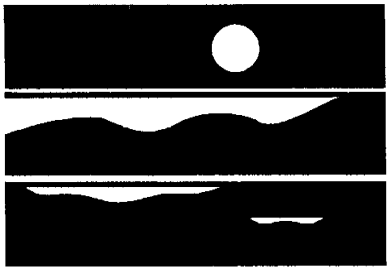

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August 1995

Publication No. 95-342

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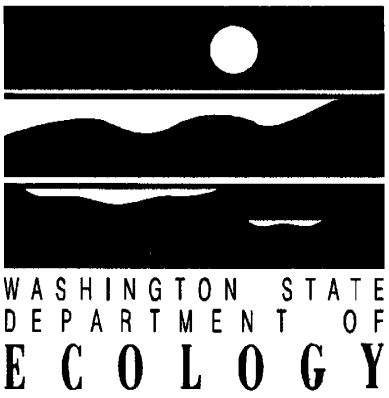

Drainage Basin Tracing Study: Phase II Chemicals Found in Storm Drains and Outfalls to Sinclair and Dyes Inlets, Washington

by
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August 1995

Water Body No. WA-15-0040

Publication No. 95-342

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Abstract

To examine concentrations and distribution of priority pollutants that discharge through the storm drain system into Sinclair and Dyes Inlet, sediments, water, and particulate centrifuged from water were collected from storm drain systems. This study was designed to trace pollutants, found in an earlier phase, to small, identifiable sections of storm drain systems. Additionally, outfalls that were not previously checked were examined in this second phase of study. A total of 13 sites were examined: two outfall areas from Port Orchard, three outfall areas from Silverdale, and eight storm drain sites in Bremerton.

Most sites had detectable levels of 4-methylphenol, phenol, and different phthalates; only the Port Orchard sites had no detectable concentrations of these chemicals. The Bremerton sites exceeded several state marine sediment and water quality standards for pentachlorophenol, PCBs, PAHs, mercury, lead and zinc. Potential sources of pollutants found in Phase 1 in three storm drain basins were narrowed to within one city block in this study. Pollutants in suspended particulate were measured and gave an indication of the levels of contaminants that enter the Puget Sound Naval Shipyard in Bremerton and eventually discharge into Puget Sound. Storm water samples showed metals contamination in less industrialized areas.

Summary

Table 1 reviews contaminants found at each site. Previously unexamined (in Phase 1) sites at Port Orchard and Silverdale were relatively free of priority pollutants in sediments. All sites in Bremerton exceeded water quality or marine sediment criteria for at least three organic compounds or metals. Sample sites in basins in the Bremerton area that previously were found to have high concentrations of priority pollutants usually showed a branch that was distinctly more contaminated. The goal of isolating the areas of greater contamination was achieved: often areas of contamination were focussed to one block or even to one vault. The sampling of particulate derived from centrifugation provided useful data in an area that did not collect sediment, but its usefulness is partially offset by the large investment of resources needed to collect one sample. No pattern of contamination by land use type could be discerned.

When compared to their respective criteria, organics in water samples were much lower than those found in sediments and particulates. At the three sites that did not retain adequate sediment samples for analysis, metals concentrations in water were higher than criteria.

Table 1. Review of contaminants found at different sites. Metals were found at all sites.

Site	Contaminants exceeding marine standards	Other Organic Contaminants	Location and Comments
P1	None	None	sediment at outfall in Port Orchard
P2	None	None	sediment at outfall in Port Orchard
S1	4-methylphenol, phenol, phthalates	None	sediment at outfall in Silverdale
S2	4-methylphenol, cadmium	phenol	sediment at outfall in Silverdale
S3	4-methylphenol, zinc	None	sediment at surface swale to stream in Silverdale
H1	most PAHs, PCBs, dibenzofuran,4-methylphenol, phthalates	carbazole, toluene	storm drain in center of Bremerton, upper branch of site H in earlier study.
H2	phenanthrene, 4-methylphenol, phenol, phthalates	other PAHs, PCBs	storm drain in center of Bremerton, upper branch of site H in earlier study.
G1	mercury, phthalates	PCBs, PAHs	storm drain in center of Bremerton, upper branch of site G in earlier study.
G2	PCBs, phthalates	4-methylphenol, dibenzofuran, PAHs	storm drain in center of Bremerton, upper branch of site G in earlier study.
Y1	Pentachlorophenol, phenanthrene, 4-methylphenol, phenol	phenol, other PAHs, toluene, chlorinated pesticides	storm drain in industrial area of Bremerton, upper branch of site Y.
Y2	4-methylphenol, phenol, phthalates	2-methylnapthalene, methylene chloride, toluene	storm drain in industrial area of Bremerton, upper branch of site Y.
F	*No direct comparison for organics*, water exceeded mercury, lead, zinc	PAHs, zinc, lead, phthalates	last storm drain before system goes into Puget Sound Naval Shipyard
M	mercury, lead, zinc (water only)	PAHs, phthalates	Bremerton area: last storm drain in local non-commercial area before discharge to Puget Sound
N	mercury, lead, zinc (water only)	PAHs, phthalates	Bremerton area: last storm drain in local non-commercial area before discharge to Puget Sound

Recommendations

- Seek sources for the following contaminants found in storm drains in this study (not listed in any priority):

Site	Contaminant
H1	PCBs, PAHs, toluene
G2	PCBs
Y1	Pentachlorophenol, toluene, chlorinated pesticides

- Use site F as an "upstream" site to discern the amount and type of contaminants that are in a storm drain system that enter the Puget Sound Naval Shipyard. The outfalls from the shipyard are currently being studied by the US Navy as part of a large clean-up project, and information from site F can help determine the type and quantity of contaminants added to the storm drains in the shipyard.

- Solve the problems in sampling storm drains that, due to their design, do not retain sediment. One potential long-range solution is a sediment trap that can be deployed in storm drains. Barnard and Wilson (1995) review the potential designs for such a trap. A short-range compromise may be to sample storm water over a period with ISCO composite samplers or manual grab samples.

Acknowledgements

Fran Solomon, formerly of the Northwest Regional Office of Department of Ecology, assisted most of this study in the following areas: selection of sample locations, collection of samples, review of the Phase 1 report, and overall study design. Gay Ann, Scott Breidenbach, and Dave Serdar also helped collect samples in sometimes difficult conditions. Dale Norton and Larry Goldstein reviewed this report.

The assistance of the City of Bremerton, Silverdale and Port Orchard's Engineering Departments and Street Departments in storm drain mapping, traffic control, and access hole identification is greatly appreciated.

Introduction

Sinclair and Dyes Inlets, which border the city of Bremerton, are considered urban bays and have been intensively studied to determine the amount and relative distribution of contaminants. The condition of these two inlets was reviewed as part of the Sinclair and Dyes Inlets Action Program (Tetra Tech 1988). Several contaminants including mercury and PCBs have been found in high concentrations in sediments from both these bays. As a result of this review, the Sinclair and Dyes Inlets Urban Bay Action Plan (Jacobson and Booth 1990) recommended collecting data on contaminant levels in storm drain catch basins that empty into these inlets in an effort to locate and quantify potential sources of contamination.

The strategy of both phases of this study was to examine sediments for contaminants at the outfalls where the storm drains discharge into Puget Sound. Sediments were selected for examination because they tend to collect non-polar (water insoluble) organics that sorb onto the grain surface and they tend to integrate concentrations of contaminants over time and thus provide a better indication of discharged contaminants than would be available from any one water sample. This report reviews the results of a second phase of storm drain sampling. Phase 1 (Cubbage 1992) examined storm drains in the Bremerton area for sediments that could be sampled and analyzed for priority pollutants. Phase 2 examined areas that were either not sampled in Phase 1, or were sampled and found to contain high concentrations of some chemicals and resampled at branches upstream to determine possible sources of contamination. These data will be used to determine the types and sources of contaminants found in storm drain systems that discharge into Sinclair and Dyes Inlets.

Survey Objectives

The primary objectives of this Phase 2 study are:

- Determine if storm drains that discharge to Sinclair and Dyes Inlets have high concentrations of contaminants compared to water and sediment quality standards and criteria.

- Delineate contaminated branches within a basin that had contamination problems in Phase 1.

Methods

Site Selection

In both phases of this study, storm drain lines were selected to represent commercial, residential and industrial uses. No storm drains inside or below the Puget Sound Naval Shipyard were studied due to potential access problems as well as to avoid being redundant to an ongoing study at the facility being conducted by the US Navy.

In Phase 1, several outfalls were checked for sediment deposition, characterized by sediments of small grain size, during low tide. Some outfalls had no deposition areas at the point of discharge due to the strong currents in Port Washington Narrows. Other outfalls were so far underwater that their exact location could not be found. In these cases, sediments were sampled in the storm drain pipes at the first accessible point upstream that accumulated sediments. In Phase 1, with the help of City of Bremerton Engineering Department and Street Department, we were able to examine vaults under 30 storm drain access holes to look for sediment.

Figure 1 shows the study area. Figures 2 and 3 show sample sites for Phase 2. Copies of site maps from the Bremerton Engineering Department that show storm drains in detail appear in Appendix 1. Figure 4 illustrates terms used in this report. Three different sampling approaches were used in Phase 2 to determine the potential levels of contaminants entering Puget Sound through storm drain systems. For those basins that were not sampled in Phase 1, sediments were sampled at the storm drain system outfalls (S1-S3 and P1-P2). For those basins that Phase 1 revealed had contaminated sediments in storm drains, storm drains above the samples checked in the earlier Phase were examined (H1-H2, Y1-Y2, G1-G2). Finally, for those sites that did not have sediments but were suspected, due to their location, of having contamination problems, storm water and, in one case, particulate derived from centrifuged storm water were sampled (F, M, N). Site F is the last access to the storm drain system before it goes through the Puget Sound Naval Shipyards (PSNS). For this study, particulate is considered comparable to sediment in that it offers particles smaller than sand onto which contaminants can sorb. Two basins identified in Phase 1 that needed further investigation were not examined in this study because the basins were so small that no additional sampling was needed to narrow the possible areas of contamination.

Sediment analyses included metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury, silver, and zinc), volatile organics (VOAs), semivolatile organics, total organic carbon, chlorinated pesticides and PCBs, and grain size distribution. Water samples were

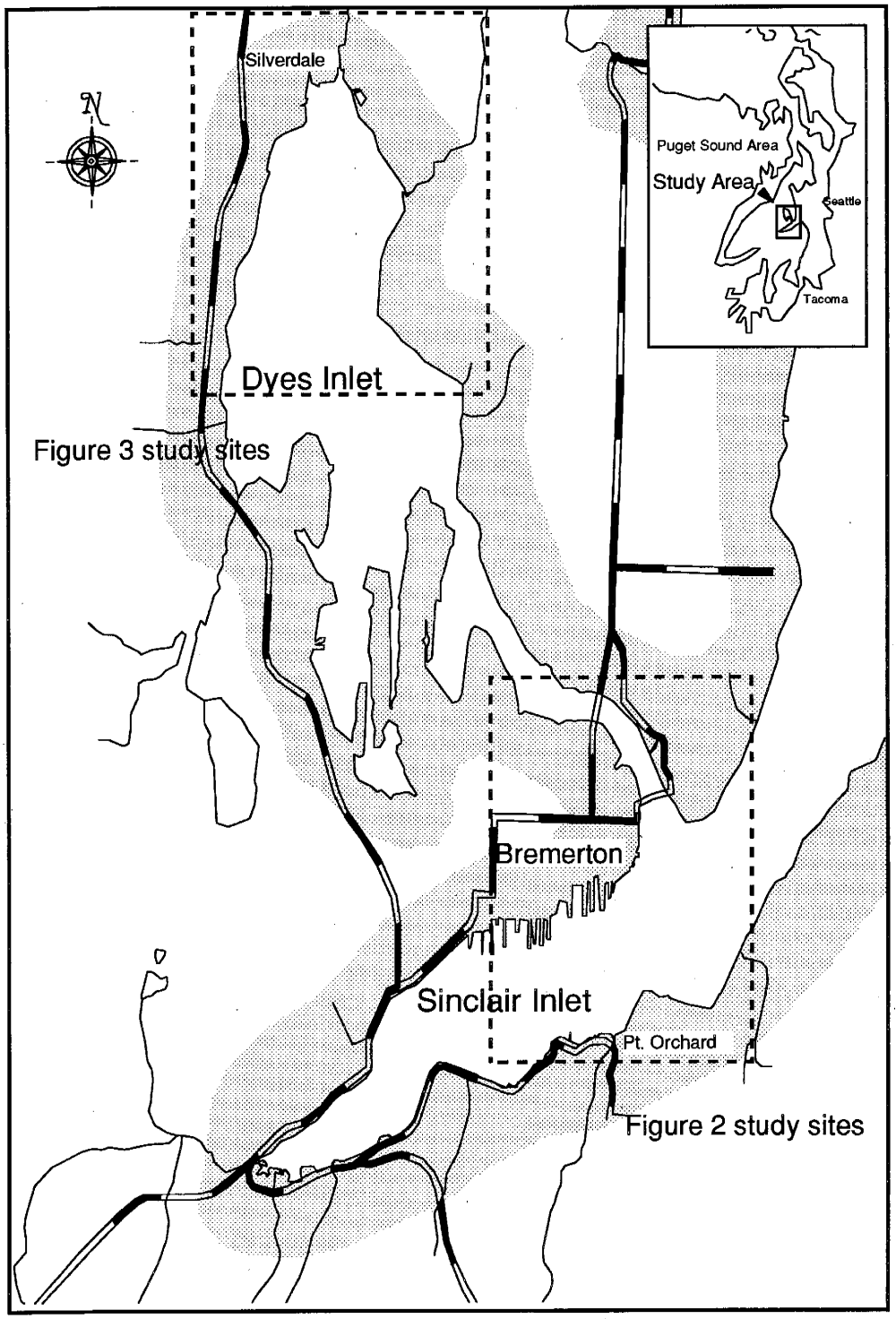

Figure 1. Study area.

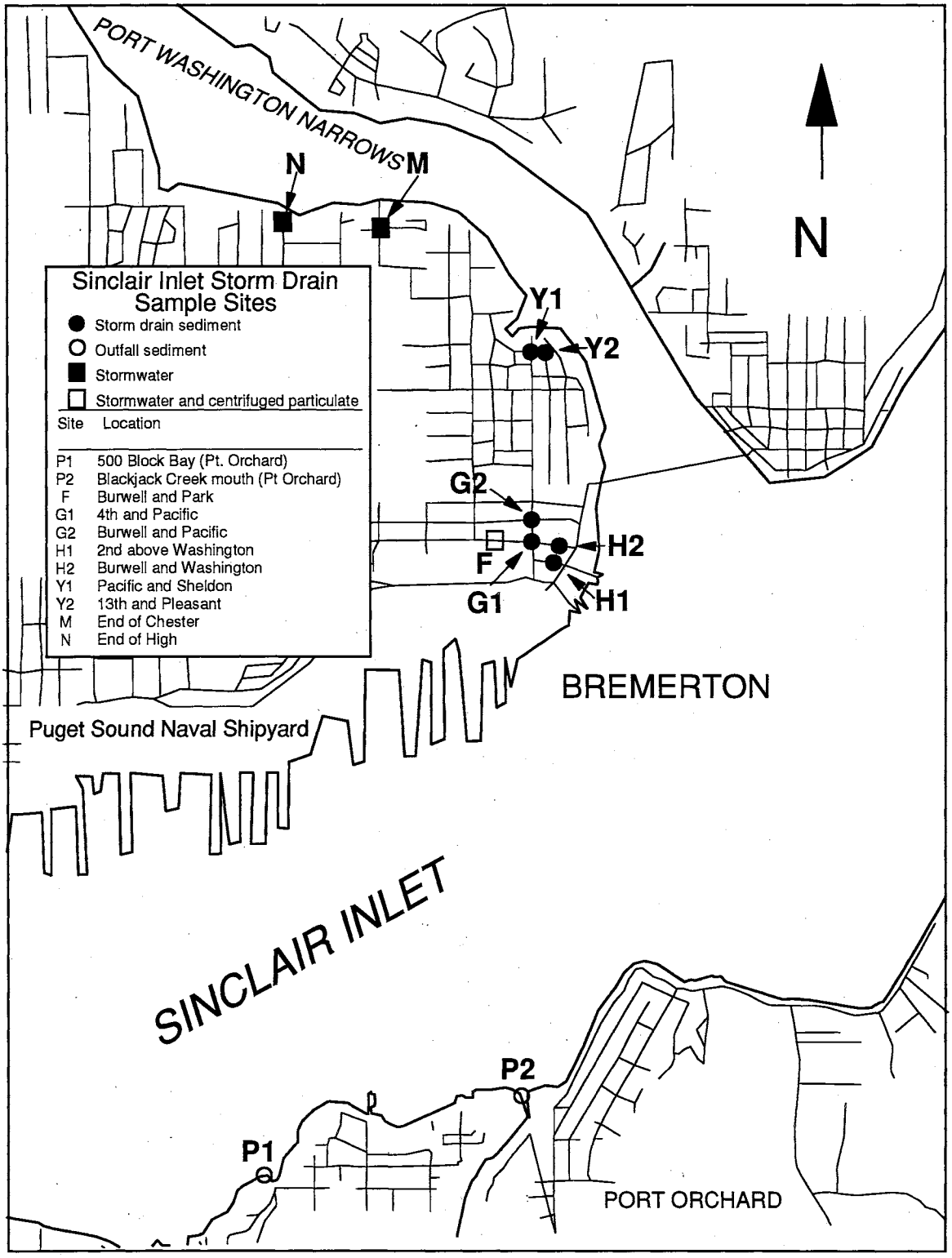

Figure 2. Sample sites in Bremerton and Port Orchard.

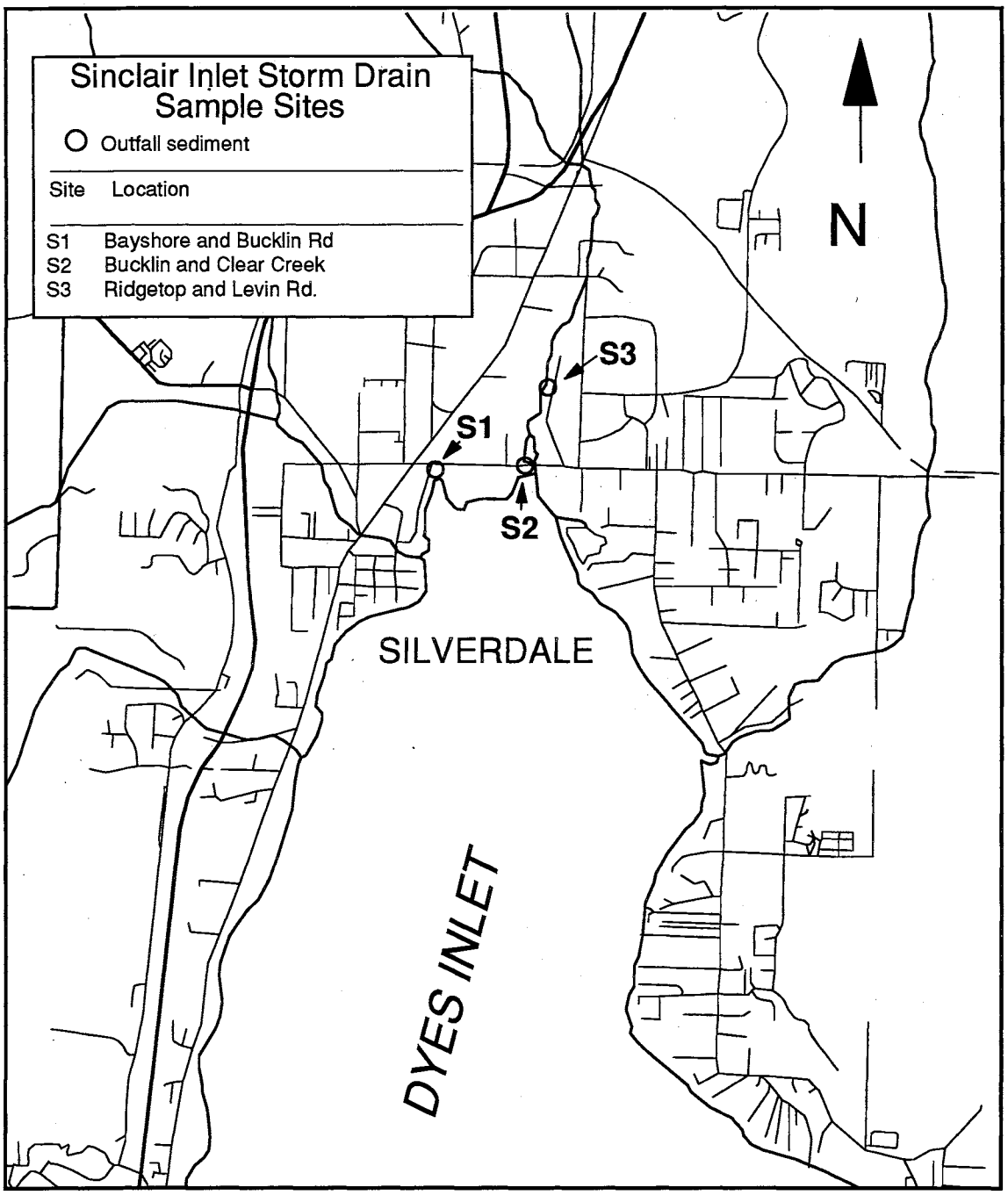

Figure 3. Sample sites in Silverdale.

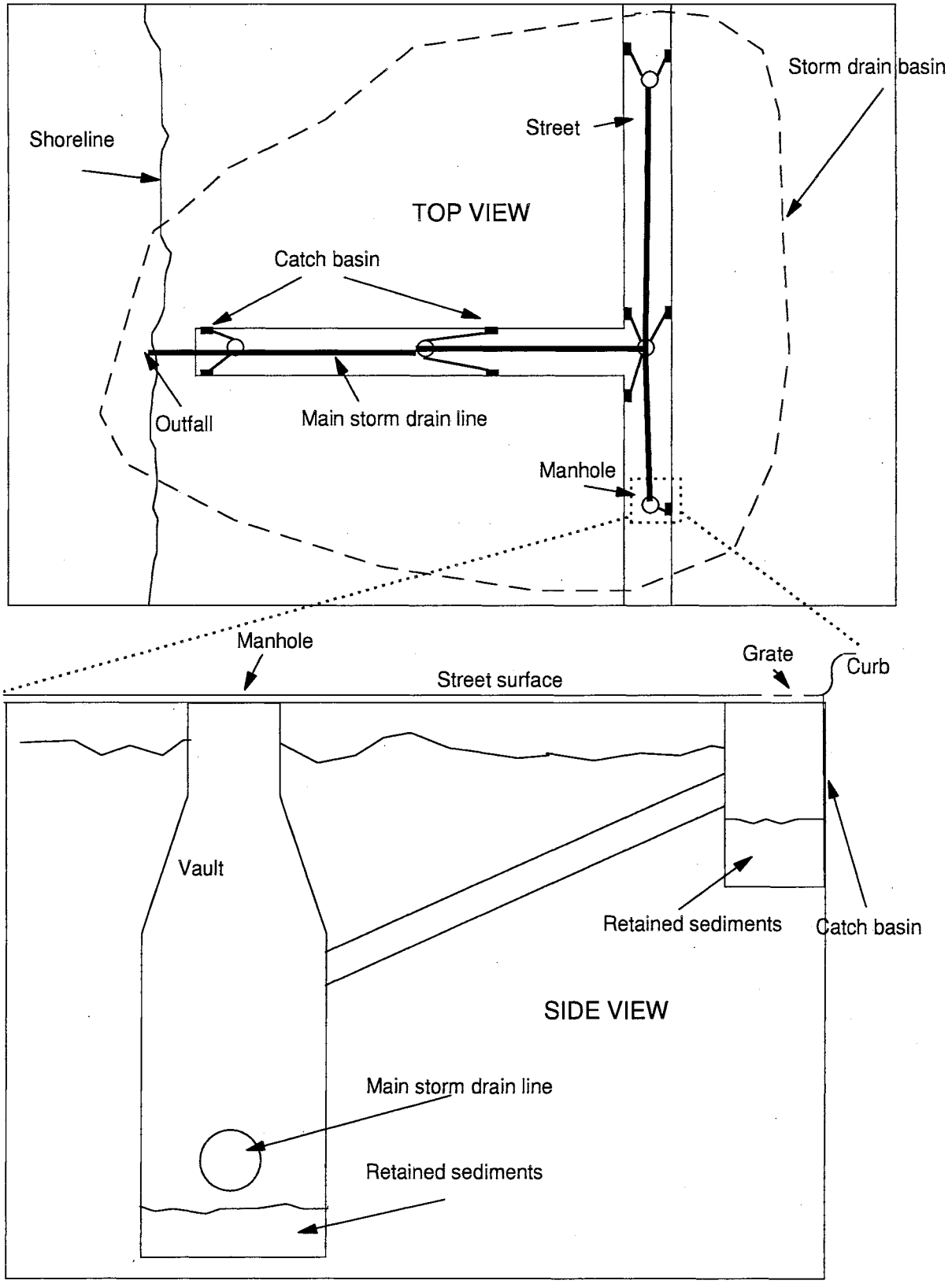

Figure 4. Typical storm drain system with terms used in report.

analyzed for metals, VOAs, semivolatiles, chlorinated pesticides and PCBs, biological oxygen demand (BOD) and fecal coliforms. Table 2 lists study sites, dates, and locations of samples as well as analyses performed on these samples. Table 3 lists the specific methods and the laboratories that performed the analyses.

Sediment samples retained in storm drains were collected with either a stainless steel pivoting scoop attached to a pole or with a stainless steel Ponar® grab sampler. Sampling personnel did not enter any manholes to collect samples. Figure 4 shows an idealized drawing of storm drain systems and the terms used in this study. All storm drain sediments collected in this study were taken from the main storm drain line. No sites were individual catch basins.

The centrifuged particulate sample at site F was collected with a specialized centrifuge system composed of two Sedisamp® centrifuges (stainless steel centrifuges constructed from modified ship fuel strainers), pumps and a generator. The system collected stormwater at about 0.5 gallons/minute from 20:51 on 3/3/93 to 07:30 on 3/4/93 for a total of 291 gallons (read by totalizer). This yielded 150 grams of sample which was adequate for the analyses shown. The equipment was set up during a storm event (greater than 1 inch of rainfall) and most of the sampling was conducted during rain.

The storm water samples were collected with stainless steel beakers attached to telescoping poles. Samples were taken during a storm event and were hand-collected composites from the three times shown in Table 1.

To reduce cross-contamination, sampling equipment was cleaned between stations with detergent, 10% nitric acid, deionized water, and acetone. All sediment samples were homogenized in stainless steel beakers, and subsamples poured into certified priority pollutant clean jars. VOAs were taken directly into VOA containers from the grab samples prior to homogenization.

Quality Assurance

Quality assurance reports appear in Appendix 2. The data are useable with few qualifications.

Table 2. Location description of all sample sites. Detailed site maps are shown in Appendix 1.

Site Name	Sample Date	Laboratory Sample Number	Type*	Location and Description
F	3/3/93	14-8155	C	Burwell and Park: Storm drain along south curb
P1	3/10/93	14-8156	I	Port Orchard: pier East of Light House restaurant; 5 composites w/in 10 feet of outfall.
P2	3/10/93	14-8157	I	Port Orchard: west bank of Blackjack creek north of bridge; 5 composites w/in 10 ft.
S1	3/10/93	14-8158	I	Silverdale: Bayshore and Bucklin Rd: 120 ft in bay from 24" outfall; 5 composites w/in 30 ft.
S2	3/10/93	14-8159	I	Silverdale: Bucklin and Clear Creek: Outfall north of Bucklin on west side of bay; 3 composites w/in 20 ft.
S3	3/10/93	14-8160	F	Silverdale: Ridgetop and Levin Rd: End of swale in standing right before discharge to Clear Creek.
M	3/16/93	14-8161	W	End of Chester: Sample times: 2024, 2253, 2350
N	3/16/93	14-8162	W	End of High Street: Sample times: 2050, 2307, 0020
F	3/16/93	14-8163	W	Burwell and Park: Storm drain along south curb; Sample times: 1930, 2235, 2340
H1	5/25/93	22-8180	S	2nd and Washington
H2	5/25/93	22-8181	S	Burwell and Washington
G1	5/25/93	22-8182	S	4th and Pacific
G2	5/25/93	22-8183	S	Burwell and Pacific
Y1	5/25/93	22-8184	S	Pacific and Sheldon
Y2	5/25/93	22-8185	S	13th and Pleasant

*Type C=Particulate from centrifuged storm water.
W=Storm water
I=Intertidal marine sediment
F=Freshwater sediment
S=Storm drain sediment

Table 3. Analytical methods.

Analysis	Method*	Method Number		Reference	Laboratory
		Solids	Liquid		
Total organic carbon	Persulfate-UV			APHA 1985	ARI
Grain size	Seives and pipettes	--	--	PSEP protocols	Soil Technology
% Moisture	Dry @ 105 degrees	--	--	APHA 1985	Manchester (EPA/Ecology)
Arsenic	GFAA	7471	206.2	EPA 1986b, 1983	Manchester (EPA/Ecology)
Cadmium	ICAP	6010	200.7	EPA 1986b, 1983	Manchester (EPA/Ecology)
Chromium	ICAP	6010	200.7	EPA 1986b, 1983	Manchester (EPA/Ecology)
Copper	ICAP	6010	200.7	EPA 1986b, 1983	Manchester (EPA/Ecology)
Mercury	CVAA	7471	245.1	EPA 1986b, 1983	Manchester (EPA/Ecology)
Lead	ICAP	6010	200.7	EPA 1986b, 1983	Manchester (EPA/Ecology)
Nickel	ICAP	6010	200.7	EPA 1986b, 1983	Manchester (EPA/Ecology)
Silver	ICAP	6010	200.7	EPA 1986b, 1983	Manchester (EPA/Ecology)
Zinc	ICAP	6010	200.7	EPA 1986b, 1983	Manchester (EPA/Ecology)
Semivolatiles	GC/MS	8270	625	EPA 1986b, 1983	Manchester (EPA/Ecology)
Pesticides/PCB	GC/EC	8080	608	EPA 1986b, 1983	ARI
VOAs	GC/MS	8240	624	EPA 1986b, 1983	ARI
BOD (Biological oxygen demand)		--	405.1		Manchester (EPA/Ecology)
Fecal Coliforms	Membrane filter	--	9221C		Manchester (EPA/Ecology)
TSS (Total suspended solids)		--	160.2		Manchester (EPA/Ecology)

* Methods GFAA = Graphite Furnace Atomic absorption spectrometer
ICAP=Inductively Coupled Argon Plasma Emission Spectrometer
CVAA=Cold vapor atomic absorption spectrometer
GC/MS=Gas chromatograph / mass spectrometer
GC/EC=Gas chromatograph / electron capture detector

Results and Discussion

Metals and Conventionals

Table 4 shows concentrations of metals found at the study sites. Most metals were low with the exception of lead and zinc. Particulate from Site F (adjacent to PSNS) had the highest concentrations of these two metals as well as copper compared to the sediment samples. Of the three water samples, Site F had the highest metals concentrations. Among the sediment samples only, Site S3 (Silverdale) had the highest zinc, Site G2 (lower Bremerton) had the highest lead, and Site Y1 had the highest copper. The Port Orchard sites (P1 and P2) and with the exception S3 zinc, the Silverdale sites (S1, S2, S3) had relatively lower concentrations of metals than the Bremerton sites.

Table 4 also shows grain size characteristics of sediment samples taken. Most all sites were predominantly sand which indicates areas of high water speed which would carry away smaller grained silt. Grain size and TOC affect the concentrations of metals that sorb to sediments (Schults *et al.* 1987), with smaller grain size and more TOC tending to have more surface area on which metals can sorb. Some studies (eg Cubbage 1992) have found an inverse correlation of metals concentrations with grain size; the samples with greater percent clay have the comparatively higher concentration of metals. There is no current accepted method to correct or standardize metals concentrations for differing grain size.

Table 4 lists the total suspended solids (TSS), biological oxygen demand (BOD) and fecal coliform concentrations for the three sites where storm water was collected. TSS was low and the samples had no measurable BOD. F. coliforms, which originate in mammal feces, were found at concentrations at all three sites that exceed water quality criteria for all surface waters (Class AA, A, B, C) in Washington State (WAC 173-201).

Semi-Volatile Organics

Table 4 shows concentrations of priority pollutant semivolatile compounds (base, neutral, acids - BNAs) found above detection limits at the study sites. Quantification limits are shown in Appendix 2. Chemicals found at most sites include 4-methylphenol and butylbenzylphthalate. Phenol or 4-methylphenol was found at all sites except Site G1 and the Port Orchard sites (P1 and P2). Pentachlorophenol was found at site Y1 and at a much lower concentration at Y2, the other branch of that basin. Higher concentrations of polycyclic aromatic hydrocarbons (PAH) were found at site H1 than levels found in the adjacent branch H2. PAHs were also found in G2 and Y1. The centrifuged particulate

Table 4. Metals and conventional measures in sediment and stormwater from Sinclair and Dyes Inlet area storm drains.

	Sediment											Particulate*	Water (ug/l)		
Site =	P1	P2	S1	S2	S3	H1	H2	G1	G2	Y1	Y2	F	M	N	F
Lab No. =	8156	8157	8158	8159	8160	8180	8181	8182	8183	8184	8185	8155	8161	8162	8163
Metals µg/kg dry wt.															
Arsenic	3.9	2.4	4.9	6.7	2.8	8 N	1.9 J	4 N	4 N	4.3 N	3.5 N	6.7	1.5 U	1.5 U	1.5 U
Mercury	0.065 P	0.027 P	0.16	0.079	0.048	0.12	0.02 P	1.2	0.2 J	0.15 J	0.066 P	0.27	0.058 P	0.058 P	0.051 P
Cadmium	0.22 P	0.38 P	0.34 P	6.9 P	0.61 P	1.4 P	0.38 P	1 P	1.2 P	2	1.5 P	4.1	2 U	2 U	2 U
Chromium	25	29	21	37	41	29	23	22	24	42	32	71	5 U	5 U	5 U
Copper	26	12 B	21 B	26	23	78 N	37 N	51 N	49 N	84 N	79 N	250	11 J	10 J	19 J
Lead	33	43	25	53	29	360	97	220	440	310	270	530	6.7	16	20
Nickel	28	26	22	38	35	46	28	32	37	43	50	100	10 U	10 U	10 U
Silver	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.86 J	3 U	3 U	3 U
Zinc	67 E	50 E	99 E	150 E	730 E	470 N	120 N	300 N	310 N	390 N	310 N	880 E	42	47	97
Conventionals															
%Clay	5%	4%	5%	7%	10%	0%	0%	0%	1%	4%	1%	NA	--	--	--
%Silt	17%	14%	13%	22%	35%	5%	3%	1%	3%	18%	6%	NA	--	--	--
%Sand	78%	82%	82%	71%	55%	95%	97%	99%	96%	78%	93%	NA	--	--	--
%Solids	66%	67%	47%	59%	50%	81%	84%	84%	83%	48%	55%	42%	--	--	--
TSS mg/l	--	--	--	--	--	--	--	--	--	--	--	--	15	23	30
BOD mg/l	--	--	--	--	--	--	--	--	--	--	--	--	4 U	4 U	4 U
F. Coliform n/100ml		--	--	--	--	--	--	--	--	--	--	--	490	680	620

Qualifiers

P = Metal found above detection limit but below quantification limit.

U = No chemical found above detection limit shown

J = Estimate due to low signal to noise ratio

N/A= Not analyzed

N = Spike recovery is out of control limit.

from Site F (outside PSNS) showed high concentrations of PAHs. The water samples showed a variety of semivolatiles including nitrogen containing aromatics and chlorinated volatiles, often in low concentrations. Again, Site F had higher concentrations of these chemicals than the other two storm water sites.

Volatiles

Table 5 shows concentrations of volatile organics found above detection limits. Most sites had low concentrations of few volatiles. The exception was site Y1 which had high concentrations of toluene and xylenes and site Y2 which also had high concentrations of toluene and methylene chloride. Methylene chloride is a solvent sometimes used in analytical laboratories to extract samples but the low concentrations found in the method blanks as well as the lack of this chemical in any other sample signifies that it was in the sample and is not an artifact of contamination. The levels of these VOAs in storm water samples were low.

Pesticides and PCBs

Table 6 shows the concentrations of chlorinated pesticides and PCBs above detection limits in the samples. Site H1 had high levels of PCBs. Sites H2, G1, G2 and F also had PCBs above detection limits. A mixture of chlorinated pesticides including dieldrin, DDT, and chlordane, was found at site Y1. Several of these chlorinated pesticides were found at no other sites in this study.

Comparison to Standards

The Department of Ecology has issued standards for some contaminants in marine sediments in an attempt to protect indigenous biota from harm by contaminants. Metals standards are based on dry weight concentrations. Most organics are corrected by the total organic carbon in the sediments to listed as milligrams of compound per kilogram of organic carbon. Because all sediments in storm drains will eventually be discharged into Puget Sound, the sediments examined in this study were compared to the marine sediment standards and are shown in Table 7. Comparisons have also been made to freshwater sediment quality guidelines selected from a review by Batts and Cubbage (1995).

For sites with sediments or particulates, only the Port Orchard sites did not exceed any marine standards or freshwater guidelines. Many sites exceed standards for 4-methylphenol and various phthalate esters. Site H1 exceeded standards for several PAHs

Table 5. Concentrations of semivolatiles (BNAs) found above detection limits.

	Sediment (ug/kg dry weight)											Particulate*	Water (ug/l)		
Site =	P1	P2	S1	S2	S3	H1	H2	G1	G2	Y1	Y2	F	M	N	F
BNA Lab No. =	8156	8157	8158	8159	8160	8180	8181	8182	8183	8184	8185	8155	8161	8162	8163
benzoic acid	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.5
hexachloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	0.27 J	--
butylbenzylphthalate	--	--	--	--	--	508	482	158	4490	--	383 J	13900	0.26 J	0.31 J	1.3
n-nitrosodiphenylamine	--	--	--	--	--	--	--	--	--	--	--	--	--	0.091 J	0.12 J
carbazole	--	--	--	--	--	10300	91.7 J	--	--	--	--	2170	--	0.069 J	0.22 J
pentachlorophenol	--	--	--	--	--	--	--	--	--	41600	--	--	--	0.42 J	0.74 J
napthalene, 1-methyl	--	--	--	--	--	265	--	--	--	733	--	--	--	0.63 J	0.23 J
2-chloronapthalene	--	--	--	--	--	--	--	--	--	--	120 J	--	--	--	--
2-methylphenol	--	--	--	--	--	--	--	--	--	--	--	--	0.19 J	--	0.52 J
1,2-dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	0.47 J	--
4-nitrophenol	--	--	--	--	--	--	--	--	--	--	--	--	0.84 J	0.56 J	1 J
2,4-dimethylphenol	--	--	--	--	--	--	--	--	--	--	--	--	--	0.2 J	0.18 J
4-methylphenol	--	--	9740 J	889 J	2800	859 J	710	--	314 J	11600	13800	--	0.52 J	0.82	0.94
phenol	--	--	506	192	--	98	599	--	43.5 J	736	1210	--	0.45 J	0.77	1
bis(2-ethylhexyl)phthalate	--	--	3890	--	--	--	--	--	--	--	--	56500	1.4	--	5.1
dimethylphthalate	--	--	--	--	--	--	--	--	--	836	--	--	--	--	--
dibenzofuran	--	--	--	--	--	1770	24.3	--	20.7 J	214 J	--	--	--	--	0.057 J
napthalene	--	--	--	--	--	499 J	--	--	--	941	144 J	--	--	--	0.44 J
2-nethylnapthalene	--	--	--	--	--	141	--	--	--	672	--	--	--	0.57 J	0.25 J
acenaphthylene	--	--	--	--	--	1890	195 J	--	53.7 J	118 J	--	--	--	--	--
acenaphthene	--	--	--	--	--	2490	57.6 J	--	35.7 J	--	--	--	--	--	--
phenanthrene	--	--	--	--	--	56700	531	--	257 J	2970	--	11200 J	0.176 J	0.25 J	0.98
fluorene	--	--	--	--	--	3780	59 J	--	42.6 J	446 J	--	1050	--	--	0.1 J
anthracene	--	--	--	--	--	9880	77.9 J	--	40 J	--	--	--	--	0.49 J	0.084 J
fluoranthene	--	--	--	--	--	109000	870	153	407	2550	--	17500	--	0.48 J	1.4 J
pyrene	--	--	--	--	--	79700	535	--	293 J	1310	--	12800	0.067 J	0.43 J	1
benzo(a)anthracene	--	--	--	--	--	39200	271 J	--	--	--	--	4760	--	--	--
chrysene	--	--	--	--	--	47000	421	97.9 J	244 J	1390	--	8900	--	0.25 J	0.71 J
benzo(k)fluoranthene	--	--	--	--	--	17300	199 J	--	--	--	--	--	--	0.11 J	0.28 J
benzo(b)fluoranthene	--	--	--	--	--	60000	416	--	--	--	--	11800	--	0.33 J	0.69 J
Benzo(a)pyrene	--	--	--	--	--	39600	156 J	--	--	--	--	--	--	--	0.4 J
ideno(1,2,3-cd)pyrene	--	--	--	--	--	34600	165 J	--	--	--	--	--	--	0.15 J	0.33 J
Dibenzo(a,h)anthracene	--	--	--	--	--	7800	--	--	--	--	--	--	--	--	--
benzo(ghi)perylene	--	--	--	--	--	29400	--	--	--	--	--	3250	--	0.18 J	0.36 J
TOC	1.4%	2.2%	6.0%	6.4%	3.2%	5.6%	1.2%	1.0%	1.3%	5.3%	3.8%	N/A			

*=Sample is centrifuged particulate

J=Value is estimate due to low signal to noise ratio.

N/A=Not analyzed due to small sample size.

Table 6. Concentrations of VOAs and chlorinated pesticides and PCBs found above detection limits.

	Sediment ug/kg dry weight											Particulate *	Water (ug/l)		
Site =	P1	P2	S1	S2	S3	H1	H2	G1	G2	Y1	Y2	F	M	N	F
Lab No. =	8156	8157	8158	8159	8160	8180	8181	8182	8183	8184	8185	8155	8161	8162	8163
VOAs															
Methylene chloride	--	--	--	--	--	--	--	--	--	--	1400	N/A	--	--	--
Carbon disulfide	--	--	--	2 J	--	--	--	--	--	--	--	N/A	--	--	--
Acetone	--	--	--	--	--	26	--	--	--	--	--	N/A	--	--	--
Chloroform	--	--	--	--	--	--	--	--	--	--	--	N/A	--	0.1 J	--
2-Butanone	--	--	100	--	--	--	--	--	--	17	--	N/A	--	--	--
Trichloroethene	--	--	--	0.8 J	--	--	--	--	--	--	--	N/A	--	--	0.1 J
Benzene	--	--	2 J	--	--	--	--	--	--	4.6	--	N/A	--	--	--
4-Methyl-2-pentanone	--	--	11	5	--	--	--	--	--	--	--	N/A	--	--	--
Toluene	--	--	--	6	--	290 J	66	--	29	13000	5500	N/A	--	--	--
Chlorobenzene	--	--	--	--	0.8 J	--	--	--	--	--	--	N/A	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--	--	44 J	--	N/A	--	--	--
Total Xylenes	--	--	2 J	--	--	--	3.6	--	--	74 J	--	N/A	--	--	--
1,2,4-trimethylbenzene	--	--	2 J	--	--	--	--	--	--	--	--	N/A	--	--	--
p-Isopropyltoluene	--	--	2 J	--	--	--	--	--	--	--	--	N/A	--	--	--
Pesticides/PCBs															
Heptachlor epoxide	21 N	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4,4'-DDE	--	--	--	--	--	--	--	--	--	40	--	--	--	--	--
Dieldrin	--	--	--	--	9.1 J	--	--	--	--	14 J	--	--	--	--	--
4,4'-DDD	--	--	--	--	--	--	--	--	5.2 J	23 J	--	--	--	--	--
4,4'-DDT	--	--	--	--	--	--	--	--	--	120	13	--	--	--	--
endrin ketone	--	--	--	--	--	--	--	--	7.4	--	--	--	--	--	--
alpha chlordane	--	--	--	--	--	--	--	--	--	6.6 J	--	--	--	--	--
gamma chlordane	--	--	--	--	--	--	--	--	--	12 J	--	--	--	--	--
Aroclor-1248	--	--	--	--	--	--	--	--	190	--	--	--	--	--	--
Aroclor-1254	--	--	--	--	--	1600	96	64 J	85	--	--	390 N	--	--	--
Total PCBs	--	--	--	--	--	1600	96	64 J	275	--	-- --	390 N	--	--	--

J=Value is estimate due to low signal to noise ratio.

N=Evidence chemical is present, value is an estimate

*=Particulate collected with centrifuge (ug/kg dry weight).

N/A=Not analyzed

Table 7. Comparison of concentrations to different guidelines. Only sites and chemicals exceeding at least one guideline or criterion are shown.

	Sediment									Particulate*	Freshwater		Marine
Site =	S1	S2	S3	H1	H2	G1	G2	Y1	Y2	F	Ontario °	Quebec[2]	Ecology[3]
Lab No. =	8158	8159	8160	8180	8181	8182	8183	8184	8185	8155	Guidelines		Stnds
ug/kg dry weight													
pentachlorophenol	--	--	--	--	--	--	--	41600	--	--	--	--	360
4-methyphenol	9740 J	889 J	2800	859 J	710	--	--	11600	13800	--	--	--	670
phenol	506	--	--	--	599	--	--	736	1210	--	--	--	420
mg/kg organic carbon										*ug/kg d.w.*			
butylbenzylphthalate	--	--	--	9.07	40.2	15.8	345	--	10.1 J	*13900*	--	--	4.9
bis(2-ethylhexyl)phthalate	64.4	--	--	--	--	--	--	--	--	*56500*	--	--	47
dibenzofuran	--	--	--	31.6	--	--	--	--	--	--	--	--	15
acenaphthene	--	--	--	44.5	--	--	--	--	--	--	--	--	16
phenanthrene	--	--	--	1010	44.3	--	--	56	--	*11200 J*	950	80	23
Sum LPAH	--	--	--	1350	--	--	--	--	--	*12200 J*	--	--	370
fluoranthene	--	--	--	1950	--	--	--	--	--	*17500*	1020	200	160
pyrene	--	--	--	1420	--	--	--	--	--	*12800*	850	100	1000
benzo(a)anthracene	--	--	--	700	--	--	--	--	--	*4760*	1480	50	110
chrysene	--	--	--	839	--	--	--	--	--	*8900*	460	80	110
Total benzofluoranthenes	--	--	--	1380	--	--	--	--	--	*11800*	--	--	230
benzo(a)pyrene	--	--	--	707	--	--	--	--	--	--	1440	70	99
ideno(1,2,3-cd)pyrene	--	--	--	618	--	--	--	--	--	--	320	--	34
dibenzo(a,h)anthracene	--	--	--	139	--	--	--	--	--	--	130	--	12
benzo(ghi)perylene	--	--	--	525	--	--	--	--	--	*3250*	320	--	31
Sum HPAH	--	--	--	8280	--	--	--	--	--	*59000*	--	--	960
Total PCBs	--	--	--	28.6	--	--	21.2	--	--	--	530	100	12
mg/kg dry weight													
Hg	--	--	--	--	--	1.21	--	--	--	--	2	1	0.59
Cd	--	6.9 P	--	--	--	--	--	--	--	4.06	10	3	6.7
Cu	--	--	--	--	--	--	--	--	--	247	110	86	390
Pb	--	--	--	362	--	222	444	313	273	530	250	170	530
Ni	--	--	--	--	--	--	--	--	--	104	75	61	--
Zn	--	--	730 E	--	--	--	--	--	--	876 E	820	540	960

*All organics values based on ug/kg dry weight. TOC content was not analyzed.

J=Value is an estimate due to low signal to noise ratio.

P=Value is an estimate: metal found above detction limit but below quantification limit.

E=Value is an estimate.

°Guidance for the Protection and Management of aquatic sediment quality in Ontario (Persaud, 1993)

[2]Interim criteria for the evaluation of sediments of the St Lawrence River (Environment Canada and Ministry of Environment, Quebec 1992)

[3]Sediment management standards; Chapter 173-204 WAC (Ecology 1991)

and PCBs. The other site in the same branch (H2) did not exceed these standards except for one PAH, phenanthrene. Site G2 exceeded standards for PCBs. Site Y2 had high concentrations of pentachlorophenol at more than 100 times the criteria. The other site in the same basin, Y1, showed no pentachlorophenol. Site F had high concentrations of PAHs, but these cannot be compared directly with the Marine Criteria. If, for the sake of conservative comparison to the criteria, these samples were as high as 20% total organic carbon, an anomalously high concentration, they would still exceed the criteria for several PAHs. Site F also exceeded freshwater guidelines for several metals. Most sites exceeded guidelines for lead.

The water sites exceed no marine water or freshwater acute or chronic criteria for organics. All three sites exceeded both the freshwater and marine chronic criteria for mercury, copper and lead. Site F also exceeded both criteria for zinc.

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Appendices

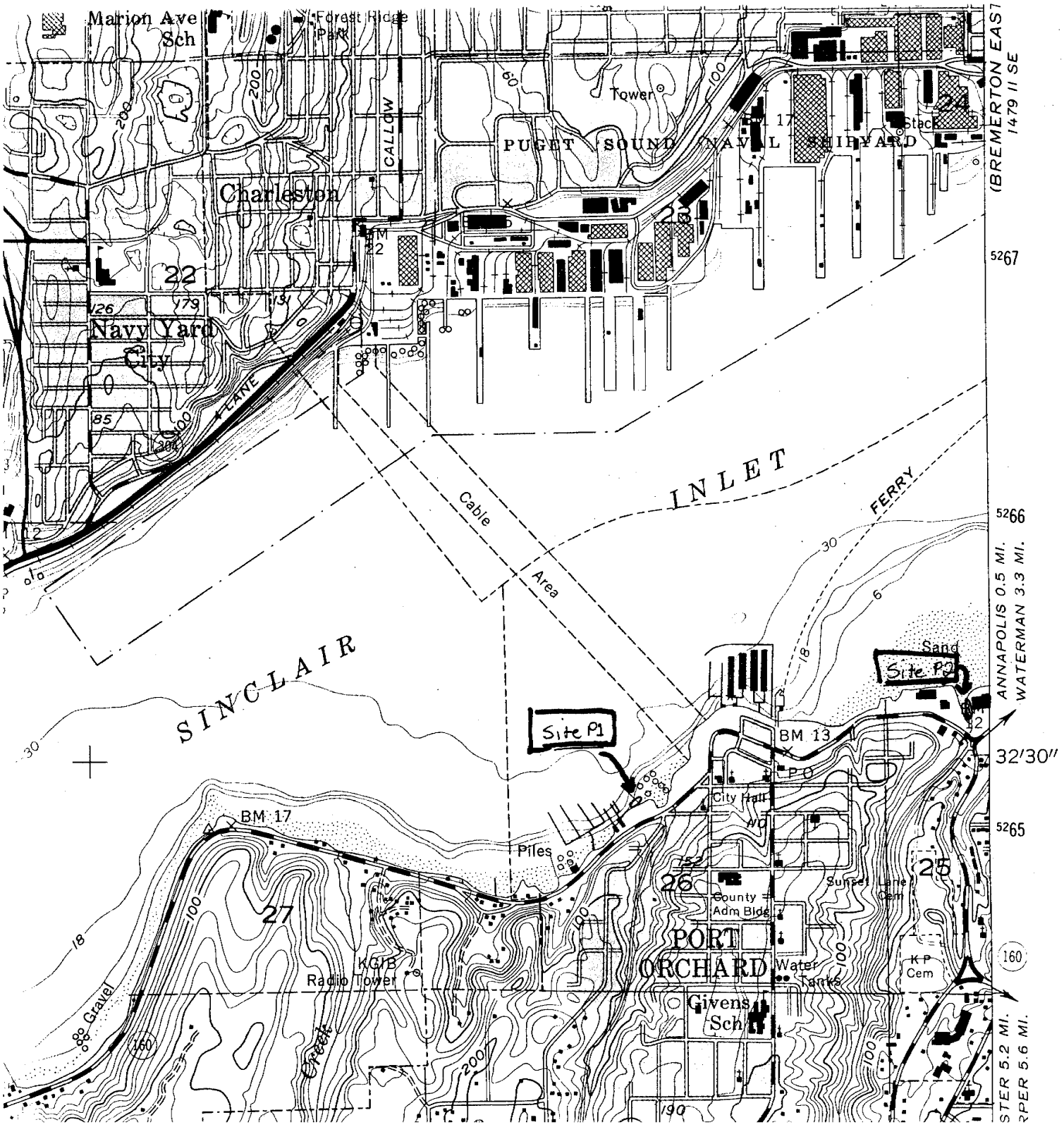
1. VICINITY MAPS OF SITES

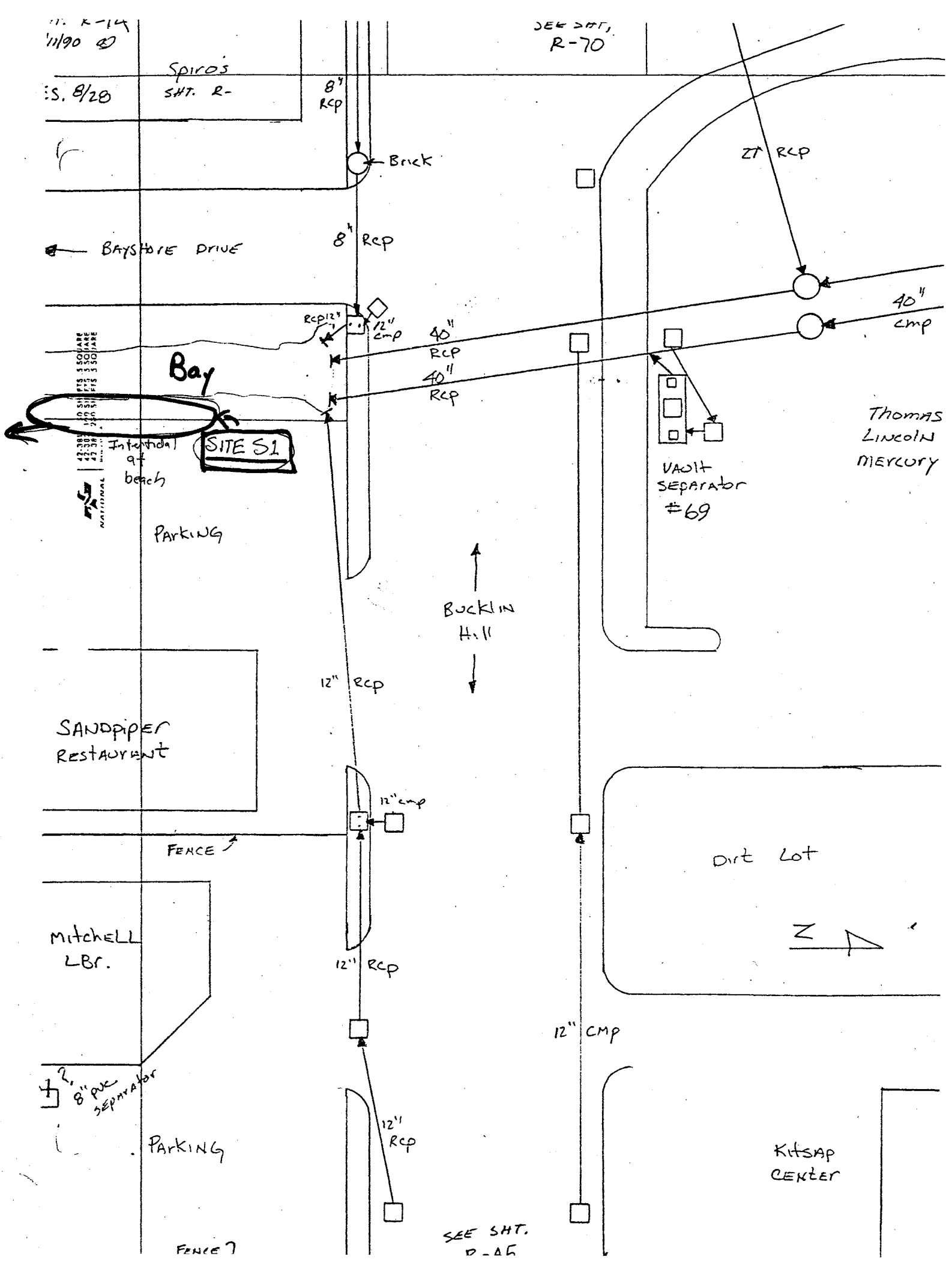
2. LABORATORY QUALITY ASSURANCE REVIEWS

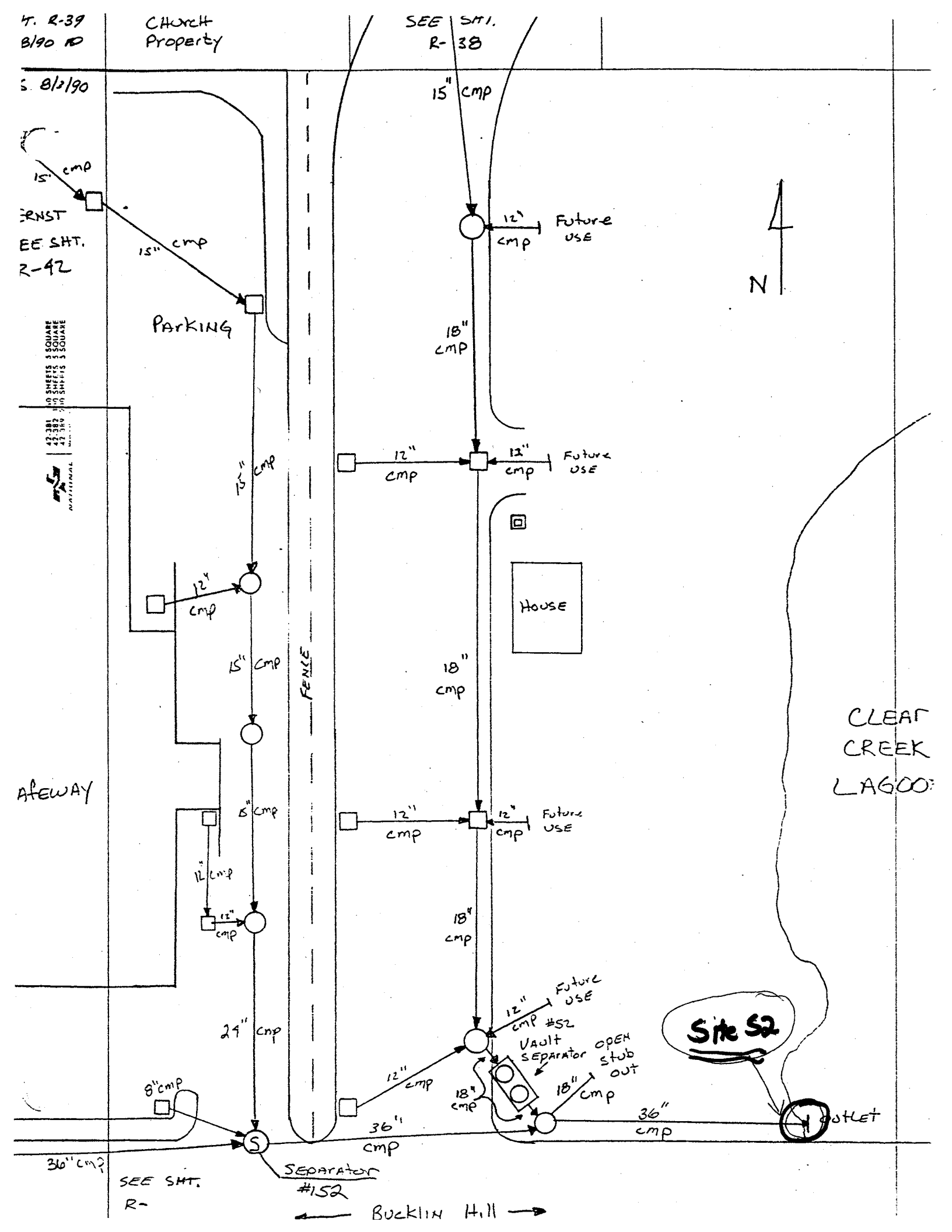
3. DETECTION LIMITS FOR ORGANICS ANALYSES FOR COMPOUNDS NOT FOUND ABOVE DETECTION LIMITS IN THIS STUDY

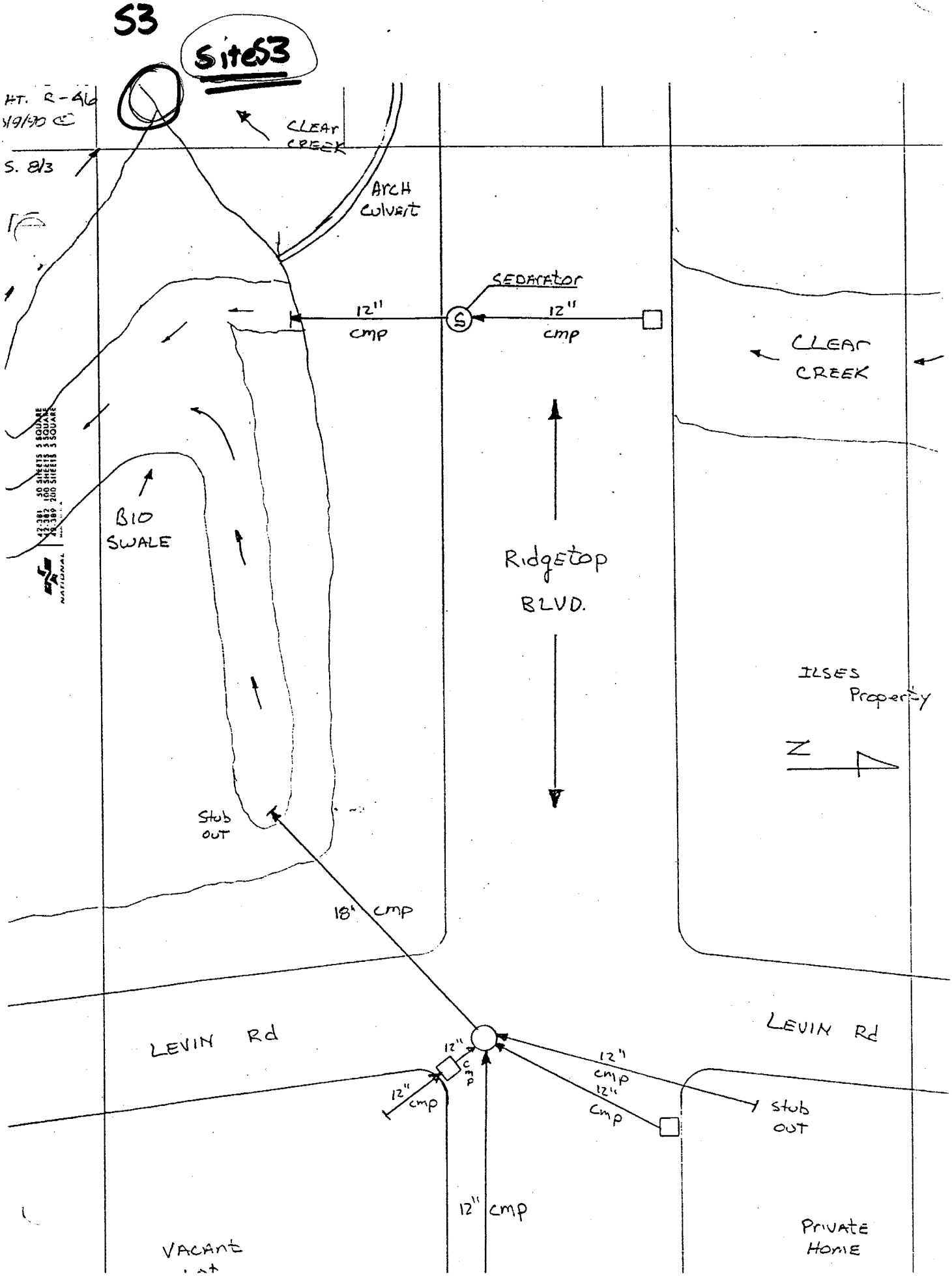
Appendix 1

VICINITY MAPS OF SITES

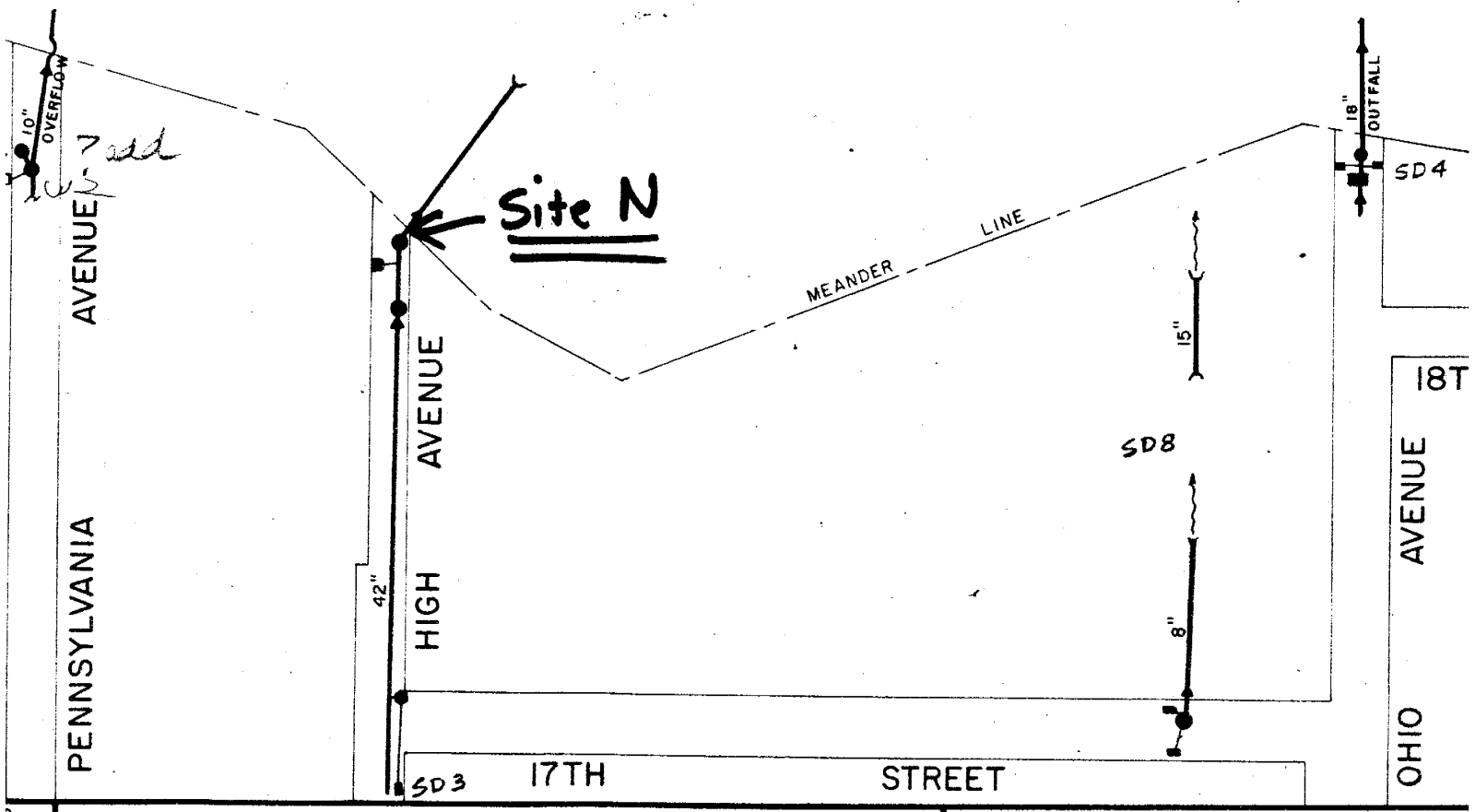

Marion Ave Sch
Forest Ridge Park
CALLOW
Tower
PUGET SOUND NAVAL SHIPYARD
Stack
Charleston
BM 22
Navy Yard City
LANE
Cable Area
INLET
FERRY
SINCLAIR
Site P1
Site P2
Sand
BM 13
PO
City Hall
Piles
BM 17
26
County Adm Bldg
Sunset Lane Cem
PORT ORCHARD
Water Tanks
KP Cem
KGIB Radio Tower
Givens Sch
Gravel
Creek
(BREMERTON EAST 1479 II SE)
ANNAPOLIS 0.5 MI.
WATERMAN 3.3 MI.
32'30"
5267
5266
5265
160


R-14
11/90
Spiros
SHT. R-
S. 8/28
SEE SHT. R-70
8" RCP
Brick
24" RCP
BAYSHORE DRIVE
8" RCP
RCP 12"
12" CMP
40" RCP
40" RCP
40" CMP
Bay
SITE S1
Intertidal of beach
PARKING
VAULT SEPARATOR #69
THOMAS LINCOLN MERCURY
BUCKLIN HILL
12" RCP
SANDPIPER RESTAURANT
12" CMP
FENCE
DIRT LOT
MITCHELL LBR.
12" RCP
12" CMP
8" PVC SEPARATOR
PARKING
12" RCP
KITSAP CENTER
SEE SHT. R-45
FENCE


T. R-39
8/90 RD
Church Property
SEE SHT.
R-38
S. 8/2/90
15" cmp
ERNST
EE SHT.
R-42
15" cmp
PARKING
15" cmp
12" cmp
Future use
N
18" cmp
12" cmp
12" cmp
Future use
15" cmp
12" cmp
HOUSE
FENCE
15" cmp
18" cmp
CLEAR CREEK LAGOON
AFEWAY
8" cmp
12" cmp
12" cmp
12" cmp
Future use
18" cmp
24" cmp
12" cmp
Future use
12" cmp #52
Site S2
Vault Separator OPEN stub out
12" cmp
18" cmp
18" cmp
8" cmp
36" cmp
36" cmp
Outlet
36" cmp?
SEE SHT.
R-
Separator #152
BUCKLIN HILL


S3
Site 53
HT. R-96
1/9/90
S. 8/3
CLEAR CREEK
ARCH CULVERT
SEPARATOR
12" cmp
12" cmp
CLEAR CREEK
BIO SWALE
Ridgetop BLVD.
ILSES Property
N
Stub OUT
18" cmp
LEVIN Rd
LEVIN Rd
12" cmp
12" cmp
12" cmp
12" cmp
stub OUT
12" cmp
VACANT
Private Home

PORT WASHINGTON NARROWS



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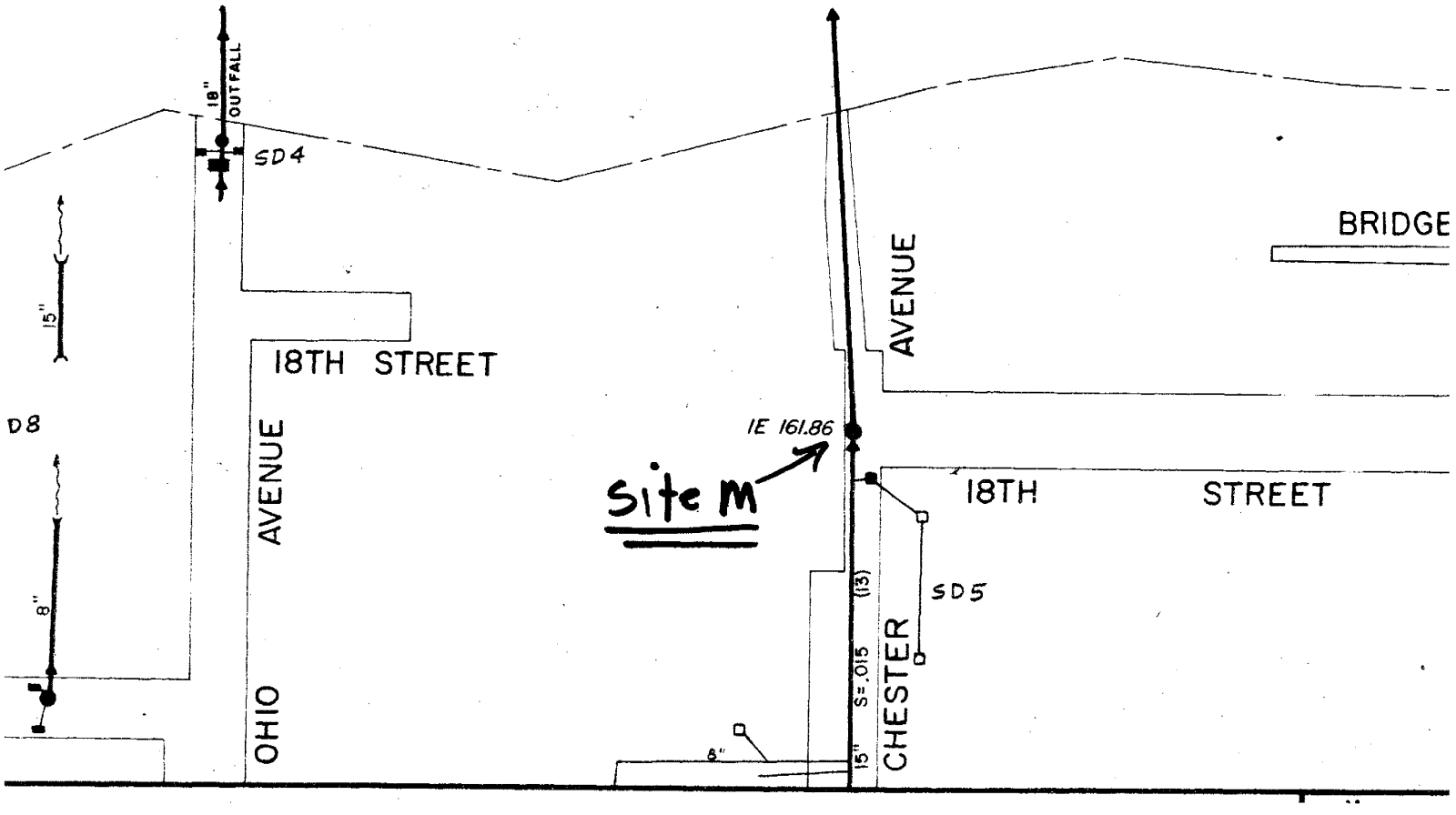
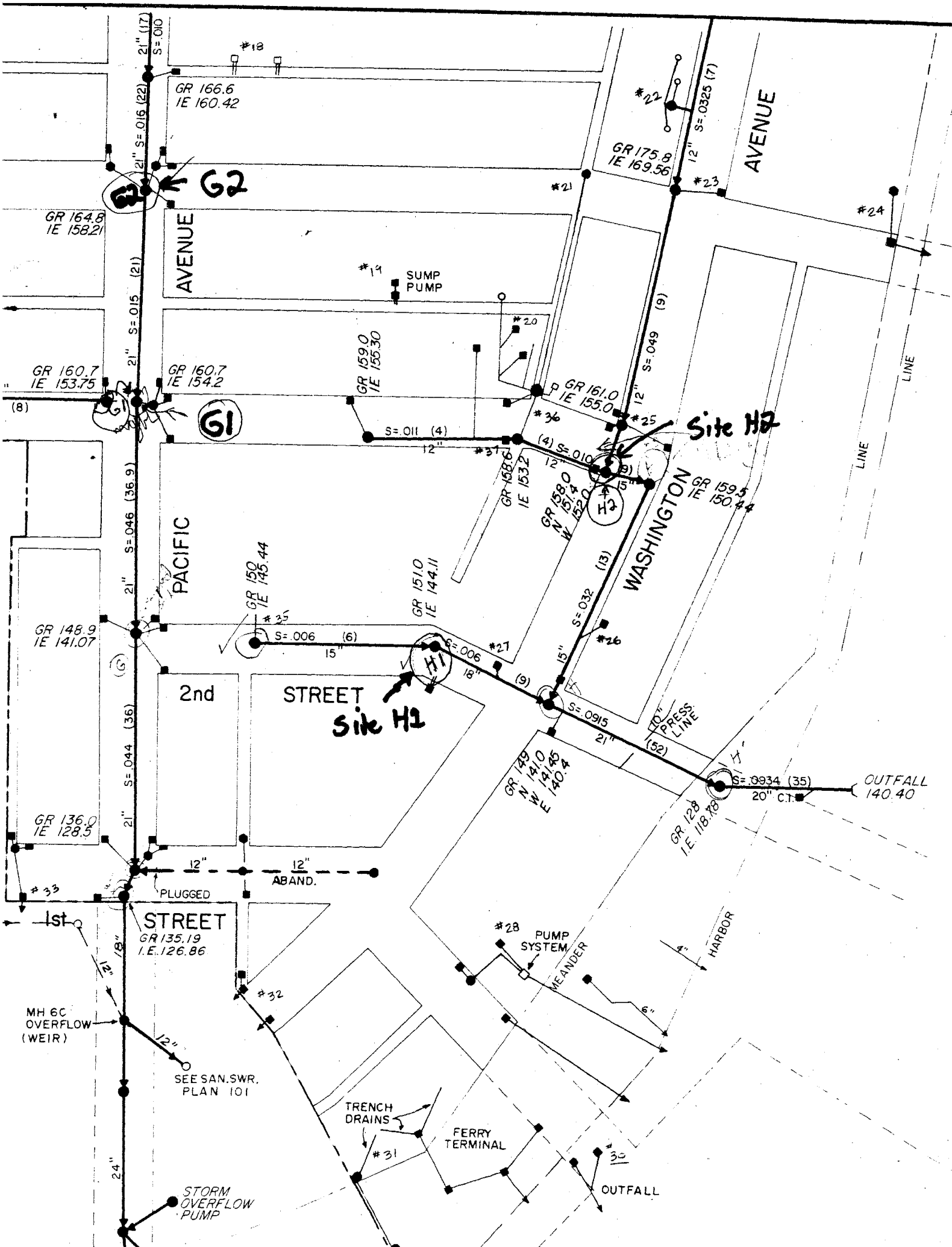
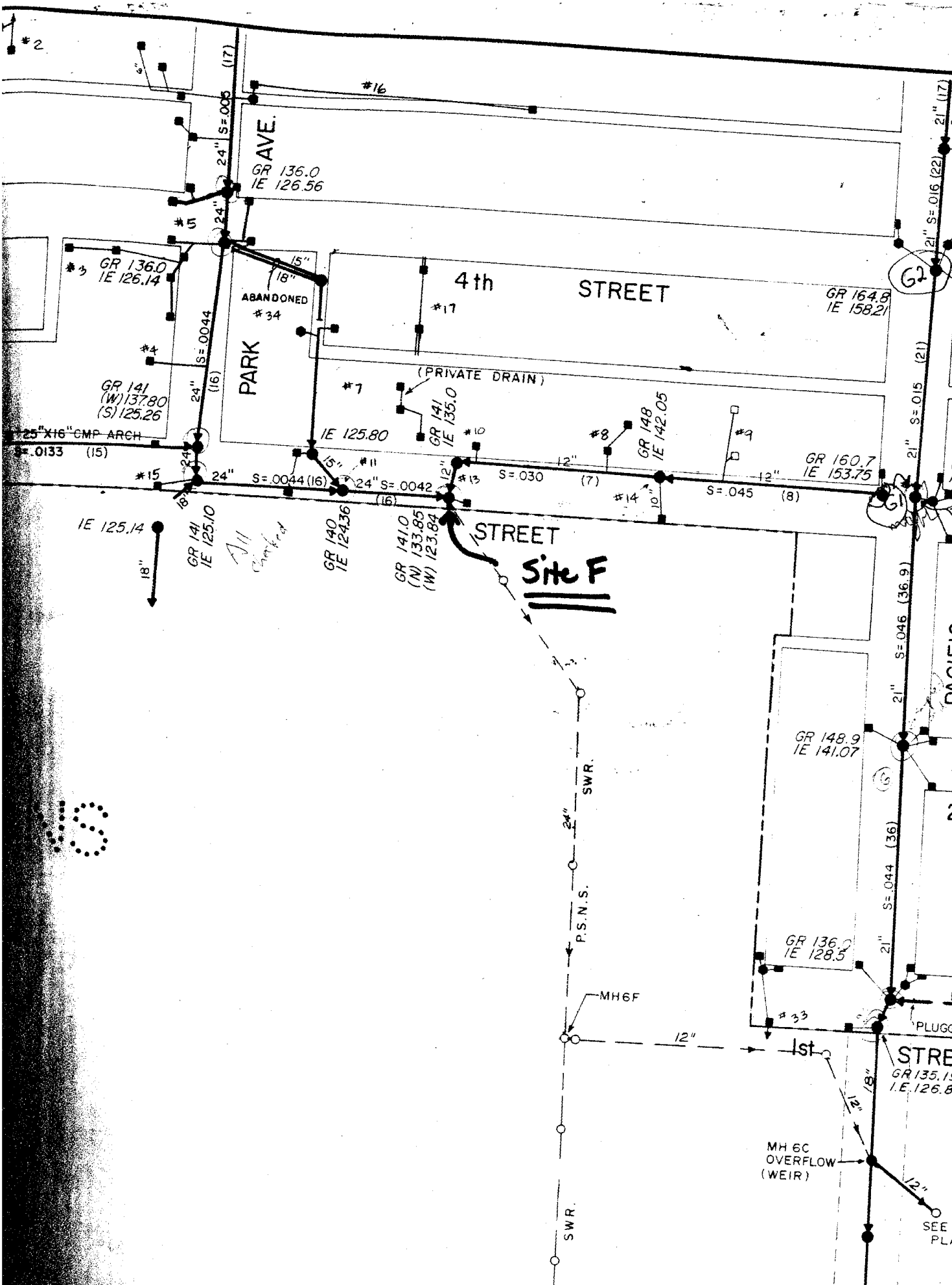
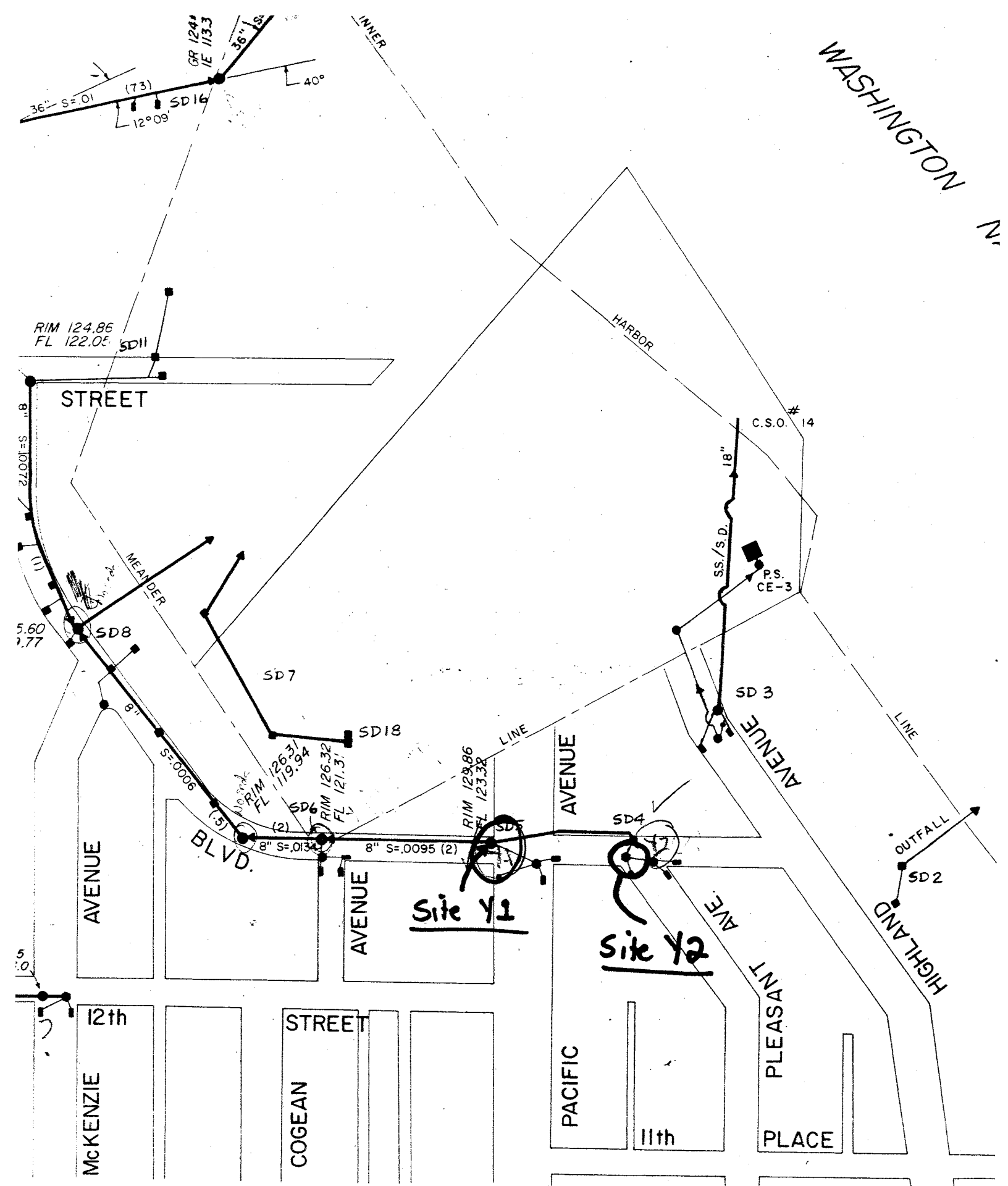

18" OUTFALL
SD4
15"
18TH STREET
AVENUE
OHIO
D8
8"
IE 161.86
Site M
AVENUE
BRIDGE
18TH
STREET
SD5
(13)
S=.015
CHESTER
6"
15"


21" (17) S=.010
#18
GR 166.6
IE 160.42
21" S=.016 (22)
G2
G2
GR 164.8
IE 158.21
AVENUE
#19
SUMP
PUMP
21" S=.015 (21)
#20
GR 159.0
IE 155.30
GR 160.7
IE 153.75
GR 160.7
IE 154.2
(8)
G1
G1
S=.011 (4)
12"
#37
(4) S=.010
12"
GR 158.6
IE 153.2
GR 158.0
W 151.4
E 152.0
H2
(9)
15"
GR 161.0
IE 155.0
#36
#25
Site H2
12" S=.049 (9)
#22
12" S=.0325 (7)
GR 175.8
IE 169.56
#21
#23
AVENUE
#24
LINE
LINE
GR 159.5
IE 150.44
WASHINGTON
(13)
S=.032
15"
#26
21" S=.046 (36.9)
PACIFIC
GR 150
IE 145.44
GR 151.0
IE 144.11
GR 148.9
IE 141.07
#35
S=.006 (6)
15"
S=.006
18"
#27
H1
(9)
2nd
STREET
Site H1
S=.0915
21"
(52)
10" PRESS. LINE
GR 149
N 141.0
W 141.45
E 140.4
S=.0934 (35)
20" C.I.
OUTFALL
140.40
GR 128
I.E. 118.78
21" S=.044 (36)
GR 136.0
IE 128.5
#33
12"
12"
ABAND.
PLUGGED
1st
STREET
GR 135.19
I.E. 126.86
18"
12"
#28
PUMP
SYSTEM
MEANDER
4"
HARBOR
6"
#32
MH 6C
OVERFLOW
(WEIR)
12"
SEE SAN. SWR.
PLAN 101
TRENCH
DRAINS
#31
FERRY
TERMINAL
#30
OUTFALL
24"
STORM
OVERFLOW
PUMP


#2
#16
AVE.
GR 136.0
IE 126.56
#5
#3
GR 136.0
IE 126.14
4th STREET
GR 164.8
IE 158.21
#17
ABANDONED
#34
PARK
#4
GR 141
(W) 137.80
(S) 125.26
#7
(PRIVATE DRAIN)
GR 141
IE 135.0
IE 125.80
#10
#8
GR 148
IE 142.05
#9
GR 160.7
IE 153.75
#15
#11
#13
#14
IE 125.14
GR 141
IE 125.10
GR 140
IE 124.36
GR 141.0
(N) 133.85
(W) 123.84
STREET
Site F
GR 148.9
IE 141.07
GR 136.2
IE 128.5
#33
P.S.N.S.
SWR.
MH6F
1st
STREET
GR 135.1
I.E. 126.8
MH 6C
OVERFLOW
(WEIR)
SWR.
SEE
PLA



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Appendix 2

LABORATORY QUALITY ASSURANCE REVIEWS

State of Washington Department of Ecology
Manchester Environmental Laboratory
7411 Beach Dr. East Port Orchard WA. 98366

Data Review
March 26, 1993

Project: **Bremerton/Bellingham Storm Drains**

Samples: 078156 through 078177

Laboratory: Soil Technology J-339

By: Karin Feddersen KF

Case Summary

The review is for sediment grain size using Puget Sound Estuary Program (P.S.E.P.) protocol.

These samples were received at the Manchester Environmental Laboratory on March 31, 1993. They were transported to Soil Technology on April 5, 1993 for analysis.

These analyses were reviewed for qualitative and quantitative accuracy, validity, and usefulness. The results are acceptable for use as reported.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
MANCHESTER ENVIRONMENTAL LABORATORY
7411 Beach Drive East • Port Orchard, Washington 98366-8204 • (206) 871-8860 • SCAN 871-8860

May 27, 1993

TO: Project Officer

FROM: David A Thomson

SUBJECT: Quality Assurance memo for the Bremerton/Bellingham Storm Drains TOC Results

SAMPLE RECEIPT

The samples from the Bremerton/Bellingham Storm Drains were received by the Manchester Laboratory on March 31, 1993 in good condition. The analyses for these samples were subsequently contracted to Analytical Resources Inc. The samples were run using the Puget Sound Estuary Program (PSEP1986) for TOC.

HOLDING TIMES

All analyses were performed within 30 days of sample collection.

PROCEDURAL BLANKS

The procedural blanks associated with these samples showed no analytically significant levels of analytes.

PRECISION DATA

Five samples were run in duplicate to evaluate precision on this sample set. The Relative Percent Difference (RPD) for all analytes was within the +/- 10% window for duplicate analysis.

SPIKED SAMPLE ANALYSIS

Spike and duplicate spike analysis were performed on sample number 148156 and 148167. Sample 148156 had spike recoveries of 70% and 57%. Sample 148167 had spike recoveries of 210% and 149%. This could indicate that the samples are very inhomogeneous. All results should be regarded as estimates.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES
LCS analyses were within the windows established for TOC.

SUMMARY

The data generated by the analysis of these samples can be used noting the data qualifications discussed in this memo.

Please call David A Thomson at SCAN 871-8822 to further discuss this project.

State of Washington Department of Ecology
Manchester Environmental Laboratory
7411 Beach Dr. East Port Orchard WA. 98366

Data Review
June 14, 1993

Project: **Bremerton/Bellingham Storm Drains**

Samples: 228180, 228181, 228182, 228183, 228184, 228185, 228190, 228191, 228192, 228193, 228194, 228196, 228197

Laboratory: Soil Technology J-369

By: Karin Feddersen KF

Case Summary

The review is for sediment grain size using Puget Sound Estuary Program (P.S.E.P.) protocol.

These samples were received at the Manchester Environmental Laboratory on May 27, 1993. They were transported to Soil Technology on May 27, 1993 for analysis.

These analyses were reviewed for qualitative and quantitative accuracy, validity, and usefulness. The results are acceptable for use as reported.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
MANCHESTER ENVIRONMENTAL LABORATORY
7411 Beach Drive East • Port Orchard, Washington 98366-8204 • (206) 871-8860 • SCAN 871-8860

May 3, 1993

TO: Jim Cubbage

FROM: Bill Kammin, Environmental_Lab_Director

SUBJECT: Metals Quality Assurance memo for the Bremerton Storm Drains Project

SAMPLE INFORMATION

The samples from the Bremerton Storm Drains project were received by the Manchester Laboratory on 3/17/93 in good condition.

HOLDING TIMES

All analyses were performed within the USEPA Contract Laboratory Program (CLP) holding times for metals analysis (28 days for mercury, 180 days for all other metals).

INSTRUMENT CALIBRATION

Instrument calibration was performed before each analytical run and checked by initial calibration verification standards and blanks. Continuing calibration standards and blanks were analyzed at a frequency of 10% during the run and again at the end of the analytical run. All initial and continuing calibration verification standards were within the relevant USEPA (CLP) control limits. AA calibration gave a correlation coefficient (r) of 0.995 or greater, also meeting CLP calibration requirements.

PROCEDURAL BLANKS

The procedural blanks associated with these samples showed no analytically significant levels of analytes, with the following exceptions: copper and zinc. Because these elements were found in the analytical blank, results for these elements that are less than 10 times the instrument detection limit are qualified with J, denoting estimated values.

SPIKED SAMPLE ANALYSES

Spike and duplicate spike sample analyses were performed on this data set. All spike recoveries were within the CLP acceptance limits of +/- 25%.

PRECISION DATA

The results of the spike and duplicate spike samples were used to evaluate precision on this sample set. The Relative Percent Difference (RPD) for all analytes was within the 20% CLP acceptance window for duplicate analysis.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES

LCS analyses were within the windows established for each parameter.

SERIAL DILUTION ANALYSES

Serial dilution is used in ICP analyses to examine sample results for potential interferences. The serial dilution results for this sample set met CLP specifications.

SUMMARY

The data generated by the analysis of these samples can be used noting the data qualifications discussed in this memo.

Please call Bill Kammin at SCAN 206-871-8801 to further discuss this project.

WRK:wrk

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive East • Port Orchard, Washington 98366-8204 • (206) 895-4737 • SCAN 744-4737

May 10, 1993

TO: Jim Cubbage

FROM: Bill Kammin, Environmental_Lab_Director BK

SUBJECT: Metals Quality Assurance memo for the Bremerton/Bellingham Storm Drains Project

SAMPLE INFORMATION

These samples from the Bremerton/Bellingham Storm Drains Project were received by the Manchester Laboratory on 3/31/93 in good condition.

HOLDING TIMES

All analyses were performed within the USEPA Contract Laboratory Program (CLP) holding times for metals analysis (28 days for mercury, 180 days for all other metals).

INSTRUMENT CALIBRATION

Instrument calibration was performed before each analytical run and checked by initial calibration verification standards and blanks. Continuing calibration standards and blanks were analyzed at a frequency of 10% during the run and again at the end of the analytical run. All initial and continuing calibration verification standards were within the relevant USEPA (CLP) control limits. AA calibration gave a correlation coefficient (r) of 0.995 or greater, also meeting CLP calibration requirements.

PROCEDURAL BLANKS

The procedural blanks associated with these samples showed no analytically significant levels of analytes, with the following exception: copper. Sample results less than 10 times the level of copper in the procedural blank are qualified with B.

SPIKED SAMPLE ANALYSES

Spike and duplicate spike sample analyses were performed on this data set. All spike recoveries were within the CLP acceptance limits of +/- 25%, with the following exception: silver. Silver results are qualified with J, denoting estimated values.

PRECISION DATA

The results of the spike and duplicate spike samples were used to evaluate precision on this sample set. The Relative Percent Difference (RPD) for all analytes was within the 20% CLP acceptance window for duplicate analysis, with the following exception: silver.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES

LCS analyses were within the windows established for each parameter, with the following exception: silver.

SERIAL DILUTION ANALYSES

Serial dilution is used in ICP analyses to examine sample results for potential interferences. The serial dilution results for this sample set met CLP specifications, with the following exception: zinc. Zinc results are qualified with E, denoting possible sample based interferences.

SUMMARY

The data generated by the analysis of these samples can be used noting the data qualifications discussed in this memo.

Please call Bill Kammin at SCAN 206-871-8801 to further discuss this project.

WRK:wrk

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
MANCHESTER ENVIRONMENTAL LABORATORY
7411 Beach Drive East • Port Orchard, Washington 98366-8204 • (206) 895-4737 • SCAN 744-4737

June 30, 1993

TO: Jim Cubbage

FROM: Bill Kammin, Environmental_Lab_Director

SUBJECT: Metals Quality Assurance memo for the Bremerton/Bellingham Storm Drains Project

SAMPLE INFORMATION

The samples from the Bremerton/Bellingham Storm Drains project were received by the Manchester Laboratory on 5/27/93 in good condition.

HOLDING TIMES

All analyses were performed within the USEPA Contract Laboratory Program (CLP) holding times for metals analysis (28 days for mercury, 180 days for all other metals).

INSTRUMENT CALIBRATION

Instrument calibration was performed before each analytical run and checked by initial calibration verification standards and blanks. Continuing calibration standards and blanks were analyzed at a frequency of 10% during the run and again at the end of the analytical run. All initial and continuing calibration verification standards were within the relevant USEPA (CLP) control limits. AA calibration gave a correlation coefficient (r) of 0.995 or greater, also meeting CLP calibration requirements.

PROCEDURAL BLANKS

The procedural blanks associated with these samples showed no analytically significant levels of analytes.

SPIKED SAMPLE ANALYSES

Spike and duplicate spike sample analyses were performed on this data set. All spike recoveries were within the CLP acceptance limits of +/- 25%, with the following exceptions: copper, zinc, and arsenic. For copper and zinc, sample levels were greater than spiking levels, resulting in low recoveries. Copper and zinc results were qualified

with N. For arsenic, one spike recovery was slightly low at 72%. Arsenic results are qualified with N or J, depending on sample levels.

PRECISION DATA

The results of the spike and duplicate spike samples were used to evaluate precision on this sample set. The Relative Percent Difference (RPD) for all analytes was within the 20% CLP acceptance window for duplicate analysis.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES

LCS analyses were within the windows established for each parameter.

SUMMARY

The data generated by the analysis of these samples can be used noting the data qualifications discussed in this memo.

Please call Bill Kammin at SCAN 206-871-8801 to further discuss this project.

WRK:wrk

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

April 16, 1993

Subject: Bremerton Storm Drains - Water

Samples: 93 - 128161 to -128164

Case No. DOE-659Y

Officer: James Cubbage

By: Dickey D. Huntamer
Organics Analysis Unit

SEMIVOLATILE ORGANICS

ANALYTICAL METHODS:

The semivolatile water samples were extracted with methylene chloride following the Manchester modification of the EPA CLP and SW 846 8270 procedure with capillary GC/MS analysis of the sample extracts. Normal QA/QC procedures were performed with the analyses.

HOLDING TIMES:

All sample and extraction holding times were within the recommended limits.

BLANKS:

Low levels of some target compounds were detected in the laboratory blanks. The EPA five times rule was applied to all target compounds which were found in the blank. Compounds that were found in the sample and in the blank were considered real and not the result of contamination if the levels in the sample are greater than or equal to five times the amount of compounds in the associated method blank.

SURROGATES:

The normal Manchester Laboratory surrogates were added to the samples prior to extraction. All surrogate recoveries were acceptable.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Matrix spikes were analyzed using sample 93-128163. Matrix spike recoveries and Relative Percent Differences (RPD) were acceptable for most of the compounds. Recoveries or RPD were outside acceptable ranges for 1,2- ;1,3-; and 1,4-dichlorobenzenes, hexachlorethane, hexachlorobutadiene, 4-nitrophenol and pentachlorophenol. Results for these compounds in sample 93-128163 were given the "J" qualifier.

ANALYTICAL COMMENTS:

No special analytical problems were encountered in the semivolatile analyses.

Pentachlorophenol (PCP) was detected in two of the samples, 93-128162 and -128163. It was also detected in the Pesticide/PCB analysis. The GC/MS results are qualified as estimates "J" because they are below the quantitation limit. PCP results for sample 93-128163 would also have been qualified with a "J" because of the PCP matrix spike recoveries.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6.
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
*	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

April 16, 1993

Subject: Bremerton Storm Drains - Water

Samples: 93 - 128161 to -128163

Case No. DOE-659Y

Officer: James Cubbage

By: Dickey D. Huntamer
Organics Analysis Unit

POLYCHLORINATED BIPHENYLS

ANALYTICAL METHODS:

The water samples were extracted using methylene chloride as the solvent. Analysis was done by EPA Method 8080 using dual column capillary GC analysis with Electron Capture Detectors (ECD).

HOLDING TIMES:

All sample extraction and analysis holding times were met.

BLANKS:

No target compounds were detected in the laboratory blanks.

SURROGATES:

All surrogate spike recoveries were within acceptable QC limits. Surrogates ranged from 56% to 105% recovery.

MATRIX SPIKE AND MATRIX SPIKE :

The matrix spikes recoveries ranged from 60% to 101%. The Relative Percent Differences (RPD) ranged from 1.0% to 22%. All recoveries and RPD were within acceptable QC limits.

ANALYTICAL COMMENTS:

There were no significant problems with the Pesticide/PCB analysis. A small amount of PCB-1242 was detected in the samples. The "N" data qualifier was added because the normal PCB-1242 peak pattern was not present possibly due to weathering.

Pentachlorophenol (PCP) was also detected in two of the samples, 93-128162 and -128163. Pentachlorophenol analysis was not requested and normally the presence of PCP would not be reported in a PCB analysis. Extraneous peaks were detected during the PCB analysis and these were subsequently identified as PCP. Since normal QA/QC protocols associated with the Herbicide (PCP) procedure were not available in the PCB extracts, sample results were given the "J" data qualifier.

Pentachlorophenol was also detected in the semivolatile analyses of these samples. Concentrations determined by GC/MS were higher than those found in the Pesticide/PCB analysis. The two values are listed in the table below. GC/MS results are qualified as estimates "J" because they are below the quantitation limit. At these levels both results are essentially identical.

	Pest/PCB	GC/MS
93-128162	0.20J	0.42J
93-128163	0.31J	0.74J

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6.
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
*	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

June 2, 1993

Subject: Bremerton/Bellingham Storm Drains

Samples: 93 - 148155 to -148160

Case No. DOE-689Y

Officer: James Cubbage

By: Dickey D. Huntamer
Organics Analysis Unit

SEMIVOLATILE ORGANICS

ANALYTICAL METHODS:

The semivolatile soil samples were Soxhlet extracted with acetone following the Manchester modification of the EPA SW 846 8270 procedure with capillary GC/MS analysis of the sample extracts. Normal QA/QC procedures were performed with the analyses.

HOLDING TIMES:

The samples were stored frozen until extraction. After extraction the samples were analyzed within the recommended forty day holding time.

BLANKS:

Low levels of some target compounds were detected in the laboratory blanks. The EPA five times rule was applied to all target compounds which were found in the blank. Compounds that were found in the sample and in the blank were considered real and not the result of contamination if the levels in the sample are greater than or equal to five times the amount of compounds in the associated method blank.

SURROGATES:

The normal surrogates compounds were added to the sample prior to extraction. All surrogate spike recoveries were within acceptable QC limits.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Matrix spike recoveries and Relative Percent Differences (RPD) were within acceptable limits except for hexachloroethane, 4-chloroaniline, hexachlorocyclopentadiene 4-nitroaniline and 3-nitroaniline. The "J" data qualifier was added to the results for these compounds in sample 93-148160.

ANALYTICAL COMMENTS:

No special analytical problems were encountered in the semivolatile analyses. The data is acceptable for use as qualified.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6.
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
*	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

May 6, 1993

Subject: Bremerton/ Bellingham Storm Drains

Samples: 93 - 148165 to -148172

Case No. DOE-689Y

Officer: James Cubbage

By: Dickey D. Huntamer DDH
Organics Analysis Unit

SEMIVOLATILE ORGANICS

ANALYTICAL METHODS:

The semivolatile soil samples were Soxhlet extracted with acetone following the Manchester modification of the EPA CLP and SW 846 8270 procedure with capillary GC/MS analysis of the sample extracts. Normal QA/QC procedures were performed with the analyses.

HOLDING TIMES:

All sample and extraction holding times were within the recommended limits.

BLANKS:

Low levels of some target compounds were detected in the laboratory blanks. The EPA five times rule was applied to all target compounds which were found in the blank. Compounds that were found in the sample and in the blank were considered real and not the result of contamination if the levels in the sample are greater than or equal to five times the amount of compounds in the associated method blank.

SURROGATES:

The normal Manchester Laboratory surrogates were added to the sample prior to extraction. All surrogate spike recoveries were within acceptable QC limits.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Matrix spike recoveries were outside acceptable limits for hexachloroethane, benzoic acid, 4-chloroaniline, 3-nitroaniline, 4-nitroaniline. The "J" data qualifier was added to the results for these compounds in sample 93-148168. One other compound hexachlorocyclopentadiene had low recoveries and the data was rejected, "REJ" as unusable.

ANALYTICAL COMMENTS:

No special analytical problems were encountered in the semivolatile analyses and the data is acceptable for use as qualified.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6.
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
*	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

July 28, 1993

Subject: Bremerton/Bellingham Storm Drains

Samples: 93 - 228180 to -228185, -228190 to -228194, -228196 and -228197

Case No. DOE-760Y

Officer: James Cubbage

By: Dickey D. Huntamer
Organics Analysis Unit

SEMIVOLATILE ORGANICS

ANALYTICAL METHODS:

The semivolatile soil samples were Soxhlet extracted with acetone following the Manchester modification of the EPA SW 846 8270 procedure with capillary GC/MS analysis of the sample extracts. Normal QA/QC procedures were performed with the analyses.

HOLDING TIMES:

All sample and extraction holding times were within the recommended limits.

BLANKS:

Low levels of some target compounds were detected in the laboratory blanks. The EPA five times rule was applied to all target compounds which were found in the blank. Compounds that were found in the sample and in the blank were considered real and not the result of contamination if the levels in the sample are greater than or equal to five times the amount of compounds in the associated method blank.

SURROGATES:

The normal surrogates compounds were added to the sample prior to extraction. All surrogate spike recoveries were within acceptable QC limits except for zero percent recovery for d10-pyrene in sample 93-228194 and 9.2% recovery for d4-1,2-dichlorobenzene. Since all of the other surrogates were okay no additional qualifiers were added to the results for -228194.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Two sets of matrix spikes were analyzed with these samples. One set using sample, -228181 and the second set using sample, -228192. Matrix recoveries or Relative Percent Differences (RPD) were outside limits for some compounds. The results for those compounds in samples -228181 and -228192 were given the "J" data qualifier.

SPECIAL ANALYTICAL PROBLEMS:

No special analytical problems were encountered in the semivolatile analyses.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6.
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
*	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

State of Washington Department of Ecology
Manchester Environmental Laboratory
7411 Beach Dr. East Port Orchard WA. 98366

July 21, 1993

Project: **Bremerton/Bellingham Storm Drains**

Samples: 228180, 228181, 228182, 228183, 228184, 228185, 228190, 228191, 228192, 228193, 228194, 228196, 228197

Laboratory: Analytical Resources Inc. D932

By: Karin Feddersen KF

Case Summary

These samples were received at the Manchester Environmental Laboratory on May 27, 1993, and transported to Analytical Resources, Inc. on May 27, 1993 for VOC, Pesticides/PCB and Chlorinated Phenols analysis.

These analyses were reviewed for qualitative and quantitative accuracy, validity, and usefulness.

There is no need to assimilate the "dilution factor" or "sample wt/vol" into the final values reported; these calculations have already been figured into the reported values.

DATA QUALIFIER DEFINITIONS

U - The analyte was not detected at or above the reported result.

UJ - The analyte was not detected at or above the reported estimated result.

J - The associated numerical result is an estimated quantity.

NJ or JN - The analyte was tentatively identified. The associated numerical result is an estimate.

REJ - The data is unusable for all purposes.

Volatiles

Holding Times:

These samples were analyzed within the SW-846 recommended holding time.

Method Blank:

Acetone was detected in all of the method blanks. Acetone was also detected in several of the samples. Where the on-column amount of Acetone in the sample exceeded the on-column amount of Acetone in the corresponding method blank by more than ten (10) times, Acetone is most likely native to the sample, and no qualification is warranted. Where the on-column amount of Acetone in the samples is less than ten (10) times the on-column amount of Acetone in the corresponding method blank, the Acetone detected in these samples is most likely due to laboratory contamination and not native to the samples. Therefore the results for Acetone in these sample have been qualified with a "U" to indicate that Acetone was not detected at or above the suspected laboratory contamination level.

GC/MS Tuning and Calibration:

Calibration against Bromofluorobenzene (BFB) is acceptable for the initial calibration, continuing calibration, and all associated sample analyses.

Initial Calibration:

The initial calibration met the minimum response criteria for the average relative responses. The % Relative Standard Deviations were within the maximum of 30%.

Continuing Calibration:

These samples were analyzed on four separate days. The average relative response factors for all target analytes were above the minimums, and the percent deviations between the initial and continuing calibration standards were within the maximum of 25%, with several exceptions for each day. Positive results for these analytes have been qualified with a "J", and non-detected results have been qualified with a "UJ" in the corresponding samples and method blanks.

Matrix Spikes (MS/MSD):

Matrix spike recovery and precision data are reasonable, acceptable, and within QC limits with one exception. The toluene recovery in 228183MS was slightly above the QC limit for this analyte. The toluene recovery was acceptable for 228183 MSD. No qualification of the data was warranted.

Surrogates:

All surrogate recoveries for these samples and the associated method blank are reasonable, acceptable, and within QC limits with several exceptions. D8-Toluene recovery was low in sample 228185 and the matrix spikes performed on this sample. Sample 228185 was reanalyzed, and d8-Toluene exhibited acceptable recovery. No qualification of the results was warranted.

Sample results:

One of the internal standards (d5-Chlorobenzene) in sample 228184 fell below the QC limits, affecting quantitation for analytes in this sample which use this internal standard for quantitation. Positive results for these analytes in sample 228184 have been qualified with a "J", and non-detected analytes have been qualified with a "UJ".
The amount of Toluene detected in the original analyses of samples 228184, 228191, 228194, and 228197 exceeded the calibration of the instrument. Toluene results for these sample analyses have been qualified with "REJ". Use the Toluene results from the medium analyses and reanalyses of sample 228184, 228191, 228194, and 228197. Use the original results for all other analytes.
This data is acceptable for use as amended.

Pesticides/PCB's

Holding Times:

The waters were extracted and analyzed within the SW-846 recommended holding times. The soils were extracted one day past the SW-846 recommended holding time. These soil samples were stored in the proper containers at the proper temperature, therefore, extraction one day beyond the recommended holding time should not have a significant effect upon the results. All extracts were analyzed within the recommended holding time of forty days from the date of extraction.

Method Blank:

No target analytes were detected in either method blank.

Initial Calibration:

The initial calibration % Relative Standard Deviations were within the maximum of 20% with several exceptions which did not affect the results.

Continuing Calibrations:

The percent deviations between the initial and continuing calibration standards were within the maximum of 25% with one exception which did not affect the results.

Matrix Spikes (MS/MSD):

Matrix spike recovery and precision data are reasonable, acceptable, and within advisory QC limits.

Surrogates:

Surrogate recoveries for these samples, the matrix spikes, and the associated method blank are reasonable, acceptable, and within advisory QC limits with several exceptions. Matrix effects due to the presence of Arochlor 1254 most likely interfered with an accurate quantitation of Decachlorobiphenyl (DCB) in sample 228180 and in the matrix spikes performed on this sample (228180MS and 228180MSD). No qualification of the data was warranted for these analyses. DCB recovery in sample 228197 was low on one column, and Tetrachloro-m-xylene (TCX) recovery was low in samples 228184, 228191, and 228194. Since quantitation was sufficient for the other column, non-detected compounds in these samples were unaffected. Detected compounds in these samples which demonstrated a discrepancy in quantitation between the two columns have been qualified with a "J".

Sample Data:

The DDE detected in the matrix spikes performed on sample 228180, (228180MS and 228180MSD), is most likely a degradation product of the DDT added as a spike to the sample for QC purposes, and is not native to the sample.
This data is acceptable for use as amended.

Chlorinated Phenols

Holding Times:

These samples were extracted and analyzed six days past the SW-846 recommended holding time. Sample 228196 was re-extracted nine days past the SW-846 recommended holding time. The samples were stored in the proper containers at the proper temperature, therefore, analysis beyond the recommended holding time should not have a significant effect upon the results. The extracts were analyzed within the recommended holding time of forty days from the date of extraction.

Method Blank:

No target analytes were detected in either method blank.

Initial Calibration:

The initial calibration % Relative Standard Deviations were within the maximum of 20%.

Continuing Calibrations:

The percent deviations between the initial and continuing calibration standards were within the maximum of 25%.

Blank Spike:

Blank spike recoveries are reasonable, acceptable and within QC limits.

Surrogates:

Soil QC limits have yet to be established by ARI for this method. All sample surrogate recoveries appear reasonable and acceptable with one exception. Sample 228196 exhibited a low surrogate recovery. All results for the original analysis of sample 228196 have been qualified with "REJ". This sample was re-extracted and reanalyzed with slightly improved recovery on June 17,1993. No qualification or rejection of the results from this reanalysis was warranted.

Sample Data:

Use the results from the reanalysis dated June 17, 1993 for sample 228186.
These results are acceptable for use as amended.

State of Washington Department of Ecology
Manchester Environmental Laboratory
7411 Beach Dr. East Port Orchard WA. 98366

June 8, 1993

Project: **Bremerton/Bellingham Storm Drains**

Samples: 148156, 148157, 148158, 148159, 148160, 148165, 148166, 148167, 148168, 148169, 148170, 148171, 148172

Laboratory: Analytical Resources Inc. D434

By: Karin Feddersen KF

Case Summary

These samples were received at the Manchester Environmental Laboratory on March 31, 1993, and transported to Analytical Resources, Inc. on April 5, 1993 for Pesticides/PCB's and Chlorinated Phenols analysis.

These analyses were reviewed for qualitative and quantitative accuracy, validity, and usefulness.

There is no need to assimilate the "dilution factor" or "sample wt/vol" into the final values reported; these calculations have already been figured into the reported values.

DATA QUALIFIER DEFINITIONS

U - The analyte was not detected at or above the reported result.

UJ - The analyte was not detected at or above the reported estimated result.

J - The associated numerical result is an estimated quantity.

Pesticides/PCB's

Holding Times:

These samples were extracted and analyzed within the SW-846 recommended holding times.

Method Blank:

No target analytes were detected in the method blank.

Initial Calibration:

The initial calibration % Relative Standard Deviations were within the maximum of 20%.

Continuing Calibrations:

The percent deviations between the initial and continuing calibration standards were within the maximum of 25%.

Matrix Spikes (MS/MSD):

Matrix spike recovery and precision data are reasonable, acceptable, and within advisory QC limits.

Surrogates:

Surrogate recoveries for these samples, the matrix spikes, and the associated method blank are reasonable, acceptable, and within advisory QC limits.

Sample Data:

This data is acceptable for use without the need for additional data qualifiers.
The "X" qualifier is used by ARI to indicate that the associated result was derived from a response that exceeded the calibration range, and a dilution analysis was required. This "X" has been replaced by a "J" qualifier to indicate an estimated value. Use the dilution analyses for samples 108245 and 108246 for the Aldrin, Endosulfan I and II, Dieldrin, and 4,4'-DDT results; for all the other analytes use the undiluted analyses.

Chlorinated Phenols

Holding Times:

These samples were extracted and analyzed within the SW-846 recommended holding time.

Method Blank:

No target analytes were detected in the method blank.

Initial Calibration:

The initial calibration % Relative Standard Deviations were within the maximum of 20%.

Blank Spikes:

Blank spike recoveries are below QC limits. No explanation has been found for this anomaly. The spiking solution concentration was tested and found to be correct. The low recoveries for the spike blanks bring the validity of the data into question. The results indicate low analyte recoveries due to extraction/analysis inefficiencies. The samples most likely behaved in a similar manner, and are to be considered biased low. All detected analytes in these samples have therefore been qualified with a "J", and non-detected analytes been qualified with a "UJ".

Surrogates:

QC limits have yet to be established by ARI for this method. All sample surrogate recoveries appear reasonable and acceptable.

Sample Data:

These results are to be used with caution.

Volatiles

Holding Times:

These samples were analyzed within the SW-846 recommended holding time.

Method Blank:

Acetone was detected in all of the method blanks. Acetone was also detected in several of the samples. Where the on-column amount of Acetone in the sample exceeded the on-column amount of Acetone in the corresponding method blank by more than ten (10) times, Acetone is most likely native to the sample, and no qualification is warranted. Where the on-column amount of Acetone in the samples is less than ten (10) times the on-column amount of Acetone in the corresponding method blank, the Acetone detected in these samples is most likely due to laboratory contamination and not native to the samples. Therefore the results for Acetone in these sample have been qualified with a "U" to indicate that Acetone was not detected at or above the suspected laboratory contamination level.

GC/MS Tuning and Calibration:

Calibration against Bromofluorobenzene (BFB) is acceptable for the initial calibration, continuing calibration, and all associated sample analyses.

Initial Calibration:

The initial calibration met the minimum response criteria for the average relative responses. The % Relative Standard Deviations were within the maximum of 30%.

Continuing Calibration:

These samples were analyzed on four separate days. The average relative response factors for all target analytes were above the minimums, and the percent deviations between the initial and continuing calibration standards were within the maximum of 25%, with several exceptions for each day. Positive results for these analytes have been qualified with a "J", and non-detected results have been qualified with a "UJ" in the corresponding samples and method blanks.

Matrix Spikes (MS/MSD):

Matrix spike recovery and precision data are reasonable, acceptable, and within QC limits with one exception. The toluene recovery in 228183MS was slightly above the QC limit for this analyte. The toluene recovery was acceptable for 228183 MSD. No qualification of the data was warranted.

Surrogates:

All surrogate recoveries for these samples and the associated method blank are reasonable, acceptable, and within QC limits with several exceptions. D8-Toluene recovery was low in sample 228185 and the matrix spikes performed on this sample. Sample 228185 was reanalyzed, and d8-Toluene exhibited acceptable recovery. No qualification of the results was warranted.

Sample results:

One of the internal standards (d5-Chlorobenzene) in sample 228184 fell below the QC limits, affecting quantitation for analytes in this sample which use this internal standard for quantitation. Positive results for these analytes in sample 228184 have been qualified with a "J", and non-detected analytes have been qualified with a "UJ".
The amount of Toluene detected in the original analyses of samples 228184, 228191, 228194, and 228197 exceeded the calibration of the instrument. Toluene results for these sample analyses have been qualified with "REJ". Use the Toluene results from the medium analyses and reanalyses of sample 228184, 228191, 228194, and 228197. Use the original results for all other analytes.
This data is acceptable for use as amended.

Pesticides/PCB's

Holding Times:

The waters were extracted and analyzed within the SW-846 recommended holding times. The soils were extracted one day past the SW-846 recommended holding time. These soil samples were stored in the proper containers at the proper temperature, therefore, extraction one day beyond the recommended holding time should not have a significant effect upon the results. All extracts were analyzed within the recommended holding time of forty days from the date of extraction.

Method Blank:

No target analytes were detected in either method blank.

Initial Calibration:

The initial calibration % Relative Standard Deviations were within the maximum of 20% with several exceptions which did not affect the results.

Continuing Calibrations:

The percent deviations between the initial and continuing calibration standards were within the maximum of 25% with one exception which did not affect the results.

Matrix Spikes (MS/MSD):

Matrix spike recovery and precision data are reasonable, acceptable, and within advisory QC limits.

Surrogates:

Surrogate recoveries for these samples, the matrix spikes, and the associated method blank are reasonable, acceptable, and within advisory QC limits with several exceptions. Matrix effects due to the presence of Arochlor 1254 most likely interfered with an accurate quantitation of Decachlorobiphenyl (DCB) in sample 228180 and in the matrix spikes performed on this sample (228180MS and 228180MSD). No qualification of the data was warranted for these analyses. DCB recovery in sample 228197 was low on one column, and Tetrachloro-m-xylene (TCX) recovery was low in samples 228184, 228191, and 228194. Since quantitation was sufficient for the other column, non-detected compounds in these samples were unaffected. Detected compounds in these samples which demonstrated a discrepancy in quantitation between the two columns have been qualified with a "J".

Sample Data:

The DDE detected in the matrix spikes performed on sample 228180, (228180MS and 228180MSD), is most likely a degradation product of the DDT added as a spike to the sample for QC purposes, and is not native to the sample.
This data is acceptable for use as amended.

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

July 6, 1993

Subject: Bremerton/Bellingham Storm Drains

Samples: 93 - 148156 to -148160

Case No. DOE-689Y

Officer: James Cubbage

By: Dickey D. Huntamer
Organics Analysis Unit

VOLATILE ORGANIC ANALYSIS

ANALYTICAL METHODS:

Volatile organic compounds were analyzed using Manchester modification of the EPA SW 846 Method 8240 purge-trap procedure with capillary GC/MS analysis. Normal QA/QC procedures were performed on the samples.

BLANKS:

Low levels of the common laboratory solvents acetone and methylene chloride were detected in the laboratory blanks The EPA five times rule was applied to all target compounds which were found in the blank. Compounds that were found in the sample and in the blank were considered real and not the result of contamination if the levels in the sample are greater than or equal to five times the amount of compounds in the associated method blank.

SURROGATES:

Surrogate recoveries were within acceptable limits for the soil samples.

HOLDING TIMES:

The soil samples were stored frozen until extraction. After extraction the samples were analyzed within the recommended 40 day holding time.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Soil matrix spikes were within acceptable QC limits for both percent recovery and Relative Percent Differences (RPD).

ANALYTICAL COMMENTS:

No analytical problems were encountered in the analysis. The data is acceptable for use as qualified.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6.
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
*	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

July 6, 1993

Subject: Bremerton/Bellingham Storm Drains

Samples: 93 - 128161 to -128163

Case No. DOE-659Y

Officer: James Cubbage

By: Dickey D. Huntamer
Organics Analysis Unit

VOLATILE ORGANIC ANALYSIS

ANALYTICAL METHODS:

Volatile organic compounds were analyzed using Manchester modification of the EPA SW 846 Method 8260 purge-trap procedure with capillary GC/MS analysis. Normal QA/QC procedures were performed on the samples.

BLANKS:

Low levels of the common laboratory solvents acetone and methylene chloride were detected in the laboratory blanks The EPA five times rule was applied to all target compounds which were found in the blank. Compounds that were found in the sample and in the blank were considered real and not the result of contamination if the levels in the sample are greater than or equal to five times the amount of compounds in the associated method blank.

SURROGATES:

Surrogate recoveries were within acceptable limits for water samples.

HOLDING TIMES:

Both the water and soil samples were analyzed within the recommended 14 day holding time.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Water matrix spikes were within acceptable QC limits for both percent recovery and RPD.

ANALYTICAL COMMENTS:

No analytical problems were encountered in the analysis.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6.
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
*	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

Appendix 3

DETECTION LIMITS FOR ORGANICS ANALYSES FOR COMPOUNDS NOT FOUND ABOVE DETECTION LIMITS IN THIS STUDY

Transaction #: 06299307 Seq #: 01 (51) VOA - PP Scan
Project Code : DOE-659Y BREMERTON STORM DRAINS PE

Sample No.: 93 128161 Alternate Keys:

Samp Matrix: (10) Water-Total Units: (11) ug/l %Sl
QA Code: ( ) Unspecifed Peaks Tot
Date Extracted: Date Analyzed: 930329 # Days to Ext/An

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/l	1U
2	75718	Methane, Dichlorodifluoro-	ug/l	5U
3	74839	Bromomethane	ug/l	1U
4	75014	Vinyl Chloride	ug/l	1U
5	75003	Chloroethane	ug/l	1U
6	75694	Trichlorofluoromethane	ug/l	1UJ
7	75092	Methylene Chloride	ug/l	1UJ
8	67641	Acetone	ug/l	20UJ
9	75150	Carbon Disulfide	ug/l	5U
10	75354	1,1-Dichloroethene	ug/l	1U
11	75343	1,1-Dichloroethane	ug/l	1U
12	156605	trans-1,2-Dichloroethene	ug/l	1U
13	156592	Cis-1,2-Dichloroethene	ug/l	1U
14	594207	2,2-Dichloropropane	ug/l	1U
15	74975	Bromochloromethane	ug/l	1U
16	67663	Chloroform	ug/l	1U
17	107062	1,2-Dichloroethane	ug/l	1U
	78933	2-Butanone	ug/l	5UJ
	71556	1,1,1-Trichloroethane	ug/l	1U
20	56235	Carbon Tetrachloride	ug/l	1U
21	563586	1,1-Dichloropropene	ug/l	1U
22	75274	Bromodichloromethane	ug/l	1U
23	78875	1,2-Dichloropropane	ug/l	1U
24	74953	Dibromomethane	ug/l	1U
25	10061026	trans-1,3-Dichloropropene	ug/l	1U
26	79016	Ethene, trichloro-	ug/l	1U
27	124481	Dibromochloromethane	ug/l	1U
28	106934	1,2-Dibromoethane (EDB)	ug/l	1U
29	79005	1,1,2-Trichloroethane	ug/l	1U
30	142289	1,3-Dichloropropane	ug/l	1U
31	71432	Benzene	ug/l	1U
32	10061015	cis-1,3-Dichloropropene	ug/l	1U
33	75252	Bromoform	ug/l	1U
34	591786	2-Hexanone	ug/l	1U
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/l	1U
36	127184	Tetrachloroethene	ug/l	1U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/l	1UJ
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/l	1U
39	108883	Toluene	ug/l	1U
40	108907	Chlorobenzene	ug/l	1U
41	100414	Ethylbenzene	ug/l	1U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/l	1U
43	108861	Bromobenzene	ug/l	1U
	96184	1,2,3-Trichloropropane	ug/l	1U
	95498	2-Chlorotoluene	ug/l	1U
46	106434	4-Chlorotoluene	ug/l	1U
47	1330207	Total Xylenes	ug/l	1U
48	95636	1,2,4-Trimethylbenzene	ug/l	1U
49	98066	Tert-Butylbenzene	ug/l	1U
50	108678	1,3,5-Trimethylbenzene	ug/l	1U

(continued on next page)

Transaction #: 06299307 Seq #: 01 (51) VOA - PP Scan
Sample No.: 93 128161 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/l	1U	
52	99876	p-Isopropyltoluene	ug/l	1U	
53	104518	Butylbenzene	ug/l	1U	
54	96128	1,2-Dibromo-3-chloropropane	ug/l	5U	
55	87616	1,2,3-Trichlorobenzene	ug/l	1U	
56	98828	Isopropylbenzene (Cumene)	ug/l	1U	
57	103651	BENZENE, PROPYL-	ug/l	1U	
58	541731	1,3-Dichlorobenzene	ug/l	1U	
59	106467	1,4-Dichlorobenzene	ug/l	1U	
60	95501	1,2-Dichlorobenzene	ug/l	1U	
61	120821	1,2,4-Trichlorobenzene	ug/l	1U	
62	91203	Naphthalene	ug/l	1UJ	
63	87683	Hexachlorobutadiene	ug/l	1U	
64	462066	FLUOROBENZENE	% Recov	101	(Surr) PR
65	2037265	TOLUENE-D8	% Recov	97	(Surr) PR
66	460004	p-BROMOFLUOROBENZENE	% Recov	98	(Surr) PR
67	17060070	1,2-DICHLOROETHANE-D4	% Recov	110	(Surr) PR
68	2199691	1,2-DICHLOROBENZENE-D4	% Recov	108	(Surr) PR

ransaction #: 06299307 Seq #: 02 (51) VOA - PP Scan
oj Code : DOE-659Y BREMERTON STORM DRAINS PE # :

ample No.: 93 128162 Alternate Keys:

amp Matrix: (10) Water-Total Units: (11) ug/l %Slds:
A Code: ( ) Unspecifed Peaks Total:
ate Extracted: Date Analyzed: 930329 # Days to Ext/Anal:

ine	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/l	1U
2	75718	Methane, Dichlorodifluoro-	ug/l	5U
3	74839	Bromomethane	ug/l	1U
4	75014	Vinyl Chloride	ug/l	1U
5	75003	Chloroethane	ug/l	1U
6	75694	Trichlorofluoromethane	ug/l	1U
7	75092	Methylene Chloride	ug/l	1UJ
8	67641	Acetone	ug/l	140UJ
9	75150	Carbon Disulfide	ug/l	5U
10	75354	1,1-Dichloroethene	ug/l	1U
11	75343	1,1-Dichloroethane	ug/l	1U
12	156605	trans-1,2-Dichloroethene	ug/l	1U
13	156592	Cis-1,2-Dichloroethene	ug/l	1U
14	594207	2,2-Dichloropropane	ug/l	1U
15	74975	Bromochloromethane	ug/l	1U
16	67663	Chloroform	ug/l	0.1J
17	107062	1,2-Dichloroethane	ug/l	1U
	78933	2-Butanone	ug/l	1UJ
	71556	1,1,1-Trichloroethane	ug/l	1U
20	56235	Carbon Tetrachloride	ug/l	1U
21	563586	1,1-Dichloropropene	ug/l	1U
22	75274	Bromodichloromethane	ug/l	1U
23	78875	1,2-Dichloropropane	ug/l	1U
24	74953	Dibromomethane	ug/l	1U
25	10061026	trans-1,3-Dichloropropene	ug/l	1U
26	79016	Ethene, trichloro-	ug/l	1U
27	124481	Dibromochloromethane	ug/l	1U
28	106934	1,2-Dibromoethane (EDB)	ug/l	1U
29	79005	1,1,2-Trichloroethane	ug/l	1U
30	142289	1,3-Dichloropropane	ug/l	1U
31	71432	Benzene	ug/l	1U
32	10061015	cis-1,3-Dichloropropene	ug/l	1U
33	75252	Bromoform	ug/l	1U
34	591786	2-Hexanone	ug/l	1U
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/l	1U
36	127184	Tetrachloroethene	ug/l	1U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/l	1UJ
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/l	1U
39	108883	Toluene	ug/l	1U
40	108907	Chlorobenzene	ug/l	1U
41	100414	Ethylbenzene	ug/l	1U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/l	1U
43	108861	Bromobenzene	ug/l	1U
44	96184	1,2,3-Trichloropropane	ug/l	1U
	95498	2-Chlorotoluene	ug/l	1U
46	106434	4-Chlorotoluene	ug/l	1U
47	1330207	Total Xylenes	ug/l	1U
48	95636	1,2,4-Trimethylbenzene	ug/l	1U
49	98066	Tert-Butylbenzene	ug/l	1U
50	108678	1,3,5-Trimethylbenzene	ug/l	1U

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Transaction #: 06299307 Seq #: 02 (51) VOA - PP Scan
10(
ple No.: 93 128162 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/l	1U	
52	99876	p-Isopropyltoluene	ug/l	1U	
53	104518	Butylbenzene	ug/l	1U	
54	96128	1,2-Dibromo-3-chloropropane	ug/l	5U	
55	87616	1,2,3-Trichlorobenzene	ug/l	1U	
56	98828	Isopropylbenzene (Cumene)	ug/l	1U	
57	103651	BENZENE, PROPYL-	ug/l	1U	
58	541731	1,3-Dichlorobenzene	ug/l	1UJ	
59	106467	1,4-Dichlorobenzene	ug/l	1U	
60	95501	1,2-Dichlorobenzene	ug/l	1U	
61	120821	1,2,4-Trichlorobenzene	ug/l	1U	
62	91203	Naphthalene	ug/l	1U	
63	87683	Hexachlorobutadiene	ug/l	1U	
64	462066	FLUOROBENZENE	% Recov	97	(Surr) PR
65	2037265	TOLUENE-D8	% Recov	99	(Surr) PR
66	460004	p-BROMOFLUOROBENZENE	% Recov	96	(Surr) PR
67	17060070	1,2-DICHLOROETHANE-D4	% Recov	108	(Surr) PR
68	2199691	1,2-DICHLOROBENZENE-D4	% Recov	103	(Surr) PR

ransaction #: 06299307 Seq #: 05 (51) VOA - PP Scan
oj Code : DOE-659Y BREMERTON STORM DRAINS PE # :

ample No.: 93 128163 Alternate Keys:

amp Matrix: (10) Water-Total Units: (11) ug/l %Slds:
A Code: ( ) Unspecifed Peaks Total:
ate Extracted: Date Analyzed: 930329 # Days to Ext/Anal:

ine	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/l	1U
2	75718	Methane, Dichlorodifluoro-	ug/l	5U
3	74839	Bromomethane	ug/l	1U
4	75014	Vinyl Chloride	ug/l	1U
5	75003	Chloroethane	ug/l	1U
6	75694	Trichlorofluoromethane	ug/l	1UJ
7	75092	Methylene Chloride	ug/l	1UJ
8	67641	Acetone	ug/l	40UJ
9	75150	Carbon Disulfide	ug/l	5U
10	75354	1,1-Dichloroethene	ug/l	1U
11	75343	1,1-Dichloroethane	ug/l	1U
12	156605	trans-1,2-Dichloroethene	ug/l	1U
13	156592	Cis-1,2-Dichloroethene	ug/l	1U
14	594207	2,2-Dichloropropane	ug/l	1U
15	74975	Bromochloromethane	ug/l	1U
16	67663	Chloroform	ug/l	1U
17	107062	1,2-Dichloroethane	ug/l	1U
)	78933	2-Butanone	ug/l	5UJ
-9	71556	1,1,1-Trichloroethane	ug/l	1U
20	56235	Carbon Tetrachloride	ug/l	1U
21	563586	1,1-Dichloropropene	ug/l	1U
22	75274	Bromodichloromethane	ug/l	1U
23	78875	1,2-Dichloropropane	ug/l	1U
24	74953	Dibromomethane	ug/l	1U
25	10061026	trans-1,3-Dichloropropene	ug/l	1U
26	79016	Ethene, trichloro-	ug/l	0.1J
27	124481	Dibromochloromethane	ug/l	1U
28	106934	1,2-Dibromoethane (EDB)	ug/l	1U
29	79005	1,1,2-Trichloroethane	ug/l	1U
30	142289	1,3-Dichloropropane	ug/l	1U
31	71432	Benzene	ug/l	1U
32	10061015	cis-1,3-Dichloropropene	ug/l	1U
33	75252	Bromoform	ug/l	1U
34	591786	2-Hexanone	ug/l	1U
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/l	1U
36	127184	Tetrachloroethene	ug/l	1U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/l	1UJ
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/l	1U
39	108883	Toluene	ug/l	1U
40	108907	Chlorobenzene	ug/l	1U
41	100414	Ethylbenzene	ug/l	1U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/l	1U
43	108861	Bromobenzene	ug/l	1U
44	96184	1,2,3-Trichloropropane	ug/l	1U
)	95498	2-Chlorotoluene	ug/l	1U
46	106434	4-Chlorotoluene	ug/l	1U
47	1330207	Total Xylenes	ug/l	1U
48	95636	1,2,4-Trimethylbenzene	ug/l	1U
49	98066	Tert-Butylbenzene	ug/l	1U
50	108678	1,3,5-Trimethylbenzene	ug/l	1U

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Transaction #: 06299307 Seq #: 05 (51) VOA - PP Scan
10(
ple No.: 93 128163 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/l	1U	
52	99876	p-Isopropyltoluene	ug/l	1U	
53	104518	Butylbenzene	ug/l	1U	
54	96128	1,2-Dibromo-3-chloropropane	ug/l	5U	
55	87616	1,2,3-Trichlorobenzene	ug/l	1U	
56	98828	Isopropylbenzene (Cumene)	ug/l	1U	
57	103651	BENZENE, PROPYL-	ug/l	1U	
58	541731	1,3-Dichlorobenzene	ug/l	1U	
59	106467	1,4-Dichlorobenzene	ug/l	1U	
60	95501	1,2-Dichlorobenzene	ug/l	1U	
61	120821	1,2,4-Trichlorobenzene	ug/l	1U	
62	91203	Naphthalene	ug/l	1U	
63	87683	Hexachlorobutadiene	ug/l	1U	
64	462066	FLUOROBENZENE	% Recov	98	(Surr) PR
65	2037265	TOLUENE-D8	% Recov	96	(Surr) PR
66	460004	p-BROMOFLUOROBENZENE	% Recov	98	(Surr) PR
67	17060070	1,2-DICHLOROETHANE-D4	% Recov	111	(Surr) PR
68	2199691	1,2-DICHLOROBENZENE-D4	% Recov	102	(Surr) PR

Transaction #: 06189304 Seq #: 01 (51) VOA - PP Scan
Proj Code : DOE-689Y BREMERTON/BELLINGHAM STORM DRAINS PE #

Sample No.: 93 148156 Alternate Keys:

Samp Matrix: (40) Sediment Units: (22) ug/kg %Sld
QA Code: ( ) Unspecifed Peaks Tota
Date Extracted: Date Analyzed: 930430 # Days to Ext/Ana

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/kg	3U
2	75718	Methane, Dichlorodifluoro-	ug/kg	3U
3	74839	Bromomethane	ug/kg	3UJ
4	75014	Vinyl Chloride	ug/kg	3U
5	75003	Chloroethane	ug/kg	3UJ
6	75694	Trichlorofluoromethane	ug/kg	3UJ
7	75092	Methylene Chloride	ug/kg	10UJ
8	67641	Acetone	ug/kg	54UJ
9	75150	Carbon Disulfide	ug/kg	3UJ
10	75354	1,1-Dichloroethene	ug/kg	3UJ
11	75343	1,1-Dichloroethane	ug/kg	3U
12	156605	trans-1,2-Dichloroethene	ug/kg	3UJ
13	156592	Cis-1,2-Dichloroethene	ug/kg	3U
14	594207	2,2-Dichloropropane	ug/kg	3U
15	74975	Bromochloromethane	ug/kg	3U
16	67663	Chloroform	ug/kg	3U
17	107062	1,2-Dichloroethane	ug/kg	3U
18	78933	2-Butanone	ug/kg	19UJ
19	71556	1,1,1-Trichloroethane	ug/kg	3U
20	56235	Carbon Tetrachloride	ug/kg	3U
21	563586	1,1-Dichloropropene	ug/kg	3U
22	75274	Bromodichloromethane	ug/kg	3U
23	78875	1,2-Dichloropropane	ug/kg	3U
24	74953	Dibromomethane	ug/kg	3U
25	10061026	trans-1,3-Dichloropropene	ug/kg	3U
26	79016	Ethene, trichloro-	ug/kg	3U
27	124481	Dibromochloromethane	ug/kg	3U
28	106934	1,2-Dibromoethane (EDB)	ug/kg	3U
29	79005	1,1,2-Trichloroethane	ug/kg	3U
30	142289	1,3-Dichloropropane	ug/kg	3U
31	71432	Benzene	ug/kg	3U
32	10061015	cis-1,3-Dichloropropene	ug/kg	3U
33	75252	Bromoform	ug/kg	3U
34	591786	2-Hexanone	ug/kg	3UJ
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/kg	3U
36	127184	Tetrachloroethene	ug/kg	3U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/kg	3U
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/kg	3U
39	108883	Toluene	ug/kg	3U
40	108907	Chlorobenzene	ug/kg	3U
41	100414	Ethylbenzene	ug/kg	3U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/kg	3U
43	108861	Bromobenzene	ug/kg	3U
44	96184	1,2,3-Trichloropropane	ug/kg	3U
45	95498	2-Chlorotoluene	ug/kg	3U
46	106434	4-Chlorotoluene	ug/kg	3U
47	1330207	Total Xylenes	ug/kg	3U
48	95636	1,2,4-Trimethylbenzene	ug/kg	3U
49	98066	Tert-Butylbenzene	ug/kg	3U
50	108678	1,3,5-Trimethylbenzene	ug/kg	3U

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Transaction #: 06189304 Seq #: 01 (51) VOA - PP Scan
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Sample No.: 93 148156 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/kg	3U	
52	99876	p-Isopropyltoluene	ug/kg	3U	
53	104518	Butylbenzene	ug/kg	3U	
54	96128	1,2-Dibromo-3-chloropropane	ug/kg	3U	
55	87616	1,2,3-Trichlorobenzene	ug/kg	3U	
56	98828	Isopropylbenzene (Cumene)	ug/kg	3U	
57	103651	BENZENE, PROPYL-	ug/kg	3U	
58	541731	1,3-Dichlorobenzene	ug/kg	3U	
59	106467	1,4-Dichlorobenzene	ug/kg	3U	
60	95501	1,2-Dichlorobenzene	ug/kg	3U	
61	120821	1,2,4-Trichlorobenzene	ug/kg	3U	
62	91203	Naphthalene	ug/kg	3U	
63	87683	Hexachlorobutadiene	ug/kg	3U	
64	462066	FLUOROBENZENE	% Recov	100	(Surr) PR
65	2747582	d8-Toluene	% Recov	105	(Surr) PR
66	-460004	p-Bromofluorobenzene	% Recov	94	(Surr) PR
67	17070070	d4-1,2-Dichloroethane	% Recov	101	(Surr) PR
68	2199691	1,2-DICHLOROBENZENE-D4	% Recov	101	(Surr) PR

Transaction #: 06189304 Seq #: 02 (51) VOA - PP Scan
Proj Code : DOE-689Y BREMERTON/BELLINGHAM STORM DRAINS PE # :

Sample No.: 93 148157 Alternate Keys:

Samp Matrix: (40) Sediment Units: (22) ug/kg %Slds:
QA Code: ( ) Unspecifed Peaks Total:
Date Extracted: Date Analyzed: 930430 # Days to Ext/Anal:

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/kg	3U
2	75718	Methane, Dichlorodifluoro-	ug/kg	3U
3	74839	Bromomethane	ug/kg	3UJ
4	75014	Vinyl Chloride	ug/kg	3U
5	75003	Chloroethane	ug/kg	3UJ
6	75694	Trichlorofluoromethane	ug/kg	3UJ
7	75092	Methylene Chloride	ug/kg	25UJ
8	67641	Acetone	ug/kg	40UJ
9	75150	Carbon Disulfide	ug/kg	3UJ
10	75354	1,1-Dichloroethene	ug/kg	3UJ
11	75343	1,1-Dichloroethane	ug/kg	3U
12	156605	trans-1,2-Dichloroethene	ug/kg	3UJ
13	156592	Cis-1,2-Dichloroethene	ug/kg	3U
14	594207	2,2-Dichloropropane	ug/kg	3U
15	74975	Bromochloromethane	ug/kg	3U
16	67663	Chloroform	ug/kg	3U
17	107062	1,2-Dichloroethane	ug/kg	3U
[illegible]	78933	2-Butanone	ug/kg	13UJ
[illegible]	71556	1,1,1-Trichloroethane	ug/kg	3U
20	56235	Carbon Tetrachloride	ug/kg	3U
21	563586	1,1-Dichloropropene	ug/kg	3U
22	75274	Bromodichloromethane	ug/kg	3U
23	78875	1,2-Dichloropropane	ug/kg	3U
24	74953	Dibromomethane	ug/kg	3U
25	10061026	trans-1,3-Dichloropropene	ug/kg	3U
26	79016	Ethene, trichloro-	ug/kg	3U
27	124481	Dibromochloromethane	ug/kg	3U
28	106934	1,2-Dibromoethane (EDB)	ug/kg	3U
29	79005	1,1,2-Trichloroethane	ug/kg	3U
30	142289	1,3-Dichloropropane	ug/kg	3U
31	71432	Benzene	ug/kg	3U
32	10061015	cis-1,3-Dichloropropene	ug/kg	3U
33	75252	Bromoform	ug/kg	3U
34	591786	2-Hexanone	ug/kg	3UJ
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/kg	3U
36	127184	Tetrachloroethene	ug/kg	3U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/kg	3U
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/kg	3U
39	108883	Toluene	ug/kg	3U
40	108907	Chlorobenzene	ug/kg	3U
41	100414	Ethylbenzene	ug/kg	3U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/kg	3U
43	108861	Bromobenzene	ug/kg	3U
[illegible]	96184	1,2,3-Trichloropropane	ug/kg	3U
[illegible]	95498	2-Chlorotoluene	ug/kg	3U
46	106434	4-Chlorotoluene	ug/kg	3U
47	1330207	Total Xylenes	ug/kg	3U
48	95636	1,2,4-Trimethylbenzene	ug/kg	3U
49	98066	Tert-Butylbenzene	ug/kg	3U
50	108678	1,3,5-Trimethylbenzene	ug/kg	3U

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Transaction #: 06189304 Seq #: 02 (51) VOA - PP Scan
[illegible]

Sample No.: 93 148157 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/kg	3U	
52	99876	p-Isopropyltoluene	ug/kg	3U	
53	104518	Butylbenzene	ug/kg	3U	
54	96128	1,2-Dibromo-3-chloropropane	ug/kg	3U	
55	87616	1,2,3-Trichlorobenzene	ug/kg	3U	
56	98828	Isopropylbenzene (Cumene)	ug/kg	3U	
57	103651	BENZENE, PROPYL-	ug/kg	3U	
58	541731	1,3-Dichlorobenzene	ug/kg	3U	
59	106467	1,4-Dichlorobenzene	ug/kg	3U	
60	95501	1,2-Dichlorobenzene	ug/kg	3U	
61	120821	1,2,4-Trichlorobenzene	ug/kg	3U	
62	91203	Naphthalene	ug/kg	3U	
63	87683	Hexachlorobutadiene	ug/kg	3U	
64	462066	FLUOROBENZENE	% Recov	100	(Surr) P
65	2747582	d8-Toluene	% Recov	102	(Surr) P
66	-460004	p-Bromofluorobenzene	% Recov	98	(Surr) P
67	17070070	d4-1,2-Dichloroethane	% Recov	103	(Surr) P
68	2199691	1,2-DICHLOROBENZENE-D4	% Recov	98	(Surr) P

Transaction #: 06189304 Seq #: 03 (51) VOA - PP Scan
Proj Code : DOE-689Y BREMERTON/BELLINGHAM STORM DRAINS PE # : 1

Sample No.: 93 148158 Alternate Keys:

Samp Matrix: (40) Sediment Units: (22) ug/kg %Slds:
QA Code: ( ) Unspecifed Peaks Total:
Date Extracted: Date Analyzed: 930430 # Days to Ext/Anal:

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/kg	6U
2	75718	Methane, Dichlorodifluoro-	ug/kg	6U
3	74839	Bromomethane	ug/kg	6UJ
4	75014	Vinyl Chloride	ug/kg	6U
5	75003	Chloroethane	ug/kg	6UJ
6	75694	Trichlorofluoromethane	ug/kg	6UJ
7	75092	Methylene Chloride	ug/kg	4UJ
8	67641	Acetone	ug/kg	190UJ
9	75150	Carbon Disulfide	ug/kg	6UJ
10	75354	1,1-Dichloroethene	ug/kg	6UJ
11	75343	1,1-Dichloroethane	ug/kg	6U
12	156605	trans-1,2-Dichloroethene	ug/kg	6UJ
13	156592	Cis-1,2-Dichloroethene	ug/kg	6U
14	594207	2,2-Dichloropropane	ug/kg	6U
15	74975	Bromochloromethane	ug/kg	6U
16	67663	Chloroform	ug/kg	6U
17	107062	1,2-Dichloroethane	ug/kg	6U
18	78933	2-Butanone	ug/kg	100
19	71556	1,1,1-Trichloroethane	ug/kg	6U
20	56235	Carbon Tetrachloride	ug/kg	6U
21	563586	1,1-Dichloropropene	ug/kg	6U
22	75274	Bromodichloromethane	ug/kg	6U
23	78875	1,2-Dichloropropane	ug/kg	6U
24	74953	Dibromomethane	ug/kg	6U
25	10061026	trans-1,3-Dichloropropene	ug/kg	6U
26	79016	Ethene, trichloro-	ug/kg	6U
27	124481	Dibromochloromethane	ug/kg	6U
28	106934	1,2-Dibromoethane (EDB)	ug/kg	6U
29	79005	1,1,2-Trichloroethane	ug/kg	6U
30	142289	1,3-Dichloropropane	ug/kg	6U
31	71432	Benzene	ug/kg	2J
32	10061015	cis-1,3-Dichloropropene	ug/kg	6U
33	75252	Bromoform	ug/kg	6U
34	591786	2-Hexanone	ug/kg	6UJ
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/kg	11
36	127184	Tetrachloroethene	ug/kg	6U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/kg	6U
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/kg	6U
39	108883	Toluene	ug/kg	4J
40	108907	Chlorobenzene	ug/kg	6U
41	100414	Ethylbenzene	ug/kg	6U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/kg	6U
43	108861	Bromobenzene	ug/kg	6U
44	96184	1,2,3-Trichloropropane	ug/kg	6U
45	95498	2-Chlorotoluene	ug/kg	6U
46	106434	4-Chlorotoluene	ug/kg	6U
47	1330207	Total Xylenes	ug/kg	2J
48	95636	1,2,4-Trimethylbenzene	ug/kg	2J
49	98066	Tert-Butylbenzene	ug/kg	6U
50	108678	1,3,5-Trimethylbenzene	ug/kg	6U

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Transaction #: 06189304 Seq #: 03 (51) VOA - PP Scan
Sample No.: 93 148158 (continued from previous page)

Line	Par #	Parameter Description	Units	Value		
51	135988	Sec-Butylbenzene	ug/kg	6U		
52	99876	p-Isopropyltoluene	ug/kg	9		
53	104518	Butylbenzene	ug/kg	6U		
54	96128	1,2-Dibromo-3-chloropropane	ug/kg	6U		
55	87616	1,2,3-Trichlorobenzene	ug/kg	6U		
56	98828	Isopropylbenzene (Cumene)	ug/kg	6U		
57	103651	BENZENE, PROPYL-	ug/kg	6U		
58	541731	1,3-Dichlorobenzene	ug/kg	6U		
59	106467	1,4-Dichlorobenzene	ug/kg	6U		
60	95501	1,2-Dichlorobenzene	ug/kg	6U		
61	120821	1,2,4-Trichlorobenzene	ug/kg	6U		
62	91203	Naphthalene	ug/kg	6U		
63	87683	Hexachlorobutadiene	ug/kg	6U		
64	462066	FLUOROBENZENE	% Recov	101	(Surr)	PR
65	2747582	d8-Toluene	% Recov	107	(Surr)	PR
66	-460004	p-Bromofluorobenzene	% Recov	87	(Surr)	PR
67	17070070	d4-1,2-Dichloroethane	% Recov	102	(Surr)	PR
68	2199691	1,2-DICHLOROBENZENE-D4	% Recov	99	(Surr)	PR

Transaction #: 06189304 Seq #: 06 (51) VOA - PP Scan
Proj Code : DOE-689Y BREMERTON/BELLINGHAM STORM DRAINS PE #

Sample No.: 93 148159 Alternate Keys:

Samp Matrix: (40) Sediment Units: (22) ug/kg %Sl
QA Code: ( ) Unspecifed Peaks Tota
Date Extracted: Date Analyzed: 930430 # Days to Ext/Ana

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/kg	4U
2	75718	Methane, Dichlorodifluoro-	ug/kg	4U
3	74839	Bromomethane	ug/kg	4UJ
4	75014	Vinyl Chloride	ug/kg	4U
5	75003	Chloroethane	ug/kg	4UJ
6	75694	Trichlorofluoromethane	ug/kg	4UJ
7	75092	Methylene Chloride	ug/kg	4UJ
8	67641	Acetone	ug/kg	140UJ
9	75150	Carbon Disulfide	ug/kg	2J
10	75354	1,1-Dichloroethene	ug/kg	4UJ
11	75343	1,1-Dichloroethane	ug/kg	4U
12	156605	trans-1,2-Dichloroethene	ug/kg	4UJ
13	156592	Cis-1,2-Dichloroethene	ug/kg	4U
14	594207	2,2-Dichloropropane	ug/kg	4U
15	74975	Bromochloromethane	ug/kg	4U
16	67663	Chloroform	ug/kg	4U
17	107062	1,2-Dichloroethane	ug/kg	4U
18	78933	2-Butanone	ug/kg	43UJ
19	71556	1,1,1-Trichloroethane	ug/kg	4U
20	56235	Carbon Tetrachloride	ug/kg	4U
21	563586	1,1-Dichloropropene	ug/kg	4U
22	75274	Bromodichloromethane	ug/kg	4U
23	78875	1,2-Dichloropropane	ug/kg	4U
24	74953	Dibromomethane	ug/kg	4U
25	10061026	trans-1,3-Dichloropropene	ug/kg	4U
26	79016	Ethene, trichloro-	ug/kg	0.8J
27	124481	Dibromochloromethane	ug/kg	4U
28	106934	1,2-Dibromoethane (EDB)	ug/kg	4U
29	79005	1,1,2-Trichloroethane	ug/kg	4U
30	142289	1,3-Dichloropropane	ug/kg	4U
31	71432	Benzene	ug/kg	4U
32	10061015	cis-1,3-Dichloropropene	ug/kg	4U
33	75252	Bromoform	ug/kg	4U
34	591786	2-Hexanone	ug/kg	4UJ
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/kg	5
36	127184	Tetrachloroethene	ug/kg	4U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/kg	4U
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/kg	4U
39	108883	Toluene	ug/kg	6
40	108907	Chlorobenzene	ug/kg	4U
41	100414	Ethylbenzene	ug/kg	4U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/kg	4U
43	108861	Bromobenzene	ug/kg	4U
44	96184	1,2,3-Trichloropropane	ug/kg	4U
45	95498	2-Chlorotoluene	ug/kg	4U
46	106434	4-Chlorotoluene	ug/kg	4U
47	1330207	Total Xylenes	ug/kg	4U
48	95636	1,2,4-Trimethylbenzene	ug/kg	4U
49	98066	Tert-Butylbenzene	ug/kg	4U
50	108678	1,3,5-Trimethylbenzene	ug/kg	4U

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Transaction #: 06189304 Seq #: 06 (51) VOA - PP Scan
D
ple No.: 93 148159 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/kg	4U	
52	99876	p-Isopropyltoluene	ug/kg	4U	
53	104518	Butylbenzene	ug/kg	4U	
54	96128	1,2-Dibromo-3-chloropropane	ug/kg	4U	
55	87616	1,2,3-Trichlorobenzene	ug/kg	4U	
56	98828	Isopropylbenzene (Cumene)	ug/kg	4U	
57	103651	BENZENE, PROPYL-	ug/kg	4U	
58	541731	1,3-Dichlorobenzene	ug/kg	4U	
59	106467	1,4-Dichlorobenzene	ug/kg	4U	
60	95501	1,2-Dichlorobenzene	ug/kg	4U	
61	120821	1,2,4-Trichlorobenzene	ug/kg	4U	
62	91203	Naphthalene	ug/kg	4U	
63	87683	Hexachlorobutadiene	ug/kg	4U	
64	462066	FLUOROBENZENE	% Recov	99	(Surr) PR
65	2747582	d8-Toluene	% Recov	104	(Surr) PR
66	-460004	p-Bromofluorobenzene	% Recov	87	(Surr) PR
67	17070070	d4-1,2-Dichloroethane	% Recov	102	(Surr) PR
68	2199691	1,2-DICHLOROBENZENE-D4	% Recov	98	(Surr) PR

Transaction #: 06189304 Seq #: 07 (51) VOA - PP Scan
Proj Code : DOE-689Y BREMERTON/BELLINGHAM STORM DRAINS PE
Sample No.: 93 148160 Alternate Keys:

Samp Matrix: (40) Sediment Units: (22) ug/kg %Sl
QA Code: ( ) Unspecifed Peaks Tot
Date Extracted: Date Analyzed: 930430 # Days to Ext/An

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/kg	3U
2	75718	Methane, Dichlorodifluoro-	ug/kg	3U
3	74839	Bromomethane	ug/kg	3UJ
4	75014	Vinyl Chloride	ug/kg	3U
5	75003	Chloroethane	ug/kg	3UJ
6	75694	Trichlorofluoromethane	ug/kg	3UJ
7	75092	Methylene Chloride	ug/kg	7UJ
8	67641	Acetone	ug/kg	47UJ
9	75150	Carbon Disulfide	ug/kg	3UJ
10	75354	1,1-Dichloroethene	ug/kg	3UJ
11	75343	1,1-Dichloroethane	ug/kg	3U
12	156605	trans-1,2-Dichloroethene	ug/kg	3UJ
13	156592	Cis-1,2-Dichloroethene	ug/kg	3U
14	594207	2,2-Dichloropropane	ug/kg	3U
15	74975	Bromochloromethane	ug/kg	3U
16	67663	Chloroform	ug/kg	3U
17	107062	1,2-Dichloroethane	ug/kg	3U
18	78933	2-Butanone	ug/kg	13UJ
19	71556	1,1,1-Trichloroethane	ug/kg	3U
20	56235	Carbon Tetrachloride	ug/kg	3U
21	563586	1,1-Dichloropropene	ug/kg	3U
22	75274	Bromodichloromethane	ug/kg	3U
23	78875	1,2-Dichloropropane	ug/kg	3U
24	74953	Dibromomethane	ug/kg	3U
25	10061026	trans-1,3-Dichloropropene	ug/kg	3U
26	79016	Ethene, trichloro-	ug/kg	3U
27	124481	Dibromochloromethane	ug/kg	3U
28	106934	1,2-Dibromoethane (EDB)	ug/kg	3U
29	79005	1,1,2-Trichloroethane	ug/kg	3U
30	142289	1,3-Dichloropropane	ug/kg	3U
31	71432	Benzene	ug/kg	3U
32	10061015	cis-1,3-Dichloropropene	ug/kg	3U
33	75252	Bromoform	ug/kg	3U
34	591786	2-Hexanone	ug/kg	3UJ
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/kg	3U
36	127184	Tetrachloroethene	ug/kg	3U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/kg	3U
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/kg	3U
39	108883	Toluene	ug/kg	3U
40	108907	Chlorobenzene	ug/kg	3U
41	100414	Ethylbenzene	ug/kg	3U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/kg	3U
43	108861	Bromobenzene	ug/kg	3U
44	96184	1,2,3-Trichloropropane	ug/kg	3U
45	95498	2-Chlorotoluene	ug/kg	3U
46	106434	4-Chlorotoluene	ug/kg	3U
47	1330207	Total Xylenes	ug/kg	3U
48	95636	1,2,4-Trimethylbenzene	ug/kg	3U
49	98066	Tert-Butylbenzene	ug/kg	3U
50	108678	1,3,5-Trimethylbenzene	ug/kg	3U

(continued on next page)

Transaction #: 06189304 Seq #: 07 (51) VOA - PP Scan
D.
Sample No.: 93 148160 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/kg	3U	
52	99876	p-Isopropyltoluene	ug/kg	3U	
53	104518	Butylbenzene	ug/kg	3U	
54	96128	1,2-Dibromo-3-chloropropane	ug/kg	3U	
55	87616	1,2,3-Trichlorobenzene	ug/kg	3U	
56	98828	Isopropylbenzene (Cumene)	ug/kg	3U	
57	103651	BENZENE, PROPYL-	ug/kg	3U	
58	541731	1,3-Dichlorobenzene	ug/kg	3U	
59	106467	1,4-Dichlorobenzene	ug/kg	3U	
60	95501	1,2-Dichlorobenzene	ug/kg	3U	
61	120821	1,2,4-Trichlorobenzene	ug/kg	3U	
62	91203	Naphthalene	ug/kg	3U	
63	87683	Hexachlorobutadiene	ug/kg	3U	
64	462066	FLUOROBENZENE	% Recov	102	(Surr) PR
65	2747582	d8-Toluene	% Recov	97	(Surr) PR
66	-460004	p-Bromofluorobenzene	% Recov	91	(Surr) PR
67	17070070	d4-1,2-Dichloroethane	% Recov	102	(Surr) PR
68	2199691	1,2-DICHLOROBENZENE-D4	% Recov	102	(Surr) PR

Transaction #: 06189304 Seq #: 08 (51) VOA - PP Scan
Proj Code : DOE-689Y BREMERTON/BELLINGHAM STORM DRAINS PE # :

Blank ID : BW3120
Sample No.: 93 148160 Alternate Keys:

Samp Matrix: (40) Sediment Units: (22) ug/kg %Slds
QA Code: (LBK1) Lab Blank Sample #1 Peaks Total
Date Extracted: Date Analyzed: 930430 # Days to Ext/Anal

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/kg	1U
2	75718	Methane, Dichlorodifluoro-	ug/kg	1U
3	74839	Bromomethane	ug/kg	1UJ
4	75014	Vinyl Chloride	ug/kg	1U
5	75003	Chloroethane	ug/kg	1UJ
6	75694	Trichlorofluoromethane	ug/kg	1UJ
7	75092	Methylene Chloride	ug/kg	4J
8	67641	Acetone	ug/kg	6
9	75150	Carbon Disulfide	ug/kg	1UJ
10	75354	1,1-Dichloroethene	ug/kg	1UJ
11	75343	1,1-Dichloroethane	ug/kg	1U
12	156605	trans-1,2-Dichloroethene	ug/kg	1UJ
13	156592	Cis-1,2-Dichloroethene	ug/kg	1U
14	594207	2,2-Dichloropropane	ug/kg	1U
15	74975	Bromochloromethane	ug/kg	1U
16	67663	Chloroform	ug/kg	1U
17	107062	1,2-Dichloroethane	ug/kg	1U
18	78933	2-Butanone	ug/kg	2U
19	71556	1,1,1-Trichloroethane	ug/kg	1U
20	56235	Carbon Tetrachloride	ug/kg	1U
21	563586	1,1-Dichloropropene	ug/kg	1U
22	75274	Bromodichloromethane	ug/kg	1U
23	78875	1,2-Dichloropropane	ug/kg	1U
24	74953	Dibromomethane	ug/kg	1U
25	10061026	trans-1,3-Dichloropropene	ug/kg	1U
26	79016	Ethene, trichloro-	ug/kg	1U
27	124481	Dibromochloromethane	ug/kg	1U
28	106934	1,2-Dibromoethane (EDB)	ug/kg	1U
29	79005	1,1,2-Trichloroethane	ug/kg	1U
30	142289	1,3-Dichloropropane	ug/kg	1U
31	71432	Benzene	ug/kg	1U
32	10061015	cis-1,3-Dichloropropene	ug/kg	1U
33	75252	Bromoform	ug/kg	1U
34	591786	2-Hexanone	ug/kg	1UJ
35	108101	4-Methyl-2-Pentanone(MIBK)	ug/kg	1U
36	127184	Tetrachloroethene	ug/kg	1U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/kg	1U
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/kg	1U
39	108883	Toluene	ug/kg	1U
40	108907	Chlorobenzene	ug/kg	0.8J
41	100414	Ethylbenzene	ug/kg	1U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/kg	1U
43	108861	Bromobenzene	ug/kg	1U
44	96184	1,2,3-Trichloropropane	ug/kg	1U
45	95498	2-Chlorotoluene	ug/kg	1U
46	106434	4-Chlorotoluene	ug/kg	1U
47	1330207	Total Xylenes	ug/kg	1U
48	95636	1,2,4-Trimethylbenzene	ug/kg	1U
49	98066	Tert-Butylbenzene	ug/kg	1U
50	108678	1,3,5-Trimethylbenzene	ug/kg	1U

Transaction #: 06189304 Seq #: 08 (51) VOA - PP Scan
Sample No.: 93 148160 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	ug/kg	1U	
52	99876	p-Isopropyltoluene	ug/kg	1U	
53	104518	Butylbenzene	ug/kg	1U	
54	96128	1,2-Dibromo-3-chloropropane	ug/kg	1U	
55	87616	1,2,3-Trichlorobenzene	ug/kg	1U	
56	98828	Isopropylbenzene (Cumene)	ug/kg	1U	
57	103651	BENZENE, PROPYL-	ug/kg	1U	
58	541731	1,3-Dichlorobenzene	ug/kg	1U	
59	106467	1,4-Dichlorobenzene	ug/kg	1U	
60	95501	1,2-Dichlorobenzene	ug/kg	1U	
61	120821	1,2,4-Trichlorobenzene	ug/kg	1U	
62	91203	Naphthalene	ug/kg	0.7J	
63	87683	Hexachlorobutadiene	ug/kg	1U	
64	462066	FLUOROBENZENE	% Recov	99	(Surr) PR
65	2747582	d8-Toluene	% Recov	97	(Surr) PR
66	-460004	p-Bromofluorobenzene	% Recov	93	(Surr) PR
67	17070070	d4-1,2-Dichloroethane	% Recov	100	(Surr) PR
68	2199691	1,2-DICHLOROBENZENE-D4	% Recov	104	(Surr) PR

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ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

Sample: 228180

Lab ID: D932A
Matrix: Soils/Sediments

QC Report No: D932 - WDOE
Project: Bremerton
Bellingham Storm Drains
VTSR: 05/27/93

Data Release Authorized: _____
Report: 06/14/93 MAC:GaT

Instrument: FINN 5
Date Analyzed: 05/28/93

Amount Analyzed: 4.12 gm (Dry Weight)
Percent Moisture: 18.9%

CAS Number		µg/Kg	
74-87-3	Chloromethane	2.4 U	
74-83-9	Bromomethane	2.4 U	
75-01-4	Vinyl Chloride	2.4 U	
75-00-3	Chloroethane	2.4 U	
75-09-2	Methylene Chloride	2.4 U	
67-64-1	**Acetone**	**24**	
75-15-0	Carbon Disulfide	1.2 U	
75-35-4	1,1-Dichloroethene	1.2 U	
75-34-3	1,1-Dichloroethane	1.2 U	
156-60-5	Trans-1,2-Dichloroethene	1.2 U	
156-59-2	Cis-1,2-Dichloroethene	1.2 U	
67-66-3	Chloroform	1.2 U	
107-06-2	1,2-Dichloroethane	1.2 U	
78-93-3	2-Butanone	6.1 U	
71-55-6	1,1,1-Trichloroethane	1.2 U	
56-23-5	Carbon Tetrachloride	1.2 U	
108-05-4	Vinyl Acetate	1.2 U	
75-27-4	Bromodichloromethane	1.2 U	
78-87-5	1,2-Dichloropropane	1.2 U	
10061-01-5	cis-1,3-Dichloropropene	1.2 U	

CAS Number		µg/Kg	
79-01-6	Trichloroethene	1.2 U	
124-48-1	Dibromochloromethane	1.2 U	
79-00-5	1,1,2-Trichloroethane	1.2 U	
71-43-2	Benzene	1.2 U	
10061-02-6	trans-1,3-Dichloropropene	1.2 U	
110-75-8	2-Chloroethylvinylether	1.2 UJ	KF
75-25-2	Bromoform	1.2 U	
108-10-1	4-Methyl-2-Pentanone	6.1 U	
591-78-6	2-Hexanone	6.1 UJ	KF
127-18-4	Tetrachloroethene	1.2 U	
79-34-5	1,1,2,2-Tetrachloroethane	1.2 U	
108-88-3	**Toluene**	**360 J**	KF
108-90-7	Chlorobenzene	1.2 U	
100-41-4	Ethylbenzene	1.2 U	
100-42-5	Styrene	1.2 U	
1330-20-7	**Total Xylenes**	**2.6**	
75-69-4	Trichlorofluoromethane	2.4 U	
76-13-1	1,1,2-Trichlorotrifluoroethane	2.4 U	
541-73-1	1,3-Dichlorobenzene	1.2 U	
95-50-1	1,4-Dichlorobenzene	1.2 U	
106-46-7	1,2-Dichlorobenzene	1.2 U	

Surrogate Recoveries

d8-Toluene	117%
Bromofluorobenzene	82.1%
d4-1,2-Dichloroethane	103%

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ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

Sample: 228181

Lab ID: D932B
Matrix: Soils/Sediments

QC Report No: D932 - WDOE
Project: Bremerton
Bellingham Storm Drains
VTSR: 05/27/93

Data Release Authorized: _____
Report: 06/14/93 MAC:GaT

Instrument: FINN 5
Date Analyzed: 05/28/93

Amount Analyzed: 4.59 gm (Dry Weight)
Percent Moisture: 21.7%

CAS Number		µg/Kg	
74-87-3	Chloromethane	2.2 U	
74-83-9	Bromomethane	2.2 U	
75-01-4	Vinyl Chloride	2.2 U	
75-00-3	Chloroethane	2.2 U	
75-09-2	Methylene Chloride	2.2 U	
67-64-1	**Acetone**	**8.6 U**	KF
75-15-0	Carbon Disulfide	1.1 U	
75-35-4	1,1-Dichloroethene	1.1 U	
75-34-3	1,1-Dichloroethane	1.1 U	
156-60-5	Trans-1,2-Dichloroethene	1.1 U	
156-59-2	Cis-1,2-Dichloroethene	1.1 U	
67-66-3	Chloroform	1.1 U	
107-06-2	1,2-Dichloroethane	1.1 U	
78-93-3	2-Butanone	5.5 U	
71-55-6	1,1,1-Trichloroethane	1.1 U	
56-23-5	Carbon Tetrachloride	1.1 U	
108-05-4	Vinyl Acetate	1.1 U	
75-27-4	Bromodichloromethane	1.1 U	
78-87-5	1,2-Dichloropropane	1.1 U	
10061-01-5	cis-1,3-Dichloropropene	1.1 U	

CAS Number		µg/Kg	
79-01-6	Trichloroethene	1.1 U	
124-48-1	Dibromochloromethane	1.1 U	
79-00-5	1,1,2-Trichloroethane	1.1 U	
71-43-2	Benzene	1.1 U	
10061-02-6	trans-1,3-Dichloropropene	1.1 U	
110-75-8	2-Chloroethylvinylether	1.1 UJ	KF
75-25-2	Bromoform	1.1 U	
108-10-1	4-Methyl-2-Pentanone	5.5 U	
591-78-6	2-Hexanone	5.5 UJ	KF
127-18-4	Tetrachloroethene	1.1 U	
79-34-5	1,1,2,2-Tetrachloroethane	1.1 U	
108-88-3	**Toluene**	**66**	
108-90-7	Chlorobenzene	1.1 U	
100-41-4	Ethylbenzene	1.1 U	
100-42-5	Styrene	1.1 U	
1330-20-7	**Total Xylenes**	**3.6**	
75-69-4	Trichlorofluoromethane	2.2 U	
76-13-1	1,1,2-Trichlorotrifluoroethane	2.2 U	
541-73-1	1,3-Dichlorobenzene	1.1 U	
95-50-1	1,4-Dichlorobenzene	1.1 U	
106-46-7	1,2-Dichlorobenzene	1.1 U	

Surrogate Recoveries

d8-Toluene	113%
Bromofluorobenzene	87.5%
d4-1,2-Dichloroethane	100%

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ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

Sample: 228182

Lab ID: D932C
Matrix: Soils/Sediments

QC Report No: D932 - WDOE
Project: Bremerton
Bellingham Storm Drains
VTSR: 05/27/93

Data Release Authorized: _____
Report: 06/14/93 MAC:GaT

Instrument: FINN 5
Date Analyzed: 05/28/93

Amount Analyzed: 4.37 gm (Dry Weight)
Percent Moisture: 18.1%

CAS Number		µg/Kg		
74-87-3	Chloromethane	2.3 U		
74-83-9	Bromomethane	2.3 U		
75-01-4	Vinyl Chloride	2.3 U		
75-00-3	Chloroethane	2.3 U		
75-09-2	Methylene Chloride	2.3 U		
67-64-1	Acetone	5.7 U		
75-15-0	Carbon Disulfide	1.1 U		
75-35-4	1,1-Dichloroethene	1.1 U		
75-34-3	1,1-Dichloroethane	1.1 U		
156-60-5	Trans-1,2-Dichloroethene	1.1 U		
156-59-2	Cis-1,2-Dichloroethene	1.1 U		
67-66-3	Chloroform	1.1 U		
107-06-2	1,2-Dichloroethane	1.1 U		
78-93-3	2-Butanone	5.7 U		
71-55-6	1,1,1-Trichloroethane	1.1 U		
56-23-5	Carbon Tetrachloride	1.1 U		
108-05-4	Vinyl Acetate	1.1 U		
75-27-4	Bromodichloromethane	1.1 U		
78-87-5	1,2-Dichloropropane	1.1 U		
10061-01-5	cis-1,3-Dichloropropene	1.1 U		
79-01-6	Trichloroethene	1.1 U		
124-48-1	Dibromochloromethane	1.1 U		
79-00-5	1,1,2-Trichloroethane	1.1 U		
71-43-2	Benzene	1.1 U		
10061-02-6	trans-1,3-Dichloropropene	1.1 U		
110-75-8	2-Chloroethylvinylether	1.1 UJ	KF	
75-25-2	Bromoform	1.1 U		
108-10-1	4-Methyl-2-Pentanone	5.7 U		
591-78-6	2-Hexanone	5.7 UJ	KF	
127-18-4	Tetrachloroethene	1.1 U		
79-34-5	1,1,2,2-Tetrachloroethane	1.1 U		
108-88-3	Toluene	1.1 U		
108-90-7	Chlorobenzene	1.1 U		
100-41-4	Ethylbenzene	1.1 U		
100-42-5	Styrene	1.1 U		
1330-20-7	Total Xylenes	2.3 U		
75-69-4	Trichlorofluoromethane	2.3 U		
76-13-1	1,1,2-Trichlorotrifluoroethane	2.3 U		
541-73-1	1,3-Dichlorobenzene	1.1 U		
95-50-1	1,4-Dichlorobenzene	1.1 U		
106-46-7	1,2-Dichlorobenzene	1.1 U		

Surrogate Recoveries

d8-Toluene	109%
Bromofluorobenzene	93.2%
d4-1,2-Dichloroethane	104%

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ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

Sample: 228183

Lab ID: D932D
Matrix: Soils/Sediments

QC Report No: D932 - WDOE
Project: Bremerton
Bellingham Storm Drains
VTSR: 05/27/93

Data Release Authorized: _____
Report: 06/14/93 MAC:GaT

Instrument: FINN 5
Date Analyzed: 06/01/93

Amount Analyzed: 4.16 gm (Dry Weight)
Percent Moisture: 22.2%

CAS Number		µg/Kg		
74-87-3	Chloromethane	2.4 U		
74-83-9	Bromomethane	2.4 U		
75-01-4	Vinyl Chloride	2.4 U		
75-00-3	Chloroethane	2.4 U		
75-09-2	Methylene Chloride	2.4 U		
67-64-1	**Acetone**	**9.1** U	KF	
75-15-0	Carbon Disulfide	1.2 U		
75-35-4	1,1-Dichloroethene	1.2 U		
75-34-3	1,1-Dichloroethane	1.2 U		
156-60-5	Trans-1,2-Dichloroethene	1.2 U		
156-59-2	Cis-1,2-Dichloroethene	1.2 U		
67-66-3	Chloroform	1.2 U		
107-06-2	1,2-Dichloroethane	1.2 U		
78-93-3	2-Butanone	6.0 U		
71-55-6	1,1,1-Trichloroethane	1.2 U		
56-23-5	Carbon Tetrachloride	1.2 U		
108-05-4	Vinyl Acetate	1.2 U		
75-27-4	Bromodichloromethane	1.2 U		
78-87-5	1,2-Dichloropropane	1.2 U		
10061-01-5	cis-1,3-Dichloropropene	1.2 U		
79-01-6	Trichloroethene	1.2 U		
124-48-1	Dibromochloromethane	1.2 U		
79-00-5	1,1,2-Trichloroethane	1.2 U		
71-43-2	Benzene	1.2 U		
10061-02-6	trans-1,3-Dichloropropene	1.2 U		
110-75-8	2-Chloroethylvinylether	1.2 UJ	KF	
75-25-2	Bromoform	1.2 U		
108-10-1	4-Methyl-2-Pentanone	6.0 U		
591-78-6	2-Hexanone	6.0 U		
127-18-4	Tetrachloroethene	1.2 UJ	KF	
79-34-5	1,1,2,2-Tetrachloroethane	1.2 U		
108-88-3	**Toluene**	**29**		
108-90-7	Chlorobenzene	1.2 U		
100-41-4	Ethylbenzene	1.2 U		
100-42-5	Styrene	1.2 U		
1330-20-7	Total Xylenes	2.4 U		
75-69-4	Trichlorofluoromethane	2.4 U		
76-13-1	1,1,2-Trichlorotrifluoroethane	2.4 U		
541-73-1	1,3-Dichlorobenzene	1.2 U		
95-50-1	1,4-Dichlorobenzene	1.2 U		
106-46-7	1,2-Dichlorobenzene	1.2 U		

Surrogate Recoveries

d8-Toluene	109%
Bromofluorobenzene	88.2%
d4-1,2-Dichloroethane	96.2%

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ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

Lab ID: D932E
Matrix: Soils/Sediments

Data Release Authorized: _____
Report: 06/14/93 MAC:GaT

Sample: 228184

QC Report No: D932 - WDOE
Project: Bremerton
Bellingham Storm Drains
VTSR: 05/27/93

Instrument: FINN 5
Date Analyzed: 06/01/93

Amount Analyzed: 2.81 gm (Dry Weight)
Percent Moisture: 46.7%

CAS Number		µg/Kg	
74-87-3	Chloromethane	3.6 U	
74-83-9	Bromomethane	3.6 U	
75-01-4	Vinyl Chloride	3.6 U	
75-00-3	Chloroethane	3.6 U	
75-09-2	Methylene Chloride	3.6 U	
67-64-1	**Acetone**	**49** u	KF
75-15-0	Carbon Disulfide	1.8 U	
75-35-4	1,1-Dichloroethene	1.8 U	
75-34-3	1,1-Dichloroethane	1.8 U	
156-60-5	Trans-1,2-Dichloroethene	1.8 U	
156-59-2	Cis-1,2-Dichloroethene	1.8 U	
67-66-3	Chloroform	1.8 U	
107-06-2	1,2-Dichloroethane	1.8 U	
78-93-3	**2-Butanone**	**17**	
71-55-6	1,1,1-Trichloroethane	1.8 U	
56-23-5	Carbon Tetrachloride	1.8 U	
108-05-4	Vinyl Acetate	1.8 U	
75-27-4	Bromodichloromethane	1.8 U	
78-87-5	1,2-Dichloropropane	1.8 U	
10061-01-5	cis-1,3-Dichloropropene	1.8 U	

CAS Number		µg/Kg	
79-01-6	Trichloroethene	1.8 U	
124-48-1	Dibromochloromethane	1.8 U	
79-00-5	1,1,2-Trichloroethane	1.8 U	
71-43-2	**Benzene**	**4.6**	
10061-02-6	trans-1,3-Dichloropropene	1.8 U	
110-75-8	2-Chloroethylvinylether	1.8 UJ	KF
75-25-2	Bromoform	1.8 U	
108-10-1	4-Methyl-2-Pentanone	8.9 U J	KF
591-78-6	2-Hexanone	8.9 U J	KF
127-18-4	Tetrachloroethene	1.8 UJ	KF
79-34-5	1,1,2,2-Tetrachloroethane	1.8 U J	KF
108-88-3	**Toluene**	**4000** X KEJ	KF
108-90-7	Chlorobenzene	1.8 U J	KF
100-41-4	**Ethylbenzene**	**44** J	KF
100-42-5	Styrene	1.8 U J	KF
1330-20-7	**Total Xylenes**	**74** J	KF
75-69-4	Trichlorofluoromethane	3.6 UJ	
76-13-1	1,1,2-Trichlorotrifluoroethane	3.6 UJ	
541-73-1	1,3-Dichlorobenzene	1.8 UJ	
95-50-1	1,4-Dichlorobenzene	1.8 UJ	
106-46-7	1,2-Dichlorobenzene	1.8 UJ	

Surrogate Recoveries

d8-Toluene	111%
Bromofluorobenzene	91.2%
d4-1,2-Dichloroethane	101%

ANALYTICAL RESOURCES INCORPORATED
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ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

Lab ID: D932FM2
Matrix: Soils/Sediments

Data Release Authorized: _____
Report: 06/16/93 MAC:GaT

Sample: 228185 reanalysis medium

QC Report No: D932 - WDOE
Project: Bremerton
Bellingham Storm Drains
VTSR: 05/27/93

Instrument: FINN 5
Date Analyzed: 06/04/93

Amount Analyzed: 0.029 gm (Dry Weight)
Percent Moisture: 31.6%

CAS Number		µg/Kg
74-87-3	Chloromethane	340 U
74-83-9	Bromomethane	340 U
75-01-4	Vinyl Chloride	340 U
75-00-3	Chloroethane	340 U
75-09-2	**Methylene Chloride**	**1400**
67-64-1	Acetone	860 U
75-15-0	Carbon Disulfide	170 U
75-35-4	1,1-Dichloroethene	170 U
75-34-3	1,1-Dichloroethane	170 U
156-60-5	Trans-1,2-Dichloroethene	170 U
156-59-2	Cis-1,2-Dichloroethene	170 U
67-66-3	Chloroform	170 U
107-06-2	1,2-Dichloroethane	170 U
78-93-3	2-Butanone	860 U
71-55-6	1,1,1-Trichloroethane	170 U
56-23-5	Carbon Tetrachloride	170 U
108-05-4	Vinyl Acetate	170 U
75-27-4	Bromodichloromethane	170 U
78-87-5	1,2-Dichloropropane	170 U
10061-01-5	cis-1,3-Dichloropropene	170 U

CAS Number		µg/Kg	
79-01-6	Trichloroethene	170 U	
124-48-1	Dibromochloromethane	170 U	
79-00-5	1,1,2-Trichloroethane	170 U	
71-43-2	Benzene	170 U	
10061-02-6	trans-1,3-Dichloropropene	170 U	
110-75-8	2-Chloroethylvinylether	170 UJ	KF
75-25-2	Bromoform	170 U	
108-10-1	4-Methyl-2-Pentanone	860 U	
591-78-6	2-Hexanone	860 U	
127-18-4	Tetrachloroethene	170 U	
79-34-5	1,1,2,2-Tetrachloroethane	170 U	
108-88-3	**Toluene**	**5500**	
108-90-7	Chlorobenzene	170 U	
100-41-4	Ethylbenzene	170 U	
100-42-5	Styrene	170 U	
1330-20-7	Total Xylenes	340 U	
75-69-4	Trichlorofluoromethane	340 U	
76-13-1	1,1,2-Trichlorotrifluoroethane	340 U	
541-73-1	1,3-Dichlorobenzene	170 U	
95-50-1	1,4-Dichlorobenzene	170 U	
106-46-7	1,2-Dichlorobenzene	170 U	

Surrogate Recoveries

d8-Toluene	84.4%
Bromofluorobenzene	86.3%
d4-1,2-Dichloroethane	85.8%

Project: DOE-689Y BREMERTON/BELLINGHAM STORM DRAINS Officer: JCC Account: D3100

Laboratory: Ecology, Manchester

Sample No: 93 148156 Description: P1 Source: Sediment (General)

Begin Date: 93/03/10 :

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	406U	ug/kg
2,4-Dinitrophenol	4060U	ug/kg
Dibenzo(a,h)anthracene	406U	ug/kg
Benzo(a)anthracene	406U	ug/kg
4-Chloro-3-Methylphenol	406U	ug/kg
Aniline	406U	ug/kg
Benzoic acid	1020U	ug/kg
Hexachloroethane	406U	ug/kg
Hexachlorocyclopentadi+	2030UJ	ug/kg
Isophorone	406U	ug/kg
Acenaphthene	406U	ug/kg
Diethylphthalate	406U	ug/kg
Di-n-Butylphthalate	406U	ug/kg
Phenanthrene	406U	ug/kg
Butylbenzylphthalate	406U	ug/kg
N-Nitrosodiphenylamine	406U	ug/kg
Fluorene	406U	ug/kg
Carbazole	406U	ug/kg
Hexachlorobutadiene	406U	ug/kg
Pentachlorophenol	406U	ug/kg
2,4,6-Trichlorophenol	406U	ug/kg
2-Nitroaniline	406U	ug/kg
2-Nitrophenol	1020U	ug/kg
Naphthalene, 1-Methyl-	406U	ug/kg
Naphthalene	406U	ug/kg
2-Methylnaphthalene	406U	ug/kg
2-Chloronaphthalene	406U	ug/kg
3,3'-Dichlorobenzidine	813U	ug/kg
Benzidine	813U	ug/kg
2-Methylphenol	406U	ug/kg
1,2-Dichlorobenzene	406U	ug/kg
o-Chlorophenol (2-Chlo+	406U	ug/kg
2,4,5-Trichlorophenol	406U	ug/kg
Nitrobenzene	406U	ug/kg
3-Nitroaniline	406U	ug/kg
4-Nitroaniline	1020U	ug/kg
4-Nitrophenol	1020U	ug/kg
Benzyl Alcohol	406U	ug/kg
4-Bromophenyl-phenylet+	406U	ug/kg
2,4-Dimethylphenol	406U	ug/kg
4-Methylphenol	406U	ug/kg
1,4-Dichlorobenzene	406U	ug/kg
4-Chloroaniline	406U	ug/kg
Phenol	810 *	ug/kg
bis(2-Chloroethyl)Ether	406U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
bis(2-Chloroethoxy)Met+	406U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	553U	ug/kg
Di-n-Octyl Phthalate	1020U	ug/kg
HEXACHLOROBENZENE	406U	ug/kg
Anthracene	406U	ug/kg
1,2,4-Trichlorobenzene	406U	ug/kg
2,4-Dichlorophenol	406U	ug/kg
2,4-Dinitrotoluene	1020U	ug/kg
Pyrene	588U	ug/kg
Dimethylphthalate	406U	ug/kg
Dibenzofuran	406U	ug/kg
Benzo(ghi)perylene	406U	ug/kg
Indeno(1,2,3-cd)pyrene	1020U	ug/kg
Benzo(b)fluoranthene	406U	ug/kg
Fluoranthene	1070U	ug/kg
Benzo(k)fluoranthene	406U	ug/kg
Acenaphthylene	406U	ug/kg
Chrysene	598U	ug/kg
Retene	406U	ug/kg
4,6-Dinitro-2-methylph+	1020U	ug/kg
1,3-Dichlorobenzene	406U	ug/kg
2,6-Dinitrotoluene	1020U	ug/kg
N-Nitroso-di-n-Propyla+	406U	ug/kg
4-Chlorophenyl-phenyle+	406U	ug/kg
1,2-Diphenylhydrazine	813U	ug/kg
BIS(20CHLOROISOPROPYL)+	406U	ug/kg
Surrog: 2-Fluorobiphen+	91	% Recov
2-Fluorophenol	66	% Recov
Surrog: 2,4,6-Tribromo+	NAP	% Recov
Terphenyl-d14	114	% Recov
Pyrene-d10	100	% Recov
1,2-DICHLOROBENZENE-D4	55	% Recov
Surrog: D5-Nitrobenzene	72	% Recov
Surrog: Phenol D5	74	% Recov
D4-2-CHLOROPHENOL (SS)	77	% Recov

Tent Ident - B/N/Aci	Sediment Result	Units
Phenylacetic Acid	1510NJ*	ug/kg
Decanoic Acid, Methyl +	1000NJ*	ug/kg
PHYTOL	1190NJ*	ug/kg
9-HEXADECENOIC ACID	801NJ*	ug/kg

Tent Ident - B/N/Aci *** Continued ***	Sediment Result	Units
Oxacyclohexadecan-2-on+	4000NJ*	ug/kg
UNKNOWN COMPOUND 2	593NJ*	ug/kg
UNKNOWN COMPOUND 4	564NJ*	ug/kg
UNKNOWN COMPOUND 5	870NJ*	ug/kg
UNKNOWN COMPOUND 7	4720NJ*	ug/kg
UNKNOWN COMPOUND 8	4750NJ*	ug/kg
UNKNOWN COMPOUND 9	7400NJ*	ug/kg
11-HEXADECENOIC ACID, +	915NJ*	ug/kg

(Sample Complete)

Laboratory: Ecology, Manchester

Sample No: 93 148157 Description: P2 Source: Sediment (General)

Begin Date: 93/03/10 :

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	434U	ug/kg
2,4-Dinitrophenol	4340U	ug/kg
Dibenzo(a,h)anthracene	434U	ug/kg
Benzo(a)anthracene	494U	ug/kg
4-Chloro-3-Methylphenol	434U	ug/kg
Aniline	434U	ug/kg
Benzoic acid	1080U	ug/kg
Hexachloroethane	434U	ug/kg
Hexachlorocyclopentadi+	2170UJ	ug/kg
Isophorone	434U	ug/kg
Acenaphthene	434U	ug/kg
Diethylphthalate	434U	ug/kg
Di-n-Butylphthalate	434U	ug/kg
Phenanthrene	621U	ug/kg
Butylbenzylphthalate	434U	ug/kg
N-Nitrosodiphenylamine	434U	ug/kg
Fluorene	434U	ug/kg
Carbazole	434U	ug/kg
Hexachlorobutadiene	434U	ug/kg
Pentachlorophenol	434U	ug/kg
2,4,6-Trichlorophenol	434U	ug/kg
2-Nitroaniline	434U	ug/kg
2-Nitrophenol	1080U	ug/kg
Naphthalene, 1-Methyl-	434U	ug/kg
Naphthalene	434U	ug/kg
2-Methylnaphthalene	434U	ug/kg
2-Chloronaphthalene	434U	ug/kg
3,3'-Dichlorobenzidine	868U	ug/kg
Benzidine	868U	ug/kg
2-Methylphenol	434U	ug/kg
1,2-Dichlorobenzene	434U	ug/kg
o-Chlorophenol (2-Chlo+	434U	ug/kg
2,4,5-Trichlorophenol	434U	ug/kg
Nitrobenzene	434U	ug/kg
3-Nitroaniline	434U	ug/kg
4-Nitroaniline	1080U	ug/kg
4-Nitrophenol	1080U	ug/kg
Benzyl Alcohol	434U	ug/kg
4-Bromophenyl-phenylet+	434U	ug/kg
2,4-Dimethylphenol	434U	ug/kg
4-Methylphenol	434U	ug/kg
1,4-Dichlorobenzene	434U	ug/kg
4-Chloroaniline	434U	ug/kg
Phenol	434U	ug/kg
bis(2-Chloroethyl)Ether	434U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
bis(2-Chloroethoxy)Met+	434U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	434U	ug/kg
Di-n-Octyl Phthalate	1080U	ug/kg
HEXACHLOROBENZENE	434U	ug/kg
Anthracene	434U	ug/kg
1,2,4-Trichlorobenzene	434U	ug/kg
2,4-Dichlorophenol	434U	ug/kg
2,4-Dinitrotoluene	1080U	ug/kg
Pyrene	913U	ug/kg
Dimethylphthalate	434U	ug/kg
Dibenzofuran	434U	ug/kg
Benzo(ghi)perylene	434U	ug/kg
Indeno(1,2,3-cd)pyrene	434U	ug/kg
Benzo(b)fluoranthene	590U	ug/kg
Fluoranthene	1360U	ug/kg
Benzo(k)fluoranthene	511U	ug/kg
Acenaphthylene	434U	ug/kg
Chrysene	637U	ug/kg
Retene	434U	ug/kg
4,6-Dinitro-2-methylph+	1080U	ug/kg
1,3-Dichlorobenzene	434U	ug/kg
2,6-Dinitrotoluene	1080U	ug/kg
N-Nitroso-di-n-Propyla+	434U	ug/kg
4-Chlorophenyl-phenyle+	434U	ug/kg
1,2-Diphenylhydrazine	868U	ug/kg
BIS(20CHLOROISOPROPYL)+	434U	ug/kg
Surrog: 2-Fluorobiphen+	98	% Recov
2-Fluorophenol	77	% Recov
Surrog: 2,4,6-Tribromo+	NAP	% Recov
Terphenyl-d14	117	% Recov
Pyrene-d10	96	% Recov
1,2-DICHLOROBENZENE-D4	72	% Recov
Surrog: D5-Nitrobenzene	88	% Recov
Surrog: Phenol D5	84	% Recov
D4-2-CHLOROPHENOL (SS)	89	% Recov

Tent Ident - B/N/Aci	Sediment Result	Units
Phenylacetic Acid	715NJ*	ug/kg
Decanoic Acid, Methyl +	859NJ*	ug/kg
Thujone	796NJ*	ug/kg
9-HEXADECENOIC ACID, M+	539NJ*	ug/kg

Tent Ident - B/N/Aci *** Continued ***	Sediment Result	Units
BENZOIC ACID, 2,4-DIHY+	396NJ*	ug/kg
TETRADECANOIC ACID, 12+	323NJ*	ug/kg
UNKNOWN COMPOUND 1	367NJ*	ug/kg
UNKNOWN COMPOUND 2	519NJ*	ug/kg
UNKNOWN COMPOUND 5	445NJ*	ug/kg
UNKNOWN COMPOUND 6	1800NJ*	ug/kg
UNKNOWN COMPOUND 7	5630NJ*	ug/kg

(Sample Complete)

Project: DOE-689Y BREMERTON/BELLINGHAM STORM DRAINS Officer: JCC Account: D3100

Laboratory: Ecology, Manchester

Sample No: 93 148158 Description: S1 Source: Sediment (General)

Begin Date: 93/03/10 :

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	748U	ug/kg
2,4-Dinitrophenol	7480U	ug/kg
Dibenzo(a,h)anthracene	748U	ug/kg
Benzo(a)anthracene	748U	ug/kg
4-Chloro-3-Methylphenol	748U	ug/kg
Aniline	748U	ug/kg
Benzoic acid	1870U	ug/kg
Hexachloroethane	748U	ug/kg
Hexachlorocyclopentadi+	3740UJ	ug/kg
Isophorone	748U	ug/kg
Acenaphthene	748U	ug/kg
Diethylphthalate	748U	ug/kg
Di-n-Butylphthalate	748U	ug/kg
Phenanthrene	748U	ug/kg
Butylbenzylphthalate	748U	ug/kg
N-Nitrosodiphenylamine	748U	ug/kg
Fluorene	748U	ug/kg
Carbazole	748U	ug/kg
Hexachlorobutadiene	748U	ug/kg
Pentachlorophenol	748U	ug/kg
2,4,6-Trichlorophenol	748U	ug/kg
2-Nitroaniline	748U	ug/kg
2-Nitrophenol	1870U	ug/kg
Naphthalene, 1-Methyl-	748U	ug/kg
Naphthalene	748U	ug/kg
2-Methylnaphthalene	748U	ug/kg
2-Chloronaphthalene	748U	ug/kg
3,3'-Dichlorobenzidine	1500U	ug/kg
Benzidine	1500U	ug/kg
2-Methylphenol	748U	ug/kg
1,2-Dichlorobenzene	748U	ug/kg
o-Chlorophenol (2-Chlo+	748U	ug/kg
2,4,5-Trichlorophenol	748U	ug/kg
Nitrobenzene	748U	ug/kg
3-Nitroaniline	748U	ug/kg
4-Nitroaniline	1870U	ug/kg
4-Nitrophenol	1870U	ug/kg
Benzyl Alcohol	748U	ug/kg
4-Bromophenyl-phenylet+	748U	ug/kg
2,4-Dimethylphenol	748U	ug/kg
4-Methylphenol	9740 *	ug/kg
1,4-Dichlorobenzene	748U	ug/kg
4-Chloroaniline	748U	ug/kg
Phenol	506J*	ug/kg
bis(2-Chloroethyl)Ether	748U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
bis(2-Chloroethoxy)Met+	748U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	3890 *	ug/kg
Di-n-Octyl Phthalate	1870U	ug/kg
HEXACHLOROBENZENE	748U	ug/kg
Anthracene	748U	ug/kg
1,2,4-Trichlorobenzene	748U	ug/kg
2,4-Dichlorophenol	748U	ug/kg
2,4-Dinitrotoluene	1870U	ug/kg
Pyrene	748U	ug/kg
Dimethylphthalate	748U	ug/kg
Dibenzofuran	748U	ug/kg
Benzo(ghi)perylene	748U	ug/kg
Indeno(1,2,3-cd)pyrene	1870U	ug/kg
Benzo(b)fluoranthene	748U	ug/kg
Fluoranthene	853U	ug/kg
Benzo(k)fluoranthene	748U	ug/kg
Acenaphthylene	748U	ug/kg
Chrysene	748U	ug/kg
Retene	748U	ug/kg
4,6-Dinitro-2-methylph+	1870U	ug/kg
1,3-Dichlorobenzene	748U	ug/kg
2,6-Dinitrotoluene	1870U	ug/kg
N-Nitroso-di-n-Propyla+	748U	ug/kg
4-Chlorophenyl-phenyle+	748U	ug/kg
1,2-Diphenylhydrazine	1500U	ug/kg
BIS(2OCHLOROISOPROPYL)+	748U	ug/kg
Surrog: 2-Fluorobiphen+	98	% Recov
2-Fluorophenol	64	% Recov
Surrog: 2,4,6-Tribromo+	NAF	% Recov
Terphenyl-d14	114	% Recov
Pyrene-d10	80	% Recov
1,2-DICHLOROBENZENE-D4	46	% Recov
Surrog: D5-Nitrobenzene	80	% Recov
Surrog: Phenol D5	73	% Recov
D4-2-CHLOROPHENOL (SS)	74	% Recov

Tent Ident - B/N/Aci *** Continued ***	Sediment Result	Units
BENZENEPROPANOIC ACID	8790NJ*	ug/kg
UNKNOWN COMPOUND 1	6020NJ*	ug/kg
UNKNOWN COMPOUND 2	2780NJ*	ug/kg
UNKNOWN COMPOUND 3	6030NJ*	ug/kg
UNKNOWN COMPOUND 4	2640NJ*	ug/kg
UNKNOWN COMPOUND 5	2710NJ*	ug/kg
UNKNOWN COMPOUND 7	3940NJ*	ug/kg
UNKNOWN COMPOUND 8	3360NJ*	ug/kg
11-HEXADECENOIC ACID, +	4730NJ*	ug/kg

Tent Ident - B/N/Aci	Sediment Result	Units
Phenylacetic Acid	14500NJ*	ug/kg
Decanoic Acid, Methyl +	5240NJ*	ug/kg
Oleic acid	3380NJ*	ug/kg
PHYTOL	10000NJ*	ug/kg

Project: DOE-689Y BREMERTON/BELLINGHAM STORM DRAINS Officer: JCC Account: D3100

Laboratory: Ecology, Manchester

Sample No: 93 148159 Description: S2 Source: Sediment (General)

Begin Date: 93/03/10 :

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	509U	ug/kg
2,4-Dinitrophenol	5090U	ug/kg
Dibenzo(a,h)anthracene	509U	ug/kg
Benzo(a)anthracene	549U	ug/kg
4-Chloro-3-Methylphenol	509U	ug/kg
Aniline	509U	ug/kg
Benzoic acid	1270U	ug/kg
Hexachloroethane	509U	ug/kg
Hexachlorocyclopentadi+	2550UJ	ug/kg
Isophorone	509U	ug/kg
Acenaphthene	509U	ug/kg
Diethylphthalate	509U	ug/kg
Di-n-Butylphthalate	509U	ug/kg
Phenanthrene	562U	ug/kg
Butylbenzylphthalate	509U	ug/kg
N-Nitrosodiphenylamine	509U	ug/kg
Fluorene	509U	ug/kg
Carbazole	81.2J*	ug/kg
Hexachlorobutadiene	509U	ug/kg
Pentachlorophenol	509U	ug/kg
2,4,6-Trichlorophenol	509U	ug/kg
2-Nitroaniline	509U	ug/kg
2-Nitrophenol	1270U	ug/kg
Naphthalene, 1-Methyl-	509U	ug/kg
Naphthalene	509U	ug/kg
2-Methylnaphthalene	509U	ug/kg
2-Chloronaphthalene	509U	ug/kg
3,3'-Dichlorobenzidine	1020U	ug/kg
Benzidine	1020U	ug/kg
2-Methylphenol	509U	ug/kg
1,2-Dichlorobenzene	509U	ug/kg
o-Chlorophenol (2-Chlo+	509U	ug/kg
2,4,5-Trichlorophenol	509U	ug/kg
Nitrobenzene	509U	ug/kg
3-Nitroaniline	509U	ug/kg
4-Nitroaniline	1270U	ug/kg
4-Nitrophenol	1270U	ug/kg
Benzyl Alcohol	509U	ug/kg
4-Bromophenyl-phenylet+	509U	ug/kg
2,4-Dimethylphenol	509U	ug/kg
4-Methylphenol	889 *	ug/kg
1,4-Dichlorobenzene	509U	ug/kg
4-Chloroaniline	509U	ug/kg
Phenol	192J*	ug/kg
bis(2-Chloroethyl)Ether	509U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
bis(2-Chloroethoxy)Met+	509U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	2740U	ug/kg
Di-n-Octyl Phthalate	1270U	ug/kg
HEXACHLOROBENZENE	509U	ug/kg
Anthracene	509U	ug/kg
1,2,4-Trichlorobenzene	509U	ug/kg
2,4-Dichlorophenol	509U	ug/kg
2,4-Dinitrotoluene	1270U	ug/kg
Pyrene	913U	ug/kg
Dimethylphthalate	509U	ug/kg
Dibenzofuran	509U	ug/kg
Benzo(ghi)perylene	509U	ug/kg
Indeno(1,2,3-cd)pyrene	509U	ug/kg
Benzo(b)fluoranthene	650U	ug/kg
Fluoranthene	1360U	ug/kg
Benzo(k)fluoranthene	518U	ug/kg
Acenaphthylene	509U	ug/kg
Chrysene	680U	ug/kg
Retene	509U	ug/kg
4,6-Dinitro-2-methylph+	1270U	ug/kg
1,3-Dichlorobenzene	509U	ug/kg
2,6-Dinitrotoluene	1270U	ug/kg
N-Nitroso-di-n-Propyla+	509U	ug/kg
4-Chlorophenyl-phenyle+	509U	ug/kg
1,2-Diphenylhydrazine	1020U	ug/kg
BIS(2OCHLOROISOPROPYL)+	509U	ug/kg
Surrog: 2-Fluorobiphen+	48	% Recov
2-Fluorophenol	33	% Recov
Surrog: 2,4,6-Tribromo+	NAF	% Recov
Terphenyl-d14	57	% Recov
Pyrene-d10	41	% Recov
1,2-DICHLOROBENZENE-D4	28	% Recov
Surrog: D5-Nitrobenzene	36	% Recov
Surrog: Phenol D5	38	% Recov
D4-2-CHLOROPHENOL (SS)	38	% Recov

Tent Ident - B/N/Aci *** Continued ***	Sediment Result	Units
9-HEXADECENOIC ACID	3330NJ*	ug/kg
UNKNOWN HYDROCARBON 1	561NJ*	ug/kg
UNKNOWN COMPOUND 1	499NJ*	ug/kg
UNKNOWN COMPOUND 2	464NJ*	ug/kg
UNKNOWN COMPOUND 3	403NJ*	ug/kg
UNKNOWN COMPOUND 4	723NJ*	ug/kg
UNKNOWN COMPOUND 5	1130NJ*	ug/kg
UNKNOWN COMPOUND 6	5850NJ*	ug/kg
UNKNOWN COMPOUND 7	6960NJ*	ug/kg
9-HEXADECENOIC ACID, M+	1200NJ*	ug/kg

Tent Ident - B/N/Aci	Sediment Result	Units
Phenylacetic Acid	1650NJ*	ug/kg
Decanoic Acid, Methyl +	1440NJ*	ug/kg
PHYTOL	891NJ*	ug/kg
BENZENEPROPANOIC ACID	533NJ*	ug/kg

(Sample Complete)

Project: DOE-689Y BREMERTON/BELLINGHAM STORM DRAINS Officer: JCC Account: 23100

Laboratory: Ecology, Manchester

Sample No: 93 148160 Description: S3 Source: Sediment (General)

Begin Date: 93/03/10 :

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	576U	ug/kg
2,4-Dinitrophenol	5760U	ug/kg
Dibenzo(a,h)anthracene	576U	ug/kg
Benzo(a)anthracene	576U	ug/kg
4-Chloro-3-Methylphenol	576U	ug/kg
Aniline	576U	ug/kg
Benzoic acid	1440U	ug/kg
Hexachloroethane	576UJ	ug/kg
Hexachlorocyclopentadi+	NAR	ug/kg
Isophorone	576U	ug/kg
Acenaphthene	576U	ug/kg
Diethylphthalate	576U	ug/kg
Di-n-Butylphthalate	576U	ug/kg
Phenanthrene	576U	ug/kg
Butylbenzylphthalate	576U	ug/kg
N-Nitrosodiphenylamine	576U	ug/kg
Fluorene	576U	ug/kg
Carbazole	576U	ug/kg
Hexachlorobutadiene	576U	ug/kg
Pentachlorophenol	576U	ug/kg
2,4,6-Trichlorophenol	576U	ug/kg
2-Nitroaniline	576U	ug/kg
2-Nitrophenol	1440U	ug/kg
Naphthalene, 1-Methyl-Naphthalene	576U	ug/kg
2-Methylnaphthalene	576U	ug/kg
2-Chloronaphthalene	576U	ug/kg
3,3'-Dichlorobenzidine	1150U	ug/kg
Benzidine	1150U	ug/kg
2-Methylphenol	576U	ug/kg
1,2-Dichlorobenzene	576U	ug/kg
o-Chlorophenol (2-Chlo+	576U	ug/kg
2,4,5-Trichlorophenol	576U	ug/kg
Nitrobenzene	576U	ug/kg
3-Nitroaniline	576UJ	ug/kg
4-Nitroaniline	1440UJ	ug/kg
4-Nitrophenol	1440U	ug/kg
Benzyl Alcohol	576U	ug/kg
4-Bromophenyl-phenylet+	576U	ug/kg
2,4-Dimethylphenol	576U	ug/kg
4-Methylphenol	2800 *	ug/kg
1,4-Dichlorobenzene	576U	ug/kg
4-Chloroaniline	5760UJ	ug/kg
Phenol	576U	ug/kg
bis(2-Chloroethyl)Ether	576U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
bis(2-Chloroethoxy)Met+	576U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	673U	ug/kg
Di-n-Octyl Phthalate	1440U	ug/kg
HEXACHLOROBENZENE	576U	ug/kg
Anthracene	576U	ug/kg
1,2,4-Trichlorobenzene	576U	ug/kg
2,4-Dichlorophenol	576U	ug/kg
2,4-Dinitrotoluene	1440U	ug/kg
Pyrene	576U	ug/kg
Dimethylphthalate	576U	ug/kg
Dibenzofuran	576U	ug/kg
Benzo(ghi)perylene	5760UJ	ug/kg
Indeno(1,2,3-cd)pyrene	1440U	ug/kg
Benzo(b)fluoranthene	576U	ug/kg
Fluoranthene	576U	ug/kg
Benzo(k)fluoranthene	576U	ug/kg
Acenaphthylene	576U	ug/kg
Chrysene	576U	ug/kg
Retene	576U	ug/kg
4,6-Dinitro-2-methylph+	1440U	ug/kg
1,3-Dichlorobenzene	576U	ug/kg
2,6-Dinitrotoluene	1440U	ug/kg
N-Nitroso-di-n-Propyla+	576U	ug/kg
4-Chlorophenyl-phenyle+	576U	ug/kg
1,2-Diphenylhydrazine	1150U	ug/kg
BIS(2OCHLOROISOPROPYL)+	576U	ug/kg
Surrog: 2-Fluorobiphen+	95	% Recov
2-Fluorophenol	89	% Recov
Surrog: 2,4,6-Tribromo+	NAF	% Recov
Terphenyl-d14	103	% Recov
Pyrene-d10	92	% Recov
1,2-DICHLOROBENZENE-D4	83	% Recov
Surrog: D5-Nitrobenzene	89	% Recov
Surrog: Phenol D5	92	% Recov
D4-2-CHLOROPHENOL (SS)	92	% Recov

B/N/Acid Scan Matrix Spike #1	Sediment Result	Units
Benzo(a)pyrene	61	% Recov
2,4-Dinitrophenol	54	% Recov
Dibenzo(a,h)anthracene	82	% Recov
Benzo(a)anthracene	82	% Recov

B/N/Acid Scan *** Continued *** Matrix Spike #1	Sediment Result	Units
4-Chloro-3-Methylphenol	87	% Recov
Aniline	NAF	% Recov
Benzoic acid	86	% Recov
Hexachloroethane	41	% Recov
Hexachlorocyclopentadi+	NAF	% Recov
Isophorone	81	% Recov
Acenaphthene	84	% Recov
Diethylphthalate	103	% Recov
Di-n-Butylphthalate	95	% Recov
Phenanthrene	83	% Recov
Butylbenzylphthalate	101	% Recov
N-Nitrosodiphenylamine	99	% Recov
Fluorene	94	% Recov
Hexachlorobutadiene	77	% Recov
Pentachlorophenol	61	% Recov
2,4,6-Trichlorophenol	89	% Recov
2-Nitroaniline	85	% Recov
2-Nitrophenol	73	% Recov
Naphthalene, 1-Methyl-	NAF	% Recov
Naphthalene	72	% Recov
2-Methylnaphthalene	61	% Recov
2-Chloronaphthalene	78	% Recov
3,3'-Dichlorobenzidine	NAF	% Recov
Benzidine	NAF	% Recov
2-Methylphenol	87	% Recov
1,2-Dichlorobenzene	60	% Recov
o-Chlorophenol (2-Chlo+	79	% Recov
2,4,5-Trichlorophenol	88	% Recov
Nitrobenzene	78	% Recov
3-Nitroaniline	41	% Recov
4-Nitroaniline	40	% Recov
4-Nitrophenol	87	% Recov
Benzyl Alcohol	86	% Recov
4-Bromophenyl-phenylet+	95	% Recov
2,4-Dimethylphenol	91	% Recov
4-Methylphenol	85	% Recov
1,4-Dichlorobenzene	58	% Recov
4-Chloroaniline	28	% Recov
Phenol	82	% Recov
bis(2-Chloroethyl)Ether	82	% Recov
bis(2-Chloroethoxy)Met+	88	% Recov
BIS(2-ETHYLHEXYL) PHTH+	98	% Recov
Di-n-Octyl Phthalate	92	% Recov
HEXACHLOROBENZENE	68	% Recov

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Project: DOE-760Y BREMERTON/BELLINGHAM STORM DRAINS Officer: JCC Account: 23100/34

Laboratory: Ecology, Manchester

Sample No: 93 228180 Description: H1 Source: Sediment (General)

Begin Date: 93/05/25 :

Metals - PP		Sediment Result	Units
Arsenic	As-Sedmt	7.99N*	mg/kg-dr
Mercury	Hg-Sedmt	0.0961 *	mg/kg-wt

Metals - ICP Scan		Sediment Result	Units
Arsenic	As-Sedmt	10P*	mg/kg-dr
Cadmium	Cd-Sedmt	1.4P*	mg/kg-dr
Chromium	Cr-Sedmt	28.9 *	mg/kg-dr
Copper	Cu-Sedmt	78.2N*	mg/kg-dr
Lead	Pb-Sedmt	362 *	mg/kg-dr
Nickel	Ni-Sedmt	45.6 *	mg/kg-dr
Silver	Ag-Sedmt	0.3U	mg/kg-dr
Zinc	Zn-Sedmt	474N*	mg/kg-dr

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	39600 *	ug/kg
2,4-Dinitrophenol	76900UJ	ug/kg
Dibenzo(a,h)anthracene	7800 *	ug/kg
Benzo(a)anthracene	39200 *	ug/kg
4-Chloro-3-Methylphenol	384U	ug/kg
Aniline	384U	ug/kg
Nitrosamine, Dimethyl-	384U	ug/kg
Benzoic acid	384UJ	ug/kg
Hexachloroethane	384U	ug/kg
Hexachlorocyclopentadi+	961UJ	ug/kg
Isophorone	384U	ug/kg
Acenaphthene	2490 *	ug/kg
Diethylphthalate	384U	ug/kg
Di-n-Butylphthalate	384U	ug/kg
Phenanthrene	56700 *	ug/kg
Butylbenzylphthalate	508 *	ug/kg
N-Nitrosodiphenylamine	384U	ug/kg
Fluorene	3780 *	ug/kg
Carbazole	10300 *	ug/kg
Hexachlorobutadiene	384U	ug/kg
Pentachlorophenol	1920U	ug/kg
2,4,6-Trichlorophenol	384U	ug/kg
2-Nitroaniline	384U	ug/kg
2-Nitrophenol	961U	ug/kg
Naphthalene, 1-Methyl-	265J*	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
Naphthalene	499 *	ug/kg
2-Methylnaphthalene	141J*	ug/kg
2-Chloronaphthalene	384U	ug/kg
3,3'-Dichlorobenzidine	769U	ug/kg
Benzidine	769U	ug/kg
2-Methylphenol	384U	ug/kg
1,2-Dichlorobenzene	384U	ug/kg
o-Chlorophenol (2-Chlo+	384U	ug/kg
2,4,5-Trichlorophenol	384U	ug/kg
Nitrobenzene	384U	ug/kg
3-Nitroaniline	384U	ug/kg
4-Nitroaniline	384U	ug/kg
4-Nitrophenol	961U	ug/kg
Benzyl Alcohol	384UJ	ug/kg
4-Bromophenyl-phenylet+	384U	ug/kg
2,4-Dimethylphenol	384U	ug/kg
4-Methylphenol	859 *	ug/kg
1,4-Dichlorobenzene	384U	ug/kg
4-Chloroaniline	384U	ug/kg
Phenol	98.0J*	ug/kg
Pyridine	769U	ug/kg
bis(2-Chloroethyl)Ether	384U	ug/kg
bis(2-Chloroethoxy)Met+	384U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	4580UJ	ug/kg
Di-n-Octyl Phthalate	384U	ug/kg
HEXACHLOROBENZENE	384U	ug/kg
Anthracene	9880 *	ug/kg
1,2,4-Trichlorobenzene	384U	ug/kg
2,4-Dichlorophenol	384U	ug/kg
2,4-Dinitrotoluene	961U	ug/kg
Hydrazine, 1,2-Dipheny+	769U	ug/kg
Pyrene	79700 *	ug/kg
Dimethylphthalate	384U	ug/kg
Dibenzofuran	1770 *	ug/kg
Benzo(ghi)perylene	29400 *	ug/kg
Indeno(1,2,3-cd)pyrene	34600 *	ug/kg
Benzo(b)fluoranthene	60000 *	ug/kg
Fluoranthene	109000 *	ug/kg
Benzo(k)fluoranthene	17300 *	ug/kg
Acenaphthylene	1890 *	ug/kg
Chrysene	47000 *	ug/kg
Retene	384U	ug/kg
4,6-Dinitro-2-methylph+	1920U	ug/kg
1,3-Dichlorobenzene	384U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
2,6-Dinitrotoluene	961U	ug/kg
N-Nitroso-di-n-Propyla+	384U	ug/kg
4-Chlorophenyl-phenyle+	384U	ug/kg
BIS(2OCHLOROISOPROPYL)+	384U	ug/kg
Surrog: 2-Fluorobiphen+	88	% Recov
2-Fluorophenol	79	% Recov
Surrog: 2,4,6-Tribromo+	NAF	% Recov
Terphenyl-d14	99	% Recov
Pyrene-d10	59	% Recov
1,2-DICHLOROBENZENE-D4	55	% Recov
Surrog: D5-Nitrobenzene	76	% Recov
Surrog: Phenol D5	71	% Recov
D4-2-CHLOROPHENOL (SS)	74	% Recov

Tent Ident - B/N/Acid	Sediment Result	Units
Decanoic Acid, Hexa+	17530NJ*	ug/kg
1,8-NAPTHALIC ANHYDRIDE	2670NJ*	ug/kg
9,10-ANTHRACENEDIONE	24200NJ*	ug/kg
BENZO[F]QUINOLINE	2330NJ*	ug/kg
Thiophene, Dibenzo[b,d]+	2200NJ*	ug/kg
4H-CYCLOPENTA[DEF]PHEN+	7470NJ*	ug/kg
Triphenylene	12400NJ*	ug/kg
Benzoquinoline	4870NJ*	ug/kg
11H-BENZO[A]FLUORENE	1370NJ*	ug/kg
BENZO[B]NAPHTHO[2,1-D]+	1520NJ*	ug/kg
11H-BENZO[B]FLUORENE	1560NJ*	ug/kg
BENZO[B]NAPHTHO[2,3-D]+	1742NJ*	ug/kg
9H-FLUOREN-9-ONE	3350NJ*	ug/kg
ANTHRACENE, 2-METHYL-	4230NJ*	ug/kg
Phenanthrene, 1-Methyl-	4410NJ*	ug/kg
UNKNOWN COMPOUND 1	5460NJ*	ug/kg

Contract Lab Program		Sediment Result	Units
Solids	Percent	REQ	Total
VOA	GC/MS	REQ	CLP
P/PCBs	GC	REQ	CLP
GrnSize		REQ	CLP
TOC		REQ	CLP

(Sample Complete)

Project: DOE-760Y BREMERTON/BELLINGHAM STORM DRAINS

Officer: JCC Account: D3100/34

Laboratory: Ecology, Manchester

Sample No: 93 228181 Description: H2

Source: Sediment (General)

Begin Date: 93/05/25 :

Metals - PP		Sediment Result	Units
Arsenic	As-Sedmt	1.9J*	mg/kg-dr
Mercury	Hg-Sedmt	0.017P*	mg/kg-wt

Metals - ICP Scan		Sediment Result	Units
Arsenic	As-Sedmt	3.8P*	mg/kg-dr
Cadmium	Cd-Sedmt	0.38P*	mg/kg-dr
Chromium	Cr-Sedmt	23.4 *	mg/kg-dr
Copper	Cu-Sedmt	37.3N*	mg/kg-dr
Lead	Pb-Sedmt	96.7 *	mg/kg-dr
Nickel	Ni-Sedmt	27.5 *	mg/kg-dr
Silver	Ag-Sedmt	0.3U	mg/kg-dr
Zinc	Zn-Sedmt	122N*	mg/kg-dr

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	156J*	ug/kg
2,4-Dinitrophenol	7330UJ	ug/kg
Dibenzo(a,h)anthracene	367U	ug/kg
Benzo(a)anthracene	271J*	ug/kg
4-Chloro-3-Methylphenol	367UJ	ug/kg
Aniline	367U	ug/kg
Nitrosamine, Dimethyl-	367U	ug/kg
Benzoic acid	917UJ	ug/kg
Hexachloroethane	367UJ	ug/kg
Hexachlorocyclopentadi+	REJ	ug/kg
Isophorone	367U	ug/kg
Acenaphthene	57.6J*	ug/kg
Diethylphthalate	367U	ug/kg
Di-n-Butylphthalate	367U	ug/kg
Phenanthrene	531 *	ug/kg
Butylbenzylphthalate	482 *	ug/kg
N-Nitrosodiphenylamine	367U	ug/kg
Fluorene	59.0J*	ug/kg
Carbazole	91.7J*	ug/kg
Hexachlorobutadiene	367U	ug/kg
Pentachlorophenol	1830UJ	ug/kg
2,4,6-Trichlorophenol	367U	ug/kg
2-Nitroaniline	367U	ug/kg
2-Nitrophenol	917U	ug/kg
Naphthalene, 1-Methyl-	367U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
Naphthalene	367U	ug/kg
2-Methylnaphthalene	367U	ug/kg
2-Chloronaphthalene	367U	ug/kg
3,3'-Dichlorobenzidine	733U	ug/kg
Benzidine	733UJ	ug/kg
2-Methylphenol	367U	ug/kg
1,2-Dichlorobenzene	367U	ug/kg
o-Chlorophenol (2-Chlo+	367U	ug/kg
2,4,5-Trichlorophenol	367U	ug/kg
Nitrobenzene	367U	ug/kg
3-Nitroaniline	367UJ	ug/kg
4-Nitroaniline	367U	ug/kg
4-Nitrophenol	917U	ug/kg
Benzyl Alcohol	367UJ	ug/kg
4-Bromophenyl-phenylet+	367U	ug/kg
2,4-Dimethylphenol	367UJ	ug/kg
4-Methylphenol	710 *	ug/kg
1,4-Dichlorobenzene	367U	ug/kg
4-Chloroaniline	367UJ	ug/kg
Phenol	599 *	ug/kg
Pyridine	733U	ug/kg
bis(2-Chloroethyl)Ether	367U	ug/kg
bis(2-Chloroethoxy)Met+	367U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	3320UJ	ug/kg
Di-n-Octyl Phthalate	367U	ug/kg
HEXACHLOROBENZENE	367U	ug/kg
Anthracene	77.9J*	ug/kg
1,2,4-Trichlorobenzene	367U	ug/kg
2,4-Dichlorophenol	367U	ug/kg
2,4-Dinitrotoluene	917U	ug/kg
Hydrazine, 1,2-Dipheny+	733U	ug/kg
Pyrene	535 *	ug/kg
Dimethylphthalate	367U	ug/kg
Dibenzofuran	24.3J*	ug/kg
Benzo(ghi)perylene	367UJ	ug/kg
Indeno(1,2,3-cd)pyrene	165J*	ug/kg
Benzo(b)fluoranthene	416 *	ug/kg
Fluoranthene	870 *	ug/kg
Benzo(k)fluoranthene	199J*	ug/kg
Acenaphthylene	195J*	ug/kg
Chrysene	421 *	ug/kg
Retene	367U	ug/kg
4,6-Dinitro-2-methylph+	1830UJ	ug/kg
1,3-Dichlorobenzene	367U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
2,6-Dinitrotoluene	917U	ug/kg
N-Nitroso-di-n-Propyla+	367U	ug/kg
4-Chlorophenyl-phenyle+	367U	ug/kg
BIS(2OCHLOROISOPROPYL)+	367U	ug/kg
Surrog: 2-Fluorobiphen+	89	% Recov
2-Fluorophenol	81	% Recov
Surrog: 2,4,6-Tribromo+	NAF	% Recov
Terphenyl-d14	91	% Recov
Pyrene-d10	71	% Recov
1,2-DICHLOROBENZENE-D4	76	% Recov
Surrog: D5-Nitrobenzene	85	% Recov
Surrog: Phenol D5	74	% Recov
D4-2-CHLOROPHENOL (SS)	84	% Recov

B/N/Acid Scan Matrix Spike #1	Sediment Result	Units
Benzo(a)pyrene	81	ug/kg
2,4-Dinitrophenol	34J	ug/kg
Dibenzo(a,h)anthracene	93	ug/kg
Benzo(a)anthracene	91	ug/kg
4-Chloro-3-Methylphenol	59J	ug/kg
Aniline	NAF	ug/kg
Nitrosamine, Dimethyl-	NAF	ug/kg
Benzoic acid	45J	ug/kg
Hexachloroethane	39J	ug/kg
Hexachlorocyclopentadi+	REJ	ug/kg
Isophorone	83	ug/kg
Acenaphthene	88	ug/kg
Diethylphthalate	93	ug/kg
Di-n-Butylphthalate	98	ug/kg
Phenanthrene	97	ug/kg
Butylbenzylphthalate	96	ug/kg
N-Nitrosodiphenylamine	95	ug/kg
Fluorene	87	ug/kg
Carbazole	NAF	ug/kg
Hexachlorobutadiene	90	ug/kg
Pentachlorophenol	16J	ug/kg
2,4,6-Trichlorophenol	82	ug/kg
2-Nitroaniline	78	ug/kg
2-Nitrophenol	77	ug/kg
Naphthalene, 1-Methyl-	NAF	ug/kg
Naphthalene	82	ug/kg

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Officer: JCC Account: D3100/34

Laboratory: Ecology, Manchester

Sample No: 93 228182 Description: G1

Source: Sediment (General)

Begin Date: 93/05/25 :

Metals - PP		Sediment Result	Units
Arsenic	As-Sedmt	4.00N*	mg/kg-dr
Mercury	Hg-Sedmt	0.102 *	mg/kg-wt

Metals - ICP Scan		Sediment Result	Units
Arsenic	As-Sedmt	6.6P*	mg/kg-dr
Cadmium	Cd-Sedmt	1P*	mg/kg-dr
Chromium	Cr-Sedmt	21.9 *	mg/kg-dr
Copper	Cu-Sedmt	51.2N*	mg/kg-dr
Lead	Pb-Sedmt	222 *	mg/kg-dr
Nickel	Ni-Sedmt	32 *	mg/kg-dr
Silver	Ag-Sedmt	0.3U	mg/kg-dr
Zinc	Zn-Sedmt	303N*	mg/kg-dr

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	153U	ug/kg
2,4-Dinitrophenol	3060U	ug/kg
Dibenzo(a,h)anthracene	153U	ug/kg
Benzo(a)anthracene	153U	ug/kg
4-Chloro-3-Methylphenol	153U	ug/kg
Aniline	153U	ug/kg
Nitrosamine, Dimethyl-	153U	ug/kg
Benzoic acid	382U	ug/kg
Hexachloroethane	153U	ug/kg
Hexachlorocyclopentadi+	382UJ	ug/kg
Isophorone	153U	ug/kg
Acenaphthene	153U	ug/kg
Diethylphthalate	153U	ug/kg
Di-n-Butylphthalate	153U	ug/kg
Phenanthrene	153UJ	ug/kg
Butylbenzylphthalate	158 *	ug/kg
N-Nitrosodiphenylamine	153U	ug/kg
Fluorene	153U	ug/kg
Carbazole	153U	ug/kg
Hexachlorobutadiene	153U	ug/kg
Pentachlorophenol	765U	ug/kg
2,4,6-Trichlorophenol	153U	ug/kg
2-Nitroaniline	153U	ug/kg
2-Nitrophenol	382U	ug/kg
Naphthalene, 1-Methyl-	153U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
Naphthalene	153U	ug/kg
2-Methylnaphthalene	153U	ug/kg
2-Chloronaphthalene	153U	ug/kg
3,3'-Dichlorobenzidine	306U	ug/kg
Benzidine	306U	ug/kg
2-Methylphenol	153U	ug/kg
1,2-Dichlorobenzene	153U	ug/kg
o-Chlorophenol (2-Chlo+	153U	ug/kg
2,4,5-Trichlorophenol	153U	ug/kg
Nitrobenzene	153U	ug/kg
3-Nitroaniline	153U	ug/kg
4-Nitroaniline	153U	ug/kg
4-Nitrophenol	382U	ug/kg
Benzyl Alcohol	153U	ug/kg
4-Bromophenyl-phenylet+	153U	ug/kg
2,4-Dimethylphenol	153U	ug/kg
4-Methylphenol	153U	ug/kg
1,4-Dichlorobenzene	153U	ug/kg
4-Chloroaniline	153U	ug/kg
Phenol	153U	ug/kg
Pyridine	306U	ug/kg
bis(2-Chloroethyl)Ether	153U	ug/kg
bis(2-Chloroethoxy)Met+	153U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	1390UJ	ug/kg
Di-n-Octyl Phthalate	153U	ug/kg
HEXACHLOROBENZENE	153U	ug/kg
Anthracene	153U	ug/kg
1,2,4-Trichlorobenzene	153U	ug/kg
2,4-Dichlorophenol	153U	ug/kg
2,4-Dinitrotoluene	382U	ug/kg
Hydrazine, 1,2-Dipheny+	306U	ug/kg
Pyrene	153UJ	ug/kg
Dimethylphthalate	153U	ug/kg
Dibenzofuran	153U	ug/kg
Benzo(ghi)perylene	153U	ug/kg
Indeno(1,2,3-cd)pyrene	153U	ug/kg
Benzo(b)fluoranthene	153U	ug/kg
Fluoranthene	153 *	ug/kg
Benzo(k)fluoranthene	153U	ug/kg
Acenaphthylene	153U	ug/kg
Chrysene	97.9J*	ug/kg
Retene	153U	ug/kg
4,6-Dinitro-2-methylph+	765U	ug/kg
1,3-Dichlorobenzene	153U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
2,6-Dinitrotoluene	382U	ug/kg
N-Nitroso-di-n-Propyla+	153U	ug/kg
4-Chlorophenyl-phenyle+	153U	ug/kg
BIS(2OCHLOROISOPROPYL)+	153UJ	ug/kg
Surrog: 2-Fluorobiphen+	86	% Recov
2-Fluorophenol	71	% Recov
Surrog: 2,4,6-Tribromo+	NAF	% Recov
Terphenyl-d14	92	% Recov
Pyrene-d10	50	% Recov
1,2-DICHLOROBENZENE-D4	49	% Recov
Surrog: D5-Nitrobenzene	86	% Recov
Surrog: Phenol D5	68	% Recov
D4-2-CHLOROPHENOL (SS)	70	% Recov

Tent Ident - B/N/Aci	Sediment Result	Units
Decanoic Acid, Methyl +	267NJ*	ug/kg
DODECANE	327NJ*	ug/kg
TRIDECANE	498NJ*	ug/kg
UNKNOWN HYDROCARBON 1	329NJ*	ug/kg
UNKNOWN HYDROCARBON 2	274NJ*	ug/kg
UNKNOWN HYDROCARBON 3	228NJ*	ug/kg
UNKNOWN HYDROCARBON 4	470NJ*	ug/kg
UNKNOWN HYDROCARBON 5	381NJ*	ug/kg
UNKNOWN COMPOUND 1	380NJ*	ug/kg
UNKNOWN COMPOUND 2	255NJ*	ug/kg
UNKNOWN COMPOUND 3	517NJ*	ug/kg
UNKNOWN COMPOUND 4	3460NJ*	ug/kg
UNKNOWN COMPOUND 5	3660NJ*	ug/kg
9-HEXADECENOIC ACID, M+	324NJ*	ug/kg

Contract Lab Program		Sediment Result	Units
Solids	Percent	REQ	Total
VOA	GC/MS	REQ	CLP
P/PCBs	GC	REQ	CLP
GrnSize		REQ	CLP
TOC		REQ	CLP

(Sample Complete)

Project: DOE-760Y BREMERTON/BELLINGHAM STORM DRAINS Officer: JCC Account: D3100/34

Laboratory: Ecology, Manchester

Sample No: 93 228183 Description: G2 Source: Sediment (General)

Begin Date: 93/05/25 :

Metals - PP		Sediment Result	Units
Arsenic	As-Sedmt	4.01N*	mg/kg-dr
Mercury	Hg-Sedmt	0.168J*	mg/kg-wt

Metals - PP Duplicate #1		Sediment Result	Units
Mercury	Hg-Sedmt	0.338J*	mg/kg-wt

Metals - ICP Scan		Sediment Result	Units
Arsenic	As-Sedmt	8.6P*	mg/kg-dr
Cadmium	Cd-Sedmt	1.2P*	mg/kg-dr
Chromium	Cr-Sedmt	23.9 *	mg/kg-dr
Copper	Cu-Sedmt	48.5N*	mg/kg-dr
Lead	Pb-Sedmt	444 *	mg/kg-dr
Nickel	Ni-Sedmt	37.4 *	mg/kg-dr
Silver	Ag-Sedmt	0.3U	mg/kg-dr
Zinc	Zn-Sedmt	307N*	mg/kg-dr

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	334U	ug/kg
2,4-Dinitrophenol	6690UJ	ug/kg
Dibenzo(a,h)anthracene	334U	ug/kg
Benzo(a)anthracene	334U	ug/kg
4-Chloro-3-Methylphenol	334U	ug/kg
Aniline	334U	ug/kg
Nitrosamine, Dimethyl-	334U	ug/kg
Benzoic acid	836U	ug/kg
Hexachloroethane	334U	ug/kg
Hexachlorocyclopentadi+	836UJ	ug/kg
Isophorone	334U	ug/kg
Acenaphthene	35.7J*	ug/kg
Diethylphthalate	334U	ug/kg
Di-n-Butylphthalate	334U	ug/kg
Phenanthrene	257J*	ug/kg
Butylbenzylphthalate	4490 *	ug/kg
N-Nitrosodiphenylamine	334U	ug/kg
Fluorene	42.6J*	ug/kg
Carbazole	334U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
Hexachlorobutadiene	334U	ug/kg
Pentachlorophenol	1670U	ug/kg
2,4,6-Trichlorophenol	334U	ug/kg
2-Nitroaniline	334U	ug/kg
2-Nitrophenol	836U	ug/kg
Naphthalene, 1-Methyl-	334U	ug/kg
Naphthalene	334U	ug/kg
2-Methylnaphthalene	334U	ug/kg
2-Chloronaphthalene	334U	ug/kg
3,3'-Dichlorobenzidine	669U	ug/kg
Benzidine	669UJ	ug/kg
2-Methylphenol	334U	ug/kg
1,2-Dichlorobenzene	334U	ug/kg
o-Chlorophenol (2-Chlo+	334U	ug/kg
2,4,5-Trichlorophenol	334U	ug/kg
Nitrobenzene	334U	ug/kg
3-Nitroaniline	334U	ug/kg
4-Nitroaniline	334U	ug/kg
4-Nitrophenol	836U	ug/kg
Benzyl Alcohol	334UJ	ug/kg
4-Bromophenyl-phenylet+	334U	ug/kg
2,4-Dimethylphenol	334U	ug/kg
4-Methylphenol	314J*	ug/kg
1,4-Dichlorobenzene	334U	ug/kg
4-Chloroaniline	334U	ug/kg
Phenol	43.5J*	ug/kg
Pyridine	669U	ug/kg
bis(2-Chloroethyl)Ether	334U	ug/kg
bis(2-Chloroethoxy)Met+	334U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	3670UJ	ug/kg
Di-n-Octyl Phthalate	334U	ug/kg
HEXACHLOROBENZENE	334U	ug/kg
Anthracene	40.0J*	ug/kg
1,2,4-Trichlorobenzene	334U	ug/kg
2,4-Dichlorophenol	334U	ug/kg
2,4-Dinitrotoluene	836U	ug/kg
Hydrazine, 1,2-Dipheny+	669U	ug/kg
Pyrene	293J*	ug/kg
Dimethylphthalate	334U	ug/kg
Dibenzofuran	20.7J*	ug/kg
Benzo(ghi)perylene	334U	ug/kg
Indeno(1,2,3-cd)pyrene	334U	ug/kg
Benzo(b)fluoranthene	334U	ug/kg
Fluoranthene	407 *	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
Benzo(k)fluoranthene	334U	ug/kg
Acenaphthylene	53.7J*	ug/kg
Chrysene	244J*	ug/kg
Retene	334U	ug/kg
4,6-Dinitro-2-methylph+	1670U	ug/kg
1,3-Dichlorobenzene	334U	ug/kg
2,6-Dinitrotoluene	836U	ug/kg
N-Nitroso-di-n-Propyla+	334U	ug/kg
4-Chlorophenyl-phenyle+	334U	ug/kg
BIS(2OCHLOROISOPROPYL)+	334U	ug/kg
Surrog: 2-Fluorobiphen+	83	% Recov
2-Fluorophenol	75	% Recov
Surrog: 2,4,6-Tribromo+	NAF	% Recov
Terphenyl-d14	92	% Recov
Pyrene-d10	55	% Recov
1,2-DICHLOROBENZENE-D4	53	% Recov
Surrog: D5-Nitrobenzene	69	% Recov
Surrog: Phenol D5	70	% Recov
D4-2-CHLOROPHENOL (SS)	71	% Recov

Tent Ident - B/N/Aci	Sediment Result	Units
1,1':2',1''-TERPHENYL	618NJ*	ug/kg
1,1':3',1''-TERPHENYL	1760NJ*	ug/kg
Phenylacetic Acid	187NJ*	ug/kg
Decanoic Acid, Methyl +	442NJ*	ug/kg
Decanoic Acid, Di-	216NJ*	ug/kg
UNKNOWN HYDROCARBON 1	510NJ*	ug/kg
UNKNOWN HYDROCARBON 2	836NJ*	ug/kg
UNKNOWN COMPOUND 1	377NJ*	ug/kg
UNKNOWN COMPOUND 2	668NJ*	ug/kg
ANTHRACENE, 1,4-DIMETH+	627NJ*	ug/kg
PHENOL, NONYL-	375NJ*	ug/kg
TERPHENYL	1920NJ*	ug/kg
Phenol, dodecyl	546NJ*	ug/kg

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Project: DOE-760Y BREMERTON/BELLINGHAM STORM DRAINS Officer: JCC Account: D3100/34

Laboratory: Ecology, Manchester

Sample No: 93 228184 Description: Y1 Source: Sediment (General)

Begin Date: 93/05/25 :

Metals - PP		Sediment Result	Units
Arsenic	As-Sedmt	4.32N*	mg/kg-dr
Mercury	Hg-Sedmt	0.0705J*	mg/kg-wt

Metals - PP Matrix Spike #1		Sediment Result	Units
Mercury	Hg-Sedmt	83	% Recov

Metals - PP Matrix Spike #2		Sediment Result	Units
Mercury	Hg-Sedmt	89	% Recov

Metals - ICP Scan		Sediment Result	Units
Arsenic	As-Sedmt	9.3P*	mg/kg-dr
Cadmium	Cd-Sedmt	2.04 *	mg/kg-dr
Chromium	Cr-Sedmt	42.2 *	mg/kg-dr
Copper	Cu-Sedmt	84.1N*	mg/kg-dr
Lead	Pb-Sedmt	313 *	mg/kg-dr
Nickel	Ni-Sedmt	42.5 *	mg/kg-dr
Silver	Ag-Sedmt	0.3U	mg/kg-dr
Zinc	Zn-Sedmt	390N*	mg/kg-dr

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	553U	ug/kg
2,4-Dinitrophenol	11000UJ	ug/kg
Dibenzo(a,h)anthracene	553U	ug/kg
Benzo(a)anthracene	553U	ug/kg
4-Chloro-3-Methylphenol	553U	ug/kg
Aniline	553U	ug/kg
Nitrosamine, Dimethyl-	553U	ug/kg
Benzoic acid	1380U	ug/kg
Hexachloroethane	553U	ug/kg
Hexachlorocyclopentadi+	1380UJ	ug/kg
Isophorone	553U	ug/kg
Acenaphthene	553U	ug/kg
Diethylphthalate	553U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
Di-n-Butylphthalate	1000UJ	ug/kg
Phenanthrene	2970 *	ug/kg
Butylbenzylphthalate	553U	ug/kg
N-Nitrosodiphenylamine	553U	ug/kg
Fluorene	446J*	ug/kg
Carbazole	553U	ug/kg
Hexachlorobutadiene	553U	ug/kg
Pentachlorophenol	41600 *	ug/kg
2,4,6-Trichlorophenol	553U	ug/kg
2-Nitroaniline	553U	ug/kg
2-Nitrophenol	1380U	ug/kg
Naphthalene, 1-Methyl-	733 *	ug/kg
Naphthalene	941 *	ug/kg
2-Methylnaphthalene	672 *	ug/kg
2-Chloronaphthalene	553U	ug/kg
3,3'-Dichlorobenzidine	1100U	ug/kg
Benzidine	1100UJ	ug/kg
2-Methylphenol	553U	ug/kg
1,2-Dichlorobenzene	553U	ug/kg
o-Chlorophenol (2-Chlo+	553U	ug/kg
2,4,5-Trichlorophenol	553U	ug/kg
Nitrobenzene	553U	ug/kg
3-Nitroaniline	553U	ug/kg
4-Nitroaniline	553U	ug/kg
4-Nitrophenol	1380U	ug/kg
Benzyl Alcohol	553UJ	ug/kg
4-Bromophenyl-phenylet+	553U	ug/kg
2,4-Dimethylphenol	553U	ug/kg
4-Methylphenol	11600 *	ug/kg
1,4-Dichlorobenzene	553U	ug/kg
4-Chloroaniline	553U	ug/kg
Phenol	736 *	ug/kg
Pyridine	1100U	ug/kg
bis(2-Chloroethyl)Ether	553U	ug/kg
bis(2-Chloroethoxy)Met+	553U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	14000UJ	ug/kg
Di-n-Octyl Phthalate	553U	ug/kg
HEXACHLOROBENZENE	553U	ug/kg
Anthracene	553U	ug/kg
1,2,4-Trichlorobenzene	553U	ug/kg
2,4-Dichlorophenol	553U	ug/kg
2,4-Dinitrotoluene	1380U	ug/kg
Hydrazine, 1,2-Dipheny+	1100U	ug/kg
Pyrene	1310 *	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
Dimethylphthalate	836 *	ug/kg
Dibenzofuran	214J*	ug/kg
Benzo(ghi)perylene	553U	ug/kg
Indeno(1,2,3-cd)pyrene	553U	ug/kg
Benzo(b)fluoranthene	553U	ug/kg
Fluoranthene	2550 *	ug/kg
Benzo(k)fluoranthene	553U	ug/kg
Acenaphthylene	118J*	ug/kg
Chrysene	1390 *	ug/kg
Retene	553U	ug/kg
4,6-Dinitro-2-methylph+	2760U	ug/kg
1,3-Dichlorobenzene	553U	ug/kg
2,6-Dinitrotoluene	1380U	ug/kg
N-Nitroso-di-n-Propyla+	553U	ug/kg
4-Chlorophenyl-phenyle+	553U	ug/kg
BIS(2OCHLOROISOPROPYL)+	553U	ug/kg
Surrog: 2-Fluorobiphen+	96	% Recov
2-Fluorophenol	84	% Recov
Surrog: 2,4,6-Tribromo+	NAF	% Recov
Terphenyl-d14	97	% Recov
Pyrene-d10	54	% Recov
1,2-DICHLOROBENZENE-D4	64	% Recov
Surrog: D5-Nitrobenzene	72	% Recov
Surrog: Phenol D5	78	% Recov
D4-2-CHLOROPHENOL (SS)	84	% Recov

Tent Ident - B/N/Aci	Sediment Result	Units
Decanoic Acid, Hexa-	123000NJ*	ug/kg
OCTADECANOIC ACID	12600NJ*	ug/kg
.GAMMA.-SITOSTEROL	17400NJ*	ug/kg
Decanoic Acid, Methyl +	11500NJ*	ug/kg
CYCLOHEXANE, 1-METHYL-+	9650NJ*	ug/kg
BICYCLO[3.1.0]HEXAN-3-+	6980NJ*	ug/kg
5-OCTADECENE, (E)-	3800NJ*	ug/kg
UNKNOWN HYDROCARBON 1	4190NJ*	ug/kg
UNKNOWN HYDROCARBON 2	9190NJ*	ug/kg
UNKNOWN HYDROCARBON 3	3450NJ*	ug/kg
UNKNOWN HYDROCARBON 4	6300NJ*	ug/kg
UNKNOWN HYDROCARBON 5	3620NJ*	ug/kg
UNKNOWN COMPOUND 1	4100NJ*	ug/kg
UNKNOWN COMPOUND 2	3980NJ*	ug/kg

(Continued on next page)

Project: DOE-760Y BREMERTON/BELLINGHAM STORM DRAINS

Officer: JCC Account: D3100/34

Laboratory: Ecology, Manchester

Sample No: 93 228185 Description: Y2

Source: Sediment (General)

Begin Date: 93/05/25 :

Metals - PP		Sediment Result	Units
Arsenic	As-Sedmt	3.46N*	mg/kg-dr
Mercury	Hg-Sedmt	0.036P*	mg/kg-wt

Metals - ICP Scan		Sediment Result	Units
Arsenic	As-Sedmt	7P*	mg/kg-dr
Cadmium	Cd-Sedmt	1.5P*	mg/kg-dr
Chromium	Cr-Sedmt	31.7 *	mg/kg-dr
Copper	Cu-Sedmt	78.5N*	mg/kg-dr
Lead	Pb-Sedmt	273 *	mg/kg-dr
Nickel	Ni-Sedmt	49.6 *	mg/kg-dr
Silver	Ag-Sedmt	0.3U	mg/kg-dr
Zinc	Zn-Sedmt	314N*	mg/kg-dr

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	608U	ug/kg
2,4-Dinitrophenol	12200UJ	ug/kg
Dibenzo(a,h)anthracene	608U	ug/kg
Benzo(a)anthracene	608U	ug/kg
4-Chloro-3-Methylphenol	608U	ug/kg
Aniline	608U	ug/kg
Nitrosamine, Dimethyl-	608U	ug/kg
Benzoic acid	1240UJ	ug/kg
Hexachloroethane	608U	ug/kg
Hexachlorocyclopentadi+	1520UJ	ug/kg
Isophorone	608U	ug/kg
Acenaphthene	608U	ug/kg
Diethylphthalate	608U	ug/kg
Di-n-Butylphthalate	608UJ	ug/kg
Phenanthrene	608UJ	ug/kg
Butylbenzylphthalate	383J*	ug/kg
N-Nitrosodiphenylamine	608U	ug/kg
Fluorene	608U	ug/kg
Carbazole	608U	ug/kg
Hexachlorobutadiene	608U	ug/kg
Pentachlorophenol	3040U	ug/kg
2,4,6-Trichlorophenol	608U	ug/kg
2-Nitroaniline	608U	ug/kg
2-Nitrophenol	1520U	ug/kg
Naphthalene, 1-Methyl-	144J*	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
Naphthalene	608U	ug/kg
2-Methylnaphthalene	120J*	ug/kg
2-Chloronaphthalene	608U	ug/kg
3,3'-Dichlorobenzidine	1220U	ug/kg
Benzidine	1220UJ	ug/kg
2-Methylphenol	608U	ug/kg
1,2-Dichlorobenzene	608U	ug/kg
o-Chlorophenol (2-Chlo+	608U	ug/kg
2,4,5-Trichlorophenol	608U	ug/kg
Nitrobenzene	608U	ug/kg
3-Nitroaniline	608U	ug/kg
4-Nitroaniline	608U	ug/kg
4-Nitrophenol	1520U	ug/kg
Benzyl Alcohol	608UJ	ug/kg
4-Bromophenyl-phenylet+	608U	ug/kg
2,4-Dimethylphenol	608U	ug/kg
4-Methylphenol	13800 *	ug/kg
1,4-Dichlorobenzene	608U	ug/kg
4-Chloroaniline	608U	ug/kg
Phenol	1210 *	ug/kg
Pyridine	1220U	ug/kg
bis(2-Chloroethyl)Ether	608U	ug/kg
bis(2-Chloroethoxy)Met+	608U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	3640UJ	ug/kg
Di-n-Octyl Phthalate	608U	ug/kg
HEXACHLOROBENZENE	608U	ug/kg
Anthracene	608U	ug/kg
1,2,4-Trichlorobenzene	608U	ug/kg
2,4-Dichlorophenol	608U	ug/kg
2,4-Dinitrotoluene	1520U	ug/kg
Hydrazine, 1,2-Dipheny+	1220U	ug/kg
Pyrene	608UJ	ug/kg
Dimethylphthalate	608U	ug/kg
Dibenzofuran	608U	ug/kg
Benzo(ghi)perylene	608U	ug/kg
Indeno(1,2,3-cd)pyrene	608U	ug/kg
Benzo(b)fluoranthene	608U	ug/kg
Fluoranthene	608UJ	ug/kg
Benzo(k)fluoranthene	608U	ug/kg
Acenaphthylene	608U	ug/kg
Chrysene	608U	ug/kg
Retene	608U	ug/kg
4,6-Dinitro-2-methylph+	3040U	ug/kg
1,3-Dichlorobenzene	608U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
2,6-Dinitrotoluene	1520U	ug/kg
N-Nitroso-di-n-Propyla+	608U	ug/kg
4-Chlorophenyl-phenyle+	608U	ug/kg
BIS(2OCHLOROISOPROPYL)+	608U	ug/kg
Surrog: 2-Fluorobiphen+	62	% Recov
2-Fluorophenol	52	% Recov
Surrog: 2,4,6-Tribromo+	NAF	% Recov
Terphenyl-d14	64	% Recov
Pyrene-d10	40	% Recov
1,2-DICHLOROBENZENE-D4	36	% Recov
Surrog: D5-Nitrobenzene	50	% Recov
Surrog: Phenol D5	50	% Recov
D4-2-CHLOROPHENOL (SS)	51	% Recov

Tent Ident - B/N/Aci	Sediment Result	Units
Decanoic Acid, Hexa-	219000NJ*	ug/kg
.GAMMA.-SITOSTEROL	10900NJ*	ug/kg
Decanoic Acid, Methyl +	23700NJ*	ug/kg
DODECANE	7400NJ*	ug/kg
BUTANOIC ACID, 2-METHY+	6250NJ*	ug/kg
OCTANOIC ACID	4720NJ*	ug/kg
TETRADECANOIC ACID, ME+	6380NJ*	ug/kg
DECANOIC ACID	5440NJ*	ug/kg
BENZENEPROPANOIC ACID	7260NJ*	ug/kg
Decanoic Acid, Tetra-	34400NJ*	ug/kg
Decanoic Acid, Penta-	5950NJ*	ug/kg
Decanoic Acid, Penta-	5760NJ*	ug/kg
TETRADECANOIC ACID, 12+	3900NJ*	ug/kg
1-Heptadecene	3400NJ*	ug/kg
UNKNOWN HYDROCARBON 1	8850NJ*	ug/kg
UNKNOWN COMPOUND 1	10100NJ*	ug/kg

Contract Lab Program		Sediment Result	Units
Solids	Percent	REQ	Total
VOA	GC/MS	REQ	CLP
P/PCBs	GC	REQ	CLP
GrnSize		REQ	CLP
TOC		REQ	CLP

(Sample Complete)

Laboratory: Ecology, Manchester

Sample No: 93 148155 Description: F

Source: Sediment (General)

Begin Date: 93/03/30 :

B/N/Acid Scan	Sediment Result	Units
Benzo(a)pyrene	4430U	ug/kg
2,4-Dinitrophenol	10600U	ug/kg
Dibenzo(a,h)anthracene	1060U	ug/kg
Benzo(a)anthracene	4760 *	ug/kg
4-Chloro-3-Methylphenol	1060U	ug/kg
Aniline	1060U	ug/kg
Benzoic acid	1980U	ug/kg
Hexachloroethane	1060U	ug/kg
Hexachlorocyclopentadi+	5320UJ	ug/kg
Isophorone	1060U	ug/kg
Acenaphthene	1060U	ug/kg
Diethylphthalate	1060U	ug/kg
Di-n-Butylphthalate	1720U	ug/kg
Phenanthrene	11200 *	ug/kg
Butylbenzylphthalate	13900 *	ug/kg
N-Nitrosodiphenylamine	1060U	ug/kg
Fluorene	1050J*	ug/kg
Carbazole	2170 *	ug/kg
Hexachlorobutadiene	1060U	ug/kg
Pentachlorophenol	1980U	ug/kg
2,4,6-Trichlorophenol	1060U	ug/kg
2-Nitroaniline	1060U	ug/kg
2-Nitrophenol	2660U	ug/kg
Naphthalene, 1-Methyl-	1060U	ug/kg
Naphthalene	1060U	ug/kg
2-Methylnaphthalene	1060U	ug/kg
2-Chloronaphthalene	1060U	ug/kg
3,3'-Dichlorobenzidine	2130U	ug/kg
Benzidine	2130U	ug/kg
2-Methylphenol	1060U	ug/kg
1,2-Dichlorobenzene	1060U	ug/kg
o-Chlorophenol (2-Chlo+	1060U	ug/kg
2,4,5-Trichlorophenol	1060U	ug/kg
Nitrobenzene	1060U	ug/kg
3-Nitroaniline	1060U	ug/kg
4-Nitroaniline	2660U	ug/kg
4-Nitrophenol	2660U	ug/kg
Benzyl Alcohol	1060U	ug/kg
4-Bromophenyl-phenylet+	1060U	ug/kg
2,4-Dimethylphenol	1060U	ug/kg
4-Methylphenol	1060U	ug/kg
1,4-Dichlorobenzene	1060U	ug/kg
4-Chloroaniline	1060U	ug/kg
Phenol	1060U	ug/kg
bis(2-Chloroethyl)Ether	1060U	ug/kg

B/N/Acid Scan *** Continued ***	Sediment Result	Units
bis(2-Chloroethoxy)Met+	1060U	ug/kg
BIS(2-ETHYLHEXYL) PHTH+	56500 *	ug/kg
Di-n-Octyl Phthalate	2660U	ug/kg
HEXACHLOROBENZENE	1060U	ug/kg
Anthracene	1460U	ug/kg
1,2,4-Trichlorobenzene	1060U	ug/kg
2,4-Dichlorophenol	1060U	ug/kg
2,4-Dinitrotoluene	2660U	ug/kg
Pyrene	12800 *	ug/kg
Dimethylphthalate	1060U	ug/kg
Dibenzofuran	1060U	ug/kg
Benzo(ghi)perylene	3250 *	ug/kg
Indeno(1,2,3-cd)pyrene	4380U	ug/kg
Benzo(b)fluoranthene	11800 *	ug/kg
Fluoranthene	17500 *	ug/kg
Benzo(k)fluoranthene	1060U	ug/kg
Acenaphthylene	1060U	ug/kg
Chrysene	8900 *	ug/kg
Retene	1060U	ug/kg
4,6-Dinitro-2-methylph+	2660U	ug/kg
1,3-Dichlorobenzene	1060U	ug/kg
2,6-Dinitrotoluene	2660U	ug/kg
N-Nitroso-di-n-Propyla+	1060U	ug/kg
4-Chlorophenyl-phenyle+	1060U	ug/kg
1,2-Diphenylhydrazine	2130U	ug/kg
BIS(2OCHLOROISOPROPYL)+	1060U	ug/kg
Surrog: 2-Fluorobiphen+	85	% Recov
2-Fluorophenol	76	% Recov
Surrog: 2,4,6-Tribromo+	NAF	% Recov
Terphenyl-d14	99	% Recov
Pyrene-d10	79	% Recov
1,2-DICHLOROBENZENE-D4	69	% Recov
Surrog: D5-Nitrobenzene	84	% Recov
Surrog: Phenol D5	77	% Recov
D4-2-CHLOROPHENOL (SS)	82	% Recov

Tent Ident - B/N/Aci	Sediment Result	Units
Phthalic Anhydride	2260NJ*	ug/kg
BENZALDEHYDE, 3-HYDROX+	2380NJ*	ug/kg
2-NONYLPHENOL	3840NJ*	ug/kg
PHENOL, 4-(1,1,3,3-TET+	5240NJ*	ug/kg

Tent Ident - B/N/Aci *** Continued ***	Sediment Result	Units
UNKNOWN HYDROCARBON 1	3860NJ*	ug/kg
UNKNOWN HYDROCARBON 2	6900NJ*	ug/kg
UNKNOWN COMPOUND 1	3000NJ*	ug/kg
UNKNOWN COMPOUND 2	3550NJ*	ug/kg
UNKNOWN COMPOUND 3	4980NJ*	ug/kg
UNKNOWN COMPOUND 4	3190NJ*	ug/kg
UNKNOWN COMPOUND 7	8680NJ*	ug/kg
UNKNOWN COMPOUND 8	91800NJ*	ug/kg
PHENOL, 4-(2,2,3,3-TET+	9030NJ*	ug/kg

(Sample Complete)

Project: DOE-659Y BREMERTON STORM DRAINS

Officer: JCC Account: D3100

Laboratory: Ecology, Manchester

Sample No: 93 128161 Description: M

Source: Water (General) Partial

Begin Date: 93/03/16 :

Solids - Specified		Water-Total Result	Units
Solids	T-Suspen	15 *	mg/l

Demand - Specified		Water-Total Result	Units
BOD	5 Day	4U	mg/l

Metals - PP		Water-Total Result	Units
Arsenic	As-Total	1.5U	ug/l
Lead	Pb-Total	6.7 *	ug/l
Mercury	Hg-Total	0.058P*	ug/l

Metals - PP Matrix Spike #1		Water-Total Result	Units
Mercury	Hg-Total	88	% Recov

Metals - PP Matrix Spike #2		Water-Total Result	Units
Mercury	Hg-Total	89	% Recov

Metals - ICP Scan		Water-Total Result	Units
Cadmium	Cd-Total	2.0U	ug/l
Chromium	Cr-Total	5.0U	ug/l
Copper	Cu-Total	10.8J*	ug/l
Nickel	Ni-Total	10U	ug/l
Silver	Ag-Total	3.0U	ug/l
Zinc	Zn-Total	42.3 *	ug/l

B/N/Acid Scan	Water-Total Result	Units
Benzo(a)pyrene	0.75U	ug/l
2,4-Dinitrophenol	15.0U	ug/l
Dibenzo(a,h)anthracene	0.75U	ug/l
Benzo(a)anthracene	0.75U	ug/l
4-Chloro-3-Methylphenol	0.75U	ug/l
Aniline	0.75U	ug/l
Benzoic acid	3.8U	ug/l
Hexachloroethane	0.75U	ug/l
Hexachlorocyclopentadi+	7.5UJ	ug/l
Isophorone	0.75U	ug/l
Acenaphthene	0.75U	ug/l
Diethylphthalate	0.75U	ug/l
Di-n-Butylphthalate	0.75U	ug/l
Phenanthrene	0.076J*	ug/l
Butylbenzylphthalate	0.26J*	ug/l
N-Nitrosodiphenylamine	0.75U	ug/l
Fluorene	0.75U	ug/l
Carbazole	0.75U	ug/l
Hexachlorobutadiene	0.75U	ug/l
Pentachlorophenol	7.5U	ug/l
2,4,6-Trichlorophenol	1.9U	ug/l
2-Nitroaniline	1.9U	ug/l
2-Nitrophenol	1.9U	ug/l
Naphthalene, 1-Methyl-	0.75U	ug/l
Naphthalene	0.75U	ug/l
2-Methylnaphthalene	0.75U	ug/l
2-Chloronaphthalene	0.75U	ug/l
3,3'-Dichlorobenzidine	1.5U	ug/l
Benzidine	1.5UJ	ug/l
2-Methylphenol	0.19J*	ug/l
1,2-Dichlorobenzene	0.75U	ug/l
o-Chlorophenol (2-Chlo+	0.75U	ug/l
2,4,5-Trichlorophenol	1.9U	ug/l
Nitrobenzene	0.75U	ug/l
3-Nitroaniline	1.9U	ug/l
4-Nitroaniline	1.9U	ug/l
4-Nitrophenol	0.84J*	ug/l
Benzyl Alcohol	1.9UJ	ug/l
4-Bromophenyl-phenylet+	0.75U	ug/l
2,4-Dimethylphenol	0.75U	ug/l
4-Methylphenol	0.52J*	ug/l
1,4-Dichlorobenzene	0.75U	ug/l
4-Chloroaniline	0.75U	ug/l
Phenol	0.45J*	ug/l
bis(2-Chloroethyl)Ether	0.75U	ug/l

B/N/Acid Scan *** Continued ***	Water-Total Result	Units
bis(2-Chloroethoxy)Met+	0.75U	ug/l
BIS(2-ETHYLHEXYL) PHTH+	1.4 *	ug/l
Di-n-Octyl Phthalate	0.75U	ug/l
HEXACHLOROBENZENE	0.75U	ug/l
Anthracene	0.75U	ug/l
1,2,4-Trichlorobenzene	0.75U	ug/l
2,4-Dichlorophenol	0.75U	ug/l
2,4-Dinitrotoluene	1.9U	ug/l
Pyrene	0.067J*	ug/l
Dimethylphthalate	0.75U	ug/l
Dibenzofuran	0.75U	ug/l
Benzo(ghi)perylene	0.75U	ug/l
Indeno(1,2,3-cd)pyrene	0.75U	ug/l
Benzo(b)fluoranthene	0.75U	ug/l
Fluoranthene	0.75U	ug/l
Benzo(k)fluoranthene	0.75U	ug/l
Acenaphthylene	0.75U	ug/l
Chrysene	0.75U	ug/l
Retene	0.75U	ug/l
4,6-Dinitro-2-methylph+	7.5U	ug/l
1,3-Dichlorobenzene	0.75U	ug/l
2,6-Dinitrotoluene	1.9U	ug/l
N-Nitroso-di-n-Propyla+	0.75U	ug/l
4-Chlorophenyl-phenyle+	0.75U	ug/l
1,2-Diphenylhydrazine	1.5U	ug/l
BIS(2OCHLOROISOPROPYL)+	0.75UJ	ug/l
Surrog: 2-Fluorobiphen+	76	% Recov
Surrog: 2,4,6-Tribromo+	NAR	% Recov
Surrog: 2-Fluorophenol	65	% Recov
1,2-DICHLOROBENZENE-D4	67	% Recov
Surrog: D5-Nitrobenzene	83	% Recov
Surrog: Phenol D5	52	% Recov
Surrog: D14-Terphenyl	92	% Recov
PYRENE-D10 (SS)	98	% Recov
D4-2-CHLOROPHENOL (SS)	79	% Recov

Tent Ident - B/N/Aci	Water-Total Result	Units
ETHANOL, 2-BUTOXY-, PH+	1.1NJ*	ug/l
ETHANOL, 1-(2-BUTOXYET+	1.6NJ*	ug/l
3,6,9,12,15-PENTAOXANO+	0.70NJ*	ug/l
Unknown HC 01	0.73NJ*	ug/l

(Continued on next page)

Project: DOE-659Y BREMERTON STORM DRAINS

Laboratory: Ecology, Manchester

Sample No: 93 128161 Description: M

Source: Water (General)

Begin Date: 93/03/16 :

Tent Ident - B/N/Aci *** Continued ***	Water-Total Result	Units
Unknown HC 02	3.0NJ*	ug/l
Unknown HC 03	3.3NJ*	ug/l
Unknown HC 04	2.9NJ*	ug/l
Unknown HC 05	1.4NJ*	ug/l
Unknown HC 06	0.73NJ*	ug/l
UNKNOWN COMPOUND 3	0.81NJ*	ug/l
UNKNOWN COMPOUND 4	2.2NJ*	ug/l
UNKNOWN COMPOUND 5	1.1NJ*	ug/l
UNKNOWN COMPOUND 6	0.79NJ*	ug/l
Bicyclo[3.1.1]heptan-2+	0.38NJ*	ug/l

Pest/PCB - PP Scan	Water-Total Result	Units
4,4'-DDT	0.019U	ug/l
Chlordane (Tech)	0.094U	ug/l
gamma-BHC (Lindane)	0.019U	ug/l
Dieldrin	0.019U	ug/l
Endrin	0.019U	ug/l
Methoxychlor	0.019U	ug/l
4,4'-DDD	0.019U	ug/l
4,4'-DDE	0.019U	ug/l
Heptachlor	0.019U	ug/l
Pentachlorophenol	0.28UJ	ug/l
Aldrin	0.019U	ug/l
alpha-BHC	0.019U	ug/l
beta-BHC	0.019U	ug/l
delta-BHC	0.019U	ug/l
Endosulfan I	0.019U	ug/l
Heptachlor Epoxide	0.019U	ug/l
Endosulfan sulfate	0.019U	ug/l
Endrin aldehyde	0.019U	ug/l
Toxaphene	0.47U	ug/l
PCB - 1260	0.19U	ug/l
PCB - 1254	0.19U	ug/l
PCB - 1221	0.19U	ug/l
PCB - 1232	0.47U	ug/l
PCB - 1248	0.19U	ug/l
PCB - 1016	0.19U	ug/l
Endosulfan II	0.019U	ug/l
PCB - 1242	0.19U	ug/l
Endrin Ketone	0.019U	ug/l
DIBUTYLCHLORENDATE (SS)	66	% Recov

Pest/PCB - PP Scan *** Continued ***	Water-Total Result	Units
DECACHLOROBIPHENYL	69	% Recov
4,4-Dibromooctafluorob+	56	% Recov

Pest/PCB - PP Scan Matrix Spike #1	Water-Total Result	Units
4,4'-DDT	100	% Recov
Chlordane (Tech)	90	% Recov
gamma-BHC (Lindane)	92	% Recov
Endrin	92	% Recov
Methoxychlor	98	% Recov
Heptachlor	84	% Recov
Aldrin	60	% Recov
Endosulfan I	88	% Recov
DIBUTYLCHLORENDATE (SS)	79	% Recov
DECACHLOROBIPHENYL	78	% Recov
4,4-Dibromooctafluorob+	72	% Recov

Pest/PCB - PP Scan Matrix Spike #2	Water-Total Result	Units
4,4'-DDT	101	% Recov
Chlordane (Tech)	92	% Recov
gamma-BHC (Lindane)	98	% Recov
Endrin	94	% Recov
Methoxychlor	99	% Recov
Heptachlor	87	% Recov
Aldrin	75	% Recov
Endosulfan I	90	% Recov
DIBUTYLCHLORENDATE (SS)	79	% Recov
DECACHLOROBIPHENYL	77	% Recov
4,4-Dibromooctafluorob+	76	% Recov

Microbiological	Water-Total Result	Units
Coliform Fecal	490 BOF	#/100mL

Project: DOE-659Y BREMERTON STORM DRAINS Officer: JCC Account: D3100

Laboratory: Ecology, Manchester

Sample No: 93 128162 Description: N Source: Water (General)

Begin Date: 93/03/16 :

Solids - Specified		Water-Total Result	Units
Solids	T-Suspen	23 *	mg/l

Demand - Specified		Water-Total Result	Units
BOD	5 Day	4U	mg/l

Metals - PP		Water-Total Result	Units
Arsenic	As-Total	1.5U	ug/l
Lead	Pb-Total	15.9 *	ug/l
Mercury	Hg-Total	0.058P*	ug/l

Metals - ICP Scan		Water-Total Result	Units
Cadmium	Cd-Total	2.0U	ug/l
Chromium	Cr-Total	5.0U	ug/l
Copper	Cu-Total	10.4J*	ug/l
Nickel	Ni-Total	10U	ug/l
Silver	Ag-Total	3.0U	ug/l
Zinc	Zn-Total	46.7 *	ug/l

B/N/Acid Scan	Water-Total Result	Units
Benzo(a)pyrene	0.16J*	ug/l
2,4-Dinitrophenol	12.3U	ug/l
Dibenzo(a,h)anthracene	0.62U	ug/l
Benzo(a)anthracene	0.62U	ug/l
4-Chloro-3-Methylphenol	0.62U	ug/l
Aniline	0.62U	ug/l
Benzoic acid	0.27J*	ug/l
Hexachloroethane	0.62U	ug/l
Hexachlorocyclopentadi+	6.2UJ	ug/l
Isophorone	0.62U	ug/l
Acenaphthene	0.62U	ug/l
Diethylphthalate	0.62U	ug/l
Di-n-Butylphthalate	0.62U	ug/l
Phenanthrene	0.25J*	ug/l

B/N/Acid Scan *** Continued ***	Water-Total Result	Units
Butylbenzylphthalate	0.31J*	ug/l
N-Nitrosodiphenylamine	0.091J*	ug/l
Fluorene	0.62U	ug/l
Carbazole	0.069J*	ug/l
Hexachlorobutadiene	0.62U	ug/l
Pentachlorophenol	0.42J*	ug/l
2,4,6-Trichlorophenol	1.5U	ug/l
2-Nitroaniline	1.5U	ug/l
2-Nitrophenol	1.5U	ug/l
Naphthalene, 1-Methyl-	0.063J*	ug/l
Naphthalene	0.62U	ug/l
2-Methylnaphthalene	0.057J*	ug/l
2-Chloronaphthalene	0.62U	ug/l
3,3'-Dichlorobenzidine	1.2U	ug/l
Benzidine	1.2UJ	ug/l
2-Methylphenol	0.47J*	ug/l
1,2-Dichlorobenzene	0.62U	ug/l
o-Chlorophenol (2-Chlo+	0.62U	ug/l
2,4,5-Trichlorophenol	1.5U	ug/l
Nitrobenzene	0.62U	ug/l
3-Nitroaniline	1.5U	ug/l
4-Nitroaniline	1.5U	ug/l
4-Nitrophenol	0.56J*	ug/l
Benzyl Alcohol	1.5UJ	ug/l
4-Bromophenyl-phenylet+	0.62U	ug/l
2,4-Dimethylphenol	0.20J*	ug/l
4-Methylphenol	0.82 *	ug/l
1,4-Dichlorobenzene	0.62U	ug/l
4-Chloroaniline	0.62U	ug/l
Phenol	0.77 *	ug/l
bis(2-Chloroethyl)Ether	0.62U	ug/l
bis(2-Chloroethoxy)Met+	0.62U	ug/l
BIS(2-ETHYLHEXYL) PHTH+	2.0U	ug/l
Di-n-Octyl Phthalate	0.62U	ug/l
HEXACHLOROBENZENE	0.62U	ug/l
Anthracene	0.049J*	ug/l
1,2,4-Trichlorobenzene	0.62U	ug/l
2,4-Dichlorophenol	0.62U	ug/l
2,4-Dinitrotoluene	1.5U	ug/l
Pyrene	0.43J*	ug/l
Dimethylphthalate	0.62U	ug/l
Dibenzofuran	0.62U	ug/l
Benzo(ghi)perylene	0.18J*	ug/l
Indeno(1,2,3-cd)pyrene	0.15J*	ug/l

B/N/Acid Scan *** Continued ***	Water-Total Result	Units
Benzo(b)fluoranthene	0.33J*	ug/l
Fluoranthene	0.48J*	ug/l
Benzo(k)fluoranthene	0.11J*	ug/l
Acenaphthylene	0.62U	ug/l
Chrysene	0.25J*	ug/l
Retene	0.62U	ug/l
4,6-Dinitro-2-methylph+	6.2U	ug/l
1,3-Dichlorobenzene	0.62U	ug/l
2,6-Dinitrotoluene	1.5U	ug/l
N-Nitroso-di-n-Propyla+	0.62U	ug/l
4-Chlorophenyl-phenyle+	0.62U	ug/l
1,2-Diphenylhydrazine	1.2U	ug/l
BIS(2OCHLOROISOPROPYL)+	0.62UJ	ug/l
Surrog: 2-Fluorobiphen+	79	% Recov
Surrog: 2,4,6-Tribromo+	NAR	% Recov
Surrog: 2-Fluorophenol	61	% Recov
1,2-DICHLOROBENZENE-D4	74	% Recov
Surrog: D5-Nitrobenzene	86	% Recov
Surrog: Phenol D5	47	% Recov
PYRENE-D10 (SS)	95	% Recov
D4-2-CHLOROPHENOL (SS)	82	% Recov

Tent Ident - B/N/Aci	Water-Total Result	Units
PHOSPHORIC ACID, TRIET+	0.28NJ*	ug/l
ETHANOL, 1-(2-BUTOXYET+	4.0NJ*	ug/l
BENZOTHIAZOLE	0.31NJ*	ug/l
Bicyclo[3.1.0]hexan-3-+	0.28NJ*	ug/l
BICYCLO[3.1.0]HEXAN-3-+	1.6NJ*	ug/l
3,6,9,12,15-PENTAOXANO+	2.3NJ*	ug/l
Unknown HC 01	0.61NJ*	ug/l
Unknown HC 02	0.68NJ*	ug/l
UNKNOWN COMPOUND 1	0.70NJ*	ug/l
UNKNOWN COMPOUND 3	0.98NJ*	ug/l
UNKNOWN COMPOUND 4	0.43NJ*	ug/l
UNKNOWN COMPOUND 5	0.39NJ*	ug/l
UNKNOWN COMPOUND 6	0.42NJ*	ug/l
UNKNOWN COMPOUND 7	2.3NJ*	ug/l
UNKNOWN COMPOUND 8	0.42NJ*	ug/l
UNKNOWN COMPOUND 9	0.91NJ*	ug/l
UNKNOWN COMPOUND 10	0.44NJ*	ug/l

(Continued on next page)

Laboratory: Ecology, Manchester

Sample No: 93 128162 Description: N Source: Water (General)

Begin Date: 93/03/16 :

Tent Ident - B/N/Aci *** Continued ***	Water-Total Result	Units
UNKNOWN COMPOUND 11	0.55NJ*	ug/l
UNKNOWN COMPOUND 12	0.78NJ*	ug/l
BICYCLO[3.1.0]HEX-2-EN+	1.5NJ*	ug/l

Pest/PCB - PP Scan	Water-Total Result	Units
4,4'-DDT	0.015U	ug/l
Chlordane (Tech)	0.077U	ug/l
gamma-BHC (Lindane)	0.015U	ug/l
Dieldrin	0.015U	ug/l
Endrin	0.015U	ug/l
Methoxychlor	0.015U	ug/l
4,4'-DDD	0.015U	ug/l
4,4'-DDE	0.015U	ug/l
Heptachlor	0.015U	ug/l
Pentachlorophenol	0.20J*	ug/l
Aldrin	0.015U	ug/l
alpha-BHC	0.015U	ug/l
beta-BHC	0.015U	ug/l
delta-BHC	0.015U	ug/l
Endosulfan I	0.015U	ug/l
Heptachlor Epoxide	0.015U	ug/l
Endosulfan sulfate	0.038U	ug/l
Endrin aldehyde	0.015U	ug/l
Toxaphene	0.38U	ug/l
PCB - 1260	0.15U	ug/l
PCB - 1254	0.15U	ug/l
PCB - 1221	0.15U	ug/l
PCB - 1232	0.38U	ug/l
PCB - 1248	0.15U	ug/l
PCB - 1016	0.15U	ug/l
Endosulfan II	0.015U	ug/l
PCB - 1242	0.15U	ug/l
Endrin Ketone	0.015U	ug/l
DIBUTYLCHLORENDATE (SS)	80	% Recov
DECACHLOROBIPHENYL	75	% Recov
4,4-Dibromooctafluorob+	70	% Recov

Microbiological	Water-Total Result	Units
Coliform Fecal	680 *	#/100mL

Project: DOE-659Y BREMERTON STORM DRAINS Officer: JCC Account: D3100

Laboratory: Ecology, Manchester

Sample No: 93 128163 Description: F Source: Water (General)

Begin Date: 93/03/16 :

Solids - Specified		Water-Total Result	Units
Solids	T-Suspen	30 *	mg/l

Demand - Specified		Water-Total Result	Units
BOD	5 Day	4U	mg/l

Metals - PP		Water-Total Result	Units
Arsenic	As-Total	1.5U	ug/l
Lead	Pb-Total	19.7 *	ug/l
Mercury	Hg-Total	0.051P*	ug/l

Metals - PP Matrix Spike #1		Water-Total Result	Units
Arsenic	As-Total	104	% Recov
Lead	Pb-Total	106	% Recov

Metals - PP Matrix Spike #2		Water-Total Result	Units
Arsenic	As-Total	106	% Recov
Lead	Pb-Total	102	% Recov

Metals - ICP Scan		Water-Total Result	Units
Cadmium	Cd-Total	2.0U	ug/l
Chromium	Cr-Total	5.0U	ug/l
Copper	Cu-Total	18.5J*	ug/l
Nickel	Ni-Total	10U	ug/l
Silver	Ag-Total	3.0U	ug/l
Zinc	Zn-Total	97.1 *	ug/l

Metals - ICP Scan Matrix Spike #1		Water-Total Result	Units
Cadmium	Cd-Total	108	% Recov
Chromium	Cr-Total	100	% Recov
Copper	Cu-Total	106	% Recov
Nickel	Ni-Total	104	% Recov
Silver	Ag-Total	110	% Recov
Zinc	Zn-Total	108	% Recov

Metals - ICP Scan Matrix Spike #2		Water-Total Result	Units
Cadmium	Cd-Total	111	% Recov
Chromium	Cr-Total	100	% Recov
Copper	Cu-Total	104	% Recov
Nickel	Ni-Total	102	% Recov
Silver	Ag-Total	107	% Recov
Zinc	Zn-Total	107	% Recov

B/N/Acid Scan	Water-Total Result	Units
Benzo(a)pyrene	0.40J*	ug/l
2,4-Dinitrophenol	16.6U	ug/l
Dibenzo(a,h)anthracene	0.83U	ug/l
Benzo(a)anthracene	0.83U	ug/l
4-Chloro-3-Methylphenol	0.83U	ug/l
Aniline	0.83U	ug/l
Benzoic acid	0.50J*	ug/l
Hexachloroethane	0.83UJ	ug/l
Hexachlorocyclopentadi+	8.3UJ	ug/l
Isophorone	0.83U	ug/l
Acenaphthene	0.83U	ug/l
Diethylphthalate	0.83U	ug/l
Di-n-Butylphthalate	0.83U	ug/l
Phenanthrene	0.98 *	ug/l
Butylbenzylphthalate	1.3 *	ug/l
N-Nitrosodiphenylamine	0.12J*	ug/l
Fluorene	0.10J*	ug/l
Carbazole	0.22J*	ug/l
Hexachlorobutadiene	0.83UJ	ug/l
Pentachlorophenol	0.74J*	ug/l
2,4,6-Trichlorophenol	2.1U	ug/l
2-Nitroaniline	2.1U	ug/l
2-Nitrophenol	2.1U	ug/l

B/N/Acid Scan *** Continued ***	Water-Total Result	Units
Naphthalene, 1-Methyl-	0.23J*	ug/l
Naphthalene	0.44J*	ug/l
2-Methylnaphthalene	0.25J*	ug/l
2-Chloronaphthalene	0.83U	ug/l
3,3'-Dichlorobenzidine	1.6U	ug/l
Benzidine	1.6UJ	ug/l
2-Methylphenol	0.52J*	ug/l
1,2-Dichlorobenzene	0.83UJ	ug/l
o-Chlorophenol (2-Chlo+	0.83U	ug/l
2,4,5-Trichlorophenol	2.1U	ug/l
Nitrobenzene	0.83U	ug/l
3-Nitroaniline	2.1U	ug/l
4-Nitroaniline	2.1U	ug/l
4-Nitrophenol	1.0J*	ug/l
Benzyl Alcohol	2.1UJ	ug/l
4-Bromophenyl-phenylet+	0.83U	ug/l
2,4-Dimethylphenol	0.18J*	ug/l
4-Methylphenol	0.94 *	ug/l
1,4-Dichlorobenzene	0.83UJ	ug/l
4-Chloroaniline	0.83U	ug/l
Phenol	1.0 *	ug/l
bis(2-Chloroethyl)Ether	0.83U	ug/l
bis(2-Chloroethoxy)Met+	0.83U	ug/l
BIS(2-ETHYLHEXYL) PHTH+	5.1 *	ug/l
Di-n-Octyl Phthalate	0.83U	ug/l
HEXACHLOROBENZENE	0.83U	ug/l
Anthracene	0.084J*	ug/l
1,2,4-Trichlorobenzene	0.83U	ug/l
2,4-Dichlorophenol	0.83U	ug/l
2,4-Dinitrotoluene	2.1U	ug/l
Pyrene	1.0 *	ug/l
Dimethylphthalate	0.83U	ug/l
Dibenzofuran	0.057J*	ug/l
Benzo(ghi)perylene	0.36J*	ug/l
Indeno(1,2,3-cd)pyrene	0.33J*	ug/l
Benzo(b)fluoranthene	0.69J*	ug/l
Fluoranthene	1.4 *	ug/l
Benzo(k)fluoranthene	0.28J*	ug/l
Acenaphthylene	0.83U	ug/l
Chrysene	0.71J*	ug/l
Retene	0.83U	ug/l
4,6-Dinitro-2-methylph+	8.3U	ug/l
1,3-Dichlorobenzene	0.83UJ	ug/l
2,6-Dinitrotoluene	2.1U	ug/l

(Continued on next page)

Sample No: 93 128163 Description: F Source: Water (General)

Begin Date: 93/03/16 :

B/N/Acid Scan *** Continued ***	Water-Total Result	Units
N-Nitroso-di-n-Propyla+	0.83U	ug/l
4-Chlorophenyl-phenyle+	0.83U	ug/l
1,2-Diphenylhydrazine	1.6U	ug/l
BIS(2OCHLOROISOPROPYL)+	0.83UJ	ug/l
Surrog: 2-Fluorobiphen+	80	% Recov
Surrog: 2,4,6-Tribromo+	NAR	% Recov
Surrog: 2-Fluorophenol	67	% Recov
1,2-DICHLOROBENZENE-D4	74	% Recov
Surrog: D5-Nitrobenzene	87	% Recov
Surrog: Phenol D5	58	% Recov
Surrog: D14-Terphenyl	92	% Recov
PYRENE-D10 (SS)	98	% Recov
D4-2-CHLOROPHENOL (SS)	82	% Recov

B/N/Acid Scan Matrix Spike #1	Water-Total Result	Units
Benzo(a)pyrene	90	% Recov
2,4-Dinitrophenol	98	% Recov
Dibenzo(a,h)anthracene	89	% Recov
Benzo(a)anthracene	95	% Recov
4-Chloro-3-Methylphenol	96	% Recov
Aniline	NAR	% Recov
Benzoic acid	66	% Recov
Hexachloroethane	44	% Recov
Hexachlorocyclopentadi+	106	% Recov
Isophorone	88	% Recov
Acenaphthene	86	% Recov
Diethylphthalate	100	% Recov
Di-n-Butylphthalate	94	% Recov
Phenanthrene	94	% Recov
Butylbenzylphthalate	96	% Recov
N-Nitrosodiphenylamine	101	% Recov
Fluorene	91	% Recov
Carbazole	NAR	% Recov
Hexachlorobutadiene	54	% Recov
Pentachlorophenol	108	% Recov
2,4,6-Trichlorophenol	99	% Recov
2-Nitroaniline	94	% Recov
2-Nitrophenol	87	% Recov
Naphthalene, 1-Methyl-	NAR	% Recov
Naphthalene	72	% Recov
2-Methylnaphthalene	54	% Recov

B/N/Acid Scan *** Continued *** Matrix Spike #1	Water-Total Result	Units
2-Chloronaphthalene	79	% Recov
3,3'-Dichlorobenzidine	NAR	% Recov
Benzidine	NAR	% Recov
2-Methylphenol	93	% Recov
1,2-Dichlorobenzene	53	% Recov
o-Chlorophenol (2-Chlo+	85	% Recov
2,4,5-Trichlorophenol	99	% Recov
Nitrobenzene	82	% Recov
3-Nitroaniline	64	% Recov
4-Nitroaniline	58	% Recov
4-Nitrophenol	89	% Recov
Benzyl Alcohol	82	% Recov
4-Bromophenyl-phenylet+	92	% Recov
2,4-Dimethylphenol	96	% Recov
4-Methylphenol	93	% Recov
1,4-Dichlorobenzene	51	% Recov
4-Chloroaniline	63	% Recov
Phenol	82	% Recov
bis(2-Chloroethyl)Ether	81	% Recov
bis(2-Chloroethoxy)Met+	90	% Recov
BIS(2-ETHYLHEXYL) PHTH+	91	% Recov
Di-n-Octyl Phthalate	90	% Recov
HEXACHLOROBENZENE	94	% Recov
Anthracene	98	% Recov
1,2,4-Trichlorobenzene	58	% Recov
2,4-Dichlorophenol	95	% Recov
2,4-Dinitrotoluene	93	% Recov
Pyrene	95	% Recov
Dimethylphthalate	96	% Recov
Dibenzofuran	90	% Recov
Benzo(ghi)perylene	90	% Recov
Indeno(1,2,3-cd)pyrene	87	% Recov
Benzo(b)fluoranthene	90	% Recov
Fluoranthene	92	% Recov
Benzo(k)fluoranthene	89	% Recov
Acenaphthylene	87	% Recov
Chrysene	94	% Recov
Surrog: 2-Fluorobiphen+	84	% Recov
Retene	NAR	% Recov
4,6-Dinitro-2-methylph+	93	% Recov
1,3-Dichlorobenzene	47	% Recov
2,6-Dinitrotoluene	95	% Recov
N-Nitroso-di-n-Propyla+	90	% Recov
1,2-DICHLOROBENZENE-D4	68	% Recov

B/N/Acid Scan *** Continued *** Matrix Spike #1	Water-Total Result	Units
Surrog: D5-Nitrobenzene	91	% Recov
Surrog: Phenol D5	82	% Recov
4-Chlorophenyl-phenyle+	89	% Recov
1,2-Diphenylhydrazine	NAR	% Recov
BIS(2OCHLOROISOPROPYL)+	83	% Recov
D4-2-CHLOROPHENOL (SS)	87	% Recov
Surrog: 2,4,6-Tribromo+	NAR	% Recov
Surrog: 2-Fluorophenol	80	% Recov
Surrog: D14-Terphenyl	95	% Recov
PYRENE-D10 (SS)	101	% Recov

B/N/Acid Scan Matrix Spike #2	Water-Total Result	Units
Benzo(a)pyrene	91	% Recov
2,4-Dinitrophenol	98	% Recov
Dibenzo(a,h)anthracene	93	% Recov
Benzo(a)anthracene	98	% Recov
4-Chloro-3-Methylphenol	98	% Recov
Aniline	NAR	% Recov
Benzoic acid	70	% Recov
Hexachloroethane	21	% Recov
Hexachlorocyclopentadi+	78	% Recov
Isophorone	86	% Recov
Acenaphthene	86	% Recov
Diethylphthalate	102	% Recov
Di-n-Butylphthalate	100	% Recov
Phenanthrene	95	% Recov
Butylbenzylphthalate	97	% Recov
N-Nitrosodiphenylamine	105	% Recov
Fluorene	90	% Recov
Carbazole	NAR	% Recov
Hexachlorobutadiene	33	% Recov
Pentachlorophenol	110	% Recov
2,4,6-Trichlorophenol	98	% Recov
2-Nitroaniline	97	% Recov
2-Nitrophenol	76	% Recov
Naphthalene, 1-Methyl-	NAR	% Recov
Naphthalene	60	% Recov
2-Methylnaphthalene	52	% Recov
2-Chloronaphthalene	79	% Recov
3,3'-Dichlorobenzidine	NAR	% Recov
Benzidine	NAR	% Recov

(Continued on next page)

Project: DOE-659Y BREMERTON STORM DRAINS Officer: JCC Account: D3100

Laboratory: Ecology, Manchester

Sample No: 93 128163 Description: F Source: Water (General)

Begin Date: 93/03/16 :

B/N/Acid Scan *** Continued *** Matrix Spike #2	Water-Total Result	Units
2-Methylphenol	87	% Recov
1,2-Dichlorobenzene	30	% Recov
o-Chlorophenol (2-Chlo+	67	% Recov
2,4,5-Trichlorophenol	101	% Recov
Nitrobenzene	66	% Recov
3-Nitroaniline	69	% Recov
4-Nitroaniline	66	% Recov
4-Nitrophenol	95	% Recov
Benzyl Alcohol	77	% Recov
4-Bromophenyl-phenylet+	91	% Recov
2,4-Dimethylphenol	95	% Recov
4-Methylphenol	89	% Recov
1,4-Dichlorobenzene	27	% Recov
4-Chloroaniline	63	% Recov
Phenol	76	% Recov
bis(2-Chloroethyl)Ether	57	% Recov
bis(2-Chloroethoxy)Met+	85	% Recov
BIS(2-ETHYLHEXYL) PHTH+	92	% Recov
Di-n-Octyl Phthalate	93	% Recov
HEXACHLOROBENZENE	94	% Recov
Anthracene	99	% Recov
1,2,4-Trichlorobenzene	47	% Recov
2,4-Dichlorophenol	95	% Recov
2,4-Dinitrotoluene	94	% Recov
Pyrene	96	% Recov
Dimethylphthalate	97	% Recov
Dibenzofuran	89	% Recov
Benzo(ghi)perylene	93	% Recov
Indeno(1,2,3-cd)pyrene	90	% Recov
Benzo(b)fluoranthene	91	% Recov
Fluoranthene	97	% Recov
Benzo(k)fluoranthene	95	% Recov
Acenaphthylene	86	% Recov
Chrysene	96	% Recov
Surrog: 2-Fluorobiphen+	77	% Recov
Retene	NAR	% Recov
4,6-Dinitro-2-methylph+	96	% Recov
1,3-Dichlorobenzene	24	% Recov
2,6-Dinitrotoluene	98	% Recov
N-Nitroso-di-n-Propyla+	81	% Recov
1,2-DICHLOROBENZENE-D4	36	% Recov
Surrog: D5-Nitrobenzene	73	% Recov
Surrog: Phenol D5	74	% Recov
4-Chlorophenyl-phenyle+	88	% Recov

B/N/Acid Scan *** Continued *** Matrix Spike #2	Water-Total Result	Units
1,2-Diphenylhydrazine	NAR	% Recov
BIS(2OCHLOROISOPROPYL)+	60	% Recov
D4-2-CHLOROPHENOL (SS)	67	% Recov
Surrog: 2,4,6-Tribromo+	NAR	% Recov
Surrog: 2-Fluorophenol	56	% Recov
Surrog: D14-Terphenyl	97	% Recov
PYRENE-D10 (SS)	102	% Recov

Tent Ident - B/N/Aci	Water-Total Result	Units
Benzothiazole	0.52NJ*	ug/l
Decanoic Acid, Methyl +	0.49NJ*	ug/l
BENZALDEHYDE, 4-HYDROX+	0.56NJ*	ug/l
ETHANOL, 1-(2-BUTOXYET+	3.8NJ*	ug/l
3,6,9,12,15-PENTAOXANO+	2.0NJ*	ug/l
1,2,3,4-Butanetetrol, +	2.2NJ*	ug/l
Unknown HC 01	0.57NJ*	ug/l
Unknown HC 02	0.68NJ*	ug/l
Unknown HC 03	0.92NJ*	ug/l
Unknown HC 04	1.1NJ*	ug/l
UNKNOWN COMPOUND 2	0.61NJ*	ug/l
UNKNOWN COMPOUND 3	0.93NJ*	ug/l
UNKNOWN COMPOUND 4	0.83NJ*	ug/l
UNKNOWN COMPOUND 5	0.51NJ*	ug/l
UNKNOWN COMPOUND 6	0.67NJ*	ug/l
UNKNOWN COMPOUND 7	3.2NJ*	ug/l
UNKNOWN COMPOUND 8	0.63NJ*	ug/l
UNKNOWN COMPOUND 9	0.63NJ*	ug/l

Pest/PCB - PP Scan	Water-Total Result	Units
4,4'-DDT	0.021U	ug/l
Chlordane (Tech)	0.10U	ug/l
gamma-BHC (Lindane)	0.021U	ug/l
Dieldrin	0.021U	ug/l
Endrin	0.021U	ug/l
Methoxychlor	0.021U	ug/l
4,4'-DDD	0.021U	ug/l
4,4'-DDE	0.021U	ug/l
Heptachlor	0.021U	ug/l

Pest/PCB - PP Scan *** Continued ***	Water-Total Result	Units
Pentachlorophenol	0.31J*	ug/l
Aldrin	0.021U	ug/l
alpha-BHC	0.021U	ug/l
beta-BHC	0.021U	ug/l
delta-BHC	0.021U	ug/l
Endosulfan I	0.021U	ug/l
Heptachlor Epoxide	0.021U	ug/l
Endosulfan sulfate	0.1U	ug/l
Endrin aldehyde	0.021U	ug/l
Toxaphene	0.52U	ug/l
PCB - 1260	0.21U	ug/l
PCB - 1254	0.21U	ug/l
PCB - 1221	0.21U	ug/l
PCB - 1232	0.52U	ug/l
PCB - 1248	0.21U	ug/l
PCB - 1016	0.21U	ug/l
Endosulfan II	0.021U	ug/l
PCB - 1242	0.21U	ug/l
Endrin Ketone	0.021U	ug/l
DIBUTYLCHLORENDATE (SS)	85	% Recov
DECACHLOROBIPHENYL	81	% Recov
4,4-Dibromooctafluorob+	105	% Recov

Microbiological	Water-Total Result	Units
Coliform Fecal	620 *	#/100mL

(Sample Complete)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by GC/ECD

Lab Sample ID: D434B
Matrix: Soils/Sediments

Data Release Authorized:
Data Prepared: 05/06/93 - MAC: mb
Date Extracted: 04/07/93
Date Analyzed: 04/20/93
Sample Amount: 24.0 g - (Dry Wt.)
Final Ext. Volume: 20 mL

Sample No.: 148156

QC Report No.: D434 - WDOE
Project: Bremerton/Bellingham

VTSR: 04/05/93
GPC Cleanup: Yes
Florisil Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

ANALYTICAL RESOURCES INCORPORATED

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

CAS Number		µg/kg
319-84-6	Alpha-BHC	5.5 U
319-85-7	Beta-BHC	5.5 U
319-86-8	Delta-BHC	5.5 U
58-89-9	Gamma-BHC (Lindane)	5.5 U
76-44-8	Heptachlor	5.5 U
309-00-2	Aldrin	5.5 U
1024-57-3	Heptachlor Epoxide	~~5.5 U~~ 21 KF
959-98-8	Endosulfan I	5.5 U
60-57-1	Dieldrin	11 U
72-55-9	4,4'-DDE	11 U
72-20-8	Endrin	11 U
33212-65-9	Endosulfan II	11 U
72-54-8	4,4'-DDD	11 U
1031-07-8	Endosulfan Sulfate	11 U
50-29-3	4,4'-DDT	11 U
72-43-5	Methoxychlor	55 U
53494-70-5	Endrin Ketone	11 U
7421-36-3	Endrin Aldehyde	11 U
5103-74-2	Gamma-Chlordane	5.5 U
5103-71-9	Alpha-Chlordane	5.5 U
8001-35-2	Toxaphene	550 U
-	Aroclor-1242/1016	110 U
12672-29-6	Aroclor-1248	110 U
11097-69-1	Aroclor-1254	110 U
11096-82-5	Aroclor-1260	110 U
11104-28-2	Aroclor-1221	220 U
11141-16-5	Aroclor-1232	110 U
37324-23-5	Aroclor-1262	110 U
11100-14-4	Aroclor-1268	110 U

Pesticide Surrogate Recovery		QC Limits
Decachlorobiphenyl (DCBP)	90.1%	60-150
Tetrachlorometaxylene (TCMX)	103%	60-150

Data Qualifiers

Value	
	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

FORM 1-PEST-S

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by GC/ECD

Lab Sample ID: D434C
Matrix: Soils/Sediments

Data Release Authorized:
Data Prepared: 05/06/93 - MAC: mb
Date Extracted: 04/07/93
Date Analyzed: 04/20/93
Sample Amount: 22.1 g - (Dry Wt.)
Final Ext. Volume: 20 mL

Sample No.: 148157

QC Report No.: D434 - WDOE
Project: Bremerton/Bellingham

VTSR: 04/05/93
GPC Cleanup: Yes
Florisil Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

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Consultants

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Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

CAS Number		µg/kg
319-84-6	Alpha-BHC	5.5 U
319-85-7	Beta-BHC	5.5 U
319-86-8	Delta-BHC	5.5 U
58-89-9	Gamma-BHC (Lindane)	5.5 U
76-44-8	Heptachlor	5.5 U
309-00-2	Aldrin	5.5 U
1024-57-3	Heptachlor Epoxide	5.5 U
959-98-8	Endosulfan I	5.5 U
60-57-1	Dieldrin	11 U
72-55-9	4,4'-DDE	11 U
72-20-8	Endrin	11 U
33212-65-9	Endosulfan II	11 U
72-54-8	4,4'-DDD	11 U
1031-07-8	Endosulfan Sulfate	11 U
50-29-3	4,4'-DDT	11 U
72-43-5	Methoxychlor	55 U
53494-70-5	Endrin Ketone	11 U
7421-36-3	Endrin Aldehyde	11 U
5103-74-2	Gamma-Chlordane	5.5 U
5103-71-9	Alpha-Chlordane	5.5 U
8001-35-2	Toxaphene	550 U
-	Aroclor-1242/1016	110 U
12672-29-6	Aroclor-1248	110 U
11097-69-1	Aroclor-1254	110 U
11096-82-5	Aroclor-1260	110 U
11104-28-2	Aroclor-1221	220 U
11141-16-5	Aroclor-1232	110 U
37324-23-5	Aroclor-1262	110 U
11100-14-4	Aroclor-1268	110 U

Pesticide Surrogate Recovery		QC Limits
Decachlorobiphenyl (DCBP)	96.5%	60-150
Tetrachlorometaxylene (TCMX)	89.5%	60-150

Data Qualifiers

Value	
	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

FORM 1-PEST-S

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

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(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by GC/ECD

Sample No.: 148158

Lab Sample ID: D434N
Matrix: Soils/Sediments

Data Release Authorized:
Data Prepared: 05/06/93 - MAC: mb
Date Extracted: 04/07/93
Date Analyzed: 04/20/93
Sample Amount: 15.5 g - (Dry Wt.)
Final Ext. Volume: 20 mL

QC Report No.: D434 - WDOE
Project: Bremerton/Bellingham

VTSR: 04/05/93
GPC Cleanup: Yes
Florisil Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	Alpha-BHC	6.6 U
319-85-7	Beta-BHC	6.6 U
319-86-8	Delta-BHC	6.6 U
58-89-9	Gamma-BHC (Lindane)	6.6 U
76-44-8	Heptachlor	6.6 U
309-00-2	Aldrin	7.5 U
1024-57-3	Heptachlor Epoxide	6.6 U
959-98-8	Endosulfan I	6.6 U
60-57-1	Dieldrin	13 U
72-55-9	4,4'-DDE	13 U
72-20-8	Endrin	13 U
33212-65-9	Endosulfan II	13 U
72-54-8	4,4'-DDD	13 U
1031-07-8	Endosulfan Sulfate	13 U
50-29-3	4,4'-DDT	13 U
72-43-5	Methoxychlor	66 U
53494-70-5	Endrin Ketone	13 U
7421-36-3	Endrin Aldehyde	13 U
5103-74-2	Gamma-Chlordane	6.6 U
5103-71-9	Alpha-Chlordane	6.6 U
8001-35-2	Toxaphene	660 U
-	Aroclor-1242/1016	140 U
12672-29-6	Aroclor-1248	140 U
11097-69-1	Aroclor-1254	140 U
11096-82-5	Aroclor-1260	140 U
11104-28-2	Aroclor-1221	270 U
11141-16-5	Aroclor-1232	260 U
37324-23-5	Aroclor-1262	140 U
11100-14-4	Aroclor-1268	140 U

Pesticide Surrogate Recovery		QC Limits
Decachlorobiphenyl (DCBP)	80.6%	60-150
Tetrachlorometaxylene (TCMX)	147%	60-150

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

FORM 1-PEST-S

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by GC/ECD

Sample No.: 148159

Lab Sample ID: D434D
Matrix: Soils/Sediments

Data Release Authorized:
Data Prepared: 05/06/93 - MAC: mb
Date Extracted: 04/07/93
Date Analyzed: 04/20/93
Sample Amount: 18.2 g - (Dry Wt.)
Final Ext. Volume: 20 mL

QC Report No.: D434 - WDOE
Project: Bremerton/Bellingham

VTSR: 04/05/93
GPC Cleanup: Yes
Florisil Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	Alpha-BHC	5.5 U
319-85-7	Beta-BHC	5.5 U
319-86-8	Delta-BHC	5.5 U
58-89-9	Gamma-BHC (Lindane)	5.5 U
76-44-8	Heptachlor	5.5 U
309-00-2	Aldrin	5.5 U
1024-57-3	Heptachlor Epoxide	5.5 U
959-98-8	Endosulfan I	5.5 U
60-57-1	Dieldrin	11 U
72-55-9	4,4'-DDE	11 U
72-20-8	Endrin	11 U
33212-65-9	Endosulfan II	11 U
72-54-8	4,4'-DDD	11 U
1031-07-8	Endosulfan Sulfate	11 U
50-29-3	4,4'-DDT	11 U
72-43-5	Methoxychlor	55 U
53494-70-5	Endrin Ketone	11 U
7421-36-3	Endrin Aldehyde	11 U
5103-74-2	Gamma-Chlordane	5.5 U
5103-71-9	Alpha-Chlordane	5.5 U
8001-35-2	Toxaphene	550 U
-	Aroclor-1242/1016	110 U
12672-29-6	Aroclor-1248	110 U
11097-69-1	Aroclor-1254	110 U
11096-82-5	Aroclor-1260	110 U
11104-28-2	Aroclor-1221	220 U
11141-16-5	Aroclor-1232	110 U
37324-23-5	Aroclor-1262	110 U
11100-14-4	Aroclor-1268	110 U

Pesticide Surrogate Recovery		QC Limits
Decachlorobiphenyl (DCBP)	74.3%	60-150
Tetrachlorometaxylene (TCMX)	92.9%	60-150

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

FORM 1-PEST-S

ANALYTICAL
RESOURCES
INCORPORATED

Analytical
Chemists &
Consultants

333 Ninth Ave. North
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(206) 621-6490
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ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by GC/ECD

Sample No.: 148160

Lab Sample ID: D434E
Matrix: Soils/Sediments

Data Release Authorized:
Data Prepared: 05/06/93 - MAC: mb
Date Extracted: 04/07/93
Date Analyzed: 04/20/93
Sample Amount: 11.0 g - (Dry Wt.)
Final Ext. Volume: 20 mL

QC Report No.: D434 - WDOE
Project: Bremerton/Bellingham

VTSR: 04/05/93
GPC Cleanup: Yes
Florisil Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	Alpha-BHC	9.4 U
319-85-7	Beta-BHC	9.4 U
319-86-8	Delta-BHC	9.4 U
58-89-9	Gamma-BHC (Lindane)	9.4 U
76-44-8	Heptachlor	9.4 U
309-00-2	Aldrin	9.4 U
1024-57-3	Heptachlor Epoxide	9.4 U
959-98-8	Endosulfan I	9.4 U
60-57-1	**Dieldrin**	**9.1 J**
72-55-9	4,4'-DDE	19 U
72-20-8	Endrin	19 U
33212-65-9	Endosulfan II	19 U
72-54-8	4,4'-DDD	19 U
1031-07-8	Endosulfan Sulfate	19 U
50-29-3	4,4'-DDT	~~19 U~~ 47 KF
72-43-5	Methoxychlor	94 U
53494-70-5	Endrin Ketone	19 U
7421-36-3	Endrin Aldehyde	19 U
5103-74-2	Gamma-Chlordane	9.4 U
5103-71-9	Alpha-Chlordane	9.4 U
8001-35-2	Toxaphene	940 U
-	Aroclor-1242/1016	190 U
12672-29-6	Aroclor-1248	190 U
11097-69-1	Aroclor-1254	190 U
11096-82-5	Aroclor-1260	190 U
11104-28-2	Aroclor-1221	380 U
11141-16-5	Aroclor-1232	190 U
37324-23-5	Aroclor-1262	190 U
11100-14-4	Aroclor-1268	190 U

Pesticide Surrogate Recovery		**QC Limits**
Decachlorobiphenyl (DCBP)	**89.0%**	**60-150**
Tetrachlorometaxylene (TCMX)	**91.9%**	**60-150**

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO: 228180

b Name: ANALYTICAL RESOURCES INC Contract: B BSDRAIN

.ab Code: ARI Case No.: D932 SAS No.: SDG No.: 228180

Matrix: (soil/water) SOIL Lab Sample ID: D932A

Sample wt/vol: 5.0 (g/mL) G Lab File ID:

% Moisture: 18 decanted: (Y/N) Y Date Received: 05/27/93

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/08/93

Concentrated Extract Volume: 40000 (uL) Date Analyzed: 06/14/93

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	50	U	
319-85-7	beta-BHC	50	U	
319-86-8	delta-BHC	50	U	
58-89-9	gamma-BHC (Lindane)	50	U	
76-44-8	Heptachlor	50	U	
309-00-2	Aldrin	50	U	
1024-57-3	Heptachlor epoxide	50	U	
959-98-8	Endosulfan I	50	U	
60-57-1	Dieldrin	96	U	
72-55-9	4,4'-DDE	120	X	KF
72-20-8	Endrin	120	X	KF
33213-65-9	Endosulfan II	96	U	
72-54-8	4,4'-DDD	96	U	
1031-07-8	Endosulfan sulfate	96	U	
50-29-3	4,4'-DDT	96	U	
72-43-5	Methoxychlor	500	U	
53494-70-5	Endrin ketone	220	X	KF
7421-93-4	Endrin aldehyde	96	U	
5103-71-9	alpha-Chlordane	50	U	
5103-74-2	gamma-Chlordane	83	X	KF
8001-35-2	Toxaphene	5000	U	
12674-11-2	Aroclor-1016	960	U	
11104-28-2	Aroclor-1221	2000	U	
11141-16-5	Aroclor-1232	960	U	
53469-21-9	Aroclor-1242	960	U	
12672-29-6	Aroclor-1248	2100	X	KF
[redacted]	[redacted]	1400		KF
11096-82-5	Aroclor-1260	2100	X	KF

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

DOE SAMPLE NO: 228181

Name: ANALYTICAL RESOURCES INC Contract: B BSDRAIN

Code: ARI Case No.: D932 SAS No.: SDG No.: 228180

rix: (soil/water) SOIL Lab Sample ID: D932B

ple wt/vol: 34.4 (g/mL) G Lab File ID:

oisture: 21 decanted: (Y/N) Y Date Received: 05/27/93

raction: (SepF/Cont/Sonc) SONC Date Extracted: 06/09/93

centrated Extract Volume: 20000 (uL) Date Analyzed: 06/21/93

ection Volume: 1.00 (uL) Dilution Factor: 1.00

Cleanup: (Y/N) Y pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	3.7	U	
319-85-7	beta-BHC	3.7	U	
319-86-8	delta-BHC	3.7	U	
58-89-9	gamma-BHC (Lindane)	3.7	U	
76-44-8	Heptachlor	3.7	U	
309-00-2	Aldrin	3.7	U	
1024-57-3	Heptachlor epoxide	3.7	U	
959-98-8	Endosulfan I	3.7	U	
60-57-1	Dieldrin	7.3	U	
72-55-9	4,4'-DDE	7.3	U	
72-20-8	Endrin	7.3	U	
33213-65-9	Endosulfan II	7.3	U	
72-54-8	4,4'-DDD	7.3	U	
1031-07-8	Endosulfan sulfate	7.3	U	
50-29-3	4,4'-DDT	7.3	U	
72-43-5	Methoxychlor	37	U	
53494-70-5	Endrin ketone	7.3	U	
7421-93-4	Endrin aldehyde	7.3	U	
5103-71-9	alpha-Chlordane	3.7	U	
5103-74-2	gamma-Chlordane	6.5	X	KF
8001-35-2	Toxaphene	370	U	
12674-11-2	Aroclor-1016	73	U	
11104-28-2	Aroclor-1221	150	U	
11141-16-5	Aroclor-1232	73	U	
53469-21-9	Aroclor-1242	73	U	
12672-29-6	Aroclor-1248	73	U	
[redacted]	[redacted]	96		
11096-82-5	Aroclor-1260	73	U	

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

DOE SAMPLE NO.: 228182

Lab Name: ANALYTICAL RESOURCES INC Contract: B BSDRAIN

Lab Code: ARI Case No.: D932 SAS No.: SDG No.: 228180

Matrix: (soil/water) SOIL Lab Sample ID: D932C

Sample wt/vol: 33.8 (g/mL) G Lab File ID:

% Moisture: 16 decanted: (Y/N) Y Date Received: 05/27/93

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/09/93

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 06/21/93

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.6	U
319-85-7	beta-BHC	3.6	U
319-86-8	delta-BHC	3.6	U
58-89-9	gamma-BHC (Lindane)	3.6	U
76-44-8	Heptachlor	3.6	U
309-00-2	Aldrin	3.6	U
1024-57-3	Heptachlor epoxide	3.6	U
959-98-8	Endosulfan I	3.6	U
60-57-1	Dieldrin	7.0	U
72-55-9	4,4'-DDE	7.0	U
72-20-8	Endrin	7.0	U
33213-65-9	Endosulfan II	7.0	U
72-54-8	4,4'-DDD	7.0	U
1031-07-8	Endosulfan sulfate	7.0	U
50-29-3	4,4'-DDT	7.0	U
72-43-5	Methoxychlor	36	U
53494-70-5	Endrin ketone	7.0	U
7421-93-4	Endrin aldehyde	7.0	U
5103-71-9	alpha-Chlordane	3.6	U
5103-74-2	gamma-Chlordane	3.6	U
8001-35-2	Toxaphene	360	U
12674-11-2	Aroclor-1016	70	U
11104-28-2	Aroclor-1221	140	U
11141-16-5	Aroclor-1232	70	U
53469-21-9	Aroclor-1242	70	U
12672-29-6	Aroclor-1248	70	U
[illegible]	[illegible]	[illegible]	[illegible]
11096-82-5	Aroclor-1260	70	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

DOE SAMPLE NO.: 228183

Lab Name: ANALYTICAL RESOURCES INC Contract: B BSDRAIN

Lab Code: ARI Case No.: D932 SAS No.: SDG No.: 228180

Matrix: (soil/water) SOIL Lab Sample ID: D932D

Sample wt/vol: 36.3 (g/mL) G Lab File ID:

% Moisture: 20 decanted: (Y/N) Y Date Received: 05/27/93

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/09/93

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 06/21/93

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	3.5	U	
319-85-7	beta-BHC	3.5	U	
319-86-8	delta-BHC	3.5	U	
58-89-9	gamma-BHC (Lindane)	3.5	U	
76-44-8	Heptachlor	7.0	U	KF
309-00-2	Aldrin	7.8	U	KF
1024-57-3	Heptachlor epoxide	7.4	U	KF
959-98-8	Endosulfan I	3.5	U	
60-57-1	Dieldrin	6.8	U	
72-55-9	4,4'-DDE	6.8	U	
72-20-8	Endrin	6.8	U	
33213-65-9	Endosulfan II	6.8	U	
[illegible]	[illegible]	[illegible]	[illegible]	KF
1031-07-8	Endosulfan sulfate	6.8	U	
50-29-3	4,4'-DDT	6.8	U	
72-43-5	Methoxychlor	35	U	
[illegible]	[illegible]	[illegible]	[illegible]	KF
7421-93-4	Endrin aldehyde	6.8	U	
5103-71-9	alpha-Chlordane	3.5	U	
5103-74-2	gamma-Chlordane	5.1	U	KF
8001-35-2	Toxaphene	350	U	
12674-11-2	Aroclor-1016	120	U	KF
11104-28-2	Aroclor-1221	290	U	KF
11141-16-5	Aroclor-1232	68	U	
53469-21-9	Aroclor-1242	120	U	KF
[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	
11096-82-5	Aroclor-1260	68	U	

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

DOE SAMPLE NO: 228184

Lab Name: ANALYTICAL RESOURCES INC Contract: B BSDRAIN

Lab Code: ARI Case No.: D932 SAS No.: _____ SDG No.: 228180

Matrix: (soil/water) SOIL Lab Sample ID: D932E

Sample wt/vol: 34.2 (g/mL) G Lab File ID: _____

% Moisture: 49 decanted: (Y/N) Y Date Received: 05/27/93

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 06/09/93

Concentrated Extract Volume: 20000 (uL) Date Analyzed: 06/21/93

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	5.8	U	
319-85-7	beta-BHC	5.8	U	
319-86-8	delta-BHC	5.8	U	
58-89-9	gamma-BHC (Lindane)	5.8	U	
76-44-8	Heptachlor	5.8	U	
309-00-2	Aldrin	5.8	U	
1024-57-3	Heptachlor epoxide	5.8	U	
959-98-8	Endosulfan I	5.8	U	
[redacted]				KF
72-20-8	Endrin	19	[illegible]	KF
33213-65-9	Endosulfan II	11	U	
[redacted]				KF
1031-07-8	Endosulfan sulfate	11	U	
[redacted]				
72-43-5	Methoxychlor	58	U	
53494-70-5	Endrin ketone	29	[illegible]	KF
7421-93-4	Endrin aldehyde	11	U	
[redacted]				KF
[redacted]				KF
8001-35-2	Toxaphene	580	U	
12674-11-2	Aroclor-1016	110	U	
11104-28-2	Aroclor-1221	230	U	
11141-16-5	Aroclor-1232	110	U	
53469-21-9	Aroclor-1242	110	U	
12672-29-6	Aroclor-1248	180	[illegible]	KF
11097-69-1	Aroclor-1254	180	[illegible]	KF
11096-82-5	Aroclor-1260	110	U	

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

DOE SAMPLE NO: 228185

Name: ANALYTICAL RESOURCES INC Contract: B BSDRAIN

Code: ARI Case No.: D932 SAS No.: _____ SDG No.: 228180

rix: (soil/water) SOIL Lab Sample ID: D932F

ple wt/vol: 35.4 (g/mL) G Lab File ID: _____

loisture: 46 decanted: (Y/N) Y Date Received: 05/27/93

raction: (SepF/Cont/Sonc) SONC Date Extracted: 06/09/93

centrated Extract Volume: 20000 (uL) Date Analyzed: 06/22/93

ection Volume: 1.00 (uL) Dilution Factor: 1.00

Cleanup: (Y/N) Y pH: 6.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	5.3	U	
319-85-7	beta-BHC	5.3	U	
319-86-8	delta-BHC	5.3	U	
58-89-9	gamma-BHC (Lindane)	5.3	U	
76-44-8	Heptachlor	5.3	U	
309-00-2	Aldrin	5.3	U	
1024-57-3	Heptachlor epoxide	5.3	U	
959-98-8	Endosulfan I	5.3	U	
60-57-1	Dieldrin	10	U	
72-55-9	4,4'-DDE	10	U	
72-20-8	Endrin	10	U	
33213-65-9	Endosulfan II	10	U	
72-54-8	4,4'-DDD	10	U	
1031-07-8	Endosulfan sulfate	10	U	
[redacted]		13	[illegible]	
72-43-5	Methoxychlor	53	U	
53494-70-5	Endrin ketone	12	[illegible]	KF
7421-93-4	Endrin aldehyde	10	U	
5103-71-9	alpha-Chlordane	5.3	U	
5103-74-2	gamma-Chlordane	5.3	U	
8001-35-2	Toxaphene	530	U	
12674-11-2	Aroclor-1016	100	U	
11104-28-2	Aroclor-1221	210	U	
11141-16-5	Aroclor-1232	100	U	
53469-21-9	Aroclor-1242	100	U	
12672-29-6	Aroclor-1248	100	U	
11097-69-1	Aroclor-1254	100	U	
11096-82-5	Aroclor-1260	100	U	

ANALYTICAL RESOURCES INCORPORATED

Analytical Chemists & Consultants

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ORGANICS ANALYSIS DATA SHEET
PESTICIDE/PCB by GC/ECD

Sample No.: 148155

Lab Sample ID: D434A
Matrix: Soils/Sediments

QC Report No.: D434 - WDOE
Project: Bremerton/Bellingham

Data Release Authorized:
Data Prepared: 05/06/93 - MAC: mb
Date Extracted: 04/07/93
Date Analyzed: 04/21/93
Sample Amount: 8.73 g - (Dry Wt.)
Final Ext. Volume: 20 mL

VTSR: 04/05/93
GPC Cleanup: Yes
Florisil Cleanup: Yes
Sulfur Cleanup: No
Conc/Dil Factor: 1:1

CAS Number		µg/kg
319-84-6	**Alpha-BHC**	**6.9 J**
319-85-7	Beta-BHC	12 U
319-86-8	Delta-BHC	12 U
58-89-9	Gamma-BHC (Lindane)	47 U
76-44-8	Heptachlor	12 U
309-00-2	Aldrin	12 U
1024-57-3	Heptachlor Epoxide	12 U
959-98-8	Endosulfan I	12 U
60-57-1	Dieldrin	23 U
72-55-9	4,4'-DDE	24 U
72-20-8	Endrin	65 U
33212-65-9	Endosulfan II	50 U
72-54-8	4,4'-DDD	23 U
1031-07-8	Endosulfan Sulfate	23 U
50-29-3	4,4'-DDT	48 U
72-43-5	Methoxychlor	120 U
53494-70-5	Endrin Ketone	60 U
7421-36-3	Endrin Aldehyde	23 U
5103-74-2	Gamma-Chlordane	20 U
5103-71-9	Alpha-Chlordane	12 U
8001-35-2	Toxaphene	1200 U
-	Aroclor-1242/1016	240 U
12672-29-6	Aroclor-1248	350 U
11097-69-1	**Aroclor-1254**	**390 NJ** KF
11096-82-5	Aroclor-1260	350 U
11104-28-2	Aroclor-1221	470 U
11141-16-5	Aroclor-1232	350 U
37324-23-5	Aroclor-1262	350 U
11100-14-4	Aroclor-1268	240 U

Pesticide Surrogate Recovery		**QC Limits**
Decachlorobiphenyl (DCBP)	**97.0%**	**60-150**
Tetrachlorometaxylene (TCMX)	**107%**	**60-150**

Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
J	Indicates an estimated value when that value is less than the calculated detection limit.
X	Indicates a value above the linear range of the detector. Dilution required.
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
NA	Indicates compound not analyzed.