Highway 520 Bridge Storm Water Runoff Study

March 2006

King County

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Acknowledgements

I would like to thank the Washington State Department of Transportation for not only permission and access to the Evergreen Point Floating Bridge but also for actively helping the County field crew collect the storm water samples. Without cooperation and permission from WSDOT, this study could not have been possible. In addition, many people at the County played a role in this study including:

Dave Funke, Jeff Droker, Katherine Bourbonais, Dan Smith, Jonathan Frodge, Deb Lester

Citation

King County. 2005. Highway 520 Bridge Storm Water Runoff Study. By Dean Wilson, Water and Land Resources Division. Seattle, Washington.

Table of Contents

1.0. Introduction 1

1.1 Study Questions 1

1.2 Study Site 2

2.0. Methods 3

2.1 Storm Runoff Sampling 3

2.2 Sampling Parameters 5

3.0. Results 7

3.1 Storm Water Sample Collection. 7

3.2 Analytical Results - Conventional Parameters and Indicator Bacteria 8

3.2.1 Phosphorus 8

3.2.2 Nitrogen 10

3.2.3 Indicator Bacteria 11

3.2.4 Total Suspended Solids 12

3.3 Organic Compounds and Trace Metals 13

3.4 Blank Contamination 18

4.0. Discussion 20

5.0. References 22

Figures

Figure 1. View of the West High rise portion of the 520 Bridge. 3

Figure 2. Automatic Sampler Setup 4

Figure 3. Total Phosphorus Results. Data represent 9 bridge samples and 328 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003. 9

Figure 4. Orthophosphate Phosphorus Results . Data represent 9 bridge samples and 284 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003. 9

Figure 5. Total Nitrogen Results. Data represent 9 bridge samples and 284 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003. 10

Figure 6. Ammonia Nitrogen Results Data represent 9 bridge samples and 284 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003 11

Figure 7. Fecal Coliform Bacteria. Data represent 9 bridge samples and 285 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003. 12

Figure 8. Total Suspended Solids Results. Data represent 9 bridge samples and 290 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003. 13

Tables

Table 1. Parameters analyzed and detection limits 5

Table 2. Chemical concentrations detected during each sampling event. Values represent the mean of three composite samples. Rain data is from UW atmospheric sciences rooftop rain gauge. 14

Table 3. Ratio of dissolved to total metals concentration. 18

Table 4. Estimated environmental concentration ranges of chemicals also detected in field blanks (µg/L)..... 19

Appendices

A Sampling and Analysis Plan

B Chemistry Data

C Quality Assurance Reports

1.0. INTRODUCTION

The Highway 520 Bridge Storm Water Runoff Study is a data collection effort that is part of the Sammamish-Washington Analysis and Modeling Program (SWAMP). SWAMP is a water quality and quantity monitoring and modeling project that was initiated in 2000 to support a variety of potential water resource decisions for the majority of the Greater Lake Washington watershed. The continued expansion of urban and suburban development and associated hydrological changes affecting flow and degrading riparian habitat arguably make this watershed one of the most highly altered on the West Coast (Kerwin, 2001). SWAMP provides a comprehensive evaluation of current and future water quality conditions in the study area.

Watershed modeling is an integral part of the SWAMP program. During development of the SWAMP workplan it was determined that water quality loadings from a limited access highway were needed for watershed model calibration in the Lake Washington watershed. Consequently, the primary purpose of this project is to assess the quality and quantity of storm water runoff from the 520 Bridge and to estimate contaminant loadings to Lake Washington.

The 520 Bridge was chosen for several reasons, including:

- Contaminant loadings from the bridge to the lake have not been directly measured.
- Contaminant sources to the road surface are assumed to be limited almost exclusively to those associated with vehicle traffic; few other potential contaminant sources are likely present on the bridge deck to confound results.
- Results will also be used to better understand the contaminant characteristics of bridge runoff to Lake Washington.
- Results will be used to calibrate/validate watershed models developed in the Lake Washington watershed.

1.1 Study Questions

This project was designed to estimate contaminant loadings in runoff from a limited access roadway where surrounding land use activities would not confound results. The key purpose of the project described here is to better understand the component of runoff contamination that is only associated with vehicles. Estimation of the contaminant contribution of vehicle traffic to water quality in one area will provide a better understanding of the contribution of limited access highways to water quality in the greater Lake Washington watershed by using modeling and risk assessment techniques. Specific questions this study was designed to answer include:

- What are the nutrient loadings from the 520 Bridge to Lake Washington?
- What are the metal loadings from the 520 Bridge to Lake Washington?
- What are the organics loadings from the 520 Bridge to Lake Washington?
- Is storm water from the 520 Bridge a source of bacteria to Lake Washington?

1.2 Study Site

The 520 Bridge was chosen for evaluation because it provides a unique opportunity to evaluate storm water runoff without interference from runoff associated with surrounding land use activities. Storm drains collect roadway runoff and funnel it directly to the lake through discrete drains on the bridge surface. King County obtained permission to access the bridge and assistance to collect storm water samples from the Washington State Department of Transportation (WSDOT).

Traffic volume estimates at the time of sample collection varied between 100,000 to 180,000 vehicle trips per day. The physical structure of the bridge spans over water for approximately 3 miles. The floating portion of the structure stretches for about one and a half miles and consists of a number of pontoons that are 360 feet long and 60 feet wide. Both the East and West high rise structures on the bridge are areas that transition from the near-shore piling structure to the floating part of the bridge structure. The bridge deck is 60 feet wide, with storm drains located every 90 feet along the outside edges of the bridge deck. Each storm drain collects runoff from half of the total bridge width (either the east or westbound lanes). Therefore, each storm drain has a catchment area of 90 by 30 feet (2700 ft^2). Downspouts from the bridge deck storm drains are attached to and run down the pylons supporting the bridge deck. The downspouts direct storm water into the lake, terminating approximately 2 feet above the concrete pontoon surface and about 6 feet above the lake surface.

2.0. METHODS

Detailed study methods were previously presented in the project Sampling and Analysis Plan (SAP) in Appendix A. The following provides a brief overview of the methods used in this assessment.

2.1 Storm Runoff Sampling

Initial reconnaissance of the bridge with WSDOT staff to identify potential sampling locations revealed that the west high rise area where the roadway bridge deck is supported on pilings on top of floating pontoons would provide an appropriate sampling location (Figure 1). This area, located under the bridge deck but on top of the west high rise floating pontoons, is a sheltered area with access to storm water drain pipes at the point of discharge to the lake.

Figure 1. View of the West High rise portion of the 520 Bridge.

Individual composite samples were collected from three separate storm drain downspouts on the west high rise catchment area of the 520 Bridge during the course of each storm sampled. A total of three composite samples were collected during each storm and three storms were sampled for a total of nine composite samples that were analyzed for this report. The storms were sampled during the winter of 2003 and spring of 2004 and occurred on April 8 and October 6, 2003 and January 14, 2004.

Three downspouts in the west high rise area of the bridge were equipped with ISCO® auto-sampling devices (Figure 2). Downspouts were modified to direct storm water flow into a receiving vessel of approximately 3 to 5 gallons in size. During a storm, storm water would fill the receiving vessel. When the vessel was full, water would then spill out over the top through a V-notch. Storm water was pumped by the ISCO® auto-sampler from the receiving vessel into a pre-cleaned sample container. All vessels, containers, and tubing were cleaned prior to each sampling event according to laboratory standard operating procedures as indicated in the sampling and analysis plan for this project (Appendix A)

The three ISCO® auto-samplers were triggered to sample during storms by an ISCO® flow-meter. The flow meter was installed in one of the downspout receiving vessels. The flow-meter recorded storm water flow during each storm and provided the necessary trigger inputs for the auto-samplers to initiate collection of the flow-weighted composite samples.

To determine if any contaminants were inadvertently introduced into samples in the field as a result of sampling methodology, field blank samples were collected. After the auto-samplers were set up in the field, the field crew collected field blanks from each sampling unit by pouring de-ionized water into the plastic receiving vessel. The auto-sampler was manually triggered and de-ionized water was pumped out of the receiving vessel, through the auto-sampler, and into sample containers. The blanks were then analyzed for all study parameters.

Figure 2. Automatic Sampler Setup

Criteria for choosing a storm to sample included antecedent dry conditions for at least 24 hours and a storm forecast that predicted at least 0.25 inch of rain. Once a storm began and flow was detected by the flow meter in the receiving vessel, the three ISCO® auto-samplers were triggered and collected flow-weighted composite samples in large glass sample containers. After the samples were collected by the ISCO® auto-sampler, sub-samples were split out of the large composite sample for individual analyses at the King County Environmental Laboratory (KCEL) (Appendix A).

Two rain gauges were used to monitor storm events and record the amount of rain that fell during a storm. The first was the rain gauge at the University of Washington operated by the UW's atmospheric sciences department. The second was a rain gauge installed and operated by County staff on Mercer Island. The UW rain gauge was approximately 1.5 miles from the sampling location and the Mercer Island rain gauge was approximately 3.5 miles from the sampling location.

2.2 Sampling Parameters

Water quality analytes included nutrients (ammonia nitrogen, nitrate/nitrite nitrogen, total nitrogen, orthophosphate phosphorus, total phosphorous); conventional parameters, (total suspended solids (TSS), alkalinity, specific conductance, pH, total organic carbon (TOC)), trace metals (arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, and zinc); minerals (calcium and magnesium); trace organic compounds (base/neutral/acid extractable semi-volatile organic compounds; volatile organic compounds and petroleum hydrocarbons); and indicator bacteria (fecal coliform and *E. coli*).

All chemical analyses were conducted at the King County Environmental Laboratory using standardized procedures and quality assurance guidelines. Discussion of laboratory analysis can be found in the project sampling and analysis plan (appendix A) and QA/QC reports appear in appendix C. Parameters and detections limits are listed below in Table 1.

Table 1. Parameters analyzed and detection limits

Conventionals	**Method**	**MDL (mg/L)**	**RDL (mg/L)**
Total Suspended Solids SM 2540 D	Gravimetric	0.5	1
Alkalinity SM 2320-B	Titration (Units = mg CaCO3/L)	0.2	10
Ammonia Nitrogen SM 4500-NH_3-G	Colorimetric, Automated	0.010	0.020
Nitrate+Nitrite Nitrogen SM 4500-NO_3-F	Colorimetric, Cd Reduction, Automated	0.020	0.040
Orthophosphate SM 4500-P-F	Colorimetric, Automated	0.002	0.005
Total Phosphorus SM 4500-P-B, FMOD	Colorimetric, Automated	0.005	0.010
Total Nitrogen SM 4500-N-C	Colorimetric, Cd Reduction, Automated	0.050	0.100
Total Organic Carbon SM 5310-B	High Temperature Combustion, Catalytic Conversion, IR Detection	0.5	1.0
Bacteria	**Method**	**MDL (cfu/100ml)**	**RDL (cfu/100ml)**
Fecal coliform SM 19th ed., 9222D	Membrane Filtration	1	N/A
E. coli SM 19th ed., 9213D	Membrane Filtration	1	N/A

Metals	**Method**	**MDL (mg/L)**	**RDL (mg/L)**
Calcium	ICP-OES (EPA 200.7)	0.05	0.25
Magnesium	ICP-OES (EPA 200.7)	0.03	0.15
Hardness	ICP-OES (EPA 200.7) and SM 2340-B	0.2	1.25
Arsenic	ICP-MS (EPA 200.8)	0.0005	0.0025
Cadmium	ICP-MS (EPA 200.8)	0.0001	0.0005
Chromium	ICP-MS (EPA 200.8)	0.0004	0.002
Copper	ICP-MS (EPA 200.8)	0.0004	0.002
Lead	ICP-MS (EPA 200.8)	0.0002	0.001
Nickel	ICP-MS (EPA 200.8)	0.0003	0.0015
Zinc	ICP-MS (EPA 200.8)	0.0005	0.0025
Mercury	CVAA (EPA 245.1), Low Level	0.000005	0.000015
Organic Compounds	**Method**	**MDL (μg/L)**	**RDL (μg/L)**
BNA-SURLLGW, BNA LVI	GC-MS	0.01 to 1.5	0.025 to 5.0
EPA 3520C/8270C LVI			
Volatile Organics	Purge and Trap GC MS	1 to 5	2 to 10
EPA Method 624			
Semi-volatile Petroleum Hydrocarbons WDOE Method NWTPH-Dx	GC FID	200	200
Volatile Petroleum Hydrocarbons	Purge and Trap GC FID	250	250
WDOE Method NWTPH-G			

IR – Infrared
SM – Standard Methods for the Analysis of Water and Wastewater
cfu – Colony Forming Unit
CVAA – Cold Vapor Atomic Absorption Spectrometry
EPA – Environmental Protection Agency
ICP-OES – Inductively Coupled Plasma Optical Emission Spectroscopy
ICP-MS – Inductively Coupled Plasma Mass Spectrometry
GC-FID – Gas Chromatography Flame Ionization Detection
GC-MS – Gas Chromatography Mass Spectrometry
MDL – Method Detection Limit
RDL – Reporting Detection Limit

Conventional data were averaged for all samples and storms giving an average and range that were then compared to similar wet weather data collected as part of the King County Streams Monitoring Program. This comparison was intended to give context to the conventional parameters discussed below.

Means, medians, and ranges were calculated from individual storms for metals, organics, and conventionals data and presented in the results section. These storm averages were also used to calculate loadings.

3.0. RESULTS

Complete detailed analytical results for all parameters appear in Appendix B. Quality assurance reports appear in Appendix C. The following provides a summary discussion of these results.

3.1 Storm Water Sample Collection.

The installation of flow meters and auto-samplers on the 520 Bridge for the purpose of collecting storm water samples had not been attempted by King County staff prior to this study. As such, some complications were to be expected and in the end, staff conducted five storm water sampling events to acquire three acceptable composite samples that were used for data interpretation in this report.

The first storm sampling event was conducted on January 29, 2003. The UW rain gauge recorded 0.31 inches of rain between 8:00AM and 2:00PM. At the Mercer Island rain gauge, 0.35 inches was recorded. Antecedent dry conditions of approximately 24 hours preceded the rain event. Based on these data, the storm met all project storm criteria.

Unfortunately, the flow meter malfunctioned and failed to trip the sampler at the appropriate times to collect a composite sample representative of the entire storm. As a result of these technical difficulties, the sample only represented the first fifteen minutes of the event, and as such, did not represent average flow or water quality for the entire event and did not meet project criteria.

The second storm sampling event was conducted on March 7, 2003. A total of 0.46 inches of rain was recorded between 3:30 AM and 7:30 PM at the Mercer Island rain gauge. Antecedent dry conditions of approximately 96 hours preceded the rain event. Antecedent dry conditions and rain fall met project criteria. Unfortunately, on March 6, 2003 prior to rainfall being recorded by either the UW or Mercer Island rain gauges, the flow meter detected “flow” and initiated sampling. The sampler collected a partial sample before shutting down. Once the event began on March 7, the remainder of the sample was collected by the auto sampler system. The flow meter appeared to be functioning properly. However, the source of the water collected on March 6 is uncertain, and therefore the data collected from this second event was unsuitable for study purposes.

The third storm sampling event was conducted on April 8, 2003. The UW rain gauge recorded 0.26 inches of rain and the Mercer Island gauge recorded 0.37 inches of rain. Antecedent dry conditions of approximately 24 hours preceded the rain event, meeting established criteria to initiate sampling for the project. Sampling and flow equipment performed properly and three composite samples were collected and analyzed and the associated data are presented in this report.

The fourth storm sampling event was conducted on October 6, 2003. The UW rain gauge recorded 0.19 inches of rain and the Mercer Island gauge recorded 0.27 inches of rain. Antecedent dry conditions of approximately 15 days preceded the rain event. Sampling equipment performed properly and three composite samples were collected and analyzed. While

rainfall for this event bordered on insufficient, the project team decided that because of difficult logistics, storm timing, and available resources that the samples collected from this storm event would be used in this report.

The fifth storm sampling event was conducted on January 14, 2004. The UW rain gauge recorded 0.30 inches of rain and the Mercer Island gauge recorded 0.34 inches of rain. Antecedent dry conditions of approximately 48 hours preceded the rain event. As such, antecedent dry conditions and rain fall met the established criteria for the project. Sampling and flow equipment performed properly and three composite samples were collected and analyzed and the data are presented in this report.

3.2 Analytical Results - Conventional Parameters and Indicator Bacteria

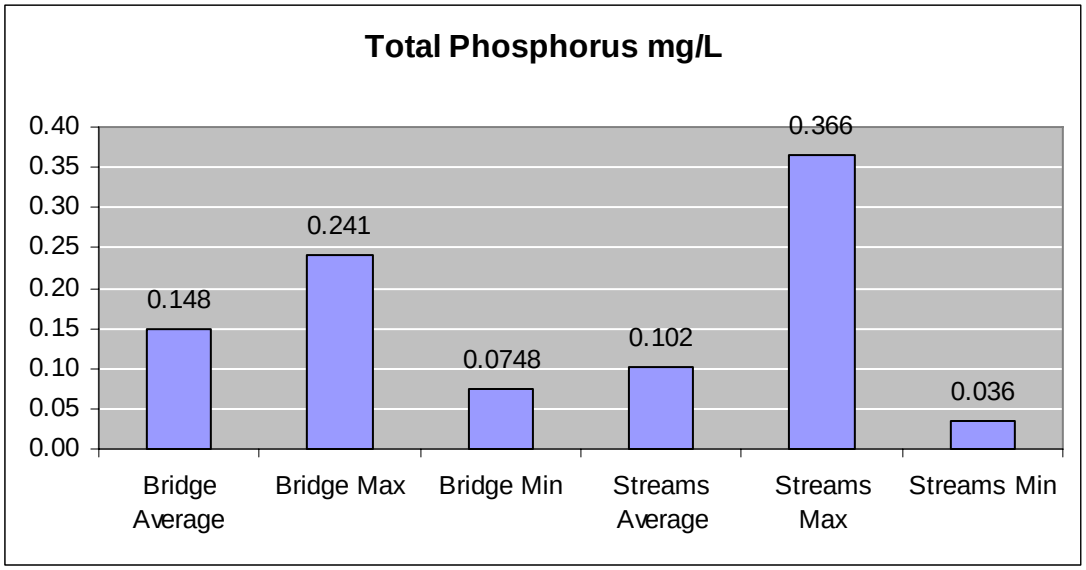
Conventional and microbiological parameters analyzed included phosphorus, nitrogen, ammonia, total suspended solids, organic carbon, and bacteria (fecal coliform, E-coli). Conventional data, discussed below, were pooled for the whole study. Study averages, medians, and ranges were calculated and then compared to wet-weather data from streams that are routinely monitored as part of King County's stream monitoring program. Comparison to the wet-weather stream data is intended to give context to the bridge data. This approach is supported by various investigations that have shown that urban runoff can have a significant impact on small streams (e.g. Wheeler et al, 2005). Data from the stream monitoring program used in this comparison are average concentrations associated with storm events during the years 1998 to 2003.

3.2.1 Phosphorus

Storm water runoff samples collected from the 520 Bridge were analyzed for total phosphorus (TP) and ortho phosphorus (OP). Phosphorus is one of the nutrients essential for growth of aquatic plants and algae. In western Washington, phosphorus is usually the freshwater nutrient in shortest supply, or the limiting nutrient required for the optimal growth of algae (Mason, 1991). As such, anthropogenic phosphorus sources have the potential to cause a nutrient imbalance and increased frequency and density of algal blooms. Non-point sources of phosphorus are a significant concern and are typically the main cause of eutrophication in rivers, lakes, and estuaries in the U.S. (Carpenter et al. 1998).

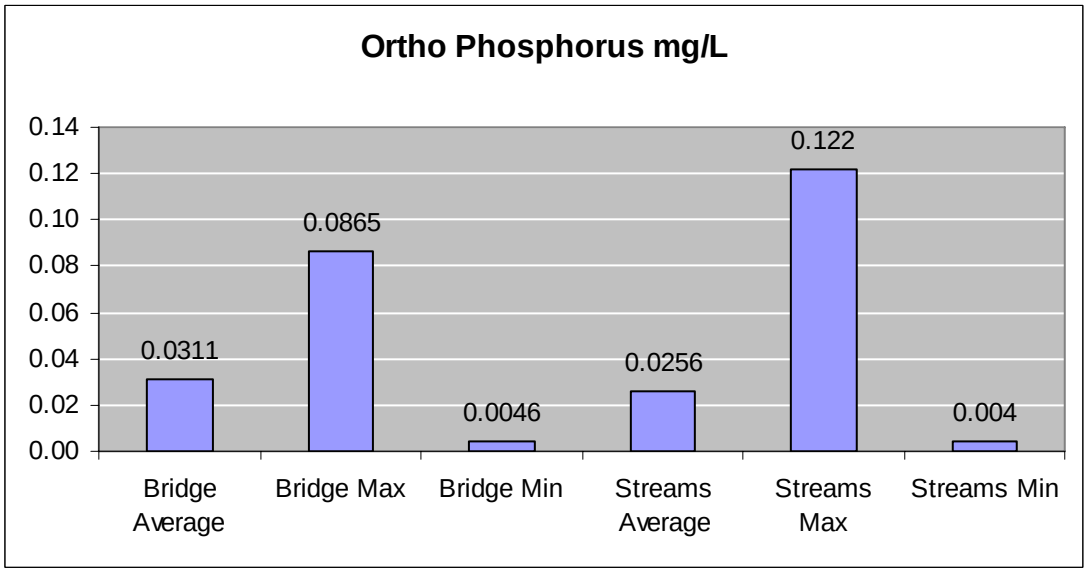
Results show that the average TP concentration in bridge runoff is similar to that detected in King County streams during storm events (Figure 3). TP includes dissolved forms (OP) and phosphorus bound in plant and animal tissue or attached to soil particles. Thus it is TP that is typically used to calculate potential loading to a lake.

Figure 3. Total Phosphorus Results. Data represent 9 bridge samples and 328 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003.



Orthophosphate Phosphorus (OP), or Soluble Reactive Phosphorus (SRP), is a measure of filterable (0.45µm) TP and represents the most bioavailable fraction of TP. As such, it is a better indication of eutrophication potential than TP (Brett et al. 2003). Results show that OP concentrations in bridge runoff are also similar to the concentrations detected in streams (Figure 4).

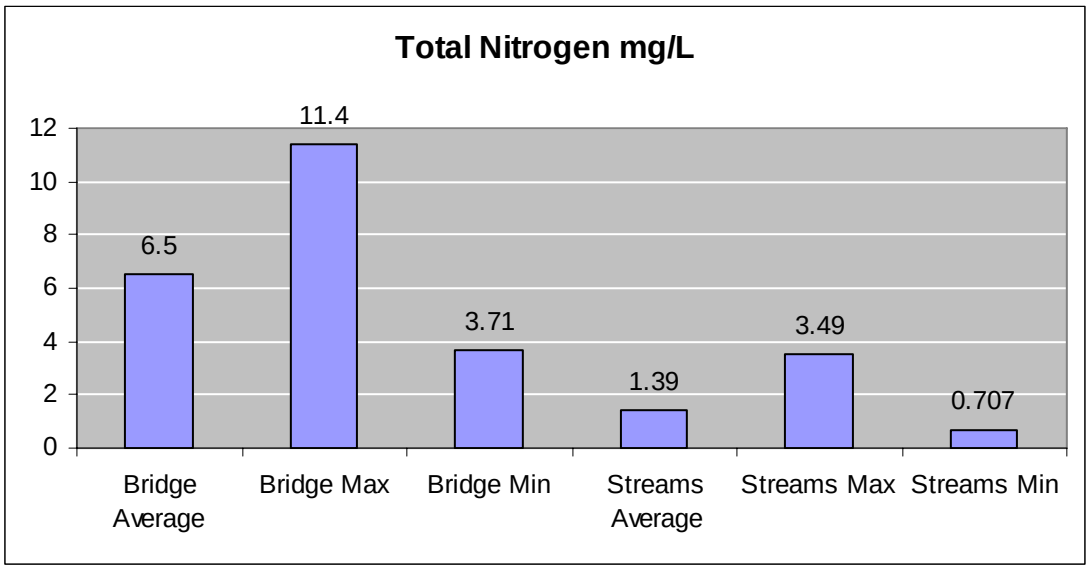
Figure 4. Orthophosphate Phosphorus Results . Data represent 9 bridge samples and 284 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003.



3.2.2 Nitrogen

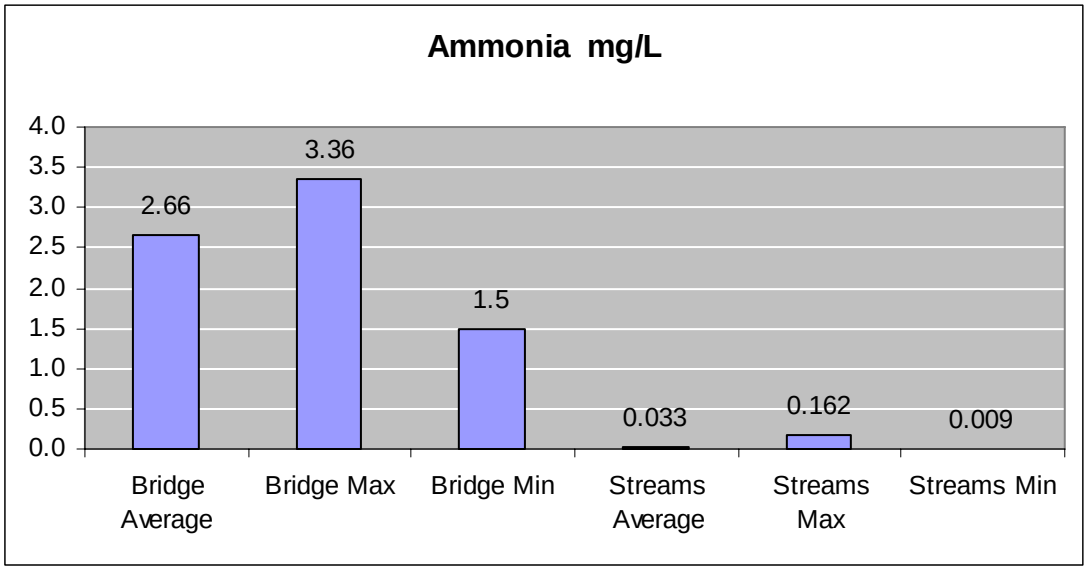
In aquatic systems, nitrogen takes the dissolved forms of ammonia, nitrate and nitrite. Nitrate has relatively low toxicity, but ammonia and nitrite can be toxic to aquatic life and people at comparatively low concentrations. Nitrite is an intermediate form of nitrogen that is formed during the reduction of nitrate or nitrification of ammonia. These reactions occur rapidly in surface waters resulting in nitrite concentrations that are typically low relative to ammonia and nitrate. Total nitrogen, nitrate-nitrite, and ammonia nitrogen were all analyzed for this study. Results indicate that total nitrogen (TN) (TN is the sum of all forms of nitrogen) is higher in bridge runoff than concentrations typically detected in streams during storm events (Figure 5).

Figure 5. Total Nitrogen Results. Data represent 9 bridge samples and 284 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003.



Results indicate that ammonia nitrogen concentrations in bridge runoff are considerably higher than concentrations typically detected in streams during storm events (Figure 6.) Comparison of the ammonia and TN concentrations from bridge runoff show that a large percentage of the TN is present in the form of ammonia. Ammonia accounted for over a third of the TN measured in bridge runoff. It is unusual for ammonia to be present in the runoff at such high concentrations as it is oxidized quickly and becomes nitrite. The presence of ammonia suggests a local but non-vehicle source.

Figure 6. Ammonia Nitrogen Results Data represent 9 bridge samples and 284 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003



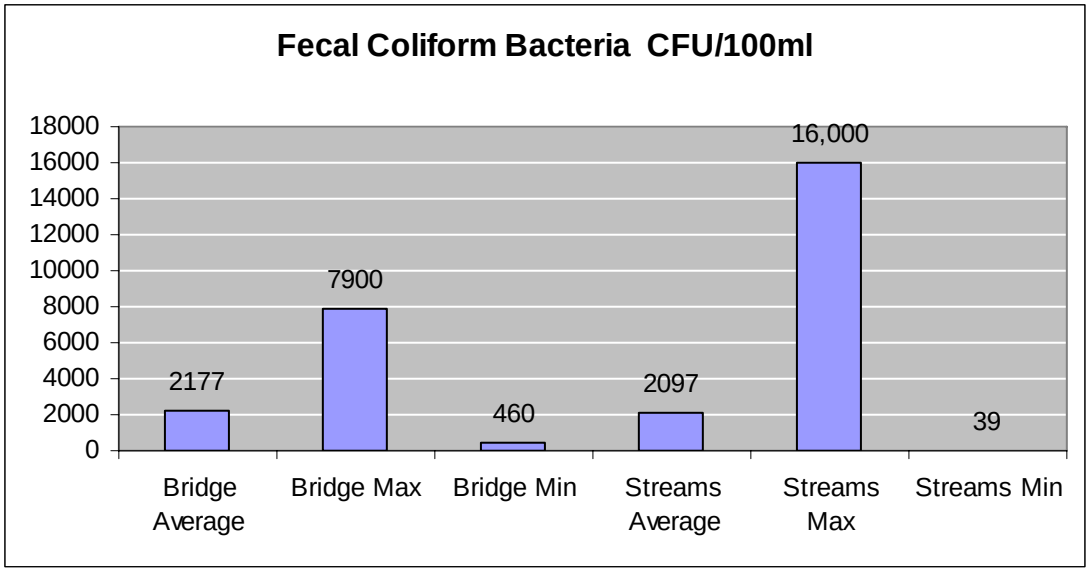
Vehicle emissions contain many nitrogen compounds including ammonia (EPA, 2004). Other studies have also detected ammonia in runoff from highways. While the maximum concentration of ammonia from the bridge samples is within the range defined by these other studies, the mean bridge ammonia concentration is elevated in comparison (Kayhanian et al, 2003, Legret and Pagotto, 1999). The possibility remains that an additional source of ammonia is present on the bridge. The sampling area is under the west high rise portion of the bridge, which has an aerial bridge structure above the car deck. It has been observed that birds are attracted to the west high rise structure as a roost. Once there, bird droppings accumulate on the bridge deck, which are then washed off during storms. This may explain some of the ammonia concentrations that were detected.

3.2.3 Indicator Bacteria

Fecal coliforms and *E. coli* are groups of bacteria found in the feces of warm-blooded animals such as people, livestock, pets, and wildlife. The number of these bacteria in a water body increases with the amount of runoff containing sewage, waste, or manure. Both fecal coliform and *E. coli* are routinely used as indicators of sewage pollution in water, as well as indicators of human health risk. While these indicator bacteria may not be directly pathogenic, their presence indicates that the water may be contaminated with other pathogenic bacteria and viruses. Fecal coliform and *E. coli* bacteria typically occur at several thousand colony forming units (CFUs) per 100 ml when sewage is present. However, high bacteria counts in surface waters do not necessarily indicate human sewage pollution because many other mammals and birds can also contribute to this type of contamination. Low levels of indicator bacteria, less than 50 CFUs, are routinely found in waters of high quality. The state water quality standards for bacteria are based on fecal coliform levels (Ecology, 2003)

Both *E. coli* and fecal coliform bacteria data were collected for this study. Initial analyses of bacteria data showed that both fecal coliform and *E. coli* results were similar. Therefore only fecal coliform results are presented and discussed here. Complete results are listed in Appendix B. Fecal coliform results show that the average levels in Bridge runoff (2177 CFU/100 ml) are similar to those detected in small streams during wet-weather (2097 CFU/100 ml). Maximum fecal coliform levels in bridge runoff were about one-half of the maximum level detected in stream samples (Figure 7). These data were somewhat surprising as small streams within the watershed can be exposed to various bacteria sources, whereas it was assumed that based on the sampling design of this study the contaminant sources would be only from automobiles. However, it appears that another source of fecal coliform bacteria to the bridge deck is also birds roosting on the west high rise structure above the sampling area.

Figure 7. Fecal Coliform Bacteria. Data represent 9 bridge samples and 285 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003.

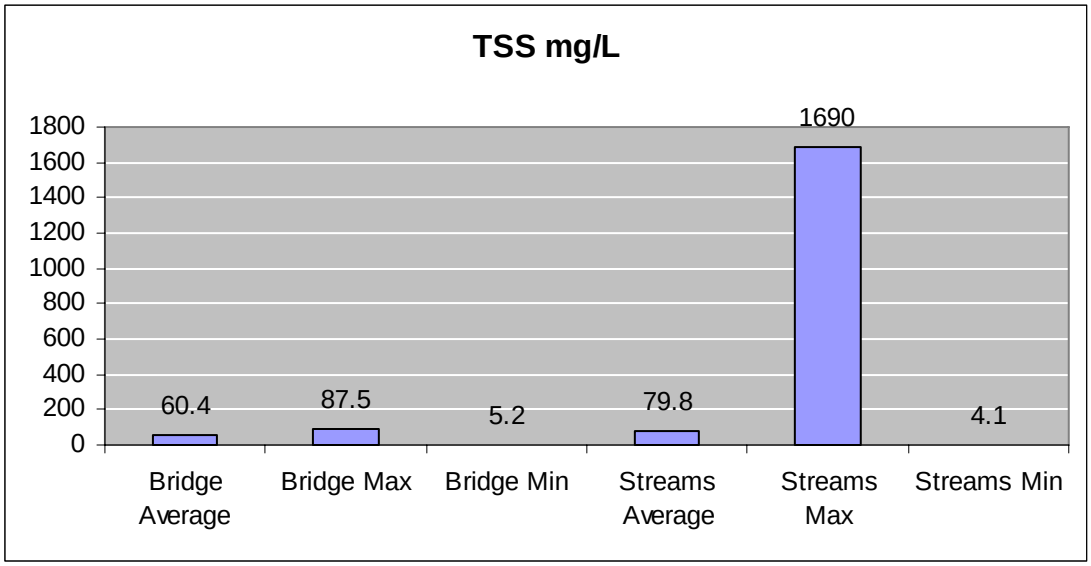


3.2.4 Total Suspended Solids

Total suspended solids (TSS) is a measure of the concentration of particulate matter in the water column. High TSS levels can have adverse effects on aquatic plants by decreasing light penetration, on filter feeders by clogging filtering organs, and on fish by decreasing visibility which can impact predation and impair and damage gills.

The average TSS concentrations in bridge runoff samples were similar to those detected during storm events in small streams in the watershed (Figure 8). However, the maximum TSS level recorded in streams (1690 mg/L) is well above the bridge maximum (87.5 mg/l).

Figure 8. Total Suspended Solids Results. Data represent 9 bridge samples and 290 samples from 14 streams. Stream data were collected during storm events between 1998 and 2003.



3.3 Organic Compounds and Trace Metals

Organic compounds and metals analyzed in this study comprise a wide variety of anthropogenic sources. Most of the organic chemicals and metals are used in a wide variety of consumer products or are the combustion by-products of vehicle fuel. Some of the organic contaminants are degradation byproducts.

A total of 31 organic compounds and 13 metals were detected in bridge runoff samples (Table 2). All 13 metals that were analyzed were detected in each storm event sample, but different organic compounds were detected during each storm. Twenty-seven organic compounds were detected during the January 14, 2004 storm, 26 were detected during the April 8, 2003 storm, and 13 were detected during the October 6, 2003 storm. Results suggest that the number of detected organic chemicals appeared to be correlated to storm intensity and runoff flow volume. However, the October 6 storm, which produced the lightest rain and subsequently the lowest storm water runoff volume of the three storms, had the highest concentrations of some nutrients and metals including zinc. The October 6 storm had the longest antecedent dry period (15 days), making it appear that the higher observed concentrations related to length of the dry period that preceded the sampled storm. In general, the highest concentrations of organic compounds were detected during the January 14th storm. Volatile organic chemicals were analyzed in samples collected for the first sampling event (April 8, 2004), however, because no volatile chemicals were detected, analysis of these parameters was discontinued.

Of the metals, zinc was found in the highest concentration. Barium was next highest followed by copper and lead. While zinc contamination has been associated with vehicle traffic (e.g. Barbosa

et al. 1999, Bris et al., 1999, Chui et al. 1982, Marsalek et al. 1997), the zinc concentrations found in this study probably reflect an additional zinc source from the deteriorating stormdrain system on the bridge (see discussion below). Barium sources include industry, the medical field, and it is also used as an additive in lubricating oils. Barium, copper, and lead are all found in brake wear dust (Brewer, 1997, VROM, 1997, Legret and Pagotto, 1997).

Bis(2-ethylhexyl phthalate was the organic compound found in the highest concentration. Phthalates are found in a wide variety of consumer products including plastics, car parts, and others (King County et al., 2005). Total petroleum hydrocarbons (TPH) in the lube oil range were found in the next highest concentrations. Also in relatively high concentrations were bisphenol A and 4-nonylphenol. Bisphenol A is also used as a plasticizer in a wide variety of consumer products, and 4-nonylphenol, which is an alkylphenol break-down product, is used as a surfactant in a wide variety of products including pesticides, detergent gasoline, and detergent oils. Bis(2-ethylhexyl)phthalate, bisphenol A, and 4-nonylphenol are all considered endocrine disrupting compounds (EDCs), that is, when organisms are exposed to and absorb these compounds into their bloodstream, these chemicals mimic hormones which then can disrupt the endocrine functions in organisms (EPA, 2001).

Table 2. Chemical concentrations detected during each sampling event. Values represent the mean of three composite samples. Rain data is from UW atmospheric sciences rooftop rain gauge.

Storm Event Date	8-Apr 2003		6-Oct 2003		14-Jan2004		Average All Storms.	Median All Storms	Range
	Mean	Stnd Dev	Mean	Stnd Dev	Mean	Stnd Dev			
Rain (inches)	0.26		0.19		0.30		0.25	N/A	N/A
Conventionals (mg/L)									
Hardness (mg/L CaCO3)	32.3	4.34	80.7	8.84	95	19.2	69.3	75.7	28.3 – 114
Total Suspended Solids	49.1	6.85	6	1.22	126	33.7	60.4	48.2	5.2 – 149
Total Nitrogen	3.87	0.172	10.5	0.793	5.12	0.251	6.5	5.1	3.71 – 11.4
Ammonia Nitrogen	1.69	0.18	3.28	0.0173	3.01	0.319	2.66	2.92	1.5 – 3.36
Nitrite + Nitrate Nitrogen	1.56	0.162	6.04	0.664	1.37	0.285	2.99	1.68	1.12 – 6.81
Total Phosphorus	0.0789	0.0048	0.203	0.0366	0.163	0.03	0.148	0.168	0.0748 – 0.241
Ortho Phosphorus	0.00697	0.00208	0.0782	0.0134	0.00816	0.00233	0.0311	0.00898	0.0046 – 0.0865
Total Organic Carbon	23.3	3.07	25.8	1.8	38	7.46	29	25.9	19.9 – 44.8
Escherichia coli (CFU/100 ml)	1420	1020	2920	4060	667	284	1670	890	460 – 7600
Fecal Coliform (CFU/100 ml)	2670	1850	3120	4150	747	241	2180	1000	460 – 7900

	8-Apr 2003		6-Oct 2003		14-Jan2004		Average All Storms.	Median All Storms	Range
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev			
Total Metals µg/L									
Antimony	7.75	0.346	7.19	0.272	11.3	1.13	8.7	7.68	7.02 – 12.0
Arsenic	1.6	0.265	2.52	0.102	2.48	0.236	2.2	2.4	1.4 – 2.75
Barium	55.1	2.2	59.4	5.38	138	10.2	84	60	52.6 – 145
Cadmium	0.605	0.0595	1.88	0.322	1.05	0.0551	1.2	1.02	0.540 – 2.24
Chromium	5.22	0.515	2.63	0.153	14.7	3.01	7.5	4.96	2.45 – 17.1
Cobalt	0.953	0.1	1.77	0.543	2.85	0.321	1.9	1.54	0.84 – 3.1
Copper	38.1	1.98	64.4	11.7	64.5	10	56	53.1	36.0 – 76.5
Lead	13.5	1.91	17.6	8.73	39.9	8.42	24	15.7	10.9 – 46.5
Molybdenum	4.59	0.21	15.2	1.87	8.78	0.442	9.5	8.6	4.38 – 17.2
Nickel	5.09	0.33	8.41	0.489	12.4	1.1	8.6	8.15	4.73 – 13.1
Vanadium	4.46	0.429	3.11	0.181	11.3	2.32	6.28	4.25	2.9 – 13.2
Zinc	542	185	2370	569	1470	674	1460	1240	427 – 3020
Mercury	0.0163	0.00386	0.012	0.00265	0.0271	0.0124	0.0185	0.0152	0.01 – 0.04

	8-Apr 2003		6-Oct 2003		14-Jan2004		Average All Storms.	Median All Storms	Range
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev			
Organics µg/L									
2,4-Dimethylphenol	0.21	0.03	0.048	0	0.482	0.0535	0.247	0.21	0.048 – 0.537
2,4-Dinitrophenol	0.47	0	1.1	0.1	0.5	0.0346	0.69	0.48	0.47 – 1.2
2-Methylnaphthalene	0.047	0.00	0.048	0	0.0821	0.0162	0.059	0.048	0.047 – 0.0952
2-Methylphenol	0.366	0.0167	0.508	0.0801	0.886	0.206	0.587	0.493	0.348 – 1.12
4,6-Dinitro-O-Cresol	0.47	0	0.109	0.105	0.48	0	0.353	0.47	0.048 – 0.48
3-Methylphenol	0.505	0.0805	0.61	0.0781	0.048	8.5E-18	0.388	0.551	0.048 – 0.57
4-Nitrophenol	0.47	0	4.22	0.787	1.4	0.3	2.03	1.4	0.47 – 5.06
Benzo(a)anthracene	0.174	0.009	0.00953	0.0000577	0.178	0.0231	0.12	0.165	0.0095 – 0.192
Benzo(a)pyrene	0.195	0.00808	0.048	0	0.227	0.0286	0.156	0.19	0.048 – 0.247
Benzo(b)fluoranthene	0.201	0.0191	0.048	0	0.129	0.14	0.126	0.048	0.048 – 0.223
Benzo(g,h,i)perylene	0.0977	0.0427	0.048	0	0.347	0.0544	0.164	0.082	0.048 – 0.391
Benzo(k)fluoranthene	0.075	0.00529	0.048	0	0.11	0.107	0.0776	0.048	0.048 – 0.233
Benzoic Acid	2.77	0.723	1.83	0.513	0.877	0.0924	1.83	1.7	0.77 – 3.6
Benzyl Alcohol	0.529	0.0828	1	0.655	0.228	0.121	0.587	0.507	0.095 – 1.76
Benzyl Butyl Phthalate	0.637	0.0643	0.48	0	0.48	0	0.532	0.48	0.48 – 0.71
Bis(2-ethylhexyl)adipate	0.583	0.0764	1.49	0.599	0.257	0.0289	0.776	0.6	0.24 – 2.12
Bisphenol A	1.72	2.38	3.05	1.51	6.56	1.88	3.78	3.26	1.55 – 7.27
Caffeine	1.96	0.161	1.23	0.628	0.79	0.705	1.33	0.856	0.382 – 5.1
Carbazole	0.019	2.72	0.019	0.172	0.0931	0.0598	0.0437	0.019	0.019 – 0.102
Chrysene	0.171	0	0.019	0	0.354	0.00862	0.181	0.164	0.019 – 0.393
Di-N-Butyl Phthalate	0.74	0.0286	0.533	0	0.48	0.0641	0.584	0.51	0.48 – 0.9
Di-N-Octyl Phthalate	2.62	1.22	0.48	0.0624	2.61	0.118	1.9	2.14	0.48 – 3.36

	8-Apr 2003		6-Oct 2003		14-Jan2004		Average All Storms.	Median All Storms	Range
	Mean	Stand Dev	Mean	Stand Dev	Mean	Stand Dev			
Fluoranthene	0.188	0.163	0.048	0.0681	0.578	0	0.271	0.166	0.048 – 0.657
Indeno(1,2,3-Cd)Pyrene	0.254	0.558	0.048	0	0.152	0.811	0.151	0.195	0.048 – 0.267
Naphthalene	0.0591	0.0498	0.024	0	0.0943	0.13	0.0591	0.0566	0.024 – 0.099
Organics µg/L									
Phenanthrene	0.132	0.0114	0.019	0	0.366	0.0905	0.172	0.13	0.019 – 0.419
Pyrene	0.262	0.0124	0.019	0	0.766	0.00594	0.349	0.245	0.019 – 0.855
Total 4-Nonylphenol	2.71	0.0246	0.48	0	7.38	0.0833	3.52	2.57	0.48 – 9.09
Lube Oil Range (>C24)	2.83	0.13	1.57	0.414	8.93	3.08	4.44	2.6	1.4 – 11

Analysis was also conducted to determine the ratio of total to dissolved metals. (Table 3) Dissolved metals are typically more bioavailable, and as such, are more likely to be toxic at lower concentrations.

The results indicate that several of the metals analyzed were present primarily in the dissolved form, including arsenic, cadmium, copper, molybdenum, and zinc. Zinc analysis indicated that during the October storm, zinc was present almost completely in the dissolved form. Most of the metals showed a much higher dissolved fraction in the October storm as compared to the two other storms (Table 3).

Differences between the April and January storms and the October storm include the length of the antecedent dry period and storm water volume. The October storm generated a smaller volume of runoff when compared to the other storms sampled. Also, the October storm was associated with a much longer dry antecedent period, which may account for the higher concentrations and loadings for many of the parameters analyzed, including metals. This suggests that higher chemical concentrations may be associated with the length of the dry antecedent conditions, however this study was not designed to determine the relative importance of anteceedant dry periods.

Table 3. Ratio of dissolved to total metals concentration.

Metal	Storm Event Date			Average
	Apr. 8, 2003	Oct. 6, 2003	Jan. 14, 2004	
Antimony	0.52	0.76	0.51	0.58
Arsenic	0.64	0.85	0.43	0.64
Barium	0.46	not available	0.43	0.5
Cadmium	0.57	0.82	0.58	0.71
Chromium	0.19	0.55	0.095	0.17
Cobalt	0.26	0.86	0.31	0.48
Copper	0.43	0.83	0.42	0.58
Lead	0.026	0.57	0.021	0.16
Molybdenum	0.72	0.86	0.79	0.82
Nickel	0.49	0.89	0.41	0.58
Vanadium	0.21	0.74	0.048	0.2
Zinc	0.76	1	0.54	0.84
Mercury	0.41	0.66	0.18	0.35
Rain (inches)	0.26	0.19	0.30	0.25

3.4 Blank Contamination

As part of the analytical quality assurance (QA) program, contaminants which may be introduced into environmental samples during sample collection and laboratory analysis are assessed through use of blanks. Two different types of blanks were analyzed as part of this study: laboratory method blanks and field blanks. Laboratory method blanks are designed to determine if any contamination has been introduced into the samples by the laboratory analytical method or process. Field blanks are designed to determine if any contamination has been introduced into the sample from the sample collection or handling methods.

Analysis of blanks show that bis(2-ethylhexyl)phthalate, bis(2-ethylhexyl)adipate, diethyl phthalate, phenol and zinc were detected in at least one of the field blanks collected during the study. This indicates some bias of results for these chemicals may have been introduced into the samples associated with these blanks.

According to the EPA's National Functional Guidelines for Organic and Inorganic Data Review (EPA, 1999 and 2004), if chemical concentrations in samples are greater than ten times the concentration detected in the blank, then it is assumed that the concentration detected in the samples is environmental. In the case of phthalates, if concentrations in samples are five times greater than the blank contamination, it is assumed that the storm water concentrations are environmental.

Assessment of the levels of blank contamination indicated that bis(2-ethylhexyl)adipate was not detected at a high enough concentration to be indicative of environmental conditions. The

environmental zinc concentrations ranged from 3 to 4 orders of magnitude higher than the concentrations detected in field blanks. No other assessment or estimation of bias from zinc contamination in field blanks was deemed necessary or performed.

Contamination detected in the blanks introduces uncertainty to evaluation of the environmental concentration of those chemicals. While subtracting blank contamination from the environmental sample is not recommended for data validation under the Superfund Program (EPA, 1999), for the purposes of this study, blank contamination was subtracted from the storm water result to better understand the possible range from the adjusted to the unadjusted contaminant concentrations. Table 4 lists the range of concentrations in storm water samples for the chemicals that were also detected in field blanks.

Table 4. Estimated environmental concentration ranges of chemicals also detected in field blanks (µg/L).

Contaminant	Storm Event Date			Possible Concentration Range
	April 8, 2003	October 6, 2003	Jan 14, 2004	
Bis(2-Ethylhexyl)Phthalate	7.02 to 14.2	4.03 to 7.52	11.22 to 14.8	4.03 to 14.8
Diethyl Phthalate	0.13 to 2.55	0.71 to 0.8	0.757[1]	0.13 to 2.55
Phenol	0.99 to 1.33	2.47 to 3.49	8.38[1]	0.99 to 8.38

[1] No contamination detected in field blank

4.0. DISCUSSION

A few interesting results were observed during this study. Zinc was detected at higher concentrations than other studies of runoff from limited access highways (Kayhanian et al. 2003, Chui et al. 1982). Also the dissolved to total ratio for zinc differed from what other researchers have found (Kayhanian et al. 2003). Discussions with WSDOT staff indicated that these zinc results were also much higher than they expected (Richard Tvetan pers. comm.). As a result, WSDOT staff collected additional samples from the 520 bridge and analyzed them for metals. Their findings confirmed the elevated zinc concentrations. (WSDOT, 2005)

WSDOT then contracted Herrera consultants to conduct a source tracking study. Herrera collected samples from various places on the 520 bridge, from the I90 floating bridge, and from the Hood Canal floating bridge and analyzed them for metals. Results showed that zinc concentrations were much higher on the 520 bridge than the I90 or Hood Canal floating bridges. Additionally, the study revealed that zinc concentrations were not elevated at all sites on the 520 bridge, only those with long downspouts. Storm water collected from storm drains that had no downspouts on the 520 bridge and storm water collected from storm drains that had long downspouts on the Hood Canal bridge both had lower zinc concentrations. (WSDOT, 2005)

Herrera then conducted metallurgical studies on a section of long downspout from the 520 bridge. Their findings indicated a failure of the galvanizing material that was intended to protect the iron downspout from corrosion. This failure apparently caused the zinc coating to leach off of the inner coating of the pipe and into storm water at a much greater rate than galvanized piping that did not have this type of coating failure (WSDOT, 2005). These finding indicate that the zinc loadings calculated during this study include failing galvanized coating in addition to zinc contributions from vehicle traffic. As such, these zinc loadings are not a good characterization of storm water runoff from a vehicle-only source.

Another key finding of the King County study is the proportion of the organic contaminant load that is comprised of phthalate compounds including bis(2-ethylhexyl)phthalate. These chemicals have a wide variety of uses and sources (King County, 2004) and have been found in marine and freshwater sediments near stormdrain outfalls and combined sewer overflows (Moshenberg, 2005, King County, 1997). These studies also found phthalate contamination in areas not near storm water or sewer outfalls but at lower concentrations, suggesting an urban phthalate source to storm water runoff. While phthalate sources other than vehicles exist, this study was able to demonstrate that storm water loadings of organic chemicals from primarily vehicle-only sources are dominated by phthalates.

The proportion of the organic contaminant load contributed by 4-nonylphenol and bisphenol A is also informative. Total 4-nonylphenol is a degradation byproduct of other alkylphenols and a surfactant used in detergent gasoline and lubricating oils. Bisphenol-A is a plasticizer used in a wide variety of consumer products including automobiles. Even though both of these chemicals are used broadly in consumer products, neither have been specifically associated with the storm water runoff from vehicle-only traffic. This information should be useful when investigating both sources and environmental effects of these chemicals.

Study results also indicated elevated concentrations of nitrogen, ammonia, and fecal coliform bacteria. Of all the chemicals analyzed, the total mass loadings were highest for nutrients. Vehicle traffic is a source of nitrogen compounds and is reflected in the total nitrogen data. However, the elevated proportion of ammonia combined with elevated levels of fecal coliform bacteria suggest a local source for these constituents. Bird droppings from roosting birds on the west high rise structure appear to be a likely source of nutrients and bacteria. This illustrates how impervious surfaces can accumulate and even preserve contaminants that can then be entrained in storm water. In contrast, bird droppings landing in forest duff or vegetated area would not be as readily washed off and subsequently contaminate surface waters. And in this case, vehicle traffic may not have been the only source of these contaminants in storm water runoff from the bridge.

This study did not assess the fraction of the stormwater loadings that came from aerial or atmospheric deposition. It is assumed that some fraction of the contaminant loadings found on the bridge were deposited there from the atmosphere. This study also did not assess what fraction of these airborne contaminants are from vehicular traffic.

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Appendix A

Sampling and Analysis Plan

SAMMAMISH/WASHINGTON ASSESSMENT AND MODELING PROGRAM
HIGHWAY 520 BRIDGE RUNOFF STUDY
SAMPLING AND ANALYSIS PLAN

Prepared for the
King County Department of Natural Resources and Parks
Water and Land Resources Division

January 24, 2003

NAME OF PROJECT: SWAMP 520 Bridge Runoff Study

PROJECT NUMBER: 423550 Subproject 100 Phase 001

SAP PREPARED BY: Dean Wilson
King County Department of Natural Resources and Parks
Water and Land Resources Division

Dean Wilson, Project Manager 520 Bridge Runoff Study	Date
Katherine Bourbonais, Laboratory Project Manager King County Environmental Laboratory	Date
Colin Elliott, QA Officer King County Environmental Laboratory	Date

I. Purpose

This Sampling and Analysis Plan (SAP) describes the planned scope of work, field sampling procedures, and laboratory analytical requirements for the State Route (SR) 520 Bridge Highway Runoff Study.

The primary purpose of this project is to assess the water quality and quantity of stormwater runoff from the SR 520 and to estimate contaminant loadings to Lake Washington.

The 520 bridge was chosen for several reasons, including:

- Contaminant loadings to the lake from the bridge have never been measured directly.
- Sources of contaminants to the road surface are limited almost exclusively to those associated with vehicle traffic. Few or no other potential sources of contaminants are present on the bridge deck to confound results.
- Results will also be used to better understand the contaminant characteristics of bridge runoff to Lake Washington.
- Results from this study will be screened against biological thresholds to better understand if roadway runoff on a basin scale should be studied in greater detail.

II. Study Design

Project objectives are to characterize the water quality of runoff from the 520 Bridge where sources are from vehicle traffic only. This study is intended to determine the contaminant loadings from the bridge to the lake. This information will be incorporated into the SWAMP lakes model and existing conditions assessment.

Study Question

What are the contaminant loadings from the 520 Bridge to Lake Washington?

Sampling Strategy

In order to characterize the water quality of 520 Bridge runoff to Lake Washington, flow-weighted composite samples will be collected during three storm events.

Variability within a given storm will be assessed by collecting three flow-weighted composited samples during each storm event. Each sample will be collected from separate storm drains on the 520 Bridge West High Rise where catchment area, traffic volume, type of traffic, gradient and exposure to rain are known.

Variability during the storm season will be assessed by collecting samples from three storms during the winter and spring. Three storm events will provide enough information to statistically assess variability.

Water quality analyses will include nutrients (ammonia nitrogen, nitrate/nitrite nitrogen, total nitrogen, orthophosphate phosphorus, total phosphorous); total suspended solids, alkalinity, specific conductance, total organic carbon, trace metals (arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, and zinc); minerals (calcium and magnesium); trace organic compounds (base/neutral/acid extractable semivolatile organic compounds; volatile organic compounds and petroleum hydrocarbons); and indicator bacteria (fecal coliform and *E. coli*).

Volatile organics will be tested initially. If these compounds are not detected during the first sampling event, further testing of volatile organics may be discontinued.

Base/Neutral/Acid (BNA) extractable organic compounds will be initially analyzed using standard GC/MS techniques. If concentrations are near or below detection limits, large volume injector (LVI) techniques will be used to attain lower detection limits.

Prior to collecting water quantity or water quality samples, water quantity measuring methods will be developed. An assessment of the bridge drainage system during a storm will also be completed. When a water quality and quantity sampling method is finalized, a written procedure will be included in this sampling and analysis plan as an addendum.

The target rainfall amount needed to trigger a sampling event will be assessed prior to collecting water quality samples. Flow measuring equipment will be installed and be operational. Staff will begin to measure runoff from storm drains on the bridge in an effort to quantify the amount of runoff generated during a given amount of rainfall. After some information is collected, the optimal size of a storm event for sampling can be determined and will be used when choosing the size of storm to be sampled.

Specific storms to be sampled will be chosen based on weather reports, predicted quantity of rain, laboratory workload, and proximity to the weekend. Weather will be monitored using web-based forecasts. Autoamplers will be set to trigger when a storm of sufficient intensity is predicted to occur. Due to limited capacity to handle and split samples at the laboratory, sampling will not occur concurrently with other large King County storm sampling projects. Also, in an effort to avoid overtime and weekend work, sampling will not be conducted during weekends or during a time that would require sample handling by laboratory staff during weekends. Antecedent dry conditions should be at least one to three days. If analysis of preliminary data indicates the antecedent period significantly affects the results, an extension of the sampling season to capture the first storm after the summer drought or "first flush" of the season may be warranted.

Station Locations

Stations will be located at three of several stormdrain down spouts under the West High Rise of the 520 Bridge. Each downspout will be labeled with a unique identifier (locator) so that the source of each composite sample can be easily identified. Discussion with DOT staff and reconnaissance of the bridge by King County staff resulted in the selection of this location. The area under the West High rise is on top of the floating pontoons. Pylons, located on top of the floating pontoons, support the bridge deck, which creates a covered space between the bridge deck above and the floating pontoons below. The floating pontoons provide ample area for installing sampling equipment. Access to this area is by boat only as there is no parking on the bridge deck 80 feet above.

Storm drains in this area are located every 90 feet along the bridge deck. The bridge deck is 60 feet in width. Each storm drain collects runoff from half of the total bridge width (either the east or westbound lanes). Therefore, each stormdrain has a catchment area of about 90 feet by 30 feet. Downspouts from the bridge deck storm drains are attached to and run down the pylons supporting the bridge deck. The downspouts direct storm water into the lake, terminating approximately 2 feet above the concrete pontoon surface and about 6 feet above the lake surface.

Three downspouts in close proximity to each other will be equipped with auto-sampling equipment. These three autosamplers will collect flow-weight composite samples in large glass sample containers. Various sub-samples will be split out of the large composite sample for the individual analyses at the King County Environmental Laboratory.

One of the three downspouts equipped with an autosampler, or a fourth downspout will be equipped with a flow-measuring device. This flow-measuring device will record the storm water flow from the sampled storm. The measuring device will provide the necessary input for the auto samplers to begin sampling and collect a flow-weighted composite sample. Measured volumes of storm water will be used to calculate contaminant loadings to the lake.

Laboratory Data Quality Objectives

Precision, Accuracy and Bias

Precision, accuracy and bias for analytical chemistry and microbiology may be measured by one or more of the following quality assurance/quality control (QA/QC) procedures:

- Collection and analysis of field replicate samples (field replicates should show a relative percent difference of less than 150 percent).
- Collection of a field blank (results should be <MDL for all appropriate parameters).
- Analysis of various laboratory QC samples such as method blanks, matrix spikes, certified reference materials, and laboratory duplicates or triplicates. Due to the small number of samples being collected for this study, microbiology lab duplicates should have a relative percent difference (RPD) of 10% or less.

Representativeness

Water quality samples will be collected from storm drains where the catchbasin area is known and flow can be measured. Water quality samples will be flow-weighted composites, allowing both the characterization of runoff draining from the bridge, and loading estimates to Lake Washington.
Samples are to be collected in such a manner as to minimize potential contamination and other types of degradation in the chemical and physical composition of the water. Following guidelines for sampler decontamination, sample acceptability criteria and sample processing will help ensure that samples are representative. Laboratory representativeness is achieved by proper preservation and storage of samples and preparation for analysis.

Completeness

Sampling in favorable conditions and at the appropriate time points, along with adherence to standardized sampling and testing protocols, will aid in providing a complete set of data for this project. The goal for completeness is 100%. The samples from each event should produce greater than 90% acceptable chemical and biological data under the QC conditions described elsewhere in this SAP.

Comparability

Comparability is achieved through use of standard techniques to collect and analyze representative samples, along with standardized data validation and reporting procedures. Changes or updates to analytical methods and sampling techniques midway into the project must be validated and shown to be equivalent to existing methods before being implemented.

III. Project Team and Responsibilities

Project team members and their responsibilities are summarized in the table below. All team members are staff of the King County Department of Natural Resources and Parks.

Project team members and responsibilities.

Name/Telephone	Title	Affiliation	Responsibility
Dave Funke (206) 296-8066	Engineer	Science, Monitoring and Data Management	Storm water sampling, autosamplers, hydrology
Dan Smith (206) 296-8007	Engineer	Science, Monitoring and Data Management	Storm water sampling, autosamplers, hydrology
Jeff Droker (206) 684-2309	Environmental Specialist	Environmental Laboratory	Storm water sampling

Name/Telephone	Title	Affiliation	Responsibility
Katherine Bourbonais (206) 684-2382	Laboratory Project Manager	Environmental Laboratory	Coordination of sampling and analytical activities, laboratory QA/QC and data reporting
Colin Elliott (206) 684-2343	Quality Assurance Officer	Environmental Laboratory	Overall analytical and field QA/QC
Dean Wilson (206) 296-8252	Water Quality Planner	Science, Monitoring and Data Management	Project manager

IV. Schedule

Sampling will take place during the storm season of 2002 and 2003 (October 2002 to June 2003).

V. Sample Collection

Prior to traveling to the bridge sampling site, notification must be given to DOT staff. Same day notification has been sufficient in the past.

Sampling Equipment

A method for measuring flow from the storm drains on the bridge will first need to be developed. Team engineers will assess available technology, purchase equipment, make adaptations, install, and test equipment as necessary to achieve project goals. After flow monitoring equipment has been installed and tested, water quality samples can be collected. As noted above, when a flow monitoring method is developed a written description of the equipment will be added to this sampling and analysis plan as an addendum.

Composite water quality samples will be collected using ISCO autosamplers equipped with 15-liter glass sample carboys. Autosamplers will be automatically triggered by flow monitoring equipment. A target amount of 15 liters of stormwater will be collected over the course of each sampled storm. The total time of collection will not exceed 24 hours. The end of the compositing period will be considered the start of the holding time period for the composite samples.

Composite sampling equipment and containers will be set up to minimize contamination of the sample for metals analysis. The composite sample containers will be fitted with a special cap designed to prevent contamination of the sample during the sampling process. The sample will remain capped until a standard cap is fitted onto the carboy for transportation to the laboratory.

Composite samples will be brought back to the laboratory to transfer to appropriate laboratory sample containers. This will be done by continuously agitating the sample in the 15-liter glass carboy while transferring sample aliquots to the appropriate laboratory containers using a Teflon siphon tube. Each sample container will be filled to the appropriate level from the autosampler carboy. This procedure will ensure a representative sample from the carboy in each laboratory sample container. If there is insufficient volume to complete all of the requested analyses, priority shall be given to conventional parameters excluding nutrients, followed by metals, organics, nutrients, and finally microbiological analyses.

Field QC Sample Collection

The following field QC samples will be collected to evaluate bias and precision of the sampling technique.

- Field Blank: Field blanks will be collected as part of the deployment for the first storm event. Lab Deionized Water will be pumped through the tubing and into a pre-cleaned carboy then divided into sample containers. Field blank samples will be analyzed for BNA extractable organic compounds and the same list of metals as runoff samples.
- Field Replicate: Field replication is part of sampling design. Three autosamplers will be set up in parallel to collect samples from essentially the same source

Decontamination Procedures

Composite autosampler bottles and autosampler tubing will be cleaned prior to each sampling event according to laboratory standard operating procedures (SOP # 02-02-014-000) for collecting samples for low-level analysis using autosamplers. Collection and analysis of equipment blanks for metals is recommended before sampling events. In addition to decontaminating the field equipment for chemical parameters, care will be taken to keep the equipment as sterile as possible.

Field Data Collection

Field data will consist of the average flow rate of the downspout used to measure flowrates, starting and ending times for the composites and total volume collected for each individual composite. Also the start and end time of the storm event (if different than the sampling period) will be recorded. Available rain gauge information for each storm event may also be collected. Field measurements will be recorded on standard field sheets or other appropriate locations. Field-pH measurements will be collected.

Sample Preservation and Holding Times

Analysis	Preservation	Holding Time*
Total Suspended Solids	Refrigerate, 4 °C	7 days
Nutrients (NH3, NO23, orthoP)	Filter and Freeze @ -20 ^{o}C	14 days @ -20°C**
Alkalinity	Refrigerate, 4 °C	14 days
Total Phosphorus, Total Nitrogen	Refrigerate, 4 °C	2 days w/o pres.; 28d H_2SO_4,pH<2; 28 days @ -20°C
Mercury, Total by CVAA	HNO3, pH <2	28 days
Mercury, Dissolved by CVAA	Filter, HNO_3, pH<2	28 days ***
Other Metals, Total by ICP-MS-Routine	HNO_3, pH <2	180 days
Other Metals, Dissolved by ICP-MS-Routine	Filter, HNO_3, pH <2	180 days ***
Minerals, Total and Hardness by ICP	HNO_3, pH <2	180 days
Minerals, Dissolved by ICP	Filter, HNO_3, pH <2	180 days ***
Fecal Coliform, E. coli	Refrigerate, 4 °C	24 hours
Total Organic Carbon	H_3PO_4, pH <2, Refrigerate, 4 °C	28 days
Volatile Organics	Refrigerate, 4 °C	7 days
Petroleum Hydrocarbons	Refrigerate, 4 °C	7 days

Analysis	Preservation	Holding Time*
Semivolatile Organics, BNA or BNA-LVI	Refrigerate, 4 °C	7 days

* The start of the holding time for grab samples is the time collected in the field. For composite samples (collected over 24 hrs or less) the holding time starts immediately at the end of the compositing period.
** Filter within one day.
*** Filter the dissolved portion prior to preservation and within 24 hours of collection.

Chain of Custody Procedures

During sample collection, all sample containers will be either installed in the autosamplers at the sampling site or in the custody of the sampling personnel. After collecting the samples, field personnel will deliver all samples to laboratory's Sample Receiving area and enter them into the Sample Receiving Logbook, as described in ESS SOP # 01-01-003-001 (Sample Management). The possession of the samples by the lab is effective at the time the Logbook is signed by sampling personnel and the lab sample manager.

VI. Laboratory Analysis

Method and detection limit requirements

The Method Detection Limits (MDL) and Reporting Detection Limits (RDL) are listed in the tables below.

Conventionals

Analysis/Method	Method Summary	MDL (mg/L)	RDL (mg/L)
Total Suspended Solids SM 2540 D	Gravimetric	0.5	1
Alkalinity SM 2320-B	Titration (Units = mg CaCO3/L)	0.2	10
Ammonia Nitrogen SM 4500-NH_3-G	Colorimetric, Automated	0.010	0.020
Nitrate+Nitrite Nitrogen SM 4500-NO_3-F	Colorimetric, Cd Reduction, Automated	0.020	0.040
Orthophosphate SM 4500-P-F	Colorimetric, Automated	0.002	0.005
Total Phosphorus SM 4500-P-B, FMOD	Colorimetric, Automated	0.005	0.010
Total Nitrogen SM 4500-N-C	Colorimetric, Cd Reduction, Automated	0.050	0.100
Total Organic Carbon SM 5310-B	High Temperature Combustion, Catalytic Conversion, IR Detection	0.5	1.0

IR – Infrared
SM – Standard Methods for the Analysis of Water and Wastewater

Metals

All elements except mercury and minerals will be analyzed by ICP-MS. Minerals (calcium and magnesium) will be analyzed by ICP. Mercury will be measured by CVAA. All elements will be analyzed for their total and dissolved fraction.

ICP Analysis

Element	Analytical Method	MDL (mg/L)	RDL (mg/L)
Calcium	ICP-OES (EPA 200.7)	0.05	0.25
Magnesium	ICP-OES (EPA 200.7)	0.03	0.15
Hardness	ICP-OES (EPA 200.7) and SM 2340-B	0.2	1.25

EPA – Environmental Protection Agency
ICP-OES – Inductively Coupled Plasma Optical Emission Spectroscopy

ICP-MS Analysis

Element	Analytical Method	MDL (mg/L)	RDL (mg/L)
Arsenic	ICP-MS (EPA 200.8)	0.0005	0.0025
Cadmium	ICP-MS (EPA 200.8)	0.0001	0.0005
Chromium	ICP-MS (EPA 200.8)	0.0004	0.002
Copper	ICP-MS (EPA 200.8)	0.0004	0.002
Lead	ICP-MS (EPA 200.8)	0.0002	0.001
Nickel	ICP-MS (EPA 200.8)	0.0003	0.0015
Zinc	ICP-MS (EPA 200.8)	0.0005	0.0025

ICP-MS – Inductively Coupled Plasma Mass Spectrometry

Mercury Analysis

Element	Analytical Method	MDL (mg/L)	RDL (mg/L)
Mercury	CVAA (EPA 245.1), Low Level	0.000005	0.000015

CVAA – Cold Vapor Atomic Absorption Spectrometry

Organics

Water samples will be analyzed for base/neutral/acid extractable semivolatile compounds (BNAs), total petroleum hydrocarbons (TPH), and volatile organic compounds. The large volume injector (LVI) technique may be used to achieve lower MDL values for the BNA analysis. The MDL and RDL values listed represent the range of values reported for the parameters and surrogates reported by each method.

Analysis/Method	Method Summary	MDL (µg/L)	RDL (µg/L)
BNA-SURLLGW, BNA LVI EPA 3520C/8270C LVI	GC-MS	0.01 to 1.5	0.025 to 5.0
Volatile Organics EPA Method 624	Purge and Trap GC MS	1 to 5	2 to 10
Semi-volatile Petroleum Hydrocarbons WDOE Method NWTPH-Dx	GC FID	200	200

Volatile Petroleum Hydrocarbons WDOE Method NWTPH-G	Purge and Trap GC FID	250	250

GC-FID – Gas Chromatography Flame Ionization Detection
GC-MS – Gas Chromatography Mass Spectrometry

Microbiology

Water samples will be analyzed for fecal coliform and *E. coli* bacteria.

Analysis/Method	**Method Summary**	**MDL (cfu/100ml)**	**RDL (cfu/100ml)**
Fecal coliform SM 19th ed., 9222D	Membrane Filtration	1	N/A
E. coli SM 19th ed., 9213D	Membrane Filtration	1	N/A

cfu – Colony Forming Unit

QC requirements

Conventionals

Laboratory QC samples for conventional analyses and associated control limits are summarized below. These QC samples will be analyzed at a frequency of one per analytical batch.

Parameter	**Method Blank**	**Duplicate RPD**	**Matrix Spike % Recovery**	**LCS % Recovery**
Alkalinity	N/A	10%	N/A	85-115
Ammonia Nitrogen	<MDL	20%	75-125	85-115
Nitrate+Nitrite Nitrogen	<MDL	20%	75-125	85-115
Orthophosphate	<MDL	20%	75-125	85-115
Total Phosphorus	<MDL	20%	75-125	85-115
Total Nitrogen	<MDL	20%	75-125	85-115
Total Organic Carbon	<MDL	20%	75-125	85-115
Total Suspended Solids	<MDL	25%	N/A	80-120

N/A - Not Applicable
LCS - Laboratory Control Sample
RPD - Relative Percent Difference

Metals

Laboratory QC samples for trace metals analyses and associated control limits are summarized below. These QC samples will be analyzed at a frequency of one per analytical batch.

Parameter	Method Blank	Blank Spike % Recovery	Filter Blank	Duplicate RPD	SRM % Recovery	Matrix Spike % Recovery
Mercury	<MDL	85-115	<MDL	20%	80 - 120	80 - 120
Other Metals	<MDL	85-115	<MDL	20%	80 - 120	80 - 120
Hardness	<MDL	85-115	<MDL	20%	NA	NA

SRM – Standard Reference Material

Organics

Laboratory QC samples for trace organic analyses and associated control limits are summarized below. These QC samples will be analyzed at a frequency of one per analytical batch (no more than 20 samples).

Parameter	Method Blank	Blank Spike % Recovery*	Matrix Spike Duplicate RPD	Matrix Spike % Recovery*	Surrogate % Recovery*
BNA-SURLLGW, BNA-LVI	<MDL	9 - 127	100%	9 - 127	10 - 141
Volatile Organics	<MDL	61 - 145	14%	61 - 145	76 - 115
Petroleum Hydrocarbons	<MDL	50 - 150	100%**	NA	50 - 150

*Low to high range of all compounds used for surrogates and spikes
** Lab Duplicates (not matrix spike duplicates) are analyzed for Petroleum Hydrocarbon analyses.

Microbiology

These QC samples will be analyzed at a frequency of one per analytical batch (no more than 20 samples).

Parameter	Filter Blanks (pre and post)	Positive Control	Negative Control	Lab Duplicate RPD
Fecal Coliform, *E. coli*	<MDL	Target organism identified	Target organism not identified	≤10%

Sample Archiving and Disposal

The laboratory will hold, where practical, any unused sample that has not exceeded holding time for at least 30 days after the release of results. After that time, unused samples will be disposed of by the laboratory.

Record Keeping and Reporting

The King County Environmental Laboratory will provide a 30-day turnaround time for all analytical data starting upon receipt of the last sample collected per event. Each laboratory section will provide a narrative in the event of analytical anomaly, and an overall narrative describing contents of the complete data

package, including any notable information of immediate interest to the recipient, will be prepared by the laboratory project manager (LPM).

Chemistry, microbiology and field measurement data will undergo standard QA review within each laboratory unit according to the Environmental Laboratory QA Manual and method-specific SOPs. Data will be flagged accordingly. The LPM will review the lab unit QC results and provide a summary of the QC information in narrative form. This narrative will accompany the data when it is transmitted to the project and program managers. All reviews will be done on an event basis. Field QC results will be evaluated against lab results for individual samples following the first sampling event. Following this review, corrective actions or adjustments to field procedures may be made. Major adjustments to field procedures would be documented using a revised SAP.

Appendix B

Chemistry Data

King County Environmental Lab Analytical Report

PROJECT: 423550-100

Locator:	520BR-N1	520BR-N1	520BR-N2	520BR-N2	520BR-N3	520BR-N3	BLANK1	BLANK1	BLANK1
Descrip:	FIRST DOWNSPOUT EA	FIRST DOWNSPOUT EA	SECOND DOWNSPOUT E	SECOND DOWNSPOUT E	THIRD DOWNSPOUT EA	THIRD DOWNSPOUT EA	Blank1	Blank1	Blank1
Client Loc:									
Sampled:	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 07, 2003	Apr 07, 2003	Apr 07, 2003
Lab ID:	L27891-1	L27891-1	L27891-3	L27891-3	L27891-5	L27891-5	L27891-7	L27891-8	L27891-9
Matrix:	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	BLANK WTR	BLANK WTR	BLANK WTR
% Solids:									

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
			-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis		
COMBINED LABS																																		
M=CV SM2320-B (03-03-001-002)																																		
Alkalinity	15.9		0.2	10	mg CaCO3/L						12.1		0.2	10	mg CaCO3/L						14.5		0.2	10	mg CaCO3/L									
M=CV SM2540-D (03-01-009-001)																																		
Total Suspended Solids	42.8		1	2	mg/L						56.4		1	2	mg/L						48.2		1	2	mg/L									
M=CV SM4500-H-B (03-01-003-003)																																		
pH	7.11				pH						7.18				pH						7.18				pH									
M=CV SM4500-N-C (03-03-013-001)																																		
Total Nitrogen	3.84		0.05	0.1	mg/L						4.05		0.1	0.2	mg/L						3.71		0.05	0.1	mg/L									
M=CV SM4500-NH3-G (03-03-012-002)																																		
Ammonia Nitrogen	1.5		0.05	0.1	mg/L						1.86		0.1	0.2	mg/L						1.7		0.1	0.2	mg/L									
M=CV SM4500-NO3-F (03-03-012-002)																																		
Nitrite + Nitrate Nitrogen	1.73		0.02	0.04	mg/L						1.41		0.02	0.04	mg/L						1.53		0.02	0.04	mg/L									
M=CV SM4500-P-B,FMOD(03-03-013-001)																																		
Total Phosphorus	0.0778		0.005	0.01	mg/L						0.0842		0.005	0.01	mg/L						0.0748		0.005	0.01	mg/L									
M=CV SM4500-P-F (03-03-012-002)																																		
Ortho Phosphorus	0.0046	<RDL	0.002	0.005	mg/L						0.00848		0.002	0.005	mg/L						0.00783		0.002	0.005	mg/L									
M=CV SM5310-B (03-04-001-003)																																		
Total Organic Carbon	25.9		5	10	mg/L						19.9		5	10	mg/L						24		5	10	mg/L									
M=ES NONE																																		
Delta Time (Accum.)	4.5				hr						4.5				hr						4.5				hr									
Field Personnel	MP,DAVEF,DANS				none																													
Sample Code	FC; AVG 0.0014CFS				none						FC; AVG 0.0014CFS				none						FC; AVG 0.0014CFS				none									
Sample Function	SAMP				none						SAMP				none						SAMP				none									
Sample Start Time	930				hr						930				hr						930				hr						1400			hr	1400				hr	1400				hr
Sample Unit	43				none						43				none						43				none									
Sampling Method	1000				none						1000				none						1000				none									
Storm Or Non-Storm	S				none						S				none						S				none									
Time Span	4.5				none						4.5				none						4.5				none									
Time Unit	HOUR				none						HOUR				none						HOUR				none									
M=MC METRO MC SOP 6.5.1																																		
Escherichia coli	780				CFU/100ml						2600				CFU/100ml						890				CFU/100ml									
M=MC SM-9222 D ed.17																																		
Fecal Coliform	1600				CFU/100ml						4800				CFU/100ml						1600				CFU/100ml									
M=MT EPA 200.7 (06-02-004-002)																																		
Calcium, Dissolved, ICP						11.2		0.05	0.25	mg/L						8		0.05	0.25	mg/L						9.41		0.05	0.25	mg/L					
Calcium, Total, ICP	12.1		0.05	0.25	mg/L						8.92		0.05	0.25	mg/L						10.3		0.05	0.25	mg/L						<MDL		0.05	0.25	mg/L	<MDL		0.05	0.25	mg/L	<MDL		0.05	0.25	mg/L
Magnesium, Dissolved, ICP						1.19		0.03	0.15	mg/L						0.896		0.03	0.15	mg/L						0.992		0.03	0.15	mg/L					
Magnesium, Total, ICP	1.66		0.03	0.15	mg/L						1.47		0.03	0.15	mg/L						1.45		0.03	0.15	mg/L						<MDL		0.03	0.15	mg/L	<MDL		0.03	0.15	mg/L	<MDL		0.03	0.15	mg/L
M=MT EPA 200.8 (06-03-004&004A-001)																																		
Antimony, Dissolved, ICP-MS						0.00437		0.0005	0.0025	mg/L						0.00385		0.0005	0.0025	mg/L						0.00392		0.0005	0.0025	mg/L					
Antimony, Total, ICP-MS	0.00768		0.0005	0.0025	mg/L						0.00813		0.0005	0.0025	mg/L						0.00745		0.0005	0.0025	mg/L						<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L
Arsenic, Dissolved, ICP-MS						0.0013	<RDL	0.0005	0.0025	mg/L						0.00078	<RDL	0.0005	0.0025	mg/L						0.00099	<RDL	0.0005	0.0025	mg/L					
Arsenic, Total, ICP-MS	0.0019	<RDL	0.0005	0.0025	mg/L						0.0014	<RDL	0.0005	0.0025	mg/L						0.0015	<RDL	0.0005	0.0025	mg/L						<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L
Barium, Dissolved, ICP-MS						0.0281		0.0002	0.001	mg/L						0.0237		0.0002	0.001	mg/L						0.0251		0.0002	0.001	mg/L					
Barium, Total, ICP-MS	0.0565		0.0002	0.001	mg/L						0.0563		0.0002	0.001	mg/L						0.0526		0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Beryllium, Dissolved, ICP-MS							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L					
Beryllium, Total, ICP-MS		<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Cadmium, Dissolved, ICP-MS						0.00036	<RDL	0.0001	0.0005	mg/L						0.00035	<RDL	0.0001	0.0005	mg/L						0.00032	<RDL	0.0001	0.0005	mg/L					
Cadmium, Total, ICP-MS	0.000617		0.0001	0.0005	mg/L						0.000657		0.0001	0.0005	mg/L						0.00054		0.0001	0.0005	mg/L						<MDL		0.0001	0.0005	mg/L	<MDL		0.0001	0.0005	mg/L	<MDL		0.0001	0.0005	mg/L
Chromium, Dissolved, ICP-MS						0.00097	<RDL	0.0004	0.002	mg/L						0.00099	<RDL	0.0004	0.002	mg/L						0.001	<RDL	0.0004	0.002	mg/L					
Chromium, Total, ICP-MS	0.00496		0.0004	0.002	mg/L						0.00581		0.0004	0.002	mg/L						0.00488		0.0004	0.002	mg/L						<MDL		0.0004	0.002	mg/L	<MDL		0.0004	0.002	mg/L	<MDL		0.0004	0.002	mg/L
Cobalt, Dissolved, ICP-MS						0.00032	<RDL	0.0002	0.001	mg/L						0.00023	<RDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L					
Cobalt, Total, ICP-MS	0.00099	<RDL	0.0002	0.001	mg/L						0.00103		0.0002	0.001	mg/L						0.00084	<RDL	0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Copper, Dissolved, ICP-MS						0.0177		0.0004	0.002	mg/L						0.0155		0.0004	0.002	mg/L						0.0158		0.0004	0.002	mg/L					
Copper, Total, ICP-MS	0.0385		0.0004	0.002	mg/L						0.0399		0.0004	0.002	mg/L						0.036		0.0004	0.002	mg/L						<MDL		0.0004	0.002	mg/L	<MDL		0.0004	0.002	mg/L	<MDL		0.0004	0.002	mg/L
Lead, Dissolved, ICP-MS						0.00032	<RDL	0.0002	0.001	mg/L						0.00038	<RDL	0.0002	0.001	mg/L						0.00034	<RDL	0.0002	0.001	mg/L					
Lead, Total, ICP-MS	0.0125		0.0002	0.001	mg/L						0.0157		0.0002	0.001	mg/L						0.0123		0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Molybdenum, Dissolved, ICP-MS						0.0036		0.0005	0.0025	mg/L						0.00298		0.0005	0.0025	mg/L						0.00331		0.0005	0.0025	mg/L					
Molybdenum, Total, ICP-MS	0.0048		0.0005	0.0025	mg/L						0.00438		0.0005	0.0025	mg/L						0.00458		0.0005	0.0025	mg/L						<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L
Nickel, Dissolved, ICP-MS						0.00278		0.0003	0.0015	mg/L						0.00232		0.0003	0.0015	mg/L						0.00233		0.0003	0.0015	mg/L					
Nickel, Total, ICP-MS	0.00515		0.0003	0.0015	mg/L						0.00538		0.0003	0.0015	mg/L						0.00473		0.0003	0.0015	mg/L						<MDL		0.0003	0.0015	mg/L	<MDL		0.0003	0.0015	mg/L	<MDL		0.0003	0.0015	mg/L
Selenium, Dissolved, ICP-MS							<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L					
Selenium, Total, ICP-MS		<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L						<MDL		0.0015	0.0075	mg/L	<MDL		0.0015	0.0075	mg/L	<MDL		0.0015	0.0075	mg/L
Silver, Dissolved, ICP-MS							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L					
Silver, Total, ICP-MS		<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Thallium, Dissolved, ICP-MS							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L					
Thallium, Total, ICP-MS		<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Vanadium, Dissolved, ICP-MS						0.00089	<RDL	0.0003	0.0015	mg/L						0.00099	<RDL	0.0003	0.0015	mg/L						0.00097	<RDL	0.0003	0.0015	mg/L					
Vanadium, Total, ICP-MS	0.00425		0.0003	0.0015	mg/L						0.00495		0.0003	0.0015	mg/L						0.00417		0.0003	0.0015	mg/L						<MDL		0.0003	0.0015	mg/L	<MDL		0.0003	0.0015	mg/L	<MDL		0.0003	0.0015	mg/L
Zinc, Dissolved, ICP-MS						0.609		0.0025	0.0125	mg/L						0.341		0.001	0.005	mg/L						0.292		0.001	0.005	mg/L					
Zinc, Total, ICP-MS	0.756		0.0025	0.0125	mg/L						0.444		0.0025	0.0125	mg/L						0.427		0.0025	0.0125	mg/L						<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L	0.00096	<RDL	0.0005	0.0025	mg/L
M=MT EPA 245.2 (06-01-004-003)																																		
Mercury, Total, CVAA	0.000012	<RDL	5E-06	1.5E-05	mg/L	6.5E-06	<RDL	5E-06	1.5E-05	mg/L	1.94E-05		5E-06	1.5E-05	mg/L	7.4E-06	<RDL	5E-06	1.5E-05	mg/L	1.76E-05		5E-06	1.5E-05	mg/L	6.3E-06	<RDL	5E-06	1.5E-05	mg/L	<MDL		5E-06	1.5E-05	mg/L	<MDL		5E-06	1.5E-05	mg/L	<MDL		5E-06	1.5E-05	mg/L
M=MT SM2340B.ED19 (06-02-004-002)																																		
Hardness, Calc	36.9		0.2	1.25	mg CaCO3/L						28.3		0.2	1.25	mg CaCO3/L						31.6		0.2	1.25	mg CaCO3/L									
M=OR EPA 3520C/8270C (7-3-01-004)																																		
1,2,4-Trichlorobenzene		<MDL	0.047	0.0943	ug/L							<MDL	0.047	0.0943	ug/L							<MDL	0.047	0.0943	ug/L						<MDL		0.048	0.0952	ug/L	<MDL		0.048	0.0952	ug/L	<MDL		0.048	0.0952	ug/L
1,2-Dichlorobenzene		<MDL	0.0094	0.0189	ug/L							<MDL	0.0094	0.0189	ug/L							<MDL	0.0094	0.0189	ug/L						<MDL		0.0095	0.019	ug/L	<MDL		0.0095	0.019	ug/L	<MDL		0.0095	0.019	ug/L
1,2-Diphenylhydrazine		<MDL	0.094	0.189	ug/L							<MDL	0.094	0.189	ug/L							<MDL	0.094	0.189	ug/L						<MDL		0.095	0.19	ug/L	<MDL		0.095	0.19	ug/L	<MDL		0.095	0.19	ug/L
1,3-Dichlorobenzene		<MDL	0.0094	0.0189	ug/L							<MDL	0.0094	0.0189	ug/L							<MDL	0.0094	0.0189	ug/L						<MDL		0.0095	0.019	ug/L	<MDL		0.0095	0.019	ug/L	<MDL		0.0095	0.019	ug/L
1,4-Dichlorobenzene		<MDL	0.0094	0.0189	ug/L							<MDL	0.0094	0.0189	ug/L							<MDL	0.0094	0.0189	ug/L						<MDL		0.0095	0.019	ug/L	<MDL		0.0095	0.019	ug/L	<MDL		0.0095	0.019	ug/L
2,4,5-Trichlorophenol		<MDL	0.47	1.89	ug/L							<MDL	0.47	1.89	ug/L							<MDL	0.47	1.89	ug/L						<MDL		0.48	1.9	ug/L	<MDL		0.48	1.9	ug/L	<MDL		0.48	1.9	ug/L
2,4,6-Trichlorophenol		<MDL	0.47	1.89	ug/L							<MDL	0.47	1.89	ug/L							<MDL	0.47	1.89	ug/L						<MDL		0.48	1.9	ug/L	<MDL		0.48	1.9	ug/L	<MDL		0.48	1.9	ug/L
2,4-Dichlorophenol		<MDL	0.047	0.472	ug/L							<MDL	0.047	0.472	ug/L							<MDL	0.047	0.472	ug/L						<MDL		0.048	0.476	ug/L	<MDL		0.048	0.476	ug/L	<MDL		0.048	0.476	ug/L
2,4-Dimethylphenol	0.18	<RDL	0.047	0.472	ug/L						0.21	<RDL	0.047	0.472	ug/L						0.24	<RDL	0.047	0.472	ug/L						<MDL		0.048	0.476	ug/L	<MDL		0.048	0.476	ug/L	<MDL		0.048	0.476	ug/L
2,4-Dinitrophenol		<MDL	0.47	4.72	ug/L							<MDL	0.47	4.72	ug/L							<MDL	0.47	4.72	ug/L						<MDL		0.48	4.76	ug/L	<MDL		0.48	4.76	ug/L	<MDL		0.48	4.76	ug/L
2,4-Dinitrotoluene		<MDL	0.94	1.89	ug/L							<MDL	0.94	1.89	ug/L							<MDL	0.94	1.89	ug/L						<MDL		0.95	1.9	ug/L	<MDL		0.95	1.9	ug/L	<MDL		0.95	1.9	ug/L
2,6-Dinitrotoluene		<MDL	0.94	1.89	ug/L							<MDL	0.94	1.89	ug/L							<MDL	0.94	1.89	ug/L						<MDL		0.95	1.9	ug/L	<MDL		0.95	1.9	ug/L	<MDL		0.95	1.9	ug/L
2-Chloronaphthalene		<MDL	0.019	0.0472	ug/L							<MDL	0.019	0.0472	ug/L							<MDL	0.019	0.0472	ug/L						<MDL		0.019	0.0476	ug/L	<MDL		0.019	0.0476	ug/L	<MDL		0.019	0.0476	ug/L
2-Chlorophenol		<MDL	0.019	0.0472	ug/L							<MDL	0.019	0.0472	ug/L							<MDL	0.019	0.0472	ug/L						<MDL		0.019	0.0476	ug/L	<MDL		0.019	0.0476	ug/L	<MDL		0.019	0.0476	ug/L

King County Environmental Lab Analytical Report

PROJECT: 423550-100

Locator:	520BR-N1	520BR-N1	520BR-N2	520BR-N2	520BR-N3	520BR-N3	BLANK1	BLANK1	BLANK1
Descrip:	FIRST DOWNSPOUT EA	FIRST DOWNSPOUT EA	SECOND DOWNSPOUT E	SECOND DOWNSPOUT E	THIRD DOWNSPOUT EA	THIRD DOWNSPOUT EA	Blank1	Blank1	Blank1
Client Loc:									
Sampled:	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 07, 2003	Apr 07, 2003	Apr 07, 2003
Lab ID:	L27891-1	L27891-1	L27891-3	L27891-3	L27891-5	L27891-5	L27891-7	L27891-8	L27891-9
Matrix:	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	BLANK WTR	BLANK WTR	BLANK WTR
% Solids:									

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
			-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis		
COMBINED LABS																																		
2-Methylnaphthalene		<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
2-Methylphenol	0.369		0.047	0.236	ug/L			0.348	0.047	0.236	ug/L			0.381	0.047	0.236	ug/L			<MDL	0.048	0.238	ug/L			<MDL	0.048	0.238	ug/L			<MDL	0.048	0.238	ug/L
2-Nitroaniline		<MDL	0.94	1.89	ug/L			<MDL	0.94	1.89	ug/L			<MDL	0.94	1.89	ug/L			<MDL	0.95	1.9	ug/L			<MDL	0.95	1.9	ug/L			<MDL	0.95	1.9	ug/L
2-Nitrophenol		<MDL	0.19	0.472	ug/L			<MDL	0.19	0.472	ug/L			<MDL	0.19	0.472	ug/L			<MDL	0.19	0.476	ug/L			<MDL	0.19	0.476	ug/L			<MDL	0.19	0.476	ug/L
3,3'-Dichlorobenzidine		<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L
3-Methylphenol	0.412		0.047	0.236	ug/L			0.552	0.047	0.236	ug/L			0.551	0.047	0.236	ug/L			<MDL	0.048	0.238	ug/L			<MDL	0.048	0.238	ug/L			<MDL	0.048	0.238	ug/L
3-Nitroaniline		<MDL	0.24	0.943	ug/L			<MDL	0.24	0.943	ug/L			<MDL	0.24	0.943	ug/L			<MDL	0.24	0.952	ug/L			<MDL	0.24	0.952	ug/L			<MDL	0.24	0.952	ug/L
4,4'-DDD		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
4,4'-DDE		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
4,4'-DDT		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
4,6-Dinitro-O-Cresol		<MDL	0.47	4.72	ug/L			<MDL	0.47	4.72	ug/L			<MDL	0.47	4.72	ug/L			<MDL	0.48	4.76	ug/L			<MDL	0.48	4.76	ug/L			<MDL	0.48	4.76	ug/L
4-Bromophenyl Phenyl Ether		<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L
4-Chloro-3-Methylphenol		<MDL	0.47	1.89	ug/L			<MDL	0.47	1.89	ug/L			<MDL	0.47	1.89	ug/L			<MDL	0.48	1.9	ug/L			<MDL	0.48	1.9	ug/L			<MDL	0.48	1.9	ug/L
4-Chloroaniline		<MDL	0.047	0.236	ug/L			<MDL	0.047	0.236	ug/L			<MDL	0.047	0.236	ug/L			<MDL	0.048	0.238	ug/L			<MDL	0.048	0.238	ug/L			<MDL	0.048	0.238	ug/L
4-Chlorophenyl Phenyl Ether		<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
4-Methylphenol		<MDL	0.047	0.236	ug/L			<MDL	0.047	0.236	ug/L			<MDL	0.047	0.236	ug/L			<MDL	0.048	0.238	ug/L			<MDL	0.048	0.238	ug/L			<MDL	0.048	0.238	ug/L
4-Nitroaniline		<MDL	0.94	1.89	ug/L			<MDL	0.94	1.89	ug/L			<MDL	0.94	1.89	ug/L			<MDL	0.95	1.9	ug/L			<MDL	0.95	1.9	ug/L			<MDL	0.95	1.9	ug/L
4-Nitrophenol		<MDL	0.47	4.72	ug/L			<MDL	0.47	4.72	ug/L			<MDL	0.47	4.72	ug/L			<MDL	0.48	4.76	ug/L			<MDL	0.48	4.76	ug/L			<MDL	0.48	4.76	ug/L
Acenaphthene		<MDL	0.0094	0.0189	ug/L			<MDL	0.0094	0.0189	ug/L			<MDL	0.0094	0.0189	ug/L			<MDL	0.0095	0.019	ug/L			<MDL	0.0095	0.019	ug/L			<MDL	0.0095	0.019	ug/L
Acenaphthylene		<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L
Aldrin		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Alpha-BHC		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Alpha-Chlordane		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Aniline		<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L
Anthracene		<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L
Atrazine		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Benzidine		<MDL	0.94	9.43	ug/L			<MDL	0.94	9.43	ug/L			<MDL	0.94	9.43	ug/L			<MDL	0.95	9.52	ug/L			<MDL	0.95	9.52	ug/L			<MDL	0.95	9.52	ug/L
Benzo(a)anthracene	0.165		0.0094	0.0189	ug/L			0.183	0.0094	0.0189	ug/L			0.174	0.0094	0.0189	ug/L			<MDL	0.0095	0.019	ug/L			<MDL	0.0095	0.019	ug/L			<MDL	0.0095	0.019	ug/L
Benzo(a)pyrene	0.19		0.047	0.0943	ug/L			0.19	0.047	0.0943	ug/L			0.204	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Benzo(b)fluoranthene	0.189		0.047	0.0943	ug/L			0.191	0.047	0.0943	ug/L			0.223	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Benzo(g,h,i)perylene	0.065	<RDL	0.047	0.0943	ug/L			0.082	<RDL	0.047	0.0943	ug/L		0.146	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Benzo(k)fluoranthene	0.073	<RDL	0.047	0.0943	ug/L			0.071	<RDL	0.047	0.0943	ug/L		0.081	<RDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Benzoic Acid	2.3	<RDL	0.47	4.72	ug/L			2.4	<RDL	0.47	4.72	ug/L		3.6	<RDL	0.47	4.72	ug/L		<MDL	0.48	4.76	ug/L			<MDL	0.48	4.76	ug/L			<MDL	0.48	4.76	ug/L
Benzyl Alcohol	0.46	<RDL	0.094	0.472	ug/L			0.507	0.094	0.472	ug/L			0.621	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Benzyl Butyl Phthalate	0.61	<RDL	0.47	0.943	ug/L			0.59	<RDL	0.47	0.943	ug/L		0.71	<RDL	0.47	0.943	ug/L		<MDL	0.48	0.952	ug/L			<MDL	0.48	0.952	ug/L			<MDL	0.48	0.952	ug/L
Beta-BHC		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Bis(2-Chloroethoxy)Methane		<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Bis(2-Chloroethyl)Ether		<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Bis(2-Chloroisopropyl)Ether		<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L
Bis(2-ethylhexyl)adipate	0.5	<RDL	0.24	0.943	ug/L			0.6	<RDL	0.24	0.943	ug/L		0.65	<RDL	0.24	0.943	ug/L		0.27	<RDL,B	0.24	0.952	ug/L		0.27	<RDL,B	0.24	0.952	ug/L		0.26	<RDL,B	0.24	0.952	ug/L
Bis(2-Ethylhexyl)Phthalate	9.49		0.47	0.943	ug/L			12.4	0.47	0.943	ug/L			14.2	0.47	0.943	ug/L			2.47	B	0.48	0.952	ug/L		1.94	B	0.48	0.952	ug/L		1.08	B	0.48	0.952	ug/L
Bisphenol A	1.87		0.24	0.943	ug/L			1.55	0.24	0.943	ug/L			1.74	0.24	0.943	ug/L			<MDL	0.24	0.952	ug/L			<MDL	0.24	0.952	ug/L			<MDL	0.24	0.952	ug/L
Caffeine	5.1		0.047	0.0943	ug/L			0.412	0.047	0.0943	ug/L			0.382	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Carbazole		<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L
Chlordecone (Kepone)		<MDL	0.24	0.943	ug/L			<MDL	0.24	0.943	ug/L			<MDL	0.24	0.943	ug/L			<MDL	0.24	0.952	ug/L			<MDL	0.24	0.952	ug/L			<MDL	0.24	0.952	ug/L
Chrysene	0.146		0.019	0.0472	ug/L			0.164	0.019	0.0472	ug/L			0.202	0.019	0.0472	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L
Coprostanol		<MDL	2.4	18.9	ug/L			<MDL	2.4	18.9	ug/L			<MDL	2.4	18.9	ug/L			<MDL	2.4	19	ug/L			<MDL	2.4	19	ug/L			<MDL	2.4	19	ug/L
Delta-BHC		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Diazinon		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Dibenzo(a,h)anthracene		<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Dibenzofuran		<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0472	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L
Dieldrin		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Diethyl Phthalate	2.55		0.047	0.189	ug/L			0.451	0.047	0.189	ug/L			0.434	0.047	0.189	ug/L			0.213	0.048	0.19	ug/L			0.13	<RDL	0.048	0.19	ug/L		0.205	0.048	0.19	ug/L
Dimethyl Phthalate		<MDL	0.047	0.0943	ug/L			0.108	0.047	0.0943	ug/L			0.11	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Di-N-Butyl Phthalate	0.575		0.24	0.472	ug/L			0.9	0.24	0.472	ug/L			0.745	0.24	0.472	ug/L			<MDL	0.24	0.476	ug/L			<MDL	0.24	0.476	ug/L			0.27	<RDL	0.24	0.476	ug/L
Di-N-Octyl Phthalate	2.14		0.47	0.943	ug/L			2.48	0.47	0.943	ug/L			3.23	0.47	0.943	ug/L			<MDL	0.48	0.952	ug/L			<MDL	0.48	0.952	ug/L			<MDL	0.48	0.952	ug/L
Endosulfan I		<MDL	0.19	0.472	ug/L			<MDL	0.19	0.472	ug/L			<MDL	0.19	0.472	ug/L			<MDL	0.19	0.476	ug/L			<MDL	0.19	0.476	ug/L			<MDL	0.19	0.476	ug/L
Endosulfan II		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Endosulfan Sulfate		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Endrin		<MDL	0.24	0.943	ug/L			<MDL	0.24	0.943	ug/L			<MDL	0.24	0.943	ug/L			<MDL	0.48	0.952	ug/L			<MDL	0.48	0.952	ug/L			<MDL	0.48	0.952	ug/L
Endrin Aldehyde		<MDL	0.19	0.472	ug/L			<MDL	0.19	0.472	ug/L			<MDL	0.19	0.472	ug/L			<MDL	0.19	0.476	ug/L			<MDL	0.19	0.476	ug/L			<MDL	0.19	0.476	ug/L
Estradiol		<MDL	0.94	4.72	ug/L			<MDL	0.94	4.72	ug/L			<MDL	0.94	4.72	ug/L			<MDL	0.95	4.76	ug/L			<MDL	0.95	4.76	ug/L			<MDL	0.95	4.76	ug/L
Estrone		<MDL	0.47	1.89	ug/L			<MDL	0.47	1.89	ug/L			<MDL	0.47	1.89	ug/L			<MDL	0.48	1.9	ug/L			<MDL	0.48	1.9	ug/L			<MDL	0.48	1.9	ug/L
Ethynyl estradiol		<MDL	0.47	1.89	ug/L			<MDL	0.47	1.89	ug/L			<MDL	0.47	1.89	ug/L			<MDL	0.48	1.9	ug/L			<MDL	0.48	1.9	ug/L			<MDL	0.48	1.9	ug/L
Fluoranthene	0.153		0.047	0.0943	ug/L			0.166	0.047	0.0943	ug/L			0.245	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Fluorene		<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Gamma-BHC (Lindane)		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Gamma-Chlordane		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Heptachlor		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Heptachlor Epoxide		<MDL	0.19	0.472	ug/L			<MDL	0.19	0.472	ug/L			<MDL	0.19	0.472	ug/L			<MDL	0.19	0.476	ug/L			<MDL	0.19	0.476	ug/L			<MDL	0.19	0.476	ug/L
Hexachlorobenzene		<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Hexachlorobutadiene		<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Hexachlorocyclopentadiene		<MDL	0.094	0.943	ug/L			<MDL	0.094	0.943	ug/L			<MDL	0.094	0.943	ug/L			<MDL	0.095	0.952	ug/L			<MDL	0.095	0.952	ug/L			<MDL	0.095	0.952	ug/L
Hexachloroethane		<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Indeno(1,2,3-Cd)Pyrene	0.251		0.047	0.0943	ug/L			0.245	0.047	0.0943	ug/L			0.267	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Isophorone		<MDL	0.47	0.0943	ug/L			<MDL	0.47	0.0943	ug/L			<MDL	0.47	0.0943	ug/L			<MDL	0.48	0.0952	ug/L			<MDL	0.48	0.0952	ug/L			<MDL	0.48	0.0952	ug/L
Methoxychlor		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L
Methyltestosterone		<MDL	0.47	1.89	ug/L			<MDL	0.47	1.89	ug/L			<MDL	0.47	1.89	ug/L			<MDL	0.48	1.9	ug/L			<MDL	0.48	1.9	ug/L			<MDL	0.48	1.9	ug/L
Naphthalene	0.0481		0.019	0.0472	ug/L			0.0566	0.019	0.0472	ug/L			0.0726	0.019	0.0472	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L
Nitrobenzene		<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L
N-Nitrosodimethylamine		<MDL	0.094	0.236	ug/L			<MDL	0.094	0.236	ug/L			<MDL	0.094	0.236	ug/L			<MDL	0.095	0.238	ug/L			<MDL	0.095	0.238	ug/L			<MDL	0.095	0.238	ug/L
N-Nitrosodi-N-Propylamine		<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.094	0.189	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L			<MDL	0.095	0.19	ug/L
N-Nitrosodiphenylamine		<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.047	0.0943	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L			<MDL	0.048	0.0952	ug/L
Pentachlorophenol		<MDL	0.94	9.43	ug/L			<MDL	0.94	9.43	ug/L			<MDL	0.94	9.43	ug/L			<MDL	0.95	9.52	ug/L			<MDL	0.95	9.52	ug/L			<MDL	0.95	9.52	ug/L
Phenanthrene	0.109		0.019	0.0472	ug/L			0.13	0.019	0.0472	ug/L			0.158	0.019	0.0472	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L
Phenol	1.33		0.0094	0.0189	ug/L			1.07	0.0094	0.0189	ug/L			1.19	0.0094	0.0189	ug/L			0.0533	0.0095	0.019	ug/L			0.0829	0.0095	0.019	ug/L			0.039	0.0095	0.019	ug/L
Progesterone		<MDL	0.24	0.943	ug/L			<MDL	0.24	0.943	ug/L			<MDL	0.24	0.943	ug/L			<MDL	0.24	0.952	ug/L			<MDL	0.24	0.952	ug/L			<MDL	0.24	0.952	ug/L
Pyrene	0.224		0.019	0.0472	ug/L			0.245	0.019	0.0472	ug/L			0.318	0.019	0.0472	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L			<MDL	0.019	0.0476	ug/L
Pyridine		<MDL	0.094	1.89	ug/L			<MDL	0.094	1.89	ug/L			<MDL	0.094	1.89	ug/L			<MDL	0.095	1.9	ug/L			<MDL	0.095	1.9	ug/L			<MDL	0.095	1.9	ug/L
Simazine		<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.094	0.472	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L			<MDL	0.095	0.476	ug/L

King County Environmental Lab Analytical Report

PROJECT: 423550-100

Locator:	520BR-N1	520BR-N1	520BR-N2	520BR-N2	520BR-N3	520BR-N3	BLANK1	BLANK1	BLANK1
Descrip:	FIRST DOWNSPOUT EA	FIRST DOWNSPOUT EA	SECOND DOWNSPOUT E	SECOND DOWNSPOUT E	THIRD DOWNSPOUT EA	THIRD DOWNSPOUT EA	Blank1	Blank1	Blank1
Client Loc:									
Sampled:	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 08, 2003	Apr 07, 2003	Apr 07, 2003	Apr 07, 2003
Lab ID:	L27891-1	L27891-1	L27891-3	L27891-3	L27891-5	L27891-5	L27891-7	L27891-8	L27891-9
Matrix:	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	BLANK WTR	BLANK WTR	BLANK WTR
% Solids:									

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
			-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis					-Wet Weight Basis		
COMBINED LABS																																			
Testosterone		<MDL	0.94	4.72	ug/L							<MDL	0.94	4.72	ug/L							<MDL	0.95	4.76	ug/L		<MDL	0.95	4.76	ug/L		<MDL	0.95	4.76	ug/L
Total 4-Nonylphenol	3.35		0.47	2.36	ug/L						2.2	<RDL	0.47	2.36	ug/L	2.57		0.47	2.36	ug/L							<MDL	0.48	2.38	ug/L		<MDL	0.48	2.38	ug/L
Vinclozolin		<MDL	0.24	0.943	ug/L							<MDL	0.24	0.943	ug/L		<MDL	0.24	0.943	ug/L							<MDL	0.24	0.952	ug/L		<MDL	0.24	0.952	ug/L
M=OR EPA 624 (7-3-02-002)																																			
1,1,1-Trichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
1,1,2,2-Tetrachloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
1,1,2-Trichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
1,1,2-Trichloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
1,1-Dichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
1,1-Dichloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
1,2-Dichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
1,2-Dichloropropane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
2-Butanone (MEK)		<MDL	5	10	ug/L							<MDL	5	10	ug/L		<MDL	5	10	ug/L															
2-Chloroethylvinyl ether		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
2-Hexanone		<MDL	5	10	ug/L							<MDL	5	10	ug/L		<MDL	5	10	ug/L															
4-Methyl-2-Pentanone (MIBK)		<MDL	5	10	ug/L							<MDL	5	10	ug/L		<MDL	5	10	ug/L															
Acetone	5.7	<RDL	2.5	10	ug/L						4.4	<RDL	2.5	10	ug/L	3.9	<RDL	2.5	10	ug/L															
Acrolein		<MDL	5	10	ug/L							<MDL	5	10	ug/L		<MDL	5	10	ug/L															
Acrylonitrile		<MDL	5	10	ug/L							<MDL	5	10	ug/L		<MDL	5	10	ug/L															
Benzene		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Bromodichloromethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Bromoform		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Bromomethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Carbon Disulfide		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Carbon Tetrachloride		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Chlorobenzene		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Chlorodibromomethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Chloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Chloroform		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Chloromethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Cis-1,3-Dichloropropene		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Ethylbenzene		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Methylene Chloride		<MDL	1	10	ug/L							<MDL	1	10	ug/L		<MDL	1	10	ug/L															
Styrene		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Tetrachloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Toluene		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Total Xylenes		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Trans-1,2-Dichloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Trans-1,3-Dichloropropene		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Trichlorofluoromethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
Vinyl Acetate		<MDL	5	10	ug/L							<MDL	5	10	ug/L		<MDL	5	10	ug/L															
Vinyl Chloride		<MDL	1	2	ug/L							<MDL	1	2	ug/L		<MDL	1	2	ug/L															
M=OR WDOE NWTPH-DX (7-3-06-001)																																			
Lube Oil Range (>C24)	2.5		0.19	0.19	mg/L						3.4		0.19	0.19	mg/L	2.6		0.19	0.19	mg/L															
M=OR WDOE NWTPH-GX (7-3-07-002)																																			
Gasoline Range (C7-C12)		<MDL	250	250	ug/L							<MDL	250	250	ug/L		<MDL	250	250	ug/L															

King County Environmental Lab Analytical Report

PROJECT: 423550-100

Locator:	520BR-N1	520BR-N1	520BR-N2	520BR-N2	520BR-N3	520BR-N3	BLANK1	BLANK1	BLANK1
Descrip:	FIRST DOWNSPOUT EA	FIRST DOWNSPOUT EA	SECOND DOWNSPOUT E	SECOND DOWNSPOUT E	THIRD DOWNSPOUT EA	THIRD DOWNSPOUT EA	Blank1	Blank1	Blank1
Sampled:	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003
Lab ID:	L29844-1	L29844-1	L29844-2	L29844-2	L29844-3	L29844-3	L29844-4	L29844-5	L29844-6
Matrix:	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	BLANK WTR	BLANK WTR	BLANK WTR
% Solids:									

Parameters	Value	Qual	MDL (Wet Weight Basis)	RDL	Units	Value	Qual	MDL (Wet Weight Basis)	RDL	Units	Value	Qual	MDL (Wet Weight Basis)	RDL	Units	Value	Qual	MDL (Wet Weight Basis)	RDL	Units	Value	Qual	MDL (Wet Weight Basis)	RDL	Units	Value	Qual	MDL (Wet Weight Basis)	RDL	Units	Value	Qual	MDL (Wet Weight Basis)	RDL	Units
COMBINED LABS																																		
M=CV SM2320-B (03-03-001-003)																																		
Alkalinity	14.1		1	10	mg CaCO3/L						18.3		1	10	mg CaCO3/L						16.8		1	10	mg CaCO3/L									
M=CV SM2540-D (03-01-009-002)																																		
Total Suspended Solids	7.4		1	2	mg/L						5.4		1	2	mg/L						5.2		0.5	1	mg/L									
M=CV SM4500-H-B (03-01-003-004)																																		
pH	6.99				pH						7.12				pH						7.14				pH									
M=CV SM4500-N-C (03-03-013-001)																																		
Total Nitrogen	9.86		0.1	0.2	mg/L						10.3		0.1	0.2	mg/L						11.4		0.1	0.2	mg/L									
M=CV SM4500-NH3-G (03-03-012-002)																																		
Ammonia Nitrogen	3.29		0.05	0.1	mg/L						3.26		0.05	0.1	mg/L						3.29		0.05	0.1	mg/L									
M=CV SM4500-NO3-F (03-03-012-002)																																		
Nitrite + Nitrate Nitrogen	5.67		0.02	0.04	mg/L						5.65		0.02	0.04	mg/L						6.81		0.02	0.04	mg/L									
M=CV SM4500-P-B,FMOD(03-03-013-001)																																		
Total Phosphorus	0.168		0.005	0.01	mg/L						0.241		0.005	0.01	mg/L						0.2		0.005	0.01	mg/L									
M=CV SM4500-P-F (03-03-012-002)																																		
Ortho Phosphorus	0.0627		0.002	0.005	mg/L						0.0865		0.002	0.005	mg/L						0.0853		0.002	0.005	mg/L									
M=CV SM5310-B (03-04-001-003)																																		
Total Organic Carbon	24		0.5	1	mg/L						27.6		0.5	1	mg/L						25.8		0.5	1	mg/L									
M=ES NONE																																		
Field Personnel	JB,DAVEF				none						JB,DAVEF				none						JB,DAVEF				none									
Sample Code	FC; AVG 0.0008CFS				none						FC; AVG 0.0008CFS				none						FC; AVG 0.0008CFS				none									
Sample Function	SAMP				none						SAMP				none						SAMP				none									
Sample Start Time	1030				hr						1030				hr						1030				hr						1300			hr
Sample Unit	11 + POURED SAMPLE				none						11 + POURED SAMPLE				none						11 + POURED SAMPLE				none									
Sampling Method	01011 + POURED SAMPLE				none						01011 + POURED SAMPLE				none						01011 + POURED SAMPLE				none									
Storm Or Non-Storm	S				none						S				none						S				none									
Time Span	110				none						110				none						110				none									
Time Unit	MINUTES				none						MINUTES				none						MINUTES				none									
M=MC METRO MC SOP 6.5.1																																		
Escherichia coli	270				CFU/100ml						7600				CFU/100ml						890				CFU/100ml									
M=MC SM-9222 D ed.17																																		
Fecal Coliform	460				CFU/100ml						7900				CFU/100ml						990				CFU/100ml									
M=MT EPA 200.7 (06-02-004-002)																																		
Calcium, Dissolved, ICP						24.6		0.05	0.25	mg/L						25.8		0.05	0.25	mg/L						30.8		0.05	0.25	mg/L					
Calcium, Total, ICP	26.1		0.05	0.25	mg/L						26.6		0.05	0.25	mg/L						31.9		0.05	0.25	mg/L						<MDL		0.05	0.25	mg/L	<MDL		0.05	0.25	mg/L	<MDL		0.05	0.25	mg/L
Magnesium, Dissolved, ICP						2.33		0.03	0.15	mg/L						2.29		0.03	0.15	mg/L						2.67		0.03	0.15	mg/L					
Magnesium, Total, ICP	2.46		0.03	0.15	mg/L						2.34		0.03	0.15	mg/L						2.76		0.03	0.15	mg/L						<MDL		0.03	0.15	mg/L	<MDL		0.03	0.15	mg/L	<MDL		0.03	0.15	mg/L
M=MT EPA 200.8 (06-03-004&004A-001)																																		
Antimony, Dissolved, ICP-MS						0.00498		0.0005	0.0025	mg/L						0.00563		0.0005	0.0025	mg/L						0.00583		0.0005	0.0025	mg/L					
Antimony, Total, ICP-MS	0.00704		0.0005	0.0025	mg/L						0.0075		0.0005	0.0025	mg/L						0.00702		0.0005	0.0025	mg/L						<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L
Arsenic, Dissolved, ICP-MS						0.0021	<RDL	0.0005	0.0025	mg/L						0.002	<RDL	0.0005	0.0025	mg/L						0.0023	<RDL	0.0005	0.0025	mg/L					
Arsenic, Total, ICP-MS	0.00259		0.0005	0.0025	mg/L						0.0024	<RDL	0.0005	0.0025	mg/L						0.00256		0.0005	0.0025	mg/L						<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L
Barium, Total, ICP-MS	0.0644		0.0002	0.001	mg/L						0.0537		0.0002	0.001	mg/L						0.06		0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Beryllium, Dissolved, ICP-MS							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L					
Beryllium, Total, ICP-MS		<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Cadmium, Dissolved, ICP-MS						0.00133		0.0001	0.0005	mg/L						0.00187		0.0001	0.0005	mg/L						0.00144		0.0001	0.0005	mg/L					
Cadmium, Total, ICP-MS	0.00162		0.0001	0.0005	mg/L						0.00224		0.0001	0.0005	mg/L						0.00178		0.0001	0.0005	mg/L						<MDL		0.0001	0.0005	mg/L	<MDL		0.0001	0.0005	mg/L	<MDL		0.0001	0.0005	mg/L
Chromium, Dissolved, ICP-MS						0.0013	<RDL	0.0004	0.002	mg/L						0.0015	<RDL	0.0004	0.002	mg/L						0.0015	<RDL	0.0004	0.002	mg/L					
Chromium, Total, ICP-MS	0.00272		0.0004	0.002	mg/L						0.00271		0.0004	0.002	mg/L						0.00245		0.0004	0.002	mg/L						<MDL		0.0004	0.002	mg/L	<MDL		0.0004	0.002	mg/L	<MDL		0.0004	0.002	mg/L
Cobalt, Dissolved, ICP-MS						0.00206		0.0002	0.001	mg/L						0.00111		0.0002	0.001	mg/L						0.00139		0.0002	0.001	mg/L					
Cobalt, Total, ICP-MS	0.00239		0.0002	0.001	mg/L						0.00138		0.0002	0.001	mg/L						0.00154		0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Copper, Dissolved, ICP-MS						0.0419		0.0004	0.002	mg/L						0.0498		0.0004	0.002	mg/L						0.0684		0.0004	0.002	mg/L					
Copper, Total, ICP-MS	0.0531		0.0004	0.002	mg/L						0.0636		0.0004	0.002	mg/L						0.0765		0.0004	0.002	mg/L						<MDL		0.0004	0.002	mg/L	<MDL		0.0004	0.002	mg/L	<MDL		0.0004	0.002	mg/L
Lead, Dissolved, ICP-MS						0.00388		0.0002	0.001	mg/L						0.00773		0.0002	0.001	mg/L						0.0187		0.0002	0.001	mg/L					
Lead, Total, ICP-MS	0.0109		0.0002	0.001	mg/L						0.0145		0.0002	0.001	mg/L						0.0275		0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Molybdenum, Dissolved, ICP-MS						0.0113		0.0005	0.0025	mg/L						0.0145		0.0005	0.0025	mg/L						0.0136		0.0005	0.0025	mg/L					
Molybdenum, Total, ICP-MS	0.0135		0.0005	0.0025	mg/L						0.0172		0.0005	0.0025	mg/L						0.0149		0.0005	0.0025	mg/L						<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L
Nickel, Dissolved, ICP-MS						0.00703		0.0003	0.0015	mg/L						0.00693		0.0003	0.0015	mg/L						0.00836		0.0003	0.0015	mg/L					
Nickel, Total, ICP-MS	0.00815		0.0003	0.0015	mg/L						0.0081		0.0003	0.0015	mg/L						0.00897		0.0003	0.0015	mg/L						<MDL		0.0003	0.0015	mg/L	<MDL		0.0003	0.0015	mg/L	<MDL		0.0003	0.0015	mg/L
Selenium, Dissolved, ICP-MS							<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L					
Selenium, Total, ICP-MS		<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L						<MDL		0.0015	0.0075	mg/L	<MDL		0.0015	0.0075	mg/L	<MDL		0.0015	0.0075	mg/L
Silver, Total, ICP-MS		<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Thallium, Dissolved, ICP-MS							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L					
Thallium, Total, ICP-MS		<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L						<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L	<MDL		0.0002	0.001	mg/L
Vanadium, Dissolved, ICP-MS						0.00227		0.0003	0.0015	mg/L						0.00234		0.0003	0.0015	mg/L						0.00225		0.0003	0.0015	mg/L					
Vanadium, Total, ICP-MS	0.00318		0.0003	0.0015	mg/L						0.00324		0.0003	0.0015	mg/L						0.0029		0.0003	0.0015	mg/L						<MDL		0.0003	0.0015	mg/L	<MDL		0.0003	0.0015	mg/L	<MDL		0.0003	0.0015	mg/L
Zinc, Dissolved, ICP-MS						3.15		0.01	0.05	mg/L						2.02		0.01	0.05	mg/L						2.25		0.01	0.05	mg/L					
Zinc, Total, ICP-MS	3.02		0.01	0.05	mg/L						1.95		0.01	0.05	mg/L						2.15		0.01	0.05	mg/L						0.00082	<RDL	0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L	<MDL		0.0005	0.0025	mg/L
M=MT EPA 245.2 (06-01-004-003)																																		
Mercury, Dissolved, CVAA						5.6E-06	<RDL	0.000005	0.000015	mg/L							<MDL	0.000005	0.000015	mg/L						1.3E-05	<RDL	0.000005	0.000015	mg/L					
Mercury, Total, CVAA	1.5E-05	RDL	0.000005	0.000015	mg/L						0.00001	<RDL	0.000005	0.000015	mg/L						1.1E-05	<RDL	0.000005	0.000015	mg/L						<MDL		0.000005	0.000015	mg/L	<MDL		0.000005	0.000015	mg/L	<MDL		0.000005	0.000015	mg/L
M=MT SM2340B.ED19 (06-02-004-002)																																		
Hardness, Calc	75.2		0.2	1.25	mg CaCO3/L						76		0.2	1.25	mg CaCO3/L						90.9		0.2	1.25	mg CaCO3/L									
M=OR EPA 3520C/8270C (7-3-01-004)																																		
1,2,4-Trichlorobenzene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L						<MDL		0.049	0.098	ug/L	<MDL		0.05	0.1	ug/L	<MDL		0.048	0.0952	ug/L
1,2-Dichlorobenzene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L						<MDL		0.049	0.098	ug/L	<MDL		0.05	0.1	ug/L	<MDL		0.048	0.0952	ug/L
1,2-Diphenylhydrazine		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L							<MDL	0.096	0.192	ug/L						<MDL		0.098	0.196	ug/L	<MDL		0.1	0.2	ug/L	<MDL		0.095	0.19	ug/L
1,3-Dichlorobenzene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L						<MDL		0.049	0.098	ug/L	<MDL		0.05	0.1	ug/L	<MDL		0.048	0.0952	ug/L
1,4-Dichlorobenzene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L						<MDL		0.049	0.098	ug/L	<MDL		0.05	0.1	ug/L	<MDL		0.048	0.0952	ug/L
2,4,5-Trichlorophenol		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L							<MDL	0.48	1.92	ug/L						<MDL		0.49	1.96	ug/L	<MDL		0.5	2	ug/L	<MDL		0.48	1.9	ug/L
2,4,6-Trichlorophenol		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L							<MDL	0.48	1.92	ug/L						<MDL		0.49	1.96	ug/L	<MDL		0.5	2	ug/L	<MDL		0.48	1.9	ug/L
2,4-Dichlorophenol		<MDL	0.048	0.476	ug/L							<MDL	0.048	0.476	ug/L							<MDL	0.048	0.481	ug/L						<MDL		0.049	0.49	ug/L	<MDL		0.05	0.5	ug/L	<MDL		0.048	0.476	ug/L
2,4-Dimethylphenol		<MDL	0.048	0.476	ug/L							<MDL	0.048	0.476	ug/L							<MDL	0.048	0.481	ug/L						<MDL		0.049	0.49	ug/L	<MDL		0.05	0.5	ug/L	<MDL		0.048	0.476	ug/L
2,4-Dinitrophenol	1.1	<RDL	0.48	4.76	ug/L						1	<RDL	0.48	4.76	ug/L						1.2	<RDL	0.48	4.81	ug/L						<MDL		0.49	4.9	ug/L	<MDL		0.5	5	ug/L	<MDL		0.48	4.76	ug/L
2,4-Dinitrotoluene		<MDL	0.95	1.9	ug/L							<MDL	0.95	1.9	ug/L							<MDL	0.96	1.92	ug/L						<MDL		0.98	1.96	ug/L	<MDL		1	2	ug/L	<MDL		0.95	1.9	ug/L
2,6-Dinitrotoluene		<MDL	0.95	1.9	ug/L							<MDL	0.95	1.9	ug/L							<MDL	0.96	1.92	ug/L						<MDL		0.98	1.96	ug/L	<MDL		1	2	ug/L	<MDL		0.95	1.9	ug/L
2-Chloronaphthalene		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0481	ug/L						<MDL		0.02	0.049	ug/L	<MDL		0.02	0.05	ug/L	<MDL		0.019	0.0476	ug/L
2-Chlorophenol		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0481	ug/L						<MDL		0.02	0.049	ug/L	<MDL		0.02	0.05	ug/L	<MDL		0.019	0.0476	ug/L
2-Methylnaphthalene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L						<MDL		0.049	0.098	ug/L	<MDL		0.05	0.1	ug/L	<MDL		0.048	0.0952	ug/L
2-Methylphenol	0.595		0.048	0.238	ug/L						0.493		0.048	0.238	ug/L						0.437		0.048	0.24	ug/L						<MDL		0.049	0.245	ug/L	<MDL		0.05	0.25	ug/L	<MDL		0.048	0.238	ug/L
2-Nitroaniline		<MDL	0.95	1.9	ug/L							<MDL	0.95	1.9	ug/L							<MDL	0.96	1.92	ug/L						<MDL		0.98	1.96	ug/L	<MDL		1	2	ug/L	<MDL		0.95	1.9	ug/L
2-Nitrophenol		<MDL	0.19	0.476	ug/L							<MDL	0.19	0.476	ug/L							<MDL	0.19	0.481	ug/L						<MDL		0.2	0.49	ug/L	<MDL		0.2	0.5	ug/L	<MDL		0.19	0.476	ug/L
3,3'-Dichlorobenzidine		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L							<MDL	0.096	0.192	ug/L						<MDL		0.098	0.196	ug/L	<MDL		0.1	0.2	ug/L	<MDL		0.095	0.19	ug/L
3-Methylphenol		<MDL	0.048	0.238	ug/L							<MDL	0.048	0.238	ug/L						0.23	<RDL	0.048	0.24	ug/L						<MDL		0.049	0.245	ug/L	<MDL		0.05	0.25	ug/L	<MDL		0.048	0.238	ug/L
3-Nitroaniline		<MDL	0.24	0.952	ug/L							<MDL	0.24	0.952	ug/L							<MDL	0.24	0.962	ug/L						<MDL		0.25	0.98	ug/L	<MDL		0.25	1	ug/L	<MDL		0.24	0.952	ug/L
4,4'-DDD		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L						<MDL		0.098	0.49	ug/L	<MDL		0.1	0.5	ug/L	<MDL		0.095	0.476	ug/L
4,4'-DDE		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L						<MDL		0.098	0.49	ug/L	<MDL		0.1	0.5	ug/L	<MDL		0.095	0.476	ug/L
4,4'-DDT		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L						<MDL		0.098	0.49	ug/L	<MDL		0.1	0.5	ug/L	<MDL		0.095	0.476	ug/L
4,6-Dinitro-O-Cresol	0.56	<RDL	0.48	4.76	ug/L						0.57	<RDL	0.48	4.76	ug/L						0.7	<RDL	0.48	4.81	ug/L						<MDL		0.49	4.9	ug/L	<MDL		0.5	5	ug/L	<MDL		0.48	4.76	ug/L
4-Bromophenyl Phenyl Ether		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L							<MDL	0.096	0.192	ug/L						<MDL		0.098	0.196	ug/L	<MDL		0.1	0.2	ug/L	<MDL		0.095	0.19	ug/L
4-Chloro-3-Methylphenol		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L							<MDL	0.48	1.92	ug/L						<MDL		0.49	1.96	ug/L	<MDL		0.5	2	ug/L	<MDL		0.48	1.9	ug/L
4-Chloroaniline		<MDL	0.048	0.238	ug/L							<MDL	0.048	0.238	ug/L							<MDL	0.048	0.24	ug/L						<MDL		0.049	0.245	ug/L	<MDL		0.05	0.25	ug/L	<MDL		0.048	0.238	ug/L
4-Chlorophenyl Phenyl Ether		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L						<MDL		0.049	0.098	ug/L	<MDL		0.05	0.1	ug/L	<MDL		0.048	0.0952	ug/L

King County Environmental Lab Analytical Report

PROJECT: 423550-100

Locator:	520BR-N1	520BR-N1	520BR-N2	520BR-N2	520BR-N3	520BR-N3	BLANK1	BLANK1	BLANK1
Descrip:	FIRST DOWNSPOUT EA	FIRST DOWNSPOUT EA	SECOND DOWNSPOUT E	SECOND DOWNSPOUT E	THIRD DOWNSPOUT EA	THIRD DOWNSPOUT EA	Blank1	Blank1	Blank1
Sampled:	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003
Lab ID:	L29844-1	L29844-1	L29844-2	L29844-2	L29844-3	L29844-3	L29844-4	L29844-5	L29844-6
Matrix:	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	BLANK WTR	BLANK WTR	BLANK WTR
% Solids:									

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
			- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis		
COMBINED LABS																																		
4-Methylphenol		<MDL	0.048	0.238	ug/L							<MDL	0.048	0.24	ug/L							<MDL	0.049	0.245	ug/L		<MDL	0.05	0.25	ug/L		<MDL	0.048	0.238	ug/L
4-Nitroaniline		<MDL	0.95	1.9	ug/L							<MDL	0.95	1.9	ug/L							<MDL	0.96	1.92	ug/L		<MDL	0.98	1.96	ug/L		<MDL	1	2	ug/L		<MDL	0.95	1.9	ug/L
4-Nitrophenol	5.06		0.48	4.76	ug/L						4.1	<RDL	0.48	4.76	ug/L						3.5	<RDL	0.48	4.81	ug/L		<MDL	0.49	4.9	ug/L		<MDL	0.5	5	ug/L		<MDL	0.48	4.76	ug/L
Acenaphthene		<MDL	0.0095	0.019	ug/L							<MDL	0.0095	0.019	ug/L							<MDL	0.0096	0.0192	ug/L		<MDL	0.0098	0.0196	ug/L		<MDL	0.01	0.02	ug/L		<MDL	0.0095	0.019	ug/L
Acenaphthylene		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L							<MDL	0.096	0.192	ug/L		<MDL	0.098	0.196	ug/L		<MDL	0.1	0.2	ug/L		<MDL	0.095	0.19	ug/L
Aldrin		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Alpha-BHC		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Alpha-Chlordane		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Aniline		<MDL	1.9	4.76	ug/L							<MDL	1.9	4.76	ug/L							<MDL	1.9	4.81	ug/L		<MDL	2	4.9	ug/L		<MDL	2	5	ug/L		<MDL	1.9	4.76	ug/L
Anthracene		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0481	ug/L		<MDL	0.02	0.049	ug/L		<MDL	0.02	0.05	ug/L		<MDL	0.019	0.0476	ug/L
Atrazine		<MDL	0.95	1.9	ug/L							<MDL	0.95	1.9	ug/L							<MDL	0.96	1.92	ug/L		<MDL	0.98	1.96	ug/L		<MDL	1	2	ug/L		<MDL	0.95	1.9	ug/L
Benzidine		<MDL	1.9	9.52	ug/L							<MDL	1.9	9.52	ug/L							<MDL	1.9	9.62	ug/L		<MDL	2	9.8	ug/L		<MDL	2	10	ug/L		<MDL	1.9	9.52	ug/L
Benzo(a)anthracene		<MDL	0.0095	0.019	ug/L							<MDL	0.0095	0.019	ug/L							<MDL	0.0096	0.0192	ug/L		<MDL	0.0098	0.0196	ug/L		<MDL	0.01	0.02	ug/L		<MDL	0.0095	0.019	ug/L
Benzo(a)pyrene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Benzo(b)fluoranthene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Benzo(g,h,i)perylene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Benzo(k)fluoranthene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Benzoic Acid	2.4	<RDL	0.48	4.76	ug/L						1.7	<RDL	0.48	4.76	ug/L						1.4	<RDL	0.48	4.81	ug/L		<MDL	0.49	4.9	ug/L		<MDL	0.5	5	ug/L		<MDL	0.48	4.76	ug/L
Benzyl Alcohol	0.614		0.095	0.476	ug/L						1.76		0.095	0.476	ug/L						0.638		0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Benzyl Butyl Phthalate		<MDL	0.48	0.952	ug/L							<MDL	0.48	0.952	ug/L							<MDL	0.48	0.962	ug/L		<MDL	0.49	0.98	ug/L		<MDL	0.5	1	ug/L		<MDL	0.48	0.952	ug/L
Beta-BHC		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Bis(2-Chloroethoxy)Methane		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Bis(2-Chloroethyl)Ether		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Bis(2-Chloroisopropyl)Ether		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0481	ug/L		<MDL	0.02	0.049	ug/L		<MDL	0.02	0.05	ug/L		<MDL	0.019	0.0476	ug/L
Bis(2-ethylhexyl)adipate	0.93	<RDL	0.24	0.952	ug/L						2.12		0.24	0.952	ug/L						1.41		0.24	0.962	ug/L	0.8	<RDL	0.25	0.98	ug/L	0.99	<RDL	0.25	1	ug/L	0.59	<RDL	0.24	0.952	ug/L
Bis(2-Ethylhexyl)Phthalate	4.54		0.048	0.952	ug/L						7.52		0.048	0.952	ug/L						5.63		0.048	0.962	ug/L	0.51	<RDL,B	0.049	0.98	ug/L	1.21	B	0.05	1	ug/L	1.18	B	0.048	0.952	ug/L
Bisphenol A	3.54		0.24	0.952	ug/L						3.26		0.24	0.952	ug/L						2.34		0.24	0.962	ug/L		<MDL	0.25	0.98	ug/L		<MDL	0.25	1	ug/L		<MDL	0.24	0.952	ug/L
Caffeine	1.3		0.048	0.0952	ug/L						1.35		0.048	0.0952	ug/L						1.03		0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Carbazole		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0481	ug/L		<MDL	0.02	0.049	ug/L		<MDL	0.02	0.05	ug/L		<MDL	0.019	0.0476	ug/L
Chlordecone (Kepone)		<MDL	0.24	0.952	ug/L							<MDL	0.24	0.952	ug/L							<MDL	0.24	0.962	ug/L		<MDL	0.25	0.98	ug/L		<MDL	0.25	1	ug/L		<MDL	0.24	0.952	ug/L
Chrysene		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0481	ug/L		<MDL	0.02	0.049	ug/L		<MDL	0.02	0.05	ug/L		<MDL	0.019	0.0476	ug/L
Coprostanol		<MDL	2.4	19	ug/L							<MDL	2.4	19	ug/L							<MDL	2.4	19.2	ug/L		<MDL	2.5	19.6	ug/L		<MDL	2.5	20	ug/L		<MDL	2.4	19	ug/L
Delta-BHC		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Diazinon		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Dibenzo(a,h)anthracene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Dibenzofuran		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0481	ug/L		<MDL	0.02	0.049	ug/L		<MDL	0.02	0.05	ug/L		<MDL	0.019	0.0476	ug/L
Dieldrin		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Diethyl Phthalate	0.83	<RDL	0.48	0.952	ug/L						0.8	<RDL	0.48	0.952	ug/L						0.71	<RDL	0.48	0.962	ug/L	0.63	<RDL	0.49	0.98	ug/L		<MDL	0.5	1	ug/L		<MDL	0.48	0.952	ug/L
Dimethyl Phthalate		<MDL	0.48	0.952	ug/L							<MDL	0.48	0.952	ug/L							<MDL	0.48	0.962	ug/L		<MDL	0.49	0.98	ug/L		<MDL	0.5	1	ug/L		<MDL	0.48	0.952	ug/L
Di-N-Butyl Phthalate	0.61	<RDL	0.48	0.952	ug/L							<MDL	0.48	0.952	ug/L						0.51	<RDL	0.48	0.962	ug/L		<MDL	0.49	0.98	ug/L		<MDL	0.5	1	ug/L		<MDL	0.48	0.952	ug/L
Di-N-Octyl Phthalate		<MDL	0.48	0.952	ug/L							<MDL	0.48	0.952	ug/L							<MDL	0.48	0.962	ug/L		<MDL	0.49	0.98	ug/L		<MDL	0.5	1	ug/L		<MDL	0.48	0.952	ug/L
Endosulfan I		<MDL	0.19	0.476	ug/L							<MDL	0.19	0.476	ug/L							<MDL	0.19	0.481	ug/L		<MDL	0.2	0.49	ug/L		<MDL	0.2	0.5	ug/L		<MDL	0.19	0.476	ug/L
Endosulfan II		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Endosulfan Sulfate		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Endrin		<MDL	0.24	0.952	ug/L							<MDL	0.24	0.952	ug/L							<MDL	0.24	0.962	ug/L		<MDL	0.25	0.98	ug/L		<MDL	0.25	1	ug/L		<MDL	0.24	0.952	ug/L
Endrin Aldehyde		<MDL	0.19	0.476	ug/L							<MDL	0.19	0.476	ug/L							<MDL	0.19	0.481	ug/L		<MDL	0.2	0.49	ug/L		<MDL	0.2	0.5	ug/L		<MDL	0.19	0.476	ug/L
Estradiol		<MDL	0.95	4.76	ug/L							<MDL	0.95	4.76	ug/L							<MDL	0.96	4.81	ug/L		<MDL	0.98	4.9	ug/L		<MDL	1	5	ug/L		<MDL	0.95	4.76	ug/L
Estrone		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L							<MDL	0.48	1.92	ug/L		<MDL	0.49	1.96	ug/L		<MDL	0.5	2	ug/L		<MDL	0.48	1.9	ug/L
Ethynyl estradiol		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L							<MDL	0.48	1.92	ug/L		<MDL	0.49	1.96	ug/L		<MDL	0.5	2	ug/L		<MDL	0.48	1.9	ug/L
Fluoranthene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Fluorene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Gamma-BHC (Lindane)		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Gamma-Chlordane		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Heptachlor		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Heptachlor Epoxide		<MDL	0.19	0.476	ug/L							<MDL	0.19	0.476	ug/L							<MDL	0.19	0.481	ug/L		<MDL	0.2	0.49	ug/L		<MDL	0.2	0.5	ug/L		<MDL	0.19	0.476	ug/L
Hexachlorobenzene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Hexachlorobutadiene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Hexachlorocyclopentadiene		<MDL	1.9	4.76	ug/L							<MDL	1.9	4.76	ug/L							<MDL	1.9	4.81	ug/L		<MDL	2	4.9	ug/L		<MDL	2	5	ug/L		<MDL	1.9	4.76	ug/L
Hexachloroethane		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Indeno(1,2,3-Cd)Pyrene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Isophorone		<MDL	0.48	0.0952	ug/L							<MDL	0.48	0.0952	ug/L							<MDL	0.48	0.0962	ug/L		<MDL	0.49	0.098	ug/L		<MDL	0.5	0.1	ug/L		<MDL	0.48	0.0952	ug/L
Methoxychlor		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L							<MDL	0.096	0.481	ug/L		<MDL	0.098	0.49	ug/L		<MDL	0.1	0.5	ug/L		<MDL	0.095	0.476	ug/L
Methyltestosterone		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L							<MDL	0.48	1.92	ug/L		<MDL	0.49	1.96	ug/L		<MDL	0.5	2	ug/L		<MDL	0.48	1.9	ug/L
Naphthalene		<MDL	0.024	0.0476	ug/L							<MDL	0.024	0.0476	ug/L							<MDL	0.024	0.0481	ug/L		<MDL	0.025	0.049	ug/L		<MDL	0.025	0.05	ug/L		<MDL	0.024	0.0476	ug/L
Nitrobenzene		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L							<MDL	0.096	0.192	ug/L		<MDL	0.098	0.196	ug/L		<MDL	0.1	0.2	ug/L		<MDL	0.095	0.19	ug/L
N-Nitrosodimethylamine		<MDL	0.095	0.238	ug/L							<MDL	0.095	0.238	ug/L							<MDL	0.096	0.24	ug/L		<MDL	0.098	0.245	ug/L		<MDL	0.1	0.25	ug/L		<MDL	0.095	0.238	ug/L
N-Nitrosodi-N-Propylamine		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L							<MDL	0.096	0.192	ug/L		<MDL	0.098	0.196	ug/L		<MDL	0.1	0.2	ug/L		<MDL	0.095	0.19	ug/L
N-Nitrosodiphenylamine		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0962	ug/L		<MDL	0.049	0.098	ug/L		<MDL	0.05	0.1	ug/L		<MDL	0.048	0.0952	ug/L
Pentachlorophenol		<MDL	0.95	9.52	ug/L							<MDL	0.95	9.52	ug/L						0.63	<RDL	0.48	9.62	ug/L		<MDL	0.98	9.8	ug/L		<MDL	1	10	ug/L		<MDL	0.95	9.52	ug/L
Phenanthrene		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0481	ug/L		<MDL	0.02	0.049	ug/L		<MDL	0.02	0.05	ug/L		<MDL	0.019	0.0476	ug/L
Phenol	3.49		0.095	0.19	ug/L						2.8		0.095	0.19	ug/L						2.75		0.096	0.192	ug/L	0.2		0.098	0.196	ug/L	0.332		0.1	0.2	ug/L	0.11	<RDL	0.095	0.19	ug/L
Progesterone		<MDL	0.24	0.952	ug/L							<MDL	0.24	0.952	ug/L							<MDL	0.24	0.962	ug/L		<MDL	0.25	0.98	ug/L		<MDL	0.25	1	ug/L		<MDL	0.24	0.952	ug/L
Pyrene		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0481	ug/L		<MDL	0.02	0.049	ug/L		<MDL	0.02	0.05	ug/L		<MDL	0.019	0.0476	ug/L
Pyridine		<MDL	1.9	4.76	ug/L							<MDL	1.9	4.76	ug/L							<MDL	1.9	4.81	ug/L		<MDL	2	4.9	ug/L		<MDL	2	5	ug/L		<MDL	1.9	4.76	ug/L
Simazine		<MDL	0.95	1.9	ug/L							<MDL	0.95	1.9	ug/L							<MDL	0.96	1.92	ug/L		<MDL	0.98	1.96	ug/L		<MDL	1	2	ug/L		<MDL	0.95	1.9	ug/L
Testosterone		<MDL	0.95	4.76	ug/L							<MDL	0.95	4.76	ug/L							<MDL	0.96	4.81	ug/L		<MDL	0.98	4.9	ug/L		<MDL	1	5	ug/L		<MDL	0.95	4.76	ug/L
Total 4-Nonylphenol		<MDL	0.48	2.38	ug/L							<MDL	0.48	2.38	ug/L							<MDL	0.48	2.4	ug/L		<MDL	0.49	2.45	ug/L		<MDL	0.5	2.5	ug/L		<MDL	0.48	2.38	ug/L
Vinclozolin		<MDL	0.24	0.952	ug/L							<MDL	0.24	0.952	ug/L							<MDL	0.24	0.962	ug/L		<MDL	0.25	0.98	ug/L		<MDL	0.25	1	ug/L		<MDL	0.24	0.952	ug/L
MI=OR EPA 624 (7-3-02-002)																																		
1,1,1-Trichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
1,1,2,2-Tetrachloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
1,1,2-Trichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
1,1,2-Trichloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
1,1-Dichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
1,1-Dichloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
1,2-Dichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
1,2-Dichloropropane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
2-Butanone (MEK)		<MDL	5	10	ug/L							<MDL	5	10	ug/L							<MDL	5	10	ug/L														
2-Chloroethylvinyl ether		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
2-Hexanone		<MDL	5	10	ug/L							<MDL	5	10	ug/L							<MDL	5	10	ug/L														
4-Methyl-2-Pentanone (MIBK)		<MDL	5	10	ug/L							<MDL	5	10	ug/L							<MDL	5	10	ug/L														
Acetone		<MDL	2.5	10	ug/L							<MDL	2.5	10	ug/L							<MDL	2.5	10	ug/L														
Acrolein		<MDL	5	10	ug/L							<MDL	5	10	ug/L							<MDL	5	10	ug/L														
Acrylonitrile		<MDL	5	10	ug/L							<MDL	5	10	ug/L							<MDL	5	10	ug/L														
Benzene		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
Bromodichloromethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
Bromoform		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
Bromomethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
Carbon Disulfide		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
Carbon Tetrachloride		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
Chlorobenzene		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
Chlorodibromomethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														
Chloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L														

King County Environmental Lab Analytical Report

PROJECT: 423550-100

Locator:	520BR-N1	520BR-N1	520BR-N2	520BR-N2	520BR-N3	520BR-N3	BLANK1	BLANK1	BLANK1
Descrip:	FIRST DOWNSPOUT EA	FIRST DOWNSPOUT EA	SECOND DOWNSPOUT E	SECOND DOWNSPOUT E	THIRD DOWNSPOUT EA	THIRD DOWNSPOUT EA	Blank1	Blank1	Blank1
Sampled:	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003	Oct 06, 2003
Lab ID:	L29844-1	L29844-1	L29844-2	L29844-2	L29844-3	L29844-3	L29844-4	L29844-5	L29844-6
Matrix:	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	BLANK WTR	BLANK WTR	BLANK WTR
% Solids:									

Parameters	Value	Qual	MDL (- Wet Weight Basis)	RDL	Units	Value	Qual	MDL (- Wet Weight Basis)	RDL	Units	Value	Qual	MDL (- Wet Weight Basis)	RDL	Units	Value	Qual	MDL (- Wet Weight Basis)	RDL	Units	Value	Qual	MDL (- Wet Weight Basis)	RDL	Units	Value	Qual	MDL (- Wet Weight Basis)	RDL	Units	Value	Qual	MDL (- Wet Weight Basis)	RDL	Units
COMBINED LABS																																		
Chloroform		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
Chloromethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
Cis-1,3-Dichloropropene		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
Ethylbenzene		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
Methylene Chloride		<MDL	1	10	ug/L							<MDL	1	10	ug/L							<MDL	1	10	ug/L									
Styrene		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
Tetrachloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
Toluene		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
Total Xylenes		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
Trans-1,2-Dichloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
Trans-1,3-Dichloropropene		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
Trichlorofluoromethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
Vinyl Acetate		<MDL	5	10	ug/L							<MDL	5	10	ug/L							<MDL	5	10	ug/L									
Vinyl Chloride		<MDL	1	2	ug/L							<MDL	1	2	ug/L							<MDL	1	2	ug/L									
M=OR WDOE NWTPH-DX (7-3-06-001)																																		
Lube Oil Range (>C24)	1.4		0.19	0.19	mg/L						1.9		0.19	0.19	mg/L						1.4		0.19	0.19	mg/L									
M=OR WDOE NWTPH-GX (7-3-07-002)																																		
Gasoline Range (C7-C12)		<MDL	250	250	ug/L							<MDL	250	250	ug/L							<MDL	250	250	ug/L									

King County Environmental Lab Analytical Report

PROJECT: 423550-100

Locator:	520BR-N1	520BR-N1	520BR-N2	520BR-N2	520BR-N3	520BR-N3	BLANK1	BLANK1	BLANK1
Descrip:	FIRST DOWNSPOUT EA	FIRST DOWNSPOUT EA	SECOND DOWNSPOUT E	SECOND DOWNSPOUT E	THIRD DOWNSPOUT EA	THIRD DOWNSPOUT EA	Blank1	Blank1	Blank1
Sampled:	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 13, 2004	Jan 13, 2004	Jan 13, 2004
Lab ID:	L30251-1	L30251-1	L30251-2	L30251-2	L30251-3	L30251-3	L30251-4	L30251-5	L30251-6
Matrix:	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	BLANK WTR	BLANK WTR	BLANK WTR
% Solids:									

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
	- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis				
COMBINED LABS																																		
M=CV SM2320-B (03-03-001-003)																																		
Total Alkalinity	32.9		1	10	mg CaCO3/L						28.8		1	10	mg CaCO3/L						33.5		1	10	mg CaCO3/L									
M=CV SM2540-D (03-01-009-002)																																		
Total Suspended Solids	87.5		2.5	5	mg/L						149		2.5	5	mg/L						142		2.5	5	mg/L									
M=CV SM4500-H-B (03-01-003-004)																																		
pH	7.48				pH						7.59				pH						7.54				pH									
M=CV SM4500-N-C (03-03-013-001)																																		
Total Nitrogen	5.1		0.05	0.1	mg/L						4.88		0.05	0.1	mg/L						5.38		0.05	0.1	mg/L									
M=CV SM4500-NH3-G (03-03-012-002)																																		
Ammonia Nitrogen	3.36		0.1	0.2	mg/L						2.92		0.1	0.2	mg/L						2.74		0.1	0.2	mg/L									
M=CV SM4500-NO3-F (03-03-012-002)																																		
Nitrite + Nitrate Nitrogen	1.31		0.02	0.04	mg/L						1.12		0.02	0.04	mg/L						1.68		0.02	0.04	mg/L									
M=CV SM4500-P-B,FMOD(03-03-013-001)																																		
Total Phosphorus	0.128		0.005	0.01	mg/L						0.18		0.005	0.01	mg/L						0.18		0.005	0.01	mg/L									
M=CV SM4500-P-F (03-03-012-002)																																		
Ortho Phosphorus	0.00553		0.002	0.005	mg/L						0.00997		0.002	0.005	mg/L						0.00898		0.002	0.005	mg/L									
M=CV SM5310-B (03-04-001-003)																																		
Total Organic Carbon	30		0.5	1	mg/L						44.8		0.5	1	mg/L						39.1		0.5	1	mg/L									
M=ES NONE																																		
Field Personnel	JD,MP,DAN SMITH				none						JD,MP,DAN SMITH				none						JD,MP,DAN SMITH				none									
Sample Code	FC; AVG 0.00068CFS				none						FC; AVG 0.00068CFS				none						FC; AVG 0.00068CFS				none									
Sample Function	SAMP				none						SAMP				none						SAMP + MS/MS DUP				none									
Sample Start Time	1645				hr						1645				hr						1645				hr						1123			hr	1117				hr	1111			hr
Sample Unit	49				none						50				none						50				none									
Sampling Method	1011				none						1011				none						1011				none									
Storm Or Non-Storm	S				none						S				none						S				none									
Time Span	610				none						610				none						610				none									
Time Unit	MINUTES				none						MINUTES				none						MINUTES				none									
M=MC METRO MC SOP 6.5.1																																		
Escherichia coli	550				CFU/100ml						990				CFU/100ml						460				CFU/100ml									
M=MC SM-9222 D ed.17																																		
Fecal Coliform	720				CFU/100ml						1000				CFU/100ml						520				CFU/100ml									
M=MT EPA 200.7 (06-02-004-002)																																		
Calcium, Dissolved, ICP						36.8		0.05	0.25	mg/L						21.9		0.05	0.25	mg/L						28.6		0.05	0.25	mg/L					
Calcium, Total, ICP	39		0.05	0.25	mg/L						24.2		0.05	0.25	mg/L						31.5		0.05	0.25	mg/L						<MDL		0.05	0.25 mg/L	<MDL		0.05	0.25 mg/L	<MDL		0.05	0.25 mg/L
Magnesium, Dissolved, ICP						2.73		0.03	0.15	mg/L						1.77		0.03	0.15	mg/L						2.01		0.03	0.15	mg/L					
Magnesium, Total, ICP	4.1		0.03	0.15	mg/L						3.73		0.03	0.15	mg/L						4.08		0.03	0.15	mg/L						<MDL		0.03	0.15 mg/L	<MDL		0.03	0.15 mg/L	<MDL		0.03	0.15 mg/L
M=MT EPA 200.8 (06-03-004&004A-001)																																		
Antimony, Dissolved, ICP-MS						0.00587		0.0005	0.0025	mg/L						0.00549		0.0005	0.0025	mg/L						0.00592		0.0005	0.0025	mg/L					
Antimony, Total, ICP-MS	0.01		0.0005	0.0025	mg/L						0.0119		0.0005	0.0025	mg/L						0.012		0.0005	0.0025	mg/L						<MDL		0.0005	0.0025 mg/L	<MDL		0.0005	0.0025 mg/L	<MDL		0.0005	0.0025 mg/L
Arsenic, Dissolved, ICP-MS						0.0014	<RDL	0.0005	0.0025	mg/L						0.00079	<RDL	0.0005	0.0025	mg/L						0.00098	<RDL	0.0005	0.0025	mg/L					
Arsenic, Total, ICP-MS	0.00275		0.0005	0.0025	mg/L						0.0023	<RDL	0.0005	0.0025	mg/L						0.0024	<RDL	0.0005	0.0025	mg/L						<MDL		0.0005	0.0025 mg/L	<MDL		0.0005	0.0025 mg/L	<MDL		0.0005	0.0025 mg/L
Barium, Dissolved, ICP-MS						0.068		0.0002	0.001	mg/L						0.0515		0.0002	0.001	mg/L						0.0577		0.0002	0.001	mg/L					
Barium, Total, ICP-MS	0.126		0.0002	0.001	mg/L						0.142		0.0002	0.001	mg/L						0.145		0.0002	0.001	mg/L						<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L
Beryllium, Dissolved, ICP-MS							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L					
Beryllium, Total, ICP-MS		<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L						<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L
Cadmium, Dissolved, ICP-MS						0.000798		0.0001	0.0005	mg/L						0.00044	<RDL	0.0001	0.0005	mg/L						0.000582		0.0001	0.0005	mg/L					
Cadmium, Total, ICP-MS	0.00111		0.0001	0.0005	mg/L						0.00101		0.0001	0.0005	mg/L						0.00102		0.0001	0.0005	mg/L						<MDL		0.0001	0.0005 mg/L	<MDL		0.0001	0.0005 mg/L	<MDL		0.0001	0.0005 mg/L
Chromium, Dissolved, ICP-MS						0.0014	<RDL	0.0004	0.002	mg/L						0.0014	<RDL	0.0004	0.002	mg/L						0.0014	<RDL	0.0004	0.002	mg/L					
Chromium, Total, ICP-MS	0.0113		0.0004	0.002	mg/L						0.0171		0.0004	0.002	mg/L						0.0156		0.0004	0.002	mg/L						<MDL		0.0004	0.002 mg/L	<MDL		0.0004	0.002 mg/L	<MDL		0.0004	0.002 mg/L
Cobalt, Dissolved, ICP-MS						0.00108		0.0002	0.001	mg/L						0.00076	<RDL	0.0002	0.001	mg/L						0.00082	<RDL	0.0002	0.001	mg/L					
Cobalt, Total, ICP-MS	0.00249		0.0002	0.001	mg/L						0.0031		0.0002	0.001	mg/L						0.00297		0.0002	0.001	mg/L						<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L
Copper, Dissolved, ICP-MS						0.027		0.0004	0.002	mg/L						0.0253		0.0004	0.002	mg/L						0.0288		0.0004	0.002	mg/L					
Copper, Total, ICP-MS	0.053		0.0004	0.002	mg/L						0.071		0.0004	0.002	mg/L						0.0696		0.0004	0.002	mg/L						<MDL		0.0004	0.002 mg/L	<MDL		0.0004	0.002 mg/L	<MDL		0.0004	0.002 mg/L
Lead, Dissolved, ICP-MS						0.0007	<RDL	0.0002	0.001	mg/L						0.00076	<RDL	0.0002	0.001	mg/L						0.00104		0.0002	0.001	mg/L					
Lead, Total, ICP-MS	0.0304		0.0002	0.001	mg/L						0.0465		0.0002	0.001	mg/L						0.0427		0.0002	0.001	mg/L						<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L
Molybdenum, Dissolved, ICP-MS						0.00708		0.0005	0.0025	mg/L						0.00634		0.0005	0.0025	mg/L						0.00728		0.0005	0.0025	mg/L					
Molybdenum, Total, ICP-MS	0.0086		0.0005	0.0025	mg/L						0.00845		0.0005	0.0025	mg/L						0.00928		0.0005	0.0025	mg/L						<MDL		0.0005	0.0025 mg/L	<MDL		0.0005	0.0025 mg/L	<MDL		0.0005	0.0025 mg/L
Nickel, Dissolved, ICP-MS						0.00579		0.0003	0.0015	mg/L						0.00426		0.0003	0.0015	mg/L						0.00508		0.0003	0.0015	mg/L					
Nickel, Total, ICP-MS	0.0111		0.0003	0.0015	mg/L						0.0131		0.0003	0.0015	mg/L						0.0129		0.0003	0.0015	mg/L						<MDL		0.0003	0.0015 mg/L	<MDL		0.0003	0.0015 mg/L	<MDL		0.0003	0.0015 mg/L
Selenium, Dissolved, ICP-MS							<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L					
Selenium, Total, ICP-MS		<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L							<MDL	0.0015	0.0075	mg/L						<MDL		0.0015	0.0075 mg/L	<MDL		0.0015	0.0075 mg/L	<MDL		0.0015	0.0075 mg/L
Silver, Dissolved, ICP-MS							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L					
Silver, Total, ICP-MS		<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L						<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L
Thallium, Dissolved, ICP-MS							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L					
Thallium, Total, ICP-MS		<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L							<MDL	0.0002	0.001	mg/L						<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L	<MDL		0.0002	0.001 mg/L
Vanadium, Dissolved, ICP-MS						0.00039	<RDL	0.0003	0.0015	mg/L						0.00065	<RDL	0.0003	0.0015	mg/L						0.00057	<RDL	0.0003	0.0015	mg/L					
Vanadium, Total, ICP-MS	0.00869		0.0003	0.0015	mg/L						0.0132		0.0003	0.0015	mg/L						0.0119		0.0003	0.0015	mg/L						<MDL		0.0003	0.0015 mg/L	<MDL		0.0003	0.0015 mg/L	<MDL		0.0003	0.0015 mg/L
Zinc, Dissolved, ICP-MS						1.7		0.01	0.05	mg/L						0.259		0.0025	0.0125	mg/L						0.422		0.0025	0.0125	mg/L					
Zinc, Total, ICP-MS	2.23		0.01	0.05	mg/L						0.942		0.005	0.025	mg/L						1.24		0.005	0.025	mg/L						0.0006	<RDL	0.0005	0.0025 mg/L	0.00087	<RDL	0.0005	0.0025 mg/L	0.00082	<RDL	0.0005	0.0025 mg/L
M=MT EPA 245.2 (06-01-004-003)																																		
Mercury, Dissolved, CVAA							<MDL	0.000005	0.000015	mg/L							<MDL	0.000005	0.000015	mg/L							<MDL	0.000005	0.000015	mg/L					
Mercury, Total, CVAA	1.52E-05		0.000005	0.000015	mg/L						2.62E-05		0.000005	0.000015	mg/L						0.00004		0.000005	0.000015	mg/L						<MDL		0.000005	0.000015 mg/L	<MDL		0.000005	0.000015 mg/L	<MDL		0.000005	0.000015 mg/L
M=MT SM2340B.ED19 (06-02-004-002)																																		
Hardness, Calc	114		0.2	1.25	mg CaCO3/L						75.7		0.2	1.25	mg CaCO3/L						95.3		0.2	1.25	mg CaCO3/L									
M=OR EPA 3520C/8270C (7-3-01-004)																																		
1,2,4-Trichlorobenzene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L						<MDL		0.047	0.0943 ug/L	<MDL		0.047	0.0943 ug/L	<MDL		0.048	0.0952 ug/L
1,2-Dichlorobenzene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L						<MDL		0.047	0.0943 ug/L	<MDL		0.047	0.0943 ug/L	<MDL		0.048	0.0952 ug/L
1,2-Diphenylhydrazine		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L						<MDL		0.094	0.189 ug/L	<MDL		0.094	0.189 ug/L	<MDL		0.095	0.19 ug/L
1,3-Dichlorobenzene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L						<MDL		0.047	0.0943 ug/L	<MDL		0.047	0.0943 ug/L	<MDL		0.048	0.0952 ug/L
1,4-Dichlorobenzene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L						<MDL		0.047	0.0943 ug/L	<MDL		0.047	0.0943 ug/L	<MDL		0.048	0.0952 ug/L
2,4,5-Trichlorophenol		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L						<MDL		0.47	1.89 ug/L	<MDL		0.47	1.89 ug/L	<MDL		0.48	1.9 ug/L
2,4,6-Trichlorophenol		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L						<MDL		0.47	1.89 ug/L	<MDL		0.47	1.89 ug/L	<MDL		0.48	1.9 ug/L
2,4-Dichlorophenol		<MDL	0.048	0.476	ug/L							<MDL	0.048	0.476	ug/L							<MDL	0.048	0.476	ug/L						<MDL		0.047	0.472 ug/L	<MDL		0.047	0.472 ug/L	<MDL		0.048	0.476 ug/L
2,4-Dimethylphenol	0.48		0.048	0.476	ug/L						0.537		0.048	0.476	ug/L						0.43	<RDL	0.048	0.476	ug/L						<MDL		0.047	0.472 ug/L	<MDL		0.047	0.472 ug/L	<MDL		0.048	0.476 ug/L

King County Environmental Lab Analytical Report

PROJECT: 423550-100

Locator:	520BR-N1	520BR-N1	520BR-N2	520BR-N2	520BR-N3	520BR-N3	BLANK1	BLANK1	BLANK1
Descrip:	FIRST DOWNSPOUT EA	FIRST DOWNSPOUT EA	SECOND DOWNSPOUT E	SECOND DOWNSPOUT E	THIRD DOWNSPOUT EA	THIRD DOWNSPOUT EA	Blank1	Blank1	Blank1
Sampled:	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 13, 2004	Jan 13, 2004	Jan 13, 2004
Lab ID:	L30251-1	L30251-1	L30251-2	L30251-2	L30251-3	L30251-3	L30251-4	L30251-5	L30251-6
Matrix:	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	BLANK WTR	BLANK WTR	BLANK WTR
% Solids:									

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
			- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis		
COMBINED LABS																																			
2,4-Dinitrophenol	0.54	<RDL	0.48	4.76	ug/L							<MDL	0.48	4.76	ug/L							<MDL	0.47	4.72	ug/L		<MDL	0.47	4.72	ug/L		<MDL	0.48	4.76	ug/L
2,4-Dinitrotoluene		<MDL	0.95	1.9	ug/L							<MDL	0.95	1.9	ug/L							<MDL	0.94	1.89	ug/L		<MDL	0.94	1.89	ug/L		<MDL	0.95	1.9	ug/L
2,6-Dinitrotoluene		<MDL	0.95	1.9	ug/L							<MDL	0.95	1.9	ug/L							<MDL	0.94	1.89	ug/L		<MDL	0.94	1.89	ug/L		<MDL	0.95	1.9	ug/L
2-Chloronaphthalene		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0476	ug/L
2-Chlorophenol		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0476	ug/L
2-Methylnaphthalene	0.064	<RDL	0.048	0.0952	ug/L						0.0952	RDL	0.048	0.0952	ug/L	0.087	<RDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
2-Methylphenol	1.12		0.048	0.238	ug/L						0.808		0.048	0.238	ug/L	0.73		0.048	0.238	ug/L		<MDL	0.047	0.236	ug/L		<MDL	0.047	0.236	ug/L		<MDL	0.048	0.238	ug/L
2-Nitroaniline		<MDL	0.95	1.9	ug/L							<MDL	0.95	1.9	ug/L		<MDL	0.95	1.9	ug/L		<MDL	0.94	1.89	ug/L		<MDL	0.94	1.89	ug/L		<MDL	0.95	1.9	ug/L
2-Nitrophenol		<MDL	0.19	0.476	ug/L							<MDL	0.19	0.476	ug/L		<MDL	0.19	0.476	ug/L		<MDL	0.19	0.472	ug/L		<MDL	0.19	0.472	ug/L		<MDL	0.19	0.476	ug/L
3,3'-Dichlorobenzidine		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L		<MDL	0.095	0.19	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.095	0.19	ug/L
3-Methylphenol		<MDL	0.048	0.238	ug/L							<MDL	0.048	0.238	ug/L		<MDL	0.048	0.238	ug/L		<MDL	0.047	0.236	ug/L		<MDL	0.047	0.236	ug/L		<MDL	0.048	0.238	ug/L
3-Nitroaniline		<MDL	0.24	0.952	ug/L							<MDL	0.24	0.952	ug/L		<MDL	0.24	0.952	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.952	ug/L
4,4'-DDD		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
4,4'-DDE		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
4,4'-DDT		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
4,6-Dinitro-O-Cresol		<MDL	0.48	4.76	ug/L							<MDL	0.48	4.76	ug/L		<MDL	0.48	4.76	ug/L		<MDL	0.47	4.72	ug/L		<MDL	0.47	4.72	ug/L		<MDL	0.48	4.76	ug/L
4-Bromophenyl Phenyl Ether		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L		<MDL	0.095	0.19	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.095	0.19	ug/L
4-Chloro-3-Methylphenol		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L		<MDL	0.48	1.9	ug/L		<MDL	0.47	1.89	ug/L		<MDL	0.47	1.89	ug/L		<MDL	0.48	1.9	ug/L
4-Chloroaniline		<MDL	0.048	0.238	ug/L							<MDL	0.048	0.238	ug/L		<MDL	0.048	0.238	ug/L		<MDL	0.047	0.236	ug/L		<MDL	0.047	0.236	ug/L		<MDL	0.048	0.238	ug/L
4-Chlorophenyl Phenyl Ether		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L		<MDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
4-Methylphenol		<MDL	0.048	0.238	ug/L							<MDL	0.048	0.238	ug/L	0.18	<RDL	0.048	0.238	ug/L		<MDL	0.047	0.236	ug/L		<MDL	0.047	0.236	ug/L		<MDL	0.048	0.238	ug/L
4-Nitroaniline		<MDL	0.95	1.9	ug/L							<MDL	0.95	1.9	ug/L		<MDL	0.95	1.9	ug/L		<MDL	0.94	1.89	ug/L		<MDL	0.94	1.89	ug/L		<MDL	0.95	1.9	ug/L
4-Nitrophenol	1.4	<RDL	0.48	4.76	ug/L						1.7	<RDL	0.48	4.76	ug/L	1.1	<RDL	0.48	4.76	ug/L		<MDL	0.47	4.72	ug/L		<MDL	0.47	4.72	ug/L		<MDL	0.48	4.76	ug/L
Acenaphthene		<MDL	0.0095	0.019	ug/L							<MDL	0.0095	0.019	ug/L		<MDL	0.0095	0.019	ug/L		<MDL	0.0094	0.0189	ug/L		<MDL	0.0094	0.0189	ug/L		<MDL	0.0095	0.019	ug/L
Acenaphthylene		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L		<MDL	0.095	0.19	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.095	0.19	ug/L
Aldrin		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Alpha-BHC		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Alpha-Chlordane		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Aniline		<MDL	1.9	4.76	ug/L							<MDL	1.9	4.76	ug/L		<MDL	1.9	4.76	ug/L		<MDL	1.9	4.72	ug/L		<MDL	1.9	4.72	ug/L		<MDL	1.9	4.76	ug/L
Anthracene		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L	0.0686		0.019	0.0476	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0476	ug/L
Atrazine		<MDL,R	0.95	1.9	ug/L							<MDL,R	0.95	1.9	ug/L		<MDL,R	0.95	1.9	ug/L		<MDL,R	0.94	1.89	ug/L		<MDL,R	0.94	1.89	ug/L		<MDL,R	0.95	1.9	ug/L
Benzidine		<MDL	1.9	9.52	ug/L							<MDL	1.9	9.52	ug/L		<MDL	1.9	9.52	ug/L		<MDL	1.9	9.43	ug/L		<MDL	1.9	9.43	ug/L		<MDL	1.9	9.52	ug/L
Benzo(a)anthracene	0.151		0.0095	0.019	ug/L						0.19		0.0095	0.019	ug/L	0.192		0.0095	0.019	ug/L		<MDL	0.0094	0.0189	ug/L		<MDL	0.0094	0.0189	ug/L		<MDL	0.0095	0.019	ug/L
Benzo(a)pyrene	0.194		0.048	0.0952	ug/L						0.247		0.048	0.0952	ug/L	0.239		0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Benzo(b)fluoranthene		<MDL	0.048	0.0952	ug/L						0.291		0.048	0.0952	ug/L		<MDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Benzo(g,h,i)perylene	0.286		0.048	0.0952	ug/L						0.363		0.048	0.0952	ug/L	0.391		0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Benzo(k)fluoranthene		<MDL	0.048	0.0952	ug/L						0.233		0.048	0.0952	ug/L		<MDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Benzoic Acid	0.93	<RDL	0.48	4.76	ug/L						0.93	<RDL	0.48	4.76	ug/L	0.77	<RDL	0.48	4.76	ug/L		<MDL	0.47	4.72	ug/L		<MDL	0.47	4.72	ug/L		<MDL	0.48	4.76	ug/L
Benzyl Alcohol		<MDL	0.095	0.476	ug/L						0.33	<RDL	0.095	0.476	ug/L	0.26	<RDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Benzyl Butyl Phthalate		<MDL	0.48	0.952	ug/L							<MDL	0.48	0.952	ug/L		<MDL	0.48	0.952	ug/L		<MDL	0.47	0.943	ug/L		<MDL	0.47	0.943	ug/L		<MDL	0.48	0.952	ug/L
Beta-BHC		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Bis(2-Chloroethoxy)Methane		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L		<MDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Bis(2-Chloroethyl)Ether		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L		<MDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Bis(2-Chloroisopropyl)Ether		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L		<MDL	0.019	0.0476	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0476	ug/L
Bis(2-ethylhexyl)adipate		<MDL	0.24	0.952	ug/L						0.29	<RDL	0.24	0.952	ug/L		<MDL	0.24	0.952	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.952	ug/L
Bis(2-Ethylhexyl)Phthalate	11.5		0.048	0.952	ug/L						14.8		0.048	0.952	ug/L	14.7		0.048	0.952	ug/L	0.28	<RDL,B	0.047	0.943	ug/L	0.2	<RDL,B	0.047	0.943	ug/L	1.28	B	0.048	0.952	ug/L
Bisphenol A	6.55		0.24	0.952	ug/L						7.27		0.24	0.952	ug/L	5.86		0.24	0.952	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.952	ug/L
Caffeine	0.856		0.048	0.0952	ug/L						0.776		0.048	0.0952	ug/L	0.739		0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Carbazole	0.0848		0.019	0.0476	ug/L						0.102		0.019	0.0476	ug/L	0.0924		0.019	0.0476	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0476	ug/L
Chlordecone (Kepone)		<MDL	0.24	0.952	ug/L							<MDL	0.24	0.952	ug/L		<MDL	0.24	0.952	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.952	ug/L
Chrysene	0.28		0.019	0.0476	ug/L						0.393		0.019	0.0476	ug/L	0.389		0.019	0.0476	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0476	ug/L
Coprostanol		<MDL	2.4	19	ug/L							<MDL	2.4	19	ug/L		<MDL	2.4	19	ug/L		<MDL	2.4	18.9	ug/L		<MDL	2.4	18.9	ug/L		<MDL	2.4	19	ug/L
Delta-BHC		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Diazinon		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Dibenzo(a,h)anthracene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L		<MDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Dibenzofuran		<MDL	0.019	0.0476	ug/L							<MDL	0.019	0.0476	ug/L		<MDL	0.019	0.0476	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0476	ug/L
Dieldrin		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Diethyl Phthalate	0.62	<RDL	0.48	0.952	ug/L						0.83	<RDL	0.48	0.952	ug/L	0.82	<RDL	0.48	0.952	ug/L		<MDL	0.47	0.943	ug/L		<MDL	0.47	0.943	ug/L		<MDL	0.48	0.952	ug/L
Dimethyl Phthalate		<MDL	0.48	0.952	ug/L							<MDL	0.48	0.952	ug/L		<MDL	0.48	0.952	ug/L		<MDL	0.47	0.943	ug/L		<MDL	0.47	0.943	ug/L		<MDL	0.48	0.952	ug/L
Di-N-Butyl Phthalate		<MDL	0.48	0.952	ug/L							<MDL	0.48	0.952	ug/L		<MDL	0.48	0.952	ug/L		<MDL	0.47	0.943	ug/L		<MDL	0.47	0.943	ug/L		<MDL	0.48	0.952	ug/L
Di-N-Octyl Phthalate	1.75		0.48	0.952	ug/L						3.36		0.48	0.952	ug/L	2.73		0.48	0.952	ug/L		<MDL	0.47	0.943	ug/L		<MDL	0.47	0.943	ug/L		<MDL	0.48	0.952	ug/L
Endosulfan I		<MDL	0.19	0.476	ug/L							<MDL	0.19	0.476	ug/L		<MDL	0.19	0.476	ug/L		<MDL	0.19	0.472	ug/L		<MDL	0.19	0.472	ug/L		<MDL	0.19	0.476	ug/L
Endosulfan II		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Endosulfan Sulfate		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Endrin		<MDL	0.24	0.952	ug/L							<MDL	0.24	0.952	ug/L		<MDL	0.24	0.952	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.952	ug/L
Endrin Aldehyde		<MDL	0.19	0.476	ug/L							<MDL	0.19	0.476	ug/L		<MDL	0.19	0.476	ug/L		<MDL	0.19	0.472	ug/L		<MDL	0.19	0.472	ug/L		<MDL	0.19	0.476	ug/L
Estradiol		<MDL	0.95	4.76	ug/L							<MDL	0.95	4.76	ug/L		<MDL	0.95	4.76	ug/L		<MDL	0.94	4.72	ug/L		<MDL	0.94	4.72	ug/L		<MDL	0.95	4.76	ug/L
Estrone		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L		<MDL	0.48	1.9	ug/L		<MDL	0.47	1.89	ug/L		<MDL	0.47	1.89	ug/L		<MDL	0.48	1.9	ug/L
Ethynyl estradiol		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L		<MDL	0.48	1.9	ug/L		<MDL	0.47	1.89	ug/L		<MDL	0.47	1.89	ug/L		<MDL	0.48	1.9	ug/L
Fluoranthene	0.428		0.048	0.0952	ug/L						0.649		0.048	0.0952	ug/L	0.657		0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Fluorene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L		<MDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Gamma-BHC (Lindane)		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Gamma-Chlordane		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Heptachlor		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Heptachlor Epoxide		<MDL	0.19	0.476	ug/L							<MDL	0.19	0.476	ug/L		<MDL	0.19	0.476	ug/L		<MDL	0.19	0.472	ug/L		<MDL	0.19	0.472	ug/L		<MDL	0.19	0.476	ug/L
Hexachlorobenzene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L		<MDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Hexachlorobutadiene		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L		<MDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Hexachlorocyclopentadiene		<MDL	1.9	4.76	ug/L							<MDL	1.9	4.76	ug/L		<MDL	1.9	4.76	ug/L		<MDL	1.9	4.72	ug/L		<MDL	1.9	4.72	ug/L		<MDL	1.9	4.76	ug/L
Hexachloroethane		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L		<MDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Indeno(1,2,3-Cd)Pyrene		<MDL	0.048	0.0952	ug/L						0.213		0.048	0.0952	ug/L	0.195		0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Isophorone		<MDL	0.48	0.0952	ug/L							<MDL	0.48	0.0952	ug/L		<MDL	0.48	0.0952	ug/L		<MDL	0.47	0.0943	ug/L		<MDL	0.47	0.0943	ug/L		<MDL	0.48	0.0952	ug/L
Methoxychlor		<MDL	0.095	0.476	ug/L							<MDL	0.095	0.476	ug/L		<MDL	0.095	0.476	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.094	0.472	ug/L		<MDL	0.095	0.476	ug/L
Methyltestosterone		<MDL	0.48	1.9	ug/L							<MDL	0.48	1.9	ug/L		<MDL	0.48	1.9	ug/L		<MDL	0.47	1.89	ug/L		<MDL	0.47	1.89	ug/L		<MDL	0.48	1.9	ug/L
Naphthalene	0.0876		0.024	0.0476	ug/L						0.0962		0.024	0.0476	ug/L	0.099		0.024	0.0476	ug/L		<MDL	0.024	0.0472	ug/L		<MDL	0.024	0.0472	ug/L		<MDL	0.024	0.0476	ug/L
Nitrobenzene		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L		<MDL	0.095	0.19	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.095	0.19	ug/L

King County Environmental Lab Analytical Report

PROJECT: 423550-100

Locator:	520BR-N1	520BR-N1	520BR-N2	520BR-N2	520BR-N3	520BR-N3	BLANK1	BLANK1	BLANK1
Descrip:	FIRST DOWNSPOUT EA	FIRST DOWNSPOUT EA	SECOND DOWNSPOUT E	SECOND DOWNSPOUT E	THIRD DOWNSPOUT EA	THIRD DOWNSPOUT EA	Blank1	Blank1	Blank1
Sampled:	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 14, 2004	Jan 13, 2004	Jan 13, 2004	Jan 13, 2004
Lab ID:	L30251-1	L30251-1	L30251-2	L30251-2	L30251-3	L30251-3	L30251-4	L30251-5	L30251-6
Matrix:	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	STORM WTR	FILTER WTR	BLANK WTR	BLANK WTR	BLANK WTR
% Solids:									

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
			- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis					- Wet Weight Basis		
COMBINED LABS																																								
N-Nitrosodimethylamine		<MDL	0.095	0.238	ug/L							<MDL	0.095	0.238	ug/L							<MDL	0.095	0.238	ug/L		<MDL	0.094	0.236	ug/L		<MDL	0.094	0.236	ug/L		<MDL	0.095	0.238	ug/L
N-Nitrosodi-N-Propylamine		<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L							<MDL	0.095	0.19	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.095	0.19	ug/L
N-Nitrosodiphenylamine		<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L							<MDL	0.048	0.0952	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.047	0.0943	ug/L		<MDL	0.048	0.0952	ug/L
Pentachlorophenol		<MDL	0.95	9.52	ug/L						1.2	<RDL	0.95	9.52	ug/L							<MDL	0.95	9.52	ug/L		<MDL	0.94	9.43	ug/L		<MDL	0.94	9.43	ug/L		<MDL	0.95	9.52	ug/L
Phenanthrene	0.27		0.019	0.0476	ug/L						0.409		0.019	0.0476	ug/L	0.419		0.019	0.0476	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0476	ug/L
Phenol	11.9		0.095	0.19	ug/L						7.09		0.095	0.19	ug/L	6.15		0.095	0.19	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.094	0.189	ug/L		<MDL	0.095	0.19	ug/L
Progesterone		<MDL	0.24	0.952	ug/L							<MDL	0.24	0.952	ug/L			<MDL	0.24	0.952	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.952	ug/L
Pyrene	0.599		0.019	0.0476	ug/L						0.855		0.019	0.0476	ug/L	0.844		0.019	0.0476	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0472	ug/L		<MDL	0.019	0.0476	ug/L
Pyridine		<MDL	1.9	4.76	ug/L							<MDL	1.9	4.76	ug/L			<MDL	1.9	4.76	ug/L		<MDL	1.9	4.72	ug/L		<MDL	1.9	4.72	ug/L		<MDL	1.9	4.72	ug/L		<MDL	1.9	4.76	ug/L
Simazine		<MDL,R	0.95	1.9	ug/L							<MDL,R	0.95	1.9	ug/L			<MDL,R	0.95	1.9	ug/L		<MDL,R	0.94	1.89	ug/L		<MDL,R	0.94	1.89	ug/L		<MDL,R	0.94	1.89	ug/L		<MDL,R	0.95	1.9	ug/L
Testosterone		<MDL	0.95	4.76	ug/L							<MDL	0.95	4.76	ug/L			<MDL	0.95	4.76	ug/L		<MDL	0.94	4.72	ug/L		<MDL	0.94	4.72	ug/L		<MDL	0.94	4.72	ug/L		<MDL	0.95	4.76	ug/L
Total 4-Nonylphenol	5.46		0.48	2.38	ug/L						9.09		0.48	2.38	ug/L	7.6		0.48	2.38	ug/L		<MDL	0.47	2.36	ug/L		<MDL	0.47	2.36	ug/L		<MDL	0.47	2.36	ug/L		<MDL	0.48	2.38	ug/L
Vinclozolin		<MDL	0.24	0.952	ug/L							<MDL	0.24	0.952	ug/L			<MDL	0.24	0.952	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.943	ug/L		<MDL	0.24	0.952	ug/L
M=OR EPA 624 (7-3-02-002)																																								
1,1,1-Trichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
1,1,2,2-Tetrachloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
1,1,2-Trichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
1,1,2-Trichloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
1,1-Dichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
1,1-Dichloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
1,2-Dichloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
1,2-Dichloropropane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
2-Butanone (MEK)		<MDL	5	10	ug/L							<MDL	5	10	ug/L			<MDL	5	10	ug/L																			
2-Chloroethylvinyl ether		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
2-Hexanone		<MDL	5	10	ug/L							<MDL	5	10	ug/L			<MDL	5	10	ug/L																			
4-Methyl-2-Pentanone (MIBK)		<MDL	5	10	ug/L							<MDL	5	10	ug/L			<MDL	5	10	ug/L																			
Acetone	4.8	<RDL	2.5	10	ug/L						5.3	<RDL	2.5	10	ug/L	5.5	<RDL	2.5	10	ug/L																			
Acrolein		<MDL	5	10	ug/L							<MDL	5	10	ug/L			<MDL	5	10	ug/L																			
Acrylonitrile		<MDL	5	10	ug/L							<MDL	5	10	ug/L			<MDL	5	10	ug/L																			
Benzene		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Bromodichloromethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Bromoform		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Bromomethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Carbon Disulfide		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Carbon Tetrachloride		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Chlorobenzene		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Chlorodibromomethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Chloroethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Chloroform		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Chloromethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Cis-1,3-Dichloropropene		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Ethylbenzene		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Methylene Chloride		<MDL	1	10	ug/L							<MDL	1	10	ug/L			<MDL	1	10	ug/L																			
Styrene		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Tetrachloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Toluene		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Total Xylenes		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Trans-1,2-Dichloroethylene		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Trans-1,3-Dichloropropene		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Trichlorofluoromethane		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
Vinyl Acetate		<MDL	5	10	ug/L							<MDL	5	10	ug/L			<MDL	5	10	ug/L																			
Vinyl Chloride		<MDL	1	2	ug/L							<MDL	1	2	ug/L			<MDL	1	2	ug/L																			
M=OR WDOE NWTPH-DX (7-3-06-001)																																								
Lube Oil Range (>C24)	7.2		0.19	0.19	mg/L						11		0.19	0.19	mg/L	8.6		0.19	0.19	mg/L																			
M=OR WDOE NWTPH-GX (7-3-07-002)																																								
Gasoline Range (C7-C12)		<MDL	250	250	ug/L							<MDL	250	250	ug/L			<MDL	250	250	ug/L																			

Appendix C

Quality Assurance Reports

SWAMP – 520 Bridge Study - 3rd Storm Event
L27891
Samples collected April 8, 2003

This review includes stormwater runoff and associated field blank samples with login number L27891-1, -3, -5, and 7-9.

CONVENTIONALS

Samples were analyzed for the following conventionals parameters: alkalinity, ammonia-N, nitrate+nitrite-N, *ortho*-P, pH, total N, total P, TOC and TSS.

WG68289 and WG68246 Nutrients
All QC results were within control limits.

WG68223 pH
All method QC was within control limits.

WG68252 TSS
All method QC was within control limits.

WG68226 Alkalinity
All method QC met control limit criteria.

WG68402 TOC
All method QC met control limit criteria.

MICROBIOLOGY

Samples were analyzed for the presence of fecal coliforms and *E. coli*.

WG68205 *E. coli*
All QC results were within control limits.

WG68206 Fecal coliforms
All QC results were within control limits.

METALS

Please note the following:

At this time, data qualification on the basis of field blanks has not been done. A field blank was collected in association with each sample location, and analyzed for the presence of total Hg, total ICP and total ICPMS metals. Total zinc was detected at a low concentration (0.00096 mg/L) in one field blank (L27189-9). The reported MDL for zinc is 0.0005 mg/L. Zinc data for sample L27891-5 should be interpreted in the light of field blank detection.

WG68279 Hardness
All method QC met control limit criteria.

QC Info for Total Metals
WG68278 ICP metals
All method QC met control limit criteria.

WG68229 ICPMS metals
All method QC met control limit criteria.

QC Info for Dissolved Metals
WG68257 Dissolved ICP metals
All method QC met control limit criteria.

WG68230 Dissolved ICPMS Metals
All method QC met control limit criteria.

QC Info for Total Hg-CVAA
WG68347
All method QC met control limit criteria.

QC Info for Dissolved Hg-CVAA
WG68416
All method QC met control limit criteria.

ORGANICS
All samples were extracted and analyzed within the required holding times.

Samples L27038-7 through L27038-9 are field blanks, associated with samples collected at 520BR-N1 through 520BR-N3, respectively.

At this time, data qualification on the basis of field blanks has not been done. A field blank was collected in association with each sample location, and analyzed for the presence of BNA compounds. Low concentrations of unqualified and "B" qualified phthalates were detected in all three field blanks. In addition, low concentrations of bis(2-ethylhexyl)adipate and phenol were detected in all three of the field blanks. Sample results for these compounds should be interpreted in the light of field blank detections.

Low Level BNA / SURVEY ANALYSIS
WG68172 and WG68221
All samples were analyzed by this method.
No sample detections of BNA compounds have been qualified on the basis of possible laboratory contamination. All field blank detections of ***bis(2-ethylhexyl) phthalate*** have

been qualified “B” to indicate the compounds were also detected in laboratory method blanks.

WG68172

This WG contains field blanks L27891-7 through –9. As noted above, one target compound was detected in the method blank WG68172-1, as follows. All field blank results for this compound have been qualified “B” on this basis.

Compound	MDL, µg/L	result, µg/L
bis(2-ethylhexyl)phthalate	0.5	10.6

All other method QC results were within control limits with the following exceptions.

- A spiked blank (SB) and spiked blank duplicate (SBD) was analyzed rather than a matrix spike (MS) and matrix spike duplicate (MSD). There was insufficient sample volume for MS and MSD analysis and the matrix for these samples is ‘blank water’. Thus, SB and SBD are considered to comprise acceptable laboratory QC for this analysis.
- SB and/or SBD recoveries of the following compounds was below the lower control limit of 50%: 2,4-dimethylphenol (23%), benzidine (both 0%), bis(2-ethylhexyl)phthalate (-361% and –375%), aniline (29% and 27%), benzoic acid (both 0%), coprostanol (49%), pyridine (8%), simazine (both 0%), atrazine (both 0%), and diazinon (36% and 38%). The ‘negative’ recovery of bis(2-ethylhexyl)phthalate is due to the presence of a substantial amount of this compound that was detected as a contaminant in the method blank, but not present (as a contaminant) in the SB. Thus, calculations of % recovery (%R) are skewed.
- SB and SBD relative percent difference (RPD) for pyridine at 146 exceeded the control limit of 100. This compound was not detected in any of then field blank samples, and no results were qualified on this basis.

For the most part, these compounds were not detected in field samples or blanks, or, if detected, have already been qualified “B” indicating possible affects of contamination. Other data qualifiers were not added on the basis of these exceedances, although sample results for these compounds should be interpreted in the light of these QC results.

WG68221

This WG contains field samples L27891-1, -3 and –5. The only compound detected in the method blank WG68221-1 was bis(2-ethylhexyl)phthalate, at 0.63 µg/L, slightly above the MDL of 0.5 µg/L. However, as all sample results for this compound were well over 10X > the blank concentration, sample results were considered not affected and were not qualified. All other method QC was acceptable with the following exceptions.

- SB recoveries of the following compounds was below the lower control limit of 50%: 2,4-dimethylphenol (42%), benzidine (0%), aniline (27%), benzoic acid (0%), coprostanol (49%), pyridine (18%), simazine (0%), atrazine (0%) and diazinon (38%).
- SB recovery of bis(2-ethylhexyl)phthalate (156%) slightly exceeded the upper control limit of 150%.
- MS and/or MSD recoveries of these compounds was below the lower control limit of 50%: hexachlorocyclopentadiene (11% and 24%), 4-nitrophenol (both 0%), diethyl phthalate (-13% and 09%), N-Nitroso-diphenylamine (10%), benzidine (both 0%), 3,3’-dichlorobenzidine (both 0%), aniline (both 0%), 4-chloroaniline (48% and 0%), 2-

nitroaniline (both 0%), 3-nitroaniline (both 0%), 4-nitroaniline (both 0%), coprostanol (both 0%), pyridine (0%), simazine (both 0%), atrazine (both 0%) and diazinon (39%). The 'negative' recovery of diethyl phthalate is due to the presence of a substantial amount of this compound present in sample L27891-1, used for MS and MSD preparation. The concentration spiked is insignificant compared to the native concentration in the sample, thus recovery could not be effectively measured, and calculations of % recovery (%R) are skewed.

- MS and MSD recoveries of bis(2-ethylhexyl)phthalate (170% and 161%) exceeded the upper control limit of 150%.

Note the following.
Tentatively Identified Compounds (TICs) are reported in conjunction with BNA analysis. Sample results were qualified J2. Note all TICs are routinely qualified, J1 through J4. The "J" indicates sample results were generated outside the calibrated curve for the BNA method, and the numbers "1" through "4" indicate analyst certainty of the sample identification, with 1 denoting the highest level of certainty.

EDC Full Analysis

WG68171 and WG68220

All samples were analyzed by this method. No sample or field blank detections of EDC compounds have been qualified. EDC analysis is performed by GC/MS and results are reported with BNA compounds.

WG68171

This WG contains field blanks L27891-7, -8 and –9. The only compound detected in the method blank WG68171-1 was bis(2-ethylhexyl)adipate, at 0.27 µg/L, slightly above the MDL of 0.25 µg/L.
All other method QC was acceptable with the following exceptions.

- A SB and SBD were analyzed rather than an MS and MSD. There was insufficient sample volume for MS and MSD analysis and the matrix for these samples is 'blank water'. Thus, SB and SBD are considered to comprise acceptable laboratory QC for this analysis.
- SB and/or SBD relative percent difference (RPD) for endrin at 49 exceeded the control limit of 40. This compound was not detected in any of then field blank samples, and no results were qualified on this basis.
- The SB and SBD were not spiked with alpha-chlordane or gamma-chlordane.

WG68220

This WG contains field samples L27891-1, -3 and –5. No target analytes were detected in the method blank WG68220-1. All other method QC was acceptable with the following exceptions.

- The SB, MS and MSD were not spiked with alpha-chlordane or gamma-chlordane.
- MS and/or MSD recoveries of these compounds was below the lower control limit of 25%: endrin (both 0%), endrin aldehyde (both 0%), endosulfan sulfate (23%), chlordecone (Kepone, 19%), estradiol (0%), testosterone (0%), methyltestosterone (0%) and ethynyl estradiol (17%).
- Recovery of the surrogate 2,4,6-tribromophenol exceeded the upper control limit of 123% for all field samples, the MS and the MSD. Recoveries ranged from 147% to 170%. Recovery of the surrogate decachlorobiphenyl exceeded the upper control

limit of 150% for sample L27891-1, and the MS and MSD. Recoveries ranged from 162% to 195%. Sample L27891-1 was used for MS/MSD preparation. Recoveries of the other eight surrogates were acceptable for all samples and laboratory QC samples.

Data qualifiers were not added on the basis of these exceedances in either WG, although sample results for these compounds should be interpreted in the light of these QC results.

VOA / SURVEY ANALYSIS

WG68219

All QC results were within control limits. VOA analysis was not performed on field blank samples. No TICs were detected.

WTPH-Dx ANALYSIS

WG68258

All QC results were within acceptance limits. WTPH-Dx analysis was not performed on field blank samples. Lube oil range hydrocarbons were found in all three samples.

WTPH-G ANALYSIS

WG68259

All QC results were within control limits. WTPH-G analysis was not performed on field blank samples. No analytes were detected at or above the MDL.

SWAMP – 520 Bridge Study - 4th Storm Event
L29844
Samples collected October 6, 2003

This review includes stormwater runoff and associated field blank samples with login numbers L29844-1 through -6.

Note analysis of these samples for estradiol and ethynylestradiol by ELISA techniques was attempted. Samples contained road washings including water soluble compounds of automobile origin and particulate rubber. It appeared these contaminants and possibly others interfered with ELISA analysis, causing false positives and rendering test results not usable. Until a more thorough sample cleanup regime is developed, ELISA cannot provide useful results for this type of sample.

CONVENTIONALS

Samples were analyzed for the following conventionals parameters: alkalinity, ammonia-N, nitrate+nitrite-N, *ortho*-P, pH, total N, total P, TOC and TSS.

WG71293 and WG71296 Nutrients
All QC results were within control limits.

WG71284 pH
All method QC was within control limits.

WG71326 TSS
All method QC was within control limits.

WG71328 Alkalinity
All method QC met control limit criteria.

WG71525 TOC
All method QC met control limit criteria.

MICROBIOLOGY

Samples were analyzed for the presence of fecal coliforms and *E. coli*.

WG71270 *E. coli*
All QC results were within control limits.

WG71272 Fecal coliforms
All QC results were within control limits.

METALS

Please note the following:

At this time, data qualification on the basis of field blanks has not been done. A field blank was collected in association with each sample location, and analyzed for the

presence of total Hg, total ICP and total ICPMS metals. Samples L29844-4 through -6 are field blanks, associated with samples collected at 520BR-N1 through 520BR-N3, respectively. Total zinc was detected at a low concentration (0.00082 mg/L) in one field blank (L29844-4). The reported MDL for zinc is 0.0005 mg/L. Zinc data for sample L29844-1 should be interpreted in the light of field blank detection.

WG71310 Hardness
All method QC met control limit criteria.

QC Info for Total Metals
WG71309 ICP metals
All method QC met control limit criteria.

WG71318 ICPMS metals
All method QC met control limit criteria with one exception. Recovery of zinc from the MS at 202% exceeded the upper control limit of 120%. The sample selected for MS preparation, L29844-1, contained a high concentration of native zinc, and this caused skewing of recovery data, since the spiked amount is very small relative to the native concentration.

QC Info for Dissolved Metals
WG71329 Dissolved ICP metals
All method QC met control limit criteria.

WG71514 Dissolved ICPMS Metals
All method QC met control limit criteria with one exception. WG71514-13, the post-filtration blank, contained 0.0022 mg/L dissolved zinc. Reported detection limit for this element is 0.0005 mg/L. As all sample results for dissolved zinc were approximately 10X or more higher than this blank detection, results were not considered affected nor were they qualified.

QC Info for Total Hg-CVAA
WG71377
All method QC met control limit criteria.

QC Info for Dissolved Hg-CVAA
WG71378
All method QC met control limit criteria.

ORGANICS
All samples were extracted and analyzed within the required holding times.

At this time, data qualification on the basis of field blanks has not been done. A field blank was collected in association with each sample location, and analyzed for the presence of BNA compounds. Low concentrations of unqualified diethyl phthalate and

“B” qualified bis(2-ethylhexyl)phthalate were detected in one or more of the three field blanks. In addition, low concentrations of phenol and bis(2-ethylhexyl)adipate were detected in all three of the field blanks. Sample results for these compounds should be interpreted in the light of field blank detections.

Low Level BNA / SURVEY ANALYSIS

WG71303

All samples were analyzed by this method.
No sample detections of BNA compounds have been qualified on the basis of possible laboratory contamination. All field blank detections of ***bis(2-ethylhexyl) phthalate*** have been qualified “B” to indicate the compounds were also detected in laboratory method blanks.

As noted above, one target compound was detected in the method blank WG71303-1, as follows. All field blank results for this compound have been qualified “B” on this basis.

Compound	MDL, µg/L	result, µg/L
bis(2-ethylhexyl)phthalate	0.05	0.27

All other method QC results were within control limits with the following exceptions.

- A spiked blank (SB) and spiked blank duplicate (SBD) was analyzed rather than a matrix spike (MS) and matrix spike duplicate (MSD). There was insufficient sample volume for MS and MSD analysis. SB and SBD are considered to comprise acceptable laboratory QC for this analysis.
- SB and/or SBD recoveries of the following compounds was below the lower control limit of 50%: 2,4-dimethylphenol (10%, 45%), hexachlorocyclopentadiene (10% and 11%), 2,4-dinitrophenol (20%, 7%), 4,6-dinitro-*o*-cresol (48%, 35%), benzidine (both 0%), aniline (13%, 24%), 4-chloroaniline (39%, 48%), benzoic acid (both 0%), coprostanol (27%, 24%), pyridine (both 0%), simazine (both 0%), atrazine (both 0%), and diazinon (24%, 19%).
- SB and SBD relative percent difference (RPD) for 2,4-dimethylphenol at 127 exceeded the control limit of 100. This compound was not detected in samples, and no results were qualified on this basis.

For the most part, these compounds were not detected in field samples or blanks, or, if detected, have already been qualified “B” indicating possible affects of contamination. Other data qualifiers were not added on the basis of these exceedances, although sample results for these compounds should be interpreted in the light of these QC results.

Note the following.
Tentatively Identified Compounds (TICs) are reported in conjunction with BNA analysis. Sample results were qualified J2. Note all TICs are routinely qualified, J1 through J4. The “J” indicates sample results were generated outside the calibrated curve for the BNA method, and the numbers “1” through “4” indicate analyst certainty of the sample identification, with 1 denoting the highest level of certainty.

EDC Full Analysis

WG71304

All samples were analyzed by this method. No sample or field blank detections of EDC compounds have been qualified. EDC analysis is performed by GC/MS and results are reported with BNA compounds.
All method QC was acceptable with the following exceptions.

- A SB and SBD were analyzed rather than an MS and MSD. There was insufficient sample volume for MS and MSD analysis. SB and SBD are considered to comprise acceptable laboratory QC for this analysis.
- SBD recovery of endrin at 6% was below the lower control limit of 25%. SB/SBD recoveries of methoxychlor at 195%/206% exceeded the upper control limit of 150%.
- SB/SBD relative percent difference (RPD) for endrin at 150 exceeded the control limit of 40; RPD for methyltestosterone at 143 exceeded the control limit of 40. These compounds were not detected in any of the samples, and no results were qualified on this basis.
- The SB and SBD were not spiked with alpha-chlordane or gamma-chlordane.
- Recovery of the surrogate 2,4,6-tribromophenol from sample L29844-1 at 126% slightly exceeded the upper control limit of 150%.

VOA / SURVEY ANALYSIS

WG71337

All QC results were within control limits. VOA analysis was not performed on field blank samples. Note TICs are reported in conjunction with this analysis.

WTPH-Dx ANALYSIS

WG71298

All QC results were within acceptance limits. WTPH-Dx analysis was not performed on field blank samples. Lube oil range hydrocarbons were found in all three samples.

WTPH-G ANALYSIS

WG71336

All QC results were within control limits. WTPH-G analysis was not performed on field blank samples. No analytes were detected at or above the MDL.

SWAMP – 520 Bridge Study - 5th Storm Event
L30251
Samples collected January 14, 2004

This review includes stormwater runoff and associated field blank samples with login numbers L30251-1 through -6.

Note analysis of these samples for estradiol and ethynylestradiol by ELISA techniques was NOT attempted due to past experience with samples of this nature. Samples containing road washings include water soluble compounds of automobile origin and particulate rubber, which appear to interfere with ELISA analysis causing false positives and rendering test results not usable.

CONVENTIONALS

Samples were analyzed for the following conventionals parameters: alkalinity, ammonia-N, nitrate+nitrite-N, *ortho*-P, pH, total N, total P, TOC and TSS.

WG72782 and WG72823 Nutrients
All QC results were within control limits.

WG72789 pH
All method QC was within control limits.

WG72849 TSS
All method QC was within control limits.

WG72791 Alkalinity
All method QC met control limit criteria.

WG73034 TOC
All method QC met control limit criteria.

MICROBIOLOGY

Samples were analyzed for the presence of fecal coliforms and *E. coli*.

WG71890 *E. coli*
All QC results were within control limits.

WG71891 Fecal coliforms
All QC results were within control limits.

METALS

Please note the following:

At this time, data qualification on the basis of field blanks has not been done. A field blank was collected in association with each sample location, and analyzed for the presence of total Hg, total ICP and total ICPMS metals. Samples L30251-4 through -6

are field blanks, associated with samples collected at 520BR-N1 through 520BR-N3, respectively. Total zinc was detected at low concentrations, ranging from 0.0006 to 0.00087 mg/L, in all three field blanks. The reported MDL for zinc is 0.0005 mg/L. Zinc data for field samples should be interpreted in light of field blank detections.

WG73437 Hardness
All method QC met control limit criteria.

QC Info for Total Metals
WG73436 ICP metals
All method QC met control limit criteria.

WG72815 ICPMS metals
All method QC met control limit criteria with one exception. Recovery of zinc from the MS at -84% was below the lower control limit of 80%. The sample selected for MS preparation, L30251-2, contained a high concentration of native zinc, and this caused skewing of recovery data, since the spiked amount is very small relative to the native concentration.

QC Info for Dissolved Metals
WG73585 Dissolved ICP metals
All method QC met control limit criteria.

WG72816 Dissolved ICPMS Metals
All method QC met control limit criteria with one exception. Recovery of zinc from the MS at 173% exceeded the upper control limit of 120%. The sample selected for MS preparation, L30251-1, contained a high concentration of native zinc, and this caused skewing of recovery data, since the spiked amount is very small relative to the native concentration.

QC Info for Total Hg-CVAA
WG73033
All method QC met control limit criteria.

QC Info for Dissolved Hg-CVAA
WG73144
All method QC met control limit criteria.

ORGANICS
All samples were extracted and analyzed within the required holding times.

At this time, data qualification on the basis of field blanks has not been done. A field blank was collected in association with each sample location, and analyzed for the presence of BNA compounds. Low concentrations of “B” qualified bis(2-

ethylhexyl)phthalate were detected in all field blanks. Sample results for this compound should be interpreted in the light of field blank detections.

Low Level BNA / SURVEY ANALYSIS
WG72818
All samples were analyzed by this method.
No sample detections of BNA compounds have been qualified on the basis of possible laboratory contamination. All field blank detections of ***bis(2-ethylhexyl) phthalate*** have been qualified "B" to indicate the compounds were also detected in laboratory method blanks.

As noted above, one target compound was detected in the method blank WG72818-1, as follows. All field blank results for this compound have been qualified "B" on this basis.

Compound	MDL, µg/L	result, µg/L
bis(2-ethylhexyl)phthalate	0.05	0.99

All other method QC results were within control limits with the following exceptions.

- Spiked blank (SB) recoveries of the following compounds were below the lower control limit of 50%: 1,2-dichlorobenzene (46%), 1,3-dichlorobenzene (44%), 1,4-dichlorobenzene (44%), hexachloroethane (36%), 2,4-dimethylphenol (49%), hexachlorobutadiene (49%), 2,4-dinitrophenol (5%), 4-nitrophenol (30%), 4,6-dinitro-o-cresol (40%), benzidine (0%), aniline (26%), 4-chloroaniline (41%), benzoic acid (0%), 3-nitroaniline (44%), coprostanol (44%), pyridine (40%), simazine (0%) and atrazine (0%).
- Matrix spike (MS) and/or matrix spike duplicate (MSD) recoveries of the following compounds were below the lower control limit of 50%: benzidine (both 0%), 3,3'-dichlorobenzidine (both 0%), aniline (both 0%), 4-chloroaniline (both 0%), 3-nitroaniline (both 0%), 4-nitroaniline (both 0%), coprostanol (both 0%), simazine (both 0%) and atrazine (both 0%).
- Matrix spike (MS) and/or matrix spike duplicate (MSD) recoveries of the following compounds exceeded the upper control limit of 150%: pentachlorophenol (173% and 165%) and bis(2-ethylhexyl)phthalate (178% and 263%).

For the most part, these compounds were not detected in field samples or blanks, or, if detected, have already been qualified "B" indicating possible affects of contamination. Other data qualifiers were not added on the basis of these exceedances (except for simazine and atrazine, although sample results for these compounds should be interpreted in the light of these QC results. Simazine and atrazine results for all samples and field blanks have been qualified "R" based on these QC failures and inability to detect these compounds in the spiking solution itself. It is likely but impossible to prove that spiking solution deterioration caused the QC failures, thus, results have been qualified and should be regarded as unusable.

Note the following.
Tentatively Identified Compounds (TICs) are reported in conjunction with BNA analysis. Sample results were qualified J2. Note all TICs are routinely qualified, J1 through J4. The "J" indicates sample results were generated outside the calibrated curve for the BNA method, and the numbers "1" through "4" indicate analyst certainty of the sample identification, with 1 denoting the highest level of certainty.

EDC Full Analysis

WG72819

All samples were analyzed by this method. No sample or field blank detections of EDC compounds have been qualified. EDC analysis is performed by GC/MS and results are reported with BNA compounds.

Method QC was acceptable with the following exceptions.

- SB recovery of 4,4'-DDT at 22% and estradiol at 11% was below the lower control limit of 25%.
- MA and MSD recoveries of the following compounds was 0%; below the lower control limit of 25%: heptachlor epoxide, endosulfan I, dieldrin, endrin, endosulfan II, endrin aldehyde, chlordecone (Kepone), estradiol and testosterone.

These compounds were not detected in any of the samples, and no results were qualified on this basis.

- The SB and SBD were not spiked with alpha-chlordane or gamma-chlordane.
- Recovery of the surrogate decachlorobiphenyl from the MS, MSD and samples L30251-2, -3 and –4 exceeded the upper control limit of 150%. Recoveries ranged from 155% to 196%.

VOA / SURVEY ANALYSIS

WG72801

All QC results were within control limits. VOA analysis was not performed on field blank samples. Note TICs are reported in conjunction with this analysis.

WTPH-Dx ANALYSIS

WG72820

All QC results were within acceptance limits. WTPH-Dx analysis was not performed on field blank samples. Lube oil range hydrocarbons were found in all three samples.

WTPH-G ANALYSIS

WG72821

All QC results were within control limits. WTPH-G analysis was not performed on field blank samples. No analytes were detected at or above the MDL.