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ECOLOGY

Puget Sound Ambient Monitoring Program 1992: Marine Sediment Monitoring Task

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Contributors to the 1992 MSMT are listed below.

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EVS Consultants	Subcontract with EcoChem, Inc. to review bioassay results and arrange contracted taxonomic QA/QC work.

ABSTRACT

The Washington State Department of Ecology conducts a long-term Marine Sediment Monitoring Task in Puget Sound as part of the Puget Sound Ambient Monitoring Program in conjunction with the Puget Sound Water Quality Authority. This report presents sediment data from samples collected in the spring of 1992 at 48 locations (stations) from throughout Puget Sound. Components of this project include annual monitoring of 178 physical and chemical sediment parameters, sediment toxicity testing (amphipod bioassay), and the enumeration and identification (generally to species level) of the benthic infaunal community. Approximately two thirds (100) of the 156 organic compounds analyzed for from the 1992 samples were undetected in every sample taken. Of the organic compounds that were detected, the majority of values are qualified as estimates and are close to the detection limits. The majority of stations within the Marine Sediment Monitoring Task are located away from major sources of anthropogenic contamination. Few organic chemical compounds were detected at these locations. Several stations were located in the vicinity of the major urban areas around Puget Sound, although no stations were located within previously identified contaminated areas (*i.e.*, clean up or superfund sites). The more "urban" stations tend to have the following chemical profile: all polyaromatic hydrocarbon compounds making up total HPAH and total LPAH were detected, at least one pesticide or PCB compound was detected, and, in general, more organic compounds were detected at these stations. Amphipod bioassays (sediment toxicity testing) results fail to prove toxicity at any station when the effects of sediment grain size are considered using the DeWitt model. Benthic infaunal data indicated that the lowest mean abundance, richness, and diversity values for the major taxonomic groups and for the samples as a whole occurred in stations which displayed high percent fines and total organic carbon values.

INTRODUCTION

This is the fourth annual report of the Puget Sound Ambient Monitoring Program's long-term Marine Sediment Monitoring Task (MSMT). This report summarizes sediment chemistry, amphipod bioassay, and benthic infaunal community data collected from 48 Puget Sound stations during the 1992 MSMT survey. The purpose of this report is to present and make available the basic results of the 1992 survey.

Historical Background

The Puget Sound Ambient Monitoring Program

Marine sediment monitoring in Puget Sound is conducted by the Washington State Department of Ecology (Ecology) Ambient Monitoring Section, and is a major component of the multi-agency Puget Sound Ambient Monitoring Program (PSAMP) (Puget Sound Water Quality Authority, 1988).

The Puget Sound Ambient Monitoring Program was developed by an interdisciplinary committee of sediment and water quality professionals known as the Monitoring Management Committee. It was designed to be a long-term monitoring program, implemented by several state agencies, which would provide an exhaustive baseline characterization of the condition of the Puget Sound estuarine environment. This in turn should help identify relatively unimpacted areas which may merit management actions aimed at preventing pollution, as well as reveal chronic contamination problems that require focused attention. The program is coordinated monthly by a steering committee comprised of representatives of the lead participating agencies. Data collected by this program are available for use by any interested party.

The Marine Sediment Monitoring Task

Ecology was selected to implement the MSMT of the Puget Sound Monitoring Program. In 1989, the first year of the program, the MSMT was contracted to Tetra Tech, Inc., Bellevue, Washington (Tetra Tech, 1990). In 1990, staff were added within Ecology's Ambient Monitoring Section to manage and carry out the task. Subsequently, field sampling, benthic invertebrate sample processing, and all data analyses and report preparation have been conducted by Ecology personnel.

The MSMT was designed to identify both natural and human-induced changes in Puget Sound sediments. The task determines conventional sediment parameters, levels of organic compounds and heavy metals in the sediments, toxic effects of contaminants and grain size on bioassay organisms, and the composition of benthic macroinvertebrate assemblages at numerous stations throughout Puget Sound. The data collected are then analyzed to meet the goals and objectives listed below.

Monitoring Goals and Objectives

Ecology's goals for the sediment task are to:

- Provide a record of the condition of Puget Sound sediments.
- Aid in the identification of reference sites.
- Provide data for use by researchers concerned with sediment quality.

The specific objectives of the MSMT are to:

- Collect baseline and long-term data on Puget Sound sediments and macroinvertebrate communities in uncontaminated and contaminated areas.
- Identify areas in Puget Sound that are accumulating toxic chemicals.
- Assess the potential sediment toxicity resulting from accumulating toxic chemicals.
- Evaluate the condition of benthic macroinvertebrate communities in relation to the concentration of chemicals in the sediment.
- Document both natural and human-induced changes to sediment quality.

METHODS

Field Sampling

Field sampling for the 1992 MSMT was conducted from April 2, 1992, to April 22, 1992. Samples were collected from the Research Vessel Kittiwake, a 42-foot trawler.

For the 1992 study, a total of 48 stations were sampled throughout Puget Sound (Figures 1 and 2). Of these 48 stations, 34 were core stations that are sampled annually. The remaining 14 stations were "rotational" stations located in Central Puget Sound. These stations are sampled once every three years, on a rotational schedule with two other sets of stations located in North and South Puget Sound.

Station positioning followed the Puget Sound Estuary Program (PSEP) recommended protocols (PSEP, 1986a) and was accomplished using a Global Positioning System (GPS), LORAN C, variable radar ranging, water depth, and line-of-sight fixes on land objects. Latitude and longitude coordinates determined by GPS were used to establish positions of new stations. A summary of positioning data is contained in Appendix A, Table A-1.

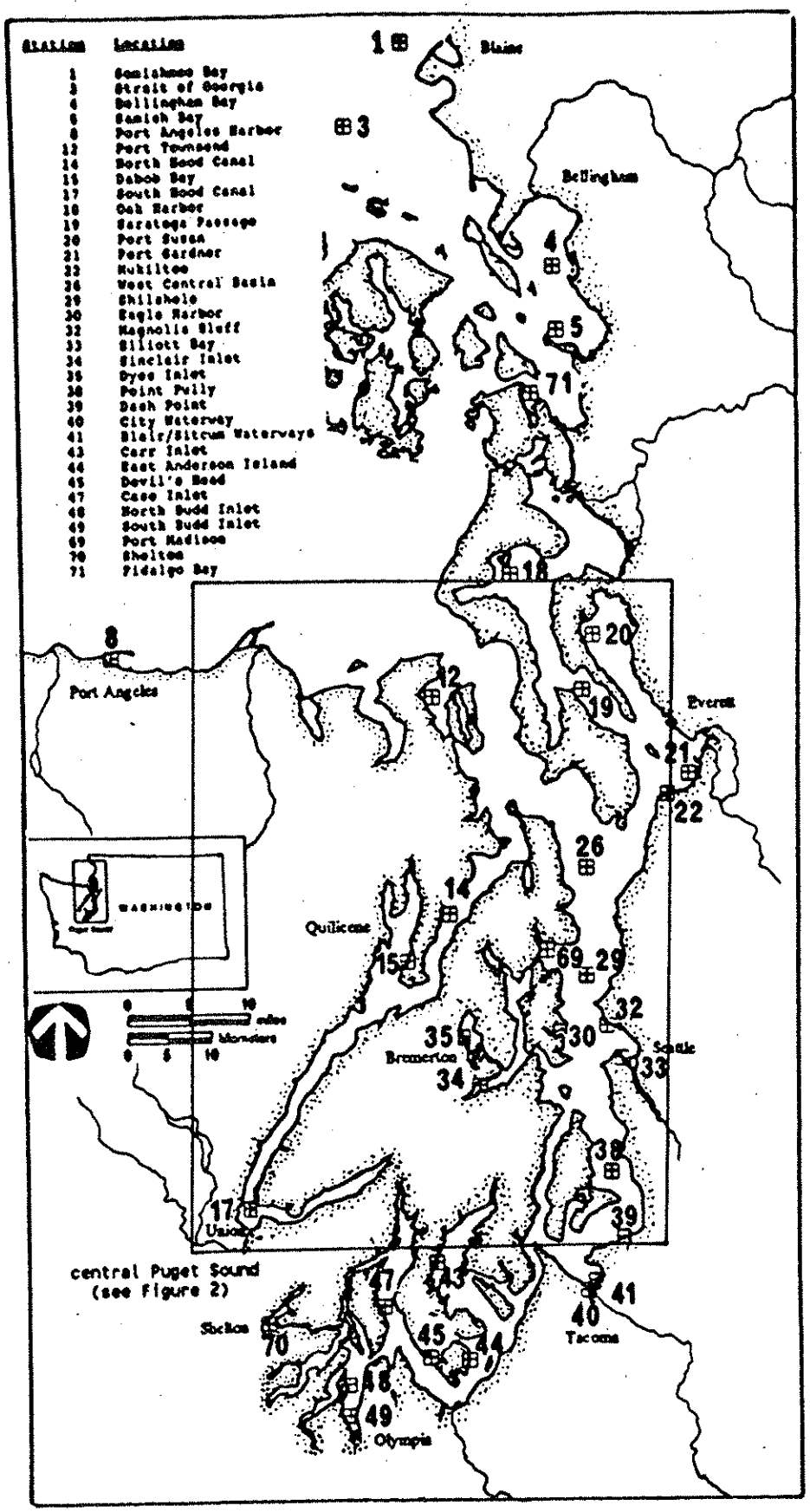

Figure 1. Locations of the 34 core (fixed) stations in Puget Sound for the 1992 Marine Sediment Monitoring Task (MSMT).

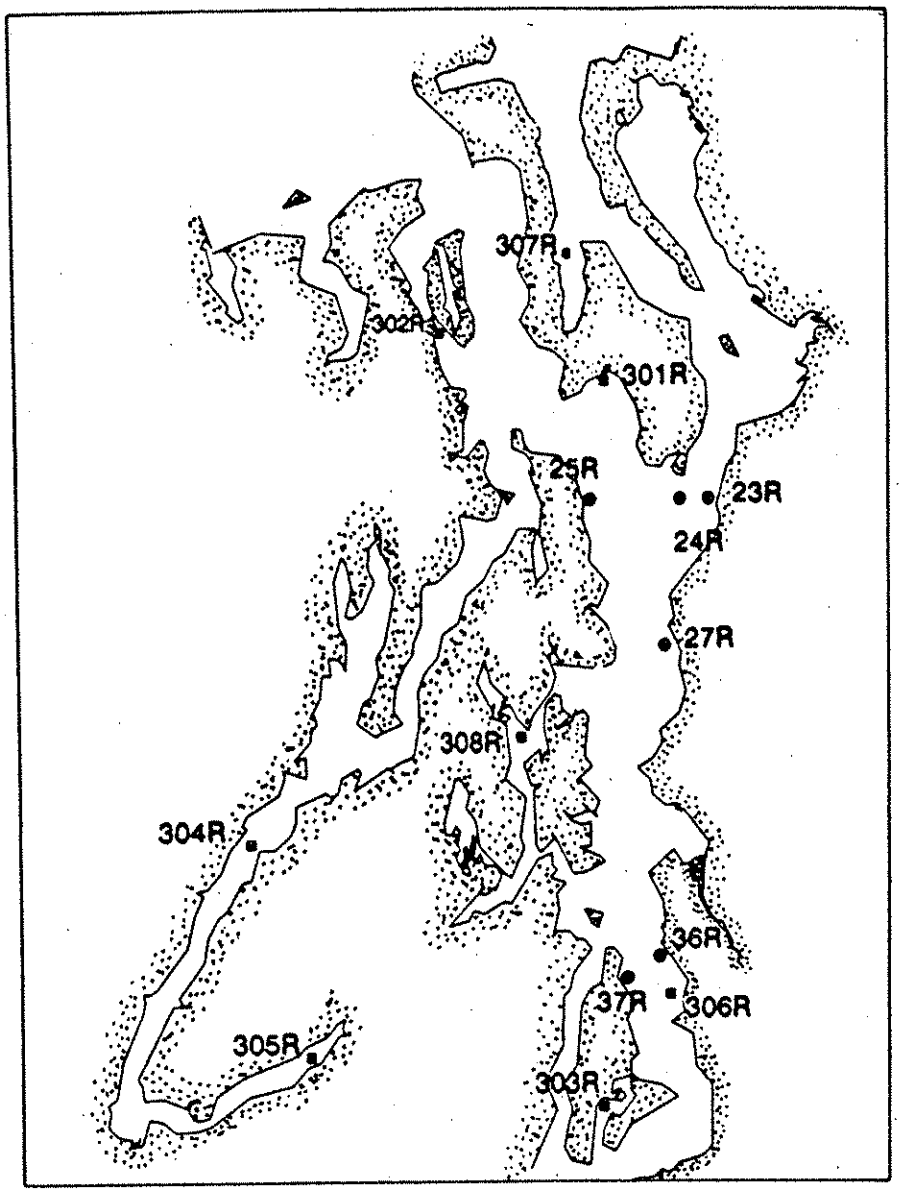

Figure 2 Locations of the 14 rotating stations (central) in Puget Sound for the 1992 Marine Sediment Monitoring Task (MSMT).

Station	Locality	Station	Locality
23R	East Central Basin	302R	Oak Bay
24R	East Central Basin	303R	Quartermaster Harbor
25R	West Central Basin	304R	Teklu Point
27R	Richmond Beach	305R	Outer Lynch Cove
36R	Brace Point	306R	Seahurst Bay
37R	North Vashon Island	307R	Holmes Harbor
301R	Useless Bay	308R	Liberty Bay

Sediment samples were collected using a double 0.1 m^2 stainless steel modified van Veen grab sampler, which allowed the chemistry and bioassay samples to be paired with the benthic infaunal samples. The top two centimeters of sediment from at least five grab samples were composited and homogenized for chemistry and bioassay samples. Sampling procedures followed the PSEP recommended protocols (PSEP, 1986b, 1986c, 1986d, 1986e, 1987, 1991), and the Marine Sediment Quality Implementation Plan (Striplin, 1988), unless otherwise indicated.

Five replicate (separate grab) samples were collected for benthic infaunal analysis at each of the 48 stations. Four replicate chemistry and bioassay samples were collected at the following locations:

- Replicates for grain size, total organic carbon (TOC), total sulfides (TS), metals, semivolatile organics, pesticides/polychlorinated biphenyls, and bioassays were collected at Stations 5, 32, 35, 38, and 44. (Samples for laboratory matrix spike and matrix spike duplicates were also collected at these stations.)

- Replicates for volatile organics were collected at Stations 29, 35, and 38.

- Replicates for resin acids and guaiacols were collected at Station 4.

The four replicate chemistry and bioassay samples were collected in the following manner: Replicates 1 and 2 were generated by splitting composited and homogenized sediment from the first set of grab samples. The first replicate was assigned the actual station number. The second replicate was assigned an artificial station number and served as a blind laboratory replicate. Two additional sets of grab samples from the same location were collected and processed independently as replicates three and four. These third and fourth replicates were given artificial station numbers and analyzed as blind field replicates.

Sediments for volatile organic compounds and TS analyses do not represent true blind laboratory replicates as they cannot be composited (Tetra Tech, 1990). However, replicate samples for these compounds provide a measure of within-grab variability of sediments.

Archived sediment samples from Sequim Bay were obtained from the Environmental Protection Agency (EPA)/Ecology Manchester Environmental Laboratory, transferred to MSMT sample containers, and submitted for analysis as Stations 66, 67, and 68. These Project Comparison Samples (PCS) contain known quantities of the acid/base and neutral (ABN) target chemicals that degrade very slowly over time, and are used each year to measure the accuracy of the laboratory analyses.

Negative control (clean) sediments for the amphipod bioassay testing were collected, along with the test organisms, from West Beach on Whidbey Island, Washington.

Sampling utensils were decontaminated between samples. With the exception of utensils used to collect sediment for analysis of volatile organic compounds (VOCs), decontamination involved the following steps:

- All equipment was washed with Alconox at the laboratory.
- In the field, utensils were soaked and rinsed in boiling fresh water, given a methanol rinse, and allowed to air dry.
- Utensils were rinsed with large amounts of seawater, on station, to remove any methanol that may have adhered to the sampling equipment.

The procedure for cleaning sampling equipment varied from that used in previous years when utensils were cleaned with acetone and methylene chloride. This change was made due to concern that the acetone and methylene chloride on board the ship may contaminate the VOC samples. Between stations, utensils were wrapped with aluminum foil and stored away from organic solvents and other sample handling equipment. The porcelain utensils used to collect samples for analysis of VOCs were washed with Alconox, rinsed with boiling fresh water, and then rinsed with organic-free water.

Laboratory Analyses

Management of chemical analyses of the 1992 MSMT samples was contracted by Ecology to EcoChem, Inc., of Seattle, Washington. Grain size determinations were made by Soil Technologies, Inc. (STI), of Bainbridge Island, Washington, while Analytical Resources, Inc., (ARI) of Seattle, Washington, performed chemical analyses. Sediment chemistry samples were analyzed in accordance with the U.S. EPA Contract Laboratory Program (CLP) methods (U.S. EPA, 1986a,b), as modified by the PSEP protocols (PSEP, 1986c,d,e), to obtain lower detection limits. The routine EPA CLP purge and trap protocol for analysis of VOCs was modified to use larger sample sizes, smaller final extract volumes, additional extract cleanup, seven initial multipoint calibration concentrations, and seven internal standards.

The method used to analyze total sulfides (TS) was the same as that used during the 1989 and 1991 MSMT. This method does present some problems due to oxygen contamination during the addition of nitric acid. However, the same method was used to provide consistency with 1989 and 1991 sample results. The analytical methods used to determine TS values for the 1990 samples differed from the procedures described in PSEP. Under PSEP, total sulfides are determined by distillation, followed by spectrophotometric analysis. In 1990, the samples were distilled, and a titrimetric analysis was used to determine the sulfide content.

The EPA/Ecology Manchester Environmental Laboratory completed sediment toxicity tests. Sixty-three sediment samples (from all 48 stations) were tested using the 10-day amphipod (*Rhepoxynius abronius*) bioassay. Testing followed PSEP guidelines (PSEP, 1991).

Benthic infaunal samples were processed according to the PSEP protocols (PSEP, 1987) and the MSMT Implementation Plan (Striplin, 1988). A total of 240 benthic infaunal samples from 48 stations were sorted. Identification of polychaetes and molluscs from 160 samples was completed by Marine Taxonomic Services and Oikos, respectively, both from Corvallis, Oregon.

The remainder of the 1992 benthic invertebrate samples were identified by Ecology Ambient Monitoring staff, with the exception of 37 samples of polychaetes from the fifth replicates. These remaining samples are being contracted out and will soon be complete. No data from the fifth replicates have been included in this report.

The Marine Sediment Monitoring Data Validation Report (Ecochem, 1993) contains a complete review and evaluation of QA/QC procedures and results for sediment grain size determination, sediment chemistry analysis, and sediment toxicity tests for the 1992 MSMT survey. Sediment chemistry data were validated according to the EPA Functional Guidelines for the validation of organics, pesticides, and metals data (U.S. EPA, 1988a-c). Additional references used in sediment chemistry validation include guidelines from the Puget Sound Estuary Program (PSEP, 1986a-e, 1987) and the Data Validation Guidance Manual for Selected Sediment Variables (PTI, 1989). Data validation for sediment toxicity tests were performed in accordance with the PSEP protocols (PSEP, 1991). Quality control for the sorting and identification of benthic macroinvertebrate samples followed PSEP protocols (PSEP, 1987).

Data Management and Analysis

Data collected during the 1992 MSMT were handled according to the procedures outlined in the MSMT Implementation Plan (Striplin, 1988). Numerical field and laboratory-generated data are stored in the sediment task module of the PSAMP System Database (written in dBase IV). A complete description of the data analysis procedures was presented in the 1989 MSMT Report (Tetra Tech, Inc., 1990).

Statistical analyses for the bioassay test results were carried out using SYSTAT. Lotus 1-2-3 was used for data manipulations. The sediment task module of the PSAMP System Database was used to calculate the infaunal trophic index (ITI), Shannon-Wiener diversity index, Pielou's equability index, and the number and abundance of pollution sensitive and tolerant species.

RESULTS

Sediment Chemistry

The following section presents the 1992 MSMT sediment chemistry results. Samples were analyzed for a total of 178 conventional, metal, and organic chemical compounds. Table 1

Table 1. Chemistry samples collected during the 1992 MSMT survey. Replicate stations are shaded.

STATION	REPLICATE	SEMI VOLATILE ORGANICS METALS PEST/PCB TOC GRAIN SIZE SULFIDES	VOLATILE ORGANIC COMPOUNDS	RESIN ACIDS GUAIACOLS	MATRIX SPIKE/ MATRIX SPIKE DUPLICATES O=organics M=metals S=sulfides P=pest/pcb
1		*			
3		*	*		
4	Replicate 1	*		*	
4	Replicate 2			*	
4	Replicate 3			*	
4	Replicate 4			*	
5	Replicate 1	*			O S M P
5	Replicate 2	*			
5	Replicate 3	*			
5	Replicate 4	*			
8		*	*	*	S M
12		*		*	
14		*			
15		*			
17		*	*		
18		*			
19		*			
20		*			
21		*			
22		*			
23R		*			
24R		*			
25R		*			
26		*	*		S
27R		*			
29	Replicate 1	*	*		
29	Replicate 2		*		
29	Replicate 3		*		
29	Replicate 4		*		
30		*			
32	Replicate 1	*			O M P
32	Replicate 2	*			
32	Replicate 3	*			
32	Replicate 4	*			
33		*			
34		*	*		

STATION	REPLICATE	SEMI VOLATILE ORGANICS METALS PEST/PCB TOC GRAIN SIZE SULFIDES	VOLATILE ORGANIC COMPOUNDS	RESIN ACID GUAIACOLS	MATRIX SPIKE/ MATRIX SPIKE DUPLICATES O=organics M=metals S=sulfides P=pest/pcb
35	Replicate 1	*	*		O S M P
35	Replicate 2	*	*		
35	Replicate 3	*	*		
35	Replicate 4	*	*		
36R		*			
37R		*			
38	Replicate 1	*	*		O S M P
38	Replicate 2	*	*		
38	Replicate 3	*	*		
38	Replicate 4	*	*		
39		*			
40		*			
41		*		*	
43		*			
44	Replicate 1	*			O M P
44	Replicate 2	*			
44	Replicate 3	*			
44	Replicate 4	*			
45		*	*		
47		*			
48		*	*		S
49		*			
69		*			
70		*			
71		*			
301R		*			
302R		*	*		
303R		*			
304R		*			
305R		*			
306R		*			
307R		*			
308R		*			

indicates which groups of compounds were analyzed at each station and replicate. A discussion of the quality assurance (QA) and quality control (QC) measures applied to the samples is presented in a separate section at the end of this report.

Conventional Variables

Conventional variables measured in the sediments include grain size (fractional percentages of gravel, sand, silt, clay, and fines (silt and clay)), percent TOC, and TS (mg-S/Kg dry weight). All raw data collected for these variables during the 1992 sampling period are presented in Appendix B. The percent fines, percent TOC, and TS data are summarized in Table 2.

Sediment Grain Size

Sediment grain size is a physical measurement of the size range of sediment particles that make up a given sample. Grain size typically exhibits a negative correlation with the concentration of chemical contaminants in sediments, and also influences the structure and function of associated benthic infaunal communities.

Percent fines data indicates that 19 of the 48 stations (28 of the 63 samples) contained between 75.1 to 96.8 percent fines. Stations with a high percentage of fine-grained sediments were all located in shallow, protected harbors and bays (6 to 25 meters depth), in Hood Canal, or in the deep basins of Puget Sound (123 to 200 meters depth). Thirteen stations (13 samples) displayed from 27.3 to 71.8 percent fines. The remaining 16 stations (22 samples) contained between 2.3 to 18.3 percent fines, and were found mainly at shallow, open shoreline stations (17 to 34 meters depth).

Total Organic Carbon

Total organic carbon (TOC) is a measure of the total amount of organic compounds in particulate, nonvolatile, partially volatile, and volatile forms in a sediment sample. Total organic carbon content can have a significant effect on the concentration, bioavailability, and toxicity of chemical contaminants in sediments, and subsequently on the abundance and composition of the associated benthic infaunal assemblages.

In 12 of 48 stations (17 of the 63 samples), TOC values were measured between 2.08 and 2.62 percent. Sixteen stations (18 samples) contained between 1.01 and 1.92 percent TOC, while the remaining 22 stations (28 samples) measured between 0.15 and 0.95 percent. With the exception of Stations 18, 21, 30, 40, 70, and 71, TOC values greater than 1.00 percent were found in samples with the highest percent fines (>71.8). The 22 stations (28 samples) with TOC values below 1.00 percent were all associated with coarser sediments (≤ 68.5 percent fines).

Table 2. Percent fines, percent total organic carbon, and total sulfides (mg–S/kg) measured in composite samples during the 1992 MSMT survey. Replicate stations are shaded.

STATION	REPLICATE	PERCENT FINES	PERCENT TOTAL ORGANIC CARBON	TOTAL SULFIDES (mg-S/kg)
1		94.1	1.74	G2.0
3		50.8	0.89	G688
4		96.8	2.49	G485
5	Replicate 1	93.8	1.79	U0.19
5	Replicate 2	94.2	1.69	U0.16
5	Replicate 3	96.2	2.16	G5.8
5	Replicate 4	94.3	2.08	U0.16
8		71.8	2.22	G17
12		93.1	1.15	G3.0
14		48	0.9	U0.15
15		5.2	0.22	U0.09
17		96.3	1.25	U0.22
18		42.8	1.33	G92
19		81.3	2.22	G86
20		95.7	1.01	U0.18
21		62.2	1.22	G5.2
22		8	0.26	U0.13
23R		2.9	0.2	U0.12
24R		90.1	2.11	U0.28
25R		3	0.15	U0.13
26		27.3	0.83	U0.2
27R		2.6	0.17	U0.13
29		87.9	1.66	U0.27
30		36.3	1.03	U0.11
32	Replicate 1	5.8	0.21	G0.95
32	Replicate 2	5.6	0.67	U0.08
32	Replicate 3	5.7	0.23	U0.09
32	Replicate 4	5.7	0.21	U0.16
33		32.9	0.19	G0.18
34		89.4	2.18	G9.4
35	Replicate 1	81.1	2.62	G58
35	Replicate 2	81.6	2.41	U0.4
35	Replicate 3	79.5	2.23	G83
35	Replicate 4	80.6	2.31	G15
36R		2.3	0.22	U0.09
37R		3.2	0.18	U0.1
38	Replicate	89.3	2.1	U0.25
38	Replicate	93.8	1.87	U0.29
38	Replicate	92.6	2.25	G58
38	Replicate	95.3	1.92	U0.22
39		2.7	0.15	U0.07
40		32.2	2.17	U0.11
41		75.1	1.14	G36
43		6	0.29	U0.07
44	Replicate	17.9	0.4	U0.11
44	Replicate	17.9	0.39	U0.1
44	Replicate	17.5	0.47	U0.08
44	Replicate	18.3	0.81	U0.07
45		55.7	0.64	U0.09
47		13.2	0.53	U0.09
48		88.7	1.52	G41
49		88.1	2.14	G246
69		18.1	0.46	U0.15
70		66.5	2.11	G29
71		53	1.23	U0.11
301R		5.9	0.3	U0.13
302R		68.5	0.95	U0.11
303R		76.8	1.27	U0.14
304R		96.5	1.89	U0.25
305R		93.9	2.45	G490
306R		9	0.4	U0.08
307R		96.1	1.83	G246
308R		11	0.39	U0.08

U = Undetected at the detection limit shown
G = Estimated value is greater than the minimum shown

Total Sulfides

Sulfides are formed during the anaerobic breakdown of organic material and the reduction of inorganic sulfur (sulfate). Their toxicity to infaunal organisms has been well described in the scientific literature (Pearson and Rosenberg, 1978).

Total sulfides were below the analytical detection limit (qualified as "U") in 41 of the 63 samples. Total sulfide values in the remaining 20 stations (22 samples) were all qualified "G" (*i.e.*, estimated value is greater than the minimum shown). These "G" qualified data exhibited a wide range of values, from a minimum of 0.18 mg-S/kg to a maximum of 688 mg-S/kg.

Metals

Sediments at all stations were analyzed for the presence of 19 metals. Metal concentrations found in these samples are listed in Table 3, along with the Washington State Marine Sediment Quality Standards chemical criteria (parts per million (ppm) dry weight) developed for arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc (Ch. 173-204-320 Washington Administrative Code, 1991).

Nearly all of the samples tested for these eight metals of concern contained concentrations well below the Marine Sediment Quality Standards. Only two metals, cadmium and mercury, exceeded state standards in any samples. One of four replicate samples at Point Pully (Station 38) had a cadmium concentration of 5.8 mg/kg dry weight. (The state standard for cadmium is 5.1 mg/kg dry weight.) The concentration of cadmium in this replicate exceeded the cadmium concentration in the other three replicates from Station 38 by an order of magnitude. All other stations where cadmium was detected displayed values less than 3.2 mg/kg dry weight.

The Marine Sediment Quality Standard chemical criteria for mercury (0.41 mg/kg dry weight) was exceeded at two stations. The four replicate samples collected from Dyes Inlet (Station 35) displayed mercury values of 0.45, 0.45, 0.42, and 0.42 mg/kg dry weight. Mercury in the sample collected from Sinclair Inlet (Station 34) was measured at 0.58 mg/kg dry weight.

Organic Compounds

Nearly two thirds (100) of the 156 organic compounds analyzed for in the 1992 MSMT study were undetected in every sample taken (Table 4). These compounds include 31 of 42 volatile organic compounds, 6 of 15 resin acids and guaiacols, 24 of 27 pesticides and polychlorinated biphenyls (PCBs), and 41 of the 72 other semivolatile organic compounds. Three compounds (1,2 dichlorobenzene, 1,3 dichlorobenzene, and 1,4 dichlorobenzene) appear in Table 4 as undetected volatile organic compounds and as undetected semivolatile organic compounds. These compounds were analyzed by two methods. Analysis of these

Table 3. Metals measured from composite sediment samples collected during the 1992 MSMT survey, (mg/kg dry weight). Marine Sediment Quality Standards (mg/kg dry weight) for metals in Puget Sound are as follows: arsenic–57, cadmium–5.1, chromium–260, copper–390, lead–450, mercury–0.41, silver–6.1, and zinc–410 (Ch. 173–204–320, WAC). Replicate stations are shaded. Values exceeding state standards are marked ***.

STATION	REPLICATE	aluminum	antimony	arsenic	barium	beryllium	cadmium	calcium	chromium	cobalt	copper	iron
1		17300	U0.25	6.3	48.5	U0.25	0.38	5820	39.2	9.2	28.8	29900
3		13600	U0.18	5.6	45.6	G0.23	0.27	31400	26.2	7.8	19.5	23700
4		21200	U0.31	7.8	59.3	U0.31	0.3	6470	56.3	12.8	39.2	35600
5	Replicate 1	18700	U0.28	6.6	51.9	U0.28	0.27	6580	44.4	9.8	31.5	31900
5	Replicate 2	19400	U0.28	8.9	53.8	U0.28	0.27	6710	45.8	10.2	34.3	32700
5	Replicate 3	18700	U0.27	7.2	51.3	G0.28	0.29	6330	44.7	10.5	32.1	32000
5	Replicate 4	18200	U0.28	8.3	51.5	U0.28	0.27	6090	44.6	10	31.5	31700
8		16000	U0.21	7.5	35.4	U0.21	0.72	4550	31.9	7.7	30	26500
12		16000	U0.25	6.1	40.9	U0.25	0.22	5470	35.3	8.3	26.5	26600
14		11800	U0.18	5.2	29.4	U0.18	0.19	4160	29	8.3	16.4	21200
15		6630	U0.12	1.7	9.5	U0.12	0.05	2980	16.2	4.4	5.6	10500
17		30100	U0.26	6.4	16.8	U0.26	0.31	11600	49.2	21.3	105	48300
18		13400	U0.17	8.4	29.2	U0.17	0.27	4440	52.2	9.8	28.5	23000
19		19400	U0.30	12.1	46.4	U0.30	0.23	5520	60	17.1	42.1	32600
20		20600	U0.18	9.3	50.2	G0.19	0.13	5080	109	18.8	44.9	37100
21		15400	U0.15	8.9	34.3	U0.15	0.33	4580	38.8	10.2	40.5	22400
22		4760	U0.12	2.9	10.3	U0.12	0.05	2160	15	3.7	4.5	7570
23R		6150	U0.11	3	10.1	U0.11	0.04	3630	20.3	5.6	5.8	11600
24R		17700	U0.28	7.5	45.2	U0.30	0.38	6230	41.3	11.3	36.9	28500
25R		3780	U0.12	1.4	7.2	U0.12	0.03	2200	11.4	2.5	3.9	5760
26		10100	U0.15	3.9	22.6	U0.15	0.23	5580	25.7	8.2	14.7	18200
27R		4860	U0.12	1.9	11.5	U0.12	0.03	2140	12.4	3.4	4.3	8000
29		17000	U0.25	6.8	46.4	U0.25	0.38	6100	37.7	10.4	34.4	27100
30		8220	U0.14	3.7	18.9	U0.14	0.05	3790	20.1	4.1	22	10600
32	Replicate 1	5080	G0.17	4.9	10.9	U0.12	U0.05	2340	13.9	4.4	6.7	9260
32	Replicate 2	5790	U0.12	4.5	11.2	0.14	U0.05	3450	14	4.4	6.9	9400
32	Replicate 3	5740	U0.12	3.4	11.1	0.13	U0.02	3380	13.9	4.4	6.8	9350
32	Replicate 4	6030	U0.12	4	12.7	U0.12	U0.03	3090	14	4.2	7.1	9350
33		9750	G0.21	4.7	42.6	0.15	0.1	6600	26.8	6.1	33.1	13800
34		18400	G0.38	12.8	90.5	U0.25	0.88	7040	54.8	9	116	26700
35	Replicate 1	17900	U0.28	11.1	42.8	0.31	E0.98	9410	49.3	10	76.2	25900
35	Replicate 2	17700	U0.28	11.9	41.1	U0.28	1.1	8520	46.7	9.1	71.6	24500
35	Replicate 3	17100	G0.33	9.5	42.7	U0.28	0.88	8620	46.2	9.1	70.6	24000
35	Replicate 4	17600	U0.27	11	40.8	U0.27	0.84	10100	46.4	9.1	72.3	24400
36R		5000	U0.11	1.4	8.5	U0.11	0.09	2080	16.4	3.9	4.6	7500
37R		6630	U0.11	3.5	14.1	0.12	U0.04	3060	18.6	5.6	6.9	11800
38	Replicate 1	19500	U0.36	11.4	50	U0.36	0.46	6240	42	13.1	49.1	28700
38	Replicate 2	19200	U0.36	13.5	50.6	U0.36	0.43	6180	42.5	13	47.7	28700
38	Replicate 3	19100	G0.43	15.2	49.8	U0.36	***5.8	6210	42.5	13	47.8	28500
38	Replicate 4	20100	G0.46	12.8	52.1	U0.36	0.41	6680	43.9	12.9	49.7	29100
39		4310	U0.12	1.6	9.1	U0.12	0.11	1700	10.9	2.4	3.5	6310

U = Undetected at the detection limit shown E = Estimated value G = Estimated value is greater than the minimum shown

Table 3. Continued.

STATION	REPLICATE	aluminum	antimony	arsenic	barium	beryllium	cadmium	calcium	chromium	cobalt	copper	iron
40		7180	G0.30	5.3	18.7	U0.14	0.2	3730	12	4.1	34.8	9810
41		10200	G0.20	5	25	U0.17	0.18	5130	12.1	4.9	30.7	13300
43		4020	U0.12	2.3	7.6	U0.12	0.06	1910	10.6	2.3	4.3	5700
44	Replicate 1	7770	G0.33	4.5	13.4	U0.14	0.16	3200	15.9	6	13.3	10600
44	Replicate 2	7440	G0.22	4.8	13.3	U0.14	0.13	3070	15.7	6.3	14.2	10400
44	Replicate 3	7660	G0.34	5.7	13.7	U0.14	0.12	7570	14.9	6.3	13.7	10200
44	Replicate 4	7870	G0.21	4.6	13.7	U0.14	0.1	3340	18.2	6.6	14	10900
45		9920	G0.31	5	17.4	U0.18	0.53	4190	15.7	6.3	24.6	11800
47		6630	U0.13	3.1	12.7	U0.13	0.14	7190	18.9	5.4	10.4	14800
48		16800	G0.40	10.8	29.3	U0.31	0.73	6410	31.6	9.4	41.5	21800
49		21900	U0.33	12.8	26.5	U0.33	1.6	4990	37.7	9.1	56.1	26000
69		6770	U0.13	3	15.5	U0.13	0.36	3990	19.4	5.1	9.1	10200
70		17500	U0.26	7.5	30.6	U0.26	0.54	8530	42	12.8	39.1	25800
71		12000	U0.18	5.5	32.3	U0.18	0.36	4890	29.1	6.9	19.4	19900
301R		6030	U0.12	1.5	12.7	U0.12	0.06	2140	20.8	4.2	6.9	9970
302R		13100	U0.19	4.3	31.2	U0.19	0.36	4390	29.9	7.2	18.8	20400
303R		12900	U0.24	12.3	31.5	U0.24	0.34	4980	37.3	6.9	58.4	18500
304R		23300	U0.35	6.7	39.6	U0.35	0.37	7240	46.6	18.5	56.4	37400
305R		27800	U0.40	16.8	26.2	U0.40	3.2	9920	64.8	15.8	90.9	40400
306R		6670	U0.12	3.1	13.6	U0.12	0.12	3750	23.4	5.7	7.5	10600
307R		21700	U0.31	15.8	51.1	U0.31	0.75	6270	73.3	13.5	51.5	34800
308R		7290	U0.12	4.4	14.1	0.13	0.32	4110	18.7	4	9.4	11200

U = Undetected at the detection limit shown E = Estimated value G = Estimated value is greater than the minimum shown

Table 3. Continued.

STATION	REPLICATE	lead	magnesium	manganese	mercury	nickel	silver	vanadium	zinc
1		11.9	11600	268	0.06	34.8	0.14	54.2	81.5
3		E10.9	8320	294	0.05	24.2	0.07	42.6	69
4		17.7	15400	350	0.11	62.1	0.16	64.3	95.7
5	Replicate 1	14.9	12700	299	0.08	41.9	0.11	56.3	84.5
5	Replicate 2	14.1	12800	305	0.08	41.6	0.12	59.1	85.9
5	Replicate 3	13	12600	297	0.08	40.9	0.12	57.1	84.4
5	Replicate 4	15.7	12600	296	0.13	38.6	0.12	54.8	83.5
8		19.3	9940	222	0.22	26.2	0.13	46.4	97.6
12		15.8	11100	255	0.06	32.3	0.12	45.5	72.8
14		7.5	8530	342	0.04	27.6	0.07	35.2	51
15		3	4160	184	0.01	14.3	U0.02	19.6	23.4
17		8.3	17900	576	0.05	48.3	0.17	113	78.3
18		7.8	10800	264	0.05	51.2	0.11	44	56.1
19		18.9	15100	701	0.09	61.2	0.24	58.2	93.3
20		10.7	19800	541	0.09	126	0.11	59.2	82.9
21		9.1	9660	267	0.07	40.1	0.17	43.4	65.1
22		4.4	3170	152	0.02	11.8	U0.02	13.9	18.2
23R		6.9	4640	452	0.01	24.2	U0.02	23	26.9
24R		21.4	12000	448	0.1	39.4	0.35	51.5	88.7
25R		2.8	2830	144	0.01	10.5	U0.02	10.7	14.1
26		7	7850	309	0.04	30.7	0.08	31.6	46
27R		5.7	3240	195	0.01	11	U0.02	15.5	19.4
29		19.4	11000	417	0.1	34.8	0.31	49.7	83.3
30		13.1	4440	129	0.12	16.1	0.12	23.1	36.1
32	Replicate 1	8.9	3180	196	U0.04	12.3	0.07	17.9	22.4
32	Replicate 2	11.4	3390	197	U0.04	12	0.06	20.1	21.4
32	Replicate 3	10.2	3450	191	U0.04	13.2	0.05	20.2	21.2
32	Replicate 4	9.8	3360	188	U0.04	12	0.06	20.6	27.2
33		31.2	5440	229	0.14	25	0.15	31.2	58.7
34		72.6	10300	329	***0.58	41.3	1.8	54.8	172
35	Replicate 1	69.7	10600	302	***0.45	43.8	1	53.7	139
35	Replicate 2	64.9	10300	283	***0.45	40.3	0.81	52.2	128
35	Replicate 3	61.1	10000	284	***0.42	38.6	0.77	51.1	128
35	Replicate 4	62.7	10200	291	***0.42	40	0.77	52.5	129
36R		4	4420	164	0.01	21.3	U0.02	15.2	19.2
37R		5.5	4520	242	U0.02	18.1	0.02	27.2	24.1
38	Replicate 1	37.7	12700	850	0.17	37.8	0.49	55.4	96.5
38	Replicate 2	43.8	12500	852	0.18	38.4	0.52	55.5	95.7
38	Replicate 3	123	12500	777	0.18	36.6	0.46	55.8	95.7
38	Replicate 4	37.8	12800	781	0.18	38.7	0.52	58.3	96.9
39		5.7	2590	104	0.02	8.2	U0.02	12.4	15
40		28.9	3590	150	0.12	9.5	0.23	24.8	38.8
41		14.7	4890	142	0.05	10	0.24	29.7	34.6
43		3.7	2490	153	0.01	8.3	U0.02	12.1	13.1

U = Undetected at the detection limit shown E = Estimated value G = Estimated value is

Table 3. Continued.

STATION	REPLICATE	lead	magnesium	manganese	mercury	nickel	silver	vanadium	zinc
44	Replicate 1	12.3	4110	389	0.04	14.9	0.06	24.2	33.4
44	Replicate 2	13.1	4140	384	0.04	13.7	0.07	23.7	32.7
44	Replicate 3	9.3	4110	372	0.04	13.7	0.06	23.5	32
44	Replicate 4	11.3	4350	410	0.04	16	0.07	24.3	34.2
45		16	4720	295	0.07	13.7	0.15	28.2	42
47		6.4	5250	348	0.03	22.7	0.06	21.9	31
48		23.7	9530	458	0.13	27.1	0.36	44.7	79.1
49		23.6	10400	238	0.18	25.8	0.44	47.8	83.2
69		4.9	4710	159	U0.03	19.7	0.08	21.9	27.8
70		14.7	9860	884	0.07	36.9	0.14	61.6	74.4
71		6.3	8050	209	0.05	29.4	0.07	38.6	55.6
301R		2.3	5000	127	0.01	24.2	U0.02	19.4	23.2
302R		10.4	8950	213	0.05	28.7	0.13	37	59.1
303R		31.5	9020	213	0.33	32.2	0.45	36	58.4
304R		29.8	16200	1370	0.08	45.4	0.14	81.8	104
305R		15.2	17200	386	0.07	49.5	0.2	94.3	89.7
306R		4.5	5410	311	0.02	23	0.03	22	24.8
307R		17	15900	375	0.1	63.1	0.36	65.9	99.9
308R		6.9	4230	151	U0.05	18.2	0.07	25.1	29

U = Undetected at the detection limit shown E = Estimated value G = Estimated value is greater than the minimum shown

Table 4. Organic compounds analyzed for, but undetected, in all samples taken during the 1992 MSMT survey.

RESIN ACIDS/GUAIACOLS	Range of detection limits (ug/kg dry weight)
3,4,5-trichloroguaiacol	11 - 29
4,5,6-trichloroguaiacol	11 - 29
4,5-dichloroguaiacol	11 - 29
neoabietic acid	33 - 58
palustric acid	120 -140
tetrachloroguaiacol	11 - 29

VOLATILE ORGANIC COMPOUNDS	Range of detection limits (ug/kg dry weight)
1,1,1-trichloroethane	0.14-0.36
1,1,2,2-tetrachloroethane	0.14-0.36
1,1,2-trichloroethane	0.14-0.36
1,1'-dichloroethane	0.14-0.36
1,1'-dichloroethene	0.14-0.36
1,2-dichlorobenzene	0.14-0.36
1,2-dichloroethane	0.14-0.36
1,2-dichloropropane	0.14-0.36
1,3-dichlorobenzene	0.14-0.36
1,4-dichlorobenzene	0.14-0.36
2-chloroethylvinyl ether	0.14-0.36
2-hexanone	1.4 -3.6
bromodichloromethane	0.14-0.36
bromomethane	0.14-0.36
carbon tetrachloride	0.14-0.36
chlorobenzene	0.14-0.36
chloroethane	0.14-0.36
chloromethane	0.14-0.36
cis-1,2-dichloroethene	0.14-0.36
cis-1,3-dichloropropene	0.14-0.36
dibromochloromethane	0.14-0.36
ethylbenzene	0.14-0.36
fluorotrichloromethane	0.14-0.36
styrene	0.14-0.36
toluene	0.14-0.36
trans-1,2-dichloroethene	0.14-0.36
trans-1,3-dichloropropene	0.14-0.36
trichloroethene	0.14-0.36
trichlorofluoromethane	0.14-0.36
vinyl acetate	0.14-0.36
vinyl chloride	0.14-0.36

PESTICIDES/PCBs	Range of detection limits (ug/kg dry weight)
aldrin	0.5 - 3.0
alpha HCH	0.5 - 3.0
alpha-chlordane	0.5 - 6.0
alpha-endosulfan	0.5 - 3.0
Arochlor 1221	20 - 120
Arochlor 1232	10 - 60
Arochlor 1248	10 - 60
Aroclor 1016/1242	10 - 60
beta HCH	0.5 - 4.0
beta-endosulfan	1.5 - 6.0
delta HCH	0.5 - 4.3
dieldrin	1.5 - 6.0
endosulfan sulfate	1.0 - 6.0
endrin	1.0 - 6.0
endrin aldehyde (reported for ST48,49,70)	4.0
endrin ketone	1.5 - 6.0
gamma HCH (lindane)	0.5 - 3.0
gamma-chlordane	0.5 - 6.0
heptachlor	0.5 - 3.0
heptachlor epoxide	0.5 - 3.0
methoxychlor	0.5 - 30
p,p'-DDE	1.0 - 6.0
p,p'-DDT	1.0 - 6.0
toxaphene	75 - 400

Table 4. Continued.

OTHER ORGANIC COMPOUNDS	Range of detection limits (ug/kg dry weight)
1,2,4-trichlorobenzene	7.9 - 29
1,2-dichlorobenzene	8.1 - 29
1,3-dichlorobenzene	7.9 - 29
1,4-dichlorobenzene	7.9 - 29
2,4,5-trichlorophenol	40 - 140
2,4,6-trichlorophenol	40 - 140
2,4-dichlorophenol	24 - 86
2,4-dinitrophenol	79 - 290
2,4-dinitrotoluene	40 - 140
2,6-dinitrotoluene	40 - 140
2-chloronaphthalene	7.9 - 29
2-chlorophenol	7.9 - 29
2-methylphenol	7.9 - 29
2-nitroaniline	40 - 140
2-nitrophenol	40 - 140
3,3'-dichlorobenzidene	40 - 140
3-nitroaniline	40 - 140
4,6-dinitro-2-methylphenol	79 - 290
4-bromophenyl phenyl ether	7.9 - 29
4-chloroaniline	24 - 86
4-chlorophenyl phenyl ether	7.9 - 29
4-chloro-3-methylphenol	16 - 57
4-nitroaniline	40 - 140
4-nitrophenol	40 - 140
benzyl alcohol	40 - 140
bis(2-chloroethoxy) methane	7.9 - 29
bis(2-chloroethyl)ether	7.9 - 29
bis(2-chloroisopropyl) ether	7.9 - 29
diethylphthalate	7.9 - 29
dimethyl phthalate	7.9 - 29
hexachlorobenzene	7.9 - 29
hexachlorobutadiene	16 - 57
hexachloroethane	16 - 57
isophorone	7.9 - 29
nitrobenzene	7.9 - 29
n-nitrosodiphenylamine	7.9 - 29
n-nitroso-di-n-propylamine	7.9 - 29
pentachlorophenol	40 - 140
polychlorodibenzodioxins	7.9 - 29

compounds as volatiles provided a range of detection limits from 0.14 to 0.36 μg/kg dry weight while analysis as semivolatile compounds provided ranges of detection limits of 8.1 to 24, 7.9 to 29, and 7.9 to 29 μg/kg dry weight, respectively. As there were no detected values associated with either of these compounds, comparison of the two methods was not possible. However, analysis of 1,2 dichlorobenzene, 1,3 dichlorobenzene, and 1,4 dichlorobenzene as volatile organic compounds did decrease their detection limits by an order of magnitude. The 56 organic compounds that were detected or estimated in at least one sample are discussed below. Comparison of the 1992 MSMT organic compound values with the Marine Sediment Quality Standards chemical criteria set forth in the state's Sediment Management Standards (Ch. 173-204 WAC) is presented in the following section.

Volatile Organic Compounds

Eleven of the 42 volatile organic compounds (VOCs) analyzed for during the 1992 MSMT survey were measured at detectable levels, qualified as "E" (*i.e.*, quantity listed is an estimated value) or qualified as "N" (*i.e.*, results based on presumptive evidence), in at least one sample (Table 5). Acetone and carbon disulfide were detected, estimated, or presumed to be in all VOC samples analyzed. All of the acetone and all but three carbon disulfide values were qualified due to problems with standard calibration (see QA/QC section). The compound 2-butanone was detected or estimated at 10 of 11 stations (in 14 of the 20 VOC samples). The sample with the greatest number of detected, estimated, or presumed VOCs was collected at Station 302R in Oak Bay, off the south end of Indian Island, south of Port Townsend.

Semivolatile Organic Compounds

Eighteen semivolatile compounds (excluding resin acids and guaiacols, pesticides and polychlorinated biphenyls, and the 15 polyaromatic hydrocarbons making up total HPAH and total LPAH) were detected or estimated in at least one of the 63 samples collected during the 1992 MSMT survey (Table 6). Several of the semivolatile compounds were chosen for analysis because they are indicators of specific anthropogenic or natural processes. These compounds are discussed below.

Beta-sitosterol is a plant sterol which is associated with the breakdown of terrestrial plant debris. This compound was detected or estimated in all of the 1992 MSMT samples. Retene, a resin acid oxidation product originating in forest and coniferous plant debris (Tetra Tech, 1990), was detected or estimated at 35 stations (50 of the 63 samples).

Beta-coprostanol, a fecal sterol, is produced by the bacterial breakdown of cholesterol and is considered a reliable marker for sewage effluent (Tetra Tech, 1990). This compound was detected or estimated at 28 stations (38 of 63 samples). Cholesterol was detected or estimated in all 1992 MSMT samples.

Table 5. Volatile organic compounds detected or estimated in at least one sample collected during the 1992 MSMT survey. Values are in ug/kg dry weight. Replicate stations are shaded.

STATION	REPLICATE	benzene	bromo-form	chloro-form	methyl-ene chloride	tetra-chloro-ethene	total xylenes	1,1,2-Tri chloro-1,2,2-tri-fluoro-ethane	2-buta-none	4-methyl-2-penta-none	acetone	carbon di-sulfide
3		0.15	U0.14	U0.14	U0.60	U0.14	0.42	U1.4	4.6	U1.4	E9.1	E1.1
8		E0.20	U0.22	E0.12	U1.9	U0.22	U0.44	U2.2	5.2	U2.2	E14	N3.0
17		U0.26	U0.26	U0.26	U4.2	U0.26	U0.52	U2.6	U4.1	U2.6	E9.1	N1.1
26		U0.14	E0.06	E0.08	U1.5	U0.14	U0.28	U1.4	6	U1.4	E11	E1.8
29	Replicate 1	U0.24	U0.24	U0.24	U0.75	U0.24	U0.48	U2.4	9.9	U2.4	E7.5	E1.4
29	Replicate 2	U0.24	U0.23	U0.23	U3.2	U0.23	0.52	U2.3	6.3	U2.3	E12	E1.7
29	Replicate 3	U0.23	U0.23	U0.23	U1.4	U0.23	U0.46	U2.3	5.9	U2.3	E20	E1.0
29	Replicate 4	U0.22	U0.22	U0.22	U4.5	U0.22	U0.44	U2.2	5.4	U2.2	E11	E1.5
34		U0.27	U0.27	U0.27	U3.2	U0.27	U0.54	E0.81	E6.8	3.9	E27	E3.2
35	Replicate 1	E0.17	U0.26	U0.26	U1.8	U0.26	U0.52	E1.1	E10	U2.6	E9.7	E1.2
35	Replicate 2	0.28	U0.25	U0.25	U2.2	U0.25	0.63	U2.5	6.5	U2.5	E28	2
35	Replicate 3	U0.27	U0.27	U0.27	U1.1	0.4	U0.54	E1.9	9.5	U2.8	E46	2.5
35	Replicate 4	U0.21	U0.21	U0.21	U0.21	0.27	U0.42	U2.1	U3.9	U2.1	E16	1.2
38	Replicate 1	U0.32	U0.32	U0.32	U1.4	U0.32	U0.64	U3.2	11	U3.2	E23	E1.4
38	Replicate 2	U0.34	U0.34	U0.34	9.1	U0.34	U0.68	U3.4	U5.6	U3.4	E14	E1.3
38	Replicate 3	U0.36	U0.36	U0.36	U1.1	U0.36	U0.72	U3.6	U7.1	U3.6	E20	E1.7
38	Replicate 4	U0.35	U0.35	U0.35	U1.0	U0.35	U0.64	U3.5	U6.5	U3.5	E14	N4.9
45		U0.15	U0.15	U0.15	U0.74	U0.15	U0.30	U1.5	U3.1	U1.5	E5.8	N1.8
48		U0.31	U0.31	U0.31	U3.5	U0.31	U0.62	U3.1	12	U3.1	E23	E4.8
302R		E0.10	U0.14	U0.14	E4.4	U0.14	E0.14	U1.4	3.9	U1.4	E7.0	N2.0

U = Undetected at the detection limit shown E = Estimated value N = Results based on presumptive evidence

Table 6. Semivolatile organic compounds detected or estimated in at least one sample collected during the 1992 MSMT survey. Values are in ug/kg dry weight. Replicate stations are shaded.

STATION	REPLICATE	bis-(2-ethyl-hexyl)-phthalate	butyl-benzyl-phthalate	di-n-butyl-phthalate	di-n-octyl-phthalate	4-methyl-phenol	phenol	benzoic acid	dibenzo-furan	beta copros-tanol
1		U16	U16	U16	U16	U16	E11	E56	U16	U80
3		16	U12	U12	U12	U12	E8.6	E27	U12	81
4		E16	U19	U19	U19	U19	E14	E64	U19	160
5	Replicate 1	E14	U17	U17	U17	U17	E13	E52	U17	90
5	Replicate 2	E17	U17	U17	U17	U17	E12	E74	U17	90
5	Replicate 3	U17	U17	U17	U17	U17	E17	E88	U17	U85
5	Replicate 4	U17	U17	U17	U17	U17	E14	E72	U17	U85
8		24	U14	E10	U14	U14	E10	E31	6	110
12		U17	U17	U17	U17	U17	U33	U170	U17	U84
14		U12	U12	U12	U12	U12	U23	U120	U12	U58
15		U8.3	U8.3	U8.3	U8.3	U8.3	E8.6	U82	U8.3	U41
17		U18	U18	U18	U18	U18	U35	E23	U18	U88
18		U12	U12	U12	U12	U12	E7.1	E35	U12	84
19		U21	U21	U21	U21	U21	U42	E34	U21	120
20		E8.5	U12	U12	U12	U12	E6.9	E20	U12	86
21		33	U10	U10	U10	16	E13	E19	E4.0	250
22		E7.9	U8.3	U8.3	U8.3	U8.3	28	E19	U8.3	47
23R		U8.0	U8.0	U8.0	U8.0	U8.0	U16	U80	U8.0	U40
24R		E15	U19	U19	U19	U19	U37	U190	U19	U93
25R		U8.3	U8.3	U8.3	U8.3	U8.3	E4.4	E19	U8.3	U41
26		U10	U10	U10	U10	U10	75	E12	U10	U50
27R		8.7	U8.0	U8.0	U8.0	U8.0	U16	U80	U8.0	E60
29		E16	U17	U17	U17	U17	U33	U170	U17	U83
30		15	U10	U10	U10	U10	E5.7	E14	19	E95
32	Replicate 1	12	U8.1	U8.1	U8.1	U8.1	42	U80	U8.1	E26
32	Replicate 2	18	U8.1	U8.1	U8.1	U8.1	U16	E23	U8.1	E27
32	Replicate 3	9.3	U8.2	U8.2	U8.2	U8.2	U16	U82	U8.2	E29
32	Replicate 4	9	E2.5	U8.1	U8.1	U8.1	U16	U81	U8.1	E30
33		40	U9.2	E4.0	U9.2	9.4	26	E24	32	E78
34		94	38	E25	U18	E7.7	E9.9	E27	E3.7	E200
35	Replicate 1	52	U19	E14	U19	U19	E5.9	U190	U19	96
35	Replicate 2	60	E15	E16	E9.6	U19	E6.5	U190	U19	U96
35	Replicate 3	58	E14	E13	U19	U19	E6.9	U190	U19	U95
35	Replicate 4	85	30	E12	E9.5	U18	E7.8	U180	E3.9	U92
36R		11	U8.3	U8.3	U8.3	U8.3	E9.0	U84	U8.3	E45
37R		E6.1	U7.9	U7.9	U7.9	U7.9	E3.0	U79	U7.9	U40

U = Undetected at the detection limit shown

E = Estimated value

Table 6. Continued.

STATION	REPLICATE	bis-(2-ethyl-hexyl)-phthalate	butyl-benzyl-phthalate	di-n-butyl-phthalate	di-n-octyl-phthalate	4-methyl-phenol	phenol	benzoic acid	dibenzo-furan	beta copros-tanol
38	Replicate 1	E32	U24	U24	U24	U24	U47	U240	U24	E99
38	Replicate 2	34	U24	U24	U24	U24	E12	E73	U24	E95
38	Replicate 3	56	U24	U24	U24	U24	U48	E28	U24	150
38	Replicate 4	46	U24	U24	U24	U24	U47	U240	U24	E87
39		E5.7	U8.1	U8.1	U8.1	U8.1	U16	U82	U8.1	E41
40		120	U9.3	U9.3	U9.3	E4.6	E14	U93	18	E160
41		150	U11	U11	U11	E6.1	E12	U110	E5.9	E680
43		E6.4	U8.3	U8.3	U8.3	U8.3	U17	U83	U8.3	U42
44	Replicate 1	E6.6	U10	U10	U10	U10	E4.9	U95	U10	E43
44	Replicate 2	E8.7	U10	U10	U10	U10	E6.8	U96	U10	E31
44	Replicate 3	E8.3	U10	U10	U10	U10	E5.3	U95	U10	E26
44	Replicate 4	E7.2	U10	U10	U10	U10	E7.3	U95	U10	E30
45		12	U12	U12	U12	U12	E6.3	E41	U12	E90
47		U9.4	U9.4	U9.4	U9.4	U9.4	E13	U94	U9.4	U47
48		U21	U21	U21	U21	U21	E9.8	E53	U21	U130
49		U22	U22	U22	U22	U22	U43	U220	U22	U110
69		E7.3	U8.9	U8.9	U8.9	U8.9	E9.3	U89	U8.9	55
70		37	23	U17	U17	U17	E12	E35	U17	U87
71		E11	U12	U12	U12	U12	E9.5	E49	U12	98
301R		E7.4	U8.2	U8.2	U8.2	U8.2	19	E34	U8.2	U41
302R		E8.4	U12	U12	U12	U12	U24	U120	U12	62
303R		15	U15	U15	U15	U15	E4.7	U150	U15	E44
304R		U26	U26	U26	U26	U26	U51	U260	U26	U130
305R		U29	U29	U29	U29	U29	U57	U290	U29	U140
306R		E6.9	U8.5	U8.5	U8.5	U8.5	E7.2	U85	U8.5	E43
307R		U22	U22	U22	U22	U22	U44	E32	U22	U110
308R		E6.3	U9.0	U9.0	U9.0	U9.0	E7.5	U85	U9.0	E38

U = Undetected at the detection limit shown

E = Estimated value

Table 6. Continued.

STATION	REPLICATE	2-methyl-napth-alene	Beta-sito-sterol	Caffeine	Chole-sterol	Cymene	Perylene	Retene	2,4-di-methyl-phenol
1		E7.3	E1000	U16	E2100	U80	E33	E14	U32
3		E8.9	1100	U12	E2100	U61	E30	E12	U24
4		E8.0	E1500	U19	1900	U93	E15	E12	U37
5	Replicate 1	E8.6	1300	U17	1100	U84	E16	E10	U34
5	Replicate 2	E11	1200	U17	1600	U87	E27	E18	U35
5	Replicate 3	E8.7	1000	U17	1200	U85	E15	E11	U34
5	Replicate 4	E7.1	1000	U17	1000	U85	E14	E8.8	U34
8		E11	1600	U14	600	E19	E18	E48	U28
12		U17	660	U17	540	U84	E12	E10	U33
14		U12	410	U12	E900	U58	E18	E11	U23
15		U8.3	440	U8.3	350	U41	U41	E3.5	U17
17		U18	E360	U18	E300	U88	U88	U88	U35
18		U12	710	U12	1300	U58	E9.1	E4.9	U23
19		U21	E970	U21	1800	U110	E25	E16	U42
20		U12	1500	U12	1900	U60	E19	E15	U24
21		E5.3	1500	U10	1300	E24	E39	E39	U20
22		U8.3	E230	U8.3	E420	U42	E6.2	U42	U17
23R		U8.0	E46	U8.0	E150	U40	U40	U40	U16
24R		U19	U93	U19	U93	U93	E24	U93	U37
25R		U8.3	U41	U8.3	140	U41	U41	U41	U17
26		U10	E130	U10	1400	U50	E13	U50	U20
27R		U8.0	U40	U8.0	E250	U40	U40	U40	U16
29		U17	U83	U17	E230	U83	E19	U83	U33
30		12	370	U10	980	U49	75	E33	U20
32	Replicate 1	U8.1	130	U8.1	E330	U40	E11	E6.1	U16
32	Replicate 2	U8.1	E85	U8.1	420	U41	E12	E8.5	U16
32	Replicate 3	U8.2	130	E2.2	E200	U41	E11	E8.1	U16
32	Replicate 4	U8.1	100	U8.1	310	U41	E11	E7.9	U16
33		21	230	U9.2	E320	E4.5	110	E45	E4.4
34		E6.1	250	U18	E1900	U90	E40	E40	U36
35	Replicate 1	E8.3	290	U19	E530	U95	60	E60	U38
35	Replicate 2	E11	E280	U19	E290	U96	E86	E69	U39
35	Replicate 3	E8.6	E210	U19	E490	U95	E88	E34	U38
35	Replicate 4	E9.5	E240	U18	E1200	U92	E89	E59	U37
36R		U8.3	260	U8.3	350	U42	U42	E9.1	U17
37R		U7.9	150	U7.9	E630	U40	E7.1	E5.0	U16

U = Undetected at the detection limit shown

E = Estimated value

Table 6. Continued.

STATION	REPLICATE	2-methyl-napth-alene	Beta-sito-sterol	Caffeine	Chole-sterol	Cymene	Perylene	Retene	2,4-di-methyl-phenol
38	Replicate 1	E10	E440	U24	E760	U120	E42	E45	U47
38	Replicate 2	E12	E410	U24	E660	U120	E37	E67	U47
38	Replicate 3	U24	640	U24	880	U120	E34	E41	U48
38	Replicate 4	E12	E420	U24	E960	U120	E46	E71	U47
39		U8.1	140	U8.1	220	U41	U41	U41	U16
40		25	930	U9.3	1000	E9.1	110	100	U19
41		14	2500	U11	3200	E12	E23	130	U21
43		U8.3	200	U8.3	570	U42	E6.4	E5.7	U17
44	Replicate 1	U10	E250	U10	E1200	U47	E8.4	E25	U19
44	Replicate 2	U10	E250	U10	E700	U48	E9.8	E24	U19
44	Replicate 3	U10	E200	U10	E1100	U47	E9.0	E23	U19
44	Replicate 4	U10	E200	U10	E1300	U48	E9.0	E28	U19
45		U12	970	U12	780	U60	E15	77	U24
47		U9.4	E260	U9.4	E1400	U47	E10	E21	U19
48		U21	480	U21	830	U100	E26	E52	U42
49		U22	U110	U22	630	U110	U110	E27	U43
69		U8.9	280	U8.9	550	U45	E8.6	E9.2	U18
70		U17	E930	U17	E790	E8.4	E22	E130	U35
71		U12	980	U12	1400	U60	E14	E8.0	U24
301R		U8.2	E200	U8.2	E450	U41	U41	U41	U16
302R		U12	1300	U12	890	U60	E16	E13	U24
303R		U15	500	U15	670	U73	E15	E69	U29
304R		U26	1000	U26	530	U130	E16	U130	U51
305R		U29	E880	U29	2700	U140	E18	U140	U57
306R		U8.5	200	U8.5	340	U43	E5.8	E9.6	U17
307R		U22	E720	U22	E1400	U110	U110	U110	U44
308R		U9.0	420	U9.0	E670	U43	E6.0	E7.9	U17

U = Undetected at the detection limit shown

E = Estimated value

Phenol is generally formed by aerobic decomposition of plant material and animal wastes. It can be used as an indicator for wastewater treatment plant effluent (Tetra Tech, 1990). Phenol was detected or estimated at 33 stations (42 of the 63 samples).

Other compounds that were detected or estimated include perylene at 38 stations (53 of the 63 samples), bis(2-ethylhexyl)phthalate at 32 stations (45 of the 63 samples), benzoic acid at 24 stations (28 of the 63 samples), 2-methyl-napthalene at 13 stations (21 of the 63 samples), and 9(H)carbazol at 8 stations (13 of the 63 samples). The 8 remaining semivolatile compounds in Table 6 were found in less than 15 percent of the samples tested for these compounds.

Resin Acids and Guaiacols

Resin acids occur naturally in the environment, but are concentrated by the wood pulping processes. Chlorine bleaching processes used by pulp mills release chlorinated resin acids and chlorinated guaiacols in their effluent (Tetra Tech, 1990). The four MSMT stations analyzed for resin acids and guaiacols were chosen due to their proximity to pulp mills.

Nine of the 15 resin acid and guaiacol compounds analyzed for were detected or estimated in at least one of the seven samples collected (Table 7). Five of these were detected or estimated in all seven samples analyzed.

Polyaromatic Hydrocarbons

The most frequently detected neutral extractable compounds were the polyaromatic hydrocarbons (PAHs). Six low molecular weight polyaromatic hydrocarbon (LPAH) and 9 high molecular weight polyaromatic hydrocarbon (HPAH) compounds (used in calculating total LPAH and total HPAH) analyzed for during the 1992 MSMT survey are presented in Tables 8 and 9, respectively. Three additional LPAH compounds (2-methylnaphthalene, cymene, and retene) have been presented in Table 6, along with the other semivolatile compounds.

The LPAH compounds are generally associated with petroleum fuels and oils (Tetra Tech, 1990). One or more of the LPAH compounds analyzed for were detected or estimated in most samples. The most frequently detected LPAH was phenanthrene which was detected or estimated at 36 stations (51 of 63 samples).

HPAHs are byproducts of combustion and are considered indicators of contaminants from urban areas (Tetra Tech, 1990). HPAH compounds were also detected or estimated in most samples analyzed. The most frequently detected HPAH was fluoranthene which was detected or estimated at 44 stations (59 of 63 samples), closely followed by pyrene at 42 stations (57 of 63 samples).

Table 7. Resin acids and guaiacol compounds detected or estimated in at least one sample collected during the 1992 MSMT survey. Values are in ug/kg dry weight. Replicate stations are shaded.

STATION	REPLICATE	abietic acid	de-hydro-abietic acid	di-chloro-dehydro-abietic acid	guaiacol	iso-pimaric acid	pimaric acid	sandaco-pimaric acid	1,4-chloro-dehydo-abietic acid	1,2-chloro-dehydo-abietic acid
4	Replicate 1	E43	E64	E21	U19	E33	U230	U460	E11	E49
4	Replicate 2	54	73	32	U27	U27	U330	U630	E20	56
4	Replicate 3	E54	58	E24	U29	U29	U350	U29	E18	48
4	Replicate 4	E51	59	E25	U28	E28	U420	U640	E15	47
8		460	460	E11	U14	220	120	70	E17	53
12		170	120	E11	U17	56	U180	130	E10	E23
41		300	170	E14	E7.8	180	U150	340	E7.5	29

U = Undetected at the detection limit shown E = Estimated value

None of the 15 PAH compounds used in calculating total LPAH and total HPAH (Tables 8 and 9) were detected in South Hood Canal (Station 17), East Central Basin (Station 23R), West Central Basin (Station 25R), or Useless Bay (Station 301R). All of the 15 PAH compounds shown in Tables 8 and 9 were detected at Eagle Harbor (Station 30), Elliott Bay (Station 33), Dyes Inlet (Station 35, replicate 3), and City (Thea Foss) Waterway (Station 40).

Pesticides and Polychlorinated Biphenyls

Only three of the 27 pesticide and PCB compounds tested for were estimated as present in the MSMT samples (Table 10). Most of the estimated values for these three compounds fall below the analytical detection limit. These values are reported as estimated, rather than undetected, due to the presence of a reliable peak produced during the gas chromatographic analysis.

These values were determined from samples collected at six stations in urban or industrially influenced areas located in Central Puget Sound. Stations with estimated values for pesticides or PCBs were located in Eagle Harbor (Station 30), south of Magnolia Bluff in Elliott Bay (Station 32; replicate 1 and replicate 3), near Duwamish Head in Elliott Bay (Station 33), Sinclair Inlet (Station 34), Dyes Inlet (Station 35; in all replicates), and in City (Thea Foss) Waterway in Tacoma (Station 40).

Comparison of Organics Data to Washington State Sediment Management Standards

The Washington State Sediment Management Standards were developed, in part, to set standards for allowable levels of chemical contamination in Puget Sound sediments. These levels should correspond to a sediment quality that will result in no adverse effects, either acute or chronic, on biological resources and will pose no significant health risk to humans. The Marine Sediment Quality Standards Chemical Criteria for Puget Sound are presented in Table 1 of the Standards (Ch. 173-204 Washington Administrative Code, 1991). The chemical criteria for Puget Sound sediments have been established for 47 chemical parameters, including 8 metals and 39 organic compounds. Comparison of the 1992 MSMT metals data to the chemical criteria have been discussed earlier in this report. This section focuses on a comparison of the 1992 MSMT organic compound data with the Marine Sediment Quality Standards chemical criteria.

Tables comparing the 1992 MSMT values with the 39 organic parameters listed in the Sediment Management Standards are provided in Appendix C. Normalization of the data to total organic carbon has been completed where appropriate for comparison with the chemical criteria. In the majority of cases, data compared with the chemical criteria were qualified as either undetected at the detection limit or as estimated values.

Table 8. Low molecular weight polyaromatic hydrocarbon (LPAH) compounds measured in the 1992 MSMT survey. Values are ug/kg dry weight. Replicate stations are shaded.

STATION	REPLICATE	acenaph-thene	ace-naphthy-lene	anthra-cene	fluorene	naphtha-lene	phenan-threne
1		U16	U16	E6.8	U16	U16	35
3		U12	U12	E5.3	U12	E5.2	27
4		U19	U19	U19	U19	E7.9	24
5	Replicate 1	U17	U17	U17	U17	U17	20
5	Replicate 2	U17	U17	U17	U17	U17	25
5	Replicate 3	U17	U17	U17	U17	U17	18
5	Replicate 4	U17	U17	U17	U17	U17	17
8		U14	E4.8	E12	E9.0	20	42
12		U17	U17	U17	U17	U17	19
14		U12	U12	U12	U12	U12	22
15		U8.3	U8.3	U8.3	U8.3	U8.3	U8.3
17		U18	U18	U18	U18	U18	U18
18		U12	U12	U12	U12	U12	U12
19		U21	U21	U21	U21	U21	23
20		U12	U12	U12	U12	U12	E10
21		E3.3	E2.8	E10	E5.4	13	30
22		U8.3	U8.3	U8.3	U8.3	U8.3	E8.3
23R		U8.0	U8.0	U8.0	U8.0	U8.0	U8.0
24R		U19	U19	U19	U19	U19	24
25R		U8.3	U8.3	U8.3	U8.3	U8.3	U8.3
26		U10	U10	U10	U10	U10	22
27R		U8.0	U8.0	U8.0	U8.0	U8.0	E5.1
29		U17	U17	U17	U17	U17	22
30		12	11	180	35	23	130
32	Replicate 1	U8.1	U8.1	E5.3	E1.9	E3.4	14
32	Replicate 2	U8.1	E1.9	E6.1	E2.1	E2.7	14
32	Replicate 3	U8.2	U8.2	E5.1	U8.2	E2.7	13
32	Replicate 4	U8.1	U8.1	E5.5	E1.7	E2.2	13
33		26	38	110	61	38	350
34		E4.3	E3.9	E13	E6.5	E6.0	E40
35	Replicate 1	U19	19	62	E11	E6.3	57
35	Replicate 2	U19	27	79	E15	E6.7	82
35	Replicate 3	E4.5	29	96	E12	E5.8	96
35	Replicate 4	U18	30	87	E11	E6.0	80
36R		U8.3	U8.3	E3.6	U8.3	U8.3	E8.1
37R		U7.9	U7.9	E2.2	U7.9	U7.9	E3.7
38	Replicate 1	U24	U24	E9.5	U24	E9.7	E42
38	Replicate 2	U24	U24	U24	U24	E9.3	33
38	Replicate 3	U24	U24	U24	U24	U24	41
38	Replicate 4	U24	U24	U24	U24	E11	50
39		U8.1	U8.1	U8.1	U8.1	U8.1	U8.1
40		37	59	340	72	53	520
41		E4.2	U11	E8.8	E5.6	11	29
43		U8.3	U8.3	U8.3	U8.3	U8.3	U8.3
44	Replicate 1	U10	U10	U10	U10	U10	E5.9
44	Replicate 2	U10	U10	U10	U10	U10	E6.7
44	Replicate 3	U10	U10	U10	U10	U10	E5.9
44	Replicate 4	U10	U10	U10	U10	U10	E8.4
45		U12	U12	U12	U12	U12	E10
47		U9.4	U9.4	U9.4	U9.4	U9.4	U9.4
48		U21	U21	U21	U21	U21	25
49		U22	U22	U22	U22	U22	U22
69		U8.9	U8.9	U8.9	U8.9	E2.0	9.3
70		U17	U17	E11	U17	U17	35
71		U12	U12	E6.5	U12	U12	33
301R		U8.2	U8.2	U8.2	U8.2	U8.2	U8.2
302R		U12	U12	U12	U12	U12	17
303R		U15	U15	E8.3	U15	E4.6	25
304R		U26	U26	U26	U26	U26	E15
305R		U29	U29	U29	U29	U29	U29
306R		U8.5	U8.5	U8.5	U8.5	U8.5	E3.4
307R		U22	U22	U22	U22	U22	U22
308R		U9.0	U9.0	U9.0	U9.0	U9.0	E4.9

U = Undetected at the detection limit shown E = Estimated value

Table 9. High molecular weight polyaromatic hydrocarbon (HPAH) compounds measured in the 1992 survey. Values are in ug/kg dry weight. Replicate stations are shaded.

STATION	REPLICATE	dibenzo-(a,h)-anthracene	benzo-(a)-anthra-cene	benzo-(a)-pyrene	total benzo-fluoran-thenes	benzo-(g,h,i)-perylene	chrysene	fluor-anthene	indeno-(1,2,3-c,d)-pyrene	pyrene
1		U16	23	29	40	E25	30	63	U19	47
3		U12	E9.6	U12	16	U12	13	E26	U12	19
4		U19	E11	U19	22	U19	E16	E35	U19	E23
5	Replicate 1	U17	E10	U17	U17	U17	E15	34	U17	18
5	Replicate 2	U17	E13	U17	27	U17	E21	43	U17	28
5	Replicate 3	U17	U17	U17	U17	U17	E16	23	U17	21
5	Replicate 4	U17	U17	U17	U17	U17	E13	29	U17	E16
8		U14	26	E23	59	E16	47	E70	U17	56
12		U17	E13	E12	27	U17	21	E33	U17	26
14		U12	E6.0	U12	12	U12	E9.0	E23	U12	E16
15		U8.3	U8.3	U8.3	U8.3	U8.3	U8.3	E4.9	U8.3	U8.3
17		U18	U18	U18	U18	U18	U18	U18	U18	U18
18		U12	U12	U12	U12	U12	U12	E8.5	U12	E5.0
19		U21	E11	U21	25	U21	E15	27	U21	22
20		U12	U12	U12	U12	U12	U12	E8.0	U12	U12
21		U10	20	19	36	E14	32	50	15	27
22		U8.3	E6.9	U8.3	12	U8.3	15	11	U8.3	E6.8
23R		U8.0	U8.0	U8.0	U8.0	U8.0	U8.0	U8.0	U8.0	U8.0
24R		U19	E16	E24	E40	U19	23	33	U19	32
25R		U8.3	U8.3	U8.3	U8.3	U8.3	U8.3	U8.3	U8.3	U8.3
26		U10	E8.4	11	18	E9.9	10	21	U11	18
27R		U8.0	E4.1	U8.0	E11	U8.0	E4.6	E7.6	U8.0	8.7
29		U17	18	E24	E39	E17	23	42	U17	39
30		44	230	230	580	E79	410	350	100	400
32	Replicate 1	E5.2	14	21	36	E13	20	20	17	23
32	Replicate 2	E6.0	E17	E23	E45	E10	25	27	E13	33
32	Replicate 3	E5.3	15	20	37	E12	21	23	16	31
32	Replicate 4	U8.1	14	18	36	E10	21	25	11	26
33		61	260	330	630	E130	340	440	180	490
34		E17	61	81	150	E53	85	E110	60	150
35	Replicate 1	28	170	210	250	E68	190	290	120	E540
35	Replicate 2	E28	E240	E300	E370	E110	260	460	E120	E660
35	Replicate 3	E31	E270	E330	E400	E110	310	480	E120	E580
35	Replicate 4	E36	E270	E330	E390	E140	300	460	E130	E820
36R		U8.3	E8.0	10	19	E11	12	13	E12	15
37R		U7.9	E3.5	E5.0	E9.2	E7.7	E4.2	E4.2	U7.9	E4.9
38	Replicate 1	U24	E33	E43	E83	E36	E41	93	E36	E49
38	Replicate 2	U24	E31	E43	E76	E22	45	60	U26	76
38	Replicate 3	U24	30	45	59	E35	48	65	E45	71
38	Replicate 4	U24	E33	E48	E89	E20	46	90	U24	70
39		U8.1	U8.1	U8.1	E7.4	U8.1	E3.5	E3.8	U8.1	E3.0

U = Undetected at the detection limit shown

E = Estimated value

Table 9. Continued.

STATION	REPLICATE	dibenzo-(a,h)-anthracene	benzo-(a)-anthra-cene	benzo-(a)-pyrene	total benzo-fluoran-thenes	benzo-(g,h,i)-perylene	chrysene	fluor-anthene	indeno-(1,2,3-c,d)-pyrene	pyrene
40		E79	460	490	580	E170	550	610	E280	1200
41		U11	28	29	66	E24	46	55	E25	81
43		U8.3	E4.7	E6.7	8.4	U8.3	E6.1	E3.3	U8.3	E6.8
44	Replicate 1	U10	E6.0	E7.6	E16	U10	E9.0	15	U10	E9.5
44	Replicate 2	U10	E6.5	E7.6	E16	U10	9.7	14	U10	12
44	Replicate 3	U10	E5.8	E6.4	E14	U10	E8.8	13	U10	11
44	Replicate 4	U10	E7.0	E7.9	E19	U10	12	19	U10	14
45		U12	E11	15	25	E17	17	16	20	27
47		U9.4	U9.4	E7.3	E13	U9.4	E6.2	9.6	U9.4	E7.4
48		U21	U21	E19	35	U21	U21	E37	U21	21
49		U22	37	31	64	U22	63	E250	U22	97
69		U8.9	E7.2	9.9	19	E8.7	10	14	12	18
70		U17	40	52	64	E37	78	95	U21	57
71		U12	18	18	34	E11	40	97	U14	49
301R		U8.2	U8.2	U8.2	U8.2	U8.2	U8.2	U8.2	U8.2	U8.2
302R		U12	E8.1	E9.1	18	U12	12	E22	U12	26
303R		E11	28	27	56	E21	39	64	E31	72
304R		U26	U26	U26	E22	U26	U26	E20	U26	27
305R		U29	U29	U29	U29	U29	U29	E21	U29	E15
306R		U8.5	E3.9	E5.2	10	E8.4	E5.7	E5.5	U8.5	E7.7
307R		U22	U22	U22	U22	U22	U22	E15	U22	E14
308R		U9.0	E6.5	E7.4	18	E8.7	11	14	U8.8	15

U = Undetected at the detection limit shown

E = Estimated value

Table 10. Pesticide/PCB compounds measured during the 1992 MSMT survey with detected or estimated values in at least one sample. Values are in ug/kg dry weight. Replicate stations are shaded.

STATION	REPLICATE	PCB Arochlor 1254	PCB Arochlor 1260	p,p'-DDD
1		U20	U20	U2.0
3		U20	U20	U2.0
4		U20	U20	U2.0
5	Replicate 1	U20	U20	U2.0
5	Replicate 2	U20	U20	U2.0
5	Replicate 3	U20	U20	U2.0
5	Replicate 4	U20	U20	U2.0
8		U20	U20	U2.0
12		U20	U20	U2.0
14		U20	U20	U2.0
15		U20	U20	U2.0
17		U20	U20	U2.0
18		U20	U20	U2.0
19		U20	U20	U4.0
20		U10	U10	U2.0
21		U10	U10	U2.0
22		U10	U10	U2.0
23R		U10	U10	U2.0
24R		U20	U20	U4.0
25R		U10	U10	U2.0
26		U10	U10	U2.0
27R		U10	U10	U2.0
29		U20	U20	U4.0
30		E8.9	U15	U2.0
32	Replicate 1	E5.8	U10	U2.0
32	Replicate 2	U10	U10	U2.0
32	Replicate 3	E5.7	E6.1	U2.0
32	Replicate 4	U10	U10	U2.0
33		E27	U30	E1.4
34		E19	E22	U4.0
35	Replicate 1	E15	U20	U4.0
35	Replicate 2	E18	U20	U4.0
35	Replicate 3	E17	U20	U4.0
35	Replicate 4	E18	U20	U4.0
36R		U30	U30	U3.0
37R		U10	U10	U2.0
38	Replicate 1	U30	U30	U3.0
38	Replicate 2	U30	U30	U3.0
38	Replicate 3	U30	U30	U3.0
38	Replicate 4	U60	U60	U8.0
39		U30	U30	U3.0
40		E40	U47	U4.0
41		U55	U30	U6.0
43		U30	U30	U3.0
44	Replicate 1	U30	U30	U6.0
44	Replicate 2	U10	U10	U1.0
44	Replicate 3	U15	U15	U1.5
44	Replicate 4	U60	U60	U6.0
45		U30	U30	U3.0
47		U30	U30	U3.0
48		U40	U40	U4.0
49		U40	U40	U4.0
69		U10	U10	U2.0
70		U40	U40	U4.0
71		U20	U20	U2.0
301R		U10	U10	U2.0
302R		U20	U20	U2.0
303R		U30	U30	U2.5
304R		U40	U40	U4.0
305R		U40	U40	U4.0
306R		U30	U30	U3.0
307R		U20	U20	U4.0
308R		U10	U10	U2.0

U = Undetected at the detection limit shown
E = Estimated value

For compounds requiring normalization to total organic carbon, undetected values were normalized at the detection limit, providing the highest and most conservative possible value for comparison with the chemical criteria. Undetected values, after normalization, which fall below the chemical criteria are considered to accurately represent values below the chemical criteria. Normalized undetected values which are greater than or equal to the chemical criteria, however, are considered "unknown" values. If the detection limit generated by the laboratory had been lower, a compound may have been detectable at a value below the chemical criteria. In these cases, a reevaluation of the laboratory analytical techniques or the chemical criteria level may be necessary. Data qualified as estimated values were also normalized for comparison and the qualifier retained.

Caution should be used in the comparison of chemistry data from the MSMT survey with the chemical criteria. Up to 90 percent of the values calculated for total HPAH and total LPAH were based on the sum of undetected chemical parameters. Also, in some cases, several chemical parameters (including 2,4-dimethylphenol and benzyl alcohol) had quantitation limits which exceeded the chemical criteria for those compounds.

Examination of the 1992 MSMT organic analysis results indicated that, in general, data collected in the MSMT surveys rarely exceed, or come close to exceeding the chemical criteria. Station 33 (Elliott Bay) was the only location where some organic compounds exceeded the Marine Sediment Quality Standards Chemical Criteria. These compounds include the following:

Parameter	**Chemical Criteria (ppm carbon)**	**Value (ppm carbon)**
phenanthrene	100	184.21
fluoranthene	160	231.58
benzo(a)anthracene	110	136.84
chrysene	110	178.95
Total benzofluoranthenes	230	331.58
benzo(a)pyrene	99	173.68
indeno(1,2,3,c,d)pyrene	34	94.74
benzo(g,h,i)perylene	31	68.42
Total HPAH	960	1505.79
Total PCBs	12	14.21

Station 33 is located in Elliott Bay near Duwamish Head, an urban area heavily influenced by anthropogenic activity. Small balls of an unidentified tar-like substance were noted when sorting benthic samples from this station. The total organic carbon value for Station 33 should be considered when comparing carbon normalized values at this station to the chemical criteria.

Station 33 had one of the lower total organic carbon values (0.19 percent) found in the 1992 MSMT survey. Such low TOC values may artificially elevate the carbon normalized value of a compound. It is recommended that when TOC values are very low (*i.e.*, 0.1 to 0.2 percent) that concentrations of organic chemicals be compared to Apparent Effects Thresholds (AET) values expressed as dry weight concentrations (Michelsen, 1992). None of the organic compounds found at Station 33 exceed the AETs for those compounds (PTI, 1989a).

Sediment Toxicity Testing - Amphipod Bioassays

The mean, standard deviation, and range of amphipod mortality for each of the 48 stations sampled are presented in Table 11. Replicate samples are not discussed separately. Mean mortality ranged from zero percent at Station 25R (West Central Basin) to 32 percent at Stations 12 (Port Townsend) and 19 (Saratoga Passage).

Seventeen stations exhibited reduced amphipod survival based on the guidelines presented by Mearns *et al.* (1986). In North Puget Sound, this included Stations 1, Semiahmoo Bay (18 percent); 3, Strait of Georgia (18 percent); 12, Port Townsend (32 percent); 14, North Hood Canal (22 percent); 17, South Hood Canal (25 percent); 19, Saratoga Passage (32 percent); and 20, Port Susan (15 percent). Central Puget Sound stations displaying reduced amphipod survival include Stations 34, Sinclair Inlet (16 percent); 35, Dyes Inlet (16 percent); 38, Point Pulley (15 percent); 41, Blair/Sitcum Waterways, (19 percent); 24R, Central Basin East (13 percent); 304R, Tekiu Point (26 percent); and 307R, Holmes Harbor (23 percent). In South Puget Sound, the stations displaying reduced amphipod survival included Stations 48, North Budd Inlet (24 percent); 49, South Budd Inlet (23 percent); and 70, Shelton (21 percent).

The Dunnetts Test (Wilkinson, 1990) was used to determine whether the mortality values observed from the control sediments (West Beach reference material) were significantly different from the mortality values found at the 17 stations listed above. Results indicated that all of the mortality values from these 17 stations were significantly different ($P<0.01$) from the control stations.

Results of the Mearns *et al.* (1986) classification of sediment toxicity were further evaluated by considering the potential effects of sediment grain size on amphipod mortality. DeWitt *et al.* (1988) demonstrated that elevated mortality in the amphipod bioassay can result solely from exposure of the organisms to fine-grained sediments. That relationship was summarized by linear regression of amphipod survival on the percent fines fraction of reference sediments (Figure 3).

According to that relationship, if the mean number of survivors observed for a test sediment is less than the lower 95 percent prediction limit calculated for the regression relationship, then the observed mortality is probably due to factors other than percent fines (*i.e.*, a contaminant effect).

Table 11. Results of the 1992 amphipod sediment toxicity tests.

Station	Location	Range of Percent Mortality	Mean (±std. dev.)* Percent Mortality
1	Semiahmoo Bay	10-25	18 (5.7)
3	Strait of Georgia	10-35	18 (10.4)
4	Bellingham Bay	0-20	11 (8.9)
5	Samish Bay	0-25	10 (2.4)
8	Port Angeles Harbor	0-15	8 (7.6)
12	Port Townsend	25-40	32 (5.7)
14	North Hood Canal	5-40	22 (14.8)
15	Dabob Bay	0-15	4 (6.5)
17	South Hood Canal	10-35	25 (11.7)
18	Oak Harbor	0-20	10 (7.9)
19	Saratoga Passage	5-100	32 (39.2)
20	Port Susan	10-25	15 (6.1)
21	Port Gardner	0-15	11 (6.5)
22	Mukilteo	0-5	3 (2.7)
26	West Central Basin	5-15	9 (5.5)
29	Shilshole	0-20	11 (7.4)
30	Eagle Harbor	0-10	3 (4.5)
32	Magnolia Bluff	0-15	6 (3.0)
33	Elliott Bay	0-10	6 (4.2)
34	Sinclair Inlet	5-25	16 (7.4)
35	Dyes Inlet	0-25	16 (2.7)
38	Point Pully	0-35	15 (4.7)
39	Dash Point	0-15	5 (6.1)
40	City Waterway	0-25	12 (12.0)
41	Blair/Sitcum Waterways	10-25	19 (6.5)
43	Carr Inlet	0-20	6 (8.2)
44	East Anderson Island	0-35	9 (3.9)
45	Devil's Head	0-15	10 (7.1)
47	Case Inlet	5-15	8 (4.5)
48	North Budd Inlet	10-35	24 (12.9)
49	South Budd Inlet	5-40	23 (15.3)
69	Port Madison	0-15	9 (5.5)
70	Shelton	15-30	21 (6.5)
71	Fidalgo Bay	0-10	5 (3.5)
23R	Central Basin E.	0-5	1 (2.2)
24R	Central Basin E.	5-20	13 (5.7)
25R	Central Basin W.	0	0 (0.0)
27R	Richmond Beach	0-10	5 (5.0)
36R	Brace Point	0-10	5 (3.5)
37R	North Vashon	5-10	6 (2.2)
301R	Useless Bay	0-5	2 (2.7)
302R	Oak Bay	0-10	6 (4.2)
303R	Quartermaster Harbor	0-20	12 (7.6)
304R	Tekiu Point	0-50	26 (18.5)
305R	Lynch Cove	5-10	7 (2.7)
306R	Seahurst Bay	0-25	11 (10.8)
307R	Holmes Harbor	15-30	23 (5.7)
308R	Liberty Bay	0-20	12 (7.6)
Control group 1		0-15	3 (6.7)
group 2		0-10	3 (4.5)
group 3		0-5	1 (2.2)
group 4		0	0 (0.0)

* Number of samples = 5

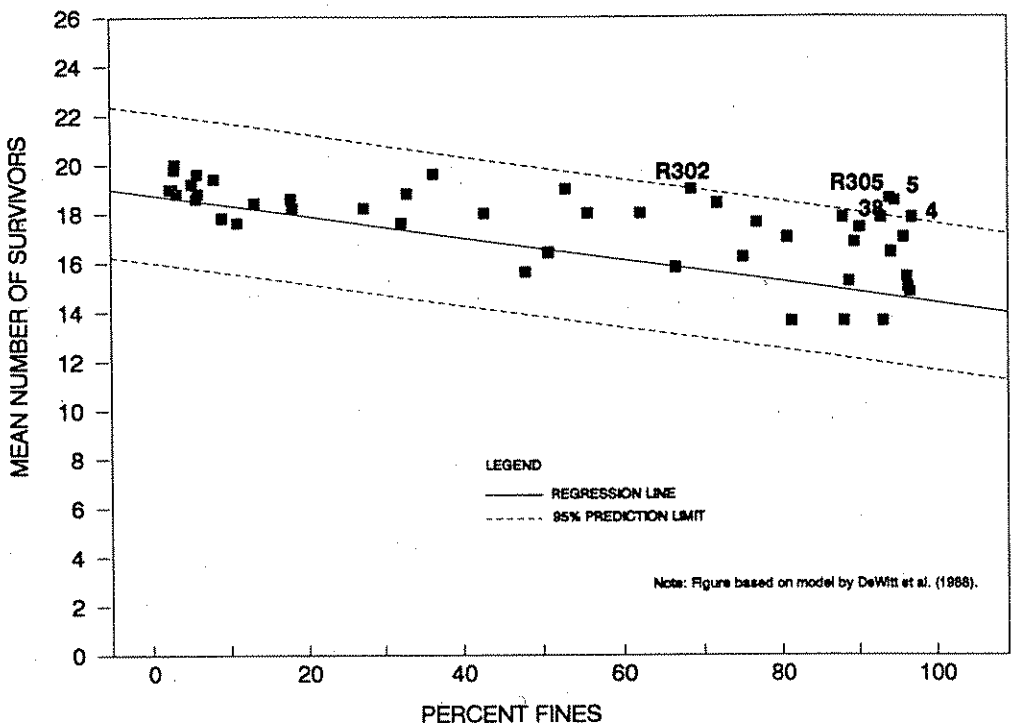

Figure 3. Amphipod survival vs. percent fine-grained sediment at 1992 MSMT stations

All 48 MSMT stations were plotted on the DeWitt *et al.* (1988) model in Figure 3. None of the data points fall below the lower 95 percent prediction limit of this model, indicating that amphipod mortalities could be due to the presence of fine-grained sediments rather than to a sediment toxicity effect. Figure 3 also shows that data from five stations (Stations 4, 5, 38, 302R, and 305R) fell on or above the upper 95 percent prediction limit of the DeWitt *et al.* (1988) model. Application of the DeWitt model to amphipod mortality suggests that the effect of fine-grained sediments on the test amphipod (*Rhepoxynius abronius*) may be responsible for reduced survival at stations with apparently elevated mortality. The *R. abronius* amphipod bioassay may not be sensitive enough to detect subtle chemical differences in sediments from the MSMT stations.

The abundances of the test amphipod, *Rhepoxynius abronius*, found at MSMT stations from the 1989 through the 1992 sampling is presented in Table 12, along with the percent fines and percent mortality found during toxicity testing. Regression analyses were conducted on the 1992 data to determine whether significant relationships existed between these parameters. None were found. The abundance of this organism may instead be correlated with the depth of each station. *Rhepoxynius abronius* was found at only 11 of 48 stations, typically at depths ranging from 15 to 18 meters.

Interannual Variability in Sediment Toxicity Testing

The range and mean percent mortality values reported for the amphipod toxicity testing during 1989, 1991, and 1992, are presented in Table 13. Results from 1990 are not included due to problems with bioassay quality control during that year of testing. Analysis of variance was used to determine whether percent mortality differed within each station from year to year. Results indicated that eight stations showed significant interannual differences ($P \leq 0.05$). They are: Stations 12 (Port Townsend), 17 (South Hood Canal), 18 (Oak Harbor), 35 (Dyes Inlet), 38 (Point Pulley), 44 (East Anderson Island), 48 (North Budd Inlet), and 49 (South Budd Inlet). The interannual differences found at these stations may be due to temporal variability.

Benthic Infauna

The benthic infauna from four of the five replicate samples, from each of the 48 stations, were sorted, identified to the lowest possible taxonomic level (generally species), and enumerated. The raw benthic invertebrate data are presented in Appendix C, Table C-1. Only the data acquired from these 192 samples were examined and discussed in this report. Interannual comparisons of benthic infaunal data were not conducted for this report.

Benthic Infaunal Indices

Table 14 lists mean values (per $0.1 m^2$) for total sample abundance, number of taxa, Shannon-Weiner diversity (H'; Pielou, 1966), evenness (J; Pielou, 1966), the infaunal trophic index (ITI; Word, 1990), the number of pollution tolerant and sensitive species, and the abundance

Table 12. Abundance and percent fines (silt and clay) at stations where *Rhepoxynius abronius* has been found during 1989 through 1992 MSMT sampling events.

Station	Abundances[1]				Fines %				Mortality %			
	89	90	91	92	89	90	91	92	89	90*	91	92
15	-	12	7	6	8.2	5.0	6.0	5.2	8	--	5	4
22	32	25	5	11	4.2	5.5	13.0	8.0	2	--	5	3
23R	30	NS	NS	55	2.1	NS	NS	2.9	3	NS	NS	1
25R	56	NS	NS	96	1.9	NS	NS	3.0	4	NS	NS	0
27R	15	NS	NS	25	3.2	NS	NS	2.6	3	NS	NS	5
32	-	4	5	4	7.2	8.0	5.5	5.7	2	--	8	6
36R	45	NS	NS	58	2.2	NS	NS	2.3	4	NS	NS	5
39	60	50	57	95	1.7	2.0	2.0	2.7	2	--	7	5
43	67	2	17	15	6.3	7.0	5.0	6.0	2	--	5	6
69	NS	3	2	9	NS	15	21	18	NS	--	1	9
301R	NS	NS	NS	4	NS	NS	NS	5.9	NS	NS	NS	2

* The 1990 mortality can not be used for among year comparison due to numerous QA/QC violations.

NS = Not sampled that year

[1] Abundance:

1989 = Total number of animals collected from 3 ($0.1m^2$) replicate samples.
1990 = Total number of animals collected from 3 ($0.1m^2$) replicate samples.
1991 = Total number of animals collected from 5 ($0.1m^2$) replicate samples.
1992 = Total number of animals collected from 4 ($0.1m^2$) replicate samples.

Table 13. Results of the amphipod sediment toxicity tests for the 34 MSMT core stations from years 1989, 1991, and 1992.

Station	Location	Range of Percent Mortality 1989	1991	1992	Mean Percent Mortality 1989	1991	1992
1	Semiahmoo Bay	0-5	0-45	10-25	3	16	18
3	Strait of Georgia	0-30	0-15	10-35	12	8	18
4	Bellingham Bay	0-20	0-10	0-20	5	6	11
5	Samish Bay	0-5	0-25	0-25	4	4	10
8	Port Angeles Harbor	0-15	5-15	0-15	10	10	8
12	Port Townsend	0-15	0-30	25-40	7	11	32
14	North Hood Canal	5-30	0-15	5-40	13	6	22
15	Dabob Bay	0-15	0-15	0-15	8	5	4
17	South Hood Canal	0-10	5-15	10-35	3	8	25
18	Oak Harbor	0-5	20-45	0-20	2	30	10
19	Saratoga Passage	0-10	0-20	5-100	5	10	32
20	Port Susan	0-85	0-20	10-25	27	6	15
21	Port Gardner	0-15	5-55	0-15	6	23	11
22	Mukilteo	0-5	0-10	0-5	2	5	3
26	West Central Basin	0-20	5-10	5-15	8	8	9
29	Shilshole	0-20	0-15	0-20	8	8	11
30	Eagle Harbor	0-50	5-20	0-10	16	8	3
32	Magnolia Bluff	0-10	0-25	0-15	2	8	6
33	Elliott Bay	0-10	5-15	0-10	8	7	6
34	Sinclair Inlet	0-20	10-20	5-25	11	15	16
35	Dyes Inlet	10-90	0-20	0-25	44	5	16
38	Point Pully	0-65	0-15	0-35	24	4	15
39	Dash Point	0-5	0-10	0-15	2	7	5
40	City Waterway	0-10	0-10	0-25	6	4	12
41	Blair/Sitcum Waterways	0-10	0-15	10-25	7	8	19
43	Carr Inlet	0-10	0-20	0-20	2	5	6
44	East Anderson Island	0-15	0-10	0-35	10	2	9
45	Devil's Head	0-10	0-10	0-15	6	3	10
47	Case Inlet	0-5	0-10	5-15	2	3	8
48	North Budd Inlet	0-10	0-5	10-35	4	4	24
49	South Budd Inlet	0-15	0-5	5-40	5	1	23
69	Port Madison	NS	0-5	0-15	NS	1	9
70	Shelton	NS	0-15	15-30	NS	5	21
71	Fidalgo Bay	NS	0-25	0-10	NS	8	5
Control	group 1	0-5	0-5	0-15	1	1	3
	group 2	0	0-1	0-10	0	7	3
	group 3	0-5	0-5	0-5	1	1	1
	group 4	0	0				

NS = Not sampled that year

Table 14. Mean values per 0.1 square meter for selected benthic infaunal indices.

STATION	Total Sample Abundance	No. of Taxa (Richness)	Diversity (H')	Evenness (J)	ITI	No. Pollution Tolerant Taxa	No. Pollution Sensitive Taxa	Abundance of Tolerant Taxa	Percent Tolerant Taxa
1	819.7	29.75	0.798	0.542	93.5	4	0	7.75	0.95
3	275.2	27.75	0.872	0.605	41.75	4.75	0	78.00	28.34
4	195.7	36.75	1.207	0.771	82.25	4.25	0.75	9.75	4.98
5	263.7	37.5	1.229	0.781	72.5	4	0	16.00	6.07
8	337.5	68	1.543	0.843	77.5	9.5	1	84.50	25.04
12	342	38.75	1.046	0.658	87	2.75	1	4.25	1.24
14	329.7	67.5	1.45	0.796	73.5	6.25	0	39.50	11.98
15	382.2	68.75	1.382	0.752	86	6.75	0	29.50	7.72
17	247.5	18.5	0.597	0.471	66	4	0	11.75	4.75
18	562.7	49.5	0.952	0.563	71	4.25	0.75	13.25	2.35
19	87	28.75	1.254	0.862	79.5	3.5	0	6.75	7.76
20	469.5	52.25	1.233	0.719	82.25	7.75	1	13.50	2.88
21	1160	51.25	1.068	0.624	61.25	10.25	0.25	375.20	32.34
22	781.2	72.25	1.171	0.631	67	12.25	0	305.50	39.11
23R	738.2	69.25	1.138	0.619	72.75	8.25	0	188.00	25.47
24R	257.7	39.25	1.029	0.647	52.25	2.75	0	10.00	3.88
25R	916.7	63.25	0.854	0.473	72.5	8.5	0	204.50	22.31
26	463	79.5	1.517	0.799	63.25	11	0	56.75	12.26
27R	653.2	103	1.516	0.753	70.25	9.25	0	253.00	38.73
29	463.5	29.75	0.644	0.437	43.25	4	0	34.00	7.34
30	326.5	57.25	1.302	0.742	67.5	14.5	0.5	135.50	41.50
32	396.5	87.5	1.554	0.8	73	11.5	0	130.50	32.91
33	595.7	86.5	1.489	0.769	68.25	14	0	237.20	39.82
34	923.5	50	0.977	0.578	83.75	6.5	0	165.00	17.87
35	783.5	39.5	0.892	0.564	87.25	4	0	5.00	0.64
36R	222	61.75	1.538	0.863	76	6.75	0	42.25	19.03
37R	720.7	118.7	1.698	0.82	77.75	13.25	0	110.7	15.36
38	156.7	24.75	1.035	0.745	56.5	3.5	0	15.00	9.57
39	165.7	43	1.273	0.779	69.75	7	0	71.00	42.85
40	662.5	76.75	1.394	0.739	68.75	13	0.5	303.00	45.74
41	891	54.25	0.997	0.576	66	9.5	0	65.50	7.35
43	858.7	68.25	1.213	0.662	85.75	8.5	0	172.00	20.03
44	452	91.75	1.611	0.829	74.75	9	0.75	92.00	20.35
45	232.2	44.75	1.261	0.764	70.75	6.5	0.5	27.50	11.84
47	819.5	109.5	1.65	0.81	76	10.75	0.5	134.20	16.38
48	298	29.25	0.684	0.467	66.25	4.75	0	17.25	5.79
49	117.2	22.5	1.148	0.854	63.25	4	0	26.00	22.18
69	520.2	82	1.519	0.795	77.75	11	0	126.50	24.32
70	84	21.25	1.132	0.862	64	7	0.25	31.50	37.50
71	394.2	62.25	1.475	0.823	71.75	12.5	0.25	74.75	18.96
301R	292.7	53.75	1.317	0.768	69	10.5	0	86.75	29.64
302R	203.2	52.5	1.463	0.853	68	8.25	0.25	49.00	24.11
303R	270.7	40.25	1.243	0.776	73.25	6.5	0	101.20	37.38
304R	61.5	17	0.972	0.801	63.5	2.5	0	21.25	34.55
305R	97	9.5	0.468	0.482	66.5	2	0	74.00	76.29
306R	235	51.25	1.405	0.829	75	6.75	0.25	34.50	14.68
307R	89	17.25	0.818	0.661	64.75	1.25	0	1.75	1.97
308R	493.2	56.25	1.174	0.672	68	11.75	0.25	133.00	26.97

and percent of tolerant taxa. The mean total abundance of infauna ranged from 61.5 individuals/0.1m^2 at Tekiu Point (Station 304R) to 1160.0 individuals/0.1m^2 at Port Gardner (Station 21). Both the mean number of taxa and the mean diversity were lowest at Lynch Cove (Station 305R), with values of 9.5 taxa/0.1m^2 and 0.468/0.1m^2, respectively. North Vashon (Station 37R) had the highest mean number of taxa, 118.7/0.1m^2, and the highest mean diversity, 1.698/0.1m^2. Mean evenness values were lowest at Shilshole, midchannel - Central Basin (Station 29), 0.437/0.1m^2, and highest at Brace Point (Station 36R), 0.863/0.1m^2.

The ITI is a measure of the functional characteristics of the benthic community. Values range from zero, representing a community dominated by subsurface deposit feeding organisms, to 100, representing a community dominated by organisms that feed in the water column on suspended particulate material (Word, 1990). In the 1992 survey, the mean ITI values ranged from a low of 41.75/0.1m^2 at Station 3, the Strait of Georgia, to a high of 93.5/0.1m^2 at Station 1, in Semiahmoo Bay.

The mean percent abundance of pollution tolerant taxa ranged from 76.29 percent at Station 305R, Lynch Cove, to 0.64 percent at Station 35, Dyes Inlet. The Lynch Cove station had the lowest mean number of taxa and diversity (H') values, and one of the lowest total sample abundances. The majority of the organisms present at this station are characterized as pollution tolerant. All other stations sampled in the 1992 MSMT survey contained less than 50 percent pollution tolerant species abundance.

The tolerant species list used in the preceding calculations was based on a literature review by Tetra Tech for the 1989 MSMT survey (Tetra Tech, 1990). Some additions or changes to the tolerant species list may be necessary. This revision would be based on the response of these pollution tolerant species to conditions within Puget Sound. At present, it is difficult to determine whether high abundances of pollution tolerant organisms are the result of natural stress or anthropogenic pollution.

Major Taxonomic Groups

The mean abundance and number of taxa (per 0.1m^2) in each major taxonomic group of organisms is presented in Table 15. The abundance of arthropods ranged from a mean low of 0.25 individuals/0.1m^2 at Station 305R, Lynch Cove, to a high of 352.2 individuals/0.1m^2 at Station 21, Port Gardner. The mean number of arthropod taxa ranged from a low of 0.25 taxa/0.1m^2 at Station 305R, Lynch Cove, to a high of 20.75 taxa/0.1m^2 at Station 37R, North Vashon.

The polychaetes ranged in mean abundance from a low of 10.75 individuals/0.1m^2 at Station 304R, Tekiu Point, to a high of 781.7 individuals/0.1m^2 at Station 34, Sinclair Inlet. The mean number of taxa ranged from a low of 5.75 taxa/0.1m^2 at Station 307R, Holmes Harbor, to a high of 73.25 taxa/0.1m^2 at Station 47, Case Inlet.

Table 15. Mean abundance and mean number of taxa per 0.1 square meters for major taxonomic groups at the 1992 MSMT stations.

STATION	Total Sample Abundance	No. of Taxa (richness)	ARTHROPODA		POLYCHAETA		MOLLUSCA		ECHINODERMATA		MISCELLANEOUS	
			Abundance	No. of Taxa	Abundance	No. of Taxa	Abundance	No. of Taxa	Abundance	No. of Taxa	Abundance	No. of Taxa
1	819.7	29.75	343.5	7	84.25	12	49.75	7.25	339.7	2.75	2	1
3	275.2	27.75	31.5	7	54	13.75	188.7	8.25	0	0	0.5	0.5
4	195.7	36.75	13	3.75	64	21.75	61.5	8.75	53	2	4.25	1.75
5	263.7	37.5	26.5	6	50.25	16	132	13	52	1.25	3	1.5
8	337.5	68	57.25	12.25	215.7	39.25	60.5	15	2.5	1	0.5	1
12	342	38.75	48.5	5.75	89	18.5	58.25	12.25	144.2	1	2	1
14	329.7	67.5	52	18.25	169.5	33	98.75	13	2	1.75	7.25	1.75
15	382.2	68.75	30.5	10.25	190.7	36.5	64.75	20.25	0	0	96.25	2.25
17	247.5	18.5	8.75	2.25	68.5	10.75	170.2	5.5	0	0	0	0
18	562.7	49.5	20	5.25	210	31.5	291.7	10.75	0.25	0.25	40.75	2
19	87	28.75	14.75	7.5	53.5	14.5	15.25	5.5	1.75	1.25	1.75	0.5
20	496.5	52.25	18.25	5.75	353.7	30.75	96	15.5	0	0	1	0.75
21	1160	51.25	352.2	6.5	197.7	24.75	605.7	18	0	0	4.75	2.75
22	781.2	72.25	286	11.25	175.7	34.25	300	24.5	0	0	19.5	3
23R	738.2	69.25	311	15.5	143.7	32.5	278.2	25.3	1.25	1.25	4	2.25
24R	257.7	39.25	32	7.25	48.25	14	172.5	12.5	2.75	1.75	2.25	1
25R	916.7	63.25	257	17.25	116	26	536.2	18	6	1.75	1.5	1
26	463	79.5	153.7	20.25	177.5	39	121.2	17.25	0.25	0.25	10.25	3
27R	653.2	103	235.5	19	318	55.25	76.75	21	6.5	2.25	16.5	5.25
29	463.5	29.75	56.5	6.25	45	12.25	359.5	9.25	2.25	1.75	0.25	0.25
30	326.5	57.25	122	8.5	145.2	33.25	52.75	12.75	1.25	0.75	5	2.25
32	396.5	87.5	110	15.5	236	49	39.25	17.25	5.75	2.25	5.5	3.5
33	595.7	86.5	154.7	12	328.2	52.5	100	17	3.75	1.75	8.25	3
34	923.5	50	92.25	6.5	781.7	30.75	41.25	10.5	5	1.25	923.5	1.75
35	783.5	39.5	299	7.25	405	20.25	10.25	6.25	61.5	2.5	783.5	3.75
36R	222	61.75	83.5	17.25	102.2	29.75	31	12.25	1	0.75	222	1.75
37R	720.7	118.7	100.7	20.75	498.7	68.5	67.25	18.75	10.25	3.75	38.5	6.5
38	156.7	24.75	57.5	10.25	23.5	8.25	72.5	5.25	2.75	0.75	156.7	0.75
39	165.7	43	38	10.5	94.25	20.5	29.5	10.5	0	0	165.7	1.5
40	662.5	76.75	166.2	9.75	342.2	45.25	141.7	17.5	6.25	2.75	662.5	2
41	891	54.25	59.75	5.75	169.7	28	632.5	17.75	18.75	1.75	891	1
43	858.7	68.25	289.7	14	286.2	34.75	55	14.75	218.5	2	858.7	3
44	452	91.75	91	16.25	272.7	49.25	63	19.75	12.25	2.5	452	3
45	232.2	44.75	20.5	4.75	174	27.75	23.75	9.75	10	1	232.2	2
47	819.5	109.5	67.75	13	598.5	73.25	79	19.5	42.75	2.5	30.5	4.25
48	298	29.25	209.2	3.25	39	12	45.25	11	0.75	0.5	3.25	2.5
49	117.2	22.5	13.5	3.75	45.75	8.75	54	8.75	0.75	0.25	3.25	1
69	520.2	82	137.7	13	178	42.5	124	20.25	72.5	2	8	4
70	84	21.25	8.75	3.5	52.5	10.75	20.5	5.75	1	0.5	1.25	0.5
71	394.2	62.25	59.5	9	212.2	32.5	100	18	17.75	1	4.75	1.75
301R	292.7	53.75	82	10	132.7	29.5	65.5	11.5	2.5	0.75	292.7	2.75
302R	203.2	52.5	59	8.5	69.5	26.75	65.75	15	8.25	1.25	203.2	0.75
303R	270.7	40.25	147.2	8.5	101	24.25	6	3.25	9	2	270.7	1.75
304R	61.5	17	8.25	3	10.75	7	40.5	6.5	1.5	0.5	61.5	0.25
305R	97	9.5	0.25	0.25	95	6	1	0.75	0	0	97	0.5
306R	235	51.25	39.75	11.5	140.5	29	50	8.5	0.25	0.25	235	1.75
307R	89	17.25	8.75	2.75	72.25	5.75	4.75	3.25	0	0	89	0.75
308R	493.2	56.25	30.25	7.5	397	34	34.75	11.5	15.25	1.25	493.2	2

Molluscan abundance ranged from a mean low of 1.00 individual/0.1m^2 at Station 305R, Lynch Cove, to a high of 632.5 individuals/0.1m^2 at Station 41, Commencement Bay. The mean number of mollusc taxa ranged from a low of 0.75 taxa/0.1m^2, again at Station 305R, Lynch Cove, to a high of 25.30 taxa/0.1m^2 at Station 23R, Central Basin East.

The data displayed in Tables 14 and 15 above indicate that the lowest mean abundance, number of taxa (richness), and diversity (H') values for the major taxonomic groups and for the samples as a whole, occurred in Stations 304R (Tekiu Point), 305R (Lynch Cove), and 307R (Holmes Harbor). Tekiu Point and Lynch Cove are both located in Hood Canal, while Holmes Harbor is located on the east side of Whidbey Island.

The Tekiu Point station is approximately mid-channel in the middle portion of Hood Canal. It is within a few miles of the mouths of both the Hamma Hamma and the Duckabush Rivers. The sediments taken from 173 meters of water are primarily silt (96.5% fines, Table 2) with a relatively high TOC level (1.89% TOC, Table 2).

The Lynch Cove station is located near the end of Hood Canal, in the vicinity of residences and summer homes. Extensive mud flats, which are exposed at low tide, are located to the northeast. Sediments sampled from this station at 20 meters depth have a moderate to strong odor of hydrogen sulfide, are very silty (93.9% fines, Table 2), and had one of the higher TOC levels in 1992 (2.45% TOC, Table 2).

The Holmes Harbor station is located less than one mile north of Dines Point, on the western side of the outer portion of the harbor. The harbor opens into Saratoga Passage, and the town of Freeland is at its southern end. In the vicinity of this station, the shoreline accommodates residences and summer homes. Sediments at this station are collected from 75 meters of water and, as with the Hood Canal stations, are silty (96.1% fines, Table 2). The TOC level for this station was also relatively high (1.83% TOC, Table 2). A slight odor of hydrogen sulfide was noted during the collection of these sediments.

This preliminary examination of the benthic invertebrate data collected in 1992 suggests a negative relationship between biological data (abundance and number of taxa found in the sediments) and some of the sediment chemistry data (grain size and TOC levels). Further analyses will be conducted at a later date to determine whether significant correlations exist between these and other parameters.

Comparison of Benthic Infaunal Data with Historical Data

The benthic infaunal invertebrate assemblages from Stations 29 (Shilshole) and 38 (Point Pully) have been studied extensively over the past 20 years (Word *et al.*, 1984; Nichols, 1985, 1988). Station 29 is located offshore of the Shilshole Bay Marina, while Station 38 is in the East Passage of Puget Sound. Both stations are located in approximately 200 meters of water, with primarily silty sediments. The means for total abundance, total number of

taxa, and the abundance of six indicator species are presented for both the historical and the current data from Stations 29 and 38 (Tables 16 and 17).

QUALITY ASSURANCE/QUALITY CONTROL

The following section is a summary discussion of quality assurance (QA) and quality control (QC) measures applied to samples collected during the 1992 MSMT. Sediment chemistry quality assurance evaluations were performed by EcoChem, Inc. The sediment toxicity test (*Rhepoxynius abronius*) results were reviewed by EVS Consultants (EcoChem, 1993). QA/QC of benthic taxonomy was also conducted through EVS Consultants.

The completeness of the contracted chemistry package was determined to be 99.3 percent. Completeness is defined as the total number of data values minus the number of rejected data values divided by the total number of data values. The degree of completeness achieved exceeds the target goal (90 percent) set for this project.

Only one data qualifier per data value was included in the Marine Sediment Monitoring Data Validation Report (EcoChem, 1993) due to limitations in the PSAMP data management system. In some cases, a data value received qualification for more than one reason. Discussions of non-detected results or rejected data values were not generally included in this summary (review EcoChem, 1993, for more detail).

Sediment Chemistry

Conventional Variables

The conventional sediment chemistry parameters measured included: sediment grain size, TOC, and TS. Sample results were deemed acceptable for the intended purposes of the project with the following qualification:

- All positive TS results were qualified G (estimated value is greater than the minimum shown). This was due to a low recovery of sulfides in the soil check standards (14 samples) and/or low sample matrix spike (MS) recoveries (22 samples).

Metals (Inorganics)

Overall, the quality of the metals data was considered good. The Sediment Reference Material (SRM) sample results were comparable to previous years. Some of the metals data received qualification for the following reasons:

- Instrument calibration and detection limit verification were not deemed acceptable for beryllium. Three beryllium results were qualified G (Estimated value greater than the minimum shown). This was because sample concentrations of beryllium were not significantly greater than the instrument detection limit (IDL) check standard. In

Table 16. Comparison of benthic infauna data at Station 29 with historical data. Data for 1989 and 1990 represent mean values from three replicates. The 1991 data are means from five replicates, while the 1992 data are means from four replicates. All data are reported as the mean number/0.1m^2. ND=no data.

	1985*	1989	1990	1991	1992
Total abundance	ND	155	286	304.6	463.5
Number of taxa	ND	35	36	33	30
Shannon-Wiener diversity (H')	ND	1.16	0.81	0.75	0.64
Polychaeta					
Pectinaria californiensis	20	25	1	6	27
Ampharete acutifrons	40	4	7	19	2
Mollusca					
Macoma carlottensis	180	32	171	194	310
Axinopsida serricata	100	2	5	11	24
Arthropoda					
Euphilomedes producta	80	21	21	11	27
Eudorella pacifica	30	14	11	2	13

*Data taken from Figure 2 in Nichols, 1988.

Table 17. Comparison of benthic infaunal data at Station 38 with historical data. Data for 1989 & 1990 represent mean values from three replicates. The 1991 data are means from five replicates, while the 1992 data are means from four replicates. All data are reported as the mean number $0.1m^2$. ND=no data.

	1969-1970*	1982-1983*	1989	1990	1991	1992
Total abundance	50	89	128	87	127	157
Number of taxa	21	26	26	24	28	25
Polychaete abundance	23	39	32	29	20	24
Pectinaria californiensis	12	2	11	1	7	13
Ampharete acutifrons	0	5	0	1	1	0
Mollusc abundance	3	30	13	9	59	73
Macoma carlottensis	1	4	8	5	51	53
Axinopsida serricata	0	18	1	1	1	8
Arthropod abundance	17	17	79	48	45	58
Euphilomedes producta	ND	2	21	6	12	11
Eudorella pacifica	ND	3	13	4	11	22

* From Word *et al.* (1984) as reported in Tetra Tech, 1990

addition, the IDL check standard recoveries were below the recommended recovery control limits. All beryllium sample results may be affected by false negative or biased low results due to the low recoveries.

- One lead sample result was qualified E (Estimated value) because the continuing calibration verification was outside the control limits and the sample was not re-analyzed.

- Seven mercury samples were qualified U (Undetected at the detection limit) because mercury in these samples was less than five times the amount of mercury found in the associated sample blanks.

- All 14 samples in which antimony was detected were qualified G because the matrix spike recovery of antimony was below the control limits.

- One cadmium sample was qualified E due to that sample's correlation coefficient for matrix spike (MS) analysis being below the accepted control limit.

Volatile Organic Compounds

All data quality objectives for volatile analysis outlined in the project's implementation plan were met and sometimes exceeded. Quantitation levels for volatile organic sample results are significantly lower than Contract Laboratory Program (CLP) Functional Guidelines (U.S. EPA, 1988b) as well as lower than some of the MSMT requirements. Results for volatile organic analyses were acceptable for project purposes as qualified below:

- All acetone samples were qualified E (estimated value) because their Relative Standard Deviations (also known as Coefficient of Variation) exceeded EPA CLP Functional Guidelines.

- All but three carbon disulfide results were qualified E (estimated value) because their Relative Response Factor and the Relative Response Factor of the continuing calibrations exceeded the percent difference allowed by EPA CLP Functional Guidelines.

- Two methylene chloride results were qualified E (estimated value) because their Relative Response Factor and the Relative Response Factor of the continuing calibrations exceeded the percent difference allowed by EPA CLP Functional Guidelines.

- Four carbon disulfide results were qualified E (estimated value) due to internal standard results out of acceptance limits.

- Results for 128 analyses for seven compounds were qualified U (Undetected) at the Method Quantitation Limit (MQL) or at their reported value because they were detected at less than the concentration found in the associated method blanks.

Semivolatile Organics (Base/Neutral/Acid Compounds)

Quantitation levels achieved for semivolatile organics analysis are significantly lower than CLP requirements. Semivolatile data, as qualified, were determined to be acceptable for use. Qualified semivolatile results are summarized below:

- Fifteen benzoic acid results and three cholesterol results were qualified E (estimated value) as their Relative Standard Deviations (also known as Coefficient of Variation or CV) exceeded CLP guidelines.

- Eight compounds from 48 samples were qualified E because of their Relative Response Factor and the Relative Response Factor of the continuing calibrations exceeded the percent difference allowed by EPA CLP Functional Guidelines.

- One hundred and one semivolatile results from 20 samples were qualified E because of surrogate compound recoveries of less than the acceptance limits established for the PSAMP project.

- All hexachlorocyclopentadiene results were rejected (qualified R) because this compound's associated MS/MSD results failed to meet a quality control value of greater than 10 percent recovery.

- Sixty-eight semivolatile results (benzoic acid, pentachlorophenol, or benzo(g,h,i)perylene) were qualified E due to these compound's associated MS/MSD results failing to meet a quality control value of greater than 50 percent recovery.

- Fifteen semivolatile results from four samples were qualified E (estimated value) due to internal standard results out of acceptance limits.

- One cholesterol result was qualified E because the chemical concentration exceeded the calibration range by 13 percent.

- Thirteen results for two compounds were qualified U (undetected) at their reported value or at the Method Quantitation Limit (MQL) because their concentration was less than the concentration found in the highest method blank.

- Six resin acid results from one sample were qualified E because the surrogate percent recovery for that sample did not meet quality control criteria.

Pesticides and Polychlorinated Biphenyls (PCBs)

Quantitation levels for Pesticide/PCB analyses were significantly lower than Contract Laboratory Program (CLP) requirements. The data, as qualified and reported, met the MSMT project's data quality objectives. All Pesticide and PCB results were qualified as

undetected, except for 15 Aroclor results, one 4,4'-DDD result, and results from the Sediment Reference Material (SRM). Pesticide and PCB analyses which were both detected and qualified are summarized as follows:

- Thirteen results for Aroclor 1254 and two results for Aroclor 1260 were qualified E (estimated value) due to a lack of continuing calibration standards for these samples. These 15 results (including SRM samples) were reported as the only positive results for Aroclors. With the exception of the SRM samples, all reported values were within the range of the analytical detection limits.

- A sample result for 4,4'-DDD was qualified E because the percent difference between the sample and the preceding standard exceeded quality control limits. This sample was reported as being positively identified below the quantitation limit.

Sediment Toxicity Bioassays

Data quality from the amphipod bioassay testing was high, overall. Sediment grain size effects (indicated by clay fractions greater than 50 percent) may have affected bioassay results at Station 304R. Results from this station may need to be qualified. Other details noted in the Marine Sediment Monitoring Data Validation report (EcoChem, 1993) are as follows:

- There was a minor omission of water quality measurements during one test interval for one replicate from Station 34.

- Salinity measurements of some samples exceeded (28-34 parts per thousand) the values specified in the PSEP protocols (27-29 parts per thousand). These results should not have affected the tests since *Rhepoxynius abronius* is sensitive to decreases in salinity (less than 25 parts per thousand) rather than increases in salinity.

- Concentrations of ammonia nitrogen exceeded testing criteria in five samples (3, R25, 26, R301, and the fourth control). No mortality occurred in the associated control and results should not have been affected.

- The positive (reference toxicant, cadmium chloride) control dilutions for the first series of test consisted of four replicates instead of five, as specified in the PSEP protocols. The results from this series fell within the range for those reported for other positive controls. Therefore, the sensitivity of the test organisms may be considered as normal.

Benthic Infauna

The percentage of samples requiring resorting was 43 percent in 1992. The QA/QC measures for benthic infauna identifications (taxonomy) involve reidentification of benthic organisms by independent taxonomists. Reidentification of benthic infauna by Ecology and consulting taxonomists is in progress. Initial results show good correlation of identifications between taxonomists.

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APPENDIX A

Station Locations

Table A-1. LATITUDE, LONGITUDE, STATE PLANE COORDINATES, DEPTHS, AND RADAR RANGES OF 1992 MONITORING STATIONS, WA. STATE DEPT. OF ECOLOGY, PUGET SOUND MARINE SEDIMENT MONITORING PROGRAM

STATION	LATITUDE (DDMMSS.S)	LONGITUDE (DDDMMSS.S)	EAST STATE PLANE COORD-INATE	NORTH STATE PLANE COORD-INATE	WATER DEPTH (METERS)	LOCALITY	VARIABLE RADAR RANGES
1	485928.00	1225141.00	1513061	732762	-23.5	Semiahmoo Bay	1) 2.0 nm to nearest shore on Kwomais Pt. 2) 2.73 nm to nearest E. shore N. of Birch Pt.
3	485214.00	1225841.00	1483831	689551	-223.2	Strait of Georgia	1) 4.9 nm to nearest shore NW of Patos Is. 2) 7.5 nm to Pt. Whitehorne 3) 6.5 nm to nearest shore of Pt. Roberts
4	484104.00	1223218.00	1588135	619018	-25.4	Bellingham Bay	1) 1.4 nm to tip of Governors Pt. 2) 1.3 nm to nearest E. shore
5	483551.00	1223206.00	1588239	587288	-20.2	Samish Bay	1) 2.7 nm to nearest E shore of Vendovi Is. 2) 1.0 nm to nearest shore of William Pt. (Samish Is.)
8	480753.00	1232657.00	1361324	423552	-22.1	Port Angeles Harbor	1) 0.3 nm to corner of pilings just S. of green bouy at marina entrance 2) 0.6 nm to tip of dock due W. at paper mill
12	480505.00	1224631.00	1525389	401662	-21.1	Port Townsend	1) 275 degrees C, 0.8 nm to face of docks at pulp mill to W. 2) 190 degrees C, 1.0 nm to tip of small dock 3) 090 degrees C, 1.2 nm to dock at Walan Pt.
14	474704.00	1224346.00	1451870	901666	-113.4	North Hood Canal	1) 0.6 nm to N. edge of pt. on W. shore to S. of station 2) 1.1 nm to tip of big dock at sub base 3) 1.3 nm to nearest E. shore at base of other dock
15	474302.00	1224850.00	1430395	877750	-21.8	Dabob Bay	1) 0.2 nm to N. tip of dock bearing 215 degrees C 2) 0.3 nm to corner of shore bearing about 065 degrees C
17	472211.00	1230746.00	1348517	753491	-82.7	South Hood Canal	1) 0.8 nm to nearest shore of Ayres Pt. 2) 1.3 nm to nearest shore point at Union 3) 0.9 nm to point at Potlach
18	481522.00	1223725.00	1563904	463266	-19.0	Oak Harbor	1) 1.2 nm to Blowers Bluff 2) 0.8 nm SW of Forbes Pt.
19	480552.00	1222816.00	1599816	404694	-122.6	Saratoga Passage	1) 2.3 nm to Mabama 2) 1.6 nm to S. edge of Lowell Pt. 3) 0.8 nm to S. edge of East Pt.
20	481023.00	1222721.00	1604128	432069	-11.8	Port Susan	1) 0.7 nm to both points due W. of station 2) 1.3 nm to Barnum Pt.
21	475907.00	1221434.00	1573118	971910	-20.7	Port Gardner	1) 0.6 nm to marker "4" 2) 0.9 nm to S.W. corner of S. pier

nm = nautical mile, C = compass bearing, true north, M = compass bearing, magnetic north

Table A-1. LATITUDE, LONGITUDE, STATE PLANE COORDINATES, DEPTHS, AND RADAR RANGES OF 1992 MONITORING STATIONS, WA. STATE DEPT. OF ECOLOGY, PUGET SOUND MARINE SEDIMENT MONITORING PROGRAM

STATION	LATITUDE (DDMMSS.S)	LONGITUDE (DDDMMSS.S)	EAST STATE PLANE COORD-INATE	NORTH STATE PLANE COORD-INATE	WATER DEPTH (METERS)	LOCALITY	VARIABLE RADAR RANGES
22	475720.00	1221710.00	1562260	961305	-22.5	Mukilteo	1) 0.1 nm to shore (tide up to breakwater) 2) 0.4 nm to tip of fuel dock
26	475108.00	1222730.00	1519124	924617	-266.9	Central Basin W.	1) 2.0 nm to nearest shore W. 2) 4.0 nm to nearest shore of Scatchet Hd. (Whidbey Is.) 3) 3.7 nm to nearest shore of Edwards Pt.
29	474206.00	1222713.00	1518923	869678	-199.9	Shilshole	1) 2.0 nm to green bouy "1" off West Pt. 2) 2.5 nm to nearest shore of Meadow Pt. 3) 2.1 nm to nearest shore S. of Pt. Monroe
30	473726.00	1223010.00	1506098	841617	-13.3	Eagle Harbor	1) 0.3 nm to marker "4" 2) 0.2 nm to marker "5" off Wycoff 3) 0.3 nm to tip off Wycoff pier due S.
32	473755.00	1222430.00	1529455	843977	-20.4	Magnolia Bluff	1) 0.2 nm to shore 2) 2.2 nm to green bouy "1" off West Pt. 3) 2.2 nm to Duwamish Head marker "2"
33	473514.00	1222233.00	1537080	827475	-20.8	Elliott Bay	
34	473247.00	1223943.00	1466081	814392	-10.6	Sinclair Inlet	1) 0.2 nm to N. shore 2) 0.8 nm to nearest shore of Pt. Heron 3) 0.1 nm to mooring bouy A-12 4) 0.5 nm to nearest shore at point due W. of Port Orchard 5) 0.5 nm to radar ref. "1" on E. shore
35	473648.00	1224155.00	1457709	839054	-13.3	Dyes Inlet	1) 0.4 nm to nearest shore at point E. of Chico Bay 2) 0.5 nm to N. edge of point (knob) at Chico 3) 0.5 nm to nearest shore on knob N. of Chico
38	472542.00	1222335.00	1531439	769633	-198.7	Point Pully	1) 1.8 nm to N. shore of Maury 2) 1.6 nm to Pt. Heyer 3) 1.4 nm to Three-Tree Pt. (Pt. Pully)
39	472013.00	1222218.00	1535941	736181	-14.8	Dash Point	1) 0.2 nm to beach 2) 2.6 nm to Dash Pt.
40	471541.00	1222613.00	1519083	709022	-10.4	Foss (City) Waterway	
41	471632.00	1222513.00	1523346	714086	-21.1	Blair/Sitcum Waterways	1) 0.4 nm to marker "1"
43	471753.00	1224432.00	1443686	724398	-20.8	Carr Inlet	1) 0.2 nm to large triangular marker 2) 2.0 nm to point due W. of Mayo Cove

nm = nautical mile, C = compass bearing, true north, M = compass bearing, magnetic north

Table A-1. LATITUDE, LONGITUDE, STATE PLANE COORDINATES, DEPTHS, AND RADAR RANGES OF 1992 MONITORING STATIONS, WA. STATE DEPT. OF ECOLOGY, PUGET SOUND MARINE SEDIMENT MONITORING PROGRAM

STATION	LATITUDE (DDMMSS.S)	LONGITUDE (DDDMMSS.S)	EAST STATE PLANE COORD-INATE	NORTH STATE PLANE COORD-INATE	WATER DEPTH (METERS)	LOCALITY	VARIABLE RADAR RANGES
44	470941.00	1224025.00	1459331	674093	-21.5	East Anderson Island	1) 0.3 nm to N. end of dock near Sandy Pt. 2) 0.6 nm to tip of Sandy Pt. 3) 1.5 nm to nearest shore of Ketron Island
45	470953.00	1224505.00	1440024	675851	-51.3	Devil's Head	1) 0.8 nm to nearest shore of Treble Pt. 2) 0.8 nm to pt. N. of Devils Hd. near marker "2" 3) 0.9 nm to nearest shore N. of Amsterdam Bay
47	471400.00	1225052.00	1416802	701564	-21.5	Case Inlet	1) 0.3 nm to nearest shore of Fudge Pt. 2) 1.0 nm to S. end of McMicken Is. 3) 1.0 nm to nearest E. shore N. of Whiteman Cove
48	470726.00	1225509.00	1397850	662200	-21.3	North Budd Inlet	1) 1.1 nm to Dofflemeyer Pt. 2) 0.3 nm to W. shore
49	470449.00	1225449.00	1398746	646260	-5.6	South Budd Inlet	1) 0.5 nm to notch in shore due E. 2) 0.3 nm to green marker No. "5"
69	474409.00	1223207.00	1499139	882647	-34.4	Port Madison	1) 0.6 nm to nearest W. shore 2) 0.7 nm to tip of dock due N. 3) 1.8 nm to tip of point W. of Pt. Monroe
70	471242.00	1230500.00	1358050	695494	-6.5	Shelton	1) 0.5 nm to Munson Point
71	483033.00	1223513.00	1574937	555352	-7.1	Fidalgo Bay	1) Bearing 275 degrees C, 0.5 nm to Cap Sante Head 2) 1.3 nm to S.E. point (Guemes Island)
23R	475214.00	1222005.00			-20	Central Basin E.	1) 0.21 nm to shore 2)0.61 nm to Picnic Point
24R	475153.00	1222152.00			-180	Central Basin E.	1) 1.25 nm to shore bump at Norma Beach 2) 1.50 nm to shore bump S. Browns Bay 3) 3.17 to N. edge of Edmonds ferry dock
25R *	475118.60	1223012.60			-20	Central Basin W.	1) 0.20 to nearest shore 2) 2.56 nm to Apple Cove Point 3) 1.62 nm to Pilot Point
27R	474535.00	1222308.00			-20	Richmond Beach	1) 0.19 nearest shore - E.
36R	473050.00	1222353.00			-15	Brace Point	1) 0.25 nm Brace Point 2) 2.31 nm Dolphin Point 3) 3.24 nm Beals
37R	472914.00	1222719.00			-20	North Vashon	1) 1.00 Dolphin Point 2) 0.18 nm shore

nm = nautical mile, C = compass bearing, true north, M = compass bearing, magnetic north

Table A-1. LATITUDE, LONGITUDE, STATE PLANE COORDINATES, DEPTHS, AND RADAR RANGES OF 1992 MONITORING STATIONS, WA. STATE DEPT. OF ECOLOGY, PUGET SOUND MARINE SEDIMENT MONITORING PROGRAM

STATION	LATITUDE (DDMMSS.S)	LONGITUDE (DDDMMSS.S)	EAST STATE PLANE COORD-INATE	NORTH STATE PLANE COORD-INATE	WATER DEPTH (METERS)	LOCALITY	VARIABLE RADAR RANGES
301R	475916.00	1222929.40			-20	Useless Bay	
302R	480109.60	1224251.60			-20	Oak Bay	1) 0.50 nm to SE tip of stone breakwater bearing 280 degrees M. 2) 0.543 nm to point at bearing 235 degrees M.
303R	472229.10	1222816.20			-16	Quartermaster Harbor (QM-2)	
304R	473515.60	1225845.00			-172	Tekiu Pt.	1) 112 degrees M 0.601 nm to tip of dock. 2) 153 degrees M 1.29 nm to point SW of Holly
305R	472349.80	1225552.80			-20	Lynch Cove.	1) 0.576 nm to N. and S. shores 2) 1.39 nm to point at gravel slump on N. shore W. of station
306R	472813.80	1222233.00			-75	Seahurst Bay (D-250)	
307R	480518.00	1223301.80			-61	Holmes Harbor	1) 0.75 nm to Dines Pt. 2) 0.386 nm shore
308R	474304.80	1223810.80			-17	Liberty Bay	1) 0.384 nm to nearest shore "Lemolo" (93 degrees M) 2) 0.223 nm to nearest shore to NE

nm = nautical mile, C = compass bearing, true north, M = compass bearing, magnetic north

APPENDIX B

Sediment Chemistry (Conventional Variables; Raw Data)

Table B-1. Sediment Grain Size Fractions.

		Grain Size Fractional Percentages				
Station ID	Sample ID	Gravel > 2 mm	Sand 2–0.63 mm	Silt .063–.004 mm	Clay < .004 mm	Fines < 0.004–0.63
1	1	0.0	5.9	67.5	26.6	94.1
3	3	16.0	33.2	33.8	17.0	50.8
4	4	0.1	3.1	53.5	43.3	96.8
5	5	0.5	5.7	65.5	28.3	93.8
5	51	0.1	5.7	58.6	35.6	94.2
5	52	0.0	3.8	60.3	35.9	96.2
5	53	0.1	5.6	61.3	33.0	94.3
8	8	0.1	28.1	50.6	21.2	71.8
12	12	0.1	6.8	65.3	27.8	93.1
14	14	0.0	52.0	30.6	17.4	48.0
15	15	0.1	94.7	3.0	2.2	5.2
17	17	0.3	3.4	64.5	31.8	96.3
18	18	0.1	57.1	20.9	21.9	42.8
19	19	0.0	18.7	31.7	49.6	81.3
20	20	0.0	4.3	64.3	31.4	95.7
21	21	0.1	37.7	47.9	14.3	62.2
22	22	0.1	91.9	2.4	5.6	8.0
26	26	0.0	72.7	14.0	13.3	27.3
29	29	0.0	12.1	55.3	32.6	87.9
30	30	0.0	63.7	25.1	11.2	36.3
32	32	0.2	94.0	2.5	3.3	5.8
32	57	0.2	94.2	2.7	2.9	5.6
32	58	0.6	93.7	2.6	3.1	5.7
32	59	0.0	94.3	2.6	3.1	5.7
33	33	1.7	65.4	24.4	8.5	32.9
34	34	0.5	10.1	58.6	30.8	89.4
35	35	0.1	18.8	52.0	29.1	81.1
35	72	0.0	18.4	50.3	31.3	81.6
35	73	0.0	20.5	52.0	27.5	79.5
35	74	0.0	19.4	51.2	29.4	80.6
38	38	0.2	10.5	45.6	43.7	89.3

Fractional percent size fractions based on U.S. Army Corps of Engineers and Wentworth Soil Classification Systems.

Table B-1. Sediment Grain Size Fractions.

		Grain Size Fractional Percentages				
Station ID	Sample ID	Gravel > 2 mm	Sand 2–0.63 mm	Silt .063–.004 mm	Clay < .004 mm	Fines < 0.004–0.63
38	60	0.0	6.2	49.0	44.8	93.8
38	61	0.0	7.4	45.3	47.3	92.6
38	62	0.0	4.7	47.4	47.9	95.3
39	39	0.1	97.2	0.7	2.0	2.7
40	40	1.1	66.7	21.9	10.3	32.2
41	41	0.0	24.9	59.1	16.0	75.1
43	43	0.0	94.0	2.7	3.3	6.0
44	44	0.5	81.6	7.9	10.0	17.9
44	63	0.3	81.8	8.4	9.5	17.9
44	64	0.7	81.8	8.4	9.1	17.5
44	65	0.4	81.3	9.0	9.3	18.3
45	45	0.0	44.3	39.2	16.5	55.7
47	47	13.4	73.4	7.4	5.8	13.2
48	48	0.2	11.1	55.5	33.2	88.7
49	49	0.0	11.9	55.4	32.7	88.1
69	69	0.2	81.7	12.2	5.9	18.1
70	70	0.1	33.4	40.9	25.6	66.5
71	71	0.1	46.9	32.5	20.5	53.0
R23	R23	1.1	96.0	0.7	2.2	2.9
R24	R24	0.1	9.8	52.2	37.9	90.1
R25	R25	0.2	96.8	0.5	2.5	3.0
R27	R27	0.4	97.0	1.0	1.6	2.6
R36	R36	0.3	97.4	0.8	1.5	2.3
R37	R37	16.1	80.7	1.3	1.9	3.2
R301	R301	7.3	86.8	3.1	2.8	5.9
R302	R302	0.1	31.4	47.1	21.4	68.5
R303	R303	0.0	23.2	57.4	19.4	76.8
R304	R304	0.2	3.3	42.9	53.6	96.5
R305	R305	0.2	5.9	54.1	39.8	93.9
R306	R306	0.3	90.7	4.0	5.0	9.0
R307	R307	0.0	3.9	47.0	49.1	96.1
R308	R308	0.3	88.7	5.3	5.7	11.0

Fractional percent size fractions based on U.S. Army Corps of Engineers and Wentworth Soil Classification Systems.

Table B-2. Concentrations (mg/kg dry weight) of Conventional Variables in Puget Sound Sediments - Total Organic Carbon and Sulfides.

Station ID	Sample ID	Replicate	Sampling Date	Total Sulfides (mg-S/Kg)	Total Organic Carbon (mg/Kg)
1	1	1	4/15/92	2 G	17,421
3	3	1	4/15/92	688 G	8,860
4	4	1	4/15/92	485 G	24,931
5	5	1	4/14/92	0.19 U	17,931
5	51	1	4/14/92	0.16 U	16,871
5	52	2	4/14/92	5.8 G	21,621
5	53	3	4/14/92	0.16 U	20,821
8	8	1	4/20/92	17 G	22,161
12	12	1	4/20/92	3 G	11,471
14	14	1	4/21/92	0.15 U	9,030
15	15	1	4/21/92	0.09 U	2,149
17	17	1	4/22/92	0.22 U	12,451
18	18	1	4/14/92	92 G	13,271
19	19	1	4/13/92	86 G	22,198
20	20	1	4/13/92	0.18 U	10,068
21	21	1	4/13/92	5.2 G	12,178
22	22	1	4/12/92	0.13 U	2,596
26	26	1	4/11/92	0.2 U	8,255
29	29	1	4/11/92	0.27 U	16,638
30	30	1	4/3/92	0.11 U	10,317
32	32	1	4/3/92	0.95 G	2,107
32	57	1	4/3/92	0.08 U	6,695
32	58	2	4/3/92	0.09 U	2,296
32	59	3	4/3/92	0.16 U	2,083
33	33	1	4/3/92	0.18 G	1,856
34	34	1	4/3/92	9.4 G	21,808
35	35	1	4/4/92	58 G	26,238
35	72	1	4/4/92	0.4 U	24,068
35	73	2	4/4/92	83 G	22,328
35	74	3	4/4/92	15 G	23,058
38	38	1	4/5/92	0.25 U	20,888
38	60	1	4/5/92	0.29 U	18,708
38	61	2	4/5/92	58 G	22,488
38	62	3	4/5/92	0.22 U	19,238

Table B-2. Concentrations (mg/kg dry weight) of Conventional Variables in Puget Sound Sediments - Total Organic Carbon and Sulfides.

Station ID	Sample ID	Replicate	Sampling Date	Total Sulfides (mg-S/Kg)	Total Organic Carbon (mg/Kg)
39	39	1	4/6/92	0.07 U	1,453
40	40	1	4/6/92	0.11 U	21,687
41	41	1	4/6/92	36 G	11,428
43	43	1	4/6/92	0.07 U	2,859
44	44	1	4/7/92	0.11 U	4,113
44	63	1	4/7/92	0.1 U	3,908
44	64	2	4/7/92	0.08 U	4,693
44	65	3	4/7/92	0.07 U	8,073
45	45	1	4/7/92	0.09 U	6,382
47	47	1	4/7/92	0.09 U	5,249
48	48	1	4/8/92	41 G	15,201
49	49	1	4/8/92	246 G	21,381
66	66	1			8,425
67	67	1			8,891
68	68	1			9,871
69	69	1	4/2/92	0.15 U	4,569
70	70	1	4/8/92	29 G	21,101
71	71	1	4/14/92	0.11 U	12,331
R23	R23	1	4/12/92	0.12 U	1,964
R24	R24	1	4/12/92	0.28 U	21,108
R25	R25	1	4/12/92	0.13 U	1,481
R27	R27	1	4/11/92	0.13 U	1,656
R29	R29	1	4/11/92	0.27 U	16,638
R36	R36	1	4/5/92	0.09 U	2,236
R37	R37	1	4/4/92	0.1 U	1,817
R301	R301	1	4/12/92	0.13 U	2,959
R302	R302	1	4/21/92	0.11 U	9,448
R303	R303	1	4/6/92	0.14 U	12,708
R304	R304	1	4/21/92	0.25 U	18,881
R305	R305	1	4/22/92	490 G	24,501
R306	R306	1	4/5/92	0.08 U	3,965
R307	R307	1	4/13/92	246 G	18,258
R308	R308	1	4/2/92	0.08 U	3,880

APPENDIX C

Comparison of Organics Data to Washington State Sediment Management Standards

Table C-1. 1992 Low molecular weight polyaromatic hydrocarbons (LPAH) normalized to total organic carbon (TOC) for comparison with Marine Sediment Quality Standards Chemical Criteria (ppm CARBON). replicate stations are shaded. Values exceeding state standards are marked **.

CHEMICAL PARAMETER:		naphthalene		acenaphthylene		acenaphthene		fluorene		phenanthrene		anthracene		Total LPAH *	2-methyl napthalene	
CHEMICAL CRITERIA (PPM CARBON):			99		66		16		23		100		220	370		38
STATION	REPLICATE															
1		U	0.94	U	0.94	U	0.94	U	0.94		2.06	E	0.40	6.22	E	0.43
3		E	0.58	U	1.35	U	1.35	U	1.35		3.03	E	0.60	8.26	E	1.00
4		E	0.32	U	0.76	U	0.76	U	0.76		0.96	U	0.76	4.33	E	0.32
5	Replicate 1	U	0.95	U	0.95	U	0.95	U	0.95		1.12	U	0.95	5.87	E	0.48
5	Replicate 2	U	1.01	U	1.01	U	1.01	U	1.01		1.48	U	1.01	6.51	E	0.65
5	Replicate 3	U	0.79	U	0.79	U	0.79	U	0.79		0.83	U	0.79	4.77	E	0.40
5	Replicate 4	U	0.82	U	0.82	U	0.82	U	0.82		0.82	U	0.82	4.90	E	0.34
8			0.90	E	0.22	U	0.63	E	0.41		1.89	E	0.54	4.59	E	0.50
12		U	1.48	U	1.48	U	1.48	U	1.48		1.65	U	1.48	9.04	U	1.48
14		U	1.33	U	1.33	U	1.33	U	1.33		2.44	U	1.33	9.11	U	1.33
15		U	3.77	U	3.77	U	3.77	U	3.77	U	3.77	U	3.77	22.64	U	3.77
17		U	1.38	U	1.38	U	1.38	U	1.38	U	1.38	U	1.38	8.31	U	1.38
18		U	0.90	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90	5.41	U	0.90
19		U	0.95	U	0.95	U	0.95	U	0.95		1.04	U	0.95	5.77	U	0.95
20		U	1.19	U	1.19	U	1.19	U	1.19	E	0.99	U	1.19	6.93	U	1.19
21			1.07	E	0.23	E	0.27	E	0.44		2.46	E	0.82	5.29	E	0.43
22		U	3.19	U	3.19	U	3.19	U	3.19	E	3.19	U	3.19	19.15	U	3.19
23R		U	4.00	U	4.00	U	4.00	U	4.00	U	4.00	U	4.00	24.00	U	4.00
24R		U	0.90	U	0.90	U	0.90	U	0.90		1.14	U	0.90	5.64	U	0.90
25R		U	5.53	U	5.53	U	5.53	U	5.53	U	5.53	U	5.53	33.20	U	5.53
26		U	1.20	U	1.20	U	1.20	U	1.20		2.65	U	1.20	8.67	U	1.20
27R		U	4.71	U	4.71	U	4.71	U	4.71	E	3.00	U	4.71	26.53	U	4.71
29		U	1.02	U	1.02	U	1.02	U	1.02		1.33	U	1.02	6.45	U	1.02
30			2.23		1.07		1.17		3.40		12.62		17.48	37.96		1.17
32	Replicate 1	E	1.62	U	3.86	U	3.86	E	0.90		6.67	E	2.52	19.43	U	3.86
32	Replicate 2	E	0.40	E	0.28	U	1.21	E	0.31		2.09	E	0.91	5.21	U	1.21
32	Replicate 3	E	1.17	U	3.57	U	3.57	U	3.57		5.65	E	2.22	19.74	U	3.57
32	Replicate 4	E	1.05	U	3.86	U	3.86	E	0.81		6.19	E	2.62	18.38	U	3.86
33			20.00		20.00		13.68		32.11	**	184.21		57.89	327.89		11.05
34		E	0.28	E	0.18	E	0.20	E	0.30	E	1.83	E	0.60	3.38	E	0.28
35	Replicate 1	E	0.24		0.73	U	0.73	E	0.42		2.19		2.38	6.70	E	0.32
35	Replicate 2	E	0.28		1.13	U	0.79	E	0.63		3.42		3.29	9.53	E	0.39
35	Replicate 3	E	0.26		1.30	E	0.20	E	0.54		4.30		4.30	10.91		
35	Replicate 4	E	0.26		1.30	U	0.78	E	0.48		3.46		3.77	10.04		
36R		U	3.77	U	3.77	U	3.77	U	3.77	E	3.68	E	1.64	20.41	U	3.77
37R		U	4.39	U	4.39	U	4.39	U	4.39	E	2.06	E	1.22	20.83	U	4.39
38	Replicate 1	E	0.46	U	1.14	U	1.14	U	1.14	E	2.00	E	0.45	6.34	E	0.48
38	Replicate 2	E	0.50	U	1.28	U	1.28	U	1.28		1.76	U	1.28	7.40	U	1.07
38	Replicate 3	U	1.07	U	1.07	U	1.07	U	1.07		1.82	U	1.07	7.16		
38	Replicate 4	E	0.57	U	1.25	U	1.25	U	1.25		2.60	U	1.25	8.18		
39		U	5.40	U	5.40	U	5.40	U	5.40	U	5.40	U	5.40	32.40	U	5.40
40			2.44		2.72		1.71		3.32		23.96		15.67	49.82		1.15
41			0.96	U	0.96	E	0.37	E	0.49		2.54	E	0.77	6.11		1.23
43		U	2.86	U	2.86	U	2.86	U	2.86	U	2.86	U	2.86	17.17	U	2.86
44	Replicate 1	U	2.50	U	2.50	U	2.50	U	2.50	E	1.48	U	2.50	13.98	U	2.50
44	Replicate 2	U	2.56	U	2.56	U	2.56	U	2.56	E	1.72	U	2.56	14.54	U	2.56
44	Replicate 3	U	2.13	U	2.13	U	2.13	U	2.13	E	1.26	U	2.13	11.89	U	2.13
44	Replicate 4	U	1.23	U	1.23	U	1.23	U	1.23	E	1.04	U	1.23	7.21	U	1.23
45		U	1.88	U	1.88	U	1.88	U	1.88	E	1.56	U	1.88	10.94	U	1.88
47		U	1.77	U	1.77	U	1.77	U	1.77	U	1.77	U	1.77	10.64	U	1.77
48		U	1.38	U	1.38	U	1.38	U	1.38		1.64	U	1.38	8.55	U	1.38

U = Undetected at the detection limit shown

E = Estimated value

* = Calculated as the sum of the undetected, qualified, and unqualified values of the following compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene.

Table C-1. 1992 Low molecular weight polyaromatic hydrocarbons (LPAH) normalized to total organic carbon (TOC) for comparison with Marine Sediment Quality Standards Chemical Criteria (ppm CARBON). replicate stations are shaded. Values exceeding state standards are marked **.

CHEMICAL PARAMETER:		naphthalene		acenaphthylene		acenaphthene		fluorene		phenanthrene		anthracene		Total LPAH *	2-methyl naphthalene	
CHEMICAL CRITERIA (PPM CARBON):			99		66		16		23		100		220	370		38
STATION	REPLICATE															
49		U	1.03	U	1.03	U	1.03	U	1.03	U	1.03	U	1.03	6.17	U	1.03
69		E	0.43	U	1.93	U	1.93	U	1.93		2.02	U	1.93	10.20	U	1.93
70		U	0.81	U	0.81	U	0.81	U	0.81		1.66	E	0.52	5.40	U	0.81
71		U	0.98	U	0.98	U	0.98	U	0.98		2.68	E	0.53	7.11	U	0.98
301R		U	2.73	U	2.73	U	2.73	U	2.73	U	2.73	U	2.73	16.40	U	2.73
302R		U	1.26	U	1.26	U	1.26	U	1.26		1.79	U	1.26	8.11	U	1.26
303R		E	0.36	U	1.18	U	1.18	U	1.18		1.97	E	0.65	6.53	U	1.18
304R		U	1.38	U	1.38	U	1.38	U	1.38	E	0.79	U	1.38	7.67	U	1.38
305R		U	1.18	U	1.18	U	1.18	U	1.18	U	1.18	U	1.18	7.10	U	1.18
306R		U	2.13	U	2.13	U	2.13	U	2.13	E	0.85	U	2.13	11.48	U	2.13
307R		U	1.20	U	1.20	U	1.20	U	1.20	U	1.20	U	1.20	7.21	U	1.20
308R		U	2.31	U	2.31	U	2.31	U	2.31	E	1.26	U	2.31	12.79	U	2.31

U = Undetected at the detection limit shown

E = Estimated value

* = Calculated as the sum of the undetected, qualified, and unqualified values of the following compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene.

Table C-2. 1992 High molecular weight polyaromatic hydrocarbons (HPAH) normalized to total organic carbon (TOC) for comparison with Marine Sediment Quality Standards Chemical Criteria (ppm CARBON). Replicate stations are shaded. Values exceeding state standards are marked **.

CHEMICAL PARAMETER:		fluor-anthene	pyrene	benzo-(a)-anthra-cene	chrysene	total benzo-fluoran-thenes	benzo-(a)-pyrene	indeno-(1,2,3-c,d)-pyrene	dibenzo-(a,h)-anthrace	benzo-(g,h,i)-perylene	Total HPAH *
CHEMICAL CRITERIA (PPM CARBON):		160	1000	110	110	230	99	34	34	12	960
STATION	REPLICATE										
1		3.71	2.76	1.35	1.76	2.35	1.71	U 1.12	U 0.94	E 1.47	17.18
3		E 2.92	2.13	E 1.08	1.46	1.80	U 1.35	U 1.35	U 1.35	U 1.35	14.79
4		E 1.41	E 0.92	E 0.44	E 0.64	0.88	U 0.76	U 0.76	U 0.76	U 0.76	7.35
5	Replicate 1	1.90	1.01	E 0.56	E 0.84	U 0.95	U 0.95	U 0.95	U 0.95	U 0.95	9.05
5	Replicate 2	2.54	1.66	E 0.77	E 1.24	1.60	U 1.01	U 1.01	U 1.01	U 1.01	11.83
5	Replicate 3	1.06	0.97	U 0.79	E 0.74	U 0.79	U 0.79	U 0.79	U 0.79	U 0.79	7.50
5	Replicate 4	1.39	E 0.77	U 0.82	E 0.63	U 0.82	U 0.82	U 0.82	U 0.82	U 0.82	7.69
8		E 3.15	2.52	1.17	2.12	2.66	E 1.04	U 0.77	U 0.63	E 0.72	14.77
12		E 2.87	2.26	E 1.13	1.83	2.35	E 1.04	U 1.48	U 1.48	U 1.48	15.91
14		E 2.56	E 1.78	E 0.67	E 1.00	1.33	U 1.33	U 1.33	U 1.33	U 1.33	12.67
15		E 2.23	U 3.77	U 3.77	U 3.77	U 3.77	U 3.77	U 3.77	U 3.77	U 3.77	32.41
17		U 1.38	U 1.38	U 1.38	U 1.38	U 1.38	U 1.38	U 1.38	U 1.38	U 1.38	12.46
18		E 0.64	E 0.38	U 0.90	U 0.90	U 0.90	U 0.90	U 0.90	U 0.90	U 0.90	7.33
19		1.22	0.99	E 0.50	E 0.68	1.13	U 0.95	U 0.95	U 0.95	U 0.95	8.29
20		E 0.79	U 1.19	U 1.19	U 1.19	U 1.19	U 1.19	U 1.19	U 1.19	U 1.19	10.30
21		4.10	2.21	1.64	2.62	2.95	1.56	1.23	U 0.82	E 1.15	18.28
22		4.23	E 2.62	E 2.65	5.77	4.62	U 3.19	U 3.19	U 3.19	U 3.19	32.65
23R		U 4.00	U 4.00	U 4.00	U 4.00	U 4.00	U 4.00	U 4.00	U 4.00	U 4.00	36.00
24R		1.56	1.52	E 0.76	1.09	E 1.90	E 1.14	U 0.90	U 0.90	U 0.90	10.66
25R		U 5.53	U 5.53	U 5.53	U 5.53	U 5.53	U 5.53	U 5.53	U 5.53	U 5.53	49.80
26		2.53	2.17	E 1.01	1.20	2.17	1.33	U 1.33	U 1.20	E 1.19	14.13
27R		E 4.47	5.12	E 2.41	E 2.71	E 6.47	U 4.71	U 4.71	U 4.71	U 4.71	40.00
29		2.53	2.35	1.08	1.39	E 2.35	E 1.45	U 1.02	U 1.02	E 1.02	14.22
30		33.98	38.83	22.33	39.81	56.31	22.33	9.71	4.27	E 7.67	235.24
32	Replicate 1	9.52	10.95	6.67	9.52	17.14	10.00	8.10	E 2.48	E 6.19	80.57
32	Replicate 2	4.03	4.93	E 2.54	3.73	E 6.72	E 3.43	E 1.94	E 0.90	E 1.49	29.70
32	Replicate 3	10.00	13.48	6.52	9.13	16.09	8.70	6.96	E 2.30	E 5.22	78.39
32	Replicate 4	11.90	12.38	6.67	10.00	17.14	8.57	5.24	U 3.86	E 4.76	80.52
33		** 231.58	257.89	** 136.84	** 178.95	** 331.58	** 173.68	** 94.74	32.11	E ** 68.42	**1505.79
34		E 5.05	6.88	2.80	3.90	6.88	3.72	2.75	E 0.78	E 2.43	35.18

U = Undetected at the detection limit shown

E = Estimated value

** = Calculated as the sum of undetected, qualified, and unqualified values of the 9 HPAH compounds presented in this table.

Table C-2. 1992 High molecular weight polyaromatic hydrocarbons (HPAH) normalized to total organic carbon (TOC) for comparison with Marine Sediment Quality Standards Chemical Criteria (ppm CARBON). Replicate stations are shaded. Values exceeding state standards are marked **.

CHEMICAL PARAMETER:		fluor-anthene	pyrene	benzo-(a)-anthra-cene	chrysene	total benzo-fluoran-thenes	benzo-(a)-pyrene	indeno-(1,2,3-c,d)-pyrene	dibenzo-(a,h)-anthrace	benzo-(g,h,i)-perylene	Total HPAH *
CHEMICAL CRITERIA (PPM CARBON):		160	1000	110	110	230	99	34	34	12	960
STATION	REPLICATE										
35	Replicate 1	11.15	E 20.77	6.54	7.31	9.62	8.08	4.62	1.08	E 2.62	71.77
35	Replicate 2	19.17	E 27.50	E 10.00	10.83	E 15.42	E 12.50	E 5.00	E 1.17	E 4.58	106.17
35	Replicate 3	21.52	E 26.01	E 12.11	13.90	E 17.94	E 14.80	E 5.38	E 1.39	E 4.93	117.98
35	Replicate 4	19.91	E 35.50	E 11.69	12.99	E 16.88	E 14.29	E 5.63	E 1.56	E 6.06	124.50
36R		5.91	6.82	E 3.64	5.45	8.64	4.55	E 5.45	U 3.77	E 5.00	49.23
37R		E 2.33	E 2.72	E 1.94	E 2.33	E 5.11	E 2.78	U 4.39	U 4.39	E 4.28	30.28
38	Replicate 1	4.43	E 2.33	E 1.57	E 1.95	E 3.95	E 2.05	E 1.71	U 1.14	E 1.71	20.86
38	Replicate 2	3.21	4.06	E 1.66	2.41	E 4.06	E 2.30	U 1.39	U 1.28	E 1.18	21.55
38	Replicate 3	2.89	3.16	1.33	2.13	2.62	2.00	E 2.00	U 1.07	E 1.56	18.76
38	Replicate 4	4.69	3.65	E 1.72	2.40	E 4.64	E 2.50	U 1.25	U 1.25	E 1.04	23.13
39		E 2.53	E 2.00	U 5.40	E 2.33	E 4.93	U 5.40	U 5.40	U 5.40	U 5.40	38.80
40		28.11	55.30	21.20	25.35	26.73	22.58	E 12.90	E 3.64	E 7.83	203.64
41		4.82	7.11	2.46	4.04	5.79	2.54	E 2.19	U 0.96	E 2.11	32.02
43		E 1.14	E 2.34	E 1.62	E 2.10	2.90	E 2.31	U 2.86	U 2.86	U 2.86	21.00
44	Replicate 1	3.75	E 2.38	E 1.50	E 2.25	E 4.00	E 1.90	U 2.50	U 2.50	U 2.50	23.28
44	Replicate 2	3.59	3.08	E 1.67	2.49	E 4.10	E 1.95	U 2.56	U 2.56	U 2.56	24.56
44	Replicate 3	2.77	2.34	E 1.23	E 1.87	E 2.98	E 1.36	U 2.13	U 2.13	U 2.13	18.94
44	Replicate 4	2.35	1.73	E 0.86	1.48	E 2.35	E 0.98	U 1.23	U 1.23	U 1.23	13.44
45		2.50	4.22	E 1.72	2.66	3.91	2.34	3.13	U 1.88	E 2.66	25.00
47		1.81	E 1.40	U 1.77	E 1.17	E 2.45	E 1.38	U 1.77	U 1.77	U 1.77	15.30
48		E 2.43	1.38	U 1.38	U 1.38	2.30	E 1.25	U 1.38	U 1.38	U 1.38	14.28
49		E 11.68	4.53	1.73	2.94	2.99	1.45	U 1.03	U 1.03	U 1.03	28.41
69		3.04	3.91	E 1.57	2.17	4.13	2.15	2.61	U 1.93	E 1.89	23.41
70		4.50	2.70	1.90	3.70	3.03	2.46	U 1.00	U 0.81	E 1.75	21.85
71		7.89	3.98	1.46	3.25	2.76	1.46	U 1.14	U 0.98	E 0.89	23.82
301R		U 2.73	U 2.73	U 2.73	U 2.73	U 2.73	U 2.73	U 2.73	U 2.73	U 2.73	24.60
302R		E 2.32	2.74	E 0.85	1.26	1.89	E 0.96	U 1.26	U 1.26	U 1.26	13.81
303R		5.04	5.67	2.20	3.07	4.41	2.13	E 2.44	E 0.87	E 1.65	27.48
304R		E 1.06	1.43	U 1.38	U 1.38	E 1.16	U 1.38	U 1.38	U 1.38	U 1.38	11.90
305R		E 0.86	E 0.61	U 1.18	U 1.18	U 1.18	U 1.18	U 1.18	U 1.18	U 1.18	9.76
306R		E 1.38	E 1.93	E 0.98	E 1.43	2.50	E 1.30	U 2.13	U 2.13	E 2.10	15.85
307R		E 0.82	E 0.77	U 1.20	U 1.20	U 1.20	U 1.20	U 1.20	U 1.20	U 1.20	10.00
308R		3.59	3.85	E 1.67	2.82	4.62	E 1.90	U 2.26	U 2.31	E 2.23	25.23

U = Undetected at the detection limit shown

E = Estimated value

** = Calculated as the sum of undetected, qualified, and unqualified values of the 9 HPAH compounds presented in this table.

Table C-3. 1992 Base/neutral extractable organic compounds normalized to total organic carbon (TOC) for comparison with Marine Sediment Quality Standards Chemical Criteria (ppm CARBON). Replicate stations are shaded.

CHEMICAL PARAMETER:		1,2-dichlorobenzene *		1,4-dichlorobenzene *		1,2,4-trichlorobenzene		hexachlorobenzene		dimethylphthalate		diethylphthalate		di-n-butylphthalate	
CHEMICAL CRITERIA (PPM CARBON):			2.3		3.1		0.81		0.38		53		61		220
STATION	REPLICATE														
1		U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94
3		U	1.35	U	1.35	U	1.35	U	1.35	U	1.35	U	1.35	U	1.35
3		U	0.02	U	0.02										
4		U	0.76	U	0.76	U	0.76	U	0.76	U	0.76	U	0.76	U	0.76
5	Replicate 1	U	0.95	U	0.95	U	0.95	U	0.95	U	0.95	U	0.95	U	0.95
5	Replicate 2	U	1.01	U	1.01	U	1.01	U	1.01	U	1.01	U	1.01	U	1.01
5	Replicate 3	U	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	0.79
5	Replicate 4	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82
8		U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	E	0.45
8		U	0.01	U	0.01										
12		U	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U	1.48
14		U	1.33	U	1.33	U	1.33	U	1.33	U	1.33	U	1.33	U	1.33
15		U	3.77	U	3.77	U	3.77	U	3.77	U	3.77	U	3.77	U	3.77
17		U	1.38	U	1.38	U	1.38	U	1.38	U	1.38	U	1.38	U	1.38
17		U	0.02	U	0.02										
18		U	0.90	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90
19		U	0.95	U	0.95	U	0.95	U	0.95	U	0.95	U	0.95	U	0.95
20		U	1.19	U	1.19	U	1.19	U	1.19	U	1.19	U	1.19	U	1.19
21		U	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82
22		U	3.19	U	3.19	U	3.19	U	3.19	U	3.19	U	3.19	U	3.19
23R		U	4.00	U	4.00	U	4.00	U	4.00	U	4.00	U	4.00	U	4.00
24R		U	0.90	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90
25R		U	5.53	U	5.53	U	5.53	U	5.53	U	5.53	U	5.53	U	5.53
26		U	1.20	U	1.20	U	1.20	U	1.20	U	1.20	U	1.20	U	1.20
26		U	0.02	U	0.02										
27R		U	4.71	U	4.71	U	4.71	U	4.71	U	4.71	U	4.71	U	4.71
29		U	1.02	U	1.02	U	1.02	U	1.02	U	1.02	U	1.02	U	1.02
29		U	0.01	U	0.01										
29		U	0.01	U	0.01										
29		U	0.01	U	0.01										
29		U	0.01	U	0.01										
30		U	0.97	U	0.97	U	0.97	U	0.97	U	0.97	U	0.97	U	0.97
32	Replicate 1	U	3.86	U	3.86	U	3.86	U	3.86	U	3.86	U	3.86	U	3.86
32	Replicate 2	U	1.21	U	1.21	U	1.21	U	1.21	U	1.21	U	1.21	U	1.21
32	Replicate 3	U	3.57	U	3.57	U	3.57	U	3.57	U	3.57	U	3.57	U	3.57
32	Replicate 4	U	3.86	U	3.86	U	3.86	U	3.86	U	3.86	U	3.86	U	3.86
33		U	4.84	U	4.84	U	4.84	U	4.84	U	4.84	U	4.84	E	2.11
34		U	0.83	U	0.83	U	0.83	U	0.83	U	0.83	U	0.83	E	1.15
34		U	0.01	U	0.01										
35	Replicate 1	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	E	0.54
35	Replicate 1	U	0.01	U	0.01										
35	Replicate 2	U	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	0.79	E	0.67
35	Replicate 2	U	0.01	U	0.01										
35	Replicate 3	U	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U	0.85	E	0.58
35	Replicate 3	U	0.01	U	0.01										
35	Replicate 4	U	0.78	U	0.78	U	0.78	U	0.78	U	0.78	U	0.78	E	0.52
35	Replicate 4	U	0.01	U	0.01										
36R		U	3.77	U	3.77	U	3.77	U	3.77	U	3.77	U	3.77	U	3.77
37R		U	4.39	U	4.39	U	4.39	U	4.39	U	4.39	U	4.39	U	4.39

U = Undetected at the detection limit shown

E = Estimated value

* = Indicates compounds that were analyzed as both volatile and semivolatile organic compounds. First reported values represent analysis as a semivolatile, second reported value represents analysis as a volatile compound

Table C-3. 1992 Base/neutral extractable organic compounds normalized to total organic carbon (TOC) for comparison with Marine Sediment Quality Standards Chemical Criteria (ppm CARBON). Replicate stations are shaded.

CHEMICAL PARAMETER:		1,2-dichlorobenzene *		1,4-dichlorobenzene *		1,2,4-trichlorobenzene		hexachlorobenzene		dimethylphthalate		diethylphthalate		di-n-butylphthalate	
CHEMICAL CRITERIA (PPM CARBON):			2.3		3.1		0.81		0.38		53		61		220
STATION	REPLICATE														
38	Replicate 1	U	1.14	U	1.14	U	1.14	U	1.14	U	1.14	U	1.14	U	1.14
38	Replicate 1	U	0.02	U	0.02										
38	Replicate 2	U	1.28	U	1.28	U	1.28	U	1.28	U	1.28	U	1.28	U	1.28
38	Replicate 2	U	0.02	U	0.02										
38	Replicate 3	U	1.07	U	1.07	U	1.07	U	1.07	U	1.07	U	1.07	U	1.07
38	Replicate 3	U	0.02	U	0.02										
38	Replicate 4	U	1.25	U	1.25	U	1.25	U	1.25	U	1.25	U	1.25	U	1.25
38	Replicate 4	U	0.02	U	0.02										
39		U	5.40	U	5.40	U	5.40	U	5.40	U	5.40	U	5.40	U	5.40
40		U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43
41		U	0.96	U	0.96	U	0.96	U	0.96	U	0.96	U	0.96	U	0.96
43		U	2.86	U	2.86	U	2.86	U	2.86	U	2.86	U	2.86	U	2.86
44	Replicate 1	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50
44	Replicate 2	U	2.56	U	2.56	U	2.56	U	2.56	U	2.56	U	2.56	U	2.56
44	Replicate 3	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13
44	Replicate 4	U	1.23	U	1.23	U	1.23	U	1.23	U	1.23	U	1.23	U	1.23
45		U	1.88	U	1.88	U	1.88	U	1.88	U	1.88	U	1.88	U	1.88
45		U	0.02	U	0.02										
47		U	1.77	U	1.77	U	1.77	U	1.77	U	1.77	U	1.77	U	1.77
48		U	1.38	U	1.38	U	1.38	U	1.38	U	1.38	U	1.38	U	1.38
48		U	0.02	U	0.02										
49		U	1.03	U	1.03	U	1.03	U	1.03	U	1.03	U	1.03	U	1.03
69		U	1.93	U	1.93	U	1.93	U	1.93	U	1.93	U	1.93	U	1.93
70		U	0.81	U	0.81	U	0.81	U	0.81	U	0.81	U	0.81	U	0.81
71		U	0.98	U	0.98	U	0.98	U	0.98	U	0.98	U	0.98	U	0.98
301R		U	2.73	U	2.73	U	2.73	U	2.73	U	2.73	U	2.73	U	2.73
302R		U	1.26	U	1.26	U	1.26	U	1.26	U	1.26	U	1.26	U	1.26
302R		U	0.01	U	0.01										
303R		U	1.18	U	1.18	U	1.18	U	1.18	U	1.18	U	1.18	U	1.18
304R		U	1.38	U	1.38	U	1.38	U	1.38	U	1.38	U	1.38	U	1.38
305R		U	1.18	U	1.18	U	1.18	U	1.18	U	1.18	U	1.18	U	1.18
306R		U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13
307R		U	1.20	U	1.20	U	1.20	U	1.20	U	1.20	U	1.20	U	1.20
308R		U	2.31	U	2.31	U	2.31	U	2.31	U	2.31	U	2.31	U	2.31

U = Undetected at the detection limit shown

E = Estimated value

* = Indicates compounds that were analyzed as both volatile and semivolatile organic compounds. First reported values represent analysis as a semivolatile, second reported value represents analysis as a volatile compound

Table C-3. (continued) 1992 Base/neutral extractable organic compounds normalized to total organic carbon (TOC) for comparison with Marine Sediment Quality Standards Chemical Criteria (ppm CARBON). Replicate stations are shaded.

CHEMICAL PARAMETER:		butyl-benzyl-phthalate		bis-(2-ethyl-hexyl)-phthalate		di-n-octyl-phthalate		dibenzo-furan		hexa-chloro-butadiene		n-nitroso-di-phenyl-amine	
CHEMICAL CRITERIA (PPM CARBON):			4.9		47		58		15		3.9		11
STATION	REPLICATE												
1		U	0.94	U	0.94	U	0.94	U	0.94	U	1.88	U	0.94
3		U	1.35		1.80	U	1.35	U	1.35	U	2.70	U	1.35
4		U	0.76	E	0.64	U	0.76	U	0.76	U	1.49	U	0.76
5	Replicate 1	U	0.95	E	0.78	U	0.95	U	0.95	U	1.90	U	0.95
5	Replicate 2	U	1.01	E	1.01	U	1.01	U	1.01	U	2.07	U	1.01
5	Replicate 3	U	0.79	U	0.79	U	0.79	U	0.79	U	1.57	U	0.79
5	Replicate 4	U	0.82	U	0.82	U	0.82	U	0.82	U	1.63	U	0.82
8		U	0.63		1.08	U	0.63		0.27	U	1.26	U	0.63
12		U	1.48	U	1.48	U	1.48	U	1.48	U	2.87	U	1.48
14		U	1.33	U	1.33	U	1.33	U	1.33	U	2.56	U	1.33
15		U	3.77	U	3.77	U	3.77	U	3.77	U	7.73	U	3.77
17		U	1.38	U	1.38	U	1.38	U	1.38	U	2.69	U	1.38
18		U	0.90	U	0.90	U	0.90	U	0.90	U	1.73	U	0.90
19		U	0.95	U	0.95	U	0.95	U	0.95	U	1.89	U	0.95
20		U	1.19	E	0.84	U	1.19	U	1.19	U	2.38	U	1.19
21		U	0.82		2.70	U	0.82	E	0.33	U	1.64	U	0.82
22		U	3.19	E	3.04	U	3.19	U	3.19	U	6.54	U	3.19
23R		U	4.00	U	4.00	U	4.00	U	4.00	U	8.00	U	4.00
24R		U	0.90	E	0.71	U	0.90	U	0.90	U	1.75	U	0.90
25R		U	5.53	U	5.53	U	5.53	U	5.53	U	11.33	U	5.53
26		U	1.20	U	1.20	U	1.20	U	1.20	U	2.41	U	1.20
27R		U	4.71		5.12	U	4.71	U	4.71	U	9.41	U	4.71
29		U	1.02	E	0.96	U	1.02	U	1.02	U	1.99	U	1.02
30		U	0.97		1.46	U	0.97		1.84	U	1.94	U	0.97
32	Replicate 1	U	3.86		5.71	U	3.86	U	3.86	U	7.62	U	3.86
32	Replicate 2	U	1.21		2.69	U	1.21	U	1.21	U	2.39	U	1.21
32	Replicate 3	U	3.57		4.04	U	3.57	U	3.57	U	6.96	U	3.57
32	Replicate 4	E	1.19		4.29	U	3.86	U	3.86	U	7.62	U	3.86
33		U	4.84		21.05	U	4.84		16.84	U	9.47	U	4.84
34			1.74		4.31	U	0.83	E	0.17	U	1.65	U	0.83
35	Replicate 1	U	0.73		2.00	U	0.73	U	0.73	U	1.46	U	0.73
35	Replicate 2	E	0.63		2.50	E	0.40	U	0.79	U	1.63	U	0.79
35	Replicate 3	E	0.63		2.60	U	0.85	U	0.85	U	1.70	U	0.85
35	Replicate 4		1.30		3.68	E	0.41	E	0.17	U	1.60	U	0.78
36R		U	3.77		5.00	U	3.77	U	3.77	U	7.73	U	3.77
37R		U	4.39	E	3.39	U	4.39	U	4.39	U	8.89	U	4.39

U = Undetected at the detection limit shown

E = Estimated value

Table C-3. (continued) 1992 Base/neutral extractable organic compounds normalized to total organic carbon (TOC) for comparison with Marine Sediment Quality Standards Chemical Criteria (ppm CARBON). Replicate stations are shaded.

CHEMICAL PARAMETER:		butyl-benzyl-phthalate		bis-(2-ethyl-hexyl)-phthalate		di-n-octyl-phthalate		dibenzo-furan		hexa-chloro-butadiene		n-nitroso-di-phenyl-amine	
CHEMICAL CRITERIA (PPM CARBON):			4.9		47		58		15		3.9		11
STATION	REPLICATE												
38	Replicate 1	U	1.14	E	1.52	U	1.14	U	1.14	U	2.24	U	1.14
38	Replicate 2	U	1.28		1.82	U	1.28	U	1.28	U	2.51	U	1.28
38	Replicate 3	U	1.07		2.49	U	1.07	U	1.07	U	2.13	U	1.07
38	Replicate 4	U	1.25		2.40	U	1.25	U	1.25	U	2.45	U	1.25
39		U	5.40	E	3.80	U	5.40	U	5.40	U	10.67	U	5.40
40		U	0.43		5.53	U	0.43		0.83	U	0.88	U	0.43
41		U	0.96		13.16	U	0.96	E	0.52	U	1.84	U	0.96
43		U	2.86	E	2.21	U	2.86	U	2.86	U	5.86	U	2.86
44	Replicate 1	U	2.50	E	1.65	U	2.50	U	2.50	U	4.75	U	2.50
44	Replicate 2	U	2.56	E	2.23	U	2.56	U	2.56	U	4.87	U	2.56
44	Replicate 3	U	2.13	E	1.77	U	2.13	U	2.13	U	4.04	U	2.13
44	Replicate 4	U	1.23	E	0.89	U	1.23	U	1.23	U	2.35	U	1.23
45		U	1.88		1.88	U	1.88	U	1.88	U	3.75	U	1.88
47		U	1.77	U	1.77	U	1.77	U	1.77	U	3.58	U	1.77
48		U	1.38	U	1.38	U	1.38	U	1.38	U	2.76	U	1.38
49		U	1.03	U	1.03	U	1.03	U	1.03	U	2.01	U	1.03
69		U	1.93	E	1.59	U	1.93	U	1.93	U	3.91	U	1.93
70			1.09		1.75	U	0.81	U	0.81	U	1.66	U	0.81
71		U	0.98	E	0.89	U	0.98	U	0.98	U	1.95	U	0.98
301R		U	2.73	E	2.47	U	2.73	U	2.73	U	5.33	U	2.73
302R		U	1.26	E	0.88	U	1.26	U	1.26	U	2.53	U	1.26
303R		U	1.18		1.18	U	1.18	U	1.18	U	2.28	U	1.18
304R		U	1.38	U	1.38	U	1.38	U	1.38	U	2.70	U	1.38
305R		U	1.18	U	1.18	U	1.18	U	1.18	U	2.33	U	1.18
306R		U	2.13	E	1.73	U	2.13	U	2.13	U	4.25	U	2.13
307R		U	1.20	U	1.20	U	1.20	U	1.20	U	2.40	U	1.20
308R		U	2.31	E	1.62	U	2.31	U	2.31	U	4.36	U	2.31

U = Undetected at the detection limit shown

E = Estimated value

Table C-4. 1992 polychlorinated biphenyls (PCBs) values normalized to total organic carbon (TOC) for comparison with Marine Sediment Quality Standards Chemical Criteria (ppm CARBON). Replicate stations are shaded. Values exceeding state standards are marked **.

CHEMICAL PARAMETER		Total detected PCBs *		PCB Arochlor 1221		PCB Arochlor 1232		PCB Arochlor 1248		PCB Arochlor 1254		PCB Arochlor 1260		Aroclor 1016/1242	
CHEMICAL CRITERIA (PPM CARBON):			12												
STATION	SAMPLE														
1		U	1.18	U	2.35	U	1.18	U	1.18	U	1.18	U	1.18	U	1.18
3		U	2.25	U	4.49	U	2.25	U	2.25	U	2.25	U	2.25	U	2.25
4		U	0.80	U	1.61	U	0.80	U	0.80	U	0.80	U	0.80	U	0.80
5	Replicate 1	U	1.12	U	2.23	U	1.12	U	1.12	U	1.12	U	1.12	U	1.12
5	Replicate 2	U	1.18	U	2.37	U	1.18	U	1.18	U	1.18	U	1.18	U	1.18
5	Replicate 3	U	0.93	U	1.85	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93
5	Replicate 4	U	0.96	U	1.92	U	0.96	U	0.96	U	0.96	U	0.96	U	0.96
8		U	0.90	U	1.80	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90
12		U	1.74	U	3.48	U	1.74	U	1.74	U	1.74	U	1.74	U	1.74
14		U	2.22	U	4.44	U	2.22	U	2.22	U	2.22	U	2.22	U	2.22
15		U	9.09	U	18.18	U	9.09	U	9.09	U	9.09	U	9.09	U	9.09
17		U	1.54	U	3.08	U	1.54	U	1.54	U	1.54	U	1.54	U	1.54
18		U	1.50	U	3.01	U	1.50	U	1.50	U	1.50	U	1.50	U	1.50
19		U	0.90	U	1.80	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90
20		U	0.99	U	1.98	U	0.99	U	0.99	U	0.99	U	0.99	U	0.99
21		U	0.82	U	1.64	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82
22		U	3.85	U	7.69	U	3.85	U	3.85	U	3.85	U	3.85	U	3.85
23R		U	5.00	U	10.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00
24R		U	0.95	U	1.90	U	0.95	U	0.95	U	0.95	U	0.95	U	0.95
25R		U	6.67	U	13.33	U	6.67	U	6.67	U	6.67	U	6.67	U	6.67
26		U	1.20	U	2.41	U	1.20	U	1.20	U	1.20	U	1.20	U	1.20
27R		U	5.88	U	11.76	U	5.88	U	5.88	U	5.88	U	5.88	U	5.88
29		U	1.20	U	2.41	U	1.20	U	1.20	U	1.20	U	1.20	U	1.20
30		E	0.86	U	1.94	U	0.97	U	0.97	E	0.86	U	1.46	U	0.97
32	Replicate 1	E	2.76	U	9.52	U	4.76	U	4.76	E	2.76	U	4.76	U	4.76
32	Replicate 2	U	1.49	U	2.99	U	1.49	U	1.49	U	1.49	U	1.49	U	1.49
32	Replicate 3	E	5.13	U	8.70	U	4.35	U	4.35	E	2.48	E	2.65	U	4.35
32	Replicate 4	U	4.76	U	9.52	U	4.76	U	4.76	U	4.76	U	4.76	U	4.76
33		E	** 14.21	U	10.53	U	5.26	U	5.26	E	14.21	U	15.79	U	5.26
34		E	1.88	U	1.83	U	0.92	U	0.92	E	0.87	E	1.01	U	0.92
35	Replicate 1	E	0.58	U	1.54	U	0.77	U	0.77	E	0.58	U	0.77	U	0.77
35	Replicate 2	E	0.75	U	1.67	U	0.83	U	0.83	E	0.75	U	0.83	U	0.83
35	Replicate 3	E	0.76	U	1.79	U	0.90	U	0.90	E	0.76	U	0.90	U	0.90
35	Replicate 4	E	0.78	U	1.73	U	0.87	U	0.87	E	0.78	U	0.87	U	0.87
36R		U	13.64	U	27.27	U	13.64	U	13.64	U	13.64	U	13.64	U	13.64
37R		U	5.56	U	11.11	U	5.56	U	5.56	U	5.56	U	5.56	U	5.56
38	Replicate 1	U	1.43	U	2.86	U	1.43	U	1.43	U	1.43	U	1.43	U	1.43
38	Replicate 2	U	1.60	U	3.21	U	1.60	U	1.60	U	1.60	U	1.60	U	1.60
38	Replicate 3	U	1.33	U	2.67	U	1.33	U	1.33	U	1.33	U	1.33	U	2.67
38	Replicate 4	U	1.56	U	6.25	U	3.13	U	3.13	U	3.13	U	3.13	U	1.56
39		U	20.00	U	40.00	U	20.00	U	20.00	U	20.00	U	20.00	U	20.00
40		E	1.84	U	2.76	U	1.38	U	1.38	E	1.84	U	2.17	U	1.38
41		U	2.63	U	5.26	U	2.63	U	2.63	U	4.82	U	2.63	U	2.63
43		U	10.34	U	20.69	U	10.34	U	10.34	U	10.34	U	10.34	U	10.34

U = Undetected at the detection limit shown

E = Estimated value

* = Calculated using the sum of detected PCB values only, or the lowest undetected value if no PCB congeners were detected.

Table C-4. 1992 polychlorinated biphenyls (PCBs) values normalized to total organic carbon (TOC) for comparison with Marine Sediment Quality Standards Chemical Criteria (ppm CARBON). Replicate stations are shaded. Values exceeding state standards are marked **.

CHEMICAL PARAMETER		Total detected PCBs *		PCB Arochlor 1221		PCB Arochlor 1232		PCB Arochlor 1248		PCB Arochlor 1254		PCB Arochlor 1260		Aroclor 1016/1242	
CHEMICAL CRITERIA (PPM CARBON):			12												
STATION	SAMPLE														
44	Replicate 1	U	3.75	U	15.00	U	7.50	U	7.50	U	7.50	U	7.50	U	3.75
44	Replicate 2	U	2.56	U	5.13	U	2.56	U	2.56	U	2.56	U	2.56	U	15.38
44	Replicate 3	U	3.19	U	6.38	U	3.19	U	3.19	U	3.19	U	3.19	U	6.38
44	Replicate 4	U	1.23	U	14.81	U	7.41	U	7.41	U	7.41	U	7.41	U	1.23
45		U	4.69	U	9.38	U	4.69	U	4.69	U	4.69	U	4.69	U	4.69
47		U	5.66	U	11.32	U	5.66	U	5.66	U	5.66	U	5.66	U	5.66
48		U	2.63	U	5.26	U	2.63	U	2.63	U	2.63	U	2.63	U	2.63
49		U	1.87	U	3.74	U	1.87	U	1.87	U	1.87	U	1.87	U	1.87
69		U	2.17	U	4.35	U	2.17	U	2.17	U	2.17	U	2.17	U	2.17
70		U	1.90	U	3.79	U	1.90	U	1.90	U	1.90	U	1.90	U	1.90
71		U	1.63	U	3.25	U	1.63	U	1.63	U	1.63	U	1.63	U	1.63
301R		U	3.33	U	6.67	U	3.33	U	3.33	U	3.33	U	3.33	U	3.33
302R		U	2.11	U	4.21	U	2.11	U	2.11	U	2.11	U	2.11	U	2.11
303R		U	2.36	U	4.72	U	2.36	U	2.36	U	2.36	U	2.36	U	2.36
304R		U	2.12	U	4.23	U	2.12	U	2.12	U	2.12	U	2.12	U	2.12
305R		U	1.63	U	3.27	U	1.63	U	1.63	U	1.63	U	1.63	U	1.63
306R		U	7.50	U	15.00	U	7.50	U	7.50	U	7.50	U	7.50	U	7.50
307R		U	1.09	U	2.19	U	1.09	U	1.09	U	1.09	U	1.09	U	1.09
308R		U	2.56	U	5.13	U	2.56	U	2.56	U	2.56	U	2.56	U	2.56

U = Undetected at the detection limit shown

E = Estimated value

* = Calculated using the sum of detected PCB values only, or the lowest undetected value if no PCB congeners were detected.

Table C-5. 1992 acid/neutral extractable organic compounds compared with Marine Sediment Quality Standards Chemical Criteria (ppb dry weight). Replicate stations are shaded.

CHEMICAL PARAMETER:		phenol		2-methyl-phenol		4-methyl-phenol		2,4-di-methyl-phenol		penta-chloro-phenol		benzyl alcohol		benzoic acid	
CHEMICAL CRITERIA (PPB DRY WEIGHT):			420		63		670		29		360		57		650
STATION	REPLICATE														
1		E	11	U	16	U	16	U	32	U	80	U	80	E	56
3		E	8.6	U	12	U	12	U	24	U	61	U	61	E	27
4		E	14	U	19	U	19	U	37	U	93	U	93	E	64
5	Replicate 1	E	13	U	17	U	17	U	34	U	84	U	84	E	52
5	Replicate 2	E	12	U	17	U	17	U	35	U	87	U	87	E	74
5	Replicate 3	E	17	U	17	U	17	U	34	U	85	U	85	E	88
5	Replicate 4	E	14	U	17	U	17	U	34	U	85	U	85	E	72
8		E	10	U	14	U	14	U	28	U	71	U	71	E	31
12		U	33	U	17	U	17	U	33	U	84	U	84	U	170
14		U	23	U	12	U	12	U	23	U	58	U	58	U	120
15		E	8.6	U	8.3	U	8.3	U	17	U	41	U	41	U	82
17		U	35	U	18	U	18	U	35	U	88	U	88	E	23
18		E	7.1	U	12	U	12	U	23	U	58	U	58	E	35
19		U	42	U	21	U	21	U	42	U	110	U	110	E	34
20		E	6.9	U	12	U	12	U	24	U	60	U	60	E	20
21		E	13	U	10		16	U	20	U	51	U	51	E	19
22			28	U	8.3	U	8.3	U	17	U	42	U	42	E	19
23R		U	16	U	8	U	8	U	16	U	40	U	40	U	80
24R		U	37	U	19	U	19	U	37	U	93	U	93	U	190
25R		E	4.4	U	8.3	U	8.3	U	17	U	41	U	41	E	19
26			75	U	10	U	10	U	20	U	50	U	50	E	12
27R		U	16	U	8	U	8	U	16	U	40	U	40	U	80
29		U	33	U	17	U	17	U	33	U	83	U	83	U	170
30		E	5.7	U	10	U	10	U	20	U	49	U	49	E	14
32	Replicate 1		42	U	8.1	U	8.1	U	16	U	40	U	40	U	80
32	Replicate 2	U	16	U	8.1	U	8.1	U	16	U	41	U	41	E	23
32	Replicate 3	U	16	U	8.2	U	8.2	U	16	U	41	U	41	U	82
32	Replicate 4	U	16	U	8.1	U	8.1	U	16	U	41	U	41	U	81
33			26	U	9.2		9.4	E	4.4	U	46	U	46	E	24
34		E	9.9	U	18	E	7.7	U	36	U	90	U	90	E	27
35	Replicate 1	E	5.9	U	19	U	19	U	38	U	95	U	95	U	190
35	Replicate 2	E	6.5	U	19	U	19	U	39	U	96	U	96	U	190
35	Replicate 3	E	6.9	U	19	U	19	U	38	U	95	U	95	U	190
35	Replicate 4	E	7.8	U	18	U	18	U	37	U	92	U	92	U	180
36R		E	9	U	8.3	U	8.3	U	17	U	42	U	42	U	84
37R		E	3	U	7.9	U	7.9	U	16	U	40	U	40	U	79
38	Replicate 1	U	47	U	24	U	24	U	47	U	120	U	120	U	240
38	Replicate 2	E	12	U	24	U	24	U	47	U	120	U	120	E	73
38	Replicate 3	U	48	U	24	U	24	U	48	U	120	U	120	E	28
38	Replicate 4	U	47	U	24	U	24	U	47	U	120	U	120	U	240
39		U	16	U	8.1	U	8.1	U	16	U	41	U	41	U	82
40		E	14	U	9.3	E	4.6	U	19	U	47	U	47	U	93
41		E	12	U	11	E	6.1	U	21	U	53	U	53	U	110
43		U	17	U	8.3	U	8.3	U	17	U	42	U	42	U	83

U = Undetected at the detection limit shown

E = Estimated value

Table C-5. 1992 acid/neutral extractable organic compounds compared with Marine Sediment Quality Standards Chemical Criteria (ppb dry weight). Replicate stations are shaded.

CHEMICAL PARAMETER:		phenol		2-methyl-phenol		4-methyl-phenol		2,4-di-methyl-phenol		penta-chloro-phenol		benzyl alcohol		benzoic acid	
CHEMICAL CRITERIA (PPB DRY WEIGHT):			420		63		670		29		360		57		650
STATION	REPLICATE														
44	Replicate 1	E	4.9	U	10	U	10	U	19	U	47	U	47	U	95
44	Replicate 2	E	6.8	U	10	U	10	U	19	U	48	U	48	U	96
44	Replicate 3	E	5.3	U	10	U	10	U	19	U	47	U	47	U	95
44	Replicate 4	E	7.3	U	10	U	10	U	19	U	48	U	48	U	95
45		E	6.3	U	12	U	12	U	24	U	60	U	60	E	41
47		E	13	U	9.4	U	9.4	U	19	U	47	U	47	U	94
48		E	9.8	U	21	U	21	U	42	U	100	U	100	E	53
49		U	43	U	22	U	22	U	43	U	110	U	110	U	220
69		E	9.3	U	8.9	U	8.9	U	18	U	45	U	45	U	89
70		E	12	U	17	U	17	U	35	U	87	U	87	E	35
71		E	9.5	U	12	U	12	U	24	U	60	U	60	E	49
301R			19	U	8.2	U	8.2	U	16	U	41	U	41	E	34
302R		U	24	U	12	U	12	U	24	U	60	U	60	U	120
303R		E	4.7	U	15	U	15	U	29	U	73	U	73	U	150
304R		U	51	U	26	U	26	U	51	U	130	U	130	U	260
305R		U	57	U	29	U	29	U	57	U	140	U	140	U	290
306R		E	7.2	U	8.5	U	8.5	U	17	U	43	U	43	U	85
307R		U	44	U	22	U	22	U	44	U	110	U	110	E	32
308R		E	7.5	U	9	U	9	U	17	U	43	U	43	U	85

U = Undetected at the detection limit shown
E = Estimated value

APPENDIX D

Benthic Infauna Raw Data Replicates 1-4

Station 1

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Pachycerianthus fimbriatus	3743010303	1				1
Platyhelminthes	39			1		1
Nemertea	43		3	3		6
Tenonia priops	5001022302	1	2	1		4
Pholoe minuta	5001060101	35	35	54	18	142
Gyptis brevipalpa	5001210102		1			1
Nephtys cornuta	5001250104	2	2	3		7
Glycera nana	5001270129		1			1
Glycinde picta	5001280101	2	5	3	1	
Goniada brunnea	5001280203	1				1
Lumbrineris bicirrata	5001310101			1	1	2
Lumbrineris luti	5001310109	1	1		1	3
Lumbrineris cruzensis	5001310118	2				2
Aricidea catherinae	5001410208			1		1
Levinsenia gracilis	5001410801		3			3
Prionospio lighti	5001430521	64	55	12	5	136
Paraprionospio pinnata	5001431701	2	3	1	1	7
Aphelochaeta multifilis	5001500302			1		1
Cossura spp.	50015201	1				1
Brada sachalina	5001540199	9	1			10
Flabelligera affinis	5001540202	2				2
Sternaspis scutata	5001590101		1			1
Heteromastus filobranchus	5001600203		2	1	1	4
Pectinaria californiensis	5001660304		1			1
Amage anops	5001670101			1		1
Lanassa venusta venusta	500168130201	1				1
Terebellides californica	5001690103		1		1	2
Oligochaeta	5004	2				2
Gastropoda	51		1			1
Alvania spp.	51032001	8				8
Alvania compacta	5103200106			4		4
Odostomia (O.) spp.	510801019999	1	3	3	1	8
Melanochlamys diomedea	5110060101			1		1
Gastropteron pacificum	5110070101				1	1
Acila castrensis	5502020101	14	12	15	8	49
Nucula tenuis	5502020201		2	3		5
Yoldia hyperborea	5502040502		2			2
Axinopsida serricata	5515020201	3	2	1		6
Mysella tumida	5515100102	14	39	22	19	94
Clinocardium spp.	55152201	1				1
Macoma carlottensis	5515310112	4	3	4	7	18
Macoma nasuta	5515310114		1			1
Euphilomedes producta	6111070303		1	1		2
Eudorella pacifica	6154040202	17	19	16	12	64
Pontoporeia femorata	6169220201	1	1	2	1	5
Protomedeia grandimana	6169260303	181	235	299	147	862
Monoculodes zernovi	6169370816		2		1	3
Westwoodilla caecula	6169371502		1			1
Heterophoxus oculatus	6169420301	40	53	50	21	164
Crangon alaskensis	6179220102	1			1	2

Pinnixa spp.	61890604	10				10
Pinnixa schmitti	6189060404	53	76	63	70	262
Scleroplax granulata	6189070301			1		1
Ophiuroidea	8120	2				2
Amphiodia urtica/periercta	812903019999	326	349	343	323	1341
Amphioplus strongyloplax	8129030999		4	7	3	14
Amphiura spp.	81290310			2		2
Molpadia intermedia	8179010101	1			1	2
	Total Abundance:	803	923	920	645	3280
	Number of Taxa:	32	35	31	23	57

Station 3						
Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43	1	1			2
Polynoidae	500102	2				2
Bylgides macrolepidus	5001020201				1	1
Harmothoe multisetosa	5001020809	1				1
Pholoe minuta	5001060101	33	12	26	25	96
Nephtys caeca	5001250103	1		2	2	5
Nephtys cornuta	5001250104	1			1	2
Nephtys rickettsi	5001250106				1	1
Nephtys ferruginea	5001250111				1	1
Glycera nana	5001270129	4	1	1	1	7
Glycinde picta	5001280101		1	1	3	5
Lumbrineris spp.	50013101			2		2
Lumbrineris californiensis	5001310132	1			1	2
Leitoscoloplos pugettensis	5001400302				1	1
Polydora socialis	5001430402	1				1
Prionospio steenstrupi	5001430506	8	2	3	8	21
Prionospio lighti	5001430521	7		4	22	33
Prionospio multibranchiata	5001430599				1	1
Spiophanes berkeleyorum	5001431004	3	2	2	1	8
Cossura spp.	50015201	3		2	15	20
Flabelligera affinis	5001540202				2	2
Nicomache personata	5001630502	1		2		3
Ampharete acutifrons	5001670208		1			1
Oligochaeta	5004	2				2
Margarites pupillus	5102100308		1			1
Polinices pallida	5103760402	4	7	1	2	14
Mitrella gausapata	5105030247		1		4	5
Neptunea phoenicia	510505080101	1				1
Admete gracilior	5105140103			2	1	3
Cylichnella culcitella	5110040101	1	1			2
Aeolidacea	5142			1		1
Yoldia hyperborea	5502040502	100	100	138	67	405
Yoldia scissurata	5502040504	1	1			2
Axinopsida serricata	5515020201	3	7	1	5	16
Mysella tumida	5515100102	1			1	2
Macoma spp.	55153101		12	4	1	17
Macoma calcarea	5515310101	77	28	81	89	275
Macoma carlottensis	5515310112		6	5		11
Balanus crenatus	6134020104		1			1
Diastylis alaskensis	6154050101		1			1
Idotea spp.	61620203				2	2
Melita desdichada	6169211008	2		3	2	7
Photis brevipes	6169260201	1				1
Protomedeia grandimana	6169260303	3	1	1		5
Cyphocaris challengeri	6169341101				1	1
Melphidippa goesi	6169350101	2		2	1	5
Heterophoxus oculatus	6169420301		2		2	4
Foxiphalus similis/cognatus	616942099999			1	2	3
Eualus avinus	6179160408			1	1	2
Crangon communis	6179220109			1	1	2

Pagurus armatus	6183060201				1	1
Pagurus aleuticus	6183060203		1			1
Pinnixa schmitti	6189060404	23	8	28	32	91
	Total Abundance:	288	198	315	301	1102
	Number of Taxa:	28	23	25	34	53

Station 4						
Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Pachycerianthus fimbriatus	3743010303	2	3	2	3	10
Platyhelminthes	39		1			1
Nemertea	43	2	2	5	1	10
Hesperone laevis	5001021703			1		1
Tenonia priops	5001022302			1	1	2
Pholoe minuta	5001060101		1		1	2
Gyptis brevipalpa	5001210102				1	1
Nereis spp.	50012404			2		2
Nereis procera	5001240404	1				1
Nereis zonata	5001240406			1		1
Platynereis bicanaliculata	5001240501			1		1
Glycera nana	5001270129		1	1	4	6
Glycinde picta	5001280101			1		1
Glycinde armigera	5001280103	1		2	2	5
Goniada maculata	5001280202		1			1
Lumbrineris bicirrata	5001310101			1		1
Lumbrineris luti	5001310109		1			1
Lumbrineris cruzensis	5001310118	5		13	5	23
Parougia caeca	5001360505			1		1
Aricidea catherinae	5001410208	2	2	2		6
Levinsenia gracilis	5001410801	3	19	18	1	41
Laonice cirrata	5001430201	1	1	2	5	9
Polydora socialis	5001430402	1				1
Prionospio steenstrupi	5001430506		4	2		6
Prionospio lighti	5001430521	1	15	3	1	20
Spiophanes berkeleyorum	5001431004	2	6	9	3	20
Paraprionospio pinnata	5001431701	8	4	3	5	20
Trochochaeta multisetosa	5001450102	1				1
Cirratulidae	500150			1		1
Cirratulus cirratus	5001500101		5			5
Aphelochaeta multifilis	5001500302				1	1
Aphelochaeta secunda	5001500309		1			1
Cossura pygodactylata	5001520106	2	8	10		20
Brada sachalina	5001540199			1		1
Travisia pupa	5001580403	1				1
Sternaspis scutata	5001590101	3	3	1		7
Mediomastus californiensis	5001600402			1		1
Maldanidae	500163		1			1
Praxillella gracilis	5001630901		1			1
Praxillella affinis pacifica	500163090301			1		1
Ampharete acutifrons	5001670208			1		1
Ampharete finmarchica	5001670214	1			1	2
Terebellidae	500168		2			2
Polycirrus sp. complex	50016808	1	2			3
Artacama coniferi	5001681101	2	1	1	2	6
Terebellides spp.	50016901		3	1	2	6
Terebellides stroemi	5001690101		5	1	4	10
Terebellides californica	5001690103	4	7		2	13
Mitrella gausapata	5105030247			1	1	2
Odostomia (O.) spp.	510801019999	4	2	4	1	11

Scaphander willetti	5110040301		1		21	22
Melanochlamys diomedea	5110060101	1				1
Haminoea vesicula	5110120101	6				6
Bivalvia	55				1	1
Acila castrensis	5502020101	26	16	24	28	94
Nucula tenuis	5502020201	8	4	14	7	33
Nuculana minuta	5502040202	1			1	2
Parvilucina tenuisculpta	5515010101	2			1	3
Axinopsida serricata	5515020201	15		2	25	42
Mysella tumida	5515100102	6	2	7	9	24
Macoma spp.	55153101	2				2
Macoma carlottensis	5515310112		1			1
Psephidia lordi	5515470501				1	1
Pandora spp.	55200201			1		1
Euphilomedes producta	6111070303		1			1
Eudorella pacifica	6154040202	4	5	7	7	23
Protomedeia grandimana	6169260303	1	5	9	5	20
Monoculodes zernovi	6169370816				1	1
Westwoodilla caecula	6169371502				1	1
Heterophoxus oculatus	6169420301	1	2	3		6
Luidia foliolata	8105010101				1	1
Amphiodia urtica/periercta	812903019999	55	80	28	43	206
Amphioplus strongyloplax	8129030999	4	1		1	6
	Total Abundance:	180	220	190	200	790
	Number of Taxa:	35	38	41	37	73

Station 5

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Pachycerianthus fimbriatus	3743010303		3		1	4
Platyhelminthes	39			5	1	6
Nemertea	43			1	1	2
Pholoe minuta	5001060101	1				1
Nephtys cornuta	5001250104	1	1			2
Nephtys signifera	5001250199	1	1	1		3
Glycera nana	5001270129	1	3	4	5	13
Glycinde armigera	5001280103	1	1	1		3
Goniada brunnea	5001280203	1		2		3
Lumbrineris bicirrata	5001310101				1	1
Lumbrineris luti	5001310109	3	1	1	2	7
Lumbrineris cruzensis	5001310118	1		3	4	8
Lumbrineris limicola	5001310128		3			3
Aricidea catherinae	5001410208	2		1		3
Levinsenia gracilis	5001410801	4	16		11	31
Laonice cirrata	5001430201	3	3	4	2	12
Polydora socialis	5001430402		2			2
Prionospio steenstrupi	5001430506			1	2	3
Prionospio lighti	5001430521	1	11	2	9	23
Spiophanes berkeleyorum	5001431004		3	1	1	5
Paraprionospio pinnata	5001431701	4	5	10	4	23
Cossura pygodactylata	5001520106	1	10		2	13
Brada villosa	5001540102	3				3
Pherusa plumosa	5001540302			2		2
Sternaspis scutata	5001590101	6		9	10	25
Mediomastus californiensis	5001600402	1	3	1		5
Maldanidae	500163	1				1
Praxillella affinis	5001630903		2			2
Pista spp.	50016807		1			1
Pista cristata	5001680701			1		1
Polycirrus sp. complex	50016808	1				1
Lanassa venusta venusta	500168130201		1			1
Alvania compacta	5103200106	1				1
Bittium attenuatum	5103460102	34	7	5	19	65
Mitrella gausapata	5105030247		1	1	1	3
Kurtziella plumbea	5106021107				1	1
Odostomia (O.) spp.	510801019999	9	12	5	7	33
Cylichnella culcitella	5110040101		2		1	3
Acila castrensis	5502020101	34	31	11	20	96
Nucula tenuis	5502020201	10	7	7	6	30
Nuculana minuta	5502040202	5	8	2	5	20
Yoldia thraciaeformis	5502040507		1			1
Musculus discors	5507010402		1			1
Axinopsida serricata	5515020201	60	38	45	27	170
Mysella tumida	5515100102	7	6	4	2	19
Nemocardium centrifilosum	5515220301		1			1
Macoma spp.	55153101			3		3
Macoma carlottensis	5515310112	6	3	3	2	14
Compsomyax subdiaphana	5515470301	1		2		3
Psephidia lordi	5515470501	16	11	10	22	59

Gadilidae	560204		2	1	2	5
Euphilomedes carcharodonta	6111070301				1	1
Euphilomedes producta	6111070303	12	9	4	5	30
Eudorella pacifica	6154040202	6	5	16	10	37
Photis brevipes	6169260201		1			1
Protomedeia grandimana	6169260303	4	7	5	6	22
Lepidepecreum garthi	61693421**	1				1
Monoculodes norvegicus	6169370824	1	2	1	1	5
Harpiniopsis fulgens	6169420204	1	2	2	4	9
Heterophoxus oculatus	6169420301	1				1
Amphiodia urtica/periercta	812903019999	20	58	64	65	207
Amphioplus strongyloplax	8129030999		1			1
	Total Abundance:	266	286	241	263	1056
	Number of Taxa:	38	41	37	35	62

** NODC code not available

Station 8

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43				1	1
Nematoda	47	1				1
Malmgreniella sp. S	5001020818			1		1
Lepidasthenia berkeleyae	5001021801			1		1
Tenonia priops	5001022302			1		1
Pholoides aspera	5001040101				1	1
Pholoe minuta	5001060101			1		1
Eteone longa	5001130205	2				2
Gyptis brevipalpa	5001210102	4	1	1	1	7
Syllis (Typosyllis) harti	5001230510	1			1	2
Exogone lourei	5001230703	17	13	2	22	54
Nephtys signifera	5001250199	3	1	1	4	9
Sphaerodoropsis sphaerulifer	5001260202	1				1
Glycera nana	5001270129		1			1
Glycinde picta	5001280101	3	4	4	5	16
Glycinde armigera	5001280103	1	1	1	1	4
Onuphidae	500129	1				1
Lumbrineridae	500131	2		1		3
Lumbrineris bicirrata	5001310101	1			2	3
Lumbrineris luti	5001310109	20	16	17	18	71
Lumbrineris cruzensis	5001310118	3	2		4	9
Parougia caeca	5001360505	2				2
Leitoscoloplos pugettensis	5001400302	2			1	3
Aricidea catherinae	5001410208	7	1	3	1	12
Levinsenia gracilis	5001410801	1	1	1	1	4
Laonice cirrata	5001430201		1			1
Polydora socialis	5001430402	1	2		1	4
Polydora brachycephala	5001430429		2	1	3	6
Prionospio steenstrupi	5001430506	3	1	6	4	14
Prionospio lighti	5001430521	10	1	6	1	18
Paraprionospio pinnata	5001431701	8	12	7	5	32
Magelona sp. 1	50014401			1		1
Magelona longicornis	5001440105	2	1	2		5
Cirratulus cirratus	5001500101	4	1		8	13
Aphelochaeta multifilis	5001500302	98	43	29	27	197
Aphelochaeta secunda	5001500309	9	1	2	2	14
Chaetozone sp. 1	50015004	1				1
Chaetozone spinosa	5001500407	2				2
Pherusa plumosa	5001540302	1				1
Armandia brevis	5001580202	1			2	3
Ophelina acuminata	5001580607	5		3	7	15
Sternaspis scutata	5001590101	1	1		1	3
Capitella capitata complex	5001600101	1				1
Heteromastus filobranchus	5001600203	1		2	1	4
Notomastus tenuis	5001600302	3		1		4
Mediomastus californiensis	5001600402	3	2	5		10
Barantolla americana	5001600601	1	6	6	4	17
Petaloproctus borealis	500163070101				39	39
Praxillella gracilis	5001630901	16	20	23	26	85
Praxillella affinis pacifica	500163090301	7	3	6	5	21

Euclymeninae	5001631	11	8	3	5	27
Euclymene cf. zonalis	5001631103				1	1
Macroclymene spp.	50016321	7		3		10
Galathowenia oculata	5001640202		2		1	3
Pectinaria californiensis	5001660304			1		1
Ampharete finmarchica	5001670214		1			1
Melinna elisabethae	5001670503	3	1		1	5
Asabellides lineatus	5001670804				2	2
Pista cristata	5001680701	11	8	5	6	30
Pista brevibranchiata	5001680710		1			1
Polycirrus sp. complex	50016808	1	1	3	2	7
Artacama coniferi	5001681101	1				1
Lanassa nordenskioeldi	5001681301				2	2
Terebellides stroemi	5001690101	7	16	6	23	52
Terebellides californica	5001690103	3	4	1	2	10
Potamilla myriops	5001700602		1			1
Laonome kroyeri	5001701401		1			1
Oligochaeta	5004	2		1		3
Alvania compacta	5103200106	3	2		2	7
Mitrella gausapata	5105030247	3	4	1	2	10
Odostomia (O.) spp.	510801019999	1	1			2
Turbonilla spp.	51080102	3	2	2	1	8
Cylichnella culcitella	5110040101	1	2		1	4
Acila castrensis	5502020101	7	5	3	7	22
Nucula tenuis	5502020201		2	1	6	9
Nuculana minuta	5502040202		1			1
Yoldia scissurata	5502040504	2	1	1	1	5
Megacrenella columbiana	5507010301				2	2
Adontorhina cyclia	5515020102			1		1
Axinopsida serricata	5515020201	7			3	10
Mysella tumida	5515100102	4	6	7	6	23
Cyclocardia ventricosa	5515170101	5	1		11	17
Clinocardium nuttallii	5515220102		2			2
Nemocardium centrifilosum	5515220301	1		1		2
Macoma spp.	55153101	12	5		7	24
Macoma calcarea	5515310101	4	1	3	1	9
Macoma carlottensis	5515310112				5	5
Macoma nasuta	5515310114			6		6
Compsomyax subdiaphana	5515470301	1		4	2	7
Psephidia lordi	5515470501	16	16	9	23	64
Pandora filosa	5520020102		1			1
Scaphopoda	56	1				1
Cylindroleberididae	611103				1	1
Euphilomedes producta	6111070303	7	11	1	9	28
Balanus spp.	61340201	1				1
Alienacanthomysis macropsis	6153013201	1				1
Eudorella pacifica	6154040202	3	7	1	2	13
Cumella vulgaris	6154080102	1				1
Leptognathia brevimana	6157020204	13		2	7	22
Limnoria lignorum	6161050101		2			2
Ampelisca hancocki	6169020113	2		1	6	9
Ampelisca pugettica	6169020114				1	1
Ampelisca careyi	6169020135	1	1	2	2	6

Melita desdichada	6169211008	4	4	1	4	13
Protomedeia prudens	6169260312	22	6	9	15	52
Orchomene pinquis	6169342904		7			7
Orchomene decipiens	6169342914		2			2
Prachynella lodo	6169345701	1				1
Monoculodes zernovi	6169370816	3			1	4
Heterophoxus oculatus	6169420301	8	16	9	18	51
Metaphoxus frequens	6169420601	2				2
Foxiphalus similis/cognatus	616942099999	1				1
Tritella pilimana	6171010602	1		1		2
Callianassa spp.	61830402				1	1
Pinnixa spp.	61890604	1	5	1	2	9
Priapulus caudatus	7400010101			1		1
Amphiodia urtica/periercta	812903019999		1	1	4	6
Amphipholis squamata	8129030202				4	4
	Total Abundance:	439	296	227	401	1363
	Number of Taxa:	81	63	60	71	118

Station 12

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Platyhelminthes	39	1				1
Nemertea	43	2	1	2	2	7
Gattyana treadwelli	5001020606			1		1
Lepidasthenia berkeleyae	5001021801			1		1
Tenonia priops	5001022302		1			1
Malmgreniella sp. M	5001022687	2	3	2		7
Pholoe minuta	5001060101	41	32	23	31	127
Pilargis berkeleyae	5001220301			2		2
Nephtys punctata	5001250105				1	1
Nephtys signifera	5001250199			1		1
Glycinde armigera	5001280103	1	1			2
Lumbrineris bicirrata	5001310101			1		1
Lumbrineris luti	5001310109	3	5	3	7	18
Lumbrineris cruzensis	5001310118	1	1			2
Aricidea catherinae	5001410208				1	1
Aricidea ramosa	5001410706	2	1	4	4	11
Levinsenia gracilis	5001410801	4	2		6	12
Laonice cirrata	5001430201			2	2	4
Polydora socialis	5001430402		1			1
Polydora brachycephala	5001430429			3		3
Prionospio lighti	5001430521	1			2	3
Prionospio multibranchiata	5001430599		1			1
Paraprionospio pinnata	5001431701				1	1
Magelona longicornis	5001440105			1	1	2
Spiochaetopterus costarum	5001490302				1	1
Aphelochaeta secunda	5001500309			1		1
Brada sachalina	5001540199	1				1
Scalibregma inflatum	5001570101		1			1
Sternaspis scutata	5001590101	4	2	2	5	13
Mediomastus californiensis	5001600402		1		1	2
Praxillella gracilis	5001630901	1				1
Praxillella affinis pacifica	500163090301	4	9	8	2	23
Euclymeninae	5001631		2	2		4
Euclymene cf. zonalis	5001631103				2	2
Macroclymene spp.	50016321	2	1		1	4
Galathowenia oculata	5001640202	1		2	5	8
Pectinaria californiensis	5001660304	7	9	13	11	40
Amage anops	5001670101				1	1
Terebellides stroemi	5001690101	13	16	10	10	49
Terebellides californica	5001690103		2			2
Odostomia (O.) spp.	510801019999		4			4
Turbonilla spp.	51080102		2	1	1	4
Cylichnella culcitella	5110040101		2			2
Cylichna attonsa	5110040205	2		1	1	4
Diaphana spp.	51100901	1				1
Acila castrensis	5502020101	4	6	1	3	14
Nucula tenuis	5502020201	4	7	2	3	16
Nuculana minuta	5502040202			1		1
Yoldia scissurata	5502040504		1			1
Yoldia thraciaeformis	5502040507			1		1

Parvilucina tenuisculpta	5515010101	1		2	1	4
Lucinoma acutilineata	5515010201				1	1
Axinopsida serricata	5515020201	19	8	4	5	36
Mysella tumida	5515100102	18	26	14	11	69
Macoma spp.	55153101	1	5	2	3	11
Macoma carlottensis	5515310112	5	6	4	14	29
Compsomyax subdiaphana	5515470301	5	4	3	2	14
Lyonsia californica	5520050202		1			1
Dentalium rectus	5601010128					0
Gadilidae	560204	4	4	9	3	20
Euphilomedes producta	6111070303	3	1	4	1	9
Xenacanthomysis pseudomacropsis	6153010106			2	2	4
Pseudomma berkeleyi	6153011901		1			1
Eudorella pacifica	6154040202	22	28	37	33	120
Protomedeia spp.	61692603		1	1		2
Monoculodes zernovi	6169370816				1	1
Harpiniopsis fulgens	6169420204	2			2	4
Heterophoxus oculatus	6169420301	10	7	17	14	48
Pinnixa schmitti	6189060404		3	1	1	5
Amphiodia urtica/periercta	812903019999	184	141	102	150	577
	Total Abundance:	376	350	293	349	1368
	Number of Taxa:	34	40	40	41	70

Station 14

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Anthozoa	3740	1		3		4
Platyhelminthes	39			1		1
Nemertea	43	5		11		16
Polynoidae	500102		1		2	3
Gattyana treadwelli	5001020606		1			1
Lepidonotus squamatus	5001021103			1		1
Malmgreniella spp.	50010226			1		1
Pholoe minuta	5001060101	8	7	9	3	27
Paleanotus bellis	5001080101			2		2
Phyllodoce castanea	5001130701	2	2		1	5
Eulalia (Eumida) sanguinea	5001131101		1	2		3
Phyllodoce spp.	50011314	1				1
Phyllodoce hartmanae	5001131402			1		1
Procerea cornuta	5001230101			1		1
Pionosyllis uraga	5001230204			2		2
Exogone gemmifera	5001230702			2		2
Cheilonereis cyclurus	5001240201			1		1
Nereis zonata	5001240406			1		1
Nephtys caeca	5001250103				1	1
Nephtys rickettsi	5001250106			2		2
Nephtys californiensis	5001250113	1				1
Glycera nana	5001270129		1	1	3	5
Glycinde armigera	5001280103				1	1
Goniada brunnea	5001280203			1		1
Onuphis iridescens	5001290103	1	1			2
Diopatra ornata	5001290202		3	2	1	6
Lumbrineridae	500131			1		1
Lumbrineris luti	5001310109	2	4	3	3	12
Ninoe gemmea	5001310202	1		1		2
Leitoscoloplos pugettensis	5001400302	3	2	1	1	7
Apistobranchus ornatus	5001420102				1	1
Polydora brachycephala	5001430429			2		2
Polydora cardalia	5001430431			2		2
Prionospio steenstrupi	5001430506				2	2
Prionospio lighti	5001430521		4	1	2	7
Spiophanes berkeleyorum	5001431004	3	4	4	3	14
Paraprionospio pinnata	5001431701	1		1		2
Phyllochaetopterus prolifica	5001490202		1	2		3
Aphelochaeta multifilis	5001500302			1	1	2
Aphelochaeta secunda	5001500309			5		5
Chaetozone spinosa	5001500407		1			1
Cossura spp.	50015201	1	1	2		4
Brada sachalina	5001540199		3			3
Flabelligera affinis	5001540202		1	3		4
Pherusa plumosa	5001540302				1	1
Sternaspis scutata	5001590101	10	17	9	13	49
Capitellidae	500160			1		1
Notomastus tenuis	5001600302				1	1
Mediomastus spp.	50016004			10	1	11
Mediomastus ambiseta	5001600401	3	2		1	6

Decamastus gracilis	5001600501	12			17	29
Maldanidae	500163	14	3	6	6	29
Maldane glebifex	5001630302	17	13	32	20	82
Praxillella spp.	50016309	1	1	3	2	7
Euclymene spp.	50016311			9		9
Euclymene cf. zonalis	5001631103	4	1		4	9
Myriochele heeri	5001640201				2	2
Galathowenia oculata	5001640202	74	54	63	47	238
Idanthyrsus armatus	5001650102			6		6
Pectinaria californiensis	5001660304	1	1	1		3
Ampharete spp.	50016702			1		1
Ampharete acutifrons	5001670208	1		1	4	6
Nicolea zostericola	5001680601			1		1
Pista brevibranchiata	5001680710	1	8	3	2	14
Polycirrus sp. complex	50016808	1	1	5	3	10
Terebellides californica	5001690103	3				3
Sabellidae	500170			4		4
Chone duneri	5001700104			1	2	3
Megalomma splendida	5001700401			1		1
Pseudopotamilla intermedia	5001700701			6		6
Circeis spp.	50017305	1				1
Oligochaeta	5004		1			1
Vitrinella columbiana	5103230202		1			1
Polinices pallida	5103760402		2		2	4
Odostomia (O.) spp.	510801019999	1	1	1		3
Rictaxis punctocaelatus	5110010401			1		1
Melanochlamys diomedea	5110060101		1		2	3
Cuthona spp.	51410301			1		1
Chaetoderma spp.	54020101	2				2
Nucula tenuis	5502020201	1	1			2
Yoldia hyperborea	5502040502			1	1	2
Yoldia scissurata	5502040504	4	10	1		15
Mytilidae	550701			1		1
Pectinidae	550905	1				1
Delectopecten spp.	55090506		1			1
Delectopecten randolphi	5509050601		1	14		15
Parvilucina tenuisculpta	5515010101				2	2
Axinopsida serricata	5515020201	42	22	37	35	136
Mysella tumida	5515100102	1	2	2		5
Nemocardium centrifilosum	5515220301	1	2		1	4
Macoma spp.	55153101	7	4	9	9	29
Macoma calcarea	5515310101	24	35	34	14	107
Macoma carlottensis	5515310112	9	4	19	10	42
Compsomyax subdiaphana	5515470301	5	1	2	2	10
Hiatella arctica	5517060201			6	1	7
Lyonsia spp.	55200502	1				1
Euphilomedes producta	6111070303	4	13	4	5	26
Pseudomma berkeleyi	6153011901	2	1	4		7
Leucon subnasica	6154040115	2	1	1	3	7
Eudorella pacifica	6154040202				2	2
Eudorellopsis longirostris	6154040306	5	3	1	1	10
Diastylis alaskensis	6154050101	4	2	2	2	10
Diastylis paraspinulosa	6154050115	5	3	1	2	11

Campylaspis canaliculata	6154070102			1		1
Campylaspis rubicunda	6154070103	1				1
Leptognathia gracilis	6157020202			3	1	4
Leptognathia brevimana	6157020204		1	2		3
Haliophasma geminata	6160011601		2			2
Ampelisca hancocki	6169020113		1	1	1	3
Ampelisca careyi	6169020135		1	7	1	9
Aoroides spp.	61690602				1	1
Argissa hamatipes	6169070101				1	1
Eusirus cuspidatus	6169200802		1	2	3	6
Protomedeia spp.	61692603				1	1
Microjassa litodes	6169270402			1		1
Acidostoma spp.	61693401	1	1	1		3
Anonyx lilljeborgi	6169340303	1		1		2
Orchomene pacifica	6169342903			1	2	3
Westwoodilla caecula	6169371502	14	7	14	10	45
Harpiniopsis fulgens	6169420204	1				1
Heterophoxus oculatus	6169420301	6	4	10	8	28
Paraphoxus oculatus	6169420925				1	1
Dyopedos bispinis	6169440102		3	1	2	6
Proboloides spp.	61694808			6		6
Tritella pilimana	6171010602			1		1
Caprella irregularis	6171010708	1		3		4
Euphausia pacifica	6174020101	2				2
Callianassa spp.	61830402		1	2		3
Pinnixa spp.	61890604		1	1	1	3
Golfingia pugettensis	7200020104	1				1
Phoronis spp.	77000102			4		4
Ophiura lutkeni	8127010607		1	1		2
Amphiodia urtica/periercta	812903019999	2		1	1	4
Amphipholis squamata	8129030202			1		1
Amphioplus strongyloplax	8129030999	1				1
	Total Abundance:	1043	953	1012	951	3874
	Number of Taxa:	79	88	119	89	175

Station 15						
Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43	8	7		4	19
Harmothoinae	5001021		2	4	1	7
Pholoides aspera	5001040101			19		19
Pholoe minuta	5001060101		1	2	3	6
Paleanotus bellis	5001080101			1		1
Phyllodocidae	500113			1		1
Phyllodoce mucosa	5001130104		1			1
Eulalia bilineata	5001130304		2	2		4
Eulalia (Eumida) sanguinea	5001131101			1		1
Phyllodoce spp.	50011314	2	2	4	1	9
Procerea cornuta	5001230101			1		1
Syllis (Typosyllis) alternata	5001230501				1	1
Eusyllis habei	5001230699			1		1
Exogone lourei	5001230703	49	42	35	58	184
Exogone verugera	5001230706	3	8	23	4	38
Ehlersia heterochaeta	5001232201	5	9	17	10	41
Nephtys signifera	5001250199	1		1	1	3
Glycera nana	5001270129	2	3	4	4	13
Glycinde armigera	5001280103	1		2		3
Goniada maculata	5001280202		2	2	3	7
Onuphidae	500129		1			1
Onuphis conchylega	5001290101	2	2	1	5	10
Onuphis geophiliformis	5001290102	1	2	1		4
Lumbrineridae	500131			1		1
Lumbrineris bicirrata	5001310101		1			1
Lumbrineris luti	5001310109	11	6	13	9	39
Lumbrineris cruzensis	5001310118		9		2	11
Lumbrineris californiensis	5001310132			2		2
Leitoscoloplos pugettensis	5001400302	2	1		5	8
Orbinia (Phylo) felix	5001400510			2		2
Aricidea catherinae	5001410208		2	1		3
Levinsenia gracilis	5001410801		1			1
Apistobranchus ornatus	5001420102	1	5		1	7
Polydora socialis	5001430402		1			1
Prionospio steenstrupi	5001430506	6	7	7	15	35
Prionospio lighti	5001430521		1			1
Spio cirrifera	5001430703		4	2	1	7
Spiophanes berkeleyorum	5001431004		1	1		2
Paraprionospio pinnata	5001431701			1		1
Magelona longicornis	5001440105		1			1
Chaetopteridae	500149		2		1	3
Phyllochaetopterus prolifica	5001490202		4	73	3	80
Aphelochaeta multifilis	5001500302	1			1	2
Aphelochaeta secunda	5001500309		1		1	2
Chaetozone sp. 1	50015004	1				1
Travisia brevis	5001580401	1				1
Sternaspis scutata	5001590101	1				1
Notomastus tenuis	5001600302		5	8		13
Notomastus latericeus	5001600306		2			2
Mediomastus californiensis	5001600402		1	4	8	13

Decamastus gracilis	5001600501	1	10	9	13	33
Maldanidae	500163			1		1
Chirimia spp.	50016301				1	1
Euclymeninae	5001631	2	4	5	2	13
Rhodine bitorquata	5001631001	2	1	2		5
Euclymene cf. zonalis	5001631103	3	2	3		8
Isocirrus longiceps	5001632001				1	1
Owenia fusiformis	5001640102	1		1	4	6
Myriochele heeri	5001640201	3	5		8	16
Galathowenia oculata	5001640202	20	14	7	10	51
Pectinaria granulata	5001660303	1	5	6		12
Ampharete spp.	50016702		1			1
Ampharete acutifrons	5001670208		1			1
Lysippe labiata	5001670401	1		1	3	5
Lanassa nordenskioeldi	5001681301				1	1
Lanassa venusta venusta	500168130201	1	1			2
Terebellides californica	5001690103	1	1			2
Sabellidae	500170		1			1
Chone mollis	5001700111		1			1
Megalomma splendida	5001700401				6	6
Alvania compacta	5103200106	9	15	3	3	30
Bittium attenuatum	5103460102	1	2		2	5
Crepipatella lingulata	5103640301			2		2
Natica clausa	5103760201	1		1		2
Mitrella gausapata	5105030247	1	2	10	4	17
Oenopota spp.	51060204			1		1
Odostomia (O.) spp.	510801019999	1	3			4
Turbonilla spp.	51080102		7	2	1	10
Cylichnella culcitella	5110040101		3	1	4	8
Lepidochitona dentiens	5302010107			1		1
Chaetoderma spp.	54020101				2	2
Nucula tenuis	5502020201	2	2	3	1	8
Nuculana minuta	5502040202		1	10	3	14
Megacrenella columbiana	5507010301	1	1		1	3
Delectopecten randolphi	5509050601		3	31		34
Pododesmus cepio	5509090103			1		1
Parvilucina tenuisculpta	5515010101	7	2	5	6	20
Adontorhina cyclia	5515020102	2	1	2	1	6
Axinopsida serricata	5515020201	1		2	4	7
Thyasira gouldi	5515020325		2		3	5
Mysella tumida	5515100102	1		2	1	4
Nemocardium centrifilosum	5515220301	1	3	2	1	7
Macoma spp.	55153101	2	5	7	3	17
Macoma calcarea	5515310101		1	3	4	8
Compsomyax subdiaphana	5515470301	1				1
Psephidia lordi	5515470501	4	6	3	5	18
Bankia setacea	5518020101				1	1
Lyonsia californica	5520050202	1				1
Thracia trapezoides	5520080203	1				1
Cardiomya oldroydi	5520100103	6	3	4	3	16
Gadilidae	560204	1	1	2	1	5
Euphilomedes producta	6111070303	5	12	4	3	24
Campylaspis hartae	6154070105				1	1

Leptochelia savignyi	6157020101		6	13	5	24
Leptognathia gracilis	6157020202	1	2	1	3	7
Leptognathia brevimana	6157020204	1		2	3	6
Haliophasma geminata	6160011601	1	1			2
Ampelisca hancocki	6169020113			1		1
Ampelisca careyi	6169020135			3	1	4
Byblis millsi	6169020208	1	1	3	1	6
Rhachotropis oculata	6169201307		1	1	1	3
Photis lacia	6169260211			3		3
Opisa tridentata	6169342802		1			1
Monoculodes zernovi	6169370816	7	5	3	4	19
Synchelidium shoemakeri	6169371402				1	1
Westwoodilla caecula	6169371502	1	1		2	4
Heterophoxus oculatus	6169420301			9		9
Rhepoxynius abronius	6169421504		3	3		6
Spirontocaris snyderi	6179160204			1		1
Golfingia pugettensis	7200020104	1	1			2
Phoronis spp.	77000102	80	129	57	98	364
	Total Abundance:	276	412	474	368	1530
	Number of Taxa:	57	77	76	66	121

Station 17

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Polynoidae	500102		1			1
Eunoe uniseriata	5001020599				3	3
Hesperone laevis	5001021703		1			1
Sigambra tentaculata	5001220201			2		2
Sigambra bassi	5001220204	1				1
Nephtys ferruginea	5001250111		2	2	1	5
Nephtys signifera	5001250199		2			2
Glycera nana	5001270129	4	1		3	8
Goniada brunnea	5001280203	1				1
Leitoscoloplos pugettensis	5001400302	7	3	4	8	22
Aricidea catherinae	5001410208		1			1
Levinsenia gracilis	5001410801	1				1
Polydora socialis	5001430402		2			2
Prionospio steenstrupi	5001430506	1	1	3	1	6
Prionospio lighti	5001430521				1	1
Spiophanes berkeleyorum	5001431004	16	43	46	46	151
Paraprionospio pinnata	5001431701	2	1	1		4
Cossura spp.	50015201				4	4
Cossura modica	5001520199		1			1
Heteromastus filobranchus	5001600203			2	26	28
Mediomastus californiensis	5001600402	4	6			10
Maldanidae	500163				1	1
Pectinaria spp.	50016603		6			6
Pectinaria californiensis	5001660304			10	1	11
Terebellides californica	5001690103			1		1
Odostomia (O.) spp.	510801019999		3	2	1	6
Cylichna attonsa	5110040205	3	5	7	3	18
Acila castrensis	5502020101			1	1	2
Nucula tenuis	5502020201		1			1
Yoldia scissurata	5502040504			1	1	2
Axinopsida serricata	5515020201	166	142	155	170	633
Macoma spp.	55153101		3	1		4
Macoma carlottensis	5515310112	3	3	6	3	15
Eudorella pacifica	6154040202	7	8	6	8	29
Diastylis alaskensis	6154050101				1	1
Halicella halona	6169400602				1	1
Crangon alaskensis	6179220102				1	1
Axiopsis spinulicauda	61830204	1			2	3
	Total Abundance:	217	236	250	287	990
	Number of Taxa:	14	21	17	22	38

Station 18

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43	2		11	6	19
Lepidasthenia berkeleyae	5001021801	2	3	2		7
Tenonia priops	5001022302	1		1		2
Malmgreniella sp. L	5001022689			2		2
Sthenelais tertiaglabra	5001060305		1			1
Phyllodoce groenlandica	5001130102			1		1
Phyllodoce mucosa	5001130104		6			6
Eteone longa	5001130205			1	2	3
Eulalia (Eumida) sanguinea	5001131101	1		1		2
Phyllodoce spp.	50011314	1	1	2		4
Phyllodoce hartmanae	5001131402			2		2
Gyptis brevipalpa	5001210102		1		1	2
Sigambra tentaculata	5001220201		3	2	8	13
Syllis (Typosyllis) alternata	5001230501		1	4	2	7
Syllis (Typosyllis) harti	5001230510	5				5
Exogone gemmifera	5001230702			4		4
Nereis zonata	5001240406		1			1
Nephtys signifera	5001250199	1				1
Glycera nana	5001270129	2	3	4	2	11
Glycinde armigera	5001280103	1			2	3
Goniada brunnea	5001280203			2		2
Lumbrineridae	500131	1		1		2
Lumbrineris bicirrata	5001310101		1			1
Lumbrineris luti	5001310109	6				6
Aricidea catherinae	5001410208			1		1
Polydora socialis	5001430402	5	7			12
Polydora cardalia	5001430431		1	1		2
Polydora sp. 1	5001430488				1	1
Prionospio steenstrupi	5001430506	3	2	2	1	8
Prionospio lighti	5001430521	3				3
Spiophanes berkeleyorum	5001431004	22	36	49	16	123
Paraprionospio pinnata	5001431701	15	3	8	5	31
Trochochaeta multisetosa	5001450102	10	9	10	5	34
Phyllochaetopterus prolifica	5001490202			17		17
Spiochaetopterus costarum	5001490302	136	53	55	3	247
Mesochaetopterus taylori	5001490401		1			1
Cirratulidae	500150	3				3
Aphelochaeta multifilis	5001500302	2		1	4	7
Aphelochaeta secunda	5001500309	1		9	6	16
Chaetozone gracilis	5001500402		1			1
Chaetozone spinosa	5001500407	3	2	5		10
Brada villosa	5001540102	1				1
Scalibregma inflatum	5001570101			1		1
Ophelina acuminata	5001580607		1			1
Sternaspis scutata	5001590101	10		9	2	21
Heteromastus spp.	50016002			1	1	2
Heteromastus filobranchus	5001600203	6	13	11	21	51
Barantolla americana	5001600601			1		1
Praxillella spp.	50016309			4		4
Praxillella gracilis	5001630901	2	1			3

Praxillella affinis pacifica	500163090301	1	2			3
Euclymeninae	5001631	1	2	1		4
Euclymene cf. zonalis	5001631103			1		1
Pectinaria californiensis	5001660304	34	14	14	1	63
Ampharetidae	500167		1			1
Amage anops	5001670101	3	10	16	1	30
Ampharete acutifrons	5001670208			7	5	12
Ampharete finmarchica	5001670214		3			3
Amphicteis scaphobranchiata	5001670304		2			2
Amphicteis mucronata	5001670306			1		1
Amphisamytha bioculata	5001671801	1				1
Neoamphitrite robusta	5001680401	4	1			5
Polycirrus sp. complex	50016808	1				1
Artacama coniferi	5001681101		1			1
Terebellides spp.	50016901		1			1
Terebellides stroemi	5001690101	9	4		2	15
Terebellides californica	5001690103	2		6		8
Alvania compacta	5103200106	5	5	1	1	12
Mitrella gausapata	5105030247				8	8
Odostomia (O.) spp.	510801019999	1	2	3		6
Turbonilla spp.	51080102	1	3	1	1	6
Cylichnella culcitella	5110040101		1	1		2
Cylichna attonsa	5110040205	4	1		1	6
Nucula tenuis	5502020201	1	4	2	2	9
Yoldia spp.	55020405	1				1
Yoldia thraciaeformis	5502040507		1			1
Pectinidae	550905		1			1
Axinopsida serricata	5515020201	299	303	227	241	1070
Mysella tumida	5515100102	5	7	3	6	21
Nemocardium centrifilosum	5515220301	2				2
Macoma yoldiformis	5515310111			3		3
Macoma carlottensis	5515310112		8	4	1	13
Compsomyax subdiaphana	5515470301		1		1	2
Hiatella arctica	5517060201	1				1
Pandora filosa	5520020102	1				1
Lyonsia californica	5520050202		1	1		2
Euphilomedes producta	6111070303		1	1		2
Eudorella pacifica	6154040202	1	10	4	33	48
Diastylis alaskensis	6154050101		1			1
Ampelisca brevisimulata	6169020125	1	1			2
Aoroides inermis	6169060203	1	4	1		6
Photis brevipes	6169260201	1	3			4
Protomedeia spp.	61692603	2				2
Heterophoxus oculatus	6169420301				1	1
Dulichia rhabdoplastis	6169440111		1			1
Caprella mendax	6171010719		3			3
Pinnixa spp.	61890604	4	3	3		10
Phoronis spp.	77000102	39	62	40	2	143
Pentamera pseudopopulifera	8172060305		1			1
Porichthys notatus	8783010101	1				1
	Total Abundance:	672	620	566	395	2253
	Number of Taxa:	54	58	54	34	100

Station 19

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43		3	3		6
Eulalia levicornuta	5001130103				1	1
Gyptis brevipalpa	5001210102		1			1
Syllis elongata	5001230308		1			1
Nephtys punctata	5001250105	1	2			3
Nephtys ferruginea	5001250111	1		1		2
Glycera nana	5001270129			1		1
Goniada brunnea	5001280203	1				1
Onuphis iridescens	5001290103	4	6	7	5	22
Lumbrineris luti	5001310109	2		1	3	6
Leitoscoloplos pugettensis	5001400302	9	3	1	3	16
Orbinia (Phylo) felix	5001400510				1	1
Levinsenia gracilis	5001410801				1	1
Prionospio steenstrupi	5001430506		1	1		2
Prionospio lighti	5001430521	1				1
Spiophanes berkeleyorum	5001431004	2	5	4	7	18
Paraprionospio pinnata	5001431701	1			1	2
Aphelochaeta spp.	50015003		1			1
Brada sachalina	5001540199		3	1	3	7
Travisia brevis	5001580401				1	1
Travisia pupa	5001580403	1	1	1		3
Sternaspis scutata	5001590101	1			1	2
Heteromastus filobranchus	5001600203	3	3	2	2	10
Rhodine bitorquata	5001631001			1		1
Pectinaria californiensis	5001660304	13	12	11	11	47
Ampharete acutifrons	5001670208	1				1
Pista cristata	5001680701	22	10			32
Artacamella hancocki	5001681201		1			1
Pista estevanica	5001681803		2	15	11	28
Terebellides californica	5001690103		1	1		2
Gastropoda	51	1		4		5
Cylichnella culcitella	5110040101	3		1		4
Cylichna attonsa	5110040205	3	1	4	2	10
Chaetodermatida	540201				8	8
Chaetoderma spp.	54020101	13	6	6	1	26
Bivalvia	55			2		2
Yoldia scissurata	5502040504		1	3	1	5
Yoldia thraciaeformis	5502040507			1		1
Parvilucina tenuisculpta	5515010101	1				1
Lucinoma acutilineata	5515010201	1				1
Axinopsida serricata	5515020201	1			1	2
Mysella tumida	5515100102	2				2
Pacifacanthomysis nephrophthalma	6153010105	1	1			2
Meterythrops robusta	6153011201		1			1
Pseudomma berkeleyi	6153011901	1				1
Leucon subnasica	6154040115		1		1	2
Eudorella pacifica	6154040202	4	2	7	7	20
Ampelisca agassizi	6169020111				1	1
Ampelisca careyi	6169020135	1				1
Eusirus cuspidatus	6169200802	1	1		1	3

Rhachotropis clemens	6169201309				1	1
Protomedeia spp.	61692603	1				1
Bathymedon pumilus	6169370599			1		1
Westwoodilla caecula	6169371502		1			1
Halicella halona	6169400602	1			1	2
Heterophoxus oculatus	6169420301	1	1	1	3	6
Paraphoxus oculatus	6169420925	8	2			10
Euphausia pacifica	6174020101		3	3		6
Spirontocaris holmesi	6179160214		1			1
Leptosynapta spp.	81780102		1			1
Molpadia intermedia	8179010101	1	1	3	2	7
	Total Abundance:	108	80	87	81	356
	Number of Taxa:	33	32	27	27	61

Station 20

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Platyhelminthes	39			1		1
Nemertea	43	3		2		5
Tenonia priops	5001022302				2	2
Pholoe minuta	5001060101	1				1
Phyllodoce mucosa	5001130104				8	8
Eteone longa	5001130205	1			1	2
Phyllodoce spp.	50011314		2			2
Gyptis brevipalpa	5001210102	1				1
Procerea cornuta	5001230101				2	2
Syllis (Typosyllis) alternata	5001230501				2	2
Syllis (Typosyllis) harti	5001230510		1	2		3
Sphaerosyllis pirifera	5001230805				12	12
Nereidae	500124			1		1
Nereis (Neanthes) virens	5001240302			1		1
Nereis zonata	5001240406	4			1	5
Nephtys cornuta	5001250104	2		4		6
Nephtys ferruginea	5001250111	2				2
Nephtys signifera	5001250199		3	1		4
Sphaerodoropsis sphaerulifer	5001260202			1	2	3
Glycera nana	5001270129	4		1	5	10
Glycinde picta	5001280101				1	1
Lumbrineridae	500131			1	11	12
Lumbrineris luti	5001310109	80	55	86	89	310
Parougia caeca	5001360505			2	3	5
Aricidea catherinae	5001410208	1	1	5	3	10
Levinsenia gracilis	5001410801	6		9	14	29
Polydora socialis	5001430402			2		2
Polydora cardalia	5001430431			1	1	2
Prionospio steenstrupi	5001430506	2		1	2	5
Prionospio lighti	5001430521		1	1	8	10
Prionospio multibranchiata	5001430599			1		1
Aphelochaeta multifilis	5001500302		1			1
Aphelochaeta secunda	5001500309			1		1
Cossura spp.	50015201	3				3
Cossura pygodactylata	5001520106		1	8	17	26
Armandia brevis	5001580202		1		1	2
Ophelina acuminata	5001580607	1			1	2
Capitella capitata	5001600101				1	1
Heteromastus filobranchus	5001600203	3		4	23	30
Mediomastus spp.	50016004	1		1		2
Maldanidae	500163			7	1	8
Maldane glebifex	5001630302	9	6	3		18
Praxillella gracilis	5001630901	29	23	28	27	107
Praxillella affinis	5001630903	4				4
Praxillella affinis pacifica	500163090301		2	2	2	6
Euclymeninae	5001631	1	3	1	1	6
Macroclymene spp.	50016321			1		1
Pectinaria granulata	5001660303	1	1	4	1	7
Pectinaria californiensis	5001660304	24	23	34	16	97
Amage anops	5001670101				1	1

Melinna cristata	5001670501				1	1
Pista cristata	5001680701	109	144	96	135	484
Pista brevibranchiata	5001680710	2			3	5
Polycirrus sp. complex	50016808			2		2
Lanassa venusta venusta	500168130201				1	1
Pista estevanica	5001681803	9				9
Terebellides stroemi	5001690101	34	18	46	12	110
Terebellides californica	5001690103	7	1	1	2	11
Sabellidae	500170				1	1
Chone duneri	5001700104	1			1	2
Chone mollis	5001700111		1		1	2
Euchone incolor	5001700204		1	5	5	11
Oligochaeta	5004	1		1		2
Alvania compacta	5103200106	2			2	4
Mitrella gausapata	5105030247	2				2
Odostomia (O.) spp.	510801019999		1	1	2	4
Turbonilla spp.	51080102	6	6	2	1	15
Cylichnella culcitella	5110040101	12		19	12	43
Cylichna attonsa	5110040205		14	1		15
Melanochlamys diomedea	5110060101				1	1
Nucula tenuis	5502020201	9	9	5	8	31
Mytilus edulis	5507010101	1	1	1	1	4
Axinopsida serricata	5515020201	20	17	9	4	50
Mysella tumida	5515100102	1	1	7	4	13
Clinocardium spp.	55152201		3	1	1	5
Clinocardium fucanum	5515220103	2				2
Nemocardium centrifilosum	5515220301			1		1
Macoma spp.	55153101	6	5	7	2	20
Macoma calcarea	5515310101	7	1		1	9
Macoma carlottensis	5515310112		22	20	10	52
Macoma nasuta	5515310114	2	4			6
Compsomyax subdiaphana	5515470301	7	3	3	3	16
Psephidia lordi	5515470501	24	19	19	16	78
Pandora filosa	5520020102	3	4	4	1	12
Thracia trapezoides	5520080203			1		1
Euphilomedes producta	6111070303		1		1	2
Eudorella pacifica	6154040202	1	1			2
Melita desdichada	6169211008	4	9	8	9	30
Eogammarus oclairi	6169211901	1				1
Protomedeia prudens	6169260312	8	7	4	6	25
Monoculodes zernovi	6169370816			1		1
Westwoodilla caecula	6169371502		1			1
Heterophoxus oculatus	6169420301	1	1	3		5
Dyopedos arcticus	6169440101	1	1	1		3
Pinnixa spp.	61890604		1	3		4
Phoronis spp.	77000102				1	1
	Total Abundance:	466	421	489	507	1883
	Number of Taxa:	50	43	59	60	96

Station 21

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Ptilosarcus gurneyi	3754020201		1	2		3
Nemertea	43	2	1	4	4	11
Tenonia priops	5001022302		2	1		3
Malmgreniella sp. M	5001022687		2			2
Malmgreniella sp. L	5001022689	13	7	8	4	32
Pholoe minuta	5001060101	1		2	1	4
Phyllodoce groenlandica	5001130102			4		4
Phyllodoce mucosa	5001130104	2			7	9
Eteone longa	5001130205	6	5	2	6	19
Eteone spilotus	5001130299	1				1
Eulalia (Eumida) sanguinea	5001131101	2				2
Phyllodoce spp.	50011314		1			1
Gyptis brevipalpa	5001210102				1	1
Podarke pugettensis	5001210401		1			1
Sphaerosyllis brandhorsti	5001230806		1			1
Nephtys cornuta	5001250104	2		1		3
Nephtys ferruginea	5001250111			1	5	6
Nephtys signifera	5001250199	1				1
Sphaerodoropsis sphaerulifer	5001260202	4			3	7
Glycera nana	5001270129	12	9	4	11	36
Glycinde picta	5001280101		1	3		4
Glycinde armigera	5001280103		1		3	4
Onuphis iridescens	5001290103			1		1
Lumbrineridae	500131	2	3			5
Lumbrineris spp.	50013101			1	1	2
Lumbrineris luti	5001310109	42	27	28	52	149
Leitoscoloplos pugettensis	5001400302			3	1	4
Aricidea catherinae	5001410208	1				1
Levinsenia gracilis	5001410801	1	1			2
Prionospio steenstrupi	5001430506	3	8	11	5	27
Prionospio lighti	5001430521	2				2
Spiophanes berkeleyorum	5001431004				1	1
Paraprionospio pinnata	5001431701	4	1		2	7
Aphelochaeta multifilis	5001500302	7	4	2		13
Aphelochaeta secunda	5001500309				1	1
Sternaspis scutata	5001590101	1			1	2
Capitellidae	500160				1	1
Capitella capitata complex	5001600101			2		2
Heteromastus spp.	50016002	7	2			9
Heteromastus filobranchus	5001600203	57	35	55	45	192
Maldanidae	500163			3		3
Praxillella affinis pacifica	500163090301	1				1
Euclymeninae	5001631	3	1			4
Euclymene cf. zonalis	5001631103			5	5	10
Pectinaria californiensis	5001660304	11	9	10	10	40
Amage anops	5001670101			2		2
Ampharete spp.	50016702			1		1
Ampharete finmarchica	5001670214		4		2	6
Polycirrus sp. complex	50016808	37	20	20	32	109
Lanassa venusta venusta	500168130201	10	9	6	27	52

Terebellides stroemi	5001690101		1			1
Gastropoda	51	1				1
Alvania compacta	5103200106	5			2	7
Mitrella gausapata	5105030247	1		1	4	6
Nassarius mendicus	5105080101				1	1
Odostomia (O.) spp.	510801019999				2	2
Turbonilla spp.	51080102	4	6	4	10	24
Cephalaspidea	5110		1			1
Rictaxis punctocaelatus	5110010401		1			1
Cylichnella culcitella	5110040101	1	3	2	3	9
Melanochlamys diomedea	5110060101	2			3	5
Nucula tenuis	5502020201	5	4	2	3	14
Parvilucina tenuisculpta	5515010101	7		1	6	14
Lucinoma acutilineata	5515010201				2	2
Axinopsida serricata	5515020201	190	144	153	226	713
Mysella tumida	5515100102	9	21	9	8	47
Clinocardium spp.	55152201	1	1			2
Clinocardium nuttalii	5515220102				1	1
Nemocardium centrifilosum	5515220301	5	1	9	4	19
Solen sicarius	5515290201			1		1
Macoma spp.	55153101	85	308	77	59	529
Macoma calcarea	5515310101	10		1	13	24
Macoma moesta alaskana	551531010702			2		2
Macoma yoldiformis	5515310111	1				1
Macoma carlottensis	5515310112	118	143	273	261	795
Macoma nasuta	5515310114	4	1	5		10
Tellina spp.	55153102		1	1	2	4
Compsomyax subdiaphana	5515470301	3		3	3	9
Psephidia lordi	5515470501	48	53	27	46	174
Bankia setacea	5518020101			1		1
Pandora filosa	5520020102	2				2
Euphilomedes carcharodonta	6111070301	247	309	303	275	1134
Euphilomedes producta	6111070303	45	63	74	66	248
Balanus crenatus	6134020104			1		1
Eudorellopsis longirostris	6154040306			1	1	2
Ampelisca hancocki	6169020113			1		1
Rhachotropis oculata	6169201307		1			1
Orchomene pacifica	6169342903				1	1
Synchelidium shoemakeri	6169371402		1		1	2
Westwoodilla caecula	6169371502	2		5	1	8
Rhepoxynius variatus	6169420926			1		1
Rhepoxynius bicuspidata	6169421503	5	1	8	9	23
Stenothoe spp.	61694810			1		1
Fabia subquadrata	6189060301			1		1
Priapulus caudatus	7400010101	2		1		3
Phoronis spp.	77000102		2			2
Chaetognatha	83				1	1
	Total Abundance:	1038	1222	1151	1245	4656
	Number of Taxa:	52	46	55	53	97

Station 22

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Platyhelminthes	39			1		1
Nemertea	43	5	7	2	1	15
Lepidasthenia berkeleyae	5001021801		1			1
Tenonia priops	5001022302			1		1
Pholoe minuta	5001060101	1	2		1	4
Paleanotus bellis	5001080101		1			1
Eteone longa	5001130205	1			1	2
Eulalia (Eumida) sanguinea	5001131101	4	2	2	2	10
Phyllodoce spp.	50011314	5	4	3	3	15
Phyllodoce hartmanae	5001131402				2	2
Gyptis brevipalpa	5001210102		1			1
Exogone lourei	5001230703	4	11	6	1	22
Platynereis bicanaliculata	5001240501	1	1	1		3
Nephtys caeca	5001250103	2				2
Nephtys cornuta	5001250104		1			1
Nephtys ferruginea	5001250111	4	1	2		7
Sphaerodoropsis minuta	5001260201		1			1
Sphaerodoropsis sphaerulifer	5001260202	1	8	1		10
Glycera nana	5001270129	3	3	3	1	10
Goniadidae	500128	1				1
Glycinde picta	5001280101	2	2	1		5
Glycinde armigera	5001280103	1	3	1	2	7
Goniada maculata	5001280202	1	1	3	1	6
Onuphidae	500129	2	2			4
Lumbrineris spp.	50013101		1	2	1	4
Lumbrineris luti	5001310109	7	33	7	3	50
Leitoscoloplos pugettensis	5001400302	16	31	19	12	78
Orbinia (Phylo) felix	5001400510	2	1	2	2	7
Aricidea catherinae	5001410208		1	1	1	3
Polydora socialis	5001430402		6			6
Polydora brachycephala	5001430429				1	1
Polydora sp. 1	5001430488			1		1
Prionospio steenstrupi	5001430506	75	102	29	59	265
Prionospio multibranchiata	5001430599		2			2
Spio cirrifera	5001430703			1	1	2
Spiophanes berkeleyorum	5001431004	2	2			4
Pygospio elegans	5001431302	3	1			4
Paraprionospio pinnata	5001431701	1			1	2
Chaetopteridae	500149		1			1
Spiochaetopterus costarum	5001490302	1	1	1		3
Aphelochaeta multifilis	5001500302				1	1
Aphelochaeta secunda	5001500309		1			1
Chaetozone spp.	50015004	1		1	1	3
Ophelina acuminata	5001580607	1	3			4
Notomastus latericeus	5001600306	5	1	1	7	14
Euclymeninae	5001631	1			1	2
Rhodine bitorquata	5001631001	3			1	4
Euclymene cf. zonalis	5001631103	1	2		1	4
Pectinaria granulata	5001660303	2	6	1		9
Pectinaria californiensis	5001660304	1	7			8

Ampharetidae	500167	2				2
Amage anops	5001670101			1		1
Ampharete finmarchica	5001670214	1	1	1	2	5
Lysippe labiata	5001670401		1	1		2
Schistocomus hiltoni	5001672501		1			1
Polycirrus sp. complex	50016808	18	4	7	5	34
Lanassa venusta venusta	500168130201	1	12	1		14
Streblosoma bairdi	5001682502	23	6	4	9	42
Terebellides californica	5001690103	1	1			2
Chone magna	5001700106	1				1
Gastropoda	51	1				1
Alvania compacta	5103200106	11	10	2	3	26
Bittium attenuatum	5103460102	29	60	32	12	133
Polinices pallida	5103760402		1			1
Mitrella gausapata	5105030247			4	1	5
Nassarius mendicus	5105080101	2		1	2	5
Olivella baetica	5105100102	1				1
Kurtzia arteaga	5106024101				1	1
Odostomia (O.) spp.	510801019999	5	1	7	1	14
Turbonilla spp.	51080102		4	1	3	8
Cephalaspidea	5110		1			1
Cylichnella culcitella	5110040101		1		2	3
Armina californica	5136020101				1	1
Cuthona concinna	5141030102		1			1
Bivalvia	55			1		1
Nucula tenuis	5502020201	3	3	1		7
Solemya reidi	5504010106			2	1	3
Megacrenella columbiana	5507010301		1		2	3
Modiolus modiolus	5507010601	1			2	3
Parvilucina tenuisculpta	5515010101	10	3	8	9	30
Lucinoma acutilineata	5515010201	2	3		1	6
Axinopsida serricata	5515020201	126	211	173	130	640
Thyasira gouldi	5515020325	1				1
Mysella tumida	5515100102	2	6	1		9
Clinocardium spp.	55152201		1			1
Clinocardium nuttali	5515220102		6	1		7
Nemocardium centrifilosum	5515220301			2	2	4
Solen sicarius	5515290201			1		1
Macoma spp.	55153101	1	50	8		59
Macoma calcarea	5515310101	3	11	2	2	18
Macoma obliqua	5515310106		26	3		29
Macoma yoldiformis	5515310111	1		1		2
Macoma nasuta	5515310114	1	7	4	1	13
Tellina spp.	55153102	3			1	4
Tellina carpenteri	5515310203		4			4
Compsomyax subdiaphana	5515470301	2	1	2	2	7
Psephidia lordi	5515470501	47	13	16	29	105
Protothaca staminea	5515470701			1		1
Pandora filosa	5520020102	3	7	3	7	20
Lyonsia californica	5520050202	4	2	2	9	17
Cardiomya pectinata	5520100101	3		1		4
Cylindroleberididae	611103	1	2		1	4
Euphilomedes carcharodonta	6111070301	173	189	221	172	755

Euphilomedes producta	6111070303	5	8	8	8	29
Eudorellopsis longirostris	6154040306		1		1	2
Campylapsis crispa	6154070111				1	1
Leptochelia savignyi	6157020101	25	205	57	28	315
Haliophasma geminata	6160011601	1				1
Ampelisca hancocki	6169020113	3	2	1	1	7
Ampelisca careyi	6169020135	2	1		1	4
Aoroides spp.	61690602		1			1
Melita desdichada	6169211008		1	1		2
Photis spp.	61692602	2				2
Hippomedon coecus	6169341411		2	2	2	6
Opisa tridentata	6169342802			1		1
Orchomene pacifica	6169342903		1	1		2
Synchelidium shoemakeri	6169371402		1	1	1	3
Westwoodilla caecula	6169371502			1		1
Metaphoxus frequens	6169420601	1				1
Rhepoxynius abronius	6169421504	2		2	2	6
Fabia subquadrata	6189060301	1				1
Pinnixa spp.	61890604		1	1		2
Golfingia pugettensis	7200020104		1		2	3
Phoronis spp.	77000102	40	5	1	13	59
Molgulidae	840603				6	6
	Total Abundance:	725	1135	686	587	3133
	Number of Taxa:	74	83	70	65	125

Station 23R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Ptilosarcus gurneyi	3754020201	1				1
Edwardsia sipunculoides	3759010102			1		1
Halcampa spp.	37590401		1			1
Nemertea	43		1			1
Sigalion mathildae	5001060402				1	1
Paleonotus bellis	5001080101	5	1			6
Phyllodoce mucosa	5001130104			7		7
Eulalia bilineata	5001130304			2		2
Eulalia (Eumida) sanguinea	5001131101	1	1	3		5
Phyllodoce spp.	50011314		4			4
Phyllodoce hartmanae	5001131402				1	1
Podarke pugettensis	5001210401		2			2
Kefersteinia cirrata	5001210501			1		1
Micropodarke dubia	5001210801		1	3	1	5
Syllis spp.	50012303	1				1
Syllis elongata	5001230308			1		1
Syllis (Typosyllis) harti	5001230510			1		1
Exogone gemmifera	5001230702		109			109
Exogone lourei	5001230703	24		56	39	119
Odontosyllis phosphorea	5001231303	3				3
Nephtyidae	500125	1				1
Nephtys spp.	50012501			1	1	2
Nephtys caeca	5001250103			1	1	2
Nephtys ferruginea	5001250111		1	4	3	8
Nephtys californiensis	5001250113	3	3			6
Sphaerodoropsis sphaerulifer	5001260202			1		1
Glycinde armigera	5001280103				2	2
Goniada brunnea	5001280203		1			1
Onuphidae	500129	7	2		1	10
Onuphis spp.	50012901	2		3		5
Onuphis iridescens	5001290103		2	2	6	10
Diopatra ornata	5001290202			1		1
Lumbrineris californiensis	5001310132	2	4	5		11
Protodorvillea gracilis	5001360201			2		2
Leitoscoloplos pugettensis	5001400302	2	1			3
Aricidea catherinae	5001410208			3		3
Aricidea minuta	5001410220		4			4
Polydora socialis	5001430402		3			3
Polydora brachycephala	5001430429		1			1
Polydora cardalia	5001430431				2	2
Prionospio steenstrupi	5001430506	4	5	13	6	28
Prionospio lighti	5001430521	1				1
Spiophanes spp.	50014310	1				1
Spiophanes bombyx	5001431001	3	2	4	9	18
Spiophanes berkeleyorum	5001431004			1		1
Magelona longicornis	5001440105		1			1
Phyllochaetopterus prolifica	5001490202	19				19
Spiochaetopterus costarum	5001490302	3	5	1	2	11
Caulleriella alata	5001500202			1		1
Aphelochaeta multifilis	5001500302			1		1

Aphelochaeta secunda	5001500309		2	2	1	5
Chaetozone spp.	50015004	1				1
Chaetozone gracilis	5001500402		2		1	3
Chaetozone spinosa	5001500407		1		1	2
Brada sachalina	5001540199	1				1
Armandia brevis	5001580202	1	1			2
Ophelia limacina	5001580301			1	2	3
Notomastus latericeus	5001600306				1	1
Mediomastus spp.	50016004				1	1
Mediomastus californiensis	5001600402	3	2	2		7
Notoproctus pacificus	5001630601	2				2
Axiothella cf. rubrocincta	5001630802			2		2
Praxillella sp. A	500163099999	1				1
Euclymeninae	5001631		1		1	2
Euclymene cf. zonalis	5001631103	2		1		3
Owenia fusiformis	5001640102			3	2	5
Pectinaria granulata	5001660303	1	5	3		9
Ampharete spp.	50016702			1		1
Ampharete acutifrons	5001670208			2	2	4
Anobothrus gracilis	5001670701	3	2	2	3	10
Asabellides lineatus	5001670804		1			1
Terebellidae	500168		4	3	18	25
Nicolea zostericola	5001680601		3			3
Pista cristata	5001680701			1		1
Polycirrus sp. complex	50016808	3	13	17	10	43
Amphitritinae	5001681	1				1
Laphania boecki	5001681501			1		1
Pista estevanica	5001681803		3		1	4
Chone spp.	50017001			1		1
Chone duneri	5001700104			1		1
Solariella varicosa	5102100403		7		13	20
Alvania compacta	5103200106		1			1
Bittium attenuatum	5103460102	55	197		132	384
Crepipatella lingulata	5103640301	2			1	3
Natica clausa	5103760201		1		1	2
Polinices pallida	5103760402		1			1
Nassarius mendicus	5105080101		1		1	2
Olivella baetica	5105100102		3		2	5
Odostomia (O.) spp.	510801019999	1	5		7	13
Turbonilla spp.	51080102	1				1
Mytilidae	550701		2			2
Crenella decussata	5507010201	49	228		145	422
Musculus spp.	55070104	1				1
Musculus discors	5507010402	6	10		7	23
Parvilucina tenuisculpta	5515010101		1		5	6
Lucinoma acutilineata	5515010201	1	1		2	4
Axinopsida serricata	5515020201		3		7	10
Mysella tumida	5515100102	4			2	6
Astarte esquimalti	5515190108	19	33		27	79
Clinocardium spp.	55152201	1				1
Clinocardium nuttali	5515220102		1			1
Nemocardium centrifilosum	5515220301	2	1		3	6
Tresus capax	5515250201		1			1

Macoma spp.	55153101	1	1		1	3
Macoma calcarea	5515310101	2				2
Macoma moesta alaskana	551531010702				1	1
Macoma yoldiformis	5515310111		1			1
Macoma balthica	5515310116		1			1
Tellina spp.	55153102		1			1
Tellina nuculoides	5515310202		1		1	2
Tellina modesta	5515310204	1	1			2
Saxidomus giganteus	5515470201	1				1
Psephidia lordi	5515470501	4	49		16	69
Humilaria kennerleyi	5515470601		3			3
Mya arenaria	5517010201		5			5
Pandora filosa	5520020102		2			2
Lyonsia spp.	55200502	1	4		3	8
Lyonsia californica	5520050202	2	5		1	8
Cardiomya oldroydi	5520100103	3	4		1	8
Cardiomya californica	5520100108				1	1
Scaphopoda	56				2	2
Cylindroleberididae	611103			2		2
Rutiderma lomae	6111060103			1		1
Euphilomedes carcharodonta	6111070301	143	164	163	204	674
Euphilomedes producta	6111070303		3	1	1	5
Balanus spp.	61340201	271				271
Balanus crenatus	6134020104	8				8
Campylaspis hartae	6154070105	4	9	3	3	19
Leptochelia savignyi	6157020101	1	25	30	8	64
Leptognathia gracilis	6157020202	1	2	3	1	7
Rocinela belliceps	6161070202	1				1
Ampelisca hancocki	6169020113		1	1	1	3
Ampelisca careyi	6169020135			2		2
Byblis millsi	6169020208		7	3	3	13
Aoroides spp.	61690602			1		1
Aoroides inermis	6169060203	2				2
Corophium crassicorne	6169150203	7	11	16	31	65
Melita desdichada	6169211008	1				1
Hippomedon coecus	6169341411	5	4	5		14
Orchomene pacifica	6169342903	2	7	2	7	18
Synchelidium shoemakeri	6169371402		2		1	3
Synchelidium rectipalmum	6169371403			2		2
Westwoodilla caecula	6169371502	3			1	4
Metaphoxus frequens	6169420601			2	2	4
Rhepoxynius abronius	6169421504	15	14	12	14	55
Metopella spp.	61694803				1	1
Caprellidae	617101				1	1
Pagurus spp.	61830602	1	1	1		3
Pagurus armatus	6183060201				1	1
Golfingia pugettensis	7200020104	2				2
Phoronis spp.	77000102		2	7	1	10
Crossaster spp.	81130101	1				1
Ophiura lutkeni	8127010607			2		2
Amphiodia urtica/periercta	812903019999	1				1
Strongylocentrotus purpuratus	8149030204			2		2
Pentamera spp.	81720603	1				1

Chaetognatha	83			1		1
	Total Abundance:	729	1022	424	782	2957
	Number of Taxa:	68	80	63	68	157

Station 24R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43	3	1	4	1	9
Polynoidae	500102		1	1		2
Eunoe uniseriata	5001020599		1			1
Gattyana cirrosa	5001020603	1				1
Tenonia priops	5001022302	1				1
Malmgreniella spp.	50010226		3		1	4
Pholoe minuta	5001060101	2				2
Gyptis brevipalpa	5001210102			1		1
Nephtys cornuta	5001250104		2	1		3
Nephtys punctata	5001250105		2	1		3
Nephtys ferruginea	5001250111			1	4	5
Nephtys signifera	5001250199		1			1
Glycera nana	5001270129	1				1
Onuphis iridescens	5001290103		3		4	7
Diopatra ornata	5001290202				1	1
Lumbrineridae	500131	1	2			3
Lumbrineris luti	5001310109	2		2		4
Levinsenia gracilis	5001410801			2		2
Laonice cirrata	5001430201	1				1
Polydora cardalia	5001430431				1	1
Prionospio lighti	5001430521			1		1
Spiophanes berkeleyorum	5001431004		2			2
Brada sachalina	5001540199	3	11	1		15
Sternaspis scutata	5001590101	1				1
Heteromastus filobranchus	5001600203			1		1
Mediomastus spp.	50016004		2			2
Praxillella gracilis	5001630901	1	2	1		4
Praxillella affinis pacifica	500163090301				1	1
Euclymene cf. zonalis	5001631103	1				1
Pectinaria californiensis	5001660304	24	18	19	13	74
Ampharete acutifrons	5001670208	7		7	7	21
Ampharete finmarchica	5001670214		3			3
Pista cristata	5001680701		5		4	9
Pista brevibranchiata	5001680710	2	5		1	8
Polycirrus sp. complex	50016808		1			1
Pista estevanica	5001681803	4				4
Terebellides californica	5001690103			1		1
Bittium attenuatum	5103460102	5		1	1	7
Odostomia (O.) spp.	510801019999		4			4
Cylichnella culcitella	5110040101	3	3	3	1	10
Cylichna attonsa	5110040205	1	2			3
Melanochlamys diomedea	5110060101	1		1		2
Chaetodermatida	5402		10			10
Chaetoderma spp.	54020101	9		3	5	17
Nucula tenuis	5502020201	2	1		1	4
Yoldia scissurata	5502040504	2	2		1	5
Yoldia thraciaeformis	5502040507	5	4	2	1	12
Parvilucina tenuisculpta	5515010101			3		3
Lucinoma acutilineata	5515010201		2	1		3
Adontorhina cyclia	5515020102	1				1

Axinopsida serricata	5515020201	16	19	23	14	72
Mysella tumida	5515100102	1	3	1	3	8
Nemocardium centrifilosum	5515220301	1	1	1		3
Macoma spp.	55153101	12		23	16	51
Macoma carlottensis	5515310112	204	44	102	121	471
Compsomyax subdiaphana	5515470301			1		1
Pandora filosa	5520020102			2		2
Gadilidae	560204	1				1
Anoplodactylus erectus	6001060201				1	1
Euphilomedes producta	6111070303	3	11	5	7	26
Pseudomma berkeleyi	6153011901	1	1			2
Leucon subnasica	6154040115	1		4	1	6
Eudorella pacifica	6154040202				2	2
Diastylis alaskensis	6154050101	1	3	1	2	7
Haliophasma geminata	6160011601	1				1
Calliopius spp.	61691202			1		1
Eusirus cuspidatus	6169200802	1				1
Rhachotropis clemens	6169201309			1	1	2
Maera loveni	6169210802	5	8			13
Anonyx lilljeborgi	6169340303		1			1
Cyphocaris challengeri	6169341101		10			10
Bathymedon pumilus	6169370599	1		2		3
Harpiniopsis fulgens	6169420204	3		2		5
Heterophoxus oculatus	6169420301	4	3	3	2	12
Paraphoxus oculatus	6169420925	1	18	1		20
Syrrhoe longifrons	6169500302			1		1
Euphausia pacifica	6174020101	1	6	7		14
Amphiodia urtica/periercta	812903019999		1			1
Amphipholis squamata	8129030202		1			1
Briaster latifrons	8162040103	1		3		4
Molpadia intermedia	8179010101	2		2	1	5
	Total Abundance:	345	223	244	219	1031
	Number of Taxa:	45	41	42	29	81

Station 25R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Platyhelminthes	39	1				1
Nemertea	43	1	1			2
Lepidonotus squamatus	5001021103		1			1
Sthenalais berkeleyae	5001060301		1			1
Sigalion mathildae	5001060402	1	1			2
Paleonotus bellis	5001080101		2			2
Phyllodoce mucosa	5001130104	2	7	2	2	13
Eulalia viridis	5001130301		9			9
Eulalia (Eumida) sanguinea	5001131101		7		1	8
Phyllodoce spp.	50011314				3	3
Phyllodoce hartmanae	5001131402	2		1		3
Steggoa sp. 1	500113169999		5			5
Podarke pugettensis	5001210401		3			3
Kefersteinia cirrata	5001210501		4			4
Procerea cornuta	5001230101		4			4
Pionosyllis gigantea	5001230201		1			1
Exogone gemmifera	5001230702		5			5
Ehlersia heterochaeta	5001232201		1			1
Platynereis bicanaliculata	5001240501		35		1	36
Nephtys caeca	5001250103				1	1
Nephtys ferruginea	5001250111		1	1	1	3
Nephtys californiensis	5001250113		4		1	5
Glycera capitata	5001270101		2			2
Glycera americana	5001270104			1		1
Glycinde picta	5001280101			1		1
Glycinde armigera	5001280103	1	1	3	1	6
Onuphis spp.	50012901		3	6		9
Onuphis iridescens	5001290103	10	6	3	8	27
Diopatra ornata	5001290202	1	6		1	8
Notocirrus californiensis	5001330302				1	1
Scoloplos armiger	5001400301	5	2	4	4	15
Leitoscoloplos pugettensis	5001400302	4	6	1	3	14
Aricidea catherinae	5001410208	1	1			2
Aricidea minuta	5001410220			1		1
Laonice cirrata	5001430201		1			1
Polydora socialis	5001430402		1			1
Polydora armata	5001430419		3			3
Polydora sp. G	5001430485		1			1
Prionospio steenstrupi	5001430506	2	1	2	3	8
Prionospio lighti	5001430521				2	2
Spio sp. 1	50014307		1			1
Spiophanes bombyx	5001431001	57	41	49	32	179
Magelona sacculata	5001440116				1	1
Phyllochaetopterus prolifica	5001490202		1			1
Spiochaetopterus costarum	5001490302	1		1	1	3
Cirratulus cirratus	5001500101		3		1	4
Caulleriella alata	5001500202		1			1
Chaetozone gracilis	5001500402	1				1
Chaetozone spinosa	5001500407	2	4			6
Armandia brevis	5001580202	2				2

Mediomastus californiensis	5001600402			2		2
Barantolla americana	5001600601				1	1
Euclymene cf. zonalis	5001631103	1				1
Owenia fusiformis	5001640102				1	1
Sabellaria cementarium	5001650201		1			1
Pectinaria granulata	5001660303	4	1	3	13	21
Ampharete acutifrons	5001670208		1			1
Asabellides lineatus	5001670804		2			2
Terebellidae	500168		3			3
Nicolea zostericola	5001680601		2			2
Polycirrus sp. complex	50016808	1	3		2	6
Lanassa venusta venusta	500168130201		1			1
Sabellidae	500170			1		1
Potamilla myriops	5001700602		10			10
Solariella varicosa	5102100403	7	2	11	4	24
Alvania compacta	5103200106	3	93		1	97
Melanella spp.	51035301	1	1	2	8	12
Polinices pallida	5103760402	1	1			2
Mitrella gausapata	5105030247	5	3	5	4	17
Nassarius mendicus	5105080101	1		1		2
Olivella baetica	5105100102	2		3	2	7
Kurtziella plumbea	5106021107				1	1
Odostomia (O.) spp.	510801019999	7	5	2	8	22
Nudibranchia	5127		2			2
Bivalvia	55		2			2
Acila castrensis	5502020101	1				1
Yoldia scissurata	5502040504		1			1
Mytilidae	550701		1			1
Megacrenella columbiana	5507010301			1		1
Parvilucina tenuisculpta	5515010101		1			1
Lucinoma acutilineata	5515010201				1	1
Axinopsida serricata	5515020201	1	3	2		6
Mysella tumida	5515100102	5	8	3	5	21
Clinocardium nuttali	5515220102		2		3	5
Tresus capax	5515250201	1		1		2
Solen sicarius	5515290201		1			1
Macoma spp.	55153101	3	2	1	2	8
Tellina nuculoides	5515310202		6		14	20
Tellina modesta	5515310204	14	7	13	7	41
Saxidomus giganteus	5515470201		1			1
Psephidia lordi	5515470501	442	286	543	566	1837
Protothaca staminea	5515470701		1	1		2
Mya arenaria	5517010201		1	1	1	3
Bankia setacea	5518020101		1			1
Lyonsia spp.	55200502				1	1
Lyonsia californica	5520050202		1	1		2
Cylindroleberididae	611103	1	4		4	9
Euphilomedes carcharodonta	6111070301	197	167	49	333	746
Nebalia pugettensis	6145010102	1		2		3
Eudorella pacifica	6154040202	1				1
Diastylis alaskensis	6154050101		2			2
Leptochelia savignyi	6157020101	1	10	1	1	13
Pleurogonium rubicundum	6163120202		1			1

Ampelisca cristata	6169020112			1		1
Ampelisca careyi	6169020135	5	3	8	12	28
Byblis millsi	6169020208		1			1
Corophium crassicorne	6169150203	1	8		2	11
Protomedeia spp.	61692603			1		1
Gammaropsis thompsoni	6169260401		8			8
Cheirimedeia zotea	6169261199	2	4	1	5	12
Hippomedon coecus	6169341411	2	4		3	9
Lysianassa holmesi	6169342206		1			1
Orchomene pacifica	6169342903	4	2	3	4	13
Orchomene pinquis	6169342904				2	2
Monoculodes zernovi	6169370816				1	1
Synchelidium shoemakeri	6169371402	1	1	3	1	6
Westwoodilla caecula	6169371502	2	3			5
Rhepoxynius abronius	6169421504	18	26	25	27	96
Rhepoxynius daboius	6169421505	9	10	5	9	33
Metopella spp.	61694803	6	2	7	2	17
Metopa spp.	61694815		1			1
Tiron biocellata	6169500503		1	1		2
Eualus pusiolus	6179160408		3			3
Crangon alaskensis	6179220102	1				1
Pagurus spp.	61830602			1		1
Pagurus beringanus	61830602		1			1
Oregonia spp.	61870101		1			1
Pugettia spp.	61870105		1			1
Pinnixa spp.	61890604			1		1
Phoronis spp.	77000102		2	1		3
Ophiuroidea	8120		2			2
Amphiodia urtica/periercta	812903019999	6	2	6	6	20
Amphioplus strongyloplax	8129030999	1	1			2
Eupentacta pseudoquinquesemita	8172060201				1	1
	Total Abundance:	853	905	789	1126	3673
	Number of Taxa:	53	98	50	55	134

Station 26

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Tubularia spp.	37030302			1		1
Anthozoa	3740	1	2	1	1	5
Metridium senile	3760060101		1			1
Nemertea	43	3	3	22	4	32
Hesperone laevis	5001021703			1		1
Lepidasthenia longicirrata	5001021805			1		1
Malmgreniella sp. M	5001022687	1		1	1	3
Pholoe minuta	5001060101		4	11	4	19
Sthenelais tertiaglabra	5001060305			1		1
Paleonotus bellis	5001080101			1		1
Phyllodoce mucosa	5001130104				1	1
Eteone longa	5001130205	1		1		2
Eulalia (Eumida) sanguinea	5001131101			1		1
Phyllodoce spp.	50011314			2		2
Phyllodoce hartmanae	5001131402		1			1
Gyptis brevipalpa	5001210102			1		1
Eusyllis blomstrandi	5001230602			1		1
Eusyllis habei	5001230699			1		1
Exogone lourei	5001230703		1	1	1	3
Sphaerosyllis pirifera	5001230805			2		2
Odontosyllis phosphorea	5001231303	1		2	2	5
Nephtys caeca	5001250103	3	7	3	1	14
Nephtys cornuta	5001250104	1	4		5	10
Nephtys ferruginea	5001250111		3		3	6
Sphaerodorum papillifer	5001260102	1				1
Glycera nana	5001270129		2	5	3	10
Glycinde picta	5001280101		2	2	5	9
Glycinde armigera	5001280103		1	1	1	3
Goniada brunnea	5001280203		1	1		2
Onuphidae	500129		1			1
Diopatra ornata	5001290202			1		1
Lumbrineris bicirrata	5001310101	1		2	5	8
Lumbrineris luti	5001310109	6	4	6	5	21
Lumbrineris cruzensis	5001310118			2		2
Notocirrus californiensis	5001330302	1				1
Naineris quadricuspida	5001400202			1		1
Naineris uncinata	5001400204	3	1			4
Leitoscoloplos pugettensis	5001400302	9	6	4	7	26
Orbinia (Phylo) felix	5001400510				1	1
Aricidea catherinae	5001410208			2		2
Apistobranchus ornatus	5001420102	1				1
Spionidae	500143				1	1
Laonice cirrata	5001430201			2	1	3
Polydora brachycephala	5001430429	2		2		4
Polydora cardalia	5001430431		2			2
Prionospio steenstrupi	5001430506	8	18	20	12	58
Prionospio lighti	5001430521		1	5	2	8
Spiophanes bombyx	5001431001	8	3	3	4	18
Spiophanes berkeleyorum	5001431004	7	4	14	3	28
Aphelochaeta multifilis	5001500302	1	2			3

Aphelochaeta secunda	5001500309		1	2		3
Chaetozone spp.	50015004	1		2		3
Cossura pygodactylata	5001520106	1				1
Brada sachalina	5001540199		1			1
Asclerocheilus beringianus	5001570201			1		1
Armandia brevis	5001580202		1			1
Ophelina acuminata	5001580607	2			1	3
Heteromastus filobranchus	5001600203	3	4	3	7	17
Notomastus tenuis	5001600302	2	1	2		5
Mediomastus californiensis	5001600402	6	3	11	2	22
Decamastus gracilis	5001600501	34	32	13	35	114
Chirimia biceps	5001630104				1	1
Maldane glebifex	5001630302	1	10			11
Nicomache personata	5001630502	1			1	2
Euclymene spp.	500163	1				1
Euclymene cf. zonalis	5001631103	5	15	5	5	30
Macroclymene spp.	50016321	15	7	20	13	55
Owenia fusiformis	5001640102		2	1		3
Galathowenia oculata	5001640202	2	2	4	2	10
Pectinaria granulata	5001660303	3				3
Pectinaria californiensis	5001660304	14	34	22	20	90
Amage anops	5001670101	4	2	6	2	14
Asabellides lineatus	5001670804			3	1	4
Pista brevibranchiata	5001680710			1		1
Polycirrus sp. complex	50016808	4	3	4	6	17
Artacama coniferi	5001681101			1		1
Lanassa venusta venusta	500168130201				1	1
Gastropoda	51	1				1
Bittium attenuatum	5103460102	5	14	1	11	31
Polinices pallida	5103760402	1	1	1		3
Mitrella gausapata	5105030247	1	2			3
Odostomia (O.) spp.	510801019999	1	2			3
Turbonilla spp.	51080102	2			1	3
Cylichnella culcitella	5110040101	7	16	11	12	46
Melanochlamys diomedea	5110060101	1			2	3
Cuthona concinna	5141030102			1		1
Acila castrensis	5502020101				2	2
Nuculana minuta	5502040202	2			1	3
Yoldia scissurata	5502040504		2	3	3	8
Yoldia thraciaeformis	5502040507	1			1	2
Parvilucina tenuisculpta	5515010101	11	15	7	10	43
Lucinoma acutilineata	5515010201	2	1	1	3	7
Axinopsida serricata	5515020201	7	3	2	5	17
Mysella tumida	5515100102	4	1	3	4	12
Clinocardium nuttali	5515220102		1			1
Nemocardium centrifilosum	5515220301	2	1	1	1	5
Solen sicarius	5515290201	1				1
Macoma spp.	55153101	1		1	3	5
Macoma calcarea	5515310101	4	3	4	2	13
Macoma obliqua	5515310106	2			1	3
Macoma carlottensis	5515310112	25	41	97	97	260
Tellina nuculoides	5515310202			1		1
Compsomyax subdiaphana	5515470301	1		1		2

Psephidia lordi	5515470501	1				1
Mya spp.	55170102			1		1
Hiatella arctica	5517060201			4		4
Phoxichilidium femoratum	6001060102			1		1
Cylindroleberididae	611103		3		1	4
Euphilomedes producta	6111070303	2	12	3	10	27
Neomysis mercedis	6153011505	1				1
Eudorella pacifica	6154040202	3	1	1	9	14
Eudorellopsis longirostris	6154040306	2		2		4
Diastylis alaskensis	6154050101	3	1	4	2	10
Leptognathia gracilis	6157020202				1	1
Argissa hamatipes	6169070101	1				1
Eusirus cuspidatus	6169200802	2		1	2	5
Melita desdichada	6169211008	1		2	2	5
Photis brevipes	6169260201	4	8	1	4	17
Photis lacia	6169260211	9	22	6	28	65
Protomedeia spp.	61692603		1	1		2
Anonyx lilljeborgi	6169340303				1	1
Cyphocaris challengeri	6169341101		2			2
Orchomene pacifica	6169342903	43	62	47	109	261
Melphidippa goesi	6169350101				1	1
Synchelidium shoemakeri	6169371402	2	3		1	6
Westwoodilla caecula	6169371502	8	6	6	5	25
Heterophoxus oculatus	6169420301		1	1	1	3
Metaphoxus frequens	6169420601				1	1
Rhepoxynius variatus	6169420926	11	17	7	12	47
Rhepoxynius bicuspidata	6169421503	2	10	2	6	20
Pleusymptes subglaber	6169430501		3	1	7	11
Dyopedos arcticus	6169440101	3	1		3	7
Metopa spp.	61694815			1	1	2
Caprella mendax	6171010719			2		2
Euphausia pacifica	6174020101	1	1		1	3
Heptacarpus stimpsoni	6179160511	1			1	2
Oregonia gracilis	6187010101			1		1
Pinnixa schmitti	6189060404	15	30	1	28	74
Echiurus spp.	73010202		1			1
Phoronis spp.	77000102		1			1
Amphiodia urtica/periercta	812903019999	1				1
	Total Abundance:	356	481	460	566	1863
	Number of Taxa:	78	72	90	78	141

Station 27R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Edwardsia spp.	37590101	1				1
Edwardsia sipunculoides	3759010102			2	1	3
Metridium spp.	37600601	1	1		1	3
Metridium senile	3760060101			1		1
Platyhelminthes	39	1		1		2
Nemertea	43	35	12	1	1	49
Eunoe uniseriata	5001020599				1	1
Gattyana cirrosa	5001020603			1		1
Harmothoe imbricata	5001020806			1		1
Lepidonotus squamatus	5001021103	12	2		1	15
Pholoides aspera	5001040101	33	21	46	31	131
Pholoe minuta	5001060101		1	1		2
Sthenalais berkeleyae	5001060301	1	1			2
Sigalion mathildae	5001060402		1		1	2
Paleonotus bellis	5001080101	3	1		1	5
Phyllodoce groenlandica	5001130102		1			1
Phyllodoce mucosa	5001130104	1	1	5		7
Eulalia viridis	5001130301	3	1	2	3	9
Eulalia bilineata	5001130304	1				1
Eulalia (Eumida) sanguinea	5001131101	3	2		3	8
Phyllodoce spp.	50011314	5			1	6
Steggoa sp. 1	500113169999	4	1			5
Pterocirrus macroceros	5001131701			1		1
Gyptis brevipalpa	5001210102			1		1
Podarke pugettensis	5001210401	7	2	4	4	17
Syllidae	500123				1	1
Procerea cornuta	5001230101	4	1	2	3	10
Syllis elongata	5001230308		1		1	2
Syllis (Typosyllis) harti	5001230510	2				2
Eusyllis habei	5001230699	2	1	4	9	16
Exogone gemmifera	5001230702	55	17	23	32	127
Sphaerosyllis brandhorsti	5001230806				2	2
Odontosyllis phosphorea	5001231303			2		2
Ehlersia heterochaeta	5001232201	1	1	1	7	10
Platynereis bicanaliculata	5001240501	8	9		4	21
Nephtys caeca	5001250103	1		1		2
Nephtys ferruginea	5001250111				4	4
Nephtys californiensis	5001250113	3	1	3		7
Nephtys signifera	5001250199	3	6	5		14
Glycera capitata	5001270101			1		1
Glycera americana	5001270104	2		1	1	4
Glycinde armigera	5001280103	2	1			3
Onuphidae	500129				49	49
Onuphis spp.	50012901	6	5	17		28
Onuphis iridescens	5001290103	2	6	11	7	26
Diopatra ornata	5001290202	9	6	8	7	30
Lumbrineridae	500131			3		3
Lumbrineris cruzensis	5001310118			1		1
Lumbrineris californiensis	5001310132	22	6	8	6	42
Dorvillea pseudorubrovittata	5001360101	27	9	19	20	75

Parougia caeca	5001360505		1			1
Scoloplos armiger	5001400301		1			1
Leitoscoloplos pugettensis	5001400302				1	1
Aricidea minuta	5001410220	1		1	1	3
Aricidea ramosa	5001410706		1			1
Laonice spp.	50014302			2		2
Laonice cirrata	5001430201				1	1
Laonice pugettensis	5001430204	4		2	1	7
Polydora spp.	50014304			2		2
Polydora giardi	5001430401	5			1	6
Polydora socialis	5001430402	2	1			3
Polydora cardalia	5001430431	8	2	1	1	12
Polydora sp. G	5001430485				1	1
Polydora sp. 1	5001430488			1	1	2
Prionospio steenstrupi	5001430506	33	34	50	31	148
Prionospio lighti	5001430521	5	1	1		7
Spiophanes bombyx	5001431001		4	5		9
Spiophanes berkeleyorum	5001431004	1			1	2
Magelona longicornis	5001440105			2		2
Phyllochaetopterus prolifica	5001490202	2	4	7	4	17
Spiochaetopterus costarum	5001490302	2	3	7	4	16
Mesochaetopterus taylori	5001490401				2	2
Cirratulus cirratus	5001500101	6	8	5	6	25
Caulleriella alata	5001500202	6	3	1	3	13
Aphelochaeta multifilis	5001500302				1	1
Aphelochaeta secunda	5001500309	1				1
Chaetozone gracilis	5001500402	2	1	1		4
Chaetozone spinosa	5001500407	3	5	2	2	12
Flabelligera affinis	5001540202				2	2
Notomastus latericeus	5001600306				1	1
Mediomastus californiensis	5001600402	7	12		6	25
Barantolla americana	5001600601				1	1
Nicomache lumbricalis	5001630501	1			2	3
Axiothella cf. rubrocincta	5001630802	1				1
Euclymeninae	5001631		2			2
Idanthyrsus armatus	5001650102			2		2
Sabellaria cementarium	5001650201	1	1	3	12	17
Pectinaria granulata	5001660303	23	11	22	10	66
Ampharete acutifrons	5001670208				2	2
Ampharete finmarchica	5001670214			2		2
Anobothrus gracilis	5001670701	1		4	1	6
Asabellides lineatus	5001670804	14	13	17	12	56
Terebellidae	500168	2	4	7	6	19
Neoamphitrite robusta	5001680401			1		1
Nicolea zostericola	5001680601				1	1
Pista cristata	5001680701		1			1
Polycirrus sp. complex	50016808	4	9	6	16	35
Thelepus setosus	5001681004	1	1			2
Lanassa venusta venusta	500168130201	4	1		1	6
Pista estevanica	5001681803			1		1
Sabellidae	500170	1	6	1		8
Myxicola infundibulum	5001700502				2	2
Pseudopotamilla nr. neglecta	5001700601	1				1

Potamilla myriops	5001700602	2		1	1	4
Demonax medius	5001700802	1		3	2	6
Gastropoda	51		14	2		16
Trochidae	510210		1			1
Margarites pupillus	5102100308			1		1
Alvania compacta	5103200106	1		2	2	5
Bittium attenuatum	5103460102	8	19	7	9	43
Melanella spp.	51035301		1	1	2	4
Crepipatella lingulata	5103640301	2		2		4
Natica clausa	5103760201				1	1
Nassarius mendicus	5105080101				2	2
Olivella baetica	5105100102	1		1	1	3
Odostomia (O.) spp.	510801019999		1		1	2
Rictaxis punctocaelatus	5110010401				1	1
Melanochlamys diomedea	5110060101		1			1
Bivalvia	55			1		1
Mytilidae	550701	1	3		3	7
Megacrenella columbiana	5507010301	5		3	8	16
Musculus spp.	55070104			7		7
Musculus discors	5507010402			3	4	7
Modiolus modiolus	5507010601	1	1			2
Parvilucina tenuisculpta	5515010101	12	8	9	1	30
Lucinoma acutilineata	5515010201	1		1	1	3
Axinopsida serricata	5515020201	7	6	5	4	22
Thyasira gouldi	5515020325	1	1			2
Mysella tumida	5515100102	6	6	19	10	41
Clinocardium spp.	55152201	1				1
Clinocardium nuttali	5515220102		1			1
Clinocardium fucanum	5515220103	1			1	2
Solen sicarius	5515290201	1				1
Macoma spp.	55153101	4	1	3	8	16
Macoma calcarea	5515310101	4				4
Macoma obliqua	5515310106			2		2
Macoma yoldiformis	5515310111	3				3
Tellina modesta	5515310204			1		1
Psephidia lordi	5515470501	8	10	4	7	29
Mya arenaria	5517010201			3	3	6
Hiatella arctica	5517060201		1	1		2
Pandora filosa	5520020102		1			1
Lyonsia spp.	55200502			4	2	6
Lyonsia californica	5520050202	1	2	4	3	10
Thracia trapezoides	5520080203		1			1
Cardiomya oldroydi	5520100103	1				1
Nymphon pixellae	6001010107			2		2
Achelia spp.	60010401	1				1
Cylindroleberididae	611103	1		2	3	6
Rutiderma lomae	6111060103			1	1	2
Euphilomedes carcharodonta	6111070301	164	157	170	198	689
Balanus hesperius laevidomus	613402010801			2		2
Hemilamprops spp.	61540102	1	2	2		5
Diastylis alaskensis	6154050101	1				1
Campylaspis hartae	6154070105				1	1
Campylapsis crispa	6154070111		1			1

Leptochelia savignyi	6157020101	14	5	11	19	49
Haliophasma geminata	6160011601			1	1	2
Ampelisca cristata	6169020112			1		1
Ampelisca brevisimulata	6169020125		2			2
Ampelisca lobata	6169020134	7	2	6	1	16
Ampelisca careyi	6169020135	1	3	1	4	9
Byblis millsi	6169020208	7	1	6	8	22
Argissa hamatipes	6169070101	1				1
Corophium crassicorne	6169150203	8	5	5	2	20
Rhachotropis oculata	6169201307			1		1
Gammaropsis thompsoni	6169260401	3			3	6
Cheirimedeia zotea	6169261199	2	2	1	2	7
Hippomedon coecus	6169341411	6	1	1	4	12
Lysianassa holmesi	6169342206			1		1
Opisa tridentata	6169342802				1	1
Orchomene pacifica	6169342903			1		1
Monoculodes zernovi	6169370816		3	1	3	7
Synchelidium shoemakeri	6169371402	1	3	1	1	6
Synchelidium rectipalmum	6169371403				2	2
Westwoodilla caecula	6169371502	8	4	2	2	16
Heterophoxus oculatus	6169420301	3		4	3	10
Rhepoxynius abronius	6169421504	4	9	3	9	25
Metopella spp.	61694803			1		1
Pagurus spp.	61830602	1				1
Oregonia spp.	61870101	4		4	3	11
Pugettia spp.	61870105	1				1
Cancer spp.	61880301	1				1
Fabia subquadrata	6189060301	1				1
Pinnixa spp.	61890604	1		6		7
Golfingia spp.	72000201		2			2
Golfingia pugettensis	7200020104		1	1		2
Phoronis spp.	77000102		1	1	1	3
Terebratulina unguicula	8005070101	2		1		3
Crossaster spp.	81130101	2			3	5
Amphipholis squamata	8129030202	6	2	4	3	15
Cucumaria piperata	8172060111		1			1
Pentamera spp.	81720603	3		2		5
	Total Abundance:	730	534	669	694	2627
	Number of Taxa:	110	92	113	106	193

Station 29

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43			1	1	2
Malmgreniella sp. S	5001020818		1			1
Malmgreniella spp.	50010226		1		1	2
Pholoides aspera	5001040101	1				1
Pholoe minuta	5001060101	2		1	2	5
Nephtys caeca	5001250103	2				2
Nephtys cornuta	5001250104			1		1
Nephtys punctata	5001250105		2			2
Nephtys ferruginea	5001250111	2	5	7	2	16
Glycera nana	5001270129		1			1
Glycinde armigera	5001280103	1				1
Goniada brunnea	5001280203	1		2		3
Onuphis iridescens	5001290103			1		1
Lumbrineris luti	5001310109	1				1
Levinsenia gracilis	5001410801	1	2	1		4
Laonice cirrata	5001430201	1				1
Prionospio lighti	5001430521		1		1	2
Spiophanes berkeleyorum	5001431004	5			2	7
Paraprionospio pinnata	5001431701	3		1	1	5
Cossura spp.	50015201	1				1
Cossura pygodactylata	5001520106				1	1
Brada sachalina	5001540199		1			1
Heteromastus filobranchus	5001600203	1		1		2
Mediomastus spp.	50016004		1			1
Barantolla americana	5001600601				1	1
Galathowenia oculata	5001640202			1		1
Pectinaria californiensis	5001660304	17	25	32	32	106
Ampharete spp.	50016702		2			2
Ampharete acutifrons	5001670208	1		3	2	6
Pista brevibranchiata	5001680710	1			1	2
Bittium attenuatum	5103460102	3	7	4	5	19
Polinices pallida	5103760402				1	1
Odostomia (O.) spp.	510801019999		1			1
Melanochlamys diomedea	5110060101	2				2
Bivalvia	55			1		1
Acila castrensis	5502020101	2	3	1	2	8
Nucula tenuis	5502020201	2	2	2	1	7
Yoldia thraciaeformis	5502040507		1		1	2
Parvilucina tenuisculpta	5515010101	1				1
Lucinoma acutilineata	5515010201			2	1	3
Axinopsida serricata	5515020201	18	19	34	26	97
Nemocardium centrifilosum	5515220301			1		1
Macoma spp.	55153101	8	5	19	18	50
Macoma calcarea	5515310101			1		1
Macoma carlottensis	5515310112	371	278	351	246	1246
Compsomyax subdiaphana	5515470301		1			1
Pandora filosa	5520020102			1		1
Euphilomedes producta	6111070303	32	19	33	26	110
Pseudomma berkeleyi	6153011901		1			1
Eudorella pacifica	6154040202	19	11	10	12	52

Eudorellopsis integra	6154040301			1		1
Diastylis alaskensis	6154050101	2	1	5		8
Ampelisca careyi	6169020135		1			1
Argissa hamatipes	6169070101				1	1
Calliopius spp.	61691202		1			1
Maera loveni	6169210802		18			18
Protomedeia prudens	6169260312	5	6			11
Harpiniopsis fulgens	6169420204		4	3	1	8
Heterophoxus oculatus	6169420301	2	5	2	1	10
Paraphoxus oculatus	6169420925	1	17			18
Briaster latifrons	8162040103		1	1	1	3
Molpadia intermedia	8179010101	1	2	2	1	6
	Total Abundance:	510	446	526	391	1873
	Number of Taxa:	31	33	31	28	62

Station 30						
Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Ptilosarcus gurneyi	3754020201	1		1		2
Nemertea	43	3		4	5	12
Nematoda	47				1	1
Harmothoe spp.	50010208		1			1
Harmothoe lunulata	5001020810		1		1	2
Lepidasthenia berkeleyae	5001021801	3	1	2		6
Pholoe minuta	5001060101		7		1	8
Eteone longa	5001130205	4	2		2	8
Eulalia (Eumida) spp.	50011311	2				2
Phyllodoce spp.	50011314	1				1
Gyptis brevipalpa	5001210102	3	1	2		6
Podarke pugettensis	5001210401		1			1
Syllis (Typosyllis) alternata	5001230501		5	1	11	17
Exogone spp.	50012307	1				1
Exogone lourei	5001230703	1	1		3	5
Exogone molesta	5001230704			1		1
Platynereis bicanaliculata	5001240501	1	1		4	6
Nephtys conuta franciscana	500125010401	3				3
Nephtys ferruginea	5001250111	7	6	2	7	22
Glycera capitata	5001270101		1		3	4
Glycera americana	5001270104				1	1
Glycinde picta	5001280101		5	6	1	12
Glycinde armigera	5001280103		1	1		2
Glycinde polygnatha	5001280105				1	1
Lumbrineris spp.	50013101	1				1
Lumbrineris luti	5001310109	53	40	33	40	166
Lumbrineris californiensis	5001310132	1				1
Lumbrineris sp. gr. 2	5001310196	1				1
Schistomeringos rudolphi	5001360504		1		1	2
Leitoscoloplos pugettensis	5001400302	1			2	3
Polydora quadrilobata	5001430408	1				1
Polydora brachycephala	5001430429	2	2	1		5
Polydora cardalia	5001430431		3	5	3	11
Prionospio steenstrupi	5001430506	1	4	1	3	9
Prionospio lighti	5001430521	1				1
Boccardia pugettensis	5001430812			1		1
Spiophanes berkeleyorum	5001431004		3	1		4
Paraprionospio pinnata	5001431701	2	1	1	2	6
Spiochaetopterus costarum	5001490302		4	3	6	13
Aphelochaeta multifilis	5001500302	4	3			7
Aphelochaeta secunda	5001500309	5	3	4	4	16
Chaetozone setosa	5001500401	1		1	1	3
Ophelina acuminata	5001580607	3	5	2	4	14
Capitella capitata complex	5001600101	3	1	2		6
Heteromastus spp.	50016002	1				1
Heteromastus filiformis	5001600201	2	2	1	1	6
Notomastus tenuis	5001600302	21	18	5	10	54
Mediomastus ambiseta	5001600401	1			1	2
Mediomastus californiensis	5001600402	11	8	4	2	25
Barantolla americana	5001600601	5	15	3	4	27

Praxillella gracilis	5001630901				1	1
Praxillella affinis	5001630903	1			7	8
Praxillella affinis pacifica	500163090301	4	6	8		18
Pectinaria californiensis	5001660304	1		1	3	5
Ampharete labrops	5001670215				1	1
Anobothrus gracilis	5001670701		1			1
Polycirrus sp. complex	50016808	11	11	13	9	44
Polycirrus californiensis	5001680810	1				1
Amphitritinae	5001681	1				1
Terebellides stroemi	5001690101	1			1	2
Euchone incolor	5001700204		1			1
Potamilla myriops	5001700602				1	1
Laonome kroyeri	5001701401		1			1
Alvania compacta	5103200106	8	6	10	15	39
Mitrella gausapata	5105030247			8		8
Odostomia (O.) spp.	510801019999	1		2	1	4
Turbonilla spp.	51080102		1			1
Acila castrensis	5502020101	5	5	5	2	17
Nucula tenuis	5502020201		1			1
Parvilucina tenuisculpta	5515010101	2	3	10	4	19
Lucinoma acutilineata	5515010201		1	1	3	5
Axinopsida serricata	5515020201	9	18	17	5	49
Mysella tumida	5515100102	2	1	2		5
Nemocardium centrifilosum	5515220301			1	1	2
Solen sicarius	5515290201	1	1			2
Macoma spp.	55153101	3	7	2	5	17
Macoma calcarea	5515310101				1	1
Macoma yoldiformis	5515310111			1	1	2
Macoma carlottensis	5515310112	1		6	4	11
Macoma nasuta	5515310114			2	1	3
Compsomyax subdiaphana	5515470301				1	1
Psephidia lordi	5515470501	7	3	5	7	22
Lyonsia spp.	55200502	1			1	2
Euphilomedes carcharodonta	6111070301	119	38	109	119	385
Euphilomedes producta	6111070303	3	1	3	1	8
Eudorella pacifica	6154040202	3	1	4		8
Leptochelia savignyi	6157020101	3			1	4
Haliophasma geminata	6160011601	1				1
Ampelisca hancocki	6169020113		2	1		3
Byblis millsi	6169020208	1	1	2	2	6
Argissa hamatipes	6169070101		1			1
Melita desdichada	6169211008		1			1
Photis brevipes	6169260201	1				1
Protomedeia articulata	6169260307	4	1		2	7
Westwoodilla caecula	6169371502	4		1	1	6
Heterophoxus oculatus	6169420301			1		1
Pinnixa schmitti	6189060404	13	22	22	20	77
Priapulus caudatus	7400010101	2		3	1	6
Amphiodia urtica/periercta	812903019999	1		2	2	5
	Total Abundance:	366	282	330	349	1327
	Number of Taxa:	63	55	52	59	99

Station 32

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Edwardsia sipunculoides	3759010102			1	1	2
Halcampa spp.	37590401	1				1
Nemertea	43	4	4	2	1	11
Pholoides aspera	5001040101	16	18	31	30	95
Pholoe minuta	5001060101		1	3	1	5
Paleonotus bellis	5001080101		1			1
Phyllodoce mucosa	5001130104	1		1		2
Eteone longa	5001130205				1	1
Eulalia bilineata	5001130304	3	2	8	3	16
Eulalia (Eumida) sanguinea	5001131101	7	14	8	10	39
Phyllodoce spp.	50011314		1			1
Gyptis brevipalpa	5001210102	1				1
Podarke pugettensis	5001210401		1	2	1	4
Parandalia fauveli	5001220802				1	1
Syllis elongata	5001230308	1	1	1	1	4
Eusyllis habei	5001230699				1	1
Exogone gemmifera	5001230702	5	4	7	1	17
Odontosyllis phosphorea	5001231303			3		3
Platynereis bicanaliculata	5001240501			2	1	3
Nephtys caeca	5001250103	1				1
Nephtys ferruginea	5001250111	3	6	6	7	22
Glycera americana	5001270104		4	1	3	8
Glycera nana	5001270129		1		1	2
Glycinde armigera	5001280103	7	5	4	5	21
Goniada brunnea	5001280203			1		1
Onuphidae	500129	45	1		2	48
Onuphis iridescens	5001290103	3	5	8	3	19
Diopatra ornata	5001290202	1	1	2	2	6
Lumbrineris spp.	50013101	2			4	6
Lumbrineris californiensis	5001310132	42	33	30	40	145
Drilonereis falcata minor	500133010402		1			1
Dorvilleidae sp. Z	500136		1	1		2
Protodorvillea gracilis	5001360201	1				1
Schistomeringos rudolphi	5001360504	2	3	4	5	14
Parougia caeca	5001360505		1	2	2	5
Leitoscoloplos pugettensis	5001400302	2	3	2		7
Aricidea catherinae	5001410208		1		2	3
Levinsenia gracilis	5001410801			1		1
Apistobranchus ornatus	5001420102			1		1
Laonice cirrata	5001430201		2			2
Polydora spp.	50014304	1	1			2
Polydora giardi	5001430401	2	2		1	5
Polydora socialis	5001430402	1	3			4
Polydora cardalia	5001430431	1	2	1	3	7
Prionospio steenstrupi	5001430506	23	31	28	18	100
Prionospio lighti	5001430521			1		1
Spio butleri	5001430708		1			1
Spiophanes berkeleyorum	5001431004			1	1	2
Paraprionospio pinnata	5001431701	5		2	2	9
Magelona longicornis	5001440105	4	5	9	3	21

Phyllochaetopterus prolifica	5001490202	6	2	8	6	22
Spiochaetopterus costarum	5001490302	3	12	18	14	47
Mesochaetopterus taylori	5001490401	2	1			3
Cirratulus cirratus	5001500101	1	3			4
Aphelochaeta multifilis	5001500302	3	6	2	3	14
Monticellina tesselata	5001500308			1		1
Aphelochaeta secunda	5001500309	2	7	1	3	13
Notomastus tenuis	5001600302	7	6	5	5	23
Notomastus latericeus	5001600306	2		3	1	6
Mediomastus spp.	50016004			2		2
Mediomastus ambiseta	5001600401	1				1
Barantolla americana	5001600601	6		6	1	13
Maldanidae	500163				1	1
Nicomache lumbricalis	5001630501		6			6
Axiothella cf. rubrocincta	5001630802	1		3	6	10
Idanthyrsus armatus	5001650102	2	5	2		9
Sabellaria cementarium	5001650201		4	6		10
Pectinaria granulata	5001660303	3	1	5	6	15
Pectinaria californiensis	5001660304	1	4		2	7
Ampharetidae	500167	3		2		5
Amage anops	5001670101	3	5	2	1	11
Ampharete finmarchica	5001670214		1	2		3
Melinna elisabethae	5001670503		1			1
Anobothrus gracilis	5001670701	4	5	4	9	22
Terebellidae	500168	1	1	1	1	4
Pista cristata	5001680701	2				2
Pista brevibranchiata	5001680710			1	1	2
Polycirrus sp. complex	50016808	2			1	3
Lanassa venusta venusta	500168130201				1	1
Pista estevanica	5001681803		6	3	6	15
Terebellides californica	5001690103		1			1
Sabellidae	500170	1	1			2
Chone magna	5001700106			1		1
Demonax pacifica	5001700899				2	2
Bittium attenuatum	5103460102	1	1		2	4
Melanella spp.	51035301	1	1		1	3
Crepipatella lingulata	5103640301	1			3	4
Olivella biplicata	5105100101				1	1
Olivella baetica	5105100102	1		2	1	4
Odostomia (O.) spp.	510801019999			2		2
Turbonilla spp.	51080102				2	2
Rictaxis punctocaelatus	5110010401		1			1
Cylichna attonsa	5110040205				2	2
Melanochlamys diomedea	5110060101	1				1
Haminoea vesicula	5110120101			1		1
Bivalvia	55				1	1
Nucula tenuis	5502020201				1	1
Nuculana minuta	5502040202			1		1
Mytilidae	550701			1		1
Megacrenella columbiana	5507010301	5	7	3	6	21
Musculus discors	5507010402				1	1
Modiolus rectus	5507010603			1		1
Parvilucina tenuisculpta	5515010101	9	3	1	6	19

Lucinoma acutilineata	5515010201		1			1
Axinopsida serricata	5515020201	2	2	1		5
Mysella tumida	5515100102	5		1	8	14
Nemocardium centrifilosum	5515220301		1	1		2
Solen sicarius	5515290201			1	1	2
Macoma spp.	55153101				1	1
Macoma calcarea	5515310101	1	4	5	9	19
Macoma obliqua	5515310106	1	2	4	2	9
Macoma yoldiformis	5515310111	5	2		3	10
Saxidomus giganteus	5515470201	1				1
Psephidia lordi	5515470501	1	1		1	3
Hiatella arctica	5517060201	1	2	2		5
Lyonsia spp.	55200502	2				2
Lyonsia californica	5520050202	1	3	5	1	10
Cardiomya oldroydi	5520100103	1	1	1		3
Nymphon pixellae	6001010107			1		1
Cylindroleberididae	611103	1				1
Rutiderma lomae	6111060103		1	1		2
Euphilomedes carcharodonta	6111070301	58	81	81	82	302
Euphilomedes producta	6111070303				2	2
Eudorellopsis longirostris	6154040306				1	1
Leptochelia savignyi	6157020101	5		3	1	9
Leptognathia gracilis	6157020202		1			1
Haliophasma geminata	6160011601	2	4		1	7
Ampelisca lobata	6169020134	2	3	2	2	9
Byblis millsi	6169020208	6	11	8	10	35
Aoroides intermedius	6169060206			1		1
Corophium crassicorne	6169150203	3		2		5
Protomedeia spp.	61692603	1	1		3	5
Hippomedon coecus	6169341411	1	5	2	3	11
Lysianassa holmesi	6169342206	2				2
Opisa tridentata	6169342802			1		1
Melphidippa goesi	6169350101				1	1
Monoculodes zernovi	6169370816	1	1		1	3
Synchelidium shoemakeri	6169371402		1		2	3
Westwoodilla caecula	6169371502		3	2	1	6
Pardalisca tenuipes	6169400303		1		1	2
Heterophoxus oculatus	6169420301	4	1	1	2	8
Metaphoxus frequens	6169420601			1		1
Rhepoxynius abronius	6169421504	1	3			4
Tritella pilimana	6171010602			1	1	2
Eualus pusiolus	6179160408		1			1
Mesocrangon munitella	6179220115	1				1
Fabia subquadrata	6189060301			1		1
Pinnixa spp.	61890604		2			2
Pinnixa schmitti	6189060404	4		3	4	11
Golfingia pugettensis	7200020104	1		1	2	4
Arhynchite pugettensis	7301020105				1	1
Phoronis spp.	77000102	1	1	1		3
Ophiura lutkeni	8127010607	1				1
Amphipholis squamata	8129030202		1	1	2	4
Cucumaria piperata	8172060111	6	2	3	6	17
Pentamera pseudocalcigera	8172060301				1	1

Ascidiacea	8401		1			1
	Total Abundance:	382	395	402	410	1589
	Number of Taxa:	85	87	89	92	157

Station 33						
Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Anthozoa	3740				1	1
Ptilosarcus gurneyi	3754020201	1				1
Edwardsia spp.	37590101			3		3
Edwardsia sipunculoides	3759010102			1	1	2
Nemertea	43	1	11	6	2	20
Harmothoe lunulata	5001020810			2	1	3
Pholoides aspera	5001040101	24		9	4	37
Pholoe minuta	5001060101			1		1
Sthenelais tertiaglabra	5001060305	2	4	2	1	9
Paleonotus bellis	5001080101	1		3	1	5
Phyllodoce (Anaitides) longipes	5001130112			2		2
Eteone spp.	50011302				1	1
Eulalia bilineata	5001130304	1		3	1	5
Phyllodoce castanea	5001130701		1			1
Phyllodoce (Paranaitis) polynoides	5001130803			1		1
Eulalia (Eumida) sanguinea	5001131101	6	1	10	11	28
Phyllodoce spp.	50011314		1		1	2
Microphthalmus sczelkowii	5001210201	1				1
Podarke pugettensis	5001210401	1		2	1	4
Parandalia fauveli	5001220802	1				1
Pionosyllis gigantea	5001230201				1	1
Syllis sp. 1	5001230397			1		1
Syllis (Typosyllis) alternata	5001230501	1				1
Exogone lourei	5001230703	1	4		1	6
Syllis nr heterochaeta	5001231002	2		4		6
Platynereis bicanaliculata	5001240501	1				1
Nephtys conuta franciscana	500125010401		4	2	2	8
Nephtys ferruginea	5001250111	6	4	2	3	15
Sphaerodoropsis sphaerulifer	5001260202	2	1			3
Glycera capitata	5001270101	14	10	5	11	40
Glycera americana	5001270104	1				1
Glycinde picta	5001280101	1		1	1	3
Glycinde armigera	5001280103		2	4	3	9
Goniada maculata	5001280202	1	1	1	3	6
Onuphidae	500129		2			2
Onuphis elegans	5001290111	1	2	5	2	10
Diopatra ornata	5001290202	3	1	1		5
Lumbrineris spp.	50013101		1		3	4
Lumbrineris luti	5001310109	4	11	3	10	28
Lumbrineris pallida	5001310111	8				8
Lumbrineris californiensis	5001310132	15	2	20	1	38
Lumbrineris sp. gr. 2	5001310196	19	2	22	4	47
Lumbrineris sp. gr. 1	5001310197		3	3		6
Drilonereis longa	5001330103				1	1
Drilonereis falcata minor	500133010402		1		1	2
Leitoscoloplos pugettensis	5001400302	1	2	2		5
Aricidea catherinae	5001410208		1			1
Apistobranchus ornatus	5001420102	2	8		4	14
Laonice cirrata	5001430201	1		1	3	5
Polydora spp.	50014304			1		1

Polydora socialis	5001430402	3	2	1	1	7
Polydora cardalia	5001430431			1	3	4
Polydora sp. A	5001430486	36				36
Prionospio steenstrupi	5001430506	78	44	82	34	238
Prionospio lighti	5001430521	3		4		7
Prionospio multibranchiata	5001430599			1		1
Spio cirrifera	5001430703				1	1
Spiophanes spp.	50014310	1				1
Spiophanes berkeleyorum	5001431004				1	1
Paraprionospio pinnata	5001431701	4	8	8	6	26
Magelona longicornis	5001440105	25	19	7	27	78
Magelona berkeleyi	5001440123			1		1
Spiochaetopterus costarum	5001490302	52	7	32	16	107
Mesochaetopterus taylori	5001490401	5		1	4	10
Cirratulidae	500150	1				1
Caulleriella alata	5001500202			3	1	4
Aphelochaeta multifilis	5001500302	15	6	7	5	33
Aphelochaeta secunda	5001500309	17	5	9	9	40
Chaetozone setosa	5001500401	1	1	2		4
Chaetozone spinosa	5001500407	2		1	2	5
Cossura longocirrata	5001520101		1			1
Pherusa plumosa	5001540302	1				1
Ophelina acuminata	5001580607		1			1
Notomastus tenuis	5001600302	35	24	33	14	106
Mediomastus spp.	50016004	5	2	2		9
Mediomastus californiensis	5001600402	7		6	5	18
Barantolla americana	5001600601				5	5
Praxillella spp.	50016309	2				2
Praxillella gracilis	5001630901		1			1
Praxillella sp. A	500163099999		4		10	14
Euclymeninae	5001631		3			3
Rhodine bitorquata	5001631001				1	1
Isocirrus longiceps	5001632001	1			1	2
Myriochele spp.	50016402		9		24	33
Idanthyrsus ornamentatus	5001650101				2	2
Sabellaria cementarium	5001650201				5	5
Pectinaria granulata	5001660303	18	8	6	11	43
Pectinaria californiensis	5001660304	17	20	12	13	62
Ampharetidae	500167		2			2
Amage anops	5001670101	1	2	1	4	8
Melinna elisabethae	5001670503		1		1	2
Anobothrus gracilis	5001670701	5	2	7	6	20
Terebellidae	500168		3			3
Amphitrite cirrata	5001680101		1			1
Pista cristata	5001680701	2				2
Polycirrus sp. complex	50016808	1			6	7
Amphitritinae	5001681		1		2	3
Lanassa venusta venusta	500168130201			1		1
Pista estevanica	5001681803	2	1	3	1	7
Oligochaeta	5004		1	2		3
Gastropoda	51		1	2		3
Alvania compacta	5103200106			1	1	2
Vermetidae	510335				1	1

Crepipatella lingulata	5103640301				2	2
Natica clausa	5103760201				1	1
Mitrella gausapata	5105030247			1		1
Nassarius mendicus	5105080101	1				1
Kurtzia arteaga	5106024101		2	1		3
Turbonilla spp.	51080102			2	2	4
Rictaxis punctocaelatus	5110010401				1	1
Bivalvia	55	2	5		1	8
Acila castrensis	5502020101				2	2
Nucula tenuis	5502020201	2	16	2	11	31
Nuculana minuta	5502040202		1			1
Yoldia scissurata	5502040504		1			1
Megacrenella columbiana	5507010301	5	8	4	5	22
Modiolus modiolus	5507010601		1			1
Parvilucina tenuisculpta	5515010101	16	9	16	5	46
Lucinoma acutilineata	5515010201	1		1	1	3
Axinopsida serricata	5515020201	31	85	10	62	188
Thyasira gouldi	5515020325		2		2	4
Mysella tumida	5515100102	4		2	1	7
Cardiidae	551522		5			5
Clinocardium spp.	55152201				8	8
Clinocardium fucanum	5515220103				1	1
Nemocardium centrifilosum	5515220301	3	1			4
Macoma spp.	55153101		4	2	8	14
Macoma calcarea	5515310101	4	6	2	5	17
Macoma elimata	5515310102	5				5
Macoma carlottensis	5515310112			1	1	2
Compsomyax subdiaphana	5515470301	2	2		4	8
Mya arenaria	5517010201				1	1
Pandora filosa	5520020102				1	1
Lyonsia spp.	55200502			1		1
Lyonsia californica	5520050202				3	3
Thracia trapezoides	5520080203				2	2
Cardiomya californica	5520100108	2				2
Cylindroleberididae	611103	1	1		1	3
Rutiderma lomae	6111060103	4	8	3	2	17
Euphilomedes carcharodonta	6111070301	86	110	142	98	436
Euphilomedes producta	6111070303	13	39	8	28	88
Balanus crenatus	6134020104	12		1		13
Heteromysis odontops	6153010801				2	2
Leucon subnasica	6154040115			1		1
Eudorella pacifica	6154040202	1	2	2	1	6
Eudorellopsis longirostris	6154040306	1	1	1		3
Leptochelia savignyi	6157020101	1	1	3	7	12
Leptognathia gracilis	6157020202		2	2		4
Haliophasma geminata	6160011601	2	2		3	7
Ampelisca hancocki	6169020113	1				1
Byblis millsi	6169020208	2		4		6
Corophium spp.	61691502				1	1
Orchomene decipiens	6169342914			1		1
Pachynus barnardi	6169343101			1		1
Synchelidium shoemakeri	6169371402			1		1
Westwoodilla caecula	6169371502		1			1

Heterophoxus oculatus	6169420301	6	1	4	1	12
Eualus pusiolus	6179160408				1	1
Pinnixa spp.	61890604			2	2	4
Golfingia pugettensis	7200020104	4				4
Phoronis spp.	77000102				1	1
Ophiuroidea	8120	2	2		1	5
Ophiura lutkeni	8127010607				1	1
Amphiodia urtica/periercta	812903019999	2	2		4	8
Ascidiacea	8401			1		1
	Total Abundance:	679	580	581	587	2427
	Number of Taxa:	84	80	86	100	165

Station 34

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43		4	3	2	9
Harmothoe imbricata	5001020806				1	1
Tenonia priops	5001022302		1		1	2
Pholoides aspera	5001040101		2			2
Pholoe minuta	5001060101		2	2		4
Phyllodoce mucosa	5001130104	1			1	2
Eteone longa	5001130205				1	1
Eulalia viridis	5001130301	1				1
Eulalia (Eumida) sanguinea	5001131101	11			14	25
Gyptis brevipalpa	5001210102	2	1	4	3	10
Micropodarke dubia	5001210801	1				1
Platynereis bicanaliculata	5001240501		1			1
Nephtys cornuta	5001250104	1				1
Nephtys ferruginea	5001250111	1			1	2
Glycinde picta	5001280101	2	1	1		4
Glycinde armigera	5001280103	1		1		2
Lumbrineridae	500131				7	7
Lumbrineris bicirrata	5001310101				1	1
Lumbrineris luti	5001310109	29	45	39	34	147
Lumbrineris cruzensis	5001310118	26	42	30	34	132
Lumbrineris californiensis	5001310132	1	1	1	1	4
Levinsenia gracilis	5001410801	1		1		2
Polydora giardi	5001430401	1				1
Polydora socialis	5001430402	22			24	46
Polydora cardalia	5001430431	1				1
Polydora cornuta	5001430444		1			1
Polydora sp. 1	5001430488		10	11		21
Prionospio steenstrupi	5001430506	20	14	15	26	75
Prionospio lighti	5001430521	12	2	7	5	26
Spiophanes berkeleyorum	5001431004	3	3	1	3	10
Paraprionospio pinnata	5001431701	15	12	13	14	54
Magelona longicornis	5001440105	1	1			2
Phyllochaetopterus prolifica	5001490202	866	50	98	650	1664
Spiochaetopterus costarum	5001490302	3	8	6	2	19
Aphelochaeta multifilis	5001500302	84	198	125	105	512
Aphelochaeta secunda	5001500309	5	6	4	7	22
Chaetozone spinosa	5001500407	2				2
Cossura pygodactylata	5001520106	1				1
Armandia brevis	5001580202				1	1
Ophelina acuminata	5001580607	1				1
Heteromastus filobranchus	5001600203		1			1
Notomastus tenuis	5001600302		1		1	2
Mediomastus californiensis	5001600402	1	2	3	2	8
Praxillella affinis pacifica	500163090301		2	1		3
Euclymeninae	5001631		1			1
Pectinaria californiensis	5001660304		1			1
Amage anops	5001670101		1	3		4
Ampharete finmarchica	5001670214		2			2
Amphicteis spp.	50016703		1			1
Amphicteis scaphobranchiata	5001670304	1	1	1	2	5

Asabellides lineatus	5001670804		1	1		2
Neoamphitrite robusta	5001680401		1	1		2
Polycirrus sp. complex	50016808		2			2
Pista estevanica	5001681803		1			1
Terebellides spp.	50016901	1				1
Terebellides californica	5001690103		9	1		10
Terebellides japonica	5001690107				1	1
Potamilla myriops	5001700602			1	1	2
Pseudochitinopoma occidentalis	5001730101	8			4	12
Circeis armoricana	5001730599	110		2	144	256
Gastropoda	51	3				3
Alvania compacta	5103200106	26	2	1	10	39
Mitrella gausapata	5105030247	1	5		5	11
Nassarius mendicus	5105080101	1				1
Odostomia (O.) spp.	510801019999	3	4	3	5	15
Melanochlamys diomedea	5110060101				1	1
Aeolidea spp.	51420301	1				1
Opisthobranchia	5181		1			1
Bivalvia	55	2				2
Acila castrensis	5502020101	15	6	7	6	34
Modiolus modiolus	5507010601	1	1	1		3
Chlamys hastata	5509050101	11		3	8	22
Axinopsida serricata	5515020201	8	4	1	3	16
Mysella tumida	5515100102	1		1		2
Macoma spp.	55153101	2		2		4
Macoma yoldiformis	5515310111	1				1
Macoma carlottensis	5515310112	1	4			5
Macoma nasuta	5515310114			1		1
Compsomyax subdiaphana	5515470301				1	1
Psephidia lordi	5515470501		1			1
Mya arenaria	5517010201		1			1
Eudorella pacifica	6154040202	47	39	30	40	156
Ampelisca hancocki	6169020113			1		1
Ampelisca careyi	6169020135	2	8	3	1	14
Corophium spp.	61691502	4			1	5
Protomedeia articulata	6169260307	1			1	2
Westwoodilla caecula	6169371502			1		1
Heterophoxus oculatus	6169420301	55	8	29	41	133
Dulichia rhabdoplastis	6169440111	5			1	6
Caprella mendax	6171010719	1			1	2
Pinnixa schmitti	6189060404	16	8	14	12	50
Golfingia vulgaris	7200020103		1			1
Amphiodia urtica/periercta	812903019999	1	2	14	2	19
Pentamera spp.	81720603		1			1
Ascidiacea	8401	1				1
Chelyosoma productum	8404040102	1				1
Styela gibbsii	8406010505				2	2
	Total Abundance:	1447	528	488	1234	3697
	Number of Taxa:	59	53	43	48	97

Station 35

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Pachycerianthus fimbriatus	3743010303		1		2	3
Stylatula elongata	3754010103			1	1	2
Platyhelminthes	39	1	1		1	3
Nemertea	43	4	6	3	6	19
Lepidasthenia berkeleyae	5001021801	1				1
Tenonia priops	5001022302		1			1
Pholoe minuta	5001060101	15	8	14	17	54
Paleonotus bellis	5001080101		1			1
Phyllodoce (Paranaitis) polynoides	5001130803				1	1
Eulalia (Eumida) sanguinea	5001131101	9	10	1		20
Sigambra bassi	5001220204	1				1
Procerea cornuta	5001230101	1				1
Eusyllis blomstrandi	5001230602		1	1		2
Platynereis bicanaliculata	5001240501				1	1
Nephtys cornuta	5001250104	4	1			5
Nephtys ferruginea	5001250111	1			1	2
Glycinde armigera	5001280103	1			1	2
Lumbrineris bicirrata	5001310101	1	1			2
Lumbrineris luti	5001310109	20	8	2	2	32
Lumbrineris cruzensis	5001310118	5	14	5	5	29
Levinsenia gracilis	5001410801	4	2		3	9
Polydora socialis	5001430402				1	1
Polydora sp. 1	5001430488	1	9	4		14
Prionospio steenstrupi	5001430506				1	1
Prionospio lighti	5001430521	43	52	19	33	147
Spiophanes berkeleyorum	5001431004			1		1
Paraprionospio pinnata	5001431701	1		2		3
Phyllochaetopterus prolifica	5001490202	533	579	67	32	1211
Spiochaetopterus costarum	5001490302		3	6	2	11
Aphelochaeta multifilis	5001500302	1	1	1		3
Aphelochaeta secunda	5001500309	2	3	6	2	13
Cossura pygodactylata	5001520106		2			2
Flabelligera affinis	5001540202		1			1
Pherusa plumosa	5001540302	1	1		1	3
Armandia brevis	5001580202	1	1			2
Notomastus tenuis	5001600302		1			1
Mediomastus californiensis	5001600402	1			1	2
Praxillella affinis pacifica	500163090301	3	1		1	5
Pectinaria granulata	5001660303				1	1
Amphicteis scaphobranchiata	5001670304				1	1
Polycirrus sp. complex	50016808	1				1
Pseudochitinopoma occidentalis	5001730101	1				1
Circeis armoricana	5001730599		21	5	5	31
Gastropoda	51	3				3
Alvania spp.	51032001	1				1
Alvania compacta	5103200106		7	1		8
Mitrella gausapata	5105030247	1	1	2	1	5
Odostomia (O.) spp.	510801019999		1		1	2
Turbonilla spp.	51080102				1	1
Opisthobranchia	5181	1				1

Acila castrensis	5502020101	1		1		2
Yoldia hyperborea	5502040502	1				1
Modiolus spp.	55070106	1				1
Modiolus modiolus	5507010601		1			1
Modiolus rectus	5507010603				2	2
Chlamys hastata	5509050101		2			2
Parvilucina tenuisculpta	5515010101				1	1
Mysella tumida	5515100102		1	1		2
Cardiidae	551522	1				1
Macoma spp.	55153101			2	3	5
Macoma nasuta	5515310114		1		1	2
Euphilomedes carcharodonta	6111070301	1				1
Eudorella pacifica	6154040202	168	133	83	114	498
Ampelisca careyi	6169020135			1	1	2
Aoroides intermedius	6169060206	1	1		1	3
Argissa hamatipes	6169070101	1				1
Erichthonius brasiliensis	6169150302		6		3	9
Protomedeia spp.	61692603			1		1
Westwoodilla caecula	6169371502		1	1		2
Heterophoxus oculatus	6169420301	71	48	14	30	163
Caprella mendax	6171010719	1	1	4		6
Heptacarpus brevirostris	6179160501		1			1
Pugettia spp.	61870105		1			1
Pinnixa schmitti	6189060404	131	133	129	116	509
Golfingia pugettensis	7200020104		1	1		2
Ophiuroidea	8120				3	3
Amphiodia urtica/periercta	812903019999	60	68	56	52	236
Amphipholis squamata	8129030202	1	1			2
Strongylocentrotus purpuratus	8149030204		1			1
Cucumaria piperata	8172060111	4	1			5
Pentamera spp.	81720603	1				1
Ascidiacea	8401	3				3
Chelyosoma productum	8404040102	1	1			2
Styela gibbsii	8406010505		1			1
	Total Abundance:	1111	1143	435	452	3141
	Number of Taxa:	47	49	30	39	84

Station 36R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Anthozoa	3740			1		1
Nemertea	43		1	4	6	11
Nematoda	47			1	3	4
Polynoidae	500102			1	2	3
Lepidasthenia berkeleyae	5001021801	1				1
Tenonia priops	5001022302		2	1	1	4
Malmgreniella spp.	50010226				1	1
Pholoe minuta	5001060101				1	1
Sthenalais berkeleyae	5001060301			2	1	3
Paleonotus bellis	5001080101		1	1		2
Phyllodoce mucosa	5001130104				1	1
Eteone longa	5001130205	1				1
Eulalia viridis	5001130301			2		2
Eulalia bilineata	5001130304			2		2
Eulalia (Eumida) spp.	50011311			1		1
Eulalia (Eumida) sanguinea	5001131101	3	1	4	10	18
Phyllodoce spp.	50011314	1	7	4	2	14
Steggoa sp. 1	500113169999			1	2	3
Podarke pugettensis	5001210401			4	1	5
Micropodarke dubia	5001210801		1	2	1	4
Eusyllis habei	5001230699			1	1	2
Exogone lourei	5001230703				1	1
Ehlersia heterochaeta	5001232201			2		2
Platynereis bicanaliculata	5001240501	7	15	41	44	107
Nephtys ferruginea	5001250111	1	6	3	5	15
Nephtys caecoides	5001250119		4	2		6
Glycera americana	5001270104	1	2	1		4
Glycera nana	5001270129			1		1
Glycinde armigera	5001280103	4	5	3	5	17
Onuphis iridescens	5001290103	1	3		1	5
Diopatra ornata	5001290202	3	5	8	7	23
Lumbrineris californiensis	5001310132		1	2		3
Protodorvillea gracilis	5001360201		1			1
Leitoscoloplos pugettensis	5001400302	2		5	1	8
Prionospio steenstrupi	5001430506	6	9	8	22	45
Prionospio lighti	5001430521		1			1
Spiophanes berkeleyorum	5001431004	1	1			2
Paraprionospio pinnata	5001431701			1		1
Magelona longicornis	5001440105	1		2		3
Spiochaetopterus costarum	5001490302	2		4	2	8
Mesochaetopterus taylori	5001490401	1				1
Cirratulus cirratus	5001500101		3	1	15	19
Caulleriella alata	5001500202		4	1	2	7
Aphelochaeta secunda	5001500309				1	1
Chaetozone gracilis	5001500402		2	2	1	5
Chaetozone spinosa	5001500407		1	1		2
Flabelligera affinis	5001540202		1			1
Notomastus latericeus	5001600306	2			1	3
Mediomastus spp.	50016004		2			2
Mediomastus californiensis	5001600402	2				2

Decamastus gracilis	5001600501		1			1
Barantolla americana	5001600601		2		4	6
Owenia fusiformis	5001640102				1	1
Idanthyrsus armatus	5001650102			1		1
Pectinaria granulata	5001660303	1	2	6	3	12
Ampharetidae	500167		2			2
Amage anops	5001670101				1	1
Anobothrus gracilis	5001670701			1		1
Terebellidae	500168		3			3
Polycirrus sp. complex	50016808		2	5	1	8
Thelepus setosus	5001681004	4			2	6
Lanassa venusta venusta	500168130201	1				1
Streblosoma bairdi	5001682502			1		1
Potamilla myriops	5001700602				1	1
Gastropoda	51			2		2
Alvania compacta	5103200106		1	2	2	5
Crepipatella lingulata	5103640301			1		1
Mitrella gausapata	5105030247	3	3	1		7
Nassarius mendicus	5105080101			2	1	3
Olivella baetica	5105100102	6	5	7	1	19
Turridae	510602	1				1
Kurtzia arteaga	5106024101				1	1
Odostomia (O.) spp.	510801019999				1	1
Turbonilla spp.	51080102	1	1	2		4
Melanochlamys diomedea	5110060101			1		1
Diaphana spp.	51100901		1			1
Flabellinidae	514104				1	1
Megacrenella columbiana	5507010301				1	1
Musculus spp.	55070104				2	2
Chlamys hastata	5509050101				1	1
Parvilucina tenuisculpta	5515010101	8	4	6	3	21
Lucinoma acutilineata	5515010201			1	1	2
Axinopsida serricata	5515020201		4		1	5
Mysella tumida	5515100102	6	5	5	5	21
Solen sicarius	5515290201				1	1
Macoma spp.	55153101	1	3	1	4	9
Tellina spp.	55153102		1			1
Tellina modesta	5515310204	2		3	2	7
Psephidia lordi	5515470501	2				2
Bankia setacea	5518020101	1		1		2
Lyonsia californica	5520050202			2		2
Cylindroleberididae	611103	1			1	2
Euphilomedes carcharodonta	6111070301	14	13	26	11	64
Hemilamprops spp.	61540102			1		1
Diastylis alaskensis	6154050101		1		3	4
Cumella vulgaris	6154080102		1			1
Leptochelia savignyi	6157020101	6	9	6	5	26
Limnoria lignorum	6161050101		3			3
Ampelisca cristata	6169020112	1			1	2
Byblis millsi	6169020208	2	1	5	6	14
Aoroides spp.	61690602		3	2		5
Argissa hamatipes	6169070101			1		1
Melita desdichada	6169211008	1	3	8	3	15

Photis spp.	61692602		1		1	2
Protomedeia prudens	6169260312	15	22	8	10	55
Gammaropsis thompsoni	6169260401			6	2	8
Cheirimedeia zotea	6169261199	1	2	1	2	6
Opisa tridentata	6169342802	1				1
Pachynus barnardi	6169343101				1	1
Monoculodes zernovi	6169370816		2	1		3
Synchelidium shoemakeri	6169371402	1			1	2
Synchelidium rectipalmum	6169371403	1	4	1	3	9
Westwoodilla caecula	6169371502	4	7	8	13	32
Rhepoxynius variatus	6169420926		2	1	2	5
Rhepoxynius abronius	6169421504	22	10	13	13	58
Metopella spp.	61694803	1				1
Caprella mendax	6171010719				1	1
Cancer oregonensis	6188030106			2	1	3
Pinnixa spp.	61890604	1		1		2
Phoronis spp.	77000102			1		1
Ophiuroidea	8120		1			1
Amphipholis squamata	8129030202				1	1
Holothuroidea	8170				1	1
Cucumaria spp.	81720601			1		1
	Total Abundance:	149	204	264	264	881
	Number of Taxa:	46	57	73	72	124

Station 37R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Edwardsia sipunculoides	3759010102	1	1			2
Platyhelminthes	39				1	1
Nemertea	43	32	23	19	26	100
Nematoda	47			3	6	9
Polynoidae	500102			1	1	2
Harmothoe imbricata	5001020806	2				2
Lepidasthenia spp.	50010218		1		1	2
Lepidasthenia berkeleyae	5001021801	1		2		3
Malmgreniella spp.	50010226				1	1
Pholoides aspera	5001040101	24	11	21	14	70
Pholoe minuta	5001060101	3		2	1	6
Sthenalais berkeleyae	5001060301	1	1		1	3
Paleonotus bellis	5001080101		2	1		3
Phyllodoce groenlandica	5001130102			1		1
Eteone longa	5001130205	1	1	2	2	6
Eteone spilotus	5001130299			1		1
Eulalia viridis	5001130301	3		2	2	7
Eulalia bilineata	5001130304	7	1	3	6	17
Eulalia (Eumida) sanguinea	5001131101	31	11	25	19	86
Phyllodoce spp.	50011314	3	2	11	3	19
Phyllodoce hartmanae	5001131402		1			1
Steggoa sp. 1	500113169999	1		2		3
Gyptis brevipalpa	5001210102				1	1
Podarke pugettensis	5001210401	5	3	3	1	12
Micropodarke dubia	5001210801	2		7	4	13
Heteropodarke heteromorpha	5001211101			1		1
Procerea cornuta	5001230101	6	1	5	7	19
Pionosyllis uraga	5001230204		1			1
Syllis spp.	50012303		1			1
Syllis elongata	5001230308	1				1
Syllis (Typosyllis) alternata	5001230501	4			2	6
Syllis (Typosyllis) harti	5001230510	1		39		40
Eusyllis habei	5001230699	12	1	3	2	18
Exogone gemmifera	5001230702		12		23	35
Exogone verugera	5001230706	41		11		52
Sphaerosyllis pirifera	5001230805	2		4		6
Sphaerosyllis brandhorsti	5001230806		5			5
Odontosyllis phosphorea	5001231303			4		4
Ehlersia heterochaeta	5001232201	6	4	14	22	46
Nereis zonata	5001240406	1		2		3
Platynereis bicanaliculata	5001240501	3	2		2	7
Nephtys caeca	5001250103			1		1
Nephtys cornuta	5001250104	2	1			3
Nephtys ferruginea	5001250111		9	2	2	13
Nephtys signifera	5001250199			4		4
Glycera spp.	50012701				1	1
Glycera capitata	5001270101			1		1
Glycera americana	5001270104	1	2	4	5	12
Glycera nana	5001270129	2	1	2	5	10
Glycinde armigera	5001280103	5	10	5	8	28

Goniada brunnea	5001280203			2		2
Onuphis spp.	50012901		1			1
Onuphis iridescens	5001290103	1	2	10		13
Diopatra ornata	5001290202	20	16	10	27	73
Lumbrineridae	500131	2	3	5	9	19
Lumbrineris luti	5001310109				1	1
Lumbrineris cruzensis	5001310118				2	2
Lumbrineris californiensis	5001310132	21	15	22	29	87
Notocirrus californiensis	5001330302		1			1
Dorvillea pseudorubrovittata	5001360101	26	7	8	12	53
Protodorvillea gracilis	5001360201	2		5		7
Parougia caeca	5001360505			4	2	6
Orbiniidae spp.	500140				1	1
Leitoscoloplos pugettensis	5001400302	2	1	3	9	15
Aricidea ramosa	5001410706	1		2		3
Laonice cirrata	5001430201				1	1
Laonice pugettensis	5001430204			1		1
Polydora giardi	5001430401			1	3	4
Polydora socialis	5001430402	1	1	2	1	5
Polydora cardalia	5001430431	2		1	5	8
Prionospio steenstrupi	5001430506	16	33	31	43	123
Prionospio lighti	5001430521	5	5	16	11	37
Prionospio multibranchiata	5001430599		2	1	3	6
Spio filicornis	5001430701				1	1
Spiophanes berkeleyorum	5001431004	2	1	5	3	11
Paraprionospio pinnata	5001431701	1	1			2
Magelona longicornis	5001440105		1	1	3	5
Phyllochaetopterus prolifica	5001490202	174	19	98	93	384
Spiochaetopterus costarum	5001490302	5	13	30	28	76
Mesochaetopterus taylori	5001490401	1			1	2
Cirratulus cirratus	5001500101	15	2	17	2	36
Caulleriella alata	5001500202	5	3	10	13	31
Aphelochaeta multifilis	5001500302	1		3	6	10
Aphelochaeta secunda	5001500309	2	5	3	3	13
Chaetozone gracilis	5001500402	2	2	2	6	12
Chaetozone spinosa	5001500407	2	3	2	2	9
Flabelligera affinis	5001540202		1			1
Pherusa plumosa	5001540302	2		3		5
Asclerocheilus beringianus	5001570201				1	1
Opheliidae	500158		1			1
Ophelina acuminata	5001580607		1			1
Capitella capitata complex	5001600101			1		1
Notomastus tenuis	5001600302	7	13	16	14	50
Notomastus latericeus	5001600306	1				1
Mediomastus spp.	50016004	8	5	65	23	101
Mediomastus californiensis	5001600402				18	18
Decamastus gracilis	5001600501		2			2
Maldanidae	500163				4	4
Axiothella cf. rubrocincta	5001630802	1		1		2
Euclymeninae	5001631	3		6	2	11
Euclymene cf. zonalis	5001631103		6		17	23
Clymenura columbiana	5001631206			1		1
Owenia fusiformis	5001640102	1				1

Sabellaria cementarium	5001650201	1				1
Pectinaria granulata	5001660303	34	8	13	11	66
Ampharetidae	500167		2	1	2	5
Amage anops	5001670101	1				1
Ampharete labrops	5001670215	1				1
Anobothrus gracilis	5001670701	1	3	3	2	9
Asabellides lineatus	5001670804	3			1	4
Terebellidae	500168	2	2	1	1	6
Eupolymnia heterobranchia	5001680201		1			1
Neoamphitrite robusta	5001680401	2				2
Nicolea zostericola	5001680601	1				1
Pista cristata	5001680701	1		1		2
Pista pacifica	5001680706	1		2		3
Pista moorei	5001680712				1	1
Polycirrus sp. complex	50016808	6	1	5	4	16
Thelepus setosus	5001681004		1	1		2
Lanassa venusta venusta	500168130201			1		1
Pista estevanica	5001681803			2		2
Sabellidae	500170			1	3	4
Megalomma splendida	5001700401			1		1
Potamilla myriops	5001700602		1	2		3
Demonax medius	5001700802			3		3
Oligochaeta	5004	3		9		12
Gastropoda	51			1		1
Margarites spp.	51021003			1		1
Solariella varicosa	5102100403	2			1	3
Alvania spp.	51032001				1	1
Alvania compacta	5103200106		3	1		4
Melanella spp.	51035301			2		2
Eulima micans	5103530199	79			37	116
Crepipatella lingulata	5103640301	1	2	2	4	9
Olivella baetica	5105100102	1	1	3		5
Kurtziella plumbea	5106021107	3			3	6
Turbonilla spp.	51080102		1	2		3
Turbonilla aurantia	5108011134				1	1
Melanochlamys diomedea	5110060101	1	2		1	4
Bivalvia	55	1				1
Acila castrensis	5502020101	1		2		3
Nuculana minuta	5502040202	1				1
Nuculana taphria	5502040289	1				1
Megacrenella columbiana	5507010301	1	1	1		3
Modiolus rectus	5507010603			1		1
Pectinidae	550905		1			1
Chlamys spp.	55090501			2		2
Pododesmus cepio	5509090103				1	1
Parvilucina tenuisculpta	5515010101	5		5	7	17
Lucinoma acutilineata	5515010201	1	1			2
Axinopsida serricata	5515020201	1			2	3
Mysella tumida	5515100102	5	4	9	8	26
Cyclocardia spp.	55151701	1				1
Clinocardium nuttali	5515220102	1			1	2
Nemocardium centrifilosum	5515220301	5	1		3	9
Macoma spp.	55153101	4	2	5		11

Macoma calcarea	5515310101	2	1	2	2	7
Macoma elimata	5515310102	3			1	4
Macoma obliqua	5515310106			2		2
Macoma yoldiformis	5515310111		4	2	3	9
Tellina modesta	5515310204	2				2
Psephidia lordi	5515470501	4	3	1	2	10
Mya arenaria	5517010201			3	4	7
Hiatella arctica	5517060201	1				1
Nymphon pixellae	6001010107	2	1			3
Cylindroleberididae	611103	1				1
Rutiderma lomae	6111060103	1	1	10	3	15
Euphilomedes carcharodonta	6111070301	53	19	39	27	138
Eudorella pacifica	6154040202	4	3	1	6	14
Diastylis alaskensis	6154050101	1	1		1	3
Haliophasma geminata	6160011601				2	2
Munna ubiquita	6163120103			1		1
Ampelisca agassizi	6169020111			1		1
Ampelisca lobata	6169020134	7	6	2	3	18
Ampelisca careyi	6169020135	1				1
Byblis millsi	6169020208	15	10	36	21	82
Aoroides spp.	61690602	1				1
Aoroides inermis	6169060203			4		4
Corophium spp.	61691502	4	1		1	6
Erichthonius brasiliensis	6169150302	2				2
Rhachotropis oculata	6169201307			1		1
Melita desdichada	6169211008	1		1	2	4
Protomedeia spp.	61692603	2	2	2	1	7
Hippomedon coecus	6169341411	2	2	2	1	7
Lysianassa holmesi	6169342206	1				1
Monoculodes zernovi	6169370816	2	1		1	4
Synchelidium shoemakeri	6169371402		1		1	2
Synchelidium rectipalmum	6169371403	2				2
Westwoodilla caecula	6169371502	7	3	5	6	21
Heterophoxus oculatus	6169420301	1	1	2	6	10
Foxiphalus similis/cognatus	616942099999	1		1	1	3
Rhepoxynius abronius	6169421504		1			1
Spirontocaris snyderi	6179160204		1		1	2
Eualus pusiolus	6179160408	3			3	6
Mesocrangon munitella	6179220115	1				1
Oregonia spp.	61870101	5	3	5	5	18
Cancer oregonensis	6188030106	1			1	2
Lophopanopeus bellus diegensis	618902010102	2		1		3
Pinnixa spp.	61890604	5	1	4	6	16
Golfingia spp.	72000201	12				12
Golfingia pugettensis	7200020104	3		6	6	15
Phoronis spp.	77000102	1		3		4
Terebratulina unguicula	8005070101	1				1
Terebratalia transversa	8005110201	1				1
Crossaster spp.	81130101	2				2
Solaster stimpsoni	8113010304				1	1
Ophiura lutkeni	8127010607			3	1	4
Amphiodia urtica/periercta	812903019999	1		1		2
Amphipholis squamata	8129030202	5	2		1	8

Cucumaria piperata	8172060111				1	1
Pentamera lissoplaca	8172060303	2	5	7	7	21
Leptosynapta transgressor	8178010299			1	3	4
Hemichordata	82	1	1		1	3
Ascidiacea	8401				1	1
Styela gibbsii	8406010505	7	4	1	5	17
Boltenia villosa	8406020203	1		1	1	3
Molgulidae	840603	2				2
	Total Abundance:	887	390	830	802	2909
	Number of Taxa:	136	98	127	121	217

Station 38

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43	1	1			2
Gattyana treadwelli	5001020606		2	1		3
Nephtys punctata	5001250105				1	1
Nephtys ferruginea	5001250111		1	2	1	4
Glycera nana	5001270129	1	3	1	2	7
Glycinde armigera	5001280103			1		1
Onuphis iridescens	5001290103		1		1	2
Levinsenia gracilis	5001410801			2		2
Prionospio steenstrupi	5001430506		1			1
Prionospio lighti	5001430521		3		1	4
Spiophanes berkeleyorum	5001431004		1			1
Paraprionospio pinnata	5001431701	2	2	3	3	10
Chaetozone sp. 1	50015004		1			1
Cossura pygodactylata	5001520106			2	1	3
Brada sachalina	5001540199	1	1		1	3
Chirimia similis	5001630102	1				1
Pectinaria californiensis	5001660304	11	16	11	12	50
Bittium attenuatum	5103460102	2	1			3
Cylichna attonsa	5110040205			1		1
Melanochlamys diomedea	5110060101		1			1
Chaetoderma spp.	54020101		1	2	2	5
Parvilucina tenuisculpta	5515010101	1				1
Axinopsida serricata	5515020201	6	8	10	9	33
Mysella tumida	5515100102			1		1
Macoma spp.	55153101	13	14	5		32
Macoma carlottensis	5515310112	20	31	76	85	212
Pandora glacialis	5520020101		1			1
Euphilomedes producta	6111070303	8	6	19	10	43
Pseudomma berkeleyi	6153011901		1	2		3
Eudorella pacifica	6154040202	15	22	25	26	88
Eudorellopsis integra	6154040301		4	3	1	8
Diastylis alaskensis	6154050101		2	1	2	5
Ampelisca careyi	6169020135		2		1	3
Rhachotropis clemens	6169201309	1				1
Melita desdichada	6169211008	1				1
Protomedeia prudens	6169260312	6	11	6	10	33
Anonyx lilljeborgi	6169340303		1	2		3
Orchomene pinquis	6169342904			1		1
Bathymedon pumilus	6169370599	1				1
Harpiniopsis fulgens	6169420204	1	4	7		12
Heterophoxus oculatus	6169420301	3	4		6	13
Paraphoxus oculatus	6169420925	1	2	3	6	12
Dyopedos spp.	61694499			2		2
Euphausia pacifica	6174020101		1			1
Molpadia intermedia	8179010101	4	5	3		12
Chaetognatha	83			2		2
	Total Abundance:	100	155	194	181	630
	Number of Taxa:	21	32	27	20	46

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Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Ptilosarcus gurneyi	3754020201			1	2	3
Nemertea	43	8	1	3	2	14
Pholoe minuta	5001060101		1			1
Paleonotus bellis	5001080101	2				2
Eteone longa	5001130205		1			1
Eulalia viridis	5001130301		1			1
Eulalia (Eumida) spp.	50011311	1				1
Eulalia (Eumida) sanguinea	5001131101	5	1	2	2	10
Phyllodoce spp.	50011314	4	2		4	10
Gyptis brevipalpa	5001210102				1	1
Microphthalmus sczelkowii	5001210201			1		1
Micropodarke dubia	5001210801	8			2	10
Eusyllis habei	5001230699	1				1
Nereidae	500124	1				1
Platynereis bicanaliculata	5001240501	13	11		13	37
Nephtys caeca	5001250103	1	2			3
Nephtys ferruginea	5001250111	2	6	5	4	17
Glycera americana	5001270104			1		1
Glycera nana	5001270129		1			1
Glycinde armigera	5001280103	2	2	3	4	11
Onuphis iridescens	5001290103		1	2		3
Diopatra ornata	5001290202	4		1	2	7
Lumbrineridae	500131	4	1	1		6
Lumbrineris californiensis	5001310132	1		1	1	3
Leitoscoloplos pugettensis	5001400302	1	3	3	2	9
Aricidea catherinae	5001410208		2			2
Polydora spp.	50014304	1				1
Prionospio steenstrupi	5001430506	46	50	35	49	180
Prionospio lighti	5001430521		3			3
Paraprionospio pinnata	5001431701	1				1
Magelona longicornis	5001440105	1				1
Magelona sacculata	5001440116		1			1
Spiochaetopterus costarum	5001490302		4	6	2	12
Mesochaetopterus taylori	5001490401			1		1
Chaetozone spp.	50015004		2	1		3
Chaetozone gracilis	5001500402	1				1
Capitella capitata complex	5001600101	3				3
Notomastus latericeus	5001600306			1		1
Mediomastus californiensis	5001600402	1	6		1	8
Axiothella cf. rubrocincta	5001630802			1		1
Pectinaria granulata	5001660303	2		1		3
Asabellides lineatus	5001670804				1	1
Polycirrus sp. complex	50016808	1	3	4	3	11
Pista estevanica	5001681803		1			1
Streblosoma bairdi	5001682502			1		1
Potamilla myriops	5001700602	2			1	3
Alvania compacta	5103200106	2			1	3
Melanella spp.	51035301			1		1
Mitrella gausapata	5105030247			1		1
Olivella biplicata	5105100101				2	2

Olivella baetica	5105100102	1	3	6		10
Turbonilla spp.	51080102		2	1		3
Melanochlamys diomedea	5110060101	1	1			2
Nuculana minuta	5502040202			1		1
Musculus spp.	55070104	2			1	3
Parvilucina tenuisculpta	5515010101	13	14	17	10	54
Lucinoma acutilineata	5515010201		1	1	1	3
Axinopsida serricata	5515020201	2	1	3	1	7
Mysella tumida	5515100102		1		2	3
Clinocardium fucanum	5515220103		1			1
Solen sicarius	5515290201	1	2			3
Macoma spp.	55153101	4		1		5
Macoma yoldiformis	5515310111				2	2
Tellina spp.	55153102				1	1
Tellina modesta	5515310204	5		1	2	8
Compsomyax subdiaphana	5515470301			1		1
Hiatella arctica	5517060201	2				2
Lyonsia spp.	55200502			1		1
Lyonsia californica	5520050202		1			1
Cylindroleberididae	611103	2	1	1	1	5
Euphilomedes carcharodonta	6111070301	3	1	2	2	8
Eudorella pacifica	6154040202	1	1			2
Eudorellopsis integra	6154040301	1				1
Diastylis alaskensis	6154050101	2	1	2	1	6
Leptochelia savignyi	6157020101	1				1
Byblis millsi	6169020208	1	1			2
Aoroides spp.	61690602				1	1
Rhachotropis oculata	6169201307		1		1	2
Protomedeia prudens	6169260312			6	3	9
Cheirimedeia zotea	6169261199	2				2
Hippomedon coecus	6169341411	1	1	6		8
Monoculodes zernovi	6169370816		1	2	2	5
Synchelidium shoemakeri	6169371402	2	2		1	5
Westwoodilla caecula	6169371502	11		1	8	20
Rhepoxynius abronius	6169421504	13	22	16	22	73
Probolisca spp.	61694805	1			1	2
Pagurus spp.	61830602	1				1
Elassochirus spp.	61830603				1	1
	Total Abundance:	192	165	146	163	666
	Number of Taxa:	50	43	41	40	88

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Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43	3	4	3	5	15
Aphrodita parva	5001010103		1			1
Polynoidae	500102	1				1
Tenonia priops	5001022302		1			1
Pholoe minuta	5001060101		4			4
Sthenelais tertiaglabra	5001060305	4	2	3	3	12
Phyllodoce groenlandica	5001130102	2				2
Eteone californica	5001130201		1			1
Eteone longa	5001130205	1	1	1		3
Phyllodoce castanea	5001130701	1				1
Eulalia (Eumida) sanguinea	5001131101	1	3		2	6
Phyllodoce spp.	50011314			2	3	5
Phyllodoce hartmanae	5001131402		3			3
Podarke pugettensis	5001210401			2	1	3
Syllidae	500123		1			1
Exogone lourei	5001230703			1		1
Exogone molesta	5001230704		1			1
Sphaerosyllis brandhorsti	5001230806			2	2	4
Nephtys conuta franciscana	500125010401	1	7			8
Nephtys ferruginea	5001250111	7	7	9	8	31
Sphaerodoropsis sphaerulifer	5001260202	3	1			4
Glycera capitata	5001270101	7	10	8	4	29
Glycera americana	5001270104		1			1
Glycinde picta	5001280101	1			1	2
Glycinde armigera	5001280103	3	1	3	1	8
Goniada maculata	5001280202		2			2
Onuphis spp.	50012901	1				1
Diopatra ornata	5001290202		1		3	4
Lumbrineris spp.	50013101		29	28	19	76
Lumbrineris luti	5001310109	26	8		6	40
Lumbrineris californiensis	5001310132	9		4	5	18
Scoloplos spp.	50014003			1		1
Leitoscoloplos pugettensis	5001400302	2	1	1	1	5
Orbinia (Phylo) felix	5001400510	1				1
Levinsenia gracilis	5001410801			2		2
Laonice cirrata	5001430201	1				1
Polydora spp.	50014304	1			3	4
Polydora socialis	5001430402	2	3	3		8
Polydora brachycephala	5001430429		2			2
Polydora cardalia	5001430431		1			1
Prionospio steenstrupi	5001430506	19	16	21	16	72
Prionospio lighti	5001430521	7	2	18	3	30
Spio cirrifera	5001430703			1	1	2
Boccardiella hamata	5001430806	1	1	15	2	19
Spiophanes berkeleyorum	5001431004	4	3	11	4	22
Paraprionospio pinnata	5001431701			1		1
Magelona longicornis	5001440105		4	1		5
Spiochaetopterus costarum	5001490302	4	18	11	2	35
Cirratulidae	500150			3		3
Aphelochaeta multifilis	5001500302	25	115	160	225	525

Aphelochaeta secunda	5001500309	1			5	6
Chaetozone setosa	5001500401		6	5	1	12
Chaetozone spinosa	5001500407	3	5	4	8	20
Cossura spp.	50015201	2				2
Cossura soyeri	5001520104			1		1
Sternaspis scutata	5001590101		1			1
Capitellidae	500160	2				2
Heteromastus filiformis	5001600201		1	1		2
Notomastus spp.	50016003				1	1
Notomastus tenuis	5001600302	3	17	24		44
Notomastus lineatus	5001600303	2			1	3
Mediomastus spp.	50016004			5		5
Mediomastus ambiseta	5001600401	1		2		3
Mediomastus californiensis	5001600402	13	7	9	8	37
Barantolla americana	5001600601	2		1	4	7
Maldanidae	500163	2				2
Chirimia spp.	50016301		2			2
Praxillella gracilis	5001630901		1	2		3
Praxillella sp. A	500163099999	1	7	5	1	14
Euclymeninae	5001631	1		3		4
Rhodine bitorquata	5001631001	3	2	9	1	15
Euclymene spp.	50016311		1			1
Euclymene cf. zonalis	5001631103				3	3
Pectinaria granulata	5001660303	1	2	2		5
Pectinaria californiensis	5001660304	20	20	21	16	77
Ampharetidae	500167	1				1
Amage anops	5001670101			2	8	10
Anobothrus gracilis	5001670701	6	6	18	9	39
Asabellides lineatus	5001670804		1			1
Terebellidae	500168	2		10	5	17
Pista cristata	5001680701	1			3	4
Polycirrus sp. complex	50016808	2	3			5
Amphitritinae	5001681		1			1
Pista estevanica	5001681803	2	1	1	1	5
Terebellides stroemi	5001690101		2	2		4
Oligochaeta	5004			1		1
Alvania compacta	5103200106	1			1	2
Polinices pallida	5103760402	1				1
Polinices lewisii	5103760406				1	1
Mitrella gausapata	5105030247	1				1
Turbonilla spp.	51080102	1	5	3	4	13
Cephalospidea	5110		1			1
Rictaxis punctocaelatus	5110010401	1	1	3	5	10
Melanochlamys diomedea	5110060101		2	1	1	4
Chaetoderma spp.	54020101	1		1		2
Bivalvia	55			1	1	2
Nucula tenuis	5502020201	1	1	3	2	7
Yoldia scissurata	5502040504		1	1		2
Megacrenella columbiana	5507010301	6	11	6	11	34
Parvilucina tenuisculpta	5515010101	6	5	2	3	16
Lucinoma acutilineata	5515010201	1				1
Axinopsida serricata	5515020201	109	39	51	81	280
Mysella tumida	5515100102			1		1

Nemocardium centrifilosum	5515220301	4		3	2	9
Solen sicarius	5515290201	1		2	2	5
Macoma spp.	55153101	29	10	39	38	116
Macoma calcarea	5515310101	6	1		1	8
Macoma yoldiformis	5515310111	2	4	9	1	16
Macoma carlottensis	5515310112	5			1	6
Tellina modesta	5515310204	1				1
Compsomyax subdiaphana	5515470301			1		1
Psephidia lordi	5515470501	4	1		3	8
Lyonsia spp.	55200502	6		3	7	16
Lyonsia californica	5520050202	2	1			3
Euphilomedes carcharodonta	6111070301	58	70	91	49	268
Euphilomedes producta	6111070303	65	53	47	60	225
Balanus spp.	61340201			1		1
Eudorella pacifica	6154040202	4		2	3	9
Diastylis alaskensis	6154050101			1	3	4
Leptochelia savignyi	6157020101	8	3	7	11	29
Pleurogonium rubicundum	6163120202		1			1
Byblis millsi	6169020208	1				1
Protomedeia articulata	6169260307	1		4		5
Hippomedon coecus	6169341411	4	1	1	2	8
Synchelidium shoemakeri	6169371402		1	1	1	3
Euphausia pacifica	6174020101		6			6
Callianassa gigas	6183040202	16	18	24	5	63
Cancer gracilis	6188030105		1			1
Pinnixa spp.	61890604	7	10	8	16	41
Golfingia pugettensis	7200020104	4	1	1	2	8
Ophiuroidea	8120	1	4		1	6
Amphiodia urtica/periercta	812903019999	5	1	5	3	14
Amphioplus strongyloplax	8129030999	1	1	1	2	5
	Total Abundance:	573	595	767	718	2653
	Number of Taxa:	82	79	78	70	133

Station 41

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43	14	6	8	13	41
Phyllodoce groenlandica	5001130102	1	1			2
Eteone longa	5001130205	1				1
Phyllodoce spp.	50011314				1	1
Phyllodoce hartmanae	5001131402	3			2	5
Syllis spp.	50012303				1	1
Nereis procera	5001240404	1	2			3
Nephtys cornuta	5001250104	1				1
Nephtys ferruginea	5001250111				1	1
Glycera nana	5001270129	20	20	18	8	66
Glycinde armigera	5001280103	2	5	6	14	27
Goniada brunnea	5001280203	2				2
Onuphidae	500129			1		1
Lumbrineris spp.	50013101	2				2
Lumbrineris bicirrata	5001310101				1	1
Lumbrineris luti	5001310109	52	69	70	62	253
Lumbrineris limicola	5001310128		1			1
Drilonereis longa	5001330103		1	1		2
Parougia caeca	5001360505	1			1	2
Levinsenia gracilis	5001410801	2	3	2	2	9
Polydora socialis	5001430402	1	1	2		4
Polydora brachycephala	5001430429				13	13
Prionospio steenstrupi	5001430506	15	8	21	18	62
Prionospio lighti	5001430521	2	1	1	2	6
Spiophanes berkeleyorum	5001431004	2		7	4	13
Paraprionospio pinnata	5001431701	3	2	4	2	11
Spiochaetopterus costarum	5001490302	1	1		1	3
Aphelochaeta multifilis	5001500302	1	3	1	2	7
Aphelochaeta secunda	5001500309	1	2	3	3	9
Cossura pygodactylata	5001520106	1	1	5	11	18
Brada villosa	5001540102		1			1
Scalibregma inflatum	5001570101				1	1
Sternaspis scutata	5001590101		1			1
Capitella capitata complex	5001600101	2			1	3
Heteromastus spp.	50016002	2	1	1	3	7
Heteromastus filobranchus	5001600203	16	7	5	12	40
Notomastus tenuis	5001600302	14	5	14	14	47
Mediomastus californiensis	5001600402				1	1
Barantolla americana	5001600601	3		4	6	13
Praxillella affinis pacifica	500163090301	1				1
Euclymeninae	5001631		1	1	1	3
Pectinaria granulata	5001660303	3		2		5
Pectinaria californiensis	5001660304			3		3
Amage anops	5001670101		1	1		2
Ampharete acutifrons	5001670208	1				1
Ampharete finmarchica	5001670214				1	1
Amphicteis spp.	50016703				1	1
Anobothrus gracilis	5001670701	2		1		3
Artacama coniferi	5001681101	1	2			3
Lanassa venusta venusta	500168130201	1		3	2	6

Terebellides californica	5001690103	10			1	11
Polinices pallida	5103760402	2	2	3	3	10
Mitrella gausapata	5105030247	65	5	31	90	191
Odostomia (O.) spp.	510801019999	4		7	3	14
Turbonilla spp.	51080102	2		3	2	7
Rictaxis punctocaelatus	5110010401	17	7	7	8	39
Cylichnella culcitella	5110040101	1		6	2	9
Cylichna attonsa	5110040205		1		1	2
Melanochlamys diomedea	5110060101	2		1	1	4
Nucula tenuis	5502020201	7	8	12	13	40
Yoldia scissurata	5502040504	1	1		1	3
Parvilucina tenuisculpta	5515010101	8	6	8	8	30
Lucinoma acutilineata	5515010201	3	4	5	4	16
Axinopsida serricata	5515020201	500	311	558	371	1740
Mysella tumida	5515100102	2				2
Nemocardium centrifilosum	5515220301	4	2	2	4	12
Macoma spp.	55153101	22	48	51	41	162
Macoma calcarea	5515310101	6	1	3	6	16
Macoma yoldiformis	5515310111			2		2
Macoma carlottensis	5515310112	68	61	56	23	208
Compsomyax subdiaphana	5515470301	2	3	2	2	9
Psephidia lordi	5515470501	1			3	4
Lyonsia spp.	55200502				7	7
Lyonsia californica	5520050202	3				3
Euphilomedes carcharodonta	6111070301	23	6	16	8	53
Euphilomedes producta	6111070303	27	20	10	14	71
Synchelidium shoemakeri	6169371402	1	1		1	3
Westwoodilla caecula	6169371502	1			1	2
Rhepoxynius bicuspidata	6169421503	32	24	23	17	96
Callianassa spp.	61830402	1		4	1	6
Pinnixa spp.	61890604		3	4	1	8
Ophiuroidea	8120	7		4		11
Amphiodia urtica/periercta	812903019999	14	9	19	20	62
Amphioplus strongyloplax	8129030999	2				2
	Total Abundance:	1013	669	1022	862	3566
	Number of Taxa:	63	45	49	60	84

Station 43

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Edwardsia sipunculoides	3759010102	1	2			3
Platyhelminthes	39	2	1	1		4
Nemertea	43	2	12	4		18
Eunoe depressa	5001020502		1			1
Lepidasthenia berkeleyae	5001021801	2	1			3
Tenonia priops	5001022302	1		1	2	4
Pholoe minuta	5001060101	12	27	25	14	78
Sthenelais tertiaglabra	5001060305			1		1
Phyllodoce groenlandica	5001130102			1		1
Eulalia (Eumida) sanguinea	5001131101	4	3	2	12	21
Phyllodoce hartmanae	5001131402	2	1			3
Hesionidae sp. 1	500121	1				1
Gyptis brevipalpa	5001210102			1		1
Microphthalmus spp.	50012102				1	1
Microphthalmus sczelkowii	5001210201	2				2
Parandalia fauveli	5001220802			1		1
Syllis elongata	5001230308		1			1
Syllis (Typosyllis) alternata	5001230501				3	3
Ehlersia heterochaeta	5001232201		3		1	4
Nereis procera	5001240404		2	1		3
Platynereis bicanaliculata	5001240501	2			1	3
Nephtyidae	500125				2	2
Nephtys spp.	50012501	1				1
Nephtys caeca	5001250103	3	3	3	1	10
Nephtys longosetosa	5001250109		1			1
Nephtys ferruginea	5001250111	1				1
Glycera nana	5001270129	5	6	6	1	18
Glycinde picta	5001280101			2		2
Glycinde armigera	5001280103	4	7	7	11	29
Goniada brunnea	5001280203	1		1		2
Onuphis iridescens	5001290103		1	2	2	5
Lumbrineridae	500131				1	1
Lumbrineris spp.	50013101	5	4			9
Lumbrineris luti	5001310109			1		1
Lumbrineris cruzensis	5001310118			2		2
Lumbrineris californiensis	5001310132	7	3	14	9	33
Leitoscoloplos pugettensis	5001400302	5	6	6	4	21
Orbinia (Phylo) felix	5001400510				1	1
Polydora socialis	5001430402	4	1	3	2	10
Polydora cardalia	5001430431		1			1
Polydora sp. 1	5001430488		1			1
Prionospio steenstrupi	5001430506	6	4	3	1	14
Prionospio lighti	5001430521	12	30	16		58
Paraprionospio pinnata	5001431701	1	1	2	3	7
Spiochaetopterus costarum	5001490302	133	105	86	159	483
Mesochaetopterus taylori	5001490401	11	19	28	32	90
Caulleriella alata	5001500202	2				2
Aphelochaeta multifilis	5001500302		1	1		2
Scalibregma inflatum	5001570101	1				1
Ophelia limacina	5001580301		3	1	1	5

Notomastus tenuis	5001600302		4	1	1	6
Notomastus latericeus	5001600306			3		3
Mediomastus spp.	50016004			6		6
Mediomastus californiensis	5001600402	1	15			16
Maldanidae	500163	12	16	7		35
Nicomache lumbricalis	5001630501		1			1
Axiothella cf. rubrocincta	5001630802	8	16	6		30
Praxillella affinis pacifica	500163090301				17	17
Euclymeninae	5001631	4	19	3		26
Euclymene cf. zonalis	5001631103	8		5		13
Clymenura columbiana	5001631206	7	9	5		21
Isocirrus longiceps	5001632001	1	2	3	2	8
Pectinaria granulata	5001660303	5		2	1	8
Pectinaria californiensis	5001660304		2			2
Anobothrus gracilis	5001670701	1	3	4	1	9
Pista brevibranchiata	5001680710	1				1
Polycirrus sp. complex	50016808	2	1			3
Thelepus spp.	50016810		1			1
Pista estevanica	5001681803	1				1
Demonax medius	5001700802			1		1
Gastropoda	51		1			1
Alvania compacta	5103200106			1		1
Polinices pallida	5103760402		1			1
Mitrella gausapata	5105030247	11		7	3	21
Nassarius mendicus	5105080101	5	2	2	1	10
Kurtzia arteaga	5106024101	1		3	3	7
Turbonilla spp.	51080102	2	1	1		4
Cylichnella culcitella	5110040101	7		1	3	11
Cylichna attonsa	5110040205		10	7	5	22
Acila castrensis	5502020101			1		1
Nucula tenuis	5502020201	2	10	6	3	21
Yoldia scissurata	5502040504		1	1		2
Megacrenella columbiana	5507010301	9	4	3	3	19
Modiolus modiolus	5507010601		1	1	1	3
Parvilucina tenuisculpta	5515010101	4	4	4		12
Lucinoma acutilineata	5515010201		1			1
Axinopsida serricata	5515020201	1				1
Thyasira gouldi	5515020325				1	1
Mysella tumida	5515100102	6	16	19	7	48
Macoma spp.	55153101	4	1	1	1	7
Macoma calcarea	5515310101	1				1
Macoma yoldiformis	5515310111	1	5	6	2	14
Psephidia lordi	5515470501		3	4	3	10
Lyonsia californica	5520050202				1	1
Euphilomedes carcharodonta	6111070301	122	161	167	147	597
Eudorella pacifica	6154040202		1		2	3
Leptochelia savignyi	6157020101	4	7	5	1	17
Haliophasma geminata	6160011601			1		1
Ampelisca hancocki	6169020113	1		1		2
Byblis millsi	6169020208	4	2	1	6	13
Aoroides intermedius	6169060206	6	2	4	6	18
Corophium crassicorne	6169150203	10	3	2	4	19
Protomedeia articulata	6169260307	9	3	4	8	24

Prachynella lodo	6169345701				2	2
Westwoodilla caecula	6169371502			2	3	5
Heterophoxus oculatus	6169420301	15	12	6	14	47
Eyakia robustus	6169420918	6	1	16	16	39
Rhepoxynius variatus	6169420926	8	27	35	17	87
Rhepoxynius abronius	6169421504	2	8	2	1	13
Crangon alaskensis	6179220102				1	1
Callianassa spp.	61830402			1		1
Pagurus setosus	6183060206			1		1
Pinnixa spp.	61890604	32	113	44	70	259
Golfingia pugettensis	7200020104	1	9	4		14
Amphiodia urtica/periercta	812903019999	201	217	219	219	856
Amphipholis squamata	8129030202	5				5
Amphioplus strongyloplax	8129030999		6	3	4	13
Dendraster excentricus	8155010101				1	1
Molgulidae	840603	1				1
	Total Abundance:	765	973	854	845	3437
	Number of Taxa:	69	71	76	59	119

Station 44

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Edwardsia sipunculoides	3759010102	1	1		1	3
Nemertea	43	12		5	17	34
Polynoidae	500102				2	2
Harmothoe imbricata	5001020806			1		1
Lepidasthenia berkeleyae	5001021801		1		1	2
Lepidasthenia longicirrata	5001021805		1			1
Tenonia priops	5001022302			1	1	2
Malmgreniella sp. M	5001022687		1		1	2
Pholoides aspera	5001040101		11	10	7	28
Pholoe minuta	5001060101		1		3	4
Sthenelais tertiaglabra	5001060305			1		1
Phyllodoce mucosa	5001130104			1	3	4
Eteone longa	5001130205		3	2		5
Eulalia viridis	5001130301				6	6
Eulalia (Eumida) sanguinea	5001131101		12		7	19
Phyllodoce spp.	50011314			1		1
Hesionidae	500121				1	1
Micropodarke dubia	5001210801			2		2
Pilargis berkeleyae	5001220301		1			1
Parandalia fauveli	5001220802			1		1
Syllidae	500123			1		1
Autolytus spp.	50012301				1	1
Syllis (Typosyllis) alternata	5001230501	1	2	3	3	9
Syllis (Typosyllis) harti	5001230510				1	1
Eusyllis habei	5001230699			1	1	2
Exogone gemmifera	5001230702			2	9	11
Ehlersia spp.	50012322				5	5
Ehlersia heterochaeta	5001232201	1	5	8	8	22
Nereidae	500124			4	1	5
Nereis procera	5001240404		1			1
Platynereis bicanaliculata	5001240501		3		4	7
Nephtys caeca	5001250103		1			1
Nephtys signifera	5001250199		10	6	13	29
Sphaerodoropsis sphaerulifer	5001260202			2	1	3
Glycera americana	5001270104				2	2
Glycera nana	5001270129		2	3		5
Glycinde picta	5001280101		1		1	2
Glycinde armigera	5001280103		1	1		2
Goniada maculata	5001280202				1	1
Diopatra ornata	5001290202		8	14	15	37
Lumbrineridae	500131		1	3	2	6
Lumbrineris luti	5001310109			1		1
Lumbrineris californiensis	5001310132		15	8	14	37
Drilonereis falcata minor	500133010402		1			1
Dorvillea pseudorubrovittata	5001360101				1	1
Leitoscoloplos pugettensis	5001400302		8	6	5	19
Orbinia (Phylo) felix	5001400510		1			1
Aricidea catherinae	5001410208		3	8	6	17
Levinsenia gracilis	5001410801			5	2	7
Laonice cirrata	5001430201		1	1	2	4

Polydora giardi	5001430401		1		2	3
Polydora socialis	5001430402		5	3	4	12
Prionospio steenstrupi	5001430506		83	36	29	148
Prionospio lighti	5001430521		4	4	6	14
Boccardia pugettensis	5001430812		1			1
Spiophanes berkeleyorum	5001431004	1	19	18	11	49
Paraprionospio pinnata	5001431701		19	15	5	39
Magelona longicornis	5001440105		1	2	2	5
Phyllochaetopterus prolifica	5001490202		7	20	15	42
Spiochaetopterus costarum	5001490302	3	40	18	128	189
Mesochaetopterus taylori	5001490401		6	16	9	31
Cirratulidae	500150		1	2		3
Cirratulus cirratus	5001500101		1	2		3
Caulleriella alata	5001500202			2	5	7
Aphelochaeta multifilis	5001500302		9	11	5	25
Aphelochaeta secunda	5001500309		1		6	7
Chaetozone spp.	50015004				1	1
Chaetozone gracilis	5001500402			1	1	2
Chaetozone spinosa	5001500407			4	1	5
Pherusa plumosa	5001540302			1		1
Scalibregma inflatum	5001570101				1	1
Notomastus tenuis	5001600302	1		5	4	10
Notomastus latericeus	5001600306		2	3	6	11
Mediomastus californiensis	5001600402	3	11	12	30	56
Axiothella cf. rubrocincta	5001630802				1	1
Praxillella gracilis	5001630901		1	1	1	3
Praxillella affinis pacifica	500163090301		3	2	3	8
Euclymeninae	5001631			1		1
Rhodine bitorquata	5001631001		1		1	2
Euclymene spp.	50016311				1	1
Clymenura columbiana	5001631206			2	4	6
Isocirrus longiceps	5001632001				1	1
Macroclymene spp.	50016321		1			1
Sabellaria cementarium	5001650201		1	1	5	7
Pectinaria granulata	5001660303			1	1	2
Amage anops	5001670101		6	1	2	9
Ampharete acutifrons	5001670208		1	1	1	3
Amphicteis scaphobranchiata	5001670304		2			2
Melinna elisabethae	5001670503		3			3
Anobothrus gracilis	5001670701		2	2	4	8
Neoamphitrite robusta	5001680401		1			1
Pista elongata	5001680703			1		1
Polycirrus sp. complex	50016808		2	4	6	12
Lanassa venusta venusta	500168130201			1	1	2
Proclea graffii	5001681702		1			1
Pista estevanica	5001681803				1	1
Terebellides stroemi	5001690101		5	4	6	15
Terebellides californica	5001690103		1	3		4
Chone magna	5001700106			1	1	2
Megalomma splendida	5001700401			1		1
Potamilla myriops	5001700602		1			1
Demonax spp.	50017008		1			1
Pseudochitinopoma occidentalis	5001730101				2	2

Gastropoda	51			1		1
Margarites pupillus	5102100308		1		1	2
Solariella varicosa	5102100403	1				1
Alvania compacta	5103200106	8	1	8	4	21
Crepipatella lingulata	5103640301			4	1	5
Alia carinata	5105030206	2			1	3
Mitrella gausapata	5105030247	2		8	2	12
Nassarius mendicus	5105080101	14		1	4	19
Olivella baetica	5105100102	1				1
Kurtziella plumbea	5106021107	1				1
Kurtzia arteaga	5106024101		1		2	3
Odostomia (O.) spp.	510801019999		3			3
Turbonilla spp.	51080102	1	1	3	2	7
Turbonilla aurantia	5108011134	5				5
Cephalospidea	5110		1			1
Cylichnella culcitella	5110040101				1	1
Cylichna attonsa	5110040205		1			1
Haminoea vesicula	5110120101			2		2
Chaetodermatida	5402		1			1
Chaetoderma spp.	54020101		2		2	4
Bivalvia	55		1			1
Acila castrensis	5502020101			3		3
Nucula tenuis	5502020201		1	2		3
Yoldia hyperborea	5502040502				1	1
Megacrenella columbiana	5507010301	1	6	1	1	9
Pectinidae	550905	1				1
Chlamys hastata	5509050101			1		1
Parvilucina tenuisculpta	5515010101	6		6	5	17
Lucinoma acutilineata	5515010201	1	1			2
Axinopsida serricata	5515020201	3	5	13	4	25
Mysella tumida	5515100102	16	6	5	16	43
Clinocardium nuttali	5515220102	1				1
Macoma spp.	55153101		5	3	2	10
Macoma calcarea	5515310101	2	1		1	4
Macoma obliqua	5515310106			1		1
Macoma yoldiformis	5515310111	3	3	7	7	20
Macoma carlottensis	5515310112			9		9
Macoma nasuta	5515310114				2	2
Compsomyax subdiaphana	5515470301	1	1	3		5
Psephidia lordi	5515470501			2		2
Hiatella arctica	5517060201		2	1		3
Pandora filosa	5520020102			1	1	2
Lyonsia californica	5520050202		1			1
Rutiderma lomae	6111060103				1	1
Euphilomedes carcharodonta	6111070301	5	28	12	1	46
Euphilomedes producta	6111070303			1		1
Eudorella pacifica	6154040202	2	4	6	3	15
Diastylis alaskensis	6154050101	1				1
Leptochelia savignyi	6157020101	1	2			3
Ampelisca hancocki	6169020113	1	1	3	3	8
Ampelisca lobata	6169020134		2		3	5
Byblis millsi	6169020208	10	6	7	6	29
Aoroides spp.	61690602		1			1

Aoroides intermedius	6169060206	1			5	6
Corophium spp.	61691502				2	2
Corophium baconi	6169150214	3	1	3		7
Erichthonius hunteri	6169150301				1	1
Erichthonius brasiliensis	6169150302	5		3	2	10
Protomedeia prudens	6169260312	7	6	1	5	19
Gammaropsis thompsoni	6169260401	1			2	3
Pachynus barnardi	6169343101	1				1
Melphidippa goesi	6169350101	1				1
Monoculodes zernovi	6169370816	1		2	1	4
Synchelidium rectipalmum	6169371403		1	1	1	3
Westwoodilla caecula	6169371502	1	2	1	2	6
Heterophoxus oculatus	6169420301	10	6	10	4	30
Spirontocaris snyderi	6179160204			1		1
Pagurus spp.	61830602			1		1
Lophopanopeus bellus diegensis	618902010102	2	1	1	1	5
Pinnixa spp.	61890604	41	23	30	61	155
Golfingia vulgaris	7200020103	1				1
Golfingia pugettensis	7200020104	5		3	1	9
Golfingia minuta	7200020106		6			6
Phoronis spp.	77000102	1				1
Terebratulina unguicula	8005070101			2		2
Ophiura lutkeni	8127010607		1			1
Amphiodia urtica/periercta	812903019999	9	9	6	17	41
Amphipholis squamata	8129030202	1	2			3
Amphioplus strongyloplax	8129030999				1	1
Pentamera spp.	81720603		1			1
Pentamera pseudocalcigera	8172060301	2		2		4
Ascidiacea	8401			1		1
	Total Abundance:	206	488	486	644	1824
	Number of Taxa:	51	100	106	113	185

Station 45

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Pachycerianthus fimbriatus	3743010303	1				1
Stylatula elongata	3754010103	1			1	2
Nemertea	43	2	1	7		10
Eunoe depressa	5001020502				1	1
Eunoe uniseriata	5001020599			1		1
Lepidasthenia berkeleyae	5001021801	4	1	2	1	8
Pholoe minuta	5001060101	1	1	1		3
Sthenalais berkeleyae	5001060301			2		2
Gyptis brevipalpa	5001210102	2	3	2	2	9
Sigambra tentaculata	5001220201	11	18	23	13	65
Pilargis berkeleyae	5001220301	3	2	2	2	9
Nereis procera	5001240404	1	1	2	3	7
Nereis zonata	5001240406		2			2
Glycera nana	5001270129	4	2	6	3	15
Goniada brunnea	5001280203	1	1			2
Onuphis iridescens	5001290103				1	1
Lumbrineris spp.	50013101		1	1	1	3
Lumbrineris luti	5001310109	1				1
Lumbrineris cruzensis	5001310118		3			3
Naineris uncinata	5001400204			1		1
Leitoscoloplos pugettensis	5001400302	1	1	2		4
Aricidea catherinae	5001410208		19	3	2	24
Aricidea ramosa	5001410706	20	31	20	32	103
Levinsenia gracilis	5001410801	30	85	44	87	246
Laonice cirrata	5001430201	1	1		1	3
Polydora socialis	5001430402	1				1
Polydora cardalia	5001430431	2	9	5	10	26
Prionospio steenstrupi	5001430506	2	1	1	1	5
Prionospio lighti	5001430521	3	4	2		9
Spiophanes berkeleyorum	5001431004		1	1	2	4
Paraprionospio pinnata	5001431701	2	2	2	1	7
Aphelochaeta secunda	5001500309	2	1		1	4
Cossura spp.	50015201	3	1	2		6
Sternaspis scutata	5001590101			1		1
Heteromastus filobranchus	5001600203	4		1		5
Notomastus tenuis	5001600302				1	1
Mediomastus spp.	50016004		1			1
Mediomastus californiensis	5001600402			2		2
Maldanidae	500163		3	1		4
Euclymeninae	5001631	10				10
Nicomache lumbricalis	5001630501				1	1
Praxillella spp.	50016309	4	2		1	7
Praxillella affinis	5001630903			5		5
Rhodine bitorquata	5001631001	1			1	2
Euclymene spp.	50016311		1			1
Euclymene cf. zonalis	5001631103		2			2
Euclymene reticulata	5001631104			3		3
Pectinaria californiensis	5001660304	20	11	16	24	71
Neoamphitrite robusta	5001680401				1	1
Artacama coniferi	5001681101	2			2	4

Terebellides stroemi	5001690101		1	1		2
Terebellides californica	5001690103	1				1
Nitidiscala indianorum	5103500104	3	1			4
Mitrella gausapata	5105030247	1			2	3
Odostomia (O.) spp.	510801019999		1	2		3
Cylichnella culcitella	5110040101		3	2	3	8
Cylichna attonsa	5110040205		1		2	3
Melanochlamys diomedea	5110060101			1		1
Berthella californica	5126020503		1			1
Chaetoderma spp.	54020101	1			1	2
Nucula tenuis	5502020201	1			2	3
Yoldia scissurata	5502040504	1	1		2	4
Yoldia thraciaeformis	5502040507			2		2
Parvilucina tenuisculpta	5515010101	10	8	5	4	27
Lucinoma acutilineata	5515010201	3	4	1	2	10
Axinopsida serricata	5515020201		2		1	3
Mysella tumida	5515100102	6	1	4	4	15
Macoma spp.	55153101	1			2	3
Compsomyax subdiaphana	5515470301		1	1		2
Lyonsia californica	5520050202			1		1
Euphilomedes carcharodonta	6111070301	14	19	8	13	54
Euphilomedes producta	6111070303	2			2	4
Eudorella pacifica	6154040202	2			1	3
Protomedeia spp.	61692603	2		1		3
Heterophoxus oculatus	6169420301	1	2	1	2	6
Callianassa spp.	61830402				1	1
Pinnixa schmitti	6189060404	3	2	5	1	11
Sipunculida	720001				1	1
Phoronis spp.	77000102	1				1
Amphiodia urtica/periercta	812903019999	4	17	25	6	52
	Total Abundance:	197	277	221	248	943
	Number of Taxa:	47	46	44	45	80

Station 47

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Anthozoa	3740				2	2
Edwardsia sipunculoides	3759010102	12		2	8	22
Platyhelminthes	39	1		3		4
Nemertea	43	27	34	2	12	75
Nematoda	47		2			2
Polynoidae	500102				1	1
Gattyana cirrosa	5001020603	1				1
Harmothoe imbricata	5001020806	3	1			4
Harmothoe multisetosa	5001020809	2				2
Malmgreniella sp. S	5001020818	4		1		5
Harmothoinae	5001021		1			1
Lepidonotus squamatus	5001021103				4	4
Lepidasthenia longicirrata	5001021805		2		2	4
Tenonia priops	5001022302				2	2
Malmgreniella spp.	50010226	4			1	5
Pholoides aspera	5001040101	33	43	14	23	113
Pholoe minuta	5001060101				1	1
Sthenalais berkeleyae	5001060301		3	1		4
Sthenelais tertiaglabra	5001060305	1	4			5
Paleonotus bellis	5001080101	1	1	3		5
Phyllodocidae	500113		1			1
Eteone longa	5001130205	1	3			4
Eulalia bilineata	5001130304	2	3		1	6
Eulalia (Eumida) sanguinea	5001131101	28	8	1	6	43
Phyllodoce spp.	50011314				1	1
Pterocirrus macroceros	5001131701		1			1
Gyptis brevipalpa	5001210102		2	2		4
Podarke pugettensis	5001210401	1	2	2		5
Kefersteinia cirrata	5001210501			1		1
Sigambra tentaculata	5001220201	8	7	6	1	22
Pilargis berkeleyae	5001220301	7	5	2	3	17
Procerea cornuta	5001230101	8	1		9	18
Pionosyllis uraga	5001230204	1				1
Syllis elongata	5001230308	3			1	4
Syllis (Typosyllis) alternata	5001230501			1		1
Syllis (Typosyllis) harti	5001230510	3			6	9
Eusyllis habei	5001230699	6	4	1		11
Exogone gemmifera	5001230702			1		1
Exogone lourei	5001230703				5	5
Exogone verugera	5001230706	17				17
Ehlersia sp. 1	50012322		5			5
Ehlersia heterochaeta	5001232201	2	5	1		8
Nereidae	500124		1	1		2
Nereis procera	5001240404	1	6	1	3	11
Nereis zonata	5001240406			2		2
Platynereis bicanaliculata	5001240501		1			1
Nephtys cornuta	5001250104		2	4		6
Nephtys ferruginea	5001250111				1	1
Nephtys caecoides	5001250119			1		1
Sphaerodoropsis sphaerulifer	5001260202		1			1

Glycera capitata	5001270101	1				1
Glycera americana	5001270104		1	1	3	5
Glycera nana	5001270129	4	7	2	2	15
Glycinde armigera	5001280103	3	2	3	3	11
Goniada brunnea	5001280203	1				1
Onuphis iridescens	5001290103	2		1	3	6
Diopatra ornata	5001290202	13	8	1	6	28
Lumbrineridae	500131		14			14
Lumbrineris spp.	50013101	6		12	4	22
Lumbrineris bicirrata	5001310101			1		1
Lumbrineris luti	5001310109	24	19	11	11	65
Lumbrineris cruzensis	5001310118		14	1	1	16
Lumbrineris californiensis	5001310132	54	15	78	5	152
Drilonereis longa	5001330103	1	1			2
Drilonereis falcata minor	500133010402			1		1
Leitoscoloplos pugettensis	5001400302	8	9	21	4	42
Paraonidae	500141		1			1
Aricidea catherinae	5001410208	2				2
Aricidea ramosa	5001410706	33	78	26	5	142
Levinsenia gracilis	5001410801	24	62	19	8	113
Laonice cirrata	5001430201	5		2	2	9
Laonice pugettensis	5001430204	1				1
Polydora spp.	50014304	1				1
Polydora giardi	5001430401	1				1
Polydora socialis	5001430402		6	5	3	14
Polydora cardalia	5001430431			1	1	2
Polydora sp. G	5001430485	1				1
Prionospio steenstrupi	5001430506	45	80	51	46	222
Prionospio lighti	5001430521		8	9		17
Spio spp.	50014307	1				1
Spiophanes berkeleyorum	5001431004	11	5	6	10	32
Paraprionospio pinnata	5001431701	10	1	2	3	16
Magelona spp.	50014401		8	1		9
Magelona longicornis	5001440105	91	62	64	69	286
Magelona berkeleyi	5001440123	1			2	3
Phyllochaetopterus prolifica	5001490202	132	52	5	15	204
Spiochaetopterus costarum	5001490302	13	9	5	9	36
Cirratulidae	500150	1				1
Cirratulus cirratus	5001500101		16		3	19
Caulleriella alata	5001500202	2	3	10	1	16
Aphelochaeta multifilis	5001500302	10	6	7	4	27
Aphelochaeta secunda	5001500309	8	27	23	1	59
Cossura spp.	50015201	1				1
Cossura pygodactylata	5001520106		3			3
Flabelligera affinis	5001540202	3		2		5
Pherusa plumosa	5001540302		1			1
Scalibregma inflatum	5001570101			2		2
Travisia brevis	5001580401			1		1
Notomastus tenuis	5001600302	2	1	4		7
Notomastus latericeus	5001600306		1			1
Mediomastus spp.	50016004	18		33	12	63
Mediomastus ambiseta	5001600401	10		9	5	24
Mediomastus californiensis	5001600402	5	77			82

Decamastus gracilis	5001600501				1	1
Maldanidae	500163			2	2	4
Maldane glebifex	5001630302	4			9	13
Nicomache personata	5001630502			2		2
Petaloproctus borealis	500163070101		4			4
Praxillella spp.	50016309			1		1
Praxillella gracilis	5001630901				2	2
Euclymeninae	5001631	3	1			4
Rhodine bitorquata	5001631001	13	2		7	22
Euclymene sp. 1	50016311	1			3	4
Clymenura columbiana	5001631206			2		2
Nicomachinae	5001632		1			1
Isocirrus longiceps	5001632001	2		1		3
Galathowenia oculata	5001640202				2	2
Idanthyrsus armatus	5001650102			1		1
Sabellaria cementarium	5001650201		1			1
Pectinaria granulata	5001660303	2		5	1	8
Pectinaria californiensis	5001660304		1	1		2
Amage anops	5001670101	30	14	8	29	81
Ampharete spp.	50016702			1		1
Ampharete goesi brazhnikovi	5001670207	1				1
Ampharete acutifrons	5001670208	2	1	2	1	6
Ampharete finmarchica	5001670214				2	2
Amphicteis glabra	5001670302	1				1
Amphicteis mucronata	5001670306		1			1
Anobothrus gracilis	5001670701	3			4	7
Asabellides lineatus	5001670804	5		1	4	10
Terebellidae	500168	2		1	1	4
Nicolea zostericola	5001680601	4	3		1	8
Pista cristata	5001680701				3	3
Pista brevibranchiata	5001680710		1			1
Thelepus setosus	5001681004		2			2
Lanassa nordenskioeldi	5001681301		1			1
Pista estevanica	5001681803	1	1	1	1	4
Terebellides spp.	50016901	1			1	2
Terebellides stroemi	5001690101	1	1			2
Terebellides californica	5001690103	3		2	1	6
Myxicola infundibulum	5001700502	1				1
Oligochaeta	5004	1	1			2
Gastropoda	51		3	1	1	5
Alvania compacta	5103200106	2	5			7
Crepipatella lingulata	5103640301	2	8	22	5	37
Mitrella gausapata	5105030247	6	7			13
Nassarius mendicus	5105080101	3	6	1	1	11
Kurtzia arteaga	5106024101	7	7	6	6	26
Odostomia (O.) spp.	510801019999	5	1		2	8
Turbonilla spp.	51080102		4	2		6
Cylichnella culcitella	5110040101			1	1	2
Cylichna attonsa	5110040205	1				1
Haminoea vesicula	5110120101	1				1
Nudibranchia	5127	3				3
Chaetoderma spp.	54020101	3	1	1		5
Mytilidae	550701		1			1

Megacrenella columbiana	5507010301	1		1		2
Modiolus modiolus	5507010601		1			1
Parvilucina tenuisculpta	5515010101	10	27	28	12	77
Lucinoma acutilineata	5515010201	6	6	5	3	20
Adontorhina cyclia	5515020102		2			2
Axinopsida serricata	5515020201	2	3	2		7
Thyasira gouldi	5515020325	1				1
Mysella tumida	5515100102	1		2	2	5
Clinocardium fucanum	5515220103			2		2
Nemocardium centrifilosum	5515220301			1		1
Solen sicarius	5515290201				2	2
Macoma spp.	55153101	3	9	2	6	20
Macoma obliqua	5515310106	4		1		5
Macoma yoldiformis	5515310111	2	4	4	4	14
Macoma carlottensis	5515310112		1		1	2
Psephidia lordi	5515470501	13	8			21
Mya arenaria	5517010201		1			1
Hiatella arctica	5517060201		1			1
Pandora filosa	5520020102		1			1
Lyonsia spp.	55200502		1			1
Lyonsia californica	5520050202			2		2
Thracia trapezoides	5520080203		1			1
Cardiomya pectinata	5520100101		1			1
Euphilomedes carcharodonta	6111070301		4		14	18
Balanus spp.	61340201			37		37
Balanus crenatus	6134020104				3	3
Eudorella pacifica	6154040202	1			1	2
Leptochelia savignyi	6157020101				2	2
Leptognathia gracilis	6157020202	1	1	1		3
Ampelisca hancocki	6169020113	1				1
Ampelisca pugettica	6169020114	5	1	4		10
Ampelisca lobata	6169020134	17	5	1	7	30
Byblis millsi	6169020208	1	9	2	6	18
Aoroides intermedius	6169060206		1		7	8
Erichthonius hunteri	6169150301	28	31		3	62
Protomedeia spp.	61692603			1		1
Gammaropsis thompsoni	6169260401	6	1			7
Ischyrocerus anguipes	6169270202	2				2
Westwoodilla caecula	6169371502	3	1	1		5
Heterophoxus oculatus	6169420301	14	14	13	1	42
Tritella pilimana	6171010602			1		1
Eualus pusiolus	6179160408	2				2
Heptacarpus stimpsoni	6179160511	1				1
Mesocrangon munitella	6179220115	1				1
Callianassa spp.	61830402				1	1
Pagurus spp.	61830602	4	6	2		12
Elassochirus tenuimanus	6183060301			1		1
Oregonia spp.	61870101	1				1
Oregonia gracilis	6187010101	1				1
Cancer gracilis	6188030105	1			1	2
Lophopanopeus bellus diegensis	618902010102	1		1		2
Pinnixa spp.	61890604	2	3	4	4	13
Dulichia rhabdoplastis	6169440111	1				1

Golfingia vulgaris	7200020103				1	1
Golfingia pugettensis	7200020104	5	2		2	9
Phoronis spp.	77000102		6			6
Amphiodia urtica/periercta	812903019999	34	53	56	15	158
Amphipholis squamata	8129030202		1	2		3
Amphioplus strongyloplax	8129030999		6	3		9
Pentamera pseudopopulifera	8172060305			1		1
(Hemichordata) Enteropneusta	8201	1	1			2
	Total Abundance:	1017	1038	719	523	3297
	Number of Taxa:	126	117	106	96	217

Station 48						
Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Pachycerianthus fimbriatus	3743010303				1	1
Stylatula elongata	3754010103	1	1	2	1	5
Nemertea	43	1	4	1		6
Amphiporidae	430605				1	1
Nematoda	47			2		2
Sthenalais berkeleyae	5001060301	1				1
Gyptis brevipalpa	5001210102				3	3
Sigambra tentaculata	5001220201	3	7	1	6	17
Sigambra bassi	5001220204		2	1		3
Pilargis berkeleyae	5001220301	1	1			2
Sphaerosyllis brandhorsti	5001230806				1	1
Nephtys cornuta	5001250104	1	1		2	4
Nephtys ferruginea	5001250111		1	1		2
Glycinde picta	5001280101	1			2	3
Lumbrineridae	500131				1	1
Lumbrineris spp.	50013101		1	1		2
Lumbrineris luti	5001310109			1		1
Lumbrineris cruzensis	5001310118				5	5
Aricidea ramosa	5001410706			3	5	8
Polydora giardi	5001430401				2	2
Polydora socialis	5001430402				25	25
Polydora brachycephala	5001430429				4	4
Polydora cardalia	5001430431				10	10
Polydora sp. 1	5001430488				5	5
Prionospio steenstrupi	5001430506			1		1
Prionospio lighti	5001430521	1	1		2	4
Spiophanes berkeleyorum	5001431004		2		1	3
Paraprionospio pinnata	5001431701	7	1	6	5	19
Phyllochaetopterus prolifica	5001490202				1	1
Aphelochaeta multifilis	5001500302			2		2
Euclymeninae	5001631			1		1
Amphitrite cirrata	5001680101				1	1
Terebellides californica	5001690103	7	10	5	3	25
Alvania compacta	5103200106	2	3	1	3	9
Mitrella gausapata	5105030247		6			6
Nassarius mendicus	5105080101			3	1	4
Odostomia (O.) spp.	510801019999	3	1	2	4	10
Cylichna attonsa	5110040205	6	13	5	4	28
Armina californica	5136020101				1	1
Yoldia hyperborea	5502040502	1	1	3		5
Parvilucina tenuisculpta	5515010101	6	14	11	3	34
Axinopsida serricata	5515020201				1	1
Mysella tumida	5515100102	11	15	7	12	45
Macoma spp.	55153101	2	6	2	2	12
Macoma carlottensis	5515310112	5	2	5	2	14
Macoma nasuta	5515310114	1	3			4
Compsomyax subdiaphana	5515470301		2	1		3
Psephidia lordi	5515470501	1	2	1	1	5
Eudorella pacifica	6154040202	188	187	182	243	800
Ampelisca careyi	6169020135	8	1	15	8	32

Heterophoxus oculatus	6169420301	1		1		2
Crangon spp.	61792201		1			1
Pinnixa spp.	61890604		1		1	2
Pinnixa eburna	6189060410	1				1
Amphiodia urtica/periercta	812903019999	2	1			3
	Total Abundance:	262	291	267	373	1193
	Number of Taxa:	25	29	28	36	55

Station 49

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43	2	6	2	3	13
Pholoe minuta	5001060101		2			2
Eteone spilotus	5001130299		1			1
Gyptis brevipalpa	5001210102		3	1	3	7
Sigambra bassi	5001220204	8	12	15	10	45
Pilargis berkeleyae	5001220301		1			1
Exogone verugera	5001230706		1			1
Nephtys cornuta	5001250104			1		1
Nephtys ferruginea	5001250111	1				1
Glycinde picta	5001280101				2	2
Lumbrineris luti	5001310109	1	4			5
Polydora socialis	5001430402				1	1
Prionospio steenstrupi	5001430506		1		1	2
Prionospio lighti	5001430521	1	4			5
Spiophanes berkeleyorum	5001431004	6	3	7	13	29
Paraprionospio pinnata	5001431701	13	20	17	23	73
Spiochaetopterus costarum	5001490302		1		1	2
Aphelochaeta multifilis	5001500302		2			2
Heteromastus filobranchus	5001600203			1		1
Amphicteis scaphobranchiata	5001670304		1	1		2
Gastropoda	51			1		1
Mitrella gausapata	5105030247	1	3	14	2	20
Nassarius mendicus	5105080101	7	9	3	1	20
Odostomia (O.) spp.	510801019999	12	10	8	17	47
Turbonilla spp.	51080102		2		2	4
Cylichnella culcitella	5110040101	10	26	8	10	54
Cylichna attonsa	5110040205				3	3
Parvilucina tenuisculpta	5515010101	2		1		3
Axinopsida serricata	5515020201		3			3
Mysella tumida	5515100102	1	2		1	4
Macoma spp.	55153101		1			1
Macoma nasuta	5515310114	5	4	6	5	20
Psephidia lordi	5515470501	6	14	13	3	36
Eudorella pacifica	6154040202	1				1
Diastylis alaskensis	6154050101				2	2
Ampelisca careyi	6169020135		1			1
Westwoodilla caecula	6169371502		1			1
Heterophoxus oculatus	6169420301	1			2	3
Crangon alaskensis	6179220102	2	1	1	3	7
Pinnixa schmitti	6189060404	10	11	8	9	38
Amphiodia urtica/periercta	812903019999		3			3
	Total Abundance:	90	153	108	117	468
	Number of Taxa:	19	30	18	22	41

Station 69

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Ptilosarcus gurneyi	3754020201		1	1		2
Halcampa decemtentaculata	3759040101			1		1
Platyhelminthes	39				2	2
Nemertea	43	5	3	3	4	15
Lepidasthenia berkeleyae	5001021801				1	1
Lepidasthenia longicirrata	5001021805		1			1
Tenonia priops	5001022302	2	2	1	1	6
Malmgreniella sp. M	5001022687				1	1
Malmgreniella sp. L	5001022689			1		1
Pholoe minuta	5001060101	13	18	7	14	52
Sthenalais berkeleyae	5001060301		1			1
Paleonotus bellis	5001080101	4	4	2		10
Phyllodoce mucosa	5001130104		1			1
Eteone longa	5001130205		2		1	3
Eteone spilotus	5001130299	1	1			2
Eulalia viridis	5001130301	1	1			2
Eulalia (Eumida) sanguinea	5001131101	3	1	2	2	8
Phyllodoce spp.	50011314				2	2
Gyptis brevipalpa	5001210102	1				1
Podarke pugettensis	5001210401	1				1
Micropodarke dubia	5001210801			1		1
Syllis (Typosyllis) harti	5001230510		2	1		3
Eusyllis blomstrandi	5001230602		2			2
Exogone lourei	5001230703		1			1
Ehlersia spp.	50012322	2			2	4
Nereis procera	5001240404	2	1			3
Platynereis bicanaliculata	5001240501		6	2	1	9
Nephtys caeca	5001250103				1	1
Nephtys cornuta	5001250104	1	2		1	4
Nephtys ferruginea	5001250111	3	2	2	4	11
Sphaerodoropsis sphaerulifer	5001260202		1			1
Glycera nana	5001270129	3	2		1	6
Glycinde picta	5001280101	1	1	2		4
Goniada maculata	5001280202	2				2
Onuphidae	500129	5		1	1	7
Onuphis geophiliformis	5001290102	1				1
Onuphis iridescens	5001290103	8	1	3	2	14
Diopatra ornata	5001290202		5	2		7
Lumbrineridae	500131	2		1		3
Lumbrineris luti	5001310109	9	6	6	10	31
Lumbrineris cruzensis	5001310118	1	1			2
Lumbrineris californiensis	5001310132		1			1
Drilonereis falcata minor	500133010402	1				1
Parougia caeca	5001360505				1	1
Leitoscoloplos pugettensis	5001400302	7	4	4	2	17
Orbinia (Phylo) felix	5001400510	1		1		2
Aricidea ramosa	5001410706		1			1
Levinsenia gracilis	5001410801	1	5		5	11
Laonice cirrata	5001430201	1	1			2
Polydora brachycephala	5001430429	2	6		1	9

Polydora sp. 1	5001430488	2	1			3
Prionospio lighti	5001430521	1	3		2	6
Prionospio multibranchiata	5001430599	6	3	3		12
Spiophanes berkeleyorum	5001431004	3	1		1	5
Magelona longicornis	5001440105	1		1	1	3
Spiochaetopterus costarum	5001490302	1	3	2	1	7
Mesochaetopterus taylori	5001490401	1				1
Aphelochaeta multifilis	5001500302	2	1			3
Aphelochaeta secunda	5001500309		1			1
Chaetozone spp.	50015004	1				1
Sternaspis scutata	5001590101			1		1
Capitella capitata complex	5001600101		1		2	3
Notomastus tenuis	5001600302	13	10	8	8	39
Mediomastus californiensis	5001600402	17	9	7	15	48
Barantolla americana	5001600601	3				3
Praxillella gracilis	5001630901	1		1	2	4
Praxillella affinis pacifica	500163090301	2	6	1	10	19
Euclymeninae	5001631				7	7
Rhodine bitorquata	5001631001			1		1
Euclymene cf. zonalis	5001631103	2	7	7	4	20
Myriochele heeri	5001640201				9	9
Pectinaria granulata	5001660303	1				1
Pectinaria californiensis	5001660304	9	7	5	4	25
Amage anops	5001670101			1		1
Ampharete finmarchica	5001670214	5	2	1	3	11
Pista spp.	50016807	1	1			2
Polycirrus sp. complex	50016808	35	37	25	47	144
Artacama coniferi	5001681101		2			2
Lanassa venusta venusta	500168130201	27	19	9	14	69
Pista estevanica	5001681803			1		1
Streblosoma bairdi	5001682502		1			1
Terebellides spp.	50016901				1	1
Terebellides californica	5001690103	1	1			2
Euchone incolor	5001700204				1	1
Gastropoda	51				2	2
Alvania compacta	5103200106	1	1	1	1	4
Bittium attenuatum	5103460102	3	3	2	2	10
Mitrella gausapata	5105030247				1	1
Odostomia (O.) spp.	510801019999	1	6	2	5	14
Turbonilla spp.	51080102			3	3	6
Cylichnella culcitella	5110040101	2	1		5	8
Cylichna attonsa	5110040205			1		1
Flabellinidae	514104		1			1
Aeolidacea	5142			1		1
Acila castrensis	5502020101		4		6	10
Nucula tenuis	5502020201	2	2	5	1	10
Yoldia scissurata	5502040504	1	2	6		9
Megacrenella columbiana	5507010301	1	3	4	1	9
Parvilucina tenuisculpta	5515010101	5	7	4	3	19
Lucinoma acutilineata	5515010201	1	3	3	3	10
Adontorhina cyclia	5515020102				1	1
Axinopsida serricata	5515020201	20	18	20	28	86
Mysella tumida	5515100102	5	7	5	6	23

Nemocardium centrifilosum	5515220301	2		3	1	6
Solen sicarius	5515290201	1				1
Macoma spp.	55153101	40	4	21	26	91
Macoma calcarea	5515310101	1	1			2
Macoma obliqua	5515310106		1			1
Macoma yoldiformis	5515310111	7	2	6	3	18
Macoma carlottensis	5515310112	8	76	6	28	118
Tellina modesta	5515310204		1			1
Compsomyax subdiaphana	5515470301	5	2	2	5	14
Psephidia lordi	5515470501	1				1
Protothaca staminea	5515470701		1			1
Hiatella arctica	5517060201		1			1
Lyonsia spp.	55200502	2	8	3	3	16
Cylindroleberididae	611103	2	1	2		5
Euphilomedes carcharodonta	6111070301	27	54	36	37	154
Euphilomedes producta	6111070303	65	65	36	64	230
Eudorella pacifica	6154040202			2	1	3
Diastylis alaskensis	6154050101				1	1
Leptochelia savignyi	6157020101	5	23	6	4	38
Leptognathia gracilis	6157020202	1				1
Leptognathia brevimana	6157020204	5		5	1	11
Pleurogonium rubicundum	6163120202		1			1
Ampelisca brevisimulata	6169020125	2				2
Byblis millsi	6169020208			1		1
Aoroides inermis	6169060203		2			2
Melita desdichada	6169211008		1			1
Protomedeia spp.	61692603				1	1
Orchomene pacifica	6169342903		1	1	1	3
Prachynella lodo	6169345701		4			4
Synchelidium shoemakeri	6169371402	1	2		1	4
Westwoodilla caecula	6169371502	2	3	3	3	11
Metaphoxus frequens	6169420601			1		1
Rhepoxynius variatus	6169420926	14	9	17	6	46
Rhepoxynius bicuspidata	6169421503	1			4	5
Rhepoxynius abronius	6169421504	5		4		9
Pinnixa spp.	61890604	4	3	5	5	17
Sipunculida	720001				1	1
Golfingia pugettensis	7200020104	3	2	2	1	8
Phoronis spp.	77000102		1	3	1	5
Amphiodia urtica/periercta	812903019999	76	82	35	79	272
Amphioplus strongyloplax	8129030999	8	3		4	15
Pentamera pseudopopulifera	8172060305			3		3
	Total Abundance:	549	615	378	541	2083
	Number of Taxa:	86	92	72	79	145

Station 70

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43	2		3		5
Gyptis brevipalpa	5001210102	1		1		2
Podarke pugettensis	5001210401			1		1
Sigambra tentaculata	5001220201	1				1
Sigambra bassi	5001220204	3	4	14		21
Nereidae	500124			2		2
Nephtys conuta franciscana	500125010401	9	10	11	5	35
Nephtys ferruginea	5001250111	1	1	2	1	5
Glycinde picta	5001280101	4	2	4	3	13
Lumbrineris spp.	50013101	1	1			2
Lumbrineris luti	5001310109	2	2	1	4	9
Aricidea ramosa	5001410706			1		1
Levinsenia gracilis	5001410801			1		1
Polydora socialis	5001430402			1		1
Polydora brachycephala	5001430429	37		25		62
Prionospio lighti	5001430521	5	1	3	1	10
Paraprionospio pinnata	5001431701	4	6	2	2	14
Aphelochaeta multifilis	5001500302	11	7	10		28
Ophelina acuminata	5001580607	1				1
Terebellides stroemi	5001690101	1				1
Alvania compacta	5103200106	3	7	12		22
Mitrella gausapata	5105030247	1				1
Nassarius mendicus	5105080101	2	3	1	7	13
Odostomia (O.) spp.	510801019999				1	1
Turbonilla spp.	51080102				1	1
Yoldia hyperborea	5502040502			2	1	3
Mytilidae	550701	1				1
Parvilucina tenuisculpta	5515010101		1		4	5
Macoma nasuta	5515310114	5	8	6	4	23
Psephidia lordi	5515470501	5	4	2	1	12
Sarsiella spp.	61110401	1				1
Euphilomedes carcharodonta	6111070301		1			1
Balanus spp.	61340201	2				2
Ampelisca hancocki	6169020113	4	4	1	1	10
Melita desdichada	6169211008	1		2		3
Protomedeia spp.	61692603			1		1
Crangon alaskensis	6179220102				1	1
Pinnixa schmitti	6189060404	11		3	2	16
Ophiuroidea	8120				2	2
Amphiodia urtica/periercta	812903019999				2	2
	Total Abundance:	119	62	112	43	336
	Number of Taxa:	26	16	25	18	40

Station 71

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Platyhelminthes	39			2		2
Nemertea	43	1	4	6	3	14
Tenonia priops	5001022302	3		1	1	5
Malmgreniella sp. M	5001022687				1	1
Pholoe minuta	5001060101	2	3	4	5	14
Eteone longa	5001130205			1	1	2
Phyllodoce spp.	50011314				1	1
Gyptis brevipalpa	5001210102		1		1	2
Syllis (Typosyllis) harti	5001230510				2	2
Nephtys cornuta	5001250104	4		2	24	30
Nephtys cornuta franciscana	500125010401		7			7
Nephtys ferruginea	5001250111	1			2	3
Glycera americana	5001270104			1		1
Glycinde picta	5001280101	6	7	5	5	23
Glycinde armigera	5001280103		1			1
Lumbrineris spp.	50013101		10			10
Lumbrineris bicirrata	5001310101	1	1	1	1	4
Lumbrineris luti	5001310109	38	28	43	44	153
Lumbrineris californiensis	5001310132			1		1
Leitoscoloplos pugettensis	5001400302	2	2		3	7
Aricidea catherinae	5001410208	6			2	8
Levinsenia gracilis	5001410801	1	1	3	2	7
Laonice cirrata	5001430201	1	2	1	1	5
Polydora socialis	5001430402			1		1
Prionospio steenstrupi	5001430506	32	19	14	41	106
Prionospio lighti	5001430521		1	2		3
Spiophanes berkeleyorum	5001431004		1			1
Paraprionospio pinnata	5001431701	9	5	4	1	19
Magelona longicornis	5001440105	5	6	2	2	15
Aphelochaeta multifilis	5001500302	1	16		2	19
Aphelochaeta secunda	5001500309	32	8	37	26	103
Chaetozone spinosa	5001500407	1		1		2
Cossura spp.	50015201	2		5	9	16
Cossura soyeri	5001520104		3			3
Armandia brevis	5001580202	3		3	1	7
Ophelina acuminata	5001580607	6	3	3	5	17
Sternaspis scutata	5001590101	43	37	38	35	153
Heteromastus filobranchus	5001600203				1	1
Mediomastus spp.	50016004		1			1
Mediomastus ambiseta	5001600401		1			1
Mediomastus californiensis	5001600402	2	8	2	10	22
Praxillella gracilis	5001630901	2	4	2	4	12
Praxillella affinis pacifica	500163090301	5		2		7
Euclymeninae	5001631	1	2	2	1	6
Euclymene cf. zonalis	5001631103		2			2
Owenia fusiformis	5001640102		1	4		5
Galathowenia oculata	5001640202	1	4	3	1	9
Ampharete acutifrons	5001670208			4	1	5
Ampharete finmarchica	5001670214				1	1
Amphicteis scaphobranchiata	5001670304			1	3	4

Melinna elisabethae	5001670503			2		2
Anobothrus gracilis	5001670701		2			2
Asabellides lineatus	5001670804		1			1
Pista cristata	5001680701			1	1	2
Polycirrus sp. complex	50016808		2		1	3
Lanassa venusta venusta	500168130201	1				1
Pista estevanica	5001681803		1			1
Terebellides stroemi	5001690101		3			3
Terebellides japonica	5001690107	2			4	6
Alvania compacta	5103200106		3		4	7
Mitrella gausapata	5105030247				1	1
Odostomia (O.) spp.	510801019999	3	1	8	3	15
Turbonilla spp.	51080102		3	6	4	13
Cylichnella culcitella	5110040101			1	3	4
Diaphana spp.	51100901				1	1
Acila castrensis	5502020101	8	11	12	5	36
Nucula tenuis	5502020201	1	7	1	15	24
Nuculana minuta	5502040202	12	11	9	9	41
Yoldia spp.	55020405				1	1
Yoldia scissurata	5502040504			1		1
Mytilus edulis	5507010101	1	1			2
Parvilucina tenuisculpta	5515010101	2	1	1	2	6
Axinopsida serricata	5515020201	1	4	10	2	17
Mysella tumida	5515100102	3	5	3	4	15
Clinocardium spp.	55152201			1		1
Clinocardium nuttali	5515220102	1			3	4
Clinocardium fucanum	5515220103		1			1
Macoma spp.	55153101	3		3	1	7
Macoma calcarea	5515310101				1	1
Macoma carlottensis	5515310112		1			1
Macoma nasuta	5515310114		4		1	5
Tellina spp.	55153102	1				1
Tellina modesta	5515310204	2	1	1		4
Saxidomus giganteus	5515470201				1	1
Compsomyax subdiaphana	5515470301				2	2
Psephidia lordi	5515470501	9	48	5	44	106
Protothaca staminea	5515470701	12	17	17	22	68
Mya arenaria	5517010201		1			1
Pandora filosa	5520020102				2	2
Lyonsia californica	5520050202	2		7	1	10
Gadilidae	560204				1	1
Euphilomedes carcharodonta	6111070301		3	7	10	20
Euphilomedes producta	6111070303		7		1	8
Balanus spp.	61340201				1	1
Balanus crenatus	6134020104			5		5
Eudorella pacifica	6154040202	5	4	6	3	18
Diastylis alaskensis	6154050101	4	1	1	1	7
Ampelisca hancocki	6169020113		2		4	6
Melita desdichada	6169211008		1			1
Photis brevipes	6169260201			2		2
Protomedeia spp.	61692603	1	1	2		4
Orchomene pacifica	6169342903		1			1
Harpiniopsis fulgens	6169420204	1			1	2

Heterophoxus oculatus	6169420301	25	23	11	18	77
Rhepoxynius variatus	6169420926	1	4	3	1	9
Pinnixa schmitti	6189060404	31	16	14	18	79
Golfingia pugettensis	7200020104	2	1			3
Amphiodia urtica/periercta	812903019999	14	22	26	9	71
	Total Abundance:	359	404	367	449	1579
	Number of Taxa:	53	65	60	72	108

Station 301R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Edwardsia sipunculoides	3759010102		1	1		2
Platyhelminthes	39			1		1
Nemertea	43	2	17	6	5	30
Nematoda	47			3		3
Pholoe minuta	5001060101		1			1
Paleonotus bellis	5001080101		7			7
Phyllodoce groenlandica	5001130102	3				3
Phyllodoce mucosa	5001130104		10		6	16
Eteone longa	5001130205		1	1	1	3
Eulalia (Eumida) sanguinea	5001131101		1			1
Phyllodoce spp.	50011314		2	3	3	8
Gyptis brevipalpa	5001210102		5	1	3	9
Micropodarke dubia	5001210801		4		3	7
Syllidae	500123	1				1
Exogone verugera	5001230706		2	2		4
Sphaerosyllis brandhorsti	5001230806		1			1
Ehlersia heterochaeta	5001232201		4		3	7
Nereis procera	5001240404				1	1
Platynereis bicanaliculata	5001240501	1	10	3	8	22
Nephtys spp.	50012501				1	1
Nephtys caeca	5001250103		3	2		5
Nephtys ferruginea	5001250111	1			6	7
Nephtys signifera	5001250199	1		1		2
Glycera capitata	5001270101		2		2	4
Glycera americana	5001270104	2	8	1		11
Glycera nana	5001270129				1	1
Glycinde spp.	50012801				1	1
Glycinde picta	5001280101	2	4	1	6	13
Glycinde armigera	5001280103	1	1	1		3
Onuphidae	500129	1			1	2
Onuphis spp.	50012901			1		1
Onuphis iridescens	5001290103	3	5	3	5	16
Diopatra ornata	5001290202		2		1	3
Lumbrineris luti	5001310109		5	2		7
Notocirrus californiensis	5001330302			1		1
Parougia caeca	5001360505			1		1
Scoloplos armiger	5001400301	3	4	3	1	11
Leitoscoloplos pugettensis	5001400302	5	23	19	14	61
Aricidea catherinae	5001410208	2	4	4	1	11
Aricidea minuta	5001410220		1			1
Paraonella platybranchia	5001410501	1				1
Polydora socialis	5001430402	6	6		3	15
Polydora brachycephala	5001430429		1			1
Prionospio steenstrupi	5001430506	12	55	65	64	196
Prionospio lighti	5001430521		2	3	2	7
Spio filicornis	5001430701				1	1
Spiophanes bombyx	5001431001	1	1	1	4	7
Pygospio elegans	5001431302		1			1
Spiochaetopterus costarum	5001490302	1	1			2
Aphelochaeta multifilis	5001500302				3	3

Armandia brevis	5001580202		2			2
Ophelina breviata	5001580604		1			1
Ophelina acuminata	5001580607				3	3
Capitella capitata complex	5001600101		1	1		2
Heteromastus filobranchus	5001600203	1				1
Notomastus latericeus	5001600306				1	1
Mediomastus spp.	50016004	1				1
Mediomastus californiensis	5001600402		7	12	1	20
Maldanidae	500163				1	1
Euclymene cf. zonalis	5001631103		1			1
Pectinaria californiensis	5001660304		1	2		3
Ampharete acutifrons	5001670208				1	1
Ampharete finmarchica	5001670214	1				1
Polycirrus sp. complex	50016808		1		2	3
Chone duneri	5001700104	1				1
Chone magna	5001700106		1			1
Oligochaeta	5004		1			1
Gastropoda	51				1	1
Margarites spp.	51021003		1			1
Lacuna spp.	51030903				1	1
Alvania compacta	5103200106	1	13	8	5	27
Mitrella gausapata	5105030247			1	2	3
Melanochlamys diomedea	5110060101	1	5	2	1	9
Bivalvia	55	2			2	4
Nucula tenuis	5502020201		2	1		3
Megacrenella columbiana	5507010301		1			1
Axinopsida serricata	5515020201		1	1	1	3
Mysella tumida	5515100102	5	19	1	13	38
Clinocardium nuttali	5515220102				1	1
Solen sicarius	5515290201	3	3	4	4	14
Macoma spp.	55153101	7	3	3	6	19
Macoma calcarea	5515310101	1			1	2
Tellina spp.	55153102	25	46	16	31	118
Tellina nuculoides	5515310202			1		1
Tellina modesta	5515310204			8		8
Saxidomus giganteus	5515470201				1	1
Psephidia lordi	5515470501	3		1	3	7
Protothaca staminea	5515470701				2	2
Euphilomedes carcharodonta	6111070301	2	5	4	4	15
Euphilomedes producta	6111070303				1	1
Balanus spp.	61340201		223	1	4	228
Lamprops quadriplicata	6154010105	10	3	6	8	27
Diastylis alaskensis	6154050101	5	3	3	10	21
Leptochelia savignyi	6157020101		3	1	3	7
Ampelisca agassizi	6169020111		1	1		2
Photis spp.	61692602		2			2
Photis brevipes	6169260201	1				1
Protomedeia spp.	61692603		1			1
Cheirimedeia zotea	6169261199		1			1
Orchomene pacifica	6169342903		2	2	1	5
Orchomene pinquis	6169342904	2				2
Synchelidium shoemakeri	6169371402		1		2	3
Westwoodilla caecula	6169371502			4	1	5

Eobrolgus spinosus	6169420928			1		1
Rhepoxynius abronius	6169421504			3	1	4
Callianassa spp.	61830402		2			2
Fabia subquadrata	6189060301	1				1
Phoronis spp.	77000102		2	1		3
Amphiodia urtica/periercta	812903019999		4	3	3	10
Chaetognatha	83		1			1
	Total Abundance:	122	559	222	272	1175
	Number of Taxa:	38	67	52	60	110

Station 302R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Anthozoa	3740			1		1
Platyhelminthes	39				1	1
Nemertea	43			1		1
Lepidasthenia berkeleyae	5001021801	1	2	2	1	6
Tenonia priops	5001022302			1		1
Pholoe minuta	5001060101	1	4	2		7
Sthenelais tertiaglabra	5001060305		1			1
Phyllodoce groenlandica	5001130102			1		1
Phyllodoce spp.	50011314				1	1
Gyptis brevipalpa	5001210102		1	2	1	4
Syllis (Typosyllis) alternata	5001230501			1		1
Platynereis bicanaliculata	5001240501	1				1
Nephtys cornuta	5001250104	2				2
Nephtys conuta franciscana	500125010401				1	1
Nephtys ferruginea	5001250111			3		3
Glycera americana	5001270104			1	1	2
Glycinde picta	5001280101	4	2	9	3	18
Lumbrineris bicirrata	5001310101	1		1	3	5
Lumbrineris luti	5001310109	1	2	2	2	7
Lumbrineris californiensis	5001310132			2		2
Drilonereis longa	5001330103	1	1	5		7
Drilonereis falcata minor	500133010402				2	2
Leitoscoloplos pugettensis	5001400302			3		3
Aricidea catherinae	5001410208			1		1
Aricidea ramosa	5001410706		1	1		2
Levinsenia gracilis	5001410801	1				1
Laonice cirrata	5001430201	1	1	1	1	4
Prionospio steenstrupi	5001430506	5	6	19	9	39
Prionospio lighti	5001430521	4	5	1		10
Paraprionospio pinnata	5001431701	10	5	7	5	27
Magelona longicornis	5001440105				1	1
Spiochaetopterus costarum	5001490302	2	1			3
Aphelochaeta multifilis	5001500302	10	4	10	14	38
Aphelochaeta secunda	5001500309		1			1
Chaetozone spinosa	5001500407	1				1
Cossura spp.	50015201			1		1
Sternaspis scutata	5001590101		1	2	1	4
Heteromastus filobranchus	5001600203		1			1
Notomastus tenuis	5001600302			3		3
Mediomastus spp.	50016004	1				1
Mediomastus californiensis	5001600402			2	1	3
Barantolla americana	5001600601			6	2	8
Maldanidae	500163			1	1	2
Maldane glebifex	5001630302	1	3	2	1	7
Praxillella affinis pacifica	500163090301	5	2	3		10
Euclymeninae	5001631		2			2
Rhodine bitorquata	5001631001	3				3
Euclymene cf. zonalis	5001631103			2		2
Myriochele heeri	5001640201		2		2	4
Galathowenia oculata	5001640202			3		3

Pectinaria granulata	5001660303		1			1
Pectinaria californiensis	5001660304		3		1	4
Ampharete finmarchica	5001670214			1		1
Asabellides sibirica	5001670801			2		2
Polycirrus sp. complex	50016808		2	2	1	5
Lanassa venusta venusta	500168130201			1	1	2
Terebellides stroemi	5001690101			1		1
Terebellides californica	5001690103	1	2			3
Megalomma splendida	5001700401		1			1
Potamilla occelata	5001700608				1	1
Alvania spp.	51032001	9	7	10	16	42
Bittium spp.	51034601	6	1			7
Mitrella tuberosa	5105030202	1				1
Mitrella gausapata	5105030247				1	1
Odostomia (O.) spp.	510801019999		1	2		3
Turbonilla spp.	51080102	1		1	2	4
Turbonilla aurantia	5108011134		2	1		3
Cylichna attonsa	5110040205	1	6	1		8
Melanochlamys diomedea	5110060101				1	1
Bivalvia	55	1				1
Nucula tenuis	5502020201	1	2	2	4	9
Nuculana spp.	55020402		1			1
Mytilidae	550701			1		1
Parvilucina tenuisculpta	5515010101	8	12	8	11	39
Lucinoma acutilineata	5515010201			1		1
Axinopsida serricata	5515020201		3	19	7	29
Mysella tumida	5515100102	2	15	5	2	24
Macoma spp.	55153101		2	4	3	9
Macoma calcarea	5515310101			2		2
Macoma elimata	5515310102			1		1
Macoma carlottensis	5515310112	6	42	5	3	56
Macoma nasuta	5515310114			2	1	3
Compsomyax subdiaphana	5515470301	1	5	1	2	9
Psephidia lordi	5515470501	3	11	4	11	29
Protothaca spp.	55154707		1	1		2
Pandora bilirata	5520020103		1			1
Euphilomedes carcharodonta	6111070301	3	11	3		17
Euphilomedes producta	6111070303		4			4
Balanus spp.	61340201				1	1
Balanus hesperius laevidomus	613402010801			1		1
Eudorella pacifica	6154040202	19	80	11	19	129
Ampelisca careyi	6169020135			1	1	2
Aoroides spp.	61690602	1				1
Photis brevipes	6169260201		1			1
Protomedeia spp.	61692603	3				3
Protomedeia articulata	6169260307		16	1		17
Westwoodilla caecula	6169371502		1	4	2	7
Harpiniopsis fulgens	6169420204	4	1	3	4	12
Heterophoxus oculatus	6169420301	8	5	4	5	22
Dyopedos arcticus	6169440101	1				1
Heptacarpus stimpsoni	6179160511				1	1
Crangon alaskensis	6179220102	2				2
Cancer spp.	61880301				1	1

Pinnixa schmitti	6189060404	5	3	5	2	15
Amphiodia urtica/periercta	812903019999	7	9	5	11	32
Pentamera pseudopopulifera	8172060305	1				1
	Total Abundance:	151	300	218	169	838
	Number of Taxa:	44	52	67	48	106

Station 303R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Stylatula elongata	3754010103	1			1	2
Platyhelminthes	39				1	1
Nemertea	43	2	8	7	8	25
Eunoe uniseriata	5001020599				1	1
Lepidasthenia berkeleyae	5001021801		3	2	2	7
Tenonia priops	5001022302				1	1
Malmgreniella sp. L	5001022689			1		1
Pholoe minuta	5001060101	1	1	1	3	6
Sthenalais berkeleyae	5001060301			2		2
Eteone longa	5001130205		1			1
Eulalia levicornuta	5001130103				1	1
Eulalia (Eumida) sanguinea	5001131101	1	1			2
Phyllodoce hartmanae	5001131402	2	2		1	5
Gyptis brevipalpa	5001210102	2	3	2	9	16
Sigambra tentaculata	5001220201				1	1
Syllis (Typosyllis) alternata	5001230501		1			1
Nereis procera	5001240404			1		1
Nephtys cornuta	5001250104				3	3
Nephtys ferruginea	5001250111				2	2
Sphaerodoropsis sphaerulifer	5001260202				1	1
Glycera nana	5001270129		1	2		3
Glycinde picta	5001280101			1	1	2
Glycinde armigera	5001280103	1				1
Lumbrineridae	500131		1		2	3
Lumbrineris luti	5001310109		2			2
Dorvillea pseudorubrovittata	5001360101	1				1
Levinsenia gracilis	5001410801	1	1		2	4
Polydora socialis	5001430402		1	2	5	8
Polydora brachycephala	5001430429		2			2
Polydora cardalia	5001430431	1				1
Polydora sp. 1	5001430488	13	12	17	10	52
Prionospio steenstrupi	5001430506		1		2	3
Prionospio lighti	5001430521				1	1
Spiophanes berkeleyorum	5001431004	1	1	3		5
Paraprionospio pinnata	5001431701		3		3	6
Aphelochaeta multifilis	5001500302	4	1	1		6
Aphelochaeta secunda	5001500309	6	10	14	11	41
Chaetozone spinosa	5001500407		2			2
Cossura spp.	50015201	1				1
Scalibregma inflatum	5001570101	2	7	3	11	23
Heteromastus filobranchus	5001600203	4	1	6	3	14
Notomastus tenuis	5001600302	4			1	5
Mediomastus spp.	50016004	1	2		3	6
Mediomastus ambiseta	5001600401			1	1	2
Barantolla americana	5001600601			1		1
Maldanidae	500163	1				1
Praxillella affinis pacifica	500163090301	1	7	7	3	18
Pectinaria californiensis	5001660304	19	19	31	29	98
Polycirrus sp. complex	50016808	3	2		3	8
Terebellides californica	5001690103		11	9	13	33

Turbonilla spp.	51080102	2			2	4
Cylichna attonsa	5110040205	1	3	4	5	13
Melanochlamys diomedea	5110060101	1				1
Nucula tenuis	5502020201	1	1	2	1	5
Parvilucina tenuisculpta	5515010101			1		1
Macoma nasuta	5515310114				1	1
Euphilomedes carcharodonta	6111070301	60	56	65	57	238
Euphilomedes producta	6111070303	25	18	48	47	138
Eudorella pacifica	6154040202	9	8	14	19	50
Eudorellopsis integra	6154040301	1				1
Ampelisca hancocki	6169020113				1	1
Byblis millsi	6169020208	1				1
Aoroides spp.	61690602		2			2
Protomedeia spp.	61692603		2			2
Protomedeia articulata	6169260307	9		7	5	21
Monoculodes zernovi	6169370816	2	2	2	2	8
Westwoodilla caecula	6169371502		1	2	1	4
Heterophoxus oculatus	6169420301		2	2	2	6
Rhepoxynius variatus	6169420926	21	16	25	39	101
Rhepoxynius abronius	6169421504	2				2
Crangon alaskensis	6179220102			1		1
Pinnixa spp.	61890604	9	7	4	3	23
Golfingia pugettensis	7200020104	1				1
Priapulus caudatus	7400010101	1				1
Ophiuroidea	8120	1		2	1	4
Amphiodia urtica/periercta	812903019999	11	5	9	6	31
Pentamera pseudocalcigera	8172060301	1				1
	Total Abundance:	232	230	302	331	1095
	Number of Taxa:	42	41	36	48	77

Station 304R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43			2		2
Polynoidae	500102			1		1
Nephtys cornuta cornuta	500125010402	1		1		2
Nephtys punctata	5001250105		1			1
Glycinde armigera	5001280103		1	1		2
Onuphis elegans	5001290111	1	2	1		4
Lumbrineris spp.	50013101			2	2	4
Lumbrineris luti	5001310109	2	3			5
Leitoscoloplos pugettensis	5001400302		3	2	1	6
Aricidea quadrilobata	5001410217				1	1
Cirrophorus branchiatus	5001410605		1			1
Aricidea lopezi	5001411302		3	1	3	7
Spiochaetopterus costarum	5001490302	1				1
Aphelochaeta secunda	5001500309		1			1
Cossura modica	5001520199		3	2	1	6
Chirimia biceps	5001630104		1			1
Maldane glebifex	5001630302	1				1
Gastropoda	51		7			7
Cylichna attonsa	5110040205	2	5	3	3	13
Clione limacina	5125060101		1	1		2
Chaetodermatida	540201		3			3
Chaetoderma spp.	54020101			2		2
Bivalvia	55			1		1
Adontorhina cyclia	5515020102		1	2	1	4
Axinopsida serricata	5515020201	3	8	12	7	30
Thyasira flexuosa	5515020301	19	21	21	15	76
Macoma spp.	55153101		5			5
Macoma elimata	5515310102		1			1
Macoma carlottensis	5515310112	2	6	5	9	22
Eudorella pacifica	6154040202		2	2		4
Rhachotropis clemens	6169201309				1	1
Cyphocaris challengeri	6169341101		3			3
Bathymedon pumilus	6169370599	1			2	3
Halicella halona	6169400602			1		1
Heterophoxus oculatus	6169420301	1	1	2	2	6
Euphausia pacifica	6174020101		15			15
Pasiphaea pacifica	6179050101		1			1
Briaster latifrons	8162040103	3			3	6
	Total Abundance:	37	99	65	51	252
	Number of Taxa:	12	25	20	14	38

Station 305R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43	2	1			3
Eulalia (Eumida) sanguinea	5001131101				2	2
Sigambra tentaculata	5001220201	3	16	16	17	52
Nephtys cornuta	5001250104		1			1
Nephtys ferruginea	5001250111				3	3
Glycera americana	5001270104		1		1	2
Glycera nana	5001270129	2	1	1		4
Glycinde armigera	5001280103		1	1	1	3
Leitoscoloplos pugettensis	5001400302				1	1
Spiophanes berkeleyorum	5001431004	3	2			5
Paraprionospio pinnata	5001431701	22	97	90	78	287
Spiochaetopterus costarum	5001490302		1			1
Flabelligera affinis	5001540202	2				2
Capitella capitata complex	5001600101		4			4
Heteromastus filobranchus	5001600203		1			1
Pectinaria californiensis	5001660304	2	1	4	3	10
Amage anops	5001670101			1		1
Pseudopotamilla spp.	50017006	1				1
Cylichna attonsa	5110040205			1		1
Gastropteron pacificum	5110070101	2				2
Axinopsida serricata	5515020201	1				1
Pacifacanthomysis nephrophthalma	6153010105		1			1
	Total Abundance:	40	128	114	106	388
	Number of Taxa:	10	13	7	8	22

Station 306R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43		1		1	2
Harmothoe lunulata	5001020810				1	1
Tenonia priops	5001022302			1		1
Malmgreniella spp.	50010226	1	1			2
Sthenalais berkeleyae	5001060301	2				2
Sthenelais tertiaglabra	5001060305				1	1
Phyllodoce groenlandica	5001130102			1		1
Eteone longa	5001130205			1		1
Eulalia bilineata	5001130304		1		1	2
Eulalia (Eumida) sanguinea	5001131101		4		5	9
Phyllodoce spp.	50011314	1				1
Phyllodoce hartmanae	5001131402		1			1
Gyptis brevipalpa	5001210102				1	1
Odontosyllis phosphorea	5001231303				2	2
Nephtys ferruginea	5001250111	7	7	2	5	21
Glycera capitata	5001270101			6	5	11
Glycera nana	5001270129	4	6			10
Glycinde picta	5001280101			3		3
Glycinde armigera	5001280103		2	1	1	4
Goniada maculata	5001280202				1	1
Goniada brunnea	5001280203	6	1			7
Onuphis spp.	50012901				5	5
Onuphis iridescens	5001290103		3			3
Onuphis elegans	5001290111			6		6
Diopatra ornata	5001290202	11	8			19
Lumbrineridae	500131		2			2
Lumbrineris spp.	50013101				3	3
Lumbrineris luti	5001310109		1		1	2
Lumbrineris californiensis	5001310132				3	3
Leitoscoloplos pugettensis	5001400302	2			1	3
Orbinia (Phylo) felix	5001400510			1		1
Aricidea catherinae	5001410208		2			2
Aricidea lopezi	5001411302				1	1
Laonice cirrata	5001430201				1	1
Prionospio steenstrupi	5001430506	3	4	6	4	17
Boccardiella hamata	5001430806		38		125	163
Spiophanes berkeleyorum	5001431004	4	23	7	2	36
Paraprionospio pinnata	5001431701	3	1	1		5
Phyllochaetopterus prolifica	5001490202		1			1
Spiochaetopterus costarum	5001490302				3	3
Aphelochaeta multifilis	5001500302		1			1
Aphelochaeta secunda	5001500309		1		1	2
Travisia brevis	5001580401		1	1		2
Ophelina acuminata	5001580607	2	4	5		11
Capitellidae	500160			1		1
Mediomastus californiensis	5001600402			1		1
Barantolla americana	5001600601		2		2	4
Maldanidae	500163	1		5		6
Rhodine bitorquata	5001631001	5	15		3	23
Myriochele heeri	5001640201				1	1

Galathowenia oculata	5001640202	2	2			4
Pectinaria granulata	5001660303		1			1
Pectinaria californiensis	5001660304	2	2			4
Ampharetidae	500167	1				1
Amage anops	5001670101	5	29	5	34	73
Ampharete spp.	50016702	1	1			2
Anobothrus gracilis	5001670701			2		2
Terebellidae	500168	2	1			3
Nicolea zostericola	5001680601	1				1
Pista brevibranchiata	5001680710			2	2	4
Polycirrus sp. complex	50016808	5	12	5	5	27
Amphitritinae	5001681			4	6	10
Thelepus setosus	5001681004		1			1
Lanassa venusta venusta	500168130201	1	3			4
Proclea graffii	5001681702	1				1
Pista estevanica	5001681803	1	4		1	6
Terebellides stroemi	5001690101			2		2
Terebellides californica	5001690103		2			2
Megalomma splendida	5001700401		1	1	2	4
Alvania spp.	51032001		1			1
Mitrella gauspata	5105030247			1		1
Odostomia (O.) spp.	510801019999		1			1
Turbonilla spp.	51080102		1			1
Cylichna attonsa	5110040205	2	1			3
Nucula tenuis	5502020201		1			1
Nuculana minuta	5502040202			3		3
Megacrenella columbiana	5507010301				1	1
Lucinoma acutilineata	5515010201		1			1
Adontorhina cyclia	5515020102		1			1
Axinopsida serricata	5515020201	18	12	16	16	62
Mysella tumida	5515100102	1				1
Nemocardium centrifilosum	5515220301	6	26	5	10	47
Macoma spp.	55153101		10		5	15
Macoma elimata	5515310102	2	7		11	20
Macoma yoldiformis	5515310111				1	1
Macoma carlottensis	5515310112	7	4	15	8	34
Tellina modesta	5515310204		1			1
Lyonsia spp.	55200502		1			1
Lyonsia californica	5520050202				1	1
Cardiomya californica	5520100108		2		1	3
Nymphon pixellae	6001010107		1			1
Cylindroleberididae	611103		2			2
Euphilomedes carcharodonta	6111070301			1	1	2
Euphilomedes producta	6111070303	10	26	4	32	72
Eudorella pacifica	6154040202	1				1
Eudorellopsis longirostris	6154040306	3	2	3	5	13
Leptostylis villosa	6154050401		1	1		2
Campylaspis hartae	6154070105				2	2
Campylapsis crispa	6154070111				1	1
Leptognathia gracilis	6157020202				1	1
Eurycope spp.	61631601				2	2
Ampelisca hancocki	6169020113			1		1
Ampelisca careyi	6169020135	3	2	4	2	11

Byblis millsi	6169020208				2	2
Aoroides spp.	61690602		1			1
Rhachotropis oculata	6169201307				4	4
Protomedeia articulata	6169260307	1	5	2		8
Hippomedon coecus	6169341411	1			9	10
Opisa tridentata	6169342802	1			3	4
Orchomene pacifica	6169342903		1			1
Pachynus barnardi	6169343101				1	1
Westwoodilla caecula	6169371502	2	2	2	3	9
Heterophoxus oculatus	6169420301				1	1
Metaphoxus frequens	6169420601		3	1	1	5
Cancer gracilis	6188030105				1	1
Pinnixa spp.	61890604			1		1
Golfingia pugettensis	7200020104	3	7	1	4	15
Phoronis spp.	77000102	1				1
Amphiodia urtica/periercta	812903019999			1		1
	Total Abundance:	136	313	132	359	940
	Number of Taxa:	41	64	41	59	119

Station 307R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Nemertea	43	3	5	3	2	13
Polynoidae	500102	1		1		2
Malmgreniella sp. L	5001022689		2			2
Pholoe minuta	5001060101			1		1
Gyptis brevipalpa	5001210102			2	2	4
Nephtys cornuta cornuta	500125010402			1		1
Nephtys punctata	5001250105				1	1
Glycera capitata	5001270101			1		1
Glycera nana	5001270129	1	1			2
Glycinde spp.	50012801		1			1
Glycinde armigera	5001280103	1			4	5
Onuphis iridescens	5001290103		1			1
Lumbrineris luti	5001310109				1	1
Schistomeringos rudolphi	5001360504				2	2
Prionospio lighti	5001430521	6	1	4		11
Spiophanes berkeleyorum	5001431004	1	1			2
Paraprionospio pinnata	5001431701		1			1
Caulleriella hamata	5001500201				1	1
Scalibregma inflatum	5001570101	1	1		1	3
Heteromastus filobranchus	5001600203	33	55	13	71	172
Pectinaria californiensis	5001660304	29	13	8	19	69
Polycirrus sp. complex	50016808	1	1			2
Terebellides californica	5001690103		1			1
Alvania spp.	51032001			1		1
Mitrella gauspata	5105030247				1	1
Kurtziella plumbea	5106021107		1			1
Rictaxis punctocaelatus	5110010401	1	1	1		3
Cylichna attonsa	5110040205	1				1
Melanochlamys diomedea	5110060101			2		2
Axinopsida serricata	5515020201	1	3	3	1	8
Macoma carlottensis	5515310112			1		1
Compsomyax subdiaphana	5515470301				1	1
Pseudomma berkeleyi	6153011901			1		1
Eudorella pacifica	6154040202	3	5	5	4	17
Protomedeia prudens	6169260312	4	1	4	8	17
Crangon alaskensis	6179220102			1		1
Pinnixa spp.	61890604	1				1
	Total Abundance:	88	95	53	119	355
	Number of Taxa:	16	18	18	15	37

Station 308R

Taxon	NODC Code	Rep 1	Rep 2	Rep 3	Rep 4	Total
Ptilosarcus gurneyi	3754020201	4	1	2	5	12
Nemertea	43	1	11	1	10	23
Nematoda	47				13	13
Gattyana spp.	50010206				1	1
Tenonia priops	5001022302	1	1	1		3
Pholoe minuta	5001060101	5	3	1	7	16
Eteone longa	5001130205				1	1
Eulalia (Eumida) sanguinea	5001131101	1	4			5
Phyllodoce spp.	50011314		2			2
Gyptis brevipalpa	5001210102	2	3		2	7
Pilargis berkeleyae	5001220301		1			1
Syllis spp.	50012303	1			1	2
Syllis sp. 1	5001230397	2			1	3
Syllis (Typosyllis) alternata	5001230501		7	1	2	10
Sphaerosyllis brandhorsti	5001230806				1	1
Syllis nr heterochaeta	5001231002	2	1	1		4
Nereis spp.	50012404		1			1
Nereis procera	5001240404				1	1
Platynereis bicanaliculata	5001240501	2				2
Nephtys conuta franciscana	500125010401		4	1	4	9
Nephtys ferruginea	5001250111		2	1	1	4
Glycera americana	5001270104			1		1
Glycinde picta	5001280101	5	12	7	7	31
Glycinde armigera	5001280103	2	1			3
Onuphis spp.	50012901	2				2
Onuphis iridescens	5001290103	1			2	3
Lumbrineris spp.	50013101	4		1	1	6
Lumbrineris luti	5001310109	32	31	57	12	132
Lumbrineris californiensis	5001310132	6	10	2	15	33
Lumbrineris sp. gr. 2	5001310196	2	3	2		7
Leitoscoloplos pugettensis	5001400302	24	21	12	19	76
Levinsenia gracilis	5001410801		1	1		2
Laonice cirrata	5001430201	1	1	1		3
Polydora spp.	50014304		2		1	3
Polydora socialis	5001430402	1		1		2
Polydora brachycephala	5001430429	1				1
Prionospio steenstrupi	5001430506	30	24	31	45	130
Prionospio lighti	5001430521	286	171	197	73	727
Prionospio multibranchiata	5001430599	2				2
Spiophanes spp.	50014310	1				1
Paraprionospio pinnata	5001431701	6	9	8	1	24
Magelona longicornis	5001440105	1	1			2
Chaetopterus variopedatus	5001490101		1			1
Spiochaetopterus costarum	5001490302	24	23	21	24	92
Caulleriella alata	5001500202		1			1
Aphelochaeta multifilis	5001500302	9	2	8	6	25
Aphelochaeta secunda	5001500309	8	1	2	1	12
Chaetozone acuta	5001500489	2				2
Cossura spp.	50015201	1	1	1		3
Capitella capitata complex	5001600101	1				1

Heteromastus filobranchus	5001600203			1		1
Notomastus spp.	50016003		1			1
Notomastus tenuis	5001600302				4	4
Mediomastus spp.	50016004		4			4
Mediomastus ambiseta	5001600401		1	3		4
Mediomastus californiensis	5001600402	42	36	17	36	131
Barantolla americana	5001600601	2	2			4
Euclymene cf. zonalis	5001631103	7		12	1	20
Owenia fusiformis	5001640102		2		5	7
Ampharete labrops	5001670215			2		2
Melinna elisabethae	5001670503				1	1
Anobothrus gracilis	5001670701				1	1
Polycirrus sp. complex	50016808	2	2	1	1	6
Terebellides stroemi	5001690101	1				1
Oligochaeta	5004				1	1
Tubificidae	500902	5			6	11
Gastropoda	51		1			1
Alvania spp.	51032001	45	1	5	1	52
Crepipatella lingulata	5103640301	1				1
Mitrella tuberosa	5105030202			2		2
Mitrella gauspata	5105030247			10		10
Odostomia (O.) spp.	510801019999	1				1
Turbonilla spp.	51080102		2	1		3
Cylichna attonsa	5110040205	1		1		2
Bivalvia	55				1	1
Acila castrensis	5502020101	2	1	1		4
Mytilidae	550701	4				4
Chlamys hastata	5509050101	3				3
Parvilucina tenuisculpta	5515010101			1	2	3
Lucinoma acutilineata	5515010201		1			1
Axinopsida serricata	5515020201		1			1
Mysella tumida	5515100102	1	2			3
Solen sicarius	5515290201		1	1	1	3
Macoma spp.	55153101	2	1	5	2	10
Macoma yoldiformis	5515310111	1	2	3	6	12
Macoma carlottensis	5515310112		6	4	2	12
Macoma nasuta	5515310114			2	3	5
Compsomyax subdiaphana	5515470301		1			1
Psephidia lordi	5515470501		1	1	2	4
Protothaca spp.	55154707		1			1
Lyonsia californica	5520050202	1				1
Rutiderma lomae	6111060103		2			2
Euphilomedes carcharodonta	6111070301	16	18	25	15	74
Balanus spp.	61340201	1			1	2
Eudorella pacifica	6154040202				1	1
Diastylis alaskensis	6154050101	1	1	1		3
Ampelisca hancocki	6169020113			1		1
Aoroides spp.	61690602	1	1			2
Aoroides intermedius	6169060206				3	3
Corophium spp.	61691502	1				1
Erichthonius brasiliensis	6169150302	1				1
Pontogenia intermedia	6169201204				1	1
Melita desdichada	6169211008	1				1

Westwoodilla caecula	6169371502	2	2		3	7
Heterophoxus oculatus	6169420301	1	1			2
Rhepoxynius variatus	6169420926				1	1
Foxiphalus similis/cognatus	616942099999		1			1
Pinnixa spp.	61890604	5	5	3	6	19
Golfingia pugettensis	7200020104		2		7	9
Ophiuroidea	8120		6	6		12
Amphiodia urtica/periercta	812903019999	39	32	20	24	115
Amphioplus strongyloplax	8129030999	1	1			2
	Total Abundance:	664	499	491	395	2049
	Number of Taxa:	63	65	50	55	112

Table C-3. (continued) 1992 Base/neutral extractable organic compounds normalized to total organic carbon (TOC) for comparison with Marine Sediment Quality Standards Chemical Criteria (ppm CARBON). Replicate stations are shaded.

CHEMICAL PARAMETER:		butyl-benzyl-phthalate		bis-(2-ethyl-hexyl)-phthalate		di-n-octyl-phthalate		dibenzo-furan		hexa-chloro-butadiene		n-nitroso-di-phenyl-amine	
CHEMICAL CRITERIA (PPM CARBON):			4.9		47		58		15		3.9		11
STATION	REPLICATE												
38	Replicate 1	U	1.14	E	1.52	U	1.14	U	1.14	U	2.24	U	1.14
38	Replicate 2	U	1.28		1.82	U	1.28	U	1.28	U	2.51	U	1.28
38	Replicate 3	U	1.07		2.49	U	1.07	U	1.07	U	2.13	U	1.07
38	Replicate 4	U	1.25		2.40	U	1.25	U	1.25	U	2.45	U	1.25
39		U	5.40	E	3.80	U	5.40	U	5.40	U	10.67	U	5.40
40		U	0.43		5.53	U	0.43		0.83	U	0.88	U	0.43
41		U	0.96		13.16	U	0.96	E	0.52	U	1.84	U	0.96
43		U	2.86	E	2.21	U	2.86	U	2.86	U	5.86	U	2.86
44	Replicate 1	U	2.50	E	1.65	U	2.50	U	2.50	U	4.75	U	2.50
44	Replicate 2	U	2.56	E	2.23	U	2.56	U	2.56	U	4.87	U	2.56
44	Replicate 3	U	2.13	E	1.77	U	2.13	U	2.13	U	4.04	U	2.13
44	Replicate 4	U	1.23	E	0.89	U	1.23	U	1.23	U	2.35	U	1.23
45		U	1.88		1.88	U	1.88	U	1.88	U	3.75	U	1.88
47		U	1.77	U	1.77	U	1.77	U	1.77	U	3.58	U	1.77
48		U	1.38	U	1.38	U	1.38	U	1.38	U	2.76	U	1.38
49		U	1.03	U	1.03	U	1.03	U	1.03	U	2.01	U	1.03
69		U	1.93	E	1.59	U	1.93	U	1.93	U	3.91	U	1.93
70			1.09		1.75	U	0.81	U	0.81	U	1.66	U	0.81
71		U	0.98	E	0.89	U	0.98	U	0.98	U	1.95	U	0.98
301R		U	2.73	E	2.47	U	2.73	U	2.73	U	5.33	U	2.73
302R		U	1.26	E	0.88	U	1.26	U	1.26	U	2.53	U	1.26
303R		U	1.18		1.18	U	1.18	U	1.18	U	2.28	U	1.18
304R		U	1.38	U	1.38	U	1.38	U	1.38	U	2.70	U	1.38
305R		U	1.18	U	1.18	U	1.18	U	1.18	U	2.33	U	1.18
306R		U	2.13	E	1.73	U	2.13	U	2.13	U	4.25	U	2.13
307R		U	1.20	U	1.20	U	1.20	U	1.20	U	2.40	U	1.20
308R		U	2.31	E	1.62	U	2.31	U	2.31	U	4.36	U	2.31

U = Undetected at the detection limit shown

E = Estimated value