1/1/96
2/1/96
3/1/96
4/1/96
5/1/96
6/1/96
7/1/96
8/1/96
9/1/96
10/1/96
11/1/96
12/1/96
DATE

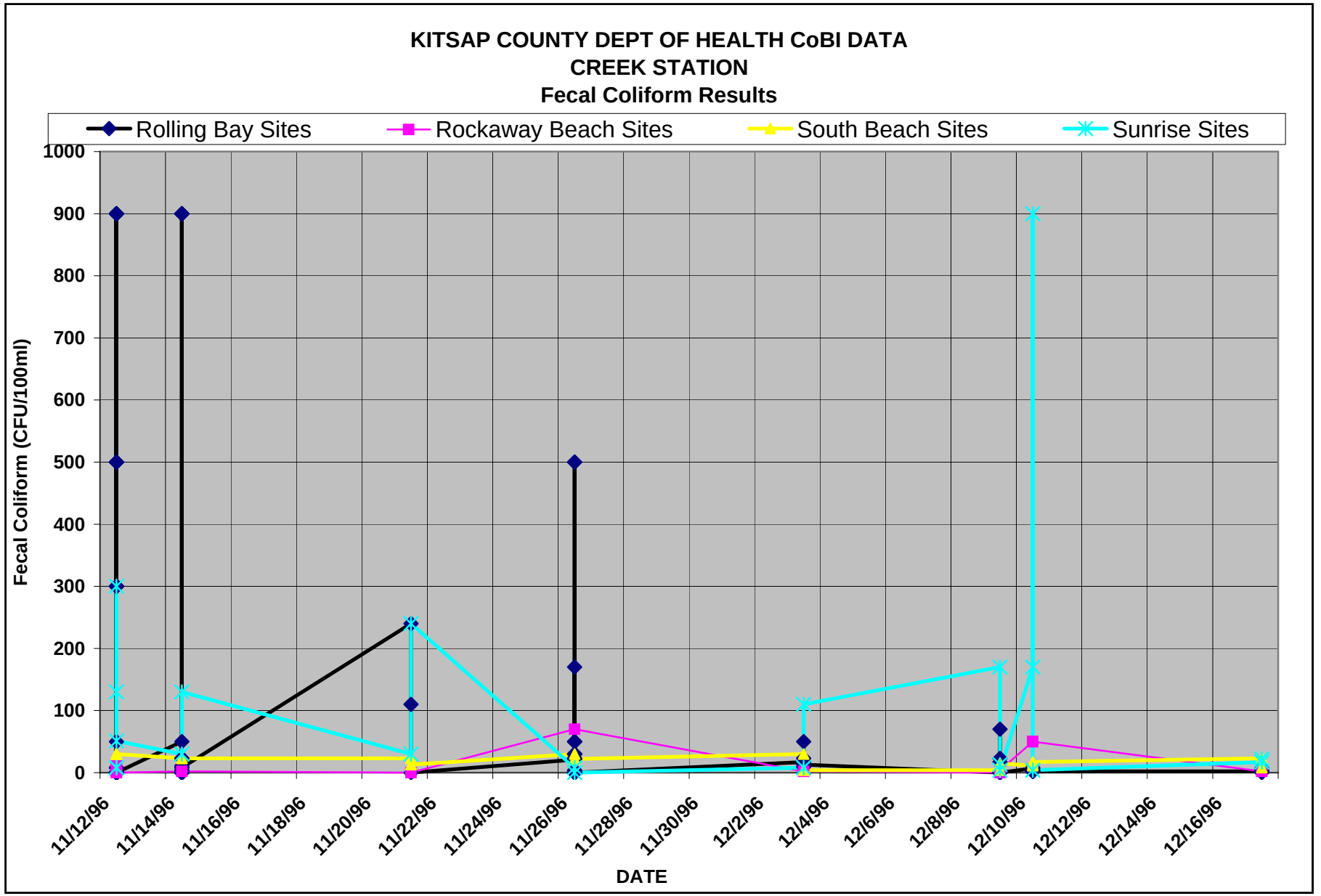

KITSAP COUNTY DEPT OF HEALTH CoBI DATA
CREEK STATION
Fecal Coliform Results
Rolling Bay Sites
Rockaway Beach Sites
South Beach Sites
Sunrise Sites
Fecal Coliform (CFU/100ml)
1000
900
800
700
600
500
400
300
200
100
0
11/12/96
11/14/96
11/16/96
11/18/96
11/20/96
11/22/96
11/24/96
11/26/96
11/28/96
11/30/96
12/2/96
12/4/96
12/6/96
12/8/96
12/10/96
12/12/96
12/14/96
12/16/96
DATE

TABLE 1

SUMMARY OF MEAN[1] STREAM MONITORING RESULTS BY STATION

BAINBRIDGE ISLAND WATER QUALITY ASSESSMENT

APRIL 1995 - DECEMBER 1996

Station	FC	Temperature	pH	DO	$\%O_2$	Conductivity	Turbidity	TSS	Flow
Units	*FC/100ml*	*degrees C*	*pH units*	*mg/L*	*% Saturation*	*mS/cm*	*NTU units*	*mg/L*	*cfs*
WQ Standard[2]	*<51*	*<16.1*	*6.5 - 8.5*	*>9.5*	*<110*		*<15*		
AG01	7	9.2	7.5	10.2	87.1	149.3	11.6	20.4	0.06
BH01	42	11.2	7.1	**9.0**	77.4	119.2	12.1	4.78	0.12
BH01A	**108**	8.9	7.2	10.4	88.6	107.3	8.2	4.3	0.88
EH01	49	9.1	7.5	9.9	85.0	142.2	6.1	2.4	0.75
EH02	**55**	9.6	7.3	9.9	86.0	101.9	4.1	27.2	0.56
FB01	**73**	10.0	7.3	10.1	89.0	107.9	5.3	6.0	3.37
FB02	**63**	9.3	7.2	9.7	71.2	120.1	**28.8**	14.7	0.47
GZ01	**79**	9.4	7.7	10.5	91.2	140.5	7.6	10.6	0.13
MC01	30	9.0	7.0	**8.8**	76.3	103.3	3.1	3.3	3.50
MC02	15	9.0	7.2	10.4	89.2	98.2	2.7	2.6	1.95
MZ01	**158**	10.1	7.4	10.1	88.5	141.9	4.9	6.8	1.85
PB01	20	11.4	8.2	10.2	93.4	109.0	3.9	1.8	0.10
PB02	**108**	8.7	7.6	10.4	89.3	152.6	12.9	24.4	0.31
PM01	15	9.3	7.4	10.2	88.4	138.6	7.4	4.6	0.25
SB01	15	9.2	7.4	10.4	89.0	108.1	9.1	4.2	0.24
SR01	**51**	9.4	7.6	10.4	90.3	144.2	5.0	7.3	1.45
% Compliance[3]	**50%**	**100%**	**100%**	**88%**	**100%**	**100%**	**94%**	**100%**	**100%**

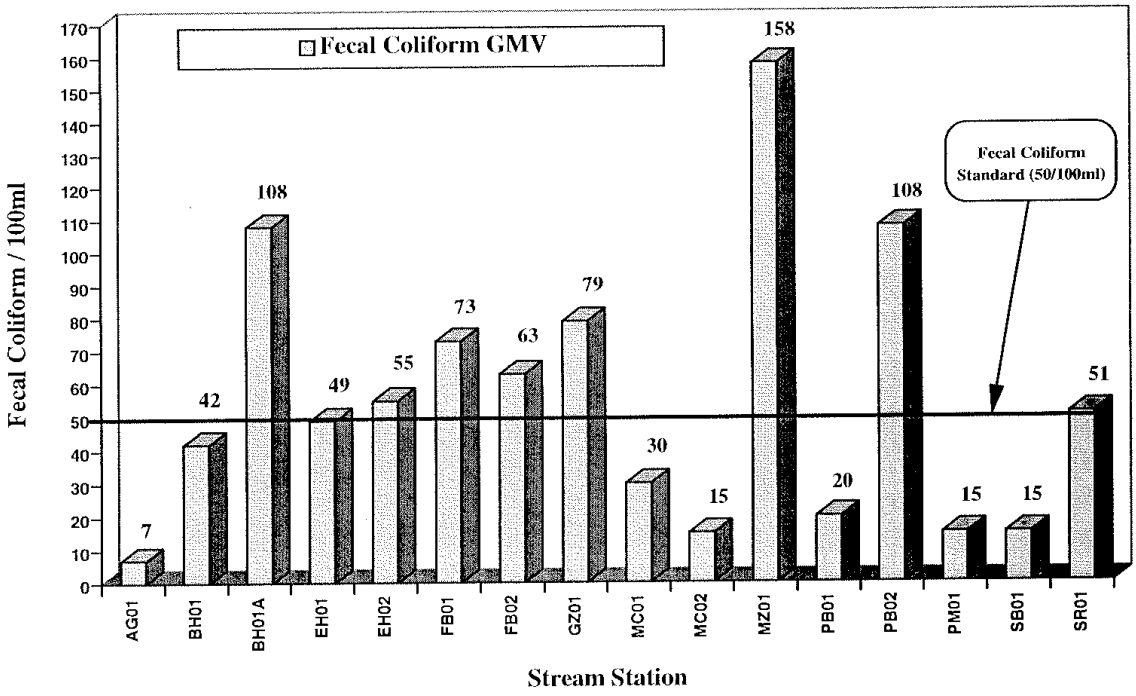
Violations of Water Quality Standards are shown in shaded boxes with **Bold** type.

1 All means are arithmetic *except* for Fecal Coliform (FC) - it is a geometric mean.

[2] Chapter 173-201A WAC, Class AA; see Appendix A for more details.

[3] Percentage of stations in compliance with applicable water quality standard.

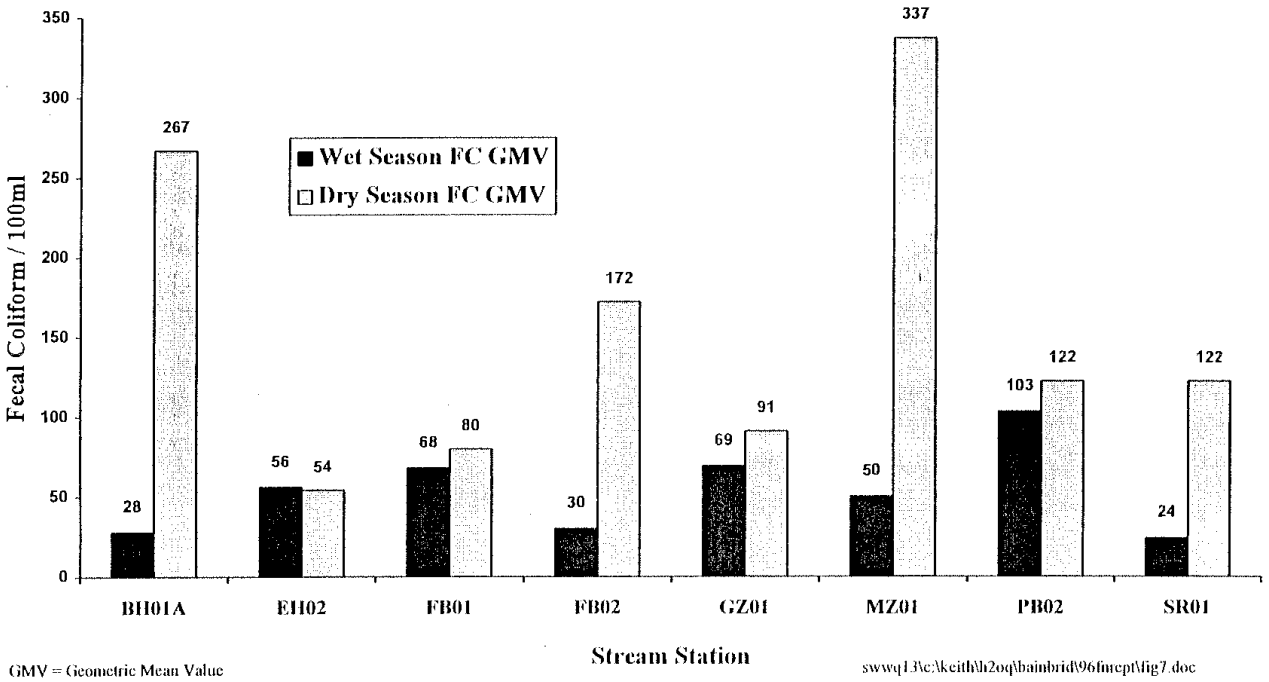
FIGURE 6
COMPARISON OF STREAM FECAL COLIFORM GEOMETRIC MEAN VALUES
TO CLASS AA STATE FECAL COLIFORM STANDARD*
BAINBRIDGE ISLAND WATER QUALITY ASSESSMENT
APRIL 1995 - DECEMBER 1996



*Chapter 173-201A WAC, Class AA

swwq13\c:\keith\h2oq\bainbrid\96fnrept\fig6.doc

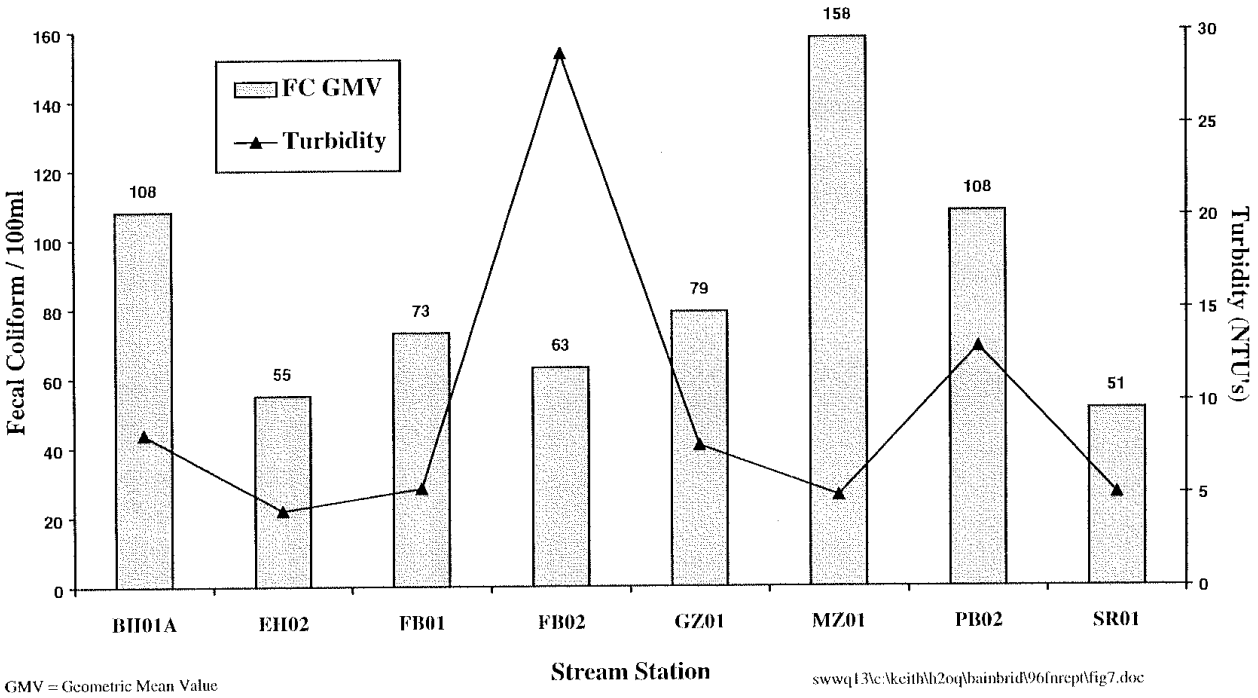
FIGURE 7
COMPARISON OF WET SEASON VS. DRY SEASON FECAL COLIFORM GMV's
FOR STREAM STATIONS IN VIOLATION OF FC WQS
BAINBRIDGE ISLAND WATER QUALITY ASSESSMENT
APRIL 1995 - DECEMBER 1996



GMV = Geometric Mean Value

swwq13\c:\keith\h2oq\bainbrid\96fnrept\fig7.doc

FIGURE 8
COMPARISON OF FECAL COLIFORM GMV's AND TURBIDITY LEVELS
FOR STREAM STATIONS IN VIOLATION OF FC WQS
BAINBRIDGE ISLAND WATER QUALITY ASSESSMENT
APRIL 1995 - DECEMBER 1996



GMV = Geometric Mean Value

swwq13\c:\keith\h2oq\bainbrid\96fnrept\fig7.doc

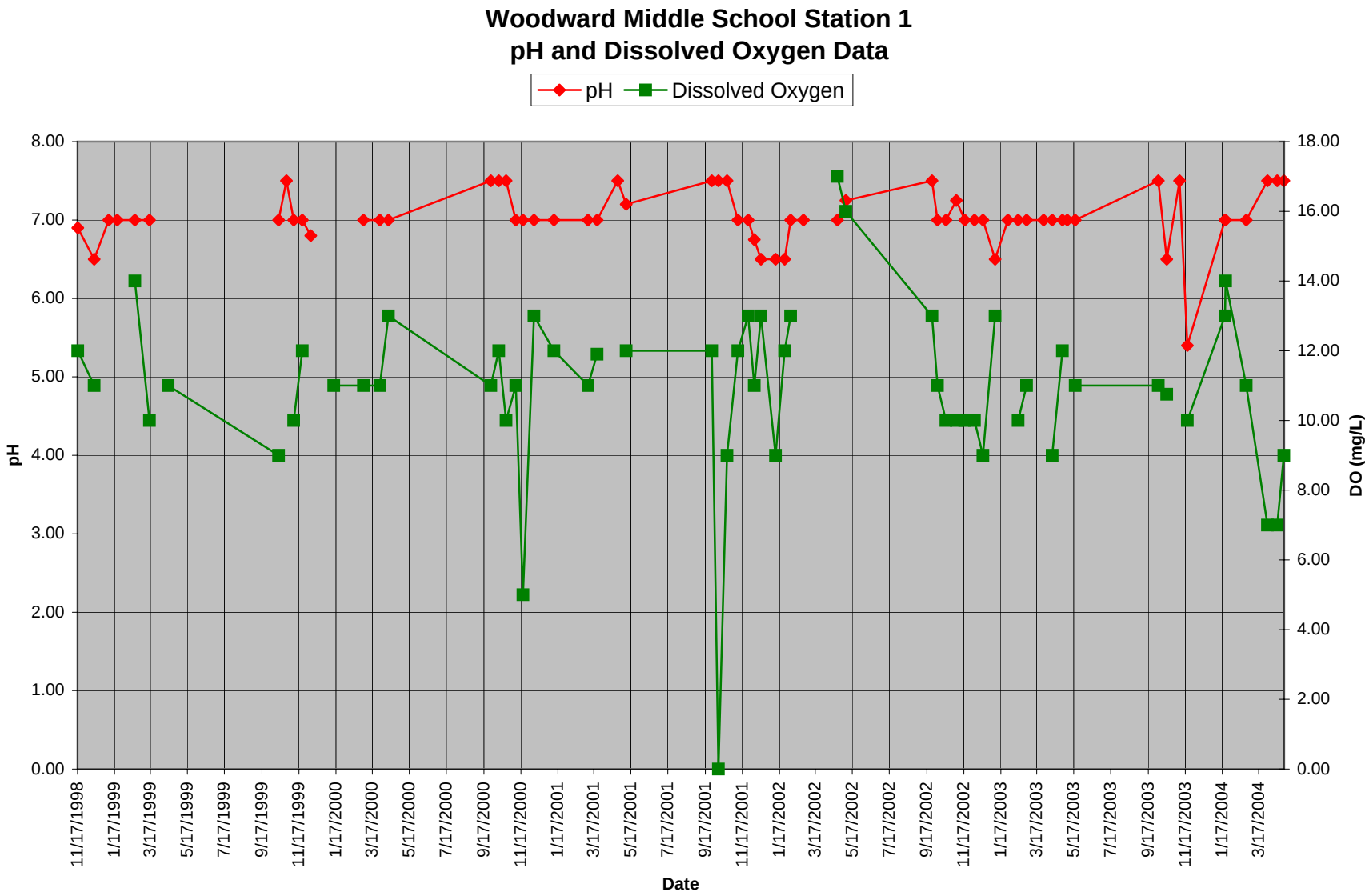
APPENDIX C-5

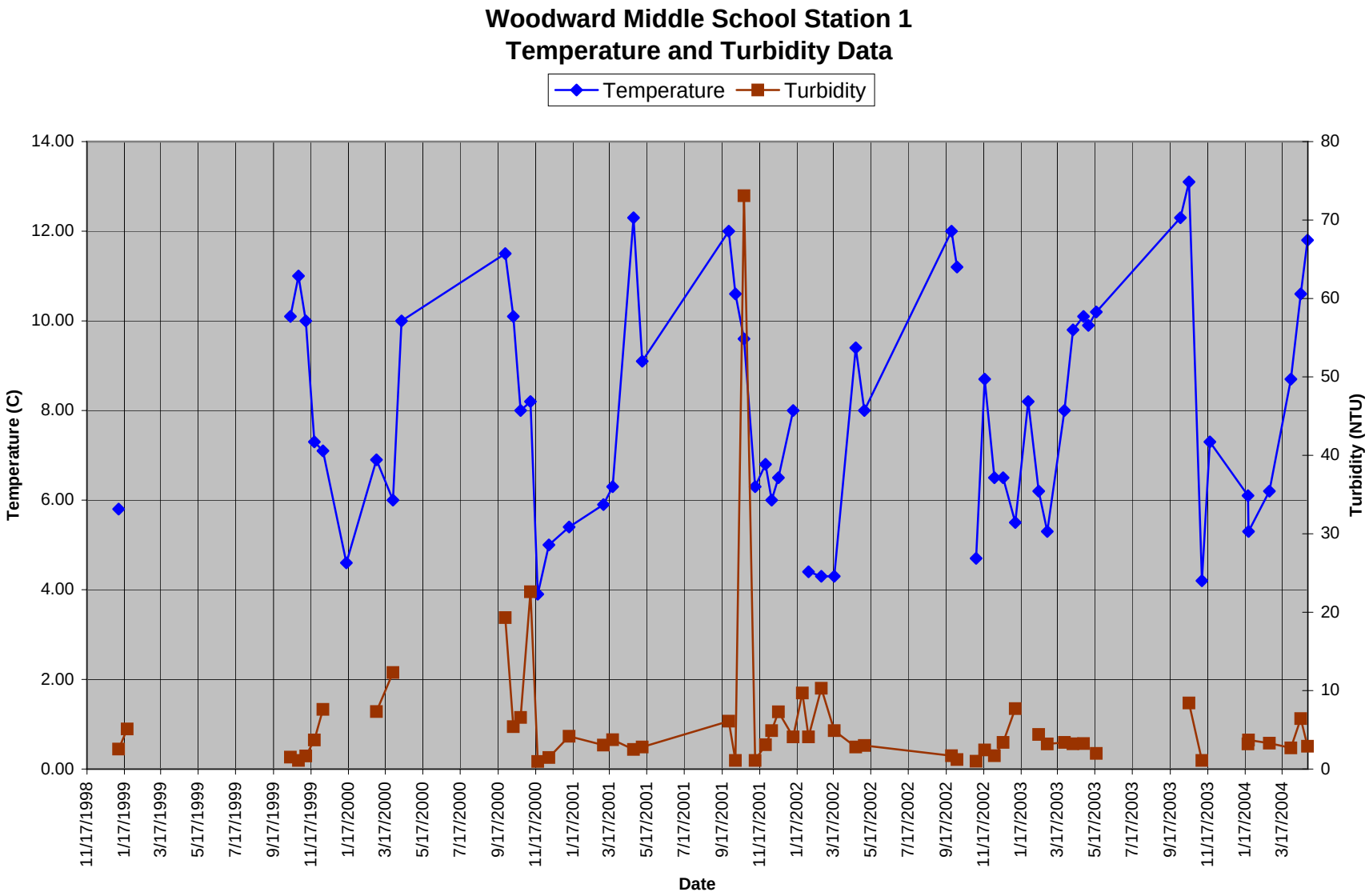
Data Set #6 – Bainbridge Is School District Water Quality Data

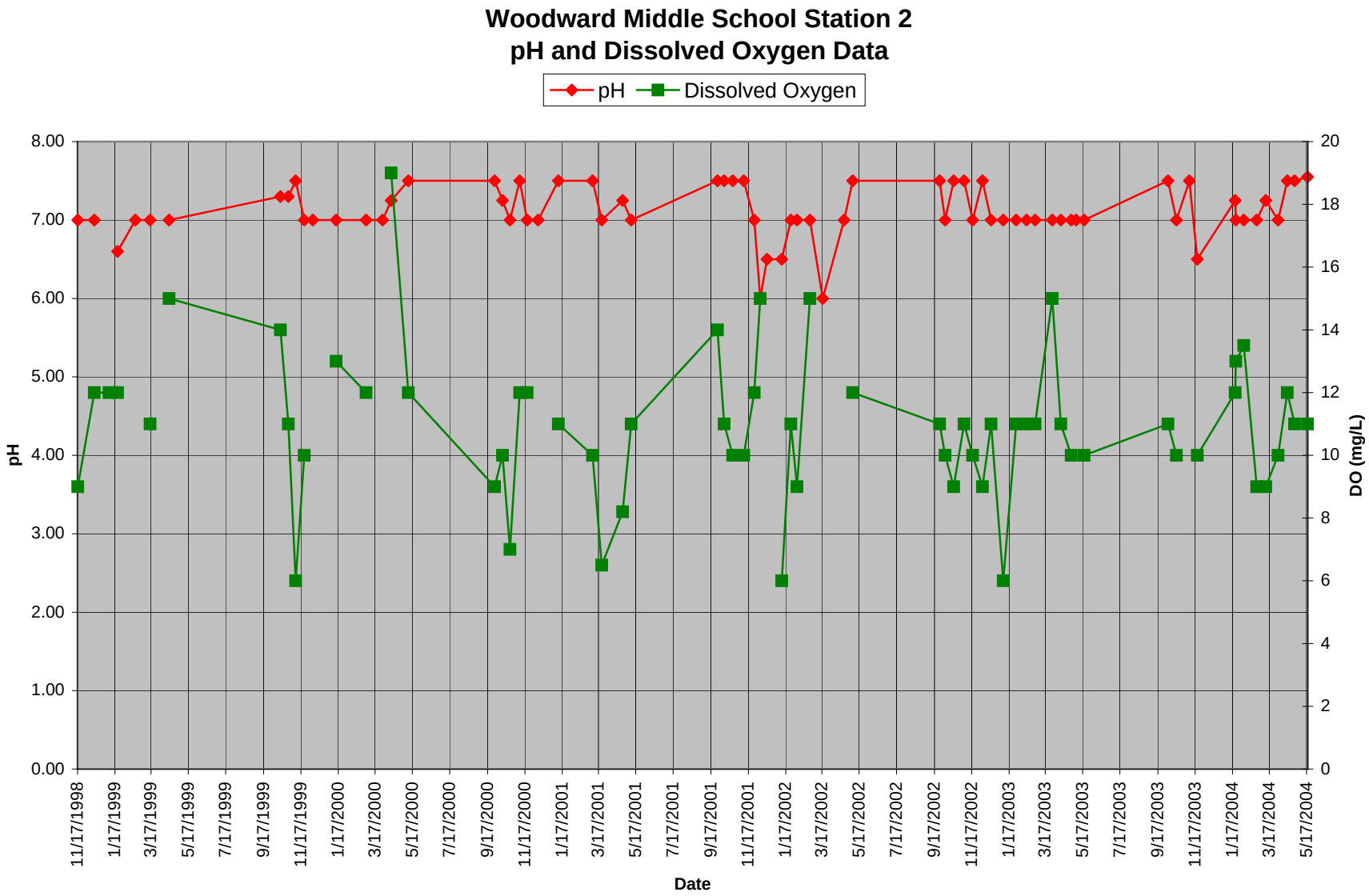
Bainbridge Island School District Water Quality Sampling Results - Woodward Middle School
1998 - 2004
Parameter Averages

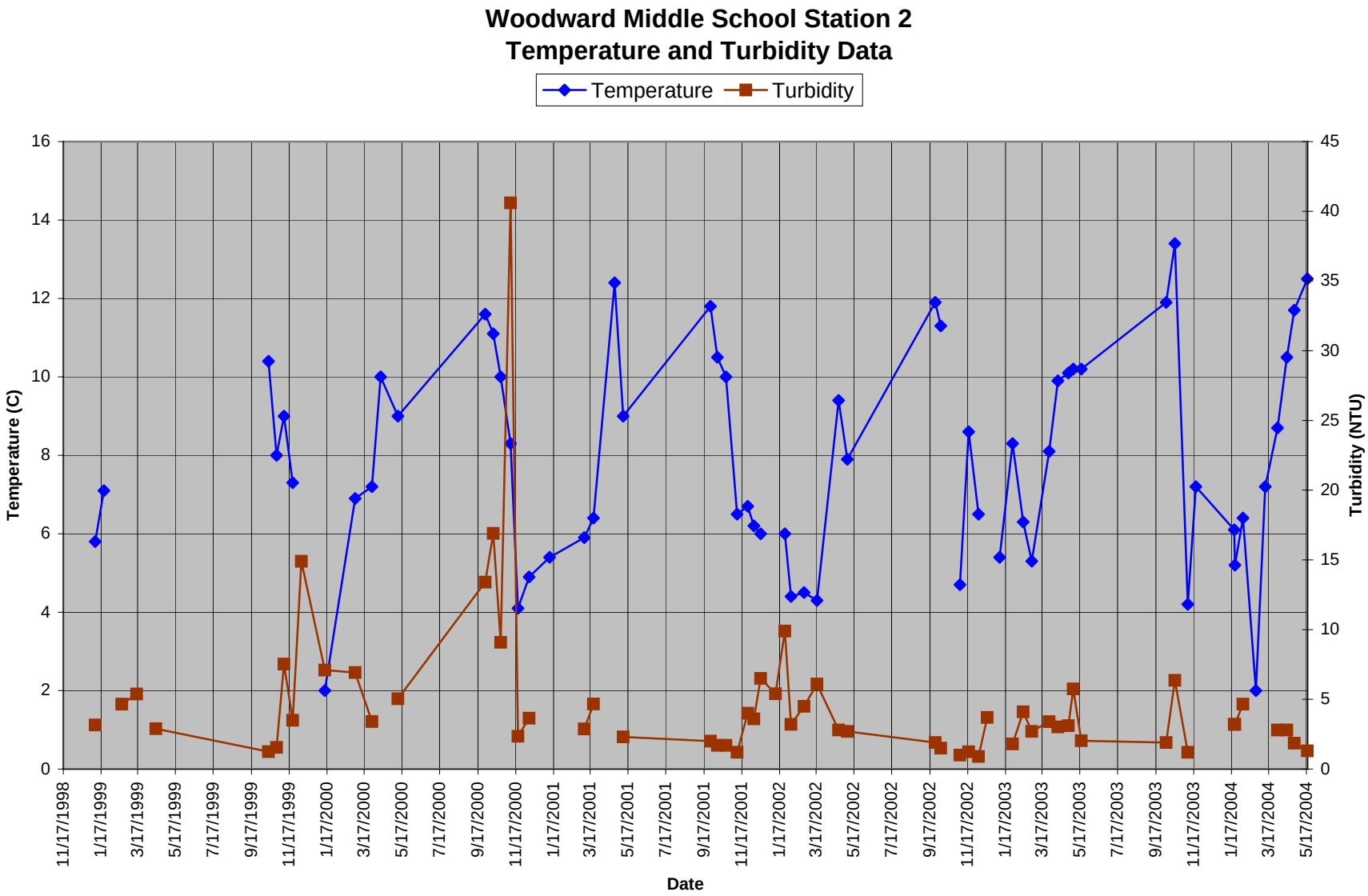
Woodward Middle School Stream WQ Sampling Station	pH	DO(mg/l)	DO %sat.	Temp ˚C	Turbidity (NTU)
Station 1 Parameter Averages	7.04	10.94	104.99	7.95	5.84
Station 2 Parameter Averages	7.11	10.92	93.28	7.90	4.73
Station 3 Parameter Averages	7.07	10.22	89.57	8.03	4.47
Station 4 Parameter Averages	7.18	11.02	95.43	8.07	5.47

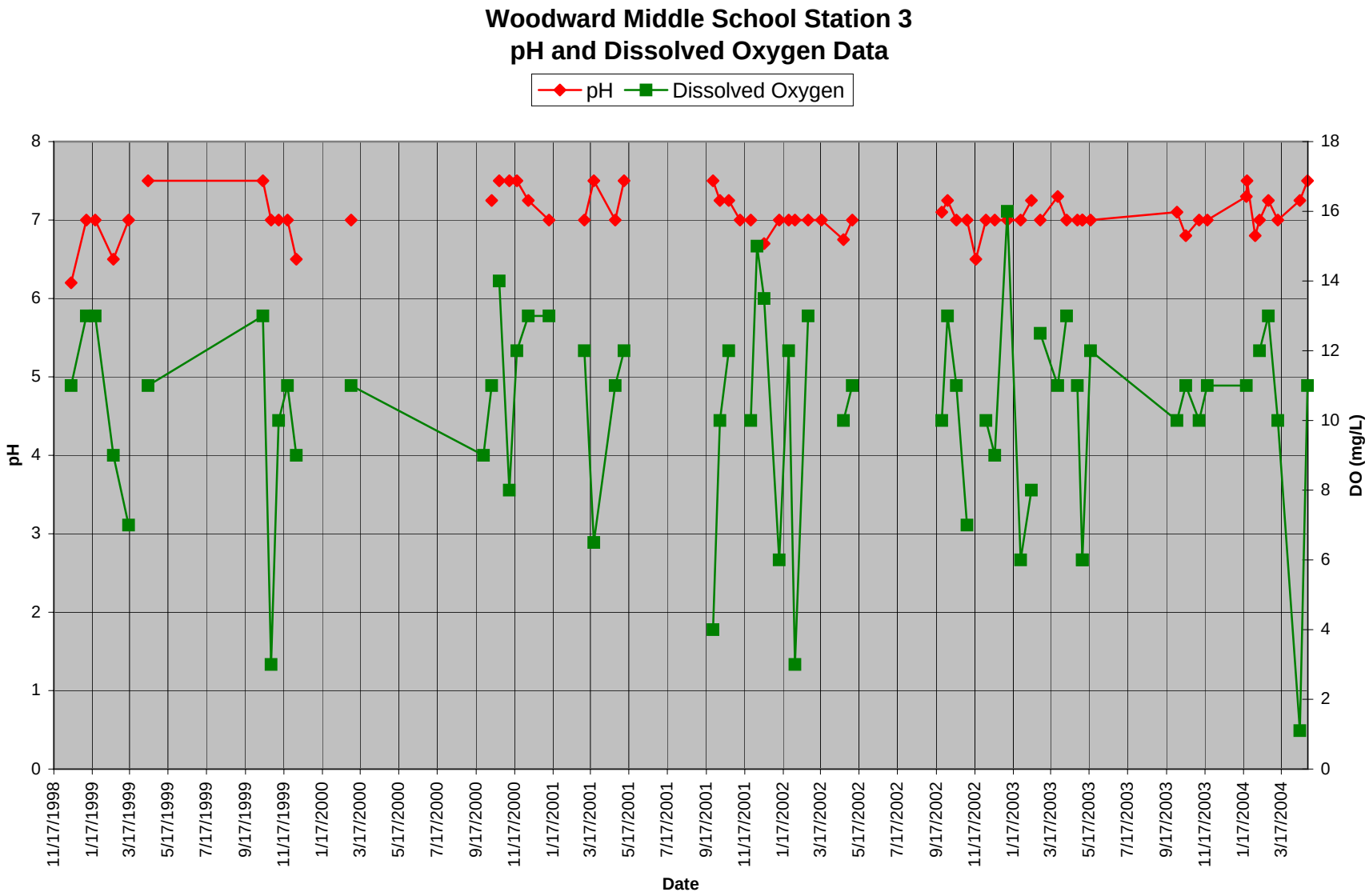
** Stations located along Woodward Creek

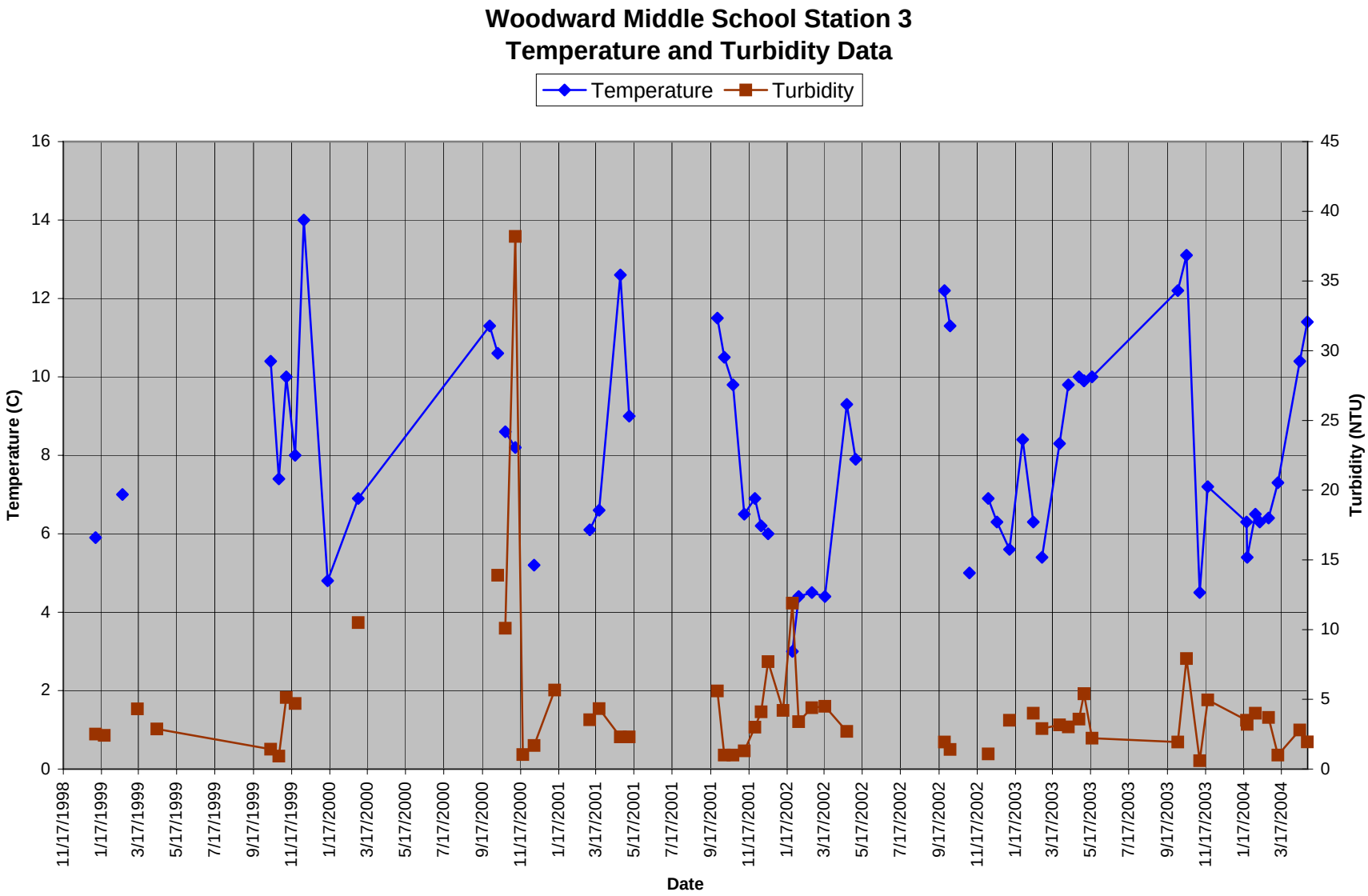

Woodward Middle School Station 1
pH and Dissolved Oxygen Data
pH
Dissolved Oxygen
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
DO (mg/L)
11/17/1998
1/17/1999
3/17/1999
5/17/1999
7/17/1999
9/17/1999
11/17/1999
1/17/2000
3/17/2000
5/17/2000
7/17/2000
9/17/2000
11/17/2000
1/17/2001
3/17/2001
5/17/2001
7/17/2001
9/17/2001
11/17/2001
1/17/2002
3/17/2002
5/17/2002
7/17/2002
9/17/2002
11/17/2002
1/17/2003
3/17/2003
5/17/2003
7/17/2003
9/17/2003
11/17/2003
1/17/2004
3/17/2004
Date

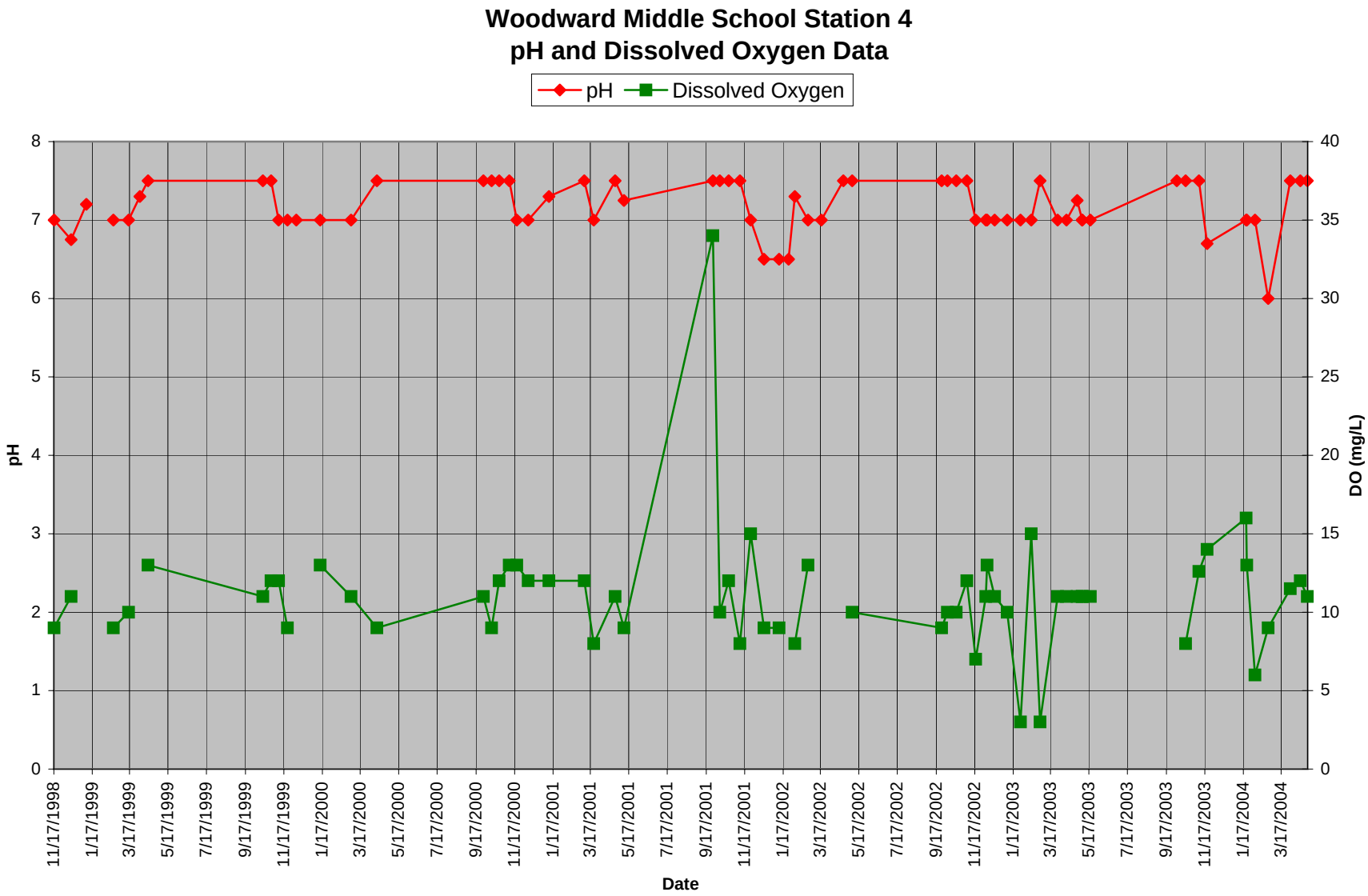

Woodward Middle School Station 1
Temperature and Turbidity Data
Temperature
Turbidity
Temperature (C)
Turbidity (NTU)
Date
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
80
70
60
50
40
30
20
10
0
11/17/1998
1/17/1999
3/17/1999
5/17/1999
7/17/1999
9/17/1999
11/17/1999
1/17/2000
3/17/2000
5/17/2000
7/17/2000
9/17/2000
11/17/2000
1/17/2001
3/17/2001
5/17/2001
7/17/2001
9/17/2001
11/17/2001
1/17/2002
3/17/2002
5/17/2002
7/17/2002
9/17/2002
11/17/2002
1/17/2003
3/17/2003
5/17/2003
7/17/2003
9/17/2003
11/17/2003
1/17/2004
3/17/2004

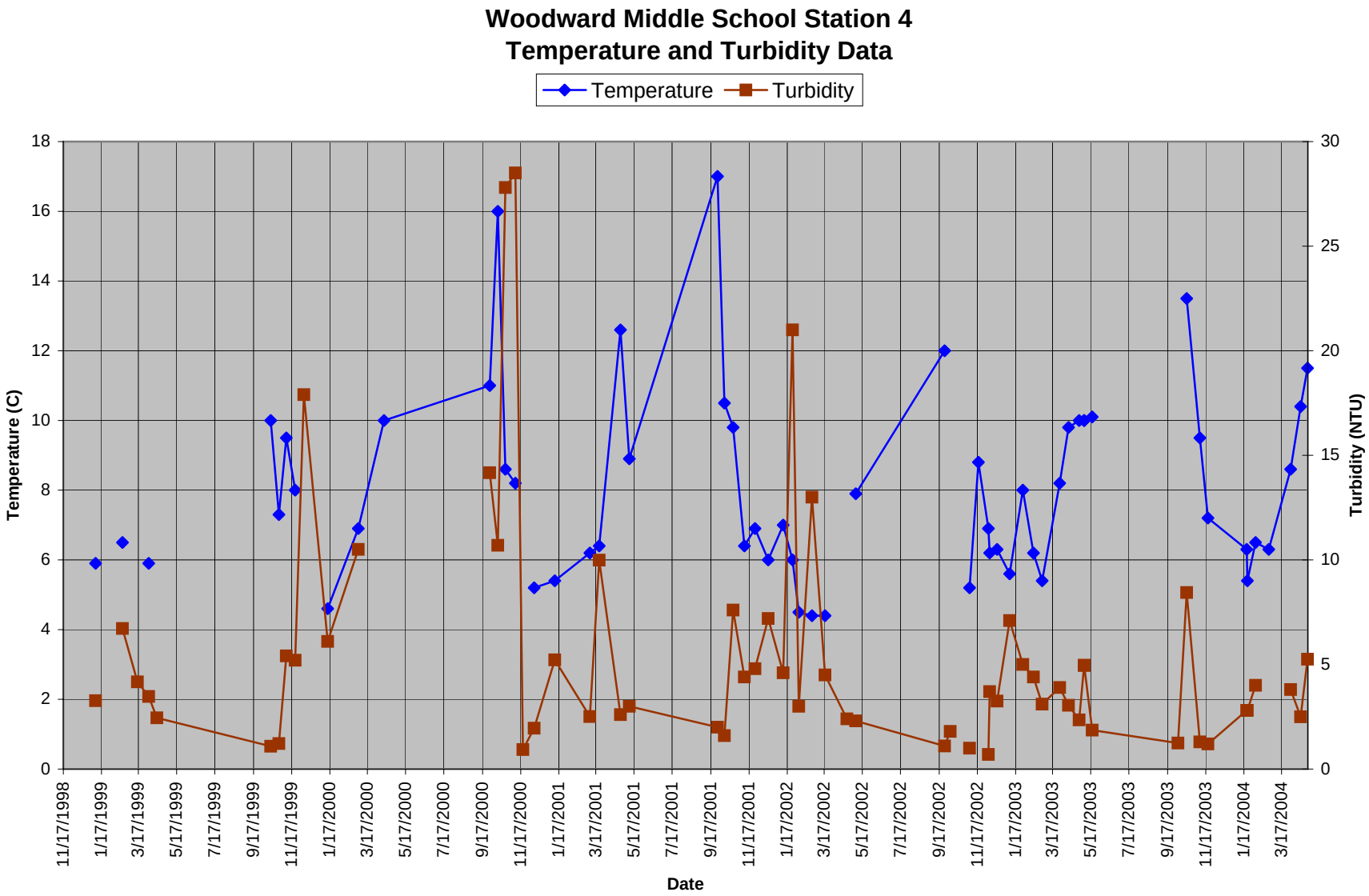

Woodward Middle School Station 2
pH and Dissolved Oxygen Data
pH
Dissolved Oxygen
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
20
18
16
14
12
10
8
6
4
2
0
DO (mg/L)
11/17/1998
1/17/1999
3/17/1999
5/17/1999
7/17/1999
9/17/1999
11/17/1999
1/17/2000
3/17/2000
5/17/2000
7/17/2000
9/17/2000
11/17/2000
1/17/2001
3/17/2001
5/17/2001
7/17/2001
9/17/2001
11/17/2001
1/17/2002
3/17/2002
5/17/2002
7/17/2002
9/17/2002
11/17/2002
1/17/2003
3/17/2003
5/17/2003
7/17/2003
9/17/2003
11/17/2003
1/17/2004
3/17/2004
5/17/2004
Date


Woodward Middle School Station 2
Temperature and Turbidity Data
Temperature
Turbidity
Temperature (C)
Turbidity (NTU)
Date
0
2
4
6
8
10
12
14
16
0
5
10
15
20
25
30
35
40
45
11/17/1998
1/17/1999
3/17/1999
5/17/1999
7/17/1999
9/17/1999
11/17/1999
1/17/2000
3/17/2000
5/17/2000
7/17/2000
9/17/2000
11/17/2000
1/17/2001
3/17/2001
5/17/2001
7/17/2001
9/17/2001
11/17/2001
1/17/2002
3/17/2002
5/17/2002
7/17/2002
9/17/2002
11/17/2002
1/17/2003
3/17/2003
5/17/2003
7/17/2003
9/17/2003
11/17/2003
1/17/2004
3/17/2004
5/17/2004


Woodward Middle School Station 3
pH and Dissolved Oxygen Data
pH
Dissolved Oxygen
pH
DO (mg/L)
Date
0
1
2
3
4
5
6
7
8
0
2
4
6
8
10
12
14
16
18
11/17/1998
1/17/1999
3/17/1999
5/17/1999
7/17/1999
9/17/1999
11/17/1999
1/17/2000
3/17/2000
5/17/2000
7/17/2000
9/17/2000
11/17/2000
1/17/2001
3/17/2001
5/17/2001
7/17/2001
9/17/2001
11/17/2001
1/17/2002
3/17/2002
5/17/2002
7/17/2002
9/17/2002
11/17/2002
1/17/2003
3/17/2003
5/17/2003
7/17/2003
9/17/2003
11/17/2003
1/17/2004
3/17/2004


Woodward Middle School Station 3
Temperature and Turbidity Data
Temperature
Turbidity
Temperature (C)
Turbidity (NTU)
Date
0
2
4
6
8
10
12
14
16
0
5
10
15
20
25
30
35
40
45
11/17/1998
1/17/1999
3/17/1999
5/17/1999
7/17/1999
9/17/1999
11/17/1999
1/17/2000
3/17/2000
5/17/2000
7/17/2000
9/17/2000
11/17/2000
1/17/2001
3/17/2001
5/17/2001
7/17/2001
9/17/2001
11/17/2001
1/17/2002
3/17/2002
5/17/2002
7/17/2002
9/17/2002
11/17/2002
1/17/2003
3/17/2003
5/17/2003
7/17/2003
9/17/2003
11/17/2003
1/17/2004
3/17/2004

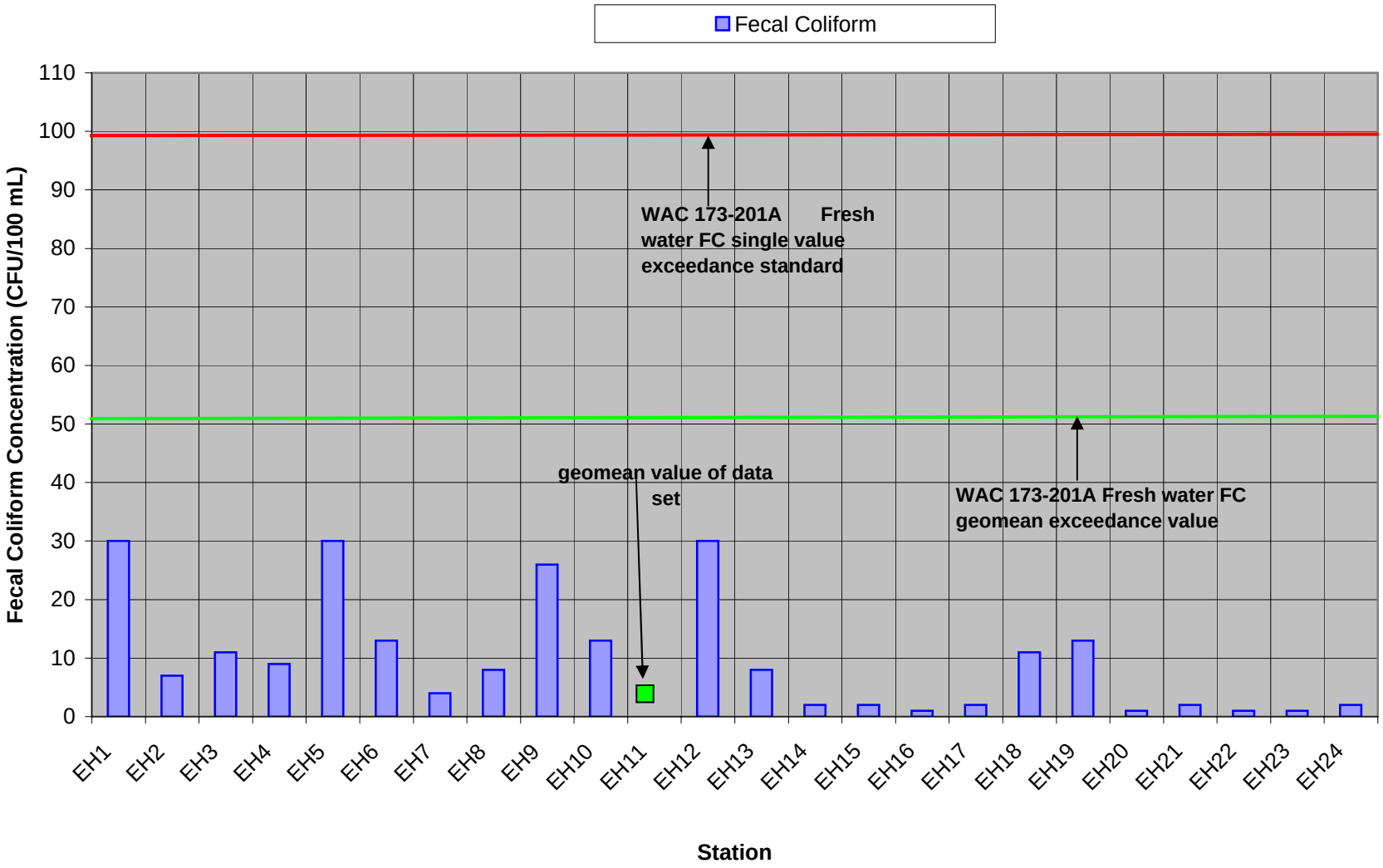

Woodward Middle School Station 4
pH and Dissolved Oxygen Data
pH
Dissolved Oxygen
pH
DO (mg/L)
Date
0
1
2
3
4
5
6
7
8
0
5
10
15
20
25
30
35
40
11/17/1998
1/17/1999
3/17/1999
5/17/1999
7/17/1999
9/17/1999
11/17/1999
1/17/2000
3/17/2000
5/17/2000
7/17/2000
9/17/2000
11/17/2000
1/17/2001
3/17/2001
5/17/2001
7/17/2001
9/17/2001
11/17/2001
1/17/2002
3/17/2002
5/17/2002
7/17/2002
9/17/2002
11/17/2002
1/17/2003
3/17/2003
5/17/2003
7/17/2003
9/17/2003
11/17/2003
1/17/2004
3/17/2004


Woodward Middle School Station 4
Temperature and Turbidity Data
Temperature
Turbidity
Temperature (C)
Turbidity (NTU)
Date
0
2
4
6
8
10
12
14
16
18
0
5
10
15
20
25
30
11/17/1998
1/17/1999
3/17/1999
5/17/1999
7/17/1999
9/17/1999
11/17/1999
1/17/2000
3/17/2000
5/17/2000
7/17/2000
9/17/2000
11/17/2000
1/17/2001
3/17/2001
5/17/2001
7/17/2001
9/17/2001
11/17/2001
1/17/2002
3/17/2002
5/17/2002
7/17/2002
9/17/2002
11/17/2002
1/17/2003
3/17/2003
5/17/2003
7/17/2003
9/17/2003
11/17/2003
1/17/2004
3/17/2004

APPENDIX C-6

Data Set #7 - CoBI Water Quality Data

Eagle Harbor Fecal Coliform Concentrations by Station
27 July 2005



BI Stream Water Chemistry Survey
(Clairborne, 2003)
CoBI Library Document ID #25

Temp	Hidden Cove	Dripping Cr.	Manzanita Cr.	Issei Cr.	Springbrook Cr.	Shel-Cheb Cr.	Mac's Dam Cr.	Cooper Cr.	Wardwell Rd
6/23/2003	11.9	12.2	13.2	13.9	15.1	16.6	13.3	11.6	13.7
6/26/2003	14.3	13	14.9	17.3	17.9	19.8	17.7	12.7	15.8
7/7/2003	14.1	12.5	15.1		17.7	18.1	15.2	13	15.6
7/8/2003	12.9	12	14.5	15.3	17.1	17.6	15.4	13.1	15.6
7/15/2003	14	12.4	15.5	16.4	17.8	18.1	15.7	14.8	15.3
7/17/2003	13.6	12.5	14.7	16.3	16.8	16.8	15.3		15.6
7/22/2003	14.9	13.8	16.5	17.9	18.9	17.5	17.1	14.6	17.5
7/24/2003	14	12.4	15.6	16.4	17.8	16.5	15.9	13.4	16.2
7/28/2003	14.4	13.9	16.6	18.8	18.9	17.2	17.5		17.4
7/29/2003	15.3	14	17.3	18.6	19.5	18.4	18.1		18.4
Average	**13.94**	**12.87**	**15.39**	**16.77**	**17.75**	**17.66**	**16.12**	**13.31**	**16.11**

PH	Hidden Cove	Dripping Cr.	Manzanita Cr.	Issei Cr.	Springbrook Cr.	Shel-Cheb Cr.	Mac's Dam Cr.	Cooper Cr.	Wardwell Rd
6/23/2003	7.8	7.9	7.8	7.4	7.6	6.8	7.4	7.2	7.4
6/26/2003	7.6	7.8	7.8	7.4	7.7	6.9	7.6	7.5	7.6
7/7/2003	7.9	7.9	7.8	7.6	7.8	6.9	7.6	7.6	7.8
7/8/2003	7.6	7.7	7.6	7.5	7.7	7	7.5	7.6	7.6
7/15/2003	7.8	8	7.8	7.4	8.1	7.6	8	7.8	8
7/17/2003	7.8	7.9	7.8	7.6	7.6	7.4	7.7		7.8
7/22/2003	7.4	7.1	7.4	7.1	7.4	7.1	7.4	7.4	7.2
7/24/2003	7.3	7.3	7.4	7.1	7.4	6.9	7.2	7.1	7.4
7/28/2003	7.4	7.8	7.3	7.4	7.6	7.4	7.4		8
7/29/2003	8.2	7.9	8.4	8.3	8.3	7	7.6		7.8
Average	**7.68**	**7.73**	**7.71**	**7.48**	**7.72**	**7.10**	**7.54**	**7.46**	**7.66**

BI Stream Water Chemistry Survey
(Clairborne, 2003)
CoBI Library Document ID #25

D.O. (mg/L)	Hidden Cove	Dripping Cr.	Manzanita Cr.	Issei Cr.	Springbrook Cr.	Shel-Cheb Cr.	Mac's Dam Cr.	Cooper Cr.	Wardwell Rd
6/23/2003	9.47	9.39	8.67	8.24	8.3	2.71	7.29	9.01	8.35
6/26/2003	8.93	9.21	8.46	7.08	7.45	1.41	6.01	8.79	7.55
7/7/2003	8.48	9.27	8.52	7.65	7.65	1.8	6.82	8.61	8.05
7/8/2003	9.37	9.46	8.6	7.86	7.88	1.87	6.69	8.75	8.06
7/15/2003	8.87	9.17	8.3	7.64	7.51	1.91	6.32	10.83	8
7/17/2003	9.01	9.22	8.5	7.51	7.95	1.43	6.38		8.22
7/22/2003	8.53	8.81	8.06	7.19	7.56	1.2	5.91	8.19	7.72
7/24/2003	8.87	8.88	8.19	7.54	7.44	1.11	6.12	8.52	8.09
7/28/2003	9.14	9.11	8.27	7.13	7.4	1.3	5.98		7.74
7/29/2003	8.39	8.95	7.89	6.91	7.14	0.93	5.4		7.39
Average	**8.91**	**9.15**	**8.35**	**7.48**	**7.63**	**1.57**	**6.29**	**8.96**	**7.92**

SAT (%)	Hidden Cove	Dripping Cr.	Manzanita Cr.	Issei Cr.	Springbrook Cr.	Shel-Cheb Cr.	Mac's Dam Cr.	Cooper Cr.	Wardwell Rd
6/23/2003	86.7	84.9	83.8	79.8	82.3	27.7	69.8	82.6	80.23
6/26/2003	84.6	87.3	83.8	74	78.1	15.5	62.7	83.5	77.8
7/7/2003	76.8	83.2	83.7	76.9	80.5	19.1	67.9	81.3	81.2
7/8/2003	88.7	87.8	84.2	78	81.7	20.2	66.7	82.5	80.6
7/15/2003	85.9	84.1	83.2	78.2	79.6	20.2	63.3	107.3	81.7
7/17/2003	86.9	86.2	83.8	76.7	82	13.3	63.2		82.6
7/22/2003	85	85.6	82.8	75.7	81.2	12.8	60.7	80.4	81.2
7/24/2003	86.2	83.9	82.3	76.7	79.7	9.2	61	81.5	82.4
7/28/2003	88.3	88.3	84.6	75.6	79.4	13.5	62.6		81.3
7/29/2003	84.8	85.8	81.6	74.1	77.8	8.1	57.5		79.1
Average	**85.39**	**85.71**	**83.38**	**76.57**	**80.23**	**15.96**	**63.54**	**85.59**	**80.81**

BI Stream Water Chemistry Survey
(Clairborne, 2003)
CoBI Library Document ID #25

Conduct (mS/cm)	Hidden Cove	Dripping Cr.	Manzanita Cr.	Issei Cr.	Springbrook Cr.	Shel-Cheb Cr.	Mac's Dam Cr.	Cooper Cr.	Wardwell Rd
6/23/2003	2.3	1.2	1.9	1.4	72.7	155.9	215.3	1.5	1.7
6/26/2003	1.59	2.6	1.4	1.8	76.5	74.5	2.3	1.3	1
7/7/2003	1.8	3.3	2.3	2.4	76.2	76.6	103.6	2	1.8
7/8/2003	1.4	2.6	2.4	1.8	1.8	1.6	2.5	2	1.8
7/15/2003	2.3	2.7	1.9	1.3	2.3	83.8	5.5	4951	2.2
7/17/2003	2.7	3.3	2.5	2.1	1.8	3.1	7.7	3.2	2.2
7/22/2003	3.6	2.2	2.5	1.3	1.9	1.4	5.2	2.2	2.2
7/24/2003	2.1	4	7.4	5.1	3.7	2.4	2.3	2.4	2.1
7/28/2003	2.1	3	2.8	5	2.1	3.1	5.7		2
7/29/2003	2.4	3.1	2.3	2.3	5.5	3.2	2.9		3.5
Average	**2.23**	**2.80**	**2.74**	**2.45**	**24.45**	**40.56**	**35.30**	**620.70**	**2.05**

Turbitity (NTU)	Hidden Cove	Dripping Cr.	Manzanita Cr.	Issei Cr.	Springbrook Cr.	Shel-Cheb Cr.	Mac's Dam Cr.	Cooper Cr.	Wardwell Rd
6/23/2003									
6/26/2003									
7/7/2003									
7/8/2003									
7/15/2003									
7/17/2003	2.54	0.88	1.59	3.56	4.52	2.07	2.47		0.92
7/22/2003	2.15	0.91	1.25	3.26	3.58	3.02	2.05	3.09	0.91
7/24/2003	1.35	0.62	1.33	4.83	5.5	4.05	2.21	2.54	0.77
7/28/2003									
7/29/2003									
Average	**2.01**	**0.80**	**1.39**	**3.88**	**4.53**	**3.05**	**2.24**	**2.82**	**0.87**

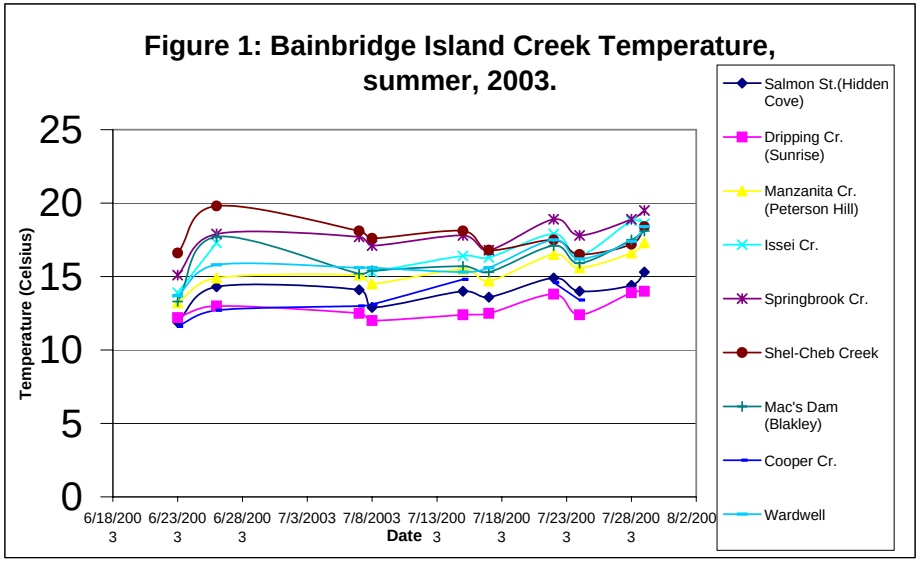


Figure 1: Bainbridge Island Creek Temperature, summer, 2003.
Temperature (Celsius)
25
20
15
10
5
0
6/18/2003
6/23/2003
6/28/2003
7/3/2003
7/8/2003
7/13/2003
7/18/2003
7/23/2003
7/28/2003
8/2/2003
Date
Salmon St.(Hidden Cove)
Dripping Cr. (Sunrise)
Manzanita Cr. (Peterson Hill)
Issei Cr.
Springbrook Cr.
Shel-Cheb Creek
Mac's Dam (Blakley)
Cooper Cr.
Wardwell

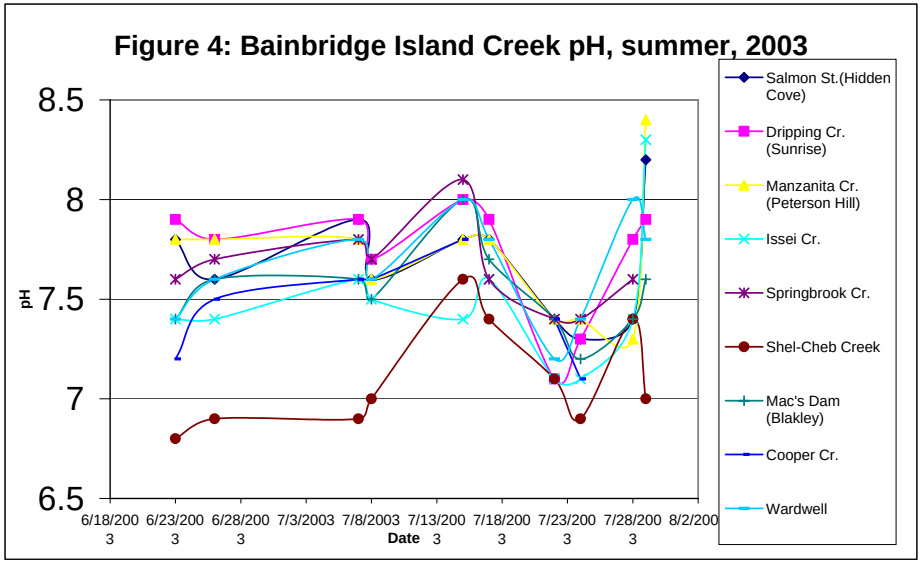


Figure 4: Bainbridge Island Creek pH, summer, 2003
pH
8.5
8
7.5
7
6.5
6/18/2003
6/23/2003
6/28/2003
7/3/2003
7/8/2003
7/13/2003
7/18/2003
7/23/2003
7/28/2003
8/2/2003
Date
Salmon St.(Hidden Cove)
Dripping Cr. (Sunrise)
Manzanita Cr. (Peterson Hill)
Issei Cr.
Springbrook Cr.
Shel-Cheb Creek
Mac's Dam (Blakley)
Cooper Cr.
Wardwell

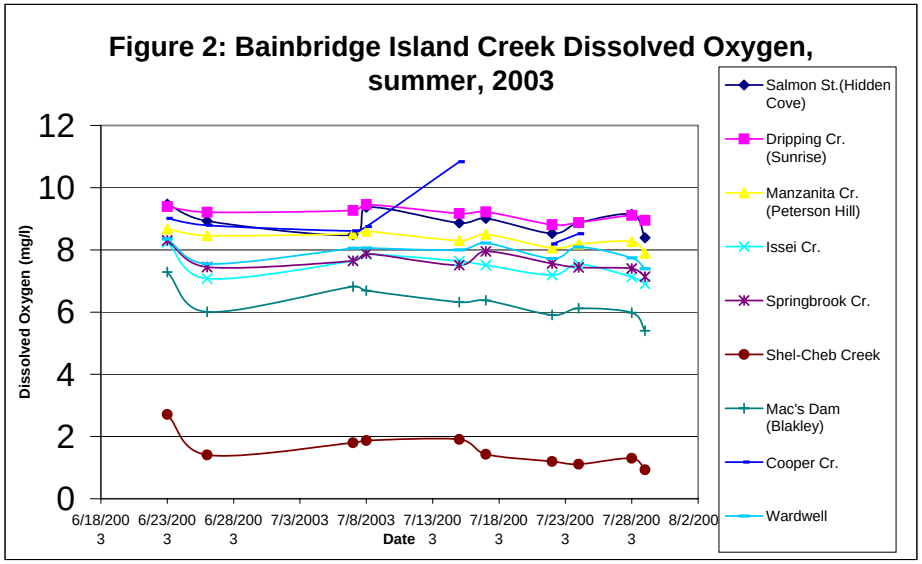


Figure 2: Bainbridge Island Creek Dissolved Oxygen, summer, 2003
Dissolved Oxygen (mg/l)
12
10
8
6
4
2
0
6/18/2003
6/23/2003
6/28/2003
7/3/2003
7/8/2003
7/13/2003
7/18/2003
7/23/2003
7/28/2003
8/2/2003
Date
Salmon St.(Hidden Cove)
Dripping Cr. (Sunrise)
Manzanita Cr. (Peterson Hill)
Issei Cr.
Springbrook Cr.
Shel-Cheb Creek
Mac's Dam (Blakley)
Cooper Cr.
Wardwell

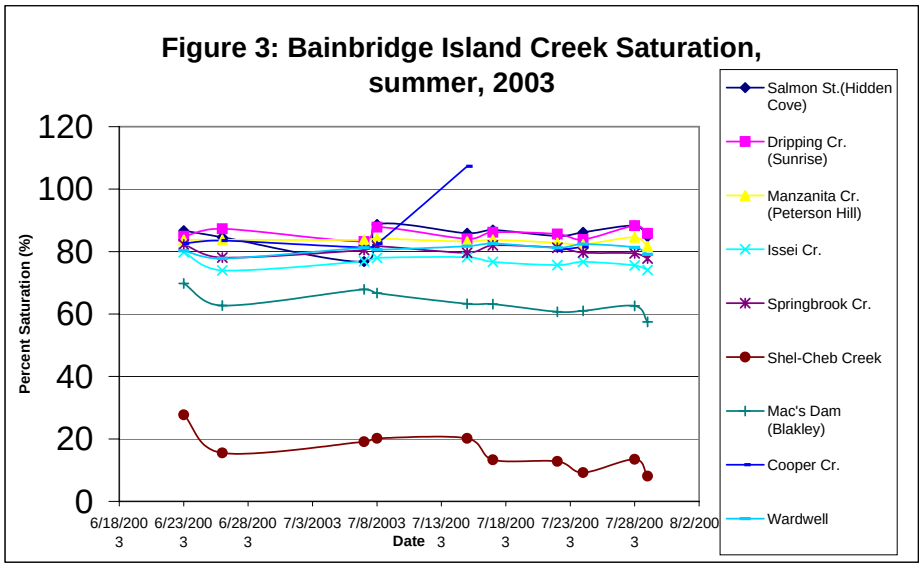


Figure 3: Bainbridge Island Creek Saturation, summer, 2003
Percent Saturation (%)
120
100
80
60
40
20
0
6/18/2003
6/23/2003
6/28/2003
7/3/2003
7/8/2003
7/13/2003
7/18/2003
7/23/2003
7/28/2003
8/2/2003
Date
Salmon St.(Hidden Cove)
Dripping Cr. (Sunrise)
Manzanita Cr. (Peterson Hill)
Issei Cr.
Springbrook Cr.
Shel-Cheb Creek
Mac's Dam (Blakley)
Cooper Cr.
Wardwell

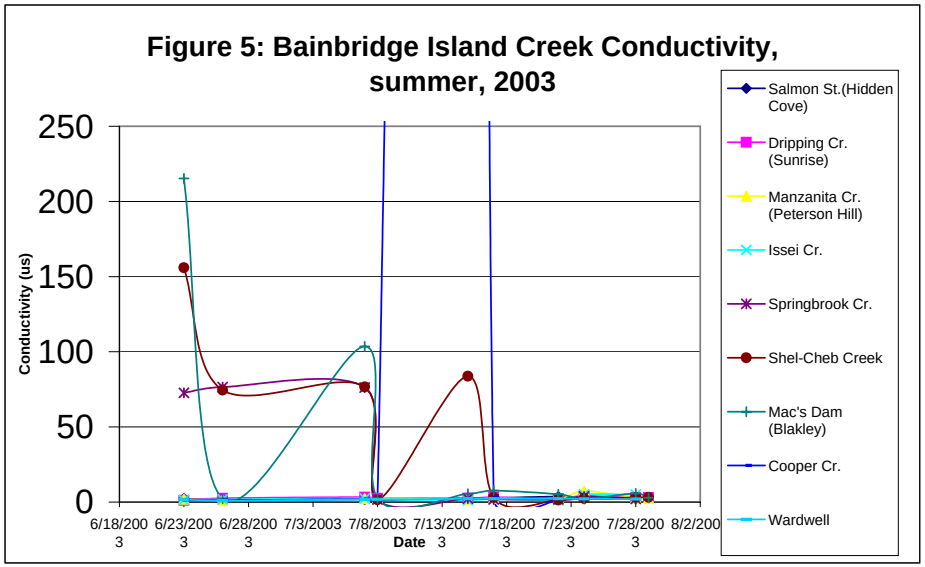


Figure 5: Bainbridge Island Creek Conductivity, summer, 2003
Conductivity (us)
250
200
150
100
50
0
6/18/2003
6/23/2003
6/28/2003
7/3/2003
7/8/2003
7/13/2003
7/18/2003
7/23/2003
7/28/2003
8/2/2003
Date
Salmon St.(Hidden Cove)
Dripping Cr. (Sunrise)
Manzanita Cr. (Peterson Hill)
Issei Cr.
Springbrook Cr.
Shel-Cheb Creek
Mac's Dam (Blakley)
Cooper Cr.
Wardwell

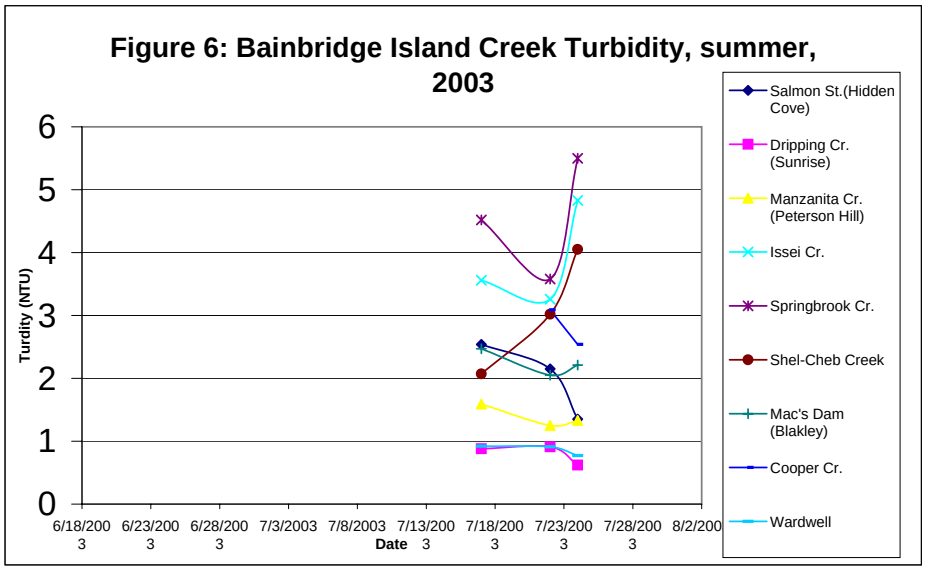


Figure 6: Bainbridge Island Creek Turbidity, summer, 2003
Turdity (NTU)
6
5
4
3
2
1
0
6/18/2003
6/23/2003
6/28/2003
7/3/2003
7/8/2003
7/13/2003
7/18/2003
7/23/2003
7/28/2003
8/2/2003
Date
Salmon St.(Hidden Cove)
Dripping Cr. (Sunrise)
Manzanita Cr. (Peterson Hill)
Issei Cr.
Springbrook Cr.
Shel-Cheb Creek
Mac's Dam (Blakley)
Cooper Cr.
Wardwell

WSDOT Ferry Maintenance Terminal Project
Surface Water Monitoring Results

Date	CoBI Site Area Code	Station	Document Reference #	pH (Unit)	DO (mg/L)	Cond. (mS/cm)	Temp (°C)	Salinity (ppt)	Turbidity (NTU)	Hardness ($mgCaCO_3/L$)	Discharge (cfs)	TSS (mg/L)
2/25/1998	EGLH	PS-01	108	8.40	8.6	40.2	9.0	25.0				21
5/28/1998	EGLH	PS-01	108	8.45	11.9	41.9	10.8	26.4	0			12
7/21/1998	EGLH	PS-01	108	**9.45**		39.7	**15.0**	25.2	24			120
12/2/1998	EGLH	PS-01	108	7.39	7.3	44.7	10.6	28.4	10			6
1/28/1999	EGLH	PS-02	108	**6.58**	10.9	40.1	8.3	24.5	58			122
6/15/1999	EGLH	PS-02	108	8.08	9.2	41.2	**15.5**	26.5	41			12
8/10/1999	EGLH	PS-02	108	8.12	10.2	41.7	**17.9**	26.8	8			22
11/22/1999	EGLH	PS-02	108	7.76	7.2	45.4	9.7	29.2	15			23
6/23/1999	BKGD	KSPB01	108		12.0		**13.1**	26.1	2.6			4
7/21/1999	BKGD	KSPB01	108		11.0		**14.1**	27.0	1.7			6
8/24/1999	BKGD	KSPB01	108		7.1		**13.3**	28.8	0.9			3
9/29/1999	BKGD	KSPB01	108		10.0		**13.8**	29.4	0.5 U			9
10/26/1999	BKGD	KSPB01	108		7.3		11.7	29.3	1.7			4
11/29/1999	BKGD	KSPB01	108		7.5		10.5	24.9	5.1			4
12/27/1999	BKGD	KSPB01	108		**7.0**		9.9	29.1	2.0			3
1/24/2000	BKGD	KSPB01	108		7.6		8.7	28.9	3.2			4
2/23/2000	BKGD	KSPB01	108		8.1		8.1	28.4	2.8			3
3/27/2000	BKGD	KSPB01	108		8.4		8.1	28.6	2.1			2
4/24/2000	BKGD	KSPB01	108		9.4		9.1	28.4	0.8			3
5/23/2000	BKGD	KSPB01	108		10.4		10.9	26.8	0.1			5
6/26/2000	BKGD	KSPB01	108		9.3		12.7	26.2	1.3			4
7/14/2003	NEGH	RS-01	108			19.80		11.9			0.8 J	
7/14/2003	NEGH	RS-01	108			9.15	**21.8**	5.1			0.8 J	
7/14/2003	NEGH	RS-02	108			12.30	**15.7**	7.1		1204	0.7 J	
7/14/2003	NEGH	RS-02	108			3.70	**20.6**	2.1		767	0.7 J	
12/8/2003	NEGH	RS-02	108			3.13	6.9	1.8		295	1.1	
5/19/2004	NEGH	RS-02	108	8.29	10.7	7.50	**15.1**	4.2	12.3	580	0.3	
12/9/2004	NEGH	RS-02	108	7.44	11.1	1.94	8.2	1.0		202	4.3	
7/14/2003	NEGH	RS-03	108			1.17	**14.2**	0.6		206	0.8 J	
7/14/2003	NEGH	RS-03	108			0.86	**15.7**	0.4		159	1.0 J	
12/8/2003	NEGH	RS-03	108			0.77	6.8	0.4		94	1.0	
5/19/2004	NEGH	RS-03	108	8.44	10.9	0.96	**14.0**	0.5	7.9	162	0.4	
12/9/2004	NEGH	RS-03	108	7.56	11.1	0.23	8.1	0.1		65.7	4.9	

a = Source: King County 2001. Point Jefferson sampling station at 1 meters depth for conventionals data and 5 meters depth for metals data.

King County sampling dates are for metals sampling; conventionals sampling occurred in the same month as metals sampling.

U = Analyte was not detected at the associated quantitation or detection limit.

J = Associated value is an estimated quantity.

Bold values exceed acute of chronic water quality criteria for extraordinary quality marine waters in Washington (WAC 173-201A, update 7/1/03).

RS Stations are associated with Ravine Creek (Winslow)

WSDOT Ferry Maintenance Terminal Project
Surface Water Monitoring Results

Date	CoBI Site Area Code	Station	Document Reference #	Copper, Dissolved (ug/L)	Lead, Dissolved (ug/L)	Zinc, Dissolved (ug/L)	Mercury, Dissolved, (ng/l)	Mercury, Total (ng/L)	Mercury Susp. Solid (mg/kg)	Arsenic, Total (ug/L)	Barium, Total (ug/L)	Beryllium, Total (ug/L)	Cadmium, Total (ug/L)	Chromium , Total (ug/L)	Copper, Total (ug/L)
2/25/1998	EGLH	PS-01	108		1.0 U	4.3 J	0.50 U	0.59	0.03						
5/28/1998	EGLH	PS-01	108		2.0 U	1.0 UJ	0.20 J	0.20 J							
7/21/1998	EGLH	PS-01	108		1.0 UJ		0.26 J	0.32 J			6.1	1.9			
12/2/1998	EGLH	PS-01	108	0.7	1.0 U	0.5 U	0.21 J	0.40 J	0.03						
1/28/1999	EGLH	PS-02	108	1.6 U	1.0 UJ	1.5 U	0.20 U	14.80	0.12						
6/15/1999	EGLH	PS-02	108	**4.4 J**	0.7 UJ	1.43 U	0.80 U	0.80 U							
8/10/1999	EGLH	PS-02	108	0.49	0.0195 U	1.28 U	0.20 U	0.36 J	0.01	1.06	6.64		0.0811	0.933 J	1.37
11/22/1999	EGLH	PS-02	108	0.39	0.0195 U	1.28 U	0.20 U	2.25	0.09						
6/23/1999	BKGD	KSPB01	108	0.389	0.007 J	0.32 J	0.30 J	0.30 J							
7/21/1999	BKGD	KSPB01	108	0.371	0.011 J	0.33 J	0.20 J	0.20 J							
8/24/1999	BKGD	KSPB01	108	0.393	0.016 J	0.59 J	0.20 J	0.30 J							
9/29/1999	BKGD	KSPB01	108	0.357	0.031	0.58 J	0.20 J	0.30 J							
10/26/1999	BKGD	KSPB01	108	0.372	0.008 J	0.49 J	0.20 J	0.20 J							
11/29/1999	BKGD	KSPB01	108	0.434	0.007 J	0.94 J	0.20 J	0.40 J							
12/27/1999	BKGD	KSPB01	108	0.396	0.005 U	0.89 J	0.20 J	0.30 J							
1/24/2000	BKGD	KSPB01	108	0.373	0.005 U	0.74 J	0.30 J	0.50							
2/23/2000	BKGD	KSPB01	108	0.395 J	0.005 U	0.77 J	0.20 J	0.50 J							
3/27/2000	BKGD	KSPB01	108	0.397	0.007 J	0.71 J	0.20 J	0.40 J							
4/24/2000	BKGD	KSPB01	108	0.374	0.005 U	0.71 J	0.10 J	0.30 J							
5/23/2000	BKGD	KSPB01	108		0.005 U	0.67 J	0.10 J	0.30 J							
6/26/2000	BKGD	KSPB01	108	0.368 J	0.007 UJ	1.48 J	0.23 J	0.37 J							
7/14/2003	NEGH	RS-01	108	**5.41**		7.85									
7/14/2003	NEGH	RS-01	108	3.05		3.93									
7/14/2003	NEGH	RS-02	108	**4.11**		14.10									
7/14/2003	NEGH	RS-02	108	2.46		6.97									
12/8/2003	NEGH	RS-02	108	2.32		7.98									
5/19/2004	NEGH	RS-02	108	2.19		5.75									
12/9/2004	NEGH	RS-02	108	2.50		14.40									
7/14/2003	NEGH	RS-03	108	0.478		1.49									
7/14/2003	NEGH	RS-03	108	0.496		1.21									
12/8/2003	NEGH	RS-03	108	1.66		4.79									
5/19/2004	NEGH	RS-03	108	0.744		1.76									
12/9/2004	NEGH	RS-03	108	2.20		9.80									

a = Source: King County 2001. Point Jefferson sampling station at 1 meters depth for conventionals data and 5 meters depth for metals data.

King County sampling dates are for metals sampling; conventionals sampling occurred in the same month as metals sampling.

U = Analyte was not detected at the associated quantitation or detection limit.

J = Associated value is an estimated quantity.

Bold values exceed acute of chronic water quality criteria for extraordinary quality marine waters in Washington (WAC 173-201A, update 7/1/03).

RS Stations are associated with Ravine Creek (Winslow)

WSDOT Ferry Maintenance Terminal Project
Surface Water Monitoring Results

Date	CoBI Site Area Code	Station	Document Reference #	Iron, Total (ug/L)	Lead, Total (ug/L)	Manganese, Total (ug/L)	Nickel, Total (ug/L)	Thallium, Total (ug/L)	Zinc, Total (ug/L)	Comments
2/25/1998	EGLH	PS-01	108							Eagle Harbor WHOU
5/28/1998	EGLH	PS-01	108							Eagle Harbor WHOU
7/21/1998	EGLH	PS-01	108			6.1	8.8			Eagle Harbor WHOU
12/2/1998	EGLH	PS-01	108							Eagle Harbor WHOU
1/28/1999	EGLH	PS-02	108							Eagle Harbor WHOU
6/15/1999	EGLH	PS-02	108							Eagle Harbor WHOU
8/10/1999	EGLH	PS-02	108	442 J	0.23	20.3	1.32	0.0113	3.91 J	Eagle Harbor WHOU
11/22/1999	EGLH	PS-02	108							Eagle Harbor WHOU
6/23/1999	BKGD	KSPB01	108							a
7/21/1999	BKGD	KSPB01	108							a
8/24/1999	BKGD	KSPB01	108							a
9/29/1999	BKGD	KSPB01	108							a
10/26/1999	BKGD	KSPB01	108							a
11/29/1999	BKGD	KSPB01	108							a
12/27/1999	BKGD	KSPB01	108							a
1/24/2000	BKGD	KSPB01	108							a
2/23/2000	BKGD	KSPB01	108							a
3/27/2000	BKGD	KSPB01	108							a
4/24/2000	BKGD	KSPB01	108							a
5/23/2000	BKGD	KSPB01	108							a
6/26/2000	BKGD	KSPB01	108							a
7/14/2003	NEGH	RS-01	108							Station downstream of seeps
7/14/2003	NEGH	RS-01	108							Station downstream of seeps
7/14/2003	NEGH	RS-02	108							Station downstream of seeps
7/14/2003	NEGH	RS-02	108							Station downstream of seeps
12/8/2003	NEGH	RS-02	108							Station downstream of seeps
5/19/2004	NEGH	RS-02	108							Station downstream of seeps
12/9/2004	NEGH	RS-02	108							Station downstream of seeps
7/14/2003	NEGH	RS-03	108							Station upstream of seeps
7/14/2003	NEGH	RS-03	108							Station upstream of seeps
12/8/2003	NEGH	RS-03	108							Station upstream of seeps
5/19/2004	NEGH	RS-03	108							Station upstream of seeps
12/9/2004	NEGH	RS-03	108							Station upstream of seeps

a = Source: King County 2001. Point Jefferson sampling station at 1 meters depth for conventionals data and 5 meters depth for metals data.

King County sampling dates are for metals sampling; conventionals sampling occurred in the same month as metals sampling.

U = Analyte was not detected at the associated quantitation or detection limit.

J = Associated value is an estimated quantity.

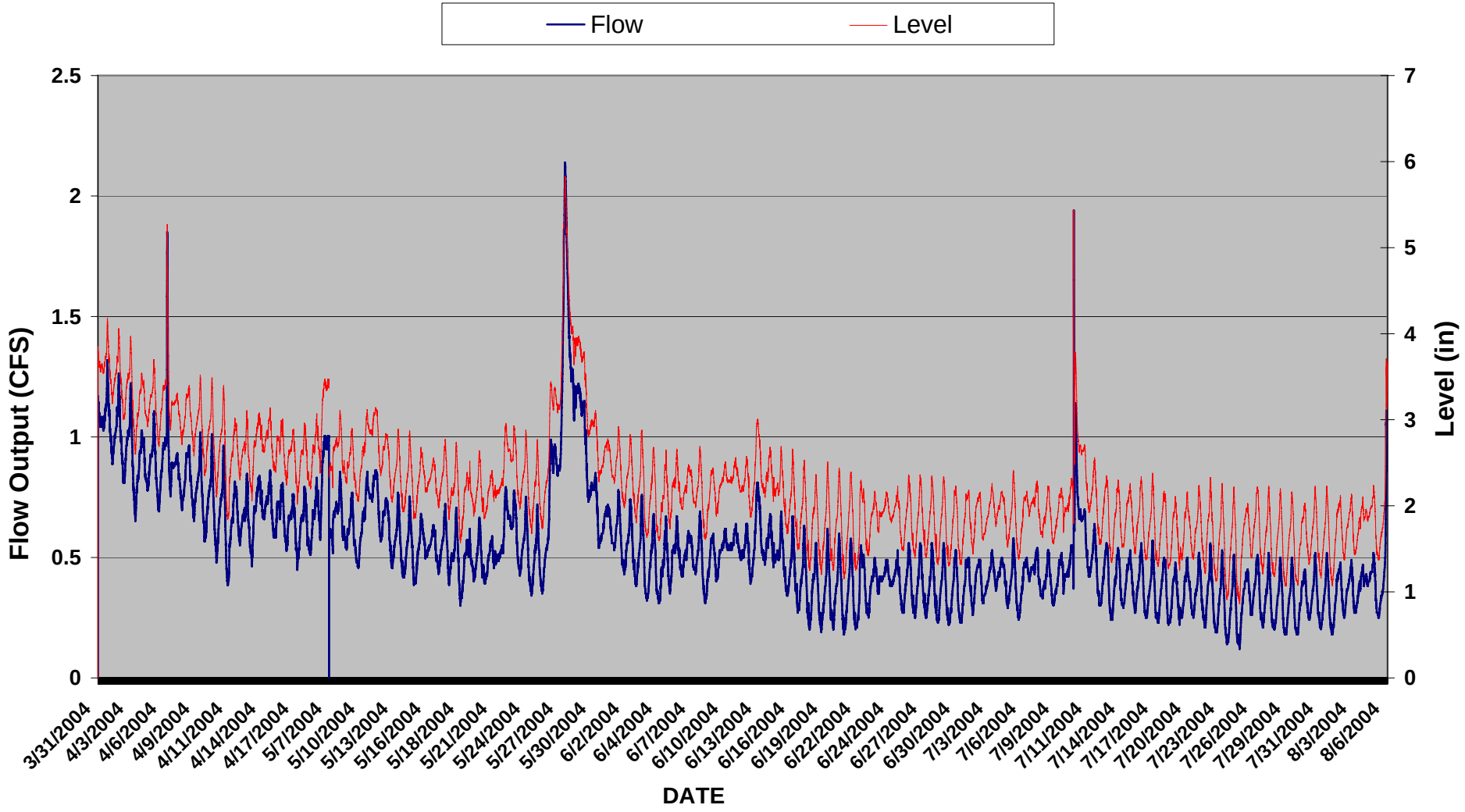
Bold values exceed acute of chronic water quality criteria for extraordinary quality marine waters in Washington (WAC 173-201A, update 7/1/03).

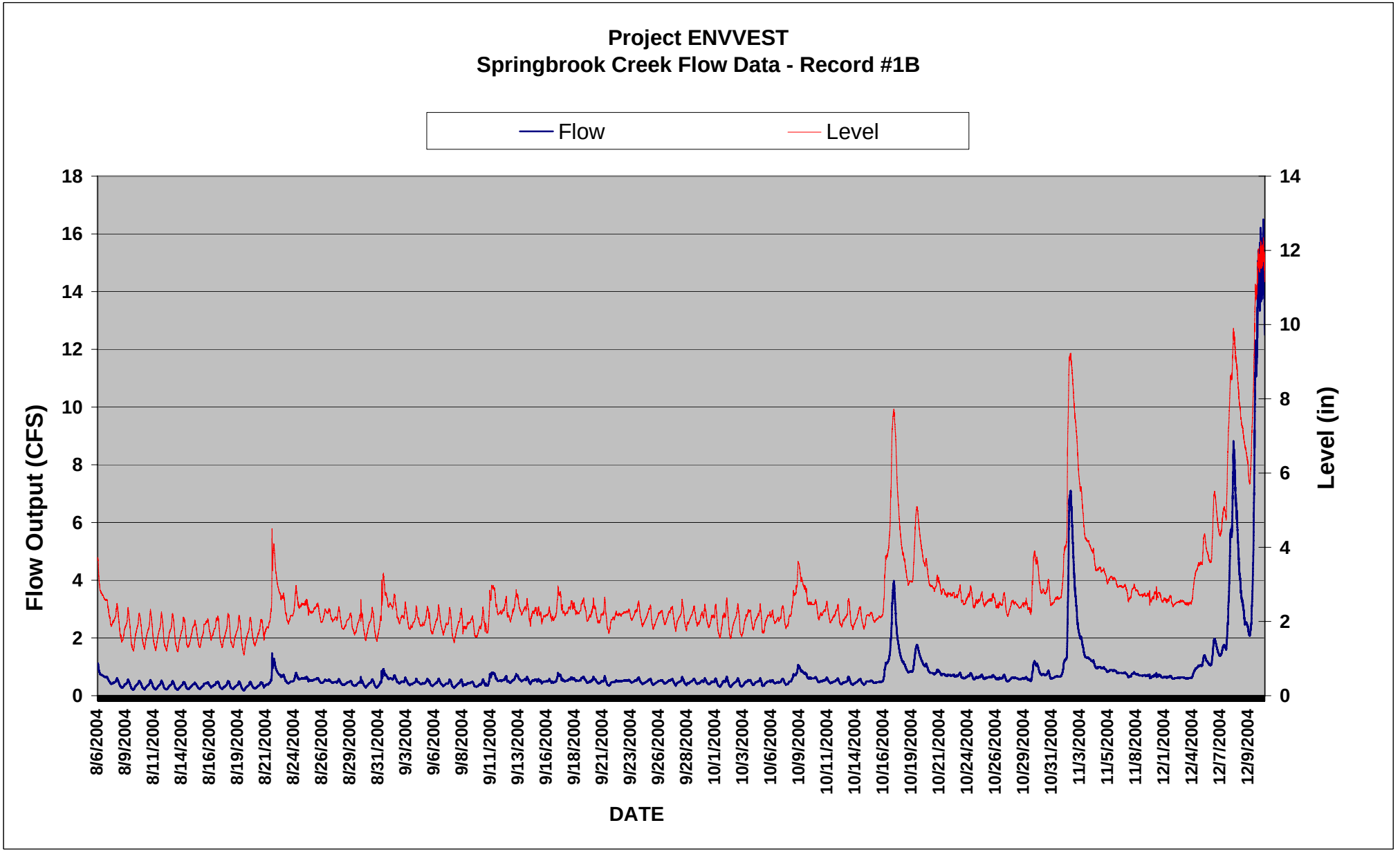
RS Stations are associated with Ravine Creek (Winslow)

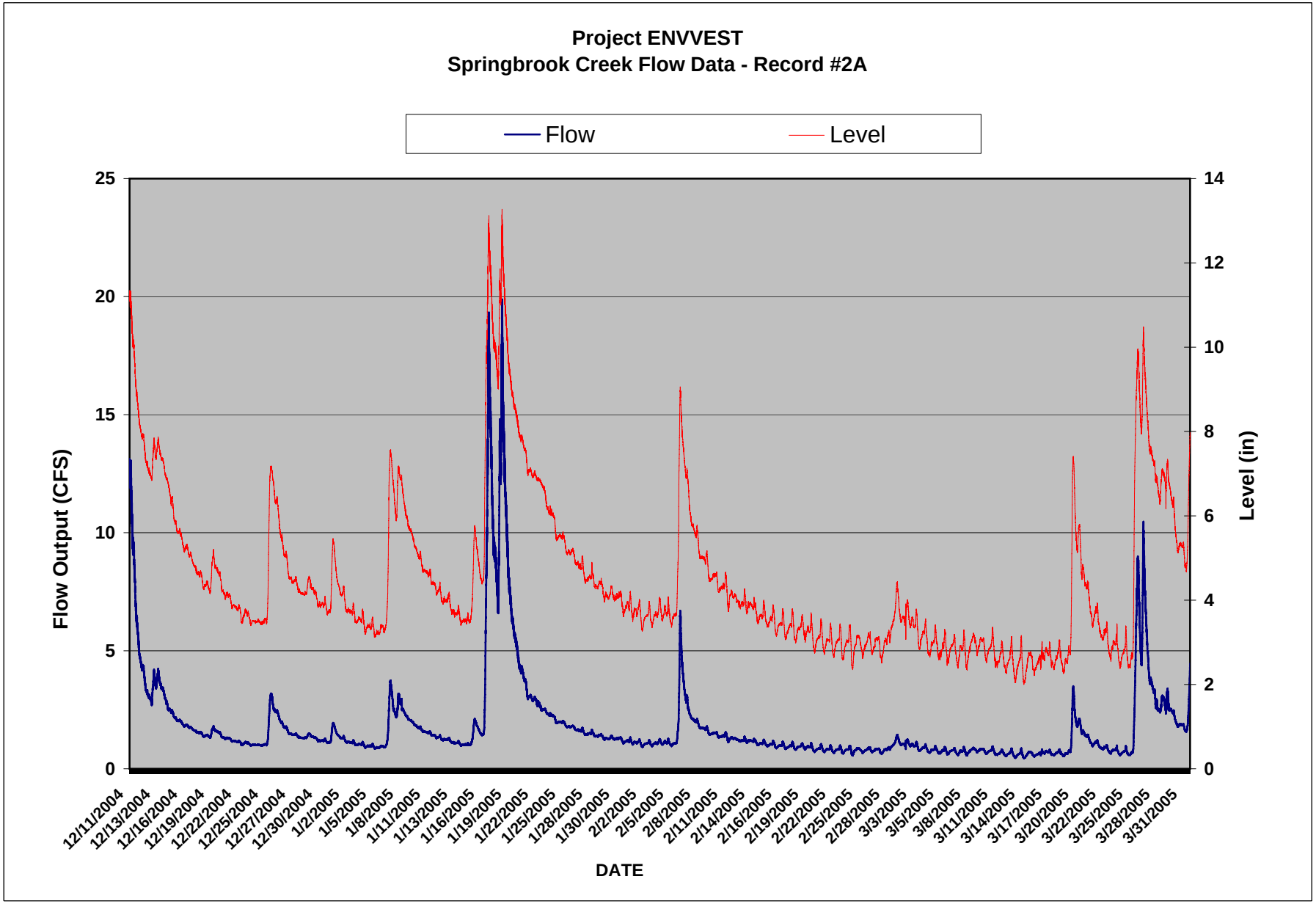
APPENDIX C-7

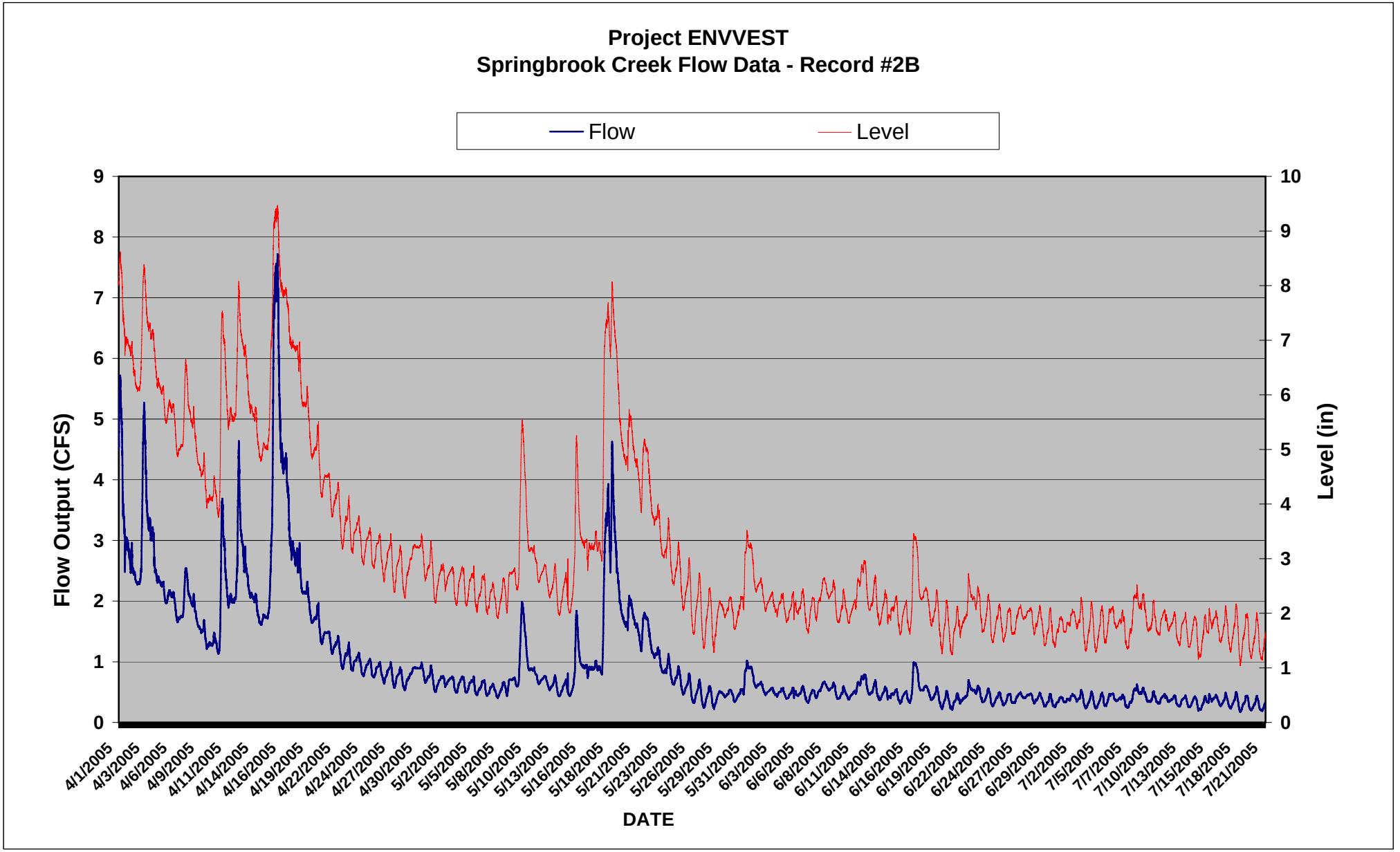
Data Set #8 - Project ENVVEST- Navy Water Quality and Flow Monitoring Data

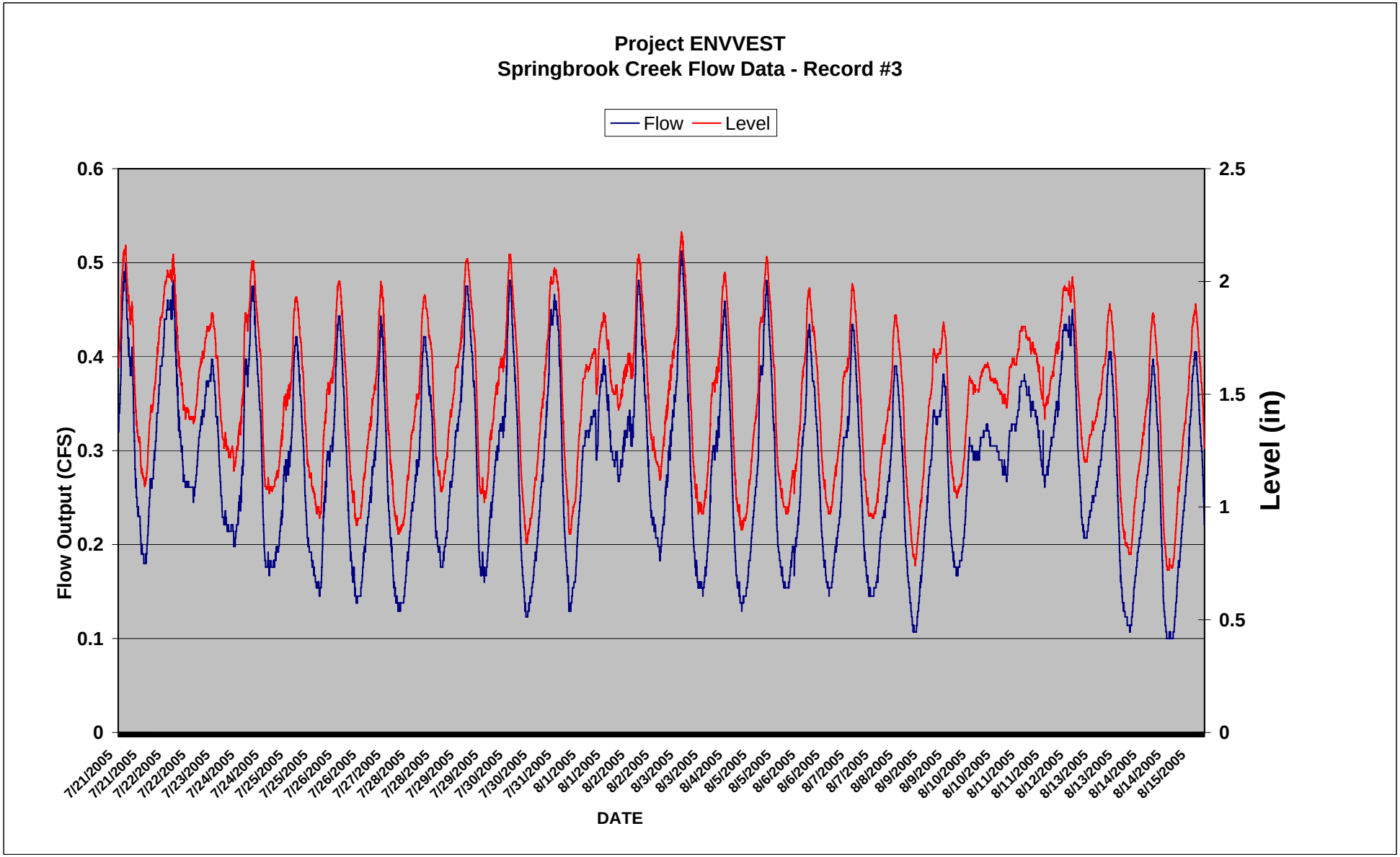
Project ENVVEST
Springbrook Creek Flow Data - Record #1A




Project ENVVEST
Springbrook Creek Flow Data - Record #1B
Flow
Level
Flow Output (CFS)
Level (in)
DATE
0
2
4
6
8
10
12
14
16
18
8/6/2004
8/9/2004
8/11/2004
8/14/2004
8/16/2004
8/19/2004
8/21/2004
8/24/2004
8/26/2004
8/29/2004
8/31/2004
9/3/2004
9/6/2004
9/8/2004
9/11/2004
9/13/2004
9/16/2004
9/18/2004
9/21/2004
9/23/2004
9/26/2004
9/28/2004
10/1/2004
10/3/2004
10/6/2004
10/9/2004
10/11/2004
10/14/2004
10/16/2004
10/19/2004
10/21/2004
10/24/2004
10/26/2004
10/29/2004
10/31/2004
11/3/2004
11/5/2004
11/8/2004
12/1/2004
12/4/2004
12/7/2004
12/9/2004


Project ENVVEST
Springbrook Creek Flow Data - Record #2A
Flow
Level
Flow Output (CFS)
Level (in)
DATE
25
20
15
10
5
0
14
12
10
8
6
4
2
0
12/11/2004
12/13/2004
12/16/2004
12/19/2004
12/22/2004
12/25/2004
12/27/2004
12/30/2004
1/2/2005
1/5/2005
1/8/2005
1/11/2005
1/13/2005
1/16/2005
1/19/2005
1/22/2005
1/25/2005
1/28/2005
1/30/2005
2/2/2005
2/5/2005
2/8/2005
2/11/2005
2/14/2005
2/16/2005
2/19/2005
2/22/2005
2/25/2005
2/28/2005
3/3/2005
3/5/2005
3/8/2005
3/11/2005
3/14/2005
3/17/2005
3/20/2005
3/22/2005
3/25/2005
3/28/2005
3/31/2005


Project ENVVEST
Springbrook Creek Flow Data - Record #2B
Flow
Level
Flow Output (CFS)
Level (in)
DATE
0
1
2
3
4
5
6
7
8
9
10
4/1/2005
4/3/2005
4/6/2005
4/9/2005
4/11/2005
4/14/2005
4/16/2005
4/19/2005
4/22/2005
4/24/2005
4/27/2005
4/30/2005
5/2/2005
5/5/2005
5/8/2005
5/10/2005
5/13/2005
5/16/2005
5/18/2005
5/21/2005
5/23/2005
5/26/2005
5/29/2005
5/31/2005
6/3/2005
6/6/2005
6/8/2005
6/11/2005
6/14/2005
6/16/2005
6/19/2005
6/22/2005
6/24/2005
6/27/2005
6/29/2005
7/2/2005
7/5/2005
7/7/2005
7/10/2005
7/13/2005
7/15/2005
7/18/2005
7/21/2005


Project ENVVEST
Springbrook Creek Flow Data - Record #3
Flow
Level
Flow Output (CFS)
Level (in)
0.6
0.5
0.4
0.3
0.2
0.1
0
2.5
2
1.5
1
0.5
0
DATE
7/21/2005
7/21/2005
7/22/2005
7/22/2005
7/23/2005
7/24/2005
7/24/2005
7/25/2005
7/25/2005
7/26/2005
7/26/2005
7/27/2005
7/28/2005
7/28/2005
7/29/2005
7/29/2005
7/30/2005
7/30/2005
7/31/2005
8/1/2005
8/1/2005
8/2/2005
8/2/2005
8/3/2005
8/3/2005
8/4/2005
8/5/2005
8/5/2005
8/6/2005
8/6/2005
8/7/2005
8/7/2005
8/8/2005
8/9/2005
8/9/2005
8/10/2005
8/10/2005
8/11/2005
8/11/2005
8/12/2005
8/13/2005
8/13/2005
8/14/2005
8/14/2005
8/15/2005

APPENDIX C-8

Data Set #9 - CoBI Beach Seine Water Quality Data

CoBI Beach Seine Sampling Resutls Database

User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
BHP-S	10-Nov-04	243	DO	5.83	mg/L
BHP-S	10-Nov-04	243	salinity	29.9	ppt
BHP-S	10-Nov-04	243	secchi depth	30	ft
BHP-S	10-Nov-04	243	temp	11.6	˚C
BL	22-Oct-03	123	DO	7.05	mg/L
BL	11-Feb-04	157	DO	10.66	mg/L
BL	21-Apr-04	187	DO	8.84	mg/L
BL	04-Jun-04	213	DO	9.7	mg/L
BL	08-Sep-04	260	DO	8.96	mg/L
BL	22-Oct-03	123	salinity	28.7	ppt
BL	11-Feb-04	157	salinity	25.8	ppt
BL	21-Apr-04	187	salinity	29.1	ppt
BL	04-Jun-04	213	salinity	27.1	ppt
BL	08-Sep-04	260	salinity	28.8	ppt
BL	18-Jun-03	51	secchi depth	9	ft
BL	02-Jul-03	34	secchi depth	9	ft
BL	13-Aug-03	103	secchi depth	30	ft
BL	22-Oct-03	123	secchi depth	21	ft
BL	11-Feb-04	157	secchi depth	33	ft
BL	04-Jun-04	213	secchi depth	15	ft
BL	08-Sep-04	260	secchi depth	14	ft
BL	18-Jun-03	51	temp	14.5	˚C
BL	02-Jul-03	34	temp	16	˚C
BL	13-Aug-03	103	temp	15	˚C
BL	22-Oct-03	123	temp	13.5	˚C
BL	11-Feb-04	157	temp	7.8	˚C
BL	21-Apr-04	187	temp	10	˚C
BL	04-Jun-04	213	temp	13.2	˚C
BL	08-Sep-04	260	temp	15.2	˚C
BP-N	16-Jul-03	39	DO	8.9	mg/L
BP-N	30-Jul-03	47	DO	11.5	mg/L
BP-N	24-Sep-03	114	DO	7.95	mg/L
BP-N	22-Oct-03	124	DO	7.33	mg/L
BP-N	24-Nov-03	134	DO	7.33	mg/L
BP-N	10-Dec-03	144	DO	6.71	mg/L
BP-N	26-Jan-04	145	DO	8.38	mg/L
BP-N	11-Feb-04	156	DO	8.35	mg/L
BP-N	08-Mar-04	167	DO	7.86	mg/L
BP-N	24-Mar-04	179	DO	8.84	mg/L
BP-N	07-Apr-04	272	DO	10.91	mg/L
BP-N	21-Apr-04	189	DO	9.77	mg/L
BP-N	05-May-04	195	DO	14.2	mg/L
BP-N	19-May-04	280	DO	14.05	mg/L
BP-N	04-Jun-04	212	DO	11	mg/L
BP-N	16-Jun-04	220	DO	8.98	mg/L
BP-N	30-Jun-04	239	DO	11.8	mg/L
BP-N	12-Aug-04	209	DO	12.9	mg/L
BP-N	25-Aug-04	277	DO	7.78	mg/L
BP-N	08-Sep-04	266	DO	9.81	mg/L
BP-N	22-Sep-04	258	DO	10	mg/L
BP-N	13-Oct-04	251	DO	7.87	mg/L
BP-N	10-Nov-04	245	DO	6.4	mg/L
BP-N	15-Dec-04	235	DO	7.27	mg/L
BP-N	24-Sep-03	114	salinity	29.8	ppt
BP-N	22-Oct-03	124	salinity	29.2	ppt
BP-N	24-Nov-03	134	salinity	28.8	ppt
BP-N	10-Dec-03	144	salinity	28.7	ppt

CoBI Beach Seine Sampling Resutls Database

User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
BP-N	26-Jan-04	145	salinity	28.9	ppt
BP-N	11-Feb-04	156	salinity	27.9	ppt
BP-N	08-Mar-04	167	salinity	28.4	ppt
BP-N	24-Mar-04	179	salinity	28.6	ppt
BP-N	07-Apr-04	272	salinity	28.4	ppt
BP-N	21-Apr-04	189	salinity	28.8	ppt
BP-N	05-May-04	195	salinity	28.6	ppt
BP-N	19-May-04	280	salinity	28.9	ppt
BP-N	04-Jun-04	212	salinity	28.6	ppt
BP-N	16-Jun-04	220	salinity	29	ppt
BP-N	30-Jun-04	239	salinity	28.4	ppt
BP-N	12-Aug-04	209	salinity	29.2	ppt
BP-N	25-Aug-04	277	salinity	29.4	ppt
BP-N	08-Sep-04	266	salinity	29.6	ppt
BP-N	22-Sep-04	258	salinity	29.7	ppt
BP-N	13-Oct-04	251	salinity	29.7	ppt
BP-N	10-Nov-04	245	salinity	29.8	ppt
BP-N	15-Dec-04	235	salinity	29.1	ppt
BP-N	23-Apr-03	5	secchi depth	12	ft
BP-N	07-May-03	11	secchi depth	12	ft
BP-N	21-May-03	19	secchi depth	12	ft
BP-N	04-Jun-03	25	secchi depth	11	ft
BP-N	18-Jun-03	32	secchi depth	6	ft
BP-N	16-Jul-03	39	secchi depth	16	ft
BP-N	30-Jul-03	47	secchi depth	19	ft
BP-N	13-Aug-03	105	secchi depth	25	ft
BP-N	27-Aug-03	108	secchi depth	26	ft
BP-N	24-Sep-03	114	secchi depth	26	ft
BP-N	22-Oct-03	124	secchi depth	15	ft
BP-N	24-Nov-03	134	secchi depth	24	ft
BP-N	10-Dec-03	144	secchi depth	22	ft
BP-N	26-Jan-04	145	secchi depth	15	ft
BP-N	11-Feb-04	156	secchi depth	23.5	ft
BP-N	08-Mar-04	167	secchi depth	32	ft
BP-N	24-Mar-04	179	secchi depth	26	ft
BP-N	07-Apr-04	272	secchi depth	26	ft
BP-N	21-Apr-04	189	secchi depth	15	ft
BP-N	05-May-04	195	secchi depth	8.5	ft
BP-N	19-May-04	280	secchi depth	8	ft
BP-N	04-Jun-04	212	secchi depth	7	ft
BP-N	16-Jun-04	220	secchi depth	23	ft
BP-N	30-Jun-04	239	secchi depth	17	ft
BP-N	12-Aug-04	209	secchi depth	15	ft
BP-N	25-Aug-04	277	secchi depth	14	ft
BP-N	08-Sep-04	266	secchi depth	13	ft
BP-N	22-Sep-04	258	secchi depth	17	ft
BP-N	13-Oct-04	251	secchi depth	18	ft
BP-N	10-Nov-04	245	secchi depth	20	ft
BP-N	15-Dec-04	235	secchi depth	18.5	ft
BP-N	23-Apr-03	5	temp	10.6	˚C
BP-N	07-May-03	11	temp	12.8	˚C
BP-N	21-May-03	19	temp	13.3	˚C
BP-N	04-Jun-03	25	temp	14	˚C
BP-N	18-Jun-03	32	temp	16.5	˚C
BP-N	16-Jul-03	39	temp	16.5	˚C
BP-N	30-Jul-03	47	temp	20	˚C
BP-N	13-Aug-03	105	temp	17	˚C

CoBI Beach Seine Sampling Resutls Database

User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
BP-N	27-Aug-03	108	temp	17	˚C
BP-N	24-Sep-03	114	temp	15	˚C
BP-N	22-Oct-03	124	temp	14	˚C
BP-N	24-Nov-03	134	temp	10	˚C
BP-N	10-Dec-03	144	temp	10	˚C
BP-N	26-Jan-04	145	temp	7.9	˚C
BP-N	11-Feb-04	156	temp	8.2	˚C
BP-N	08-Mar-04	167	temp	9.3	˚C
BP-N	24-Mar-04	179	temp	9.5	˚C
BP-N	07-Apr-04	272	temp	11	˚C
BP-N	21-Apr-04	189	temp	10.6	˚C
BP-N	05-May-04	195	temp	13.2	˚C
BP-N	19-May-04	280	temp	13.6	˚C
BP-N	04-Jun-04	212	temp	14.3	˚C
BP-N	16-Jun-04	220	temp	13.2	˚C
BP-N	30-Jun-04	239	temp	17	˚C
BP-N	12-Aug-04	209	temp	19	˚C
BP-N	25-Aug-04	277	temp	15.6	˚C
BP-N	08-Sep-04	266	temp	15.9	˚C
BP-N	22-Sep-04	258	temp	15.1	˚C
BP-N	13-Oct-04	251	temp	14.3	˚C
BP-N	10-Nov-04	245	temp	11.5	˚C
BP-N	15-Dec-04	235	temp	10	˚C
BP-S	24-Nov-03	135	DO	7.33	mg/L
BP-S	10-Dec-03	143	DO	6.71	mg/L
BP-S	24-Nov-03	135	salinity	28.8	ppt
BP-S	10-Dec-03	143	salinity	28.7	ppt
BP-S	24-Nov-03	135	secchi depth	24	ft
BP-S	10-Dec-03	143	secchi depth	22	ft
BP-S	24-Nov-03	135	temp	10	˚C
BP-S	10-Dec-03	143	temp	10	˚C
CP	24-Mar-04	183	DO	8.89	mg/L
CP	24-Mar-04	183	salinity	28.6	ppt
CP	24-Mar-04	183	secchi depth	18	ft
CP	24-Mar-04	183	temp	9.1	˚C
FBSP-M	11-Mar-04	164	DO	10	mg/L
FBSP-M	23-Mar-04	177	DO	8.9	mg/L
FBSP-M	19-May-04	282	DO	11.67	mg/L
FBSP-M	10-Nov-04	240	DO	6	mg/L
FBSP-M	11-Mar-04	164	salinity	27	ppt
FBSP-M	23-Mar-04	177	salinity	28.1	ppt
FBSP-M	19-May-04	282	salinity	28.2	ppt
FBSP-M	10-Nov-04	240	salinity	29.9	ppt
FBSP-M	11-Mar-04	164	secchi depth	19	ft
FBSP-M	23-Mar-04	177	secchi depth	21	ft
FBSP-M	19-May-04	282	secchi depth	9	ft
FBSP-M	10-Nov-04	240	secchi depth	24	ft
FBSP-M	11-Mar-04	164	temp	9.1	˚C
FBSP-M	23-Mar-04	177	temp	9.2	˚C
FBSP-M	19-May-04	282	temp	12.2	˚C
FBSP-M	10-Nov-04	240	temp	11.4	˚C
FBSP-N	16-Jul-03	43	DO	8.5	mg/L
FBSP-N	30-Jul-03	49	DO	13.4	mg/L
FBSP-N	24-Sep-03	118	DO	7.75	mg/L
FBSP-N	22-Oct-03	119	DO	6.67	mg/L
FBSP-N	24-Nov-03	129	DO	7.03	mg/L
FBSP-N	10-Dec-03	140	DO	7.48	mg/L

CoBI Beach Seine Sampling Resutls Database

User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
FBSP-N	11-Feb-04	159	DO	9.05	mg/L
FBSP-N	08-Mar-04	165	DO	7.86	mg/L
FBSP-N	11-Mar-04	163	DO	10	mg/L
FBSP-N	23-Mar-04	178	DO	8.85	mg/L
FBSP-N	24-Mar-04	181	DO	8.72	mg/L
FBSP-N	07-Apr-04	273	DO	8.4	mg/L
FBSP-N	21-Apr-04	188	DO	8.77	mg/L
FBSP-N	05-May-04	199	DO	11.75	mg/L
FBSP-N	19-May-04	281	DO	11.67	mg/L
FBSP-N	04-Jun-04	215	DO	9.8	mg/L
FBSP-N	16-Jun-04	218	DO	10.55	mg/L
FBSP-N	30-Jun-04	224	DO	11.7	mg/L
FBSP-N	12-Aug-04	207	DO	10.78	mg/L
FBSP-N	25-Aug-04	268	DO	7.63	mg/L
FBSP-N	08-Sep-04	259	DO	9.04	mg/L
FBSP-N	22-Sep-04	253	DO	7.18	mg/L
FBSP-N	22-Sep-04	254	DO	7.18	mg/L
FBSP-N	13-Oct-04	246	DO	5.94	mg/L
FBSP-N	10-Nov-04	238	DO	6	mg/L
FBSP-N	15-Dec-04	227	DO	8.84	mg/L
FBSP-N	24-Sep-03	118	salinity	30	ppt
FBSP-N	22-Oct-03	119	salinity	29	ppt
FBSP-N	24-Nov-03	129	salinity	28.5	ppt
FBSP-N	10-Dec-03	140	salinity	27	ppt
FBSP-N	11-Feb-04	159	salinity	25.3	ppt
FBSP-N	08-Mar-04	165	salinity	28.7	ppt
FBSP-N	11-Mar-04	163	salinity	27	ppt
FBSP-N	23-Mar-04	178	salinity	28	ppt
FBSP-N	24-Mar-04	181	salinity	28.4	ppt
FBSP-N	07-Apr-04	273	salinity	28.4	ppt
FBSP-N	21-Apr-04	188	salinity	29	ppt
FBSP-N	19-May-04	281	salinity	28.2	ppt
FBSP-N	04-Jun-04	215	salinity	26.9	ppt
FBSP-N	16-Jun-04	218	salinity	26.3	ppt
FBSP-N	30-Jun-04	224	salinity	27.3	ppt
FBSP-N	12-Aug-04	207	salinity	29.3	ppt
FBSP-N	25-Aug-04	268	salinity	29.6	ppt
FBSP-N	08-Sep-04	259	salinity	28.7	ppt
FBSP-N	22-Sep-04	253	salinity	27.8	ppt
FBSP-N	22-Sep-04	254	salinity	27.8	ppt
FBSP-N	13-Oct-04	246	salinity	29.9	ppt
FBSP-N	10-Nov-04	238	salinity	29.9	ppt
FBSP-N	15-Dec-04	227	salinity	28.9	ppt
FBSP-N	21-May-03	16	secchi depth	13	ft
FBSP-N	04-Jun-03	22	secchi depth	14	ft
FBSP-N	18-Jun-03	29	secchi depth	10	ft
FBSP-N	16-Jul-03	43	secchi depth	29	ft
FBSP-N	30-Jul-03	49	secchi depth	14	ft
FBSP-N	13-Aug-03	104	secchi depth	30	ft
FBSP-N	27-Aug-03	111	secchi depth	16	ft
FBSP-N	24-Sep-03	118	secchi depth	20	ft
FBSP-N	22-Oct-03	119	secchi depth	14	ft
FBSP-N	24-Nov-03	129	secchi depth	30	ft
FBSP-N	11-Feb-04	159	secchi depth	31	ft
FBSP-N	08-Mar-04	165	secchi depth	31.7	ft
FBSP-N	11-Mar-04	163	secchi depth	19	ft
FBSP-N	23-Mar-04	178	secchi depth	24	ft

CoBI Beach Seine Sampling Resutls Database

User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
FBSP-N	24-Mar-04	181	secchi depth	16	ft
FBSP-N	07-Apr-04	273	secchi depth	22	ft
FBSP-N	05-May-04	199	secchi depth	8	ft
FBSP-N	19-May-04	281	secchi depth	9	ft
FBSP-N	04-Jun-04	215	secchi depth	14	ft
FBSP-N	16-Jun-04	218	secchi depth	9	ft
FBSP-N	30-Jun-04	224	secchi depth	19	ft
FBSP-N	12-Aug-04	207	secchi depth	27	ft
FBSP-N	25-Aug-04	268	secchi depth	25	ft
FBSP-N	08-Sep-04	259	secchi depth	15	ft
FBSP-N	22-Sep-04	253	secchi depth	18	ft
FBSP-N	22-Sep-04	254	secchi depth	18	ft
FBSP-N	13-Oct-04	246	secchi depth	19	ft
FBSP-N	10-Nov-04	238	secchi depth	24	ft
FBSP-N	15-Dec-04	227	secchi depth	17	ft
FBSP-N	23-Apr-03	2	temp	10	˚C
FBSP-N	07-May-03	8	temp	11.1	˚C
FBSP-N	21-May-03	16	temp	13.9	˚C
FBSP-N	04-Jun-03	22	temp	14	˚C
FBSP-N	18-Jun-03	29	temp	13.5	˚C
FBSP-N	16-Jul-03	43	temp	14	˚C
FBSP-N	30-Jul-03	49	temp	16	˚C
FBSP-N	13-Aug-03	104	temp	14	˚C
FBSP-N	27-Aug-03	111	temp	15	˚C
FBSP-N	24-Sep-03	118	temp	15	˚C
FBSP-N	22-Oct-03	119	temp	14	˚C
FBSP-N	24-Nov-03	129	temp	10	˚C
FBSP-N	10-Dec-03	140	temp	9.5	˚C
FBSP-N	11-Feb-04	159	temp	7.6	˚C
FBSP-N	08-Mar-04	165	temp	8.5	˚C
FBSP-N	11-Mar-04	163	temp	9.1	˚C
FBSP-N	23-Mar-04	178	temp	9.2	˚C
FBSP-N	24-Mar-04	181	temp	9	˚C
FBSP-N	07-Apr-04	273	temp	9.8	˚C
FBSP-N	21-Apr-04	188	temp	9.6	˚C
FBSP-N	05-May-04	199	temp	11.4	˚C
FBSP-N	19-May-04	281	temp	12.1	˚C
FBSP-N	16-Jun-04	218	temp	13.2	˚C
FBSP-N	30-Jun-04	224	temp	15.6	˚C
FBSP-N	12-Aug-04	207	temp	16.6	˚C
FBSP-N	25-Aug-04	268	temp	14.1	˚C
FBSP-N	08-Sep-04	259	temp	15.2	˚C
FBSP-N	22-Sep-04	253	temp	15.7	˚C
FBSP-N	22-Sep-04	254	temp	13.7	˚C
FBSP-N	13-Oct-04	246	temp	13	˚C
FBSP-N	10-Nov-04	238	temp	11.4	˚C
FBSP-N	15-Dec-04	227	temp	9.9	˚C
FBSP-S	10-Dec-03	262	DO	7.48	mg/L
FBSP-S	10-Dec-03	262	salinity	27	ppt
FBSP-S	10-Dec-03	262	temp	9.5	˚C
HCR	30-Jul-03	48	DO	10	mg/L
HCR	24-Sep-03	113	DO	7.35	mg/L
HCR	24-Nov-03	136	DO	7.2	mg/L
HCR	26-Jan-04	146	DO	8.47	mg/L
HCR	11-Feb-04	158	DO	8.44	mg/L
HCR	24-Mar-04	180	DO	8.96	mg/L
HCR	16-Jun-04	219	DO	8.85	mg/L

CoBI Beach Seine Sampling Resutls Database

User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
HCR	12-Aug-04	206	DO	12.6	mg/L
HCR	08-Sep-04	267	DO	7	mg/L
HCR	10-Nov-04	241	DO	5.36	mg/L
HCR	24-Sep-03	113	salinity	29.9	ppt
HCR	24-Nov-03	136	salinity	28.9	ppt
HCR	26-Jan-04	146	salinity	29	ppt
HCR	11-Feb-04	158	salinity	27.6	ppt
HCR	24-Mar-04	180	salinity	28.5	ppt
HCR	16-Jun-04	219	salinity	29	ppt
HCR	12-Aug-04	206	salinity	29.3	ppt
HCR	08-Sep-04	267	salinity	29.5	ppt
HCR	10-Nov-04	241	salinity	29.9	ppt
HCR	04-Jun-03	27	secchi depth	14	ft
HCR	30-Jul-03	48	secchi depth	15	ft
HCR	24-Sep-03	113	secchi depth	26.5	ft
HCR	24-Nov-03	136	secchi depth	24	ft
HCR	26-Jan-04	146	secchi depth	12	ft
HCR	11-Feb-04	158	secchi depth	28	ft
HCR	24-Mar-04	180	secchi depth	23	ft
HCR	16-Jun-04	219	secchi depth	29	ft
HCR	12-Aug-04	206	secchi depth	21	ft
HCR	08-Sep-04	267	secchi depth	15	ft
HCR	10-Nov-04	241	secchi depth	26	ft
HCR	04-Jun-03	27	temp	56.3	˚C
HCR	30-Jul-03	48	temp	15.5	˚C
HCR	24-Sep-03	113	temp	15	˚C
HCR	24-Nov-03	136	temp	10.1	˚C
HCR	26-Jan-04	146	temp	8	˚C
HCR	11-Feb-04	158	temp	8.2	˚C
HCR	24-Mar-04	180	temp	9.5	˚C
HCR	16-Jun-04	219	temp	13.4	˚C
HCR	12-Aug-04	206	temp	17.6	˚C
HCR	08-Sep-04	267	temp	14.7	˚C
HCR	10-Nov-04	241	temp	11.5	˚C
LR	22-Oct-03	120	DO	6.41	mg/L
LR	24-Nov-03	131	DO	6.4	mg/L
LR	11-Feb-04	153	DO	10.24	mg/L
LR	24-Mar-04	186	DO	8.81	mg/L
LR	05-May-04	197	DO	9.46	mg/L
LR	22-Sep-04	256	DO	5.4	mg/L
LR	15-Dec-04	231	DO	7.35	mg/L
LR	22-Oct-03	120	salinity	29.9	ppt
LR	24-Nov-03	131	salinity	29.4	ppt
LR	11-Feb-04	153	salinity	28.5	ppt
LR	24-Mar-04	186	salinity	28.7	ppt
LR	05-May-04	197	salinity	29	ppt
LR	22-Sep-04	256	salinity	30	ppt
LR	15-Dec-04	231	salinity	29.6	ppt
LR	04-Jun-03	26	secchi depth	18	ft
LR	02-Jul-03	36	secchi depth	10	ft
LR	13-Aug-03	102	secchi depth	27	ft
LR	22-Oct-03	120	secchi depth	20	ft
LR	24-Nov-03	131	secchi depth	20	ft
LR	11-Feb-04	153	secchi depth	25	ft
LR	24-Mar-04	186	secchi depth	15	ft
LR	05-May-04	197	secchi depth	10	ft
LR	22-Sep-04	256	secchi depth	31	ft

CoBI Beach Seine Sampling Resutls Database

User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
LR	15-Dec-04	231	secchi depth	12.5	ft
LR	04-Jun-03	26	temp	13.25	˚C
LR	02-Jul-03	36	temp	14	˚C
LR	13-Aug-03	102	temp	15	˚C
LR	22-Oct-03	120	temp	13	˚C
LR	24-Nov-03	131	temp	10.7	˚C
LR	11-Feb-04	153	temp	8.5	˚C
LR	24-Mar-04	186	temp	8.9	˚C
LR	05-May-04	197	temp	10.8	˚C
LR	22-Sep-04	256	temp	13.1	˚C
LR	15-Dec-04	231	temp	10.3	˚C
MB	19-Sep-02	53	secchi depth	25	ft
NS	16-Jul-03	38	DO	9.9	mg/L
NS	24-Nov-03	137	DO	7.05	mg/L
NS	26-Jan-04	147	DO	7.84	mg/L
NS	08-Mar-04	166	DO	8.02	mg/L
NS	05-May-04	194	DO	13.3	mg/L
NS	16-Jun-04	222	DO	10.09	mg/L
NS	15-Dec-04	237	DO	6.91	mg/L
NS	24-Nov-03	137	salinity	29	ppt
NS	26-Jan-04	147	salinity	29.2	ppt
NS	08-Mar-04	166	salinity	28.8	ppt
NS	05-May-04	194	salinity	28.5	ppt
NS	16-Jun-04	222	salinity	26.4	ppt
NS	15-Dec-04	237	salinity	29.2	ppt
NS	19-Sep-02	59	secchi depth	25	ft
NS	23-Apr-03	7	secchi depth	14	ft
NS	21-May-03	21	secchi depth	12.5	ft
NS	16-Jul-03	38	secchi depth	15	ft
NS	27-Aug-03	107	secchi depth	24	ft
NS	24-Nov-03	137	secchi depth	30	ft
NS	26-Jan-04	147	secchi depth	21	ft
NS	08-Mar-04	166	secchi depth	29	ft
NS	05-May-04	194	secchi depth	6.5	ft
NS	16-Jun-04	222	secchi depth	10	ft
NS	15-Dec-04	237	secchi depth	22	ft
NS	23-Apr-03	7	temp	10.6	˚C
NS	21-May-03	21	temp	12.2	˚C
NS	16-Jul-03	38	temp	14	˚C
NS	27-Aug-03	107	temp	16	˚C
NS	24-Nov-03	137	temp	10.2	˚C
NS	26-Jan-04	147	temp	8.3	˚C
NS	08-Mar-04	166	temp	8.6	˚C
NS	05-May-04	194	temp	12.9	˚C
NS	16-Jun-04	222	temp	13.2	˚C
NS	15-Dec-04	237	temp	10	˚C
PL	16-Jul-03	42	DO	8.6	mg/L
PL	30-Jul-03	44	DO	10.7	mg/L
PL	24-Sep-03	117	DO	7.55	mg/L
PL	22-Oct-03	125	DO	6.28	mg/L
PL	24-Nov-03	126	DO	7	mg/L
PL	10-Dec-03	142	DO	7.28	mg/L
PL	26-Jan-04	150	DO	7.86	mg/L
PL	11-Feb-04	152	DO	10.78	mg/L
PL	08-Mar-04	176	DO	8.48	mg/L
PL	24-Mar-04	185	DO	8.38	mg/L
PL	07-Apr-04	271	DO	8.34	mg/L

CoBI Beach Seine Sampling Resutls Database

User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
PL	21-Apr-04	191	DO	8.26	mg/L
PL	05-May-04	198	DO	12	mg/L
PL	19-May-04	226	DO	10.42	mg/L
PL	04-Jun-04	216	DO	10.39	mg/L
PL	16-Jun-04	223	DO	11.6	mg/L
PL	30-Jun-04	225	DO	11.47	mg/L
PL	12-Aug-04	208	DO	9.05	mg/L
PL	25-Aug-04	270	DO	6.63	mg/L
PL	08-Sep-04	261	DO	8.98	mg/L
PL	22-Sep-04	255	DO	6.76	mg/L
PL	13-Oct-04	247	DO	6.8	mg/L
PL	10-Nov-04	242	DO	5.92	mg/L
PL	15-Dec-04	228	DO	6.85	mg/L
PL	24-Sep-03	117	salinity	29.9	ppt
PL	22-Oct-03	125	salinity	30.1	ppt
PL	24-Nov-03	126	salinity	28.3	ppt
PL	10-Dec-03	142	salinity	28	ppt
PL	26-Jan-04	150	salinity	29.3	ppt
PL	11-Feb-04	152	salinity	26.2	ppt
PL	08-Mar-04	176	salinity	28.8	ppt
PL	24-Mar-04	185	salinity	28.8	ppt
PL	07-Apr-04	271	salinity	28.4	ppt
PL	21-Apr-04	191	salinity	29.1	ppt
PL	05-May-04	198	salinity	28.6	ppt
PL	19-May-04	226	salinity	29	ppt
PL	04-Jun-04	216	salinity	27.8	ppt
PL	16-Jun-04	223	salinity	26.5	ppt
PL	30-Jun-04	225	salinity	27.5	ppt
PL	12-Aug-04	208	salinity	29.1	ppt
PL	25-Aug-04	270	salinity	29.7	ppt
PL	08-Sep-04	261	salinity	29.1	ppt
PL	22-Sep-04	255	salinity	28.7	ppt
PL	13-Oct-04	247	salinity	29.7	ppt
PL	10-Nov-04	242	salinity	29.8	ppt
PL	15-Dec-04	228	salinity	29.3	ppt
PL	23-Apr-03	3	secchi depth	15	ft
PL	07-May-03	9	secchi depth	30	ft
PL	21-May-03	17	secchi depth	22	ft
PL	04-Jun-03	23	secchi depth	8	ft
PL	18-Jun-03	30	secchi depth	10.5	ft
PL	02-Jul-03	35	secchi depth	7	ft
PL	16-Jul-03	42	secchi depth	26	ft
PL	30-Jul-03	44	secchi depth	27	ft
PL	13-Aug-03	101	secchi depth	30	ft
PL	27-Aug-03	112	secchi depth	22	ft
PL	24-Sep-03	117	secchi depth	25	ft
PL	22-Oct-03	125	secchi depth	27	ft
PL	24-Nov-03	126	secchi depth	30	ft
PL	26-Jan-04	150	secchi depth	20	ft
PL	11-Feb-04	152	secchi depth	36.5	ft
PL	08-Mar-04	176	secchi depth	29.5	ft
PL	24-Mar-04	185	secchi depth	27	ft
PL	07-Apr-04	271	secchi depth	25	ft
PL	21-Apr-04	191	secchi depth	15	ft
PL	05-May-04	198	secchi depth	8	ft
PL	19-May-04	226	secchi depth	14	ft
PL	04-Jun-04	216	secchi depth	15	ft

CoBI Beach Seine Sampling Resutls Database

User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
PL	16-Jun-04	223	secchi depth	10	ft
PL	30-Jun-04	225	secchi depth	29	ft
PL	12-Aug-04	208	secchi depth	20	ft
PL	25-Aug-04	270	secchi depth	30	ft
PL	08-Sep-04	261	secchi depth	12	ft
PL	22-Sep-04	255	secchi depth	20	ft
PL	13-Oct-04	247	secchi depth	13	ft
PL	10-Nov-04	242	secchi depth	33	ft
PL	15-Dec-04	228	secchi depth	22	ft
PL	23-Apr-03	3	temp	10	˚C
PL	07-May-03	9	temp	10.6	˚C
PL	21-May-03	17	temp	13.3	˚C
PL	04-Jun-03	23	temp	14	˚C
PL	18-Jun-03	30	temp	13.5	˚C
PL	02-Jul-03	35	temp	15	˚C
PL	16-Jul-03	42	temp	13	˚C
PL	30-Jul-03	44	temp	17	˚C
PL	13-Aug-03	101	temp	15.5	˚C
PL	27-Aug-03	112	temp	15	˚C
PL	24-Sep-03	117	temp	14.75	˚C
PL	22-Oct-03	125	temp	13	˚C
PL	24-Nov-03	126	temp	10	˚C
PL	10-Dec-03	142	temp	10	˚C
PL	26-Jan-04	150	temp	8.5	˚C
PL	11-Feb-04	152	temp	8.4	˚C
PL	08-Mar-04	176	temp	9.4	˚C
PL	24-Mar-04	185	temp	8.8	˚C
PL	07-Apr-04	271	temp	9.4	˚C
PL	21-Apr-04	191	temp	10	˚C
PL	05-May-04	198	temp	11.2	˚C
PL	19-May-04	226	temp	11.2	˚C
PL	04-Jun-04	216	temp	13	˚C
PL	16-Jun-04	223	temp	13.8	˚C
PL	30-Jun-04	225	temp	15.7	˚C
PL	12-Aug-04	208	temp	15.7	˚C
PL	25-Aug-04	270	temp	13.4	˚C
PL	08-Sep-04	261	temp	15.1	˚C
PL	22-Sep-04	255	temp	15	˚C
PL	13-Oct-04	247	temp	13.3	˚C
PL	10-Nov-04	242	temp	11.6	˚C
PL	15-Dec-04	228	temp	10.2	˚C
PM-OT	22-Sep-04	252	DO	7.35	mg/L
PM-OT	22-Sep-04	252	salinity	28.8	ppt
PM-OT	22-Sep-04	252	secchi depth	15	ft
PM-OT	22-Sep-04	252	temp	13.9	˚C
PWD	16-Jul-03	41	DO	11.6	mg/L
PWD	30-Jul-03	46	DO	10.7	mg/L
PWD	24-Sep-03	115	DO	7.03	mg/L
PWD	22-Oct-03	121	DO	6.35	mg/L
PWD	24-Nov-03	132	DO	6.5	mg/L
PWD	24-Nov-03	133	DO	6.5	mg/L
PWD	10-Dec-03	139	DO	6.62	mg/L
PWD	26-Jan-04	149	DO	8.07	mg/L
PWD	11-Feb-04	154	DO	9.07	mg/L
PWD	08-Mar-04	168	DO	8.38	mg/L
PWD	24-Mar-04	184	DO	8.55	mg/L
PWD	07-Apr-04	269	DO	8.92	mg/L

CoBI Beach Seine Sampling Resutls Database

User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
PWD	21-Apr-04	192	DO	8.65	mg/L
PWD	05-May-04	196	DO	10.4	mg/L
PWD	19-May-04	278	DO	10.65	mg/L
PWD	04-Jun-04	217	DO	10.06	mg/L
PWD	16-Jun-04	221	DO	8.34	mg/L
PWD	30-Jun-04	230	DO	10.2	mg/L
PWD	12-Aug-04	211	DO	9.14	mg/L
PWD	25-Aug-04	275	DO	7.25	mg/L
PWD	08-Sep-04	263	DO	9.6	mg/L
PWD	22-Sep-04	257	DO	6.16	mg/L
PWD	13-Oct-04	249	DO	6.43	mg/L
PWD	10-Nov-04	244	DO	5.44	mg/L
PWD	15-Dec-04	233	DO	7.26	mg/L
PWD	24-Sep-03	115	salinity	30	ppt
PWD	22-Oct-03	121	salinity	29.6	ppt
PWD	24-Nov-03	132	salinity	29.3	ppt
PWD	24-Nov-03	133	salinity	29.3	ppt
PWD	10-Dec-03	139	salinity	29.2	ppt
PWD	26-Jan-04	149	salinity	29.1	ppt
PWD	11-Feb-04	154	salinity	28.6	ppt
PWD	08-Mar-04	168	salinity	28.6	ppt
PWD	24-Mar-04	184	salinity	28.7	ppt
PWD	07-Apr-04	269	salinity	28.6	ppt
PWD	21-Apr-04	192	salinity	28.9	ppt
PWD	05-May-04	196	salinity	28.8	ppt
PWD	19-May-04	278	salinity	29	ppt
PWD	04-Jun-04	217	salinity	29.1	ppt
PWD	16-Jun-04	221	salinity	29.1	ppt
PWD	30-Jun-04	230	salinity	28.9	ppt
PWD	12-Aug-04	211	salinity	29.4	ppt
PWD	25-Aug-04	275	salinity	29.5	ppt
PWD	08-Sep-04	263	salinity	29.6	ppt
PWD	22-Sep-04	257	salinity	29.9	ppt
PWD	13-Oct-04	249	salinity	29.9	ppt
PWD	10-Nov-04	244	salinity	29.9	ppt
PWD	15-Dec-04	233	salinity	29.6	ppt
PWD	19-Sep-02	56	secchi depth	9	ft
PWD	07-May-03	10	secchi depth	12	ft
PWD	21-May-03	18	secchi depth	16	ft
PWD	04-Jun-03	24	secchi depth	17	ft
PWD	18-Jun-03	31	secchi depth	6	ft
PWD	02-Jul-03	37	secchi depth	8	ft
PWD	16-Jul-03	41	secchi depth	9	ft
PWD	30-Jul-03	46	secchi depth	16	ft
PWD	13-Aug-03	106	secchi depth	30	ft
PWD	27-Aug-03	110	secchi depth	30	ft
PWD	24-Sep-03	115	secchi depth	21	ft
PWD	22-Oct-03	121	secchi depth	18	ft
PWD	24-Nov-03	132	secchi depth	25	ft
PWD	24-Nov-03	133	secchi depth	25	ft
PWD	26-Jan-04	149	secchi depth	12	ft
PWD	11-Feb-04	154	secchi depth	24	ft
PWD	08-Mar-04	168	secchi depth	24	ft
PWD	24-Mar-04	184	secchi depth	16	ft
PWD	07-Apr-04	269	secchi depth	30	ft
PWD	05-May-04	196	secchi depth	10	ft
PWD	19-May-04	278	secchi depth	11	ft

CoBI Beach Seine Sampling Resutls Database

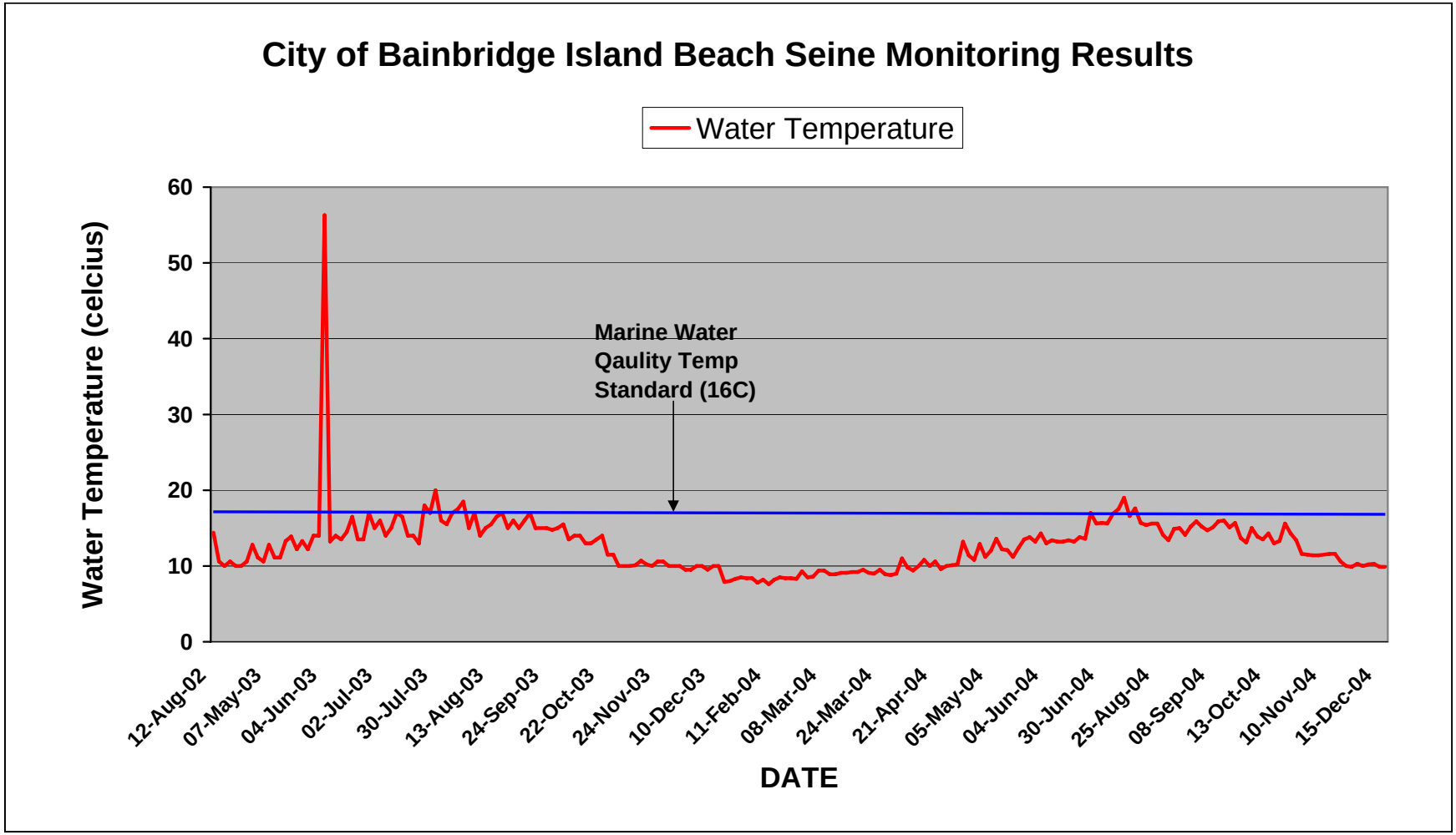
User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
PWD	16-Jun-04	221	secchi depth	26	ft
PWD	30-Jun-04	230	secchi depth	14	ft
PWD	12-Aug-04	211	secchi depth	22	ft
PWD	25-Aug-04	275	secchi depth	18	ft
PWD	08-Sep-04	263	secchi depth	15	ft
PWD	22-Sep-04	257	secchi depth	21	ft
PWD	13-Oct-04	249	secchi depth	22	ft
PWD	10-Nov-04	244	secchi depth	27	ft
PWD	15-Dec-04	233	secchi depth	17	ft
PWD	12-Aug-02	70	temp	14.4	˚C
PWD	23-Apr-03	4	temp	10	˚C
PWD	07-May-03	10	temp	12.8	˚C
PWD	21-May-03	18	temp	12.2	˚C
PWD	04-Jun-03	24	temp	13.5	˚C
PWD	18-Jun-03	31	temp	17	˚C
PWD	02-Jul-03	37	temp	17	˚C
PWD	16-Jul-03	41	temp	18	˚C
PWD	30-Jul-03	46	temp	17.5	˚C
PWD	13-Aug-03	106	temp	16.5	˚C
PWD	27-Aug-03	110	temp	16	˚C
PWD	24-Sep-03	115	temp	15	˚C
PWD	22-Oct-03	121	temp	13.5	˚C
PWD	24-Nov-03	132	temp	10.6	˚C
PWD	24-Nov-03	133	temp	10.6	˚C
PWD	10-Dec-03	139	temp	10	˚C
PWD	26-Jan-04	149	temp	8.4	˚C
PWD	11-Feb-04	154	temp	8.4	˚C
PWD	08-Mar-04	168	temp	9.4	˚C
PWD	24-Mar-04	184	temp	9	˚C
PWD	07-Apr-04	269	temp	10	˚C
PWD	21-Apr-04	192	temp	10.1	˚C
PWD	05-May-04	196	temp	12	˚C
PWD	19-May-04	278	temp	12.4	˚C
PWD	04-Jun-04	217	temp	13.4	˚C
PWD	16-Jun-04	221	temp	13.6	˚C
PWD	30-Jun-04	230	temp	15.6	˚C
PWD	12-Aug-04	211	temp	15.4	˚C
PWD	25-Aug-04	275	temp	14.9	˚C
PWD	08-Sep-04	263	temp	15.9	˚C
PWD	22-Sep-04	257	temp	13.5	˚C
PWD	13-Oct-04	249	temp	15.6	˚C
PWD	10-Nov-04	244	temp	11.6	˚C
PWD	15-Dec-04	233	temp	10.3	˚C
SCE	15-Nov-03	128	DO	6.8	mg/L
SCE	15-Nov-03	127	DO	6.8	mg/L
SCE	12-Aug-04	210	DO	9.53	mg/L
SCE	20-Nov-04	162	DO	5.92	mg/L
SCE	15-Nov-03	128	salinity	29.5	ppt
SCE	15-Nov-03	127	salinity	29.5	ppt
SCE	12-Aug-04	210	salinity	29.3	ppt
SCE	20-Nov-04	162	salinity	29.9	ppt
SCE	21-May-03	20	secchi depth	16	ft
SCE	15-Nov-03	128	secchi depth	30	ft
SCE	15-Nov-03	127	secchi depth	30	ft
SCE	12-Aug-04	210	secchi depth	18	ft
SCE	20-Nov-04	162	secchi depth	26	ft
SCE	15-Nov-03	128	temp	11.5	˚C

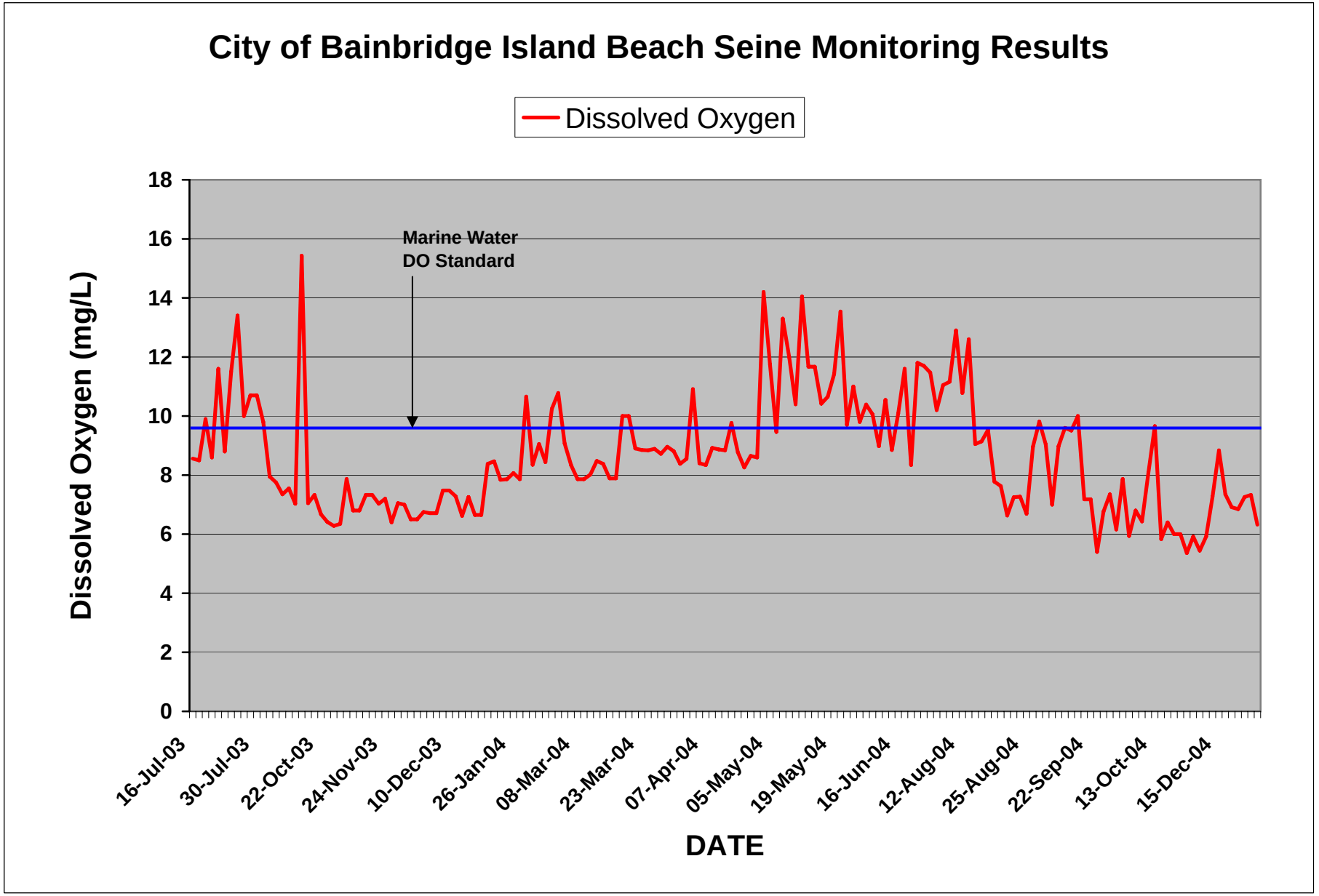
CoBI Beach Seine Sampling Resutls Database

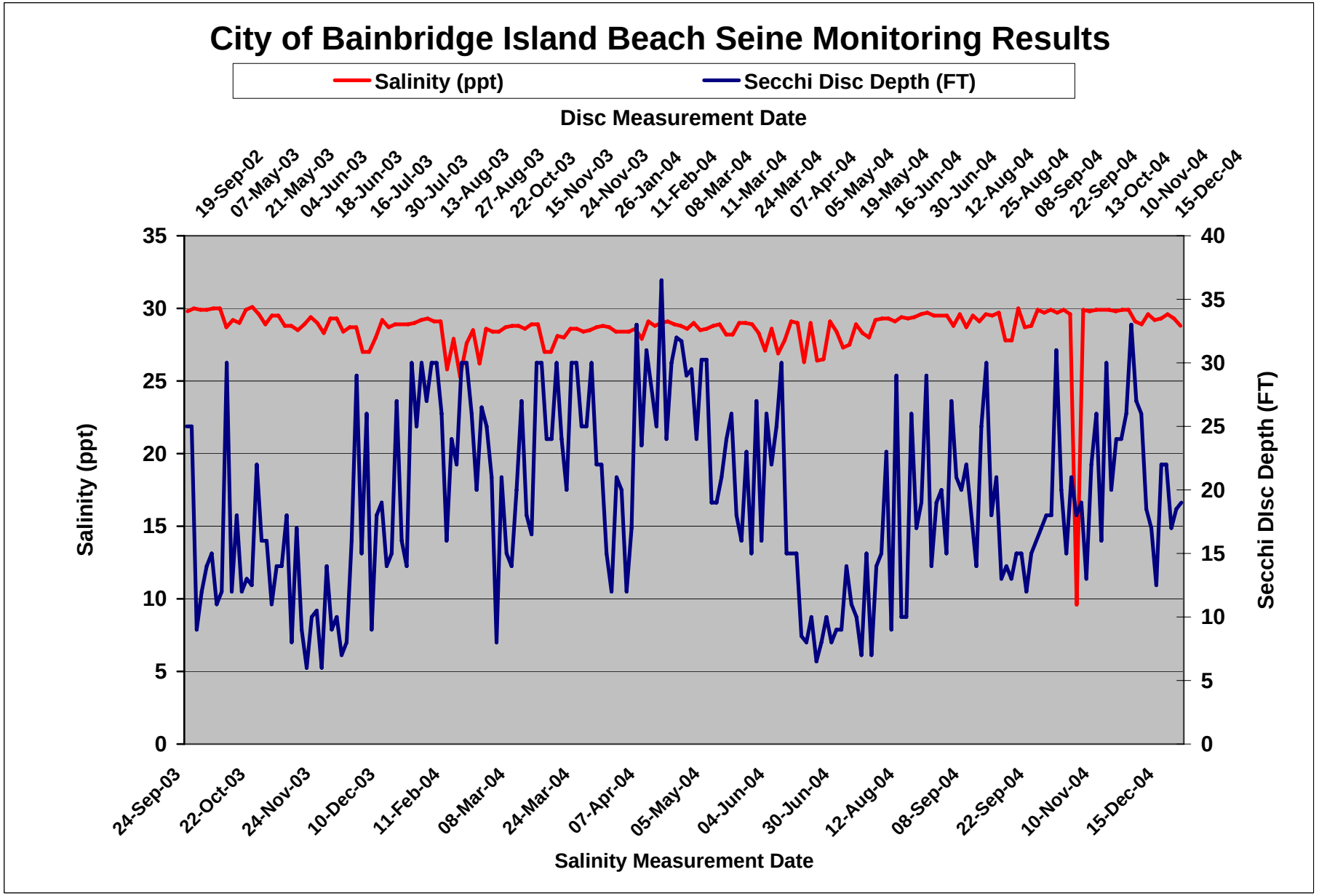
User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
SCE	15-Nov-03	127	temp	11.5	˚C
SCE	12-Aug-04	210	temp	15.6	˚C
SCE	20-Nov-04	162	temp	10.6	˚C
SFB	16-Jul-03	40	DO	8.8	mg/L
SFB	22-Oct-03	122	DO	7.87	mg/L
SFB	10-Dec-03	138	DO	7.26	mg/L
SFB	11-Feb-04	155	DO	8.33	mg/L
SFB	21-Apr-04	190	DO	8.6	mg/L
SFB	19-May-04	279	DO	11.42	mg/L
SFB	30-Jun-04	236	DO	11.05	mg/L
SFB	25-Aug-04	276	DO	7.27	mg/L
SFB	08-Sep-04	265	DO	9.51	mg/L
SFB	13-Oct-04	250	DO	8.08	mg/L
SFB	15-Dec-04	234	DO	7.33	mg/L
SFB	22-Oct-03	122	salinity	28.9	ppt
SFB	10-Dec-03	138	salinity	28.7	ppt
SFB	11-Feb-04	155	salinity	28.4	ppt
SFB	21-Apr-04	190	salinity	28.8	ppt
SFB	19-May-04	279	salinity	28.9	ppt
SFB	30-Jun-04	236	salinity	28.3	ppt
SFB	25-Aug-04	276	salinity	29.5	ppt
SFB	08-Sep-04	265	salinity	29.5	ppt
SFB	13-Oct-04	250	salinity	29.6	ppt
SFB	15-Dec-04	234	salinity	29.3	ppt
SFB	23-Apr-03	6	secchi depth	11	ft
SFB	16-Jul-03	40	secchi depth	18	ft
SFB	27-Aug-03	109	secchi depth	30	ft
SFB	22-Oct-03	122	secchi depth	16.5	ft
SFB	11-Feb-04	155	secchi depth	30	ft
SFB	19-May-04	279	secchi depth	10	ft
SFB	30-Jun-04	236	secchi depth	19	ft
SFB	25-Aug-04	276	secchi depth	21	ft
SFB	08-Sep-04	265	secchi depth	16	ft
SFB	13-Oct-04	250	secchi depth	26	ft
SFB	15-Dec-04	234	secchi depth	18.5	ft
SFB	23-Apr-03	6	temp	10.6	˚C
SFB	16-Jul-03	40	temp	17	˚C
SFB	27-Aug-03	109	temp	17	˚C
SFB	22-Oct-03	122	temp	14	˚C
SFB	10-Dec-03	138	temp	9.5	˚C
SFB	11-Feb-04	155	temp	8.3	˚C
SFB	21-Apr-04	190	temp	10.2	˚C
SFB	19-May-04	279	temp	13.5	˚C
SFB	30-Jun-04	236	temp	16.9	˚C
SFB	25-Aug-04	276	temp	15	˚C
SFB	08-Sep-04	265	temp	16	˚C
SFB	13-Oct-04	250	temp	14.3	˚C
SFB	15-Dec-04	234	temp	9.9	˚C
W-C	07-May-03	52	temp	11.1	˚C
W-FW	10-Dec-03	264	DO	6.65	mg/L
W-FW	08-Mar-04	175	DO	7.89	mg/L
W-FW	10-Dec-03	264	salinity	28.9	ppt
W-FW	08-Mar-04	175	salinity	28.9	ppt
W-FW	08-Mar-04	175	secchi depth	30.25	ft
W-FW	10-Dec-03	264	temp	10	˚C
W-FW	08-Mar-04	175	temp	8.9	˚C
W-W	30-Jul-03	45	DO	9.8	mg/L

CoBI Beach Seine Sampling Resutls Database

User_Location_ID	Result_Date	Sample_ID	Result_Parameter_Name	Result_Reported_Value	Result_Value_UOM
W-W	24-Sep-03	116	DO	15.43	mg/L
W-W	24-Nov-03	130	DO	6.75	mg/L
W-W	10-Dec-03	141	DO	6.65	mg/L
W-W	26-Jan-04	151	DO	7.86	mg/L
W-W	08-Mar-04	174	DO	7.89	mg/L
W-W	07-Apr-04	161	DO	8.87	mg/L
W-W	19-May-04	160	DO	13.54	mg/L
W-W	30-Jun-04	232	DO	11.16	mg/L
W-W	25-Aug-04	274	DO	6.69	mg/L
W-W	13-Oct-04	248	DO	9.6	mg/L
W-W	15-Dec-04	229	DO	6.32	mg/L
W-W	24-Sep-03	116	salinity	30	ppt
W-W	24-Nov-03	130	salinity	28.4	ppt
W-W	10-Dec-03	141	salinity	28.9	ppt
W-W	26-Jan-04	151	salinity	29.1	ppt
W-W	08-Mar-04	174	salinity	28.9	ppt
W-W	07-Apr-04	161	salinity	27.9	ppt
W-W	19-May-04	160	salinity	28.3	ppt
W-W	30-Jun-04	232	salinity	28	ppt
W-W	25-Aug-04	274	salinity	29.5	ppt
W-W	13-Oct-04	248	salinity	9.6	ppt
W-W	15-Dec-04	229	salinity	28.8	ppt
W-W	07-May-03	12	secchi depth	18	ft
W-W	18-Jun-03	50	secchi depth	14	ft
W-W	30-Jul-03	45	secchi depth	14	ft
W-W	24-Sep-03	116	secchi depth	8	ft
W-W	24-Nov-03	130	secchi depth	30	ft
W-W	26-Jan-04	151	secchi depth	17	ft
W-W	08-Mar-04	174	secchi depth	30.25	ft
W-W	07-Apr-04	161	secchi depth	15	ft
W-W	19-May-04	160	secchi depth	7	ft
W-W	30-Jun-04	232	secchi depth	20	ft
W-W	25-Aug-04	274	secchi depth	13	ft
W-W	13-Oct-04	248	secchi depth	16	ft
W-W	15-Dec-04	229	secchi depth	19	ft
W-W	07-May-03	12	temp	11.1	˚C
W-W	18-Jun-03	50	temp	15	˚C
W-W	30-Jul-03	45	temp	18.5	˚C
W-W	24-Sep-03	116	temp	15.5	˚C
W-W	24-Nov-03	130	temp	10	˚C
W-W	10-Dec-03	141	temp	10	˚C
W-W	26-Jan-04	151	temp	8.4	˚C
W-W	08-Mar-04	174	temp	8.9	˚C
W-W	07-Apr-04	161	temp	10.8	˚C
W-W	19-May-04	160	temp	13.8	˚C
W-W	30-Jun-04	232	temp	17.5	˚C
W-W	25-Aug-04	274	temp	14.1	˚C
W-W	13-Oct-04	248	temp	13.4	˚C
W-W	15-Dec-04	229	temp	9.9	˚C


City of Bainbridge Island Beach Seine Monitoring Results
Water Temperature
Water Temperature (celcius)
60
50
40
30
20
10
0
Marine Water
Qaulity Temp
Standard (16C)
12-Aug-02
07-May-03
04-Jun-03
02-Jul-03
30-Jul-03
13-Aug-03
24-Sep-03
22-Oct-03
24-Nov-03
10-Dec-03
11-Feb-04
08-Mar-04
24-Mar-04
21-Apr-04
05-May-04
04-Jun-04
30-Jun-04
25-Aug-04
08-Sep-04
13-Oct-04
10-Nov-04
15-Dec-04
DATE


City of Bainbridge Island Beach Seine Monitoring Results
Dissolved Oxygen
Marine Water
DO Standard
Dissolved Oxygen (mg/L)
18
16
14
12
10
8
6
4
2
0
16-Jul-03
30-Jul-03
22-Oct-03
24-Nov-03
10-Dec-03
26-Jan-04
08-Mar-04
23-Mar-04
07-Apr-04
05-May-04
19-May-04
16-Jun-04
12-Aug-04
25-Aug-04
22-Sep-04
13-Oct-04
15-Dec-04
DATE


City of Bainbridge Island Beach Seine Monitoring Results
Salinity (ppt)
Secchi Disc Depth (FT)
Disc Measurement Date
19-Sep-02
07-May-03
21-May-03
04-Jun-03
18-Jun-03
16-Jul-03
30-Jul-03
13-Aug-03
27-Aug-03
22-Oct-03
15-Nov-03
24-Nov-03
26-Jan-04
11-Feb-04
08-Mar-04
11-Mar-04
24-Mar-04
07-Apr-04
05-May-04
19-May-04
16-Jun-04
30-Jun-04
12-Aug-04
25-Aug-04
08-Sep-04
22-Sep-04
13-Oct-04
10-Nov-04
15-Dec-04
Salinity (ppt)
0
5
10
15
20
25
30
35
Secchi DIsc Depth (FT)
0
5
10
15
20
25
30
35
40
24-Sep-03
22-Oct-03
24-Nov-03
10-Dec-03
11-Feb-04
08-Mar-04
24-Mar-04
07-Apr-04
05-May-04
04-Jun-04
30-Jun-04
12-Aug-04
08-Sep-04
22-Sep-04
10-Nov-04
15-Dec-04
Salinity Measurement Date

APPENDIX C-9

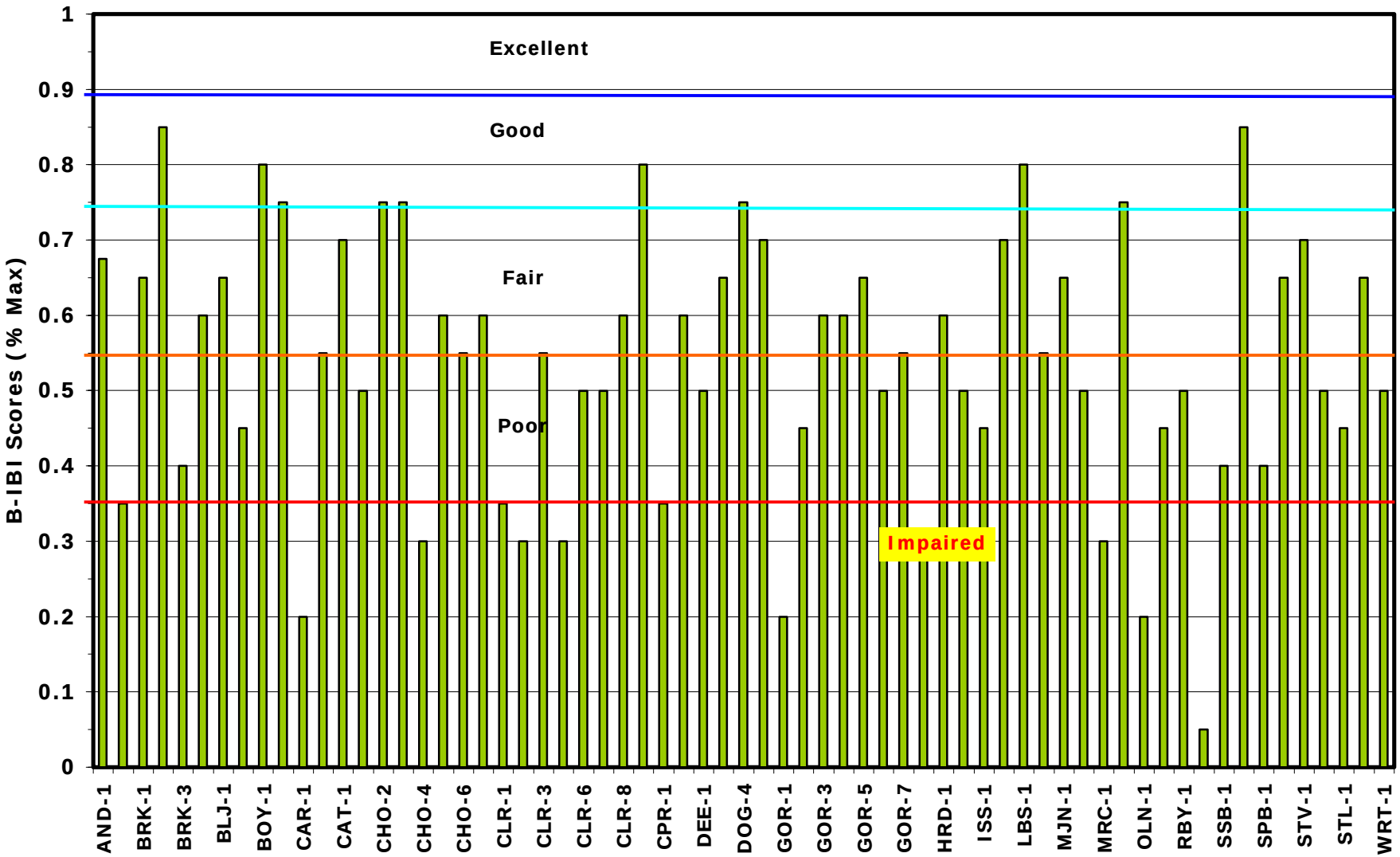
Data Set #10 - Biomonitoring and Land Use Land Cover (LULC) Data

Bainbridge Is Watershed Land Use / Land Coverage Summary

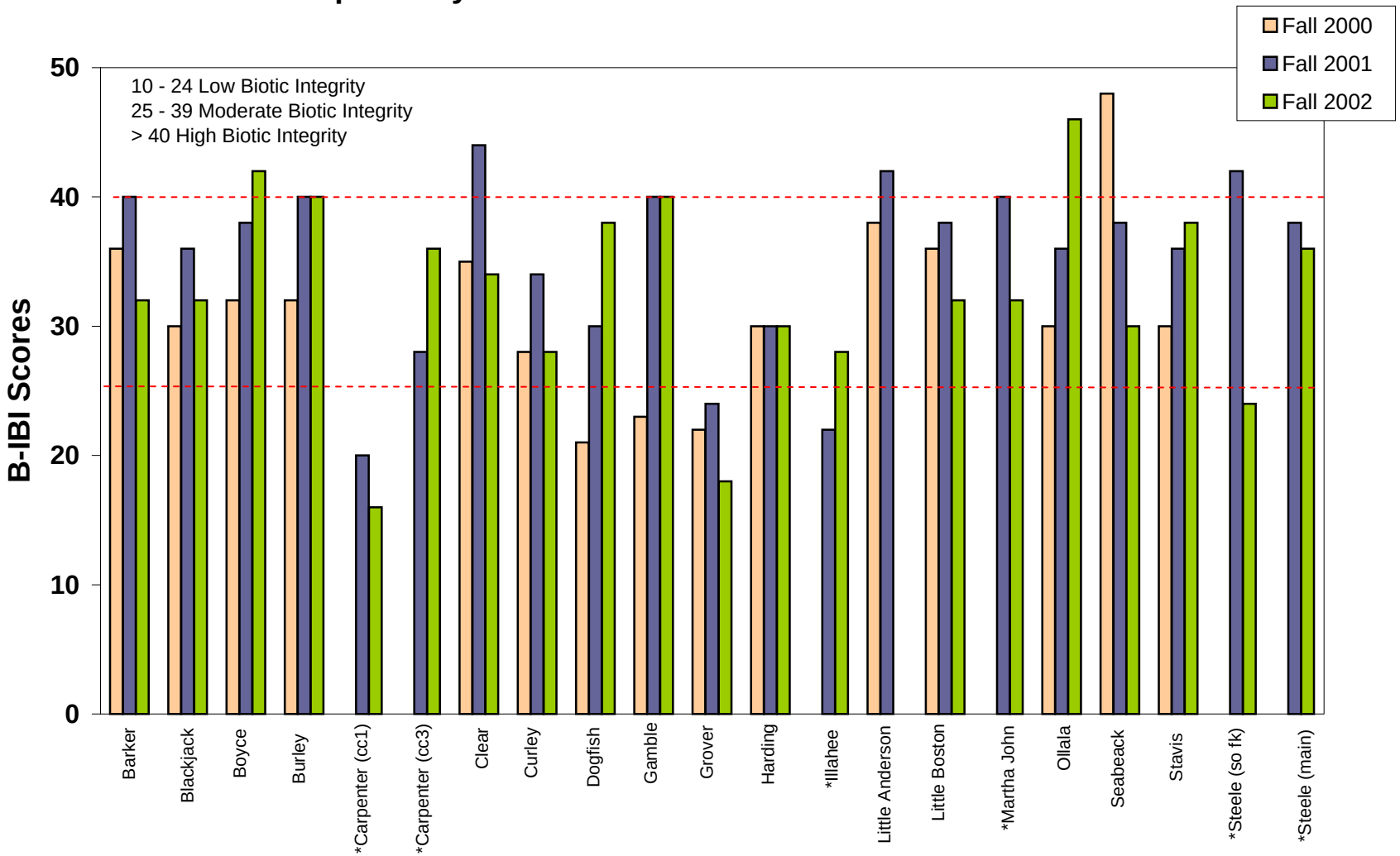
Watershed	Coniferous Forest	Deciduous Forest	Mixed Forest	Forest	Wetlands	Natural	Grass & Turf	Bare Ground	Impervious	Developed	Water
Agate Passage	57.6	19.8	2.1	79.5	2.8	82.3	4.3	3.1	9.2	16.5	0.2
Blakely Harbor	28.5	54.8	3.7	87.0	1.1	88.1	2.2	3.6	5.7	11.6	0.2
Eagledale	29.6	29.3	6.3	65.1	2.9	68.0	8.8	4.4	18.4	31.6	0.3
Fletcher Bay	47.3	25.9	2.6	75.8	1.1	76.9	8.6	6.0	7.9	22.5	0.6
Gazzam Lake	43.7	38.3	2.0	84.0	0.8	84.7	4.0	1.9	7.8	13.6	1.6
Manzanita Bay	45.6	23.7	2.9	72.3	1.9	74.2	9.8	6.8	8.8	25.4	0.5
Murden Cove	34.8	36.0	2.8	73.6	2.3	76.0	7.6	6.5	9.5	23.6	0.4
North Eagle Harbor	26.7	20.8	3.2	50.6	2.5	53.1	8.3	10.6	26.9	45.8	0.4
Pleasant Beach	35.4	32.8	2.4	70.7	3.0	73.7	6.0	6.6	13.6	26.2	0.1
Port Madison	42.0	36.2	3.6	81.9	1.2	83.0	6.3	3.7	6.4	16.4	0.3
South Beach	34.2	38.3	4.1	76.6	1.2	77.8	4.2	10.9	6.5	21.6	0.6
Sunrise	40.5	37.4	1.2	79.1	1.9	81.0	4.5	6.4	8.0	18.9	0.1


Streams
Watershed Boundaries
Roads
Land Use/Land Cover
Coniferous
Deciduous
Meadow/Shrub
Wetlands
Turf
Bareground
Impervious
Port Madison Watershed
Agate Passage Watershed
Manzanita Bay Watershed
Sunrise Watershed
Murden Cove Watershed
Fletcher Bay Watershed
North Eagle Harbor Watershed
Gazzam Lake Watershed
Eagledale Watershed
Blakely Harbor Watershed
Pleasant Beach Watershed
South Beach Watershed
N
W
E
S
0 0.375 0.75 1.5 2.25 3 Miles

	Kitsap Biological Monitoring Data Summary				Mean	2003	2003
Stream	Site ID#	Sample Team	Site Location/Description	%TIA	B-IBI	B-IBI	B-IBI
Schel-Schelb	SSB-1	Bainbridge Island	Middle Mainstem @ private property	22%	26	26	40%
Springbrook	SPB-1	Bainbridge Island	100 m upstream of Fletcher Bay Road Culvert	28%	26	26	40%
Murden Cove	MRC-1	Bainbridge Island	100 m upstream of SR-305 Culvert	33%	22	22	30%
Cooper	CPR-1	Bainbridge Island	Downstream of BI diversion	15%	24	24	35%
Manzanita	MNZ-1	Bainbridge Island	Middle Mainstem @ private property	14%	32	32	55%

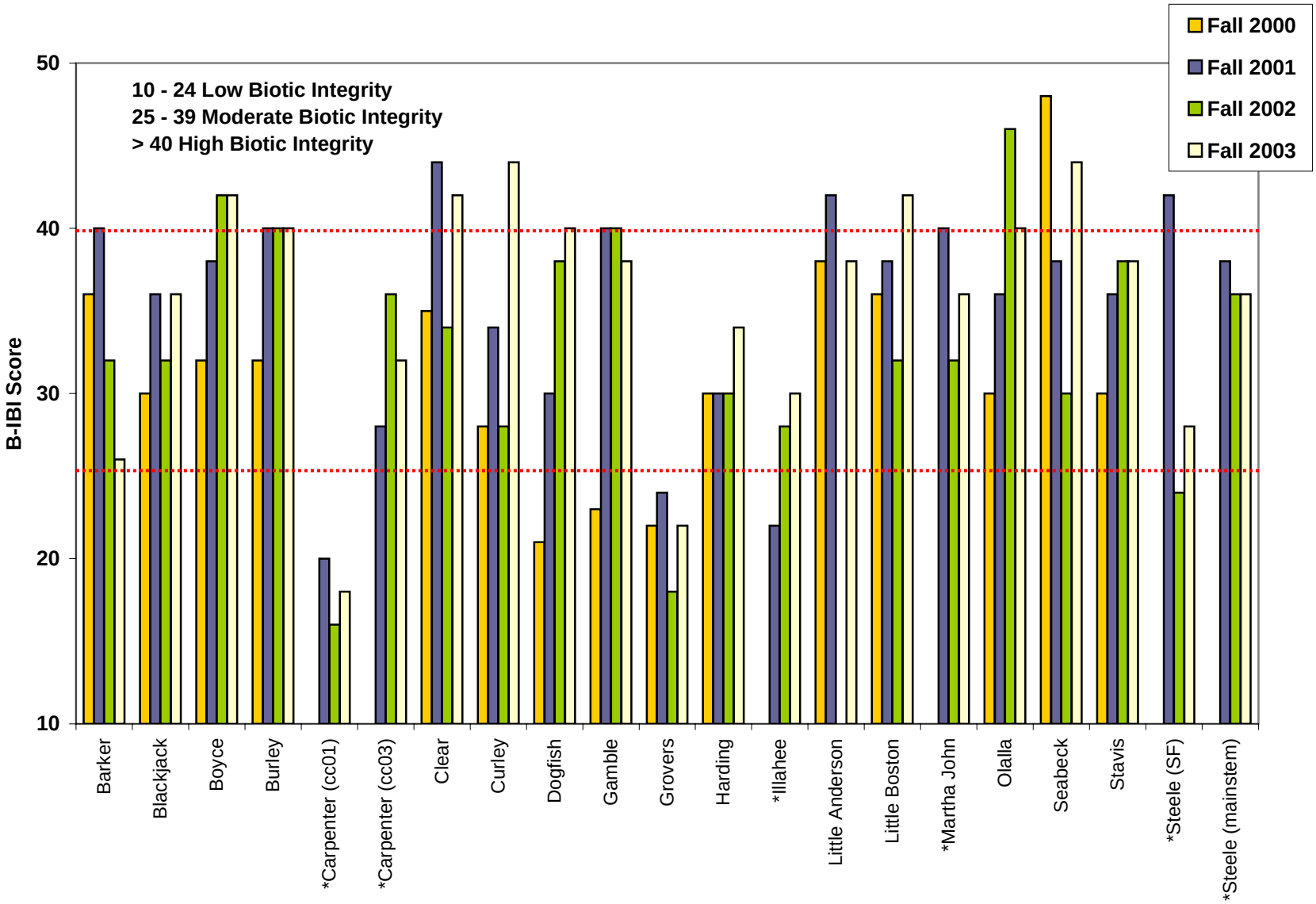

2003 Kitsap B-IBI Data
B-IBI Scores (% Max)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Excellent
Good
Fair
Poor
Impaired
AND-1
BRK-1
BRK-3
BLJ-1
BOY-1
CAR-1
CAT-1
CHO-2
CHO-4
CHO-6
CLR-1
CLR-3
CLR-6
CLR-8
CPR-1
DEE-1
DOG-4
GOR-1
GOR-3
GOR-5
GOR-7
HRD-1
ISS-1
LBS-1
MJN-1
MRC-1
OLN-1
RBY-1
SSB-1
SPB-1
STV-1
STL-1
WRT-1

Kitsap County Stream Team Benthic Macroinvertebrate Results

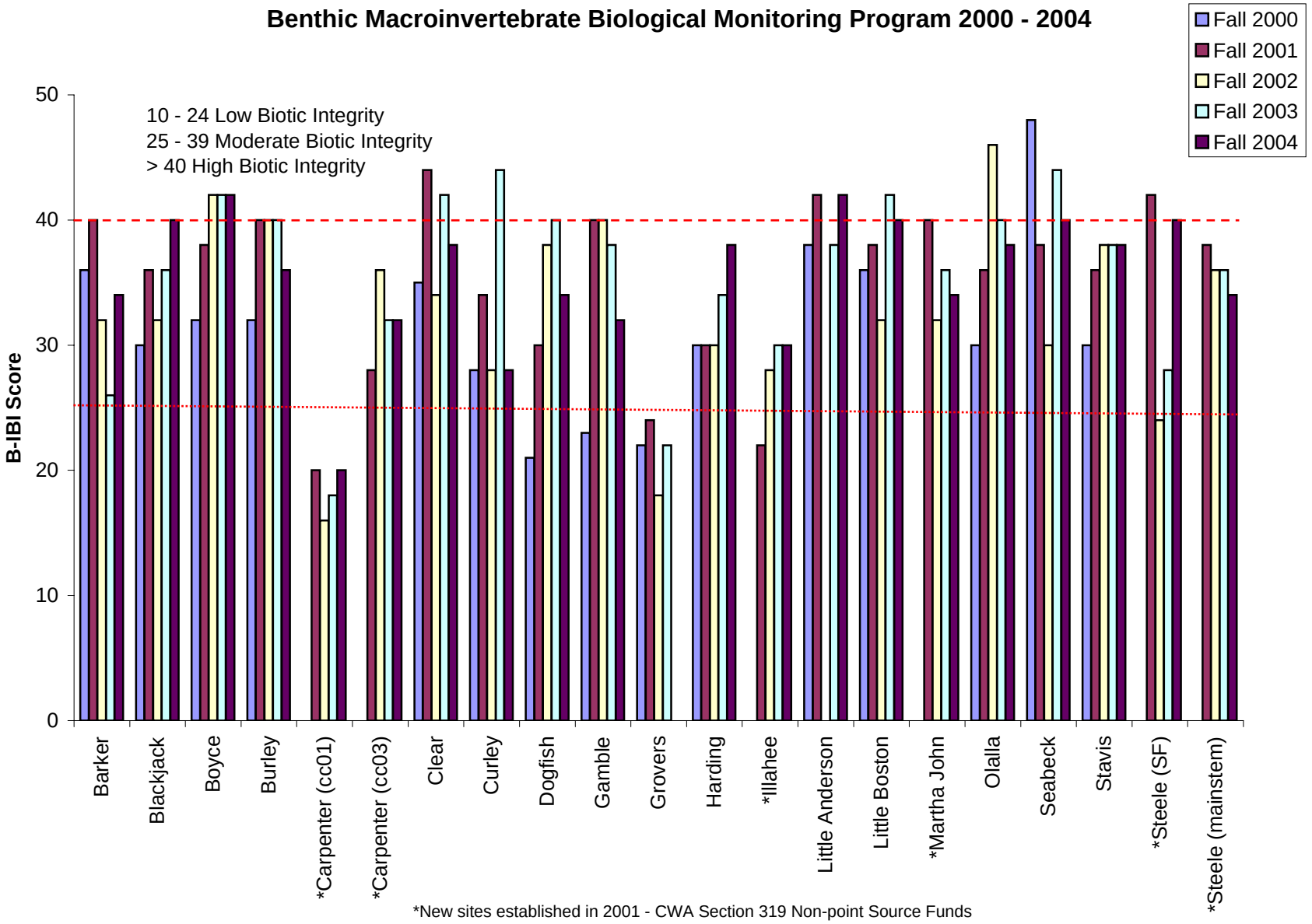


*New sites established in 2001 - CWA Section 319 Non-point Source Funds

Kitsap County Benthic Biological Monitoring Results 2000 - 2003



* New sites established in 2001 with CWA Section 319 funds


Benthic Macroinvertebrate Biological Monitoring Program 2000 - 2004
Fall 2000
Fall 2001
Fall 2002
Fall 2003
Fall 2004
10 - 24 Low Biotic Integrity
25 - 39 Moderate Biotic Integrity
> 40 High Biotic Integrity
B-IBI Score
50
40
30
20
10
0
Barker
Blackjack
Boyce
Burley
*Carpenter (cc01)
*Carpenter (cc03)
Clear
Curley
Dogfish
Gamble
Grovers
Harding
*Illahee
Little Anderson
Little Boston
*Martha John
Olalla
Seabeck
Stavis
*Steele (SF)
*Steele (mainstem)
*New sites established in 2001 - CWA Section 319 Non-point Source Funds

Benthic Macroinvertebrate Results - BIBI 10 Metric Index					
	Fall 2000	Fall 2001	Fall 2002	Fall 2003	Fall 2004
Barker	36	40	32	26	34
Blackjack	30	36	32	36	40
Boyce	32	38	42	42	42
Burley	32	40	40	40	36
*Carpenter (cc01)		20	16	18	20
*Carpenter (cc03)		28	36	32	32
Clear	35	44	34	42	38
Curley	28	34	28	44	28
Dogfish	21	30	38	40	34
Gamble	23	40	40	38	32
Grovers	22	24	18	22	
Harding	30	30	30	34	38
*Illahee		22	28	30	30
Little Anderson	38	42		38	42
Little Boston	36	38	32	42	40
*Martha John		40	32	36	34
Olalla	30	36	46	40	38
Seabeck	48	38	30	44	40
Stavis	30	36	38	38	38
*Steele (SF)		42	24	28	40
*Steele (mainstem)		38	36	36	34
Big Anderson					42
Big Beef					34
Chico - Dickerson Creek					48
Chico - Erland Pt.					26
Chico - Mainstem (Mtnr's)					34
Chico - Kitsap Creek					14

SAMPLING SITE LOCATIONS

CITY	WATERSHED	STREAM	LATITUDE	LONGITUDE	REFUGIA TYPE	EARLY RUN	STREET ADDRESS	DIRECTIONS
Bremerton	Burke Bay	Steele (S. Fork)	N47 38.745'	W122 37.854'	ND	Yes	Hwy 303	83m upstream culvert under SR 303, parking at sauna retailer
Bremerton	Burke Bay	Steele (Main)	N47 39.174'	W122 37.895'	NC	Yes	Brownsville Hwy	48m upstream of confluence of S and E forks, park at pull out a little past Gluds Pond Rd. heading east.
Bremerton	Burke Bay	Illahee	N47 36.575'	W122 35.922'	ND	No	5171 Illahee Rd. (Chum Run)	43.2m upstream from small red shed on left bank, from top of driveway cross at small foot bridge & walk up trail
Kingston	Foulweather Bluff	Carpenter	N47 48.109'	W122 331.241'	ND	No	Parnell Road NE	Walk upstream ~200' of State Hwy. 104 culvert adjacent to Parnell Road NE
Kingston	Foulweather Bluff	Carpenter	N47 47.833'	W122 30.791'	ND	No	20659 Barber Cut-off Road NE	Walk 185' upstream from the salt marsh at the Stillwaters Environmental Learning Center
Suquamish	Liberty Bay/Miller Bay	Grovers	N47 47.394'	W122 32.159'	FW	Yes	Chris Lane NE	Walk 656 feet downstream of culvert at Rainshadow Farms
Kingston	Upper Hood Canal	Gamble	N47 46.616'	W122 35.659'	NC	No	4149 NE Rova Rd.	Walk ~110 feet upstream from the culvert on Rova Rd.
Kingston	Upper Hood Canal	Martha-John	N47 49.713	W122 33.764	FW	No	Private Rd at NE 288th St.	Backtrack along driveway to break in fence, follow overgrown road/trail to open field. Walk across field ~200ft to opening in trees marking another trail to stream. Go ~100ft upstream.
Olalla	Colvos Passage	Olalla	N47 27.209'	W122 34.452'	FW	No	10680 Olalla Valley Rd.	Walk 43 feet upstream of the large stump at the head of the trail leading to the creek on the Garrido property.
Port Orchard	Burley-Minter	Burley	N47 25.980'	W122 37.484'	NC	Yes	Burley Olalla Rd. SE	Walk 173 feet upstream of culvert on Burley Olalla Rd. SE
Port Orchard	Colvos Passage	Curley	N47 30.903'	W122 33.081'	NC	Yes	7650 SE Martin Lane	Walk down the trail to creek. Walk upstream ~50 feet.
Port Orchard	Sinclair	Blackjack	N47 32.094'	W122 37.923	FW	Yes	Kendall St.	Access trail to the bridge crossing the creek from the end of Kendall St. From bridge walk upstream 259 ft.
Poulsbo	Liberty Bay/Miller Bay	Dogfish	N47 45.435'	W122 35.342'	NC	Yes	Big Valley Rd. NE	At Fredericksen Wildnerness Park on Big Valley Rd. NE ~150 ft. upstream from culvert crossing the stream.
Seabeck	Upper Hood Canal	Harding	N47 34.823'	W122 56.754	FW	No	1450 Tekiu Rd NW	Walk down the trail along hillside into ravine. Downstream end of riffle is at the base of the trail
Seabeck	Upper Hood Canal	Boyce	N47 36.530'	W122 54.588'	FW	No	19235 NW Stavis Bay Rd.	Guillemot Cove Nature Reserve - From old barn go south to foot bridge. Go upstream 600' from bridge.
Seabeck	Upper Hood Canal	Stavis	N47 36.846	W122 52.519	FW	No	Stone Farm Lane	South to the end of Stone Farm Lane (P). Hike west down steep ravine to stream. Go upstream 274' from first flag.
Seabeck	Upper Hood Canal	Seabeck	N47 37.669'	W122 50.352'	FW	No	Seabeck Holly Rd.	Upstream 370' from the culvert at Seabeck Holly Rd. between Larson Lane NW and Foley Lane NW (P)
Seabeck	Upper Hood Canal	Little Anderson	N47 39.344'	W122 45.301'	FW	No	Rising Hill Lane NW	East on Rising Hill Lane NW (P) to bridge crossing. Go 490' downstream of bridge.
Silverdale	Dyes Inlet	Clear	N47	W122	NC	Yes	3722 Half Mile Rd. NW	Walk ~300 feet upstream at Half Mile Rd. NW
Silverdale	Dyes Inlet	Barker	N 47 36.372'	W122 40.025'	NC	Yes	1184 Barker Creek Rd. NW	Walk 150 feet upstream frpm culvert on Barker Creek Rd. NW
S'kallam Res.	Upper Hood Canal	Little Boston	N 47 51.339'	W122 34.296'	FW	No	Point Julia Lane NE	Walk 712 feet upstream from weir at the mouth of the creek.

New Sites in 2001

NC = Nodal Corridor

FW = Focal Sub-Watershed

ND = Not Defined