Burlington Gages Slough
2007 Water Quality Report

Submitted to:

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May 19, 2008

Table of Contents

Table of Contents

Continued

Figures

Tables

Appendix

1.0 Introduction

Gages Slough is located in the City of Burlington, in western Skagit County in Washington State. The slough originates east of the city limits, and is located in townships 34 and 35 north in ranges 3 and 4 east (Figure 1). The slough was originally an old meander channel or sub-channel of the Skagit River, and is currently isolated from the mainstem Skagit by a series of dikes. The slough originates at the north side of State Route 20 at a culvert leading from the north end of a forested wetland at Hart Island, and meanders through the City of Burlington, eventually discharging into the Skagit River approximately one mile west of Interstate 5, south of the intersection of Bennett and Pulver Roads. Gages Slough is considered a depressional flow-through wetland according to the hydrogeomorphic (HGM) classification system.

Gages Slough has a total length of approximately 7.3 miles, with 3.5 miles of that length occurring within the urban growth boundary for the City of Burlington. Water enters the slough from the Hart Island wetland during the rainy season, generally from November until May, and water also recharges the slough through a combination of hyporheic flow from the Skagit River, seeps and shallow groundwater, and as stormwater runoff from Burlington. Within the slough itself, water moves slowly if at all, depending upon water volumes and the time of year. When moving, water flow is slowed by numerous culverts beneath road crossings along the length of the slough. Water depths within Gages Slough can reach four feet or more in deeper pools during the rainy months. The slough has a high sinuosity with a very low gradient, and the bottom substrate is composed of fine silt. Gages Slough ranges in width from about 20 feet to greater than 100 feet. The banks of the slough are relatively steep but generally low, and are either bare or vegetated with grasses, shrubs, or Himalayan blackberry bushes. Several lengths of the slough are dominated by dense stands of willow trees and shrubs. The vegetation occurring along the length of the slough is generally tolerant of periods of inundation. Water in the slough discharges into the Skagit River via a flap-gate during periods when the Skagit River is relatively low, and via a pump house located at the intersection of Pulver and Bennett Roads during periods of high flow.

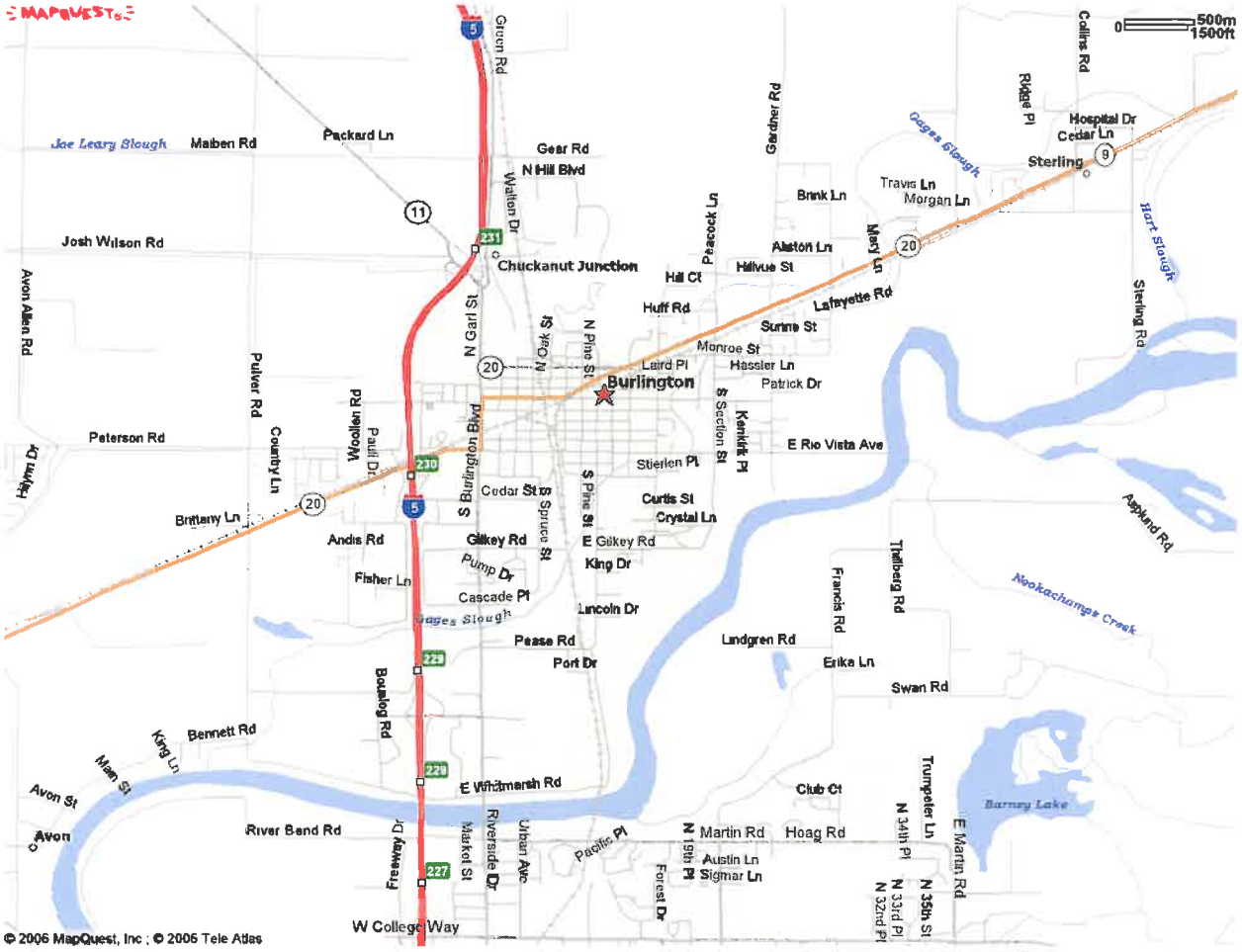


Figure 1: Gages Slough within the City of Burlington.

1.1 Gages Slough and the Skagit River Water Quality

The Gages Slough water quality monitoring program (initiated in 2004) is designed to characterize general surface water conditions and identify point and non-point sources of pollution associated within Gages Slough. This memo provides a summary of the water quality monitoring effort along with a brief discussion of findings and an analysis of trends in the slough, and a highlight of parameters of concern during stormwater monitoring.

In 1998, Gages Slough was placed on the Washington Department of Ecology's 303(d) list for violations of the fecal coliform standard. The state sets surface water quality standards to protect, preserve, and restore lakes, rivers and marine waters.

Section 303 (d) of the Federal Clean Water Act (CWA) mandates establishment of a Total Maximum Daily Load (TMDL) of pollutants for surface waters that do not meet standards after application of technology-based pollution controls. The TMDL determines the amount of a given pollutant that can be discharged to the water body and still meet water quality standards. Gages Slough is a tributary to the Skagit River. A TMDL was prepared to address impairments (dissolved oxygen [DO] and fecal coliform bacteria) to contact recreation in the Lower Skagit River Basin; the TMDL applies to all the tributaries in the lower Skagit River basin to their headwaters (Ecology 2000), as well. Therefore, concentrations of both fecal coliform bacteria and dissolved oxygen are of specific concern to this assessment.

1.2 Coordination with DOE

The Department of Ecology assumes the role of facilitator and coordinator to ensure that the organizations and activities move sequentially toward TMDL implementation.

To do this an Implementation Plan is established. This plan recommends fecal coliform bacteria monitoring during the wet season of four of the Skagit tributaries that receive discharges of municipal stormwater: Gages Slough (City of Burlington); either Hansen Creek or Brictt Slough (Skagit County); Brickyard Creek (City of Sedro-Woolley); and Kulshan Creek (City of Mount Vernon).

The purpose of establishing wet season monitoring of these stormwater-receiving creeks and sloughs is to provide each municipality with a target water body to gauge the effectiveness of its stormwater program and to focus public awareness. If the monitoring can be used successfully to aid in locating sources of bacteria and these municipalities develop effective strategies for reducing bacteria inputs, then stormwater contributions of bacteria to the Skagit River will be reduced. In addition, these municipalities should focus their illicit discharge detection programs on the storm drains that discharge directly to the Lower Skagit River.

Ecology has encouraged the city of Burlington to consider the following Recommended Actions (many of which also fall under the implementation responsibilities):

- Promote Low Impact Development for future development within the city.
- Use Gages Slough and stormwater monitoring results to educate commercial property owners about the need to prevent/reduce pollution, including bacteria pollution, of stormwater.
- Focus illicit discharge detection and elimination program on stormwater discharges to the Lower Skagit River.
- Report water quality monitoring results at annual Skagit-area water quality meeting.

- Provide information to citizens on how to report water quality complaints.

Ecology has identified the following fecal coliform implementation responsibilities:

- Monitor Gages Slough for fecal coliform bacteria and use monitoring results to educate commercial property owners and citizens about the need to reduce bacteria and other pollution of stormwater. Report water quality results at annual Skagit-area water quality meeting
- Apply illicit discharge detection and elimination program to Gages Slough and other City of Burlington stormwater discharges to the Skagit River
- Promote Low Impact Development practices
- Provide information to citizens about how to report water quality problems

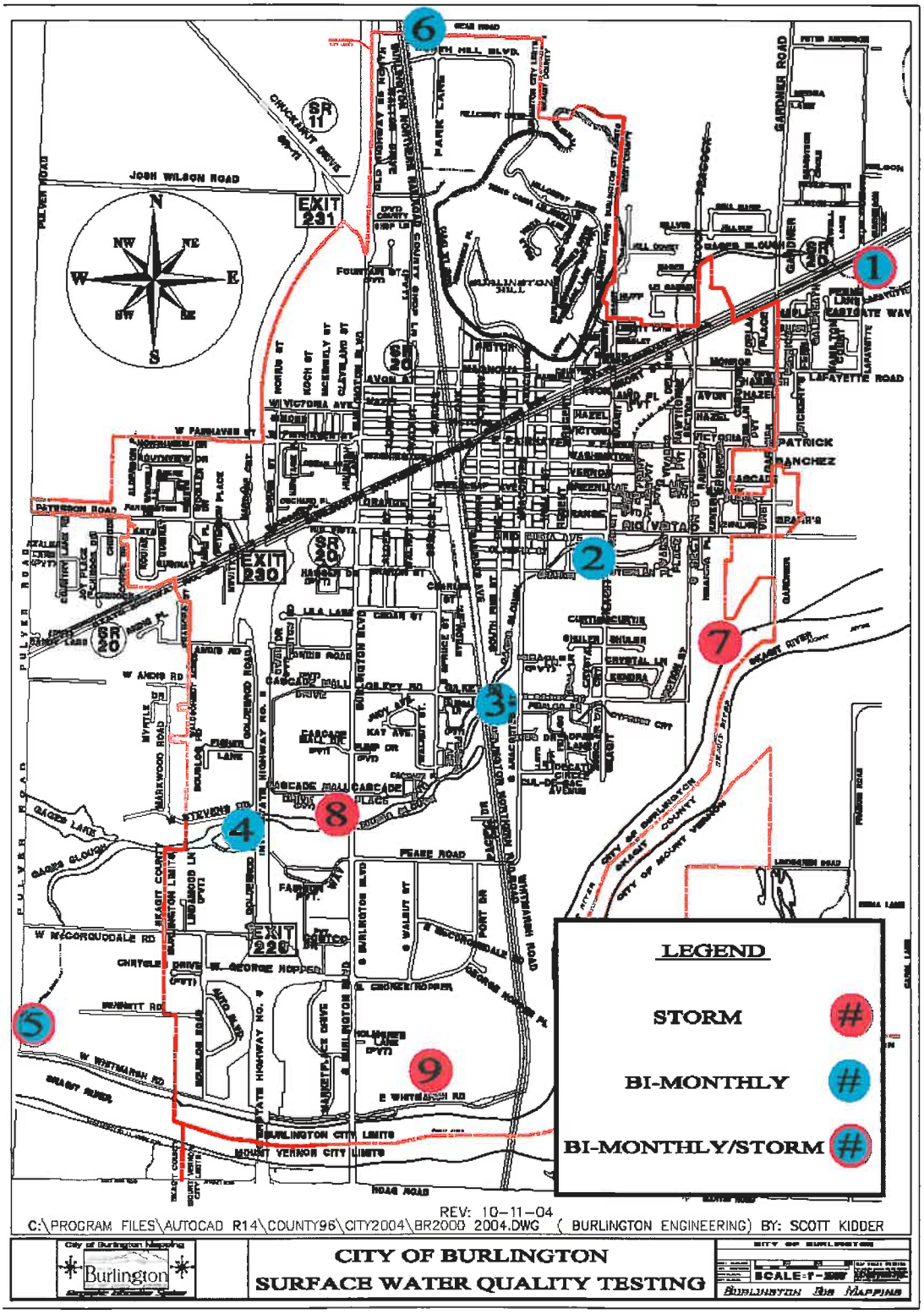
1.3 Monitoring Program

The water quality monitoring program has been in effect since 2004. Surface water sampling has occurred bi-monthly at locations along the length of Gages Slough. Stormwater sampling has been conducted at five locations including two outfalls to the Skagit River (Figure 2).

Water quality data are compared with state and Federal criteria as well as ambient data from other wetlands in the Puget Sound Lowlands. Using these criteria, parameters of specific concern are identified and a brief discussion of their potential impact to wetland water quality is given.

The various land uses within a watershed determine the potential sources of non-point source pollution. Non-point sources may include urban stormwater, rapid urbanization, agricultural practices, forest practices, and failing on-site septic systems. Land uses can affect water quality in downstream aquatic resources through changes in hydroperiod influencing erosion and sedimentation processes (Booth 1993, Booth 1991, Horner 1996), and by transporting pollutants (dissolved or adhered to sediment particles) into downstream aquatic systems. Precipitation falling on impervious surfaces washes collected chemicals and particles into the storm drain system (Schueller & Holland 2000).

Wetlands have received increased attention in recent years as a result of continuing wetland losses and impacts resulting from new development. In urbanizing areas, the quantity and quality of stormwater can change significantly as a result of land-use conversion in a watershed. Increases in the quantity of stormwater may result from new impervious surfaces (e.g., roads, buildings), installation of storm sewer piping systems, and removal of trees and other vegetation. On the other hand, decreased inflow of water can result from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CITY OF BURLINGTON
SURFACE WATER QUALITY TESTING
Burlington
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BURLINGTON GIS MAPPING

modifications to surface and groundwater flows. For cases where wetlands are the primary receiving water for urban stormwater from new developments, it is hypothesized that the effects of watershed changes will be manifested through changes in the hydrology of wetlands.

Wetland hydrology is often described in terms of its hydroperiod, the pattern of fluctuating water levels resulting from the balance between water inflows and outflows, topography, subsurface soil, geology, and groundwater conditions (Mitsch and Gosselink, 1986). Wald and Schaefer (1986) referred to seasonal water level changes as the "heartbeat" of Pacific Northwest palustrine systems.

One of the most comprehensive studies of the effects of watershed urbanization was completed by a group of researchers from the University of Washington (May et al., 1996). These researchers focused on 22 watersheds in the Puget Sound lowland ecoregion that represented a range of urbanization defined by total impervious area (% TIA). Results showed that water quality degradation was low to moderate at moderate levels of urbanization, but dramatically increased in highly urbanized watersheds (TIA > 45%). Chemical constituents that showed good correlations with degree of urbanization included total zinc, total phosphorous, and total suspended solids. However, this study found that water quality criteria were rarely violated except in the most highly urbanized watersheds.

Agricultural practices include those associated with crop production as well as small hobby farms and large farms. Improper agricultural practices can lead to physical erosion of pasture areas or stream banks by stock animals as well as increased inputs of nutrients and bacteria from the animals. Effects to water quality can be further exacerbated through the loss of riparian vegetation and subsequent increase in water temperatures. Increased inputs of organic materials and lower water temperatures lead to decrease dissolved oxygen concentrations, as well.

Forest practices include not only logging activities for timber production, but also logging to clear land for development. Improper forest practices can lead to erosion, loss of riparian vegetation, increased temperature, input of nutrients, increased suspended solids, turbidity, and sedimentation, and decreases in stream complexity due to fewer inputs of woody debris.

Failing on-site septic systems can allow bacteria and other disease-causing organisms to enter surfaces waters. Additions of nutrients may also be associated with organic chemicals that enter the water following the failure of such septic systems.

Wetlands are highly variable systems with annual, seasonal, and diurnal variability in water chemistry. They often have several sources of water supply, each possessing a distinctive

chemical blend that varies from year to year. Many water quality parameters exhibit clear seasonal fluctuations in Puget lowlands wetlands. For example, DO concentrations were generally higher from mid-November to mid-May than during the remainder of the year (Reinelt and Horner 1990). This pattern is not surprising considering that most precipitation and runoff and the coolest temperatures in the Pacific Northwest occur during this period, and cooler, more turbulent water absorbs more oxygen.

Section 2—Methods

Standard techniques to assess water quality were used to monitor water quality within Gages Slough. A complete discussion of the methods used for this assessment can be found in the City of Burlington Surface Water Monitoring Plan (S&A 2004). Methodologies were developed to ensure a consistent and accurate sampling approach over a five-year monitoring period (S&A 2004).

Both comparison and compliance monitoring were conducted. Compliance monitoring was conducted by collecting samples from the upper- and lower-most stations within the slough to identify exceedances of federal and state criteria as well as to determine what contribution of identified pollutants is associated with upstream and City sources. Comparison monitoring was conducted by collecting samples in key wetland habitats within the slough and comparing them to other highly urbanized wetland systems in Puget Sound.

In addition, samples were taken at specific stormwater outfalls to determine the quality of stormwater discharging to the Skagit River. Sampling data were then compared with water quality criteria established by the Washington State Department of Ecology (Ecology 2003) and Environmental Protection Agency (EPA).

2.1 Analytes Evaluated

Physical parameters measured included temperature, total dissolved solids, total suspended solids, dissolved oxygen, and pH. Chemical parameters included nutrients such as nitrogen and phosphorus which are essential components of plant and animal diets, and metals such as copper and zinc associated with stormwater runoff.

Pesticides and total petroleum hydrocarbons were collected 2004 and 2006. These parameters were not detected in samples collected over the three year monitoring cycle and, following consultation with the Department of Ecology, were removed from the list of analytes for this monitoring program.

Biological parameters included microorganisms (fecal coliform bacteria) from human sewage or animal manure. These disease-causing microorganisms have the potential to affect human and livestock health and generally enter surface waters in runoff containing animal or human wastes. Municipal discharges of sewage can also deliver bacteria and other organisms to surface waters. Fecal Coliform Bacteria has been a consistent parameter if concern over the course of this monitoring program.

2.2 Sampling Methods

Surface water samples were collected as grab samples by directly filling pre-labeled bottles containing the EPA recommended preservative for each parameter to be tested. During the storm sampling, composite water samples were collected and combined. Each stormwater sampling location was sampled three times during a storm event and combined into a single composite sample allowing for a 10% duplicate sampling for quality control and quality assurance protocol. Edge Analytical (an EPA accredited laboratory) performed the sample testing using EPA approved methods.

2.3 Sampling Location

Since 2005, five locations have been sampled along the length of Gages Slough from its entrance into the City limits to the north to its terminus at the pump station to the Skagit River (Figure 2). These sites were selected to characterize conditions and identify potential source areas of pollutants to the slough. Sites one and five are used for both surface and stormwater sampling. These station locations were selected because they meet the study objectives of characterizing existing surface and stormwater conditions as well as identifying existing point and non-point source pollution to both Gages Slough and the Skagit River.

Bi-monthly sampling sites within Gages Slough:

Site 1. In Gages Slough at the upper most end at the City boundary off Gardner Road
Site 2. In Gages Slough at the intersection of Skagit Road and Rio vista Avenue
Site 3. In Gages Slough along Gilkey Road below the Burlington Northern Railroad Bridge
Site 4. In Gages Slough at the intersection of Interstate 5 and Goldenrod Road
Site 5. In Gages Slough at Pulver Road upstream of the pump station discharging to the Skagit River

In 2007, three additional sites, stations 8, 9 and 10, were established at locations that discharge to Joe Leary Slough at the northern end of the City of Burlington at (Figure 2). These sites were added in response the 2006 monitoring results which showed concentrations of fecal coliform bacteria in excess of water quality standards flowing into the City of Burlington boundary via Joe Leary Slough. These sites together with Site 6 characterize that area of the City. Additional information on these sites is currently being gathered. Once this data collection is complete this information will also be analyzed and presented in a separate technical memo for Joe Leary Slough.

Site 6. At the outfall at the intersection with Old Highway 99 and Joe Leary
Site 8. At the outfall for the City of Burlington Wastewater Treatment Facility
Site 9. In Gages Slough along Burlington Boulevard near the Cascade Mall
Site 10. At the outfall to the Skagit River along East Whitmarsh Road

In addition to the bi-monthly sampling efforts, the City also collects stormwater samples once per year, typically during the first large storm in the fall. Sites specifically sampled for stormwater discharge are 7S, 8S, and 9S. Sites 7S and 9S represent stormwater discharge directly to the Skagit River and site 8S represents runoff into Gages Slough (Figure 2). In addition as stated above, sites 1 and 5 along Gages Slough are also included in the sampling regime and represent upstream and downstream conditions at the time of the storm event. Samples in 2007 were collected on October 30th. Stormwater results are presented in section 31.6.

2.4 Evaluation Criteria

The Federal Clean Water Act (CWA) requires states to set standards for pollution and to enforce violations. The goals of the CWA include maintaining surface water that does not threaten the health of fish, shellfish, or wildlife. These goals establish standards for the specific chemical criteria set by the State of Washington Department of Ecology (Ecology).

Ecology has established water quality criteria for the protection of fresh waters of the state (Ecology 2003). These surface water criteria are used to highlight discrepancies between the quality of the water body being analyzed and the quality of water needed to support a healthy aquatic ecosystem. Water bodies not meeting state criteria are placed on Ecology's 303 (d) list for non-compliance. Section 303 (d) of the federal Clean Water Act (CWA) mandates that the state establish the Total Maximum Daily Load (TMDL) of pollutants for surface waters that do not meet standards after application of technology-based pollution controls. The TMDL determines the amount of a given pollutant that can be discharged to the water body and still meet water quality standards. In the case of non-point source wetland analysis, these surface water criteria are not used to determine exceedances in a regulatory context, as there are currently no specific water quality criteria for wetlands. Rather, the standards are used in an ecological context to highlight the pollutants of concern within a given water body. Ecology has developed criteria for fecal coliform bacteria, dissolved oxygen, temperature, and pH (Table 1).

Table 1. Surface water quality criteria for the designated uses of salmon and trout spawning, core rearing and migration; and extraordinary primary contact recreation (Ecology 2003)			
Fecal coliform bacteria	Dissolved oxygen	Temperature	pH
Not > 50 colonies/100 mL	9.5 mg/L	16.0°C (60.8 oF)	6.5 to 8.5

Ecology criteria are also provided for trace metals such as copper, lead and zinc (Ecology 2003). Unlike other criteria, which are adjusted by designated use, criteria for trace metals are based on the specific hardness of the water sampled--generally, the harder the water the less toxic the metal. In order to determine the correct criteria, it is important to use a hardness value that reflects ambient conditions because the higher the hardness value the higher the criteria will be. Criteria for this assessment was calculated based on the lowest hardness value for the period being analyzed.

In addition to the Ecology criteria, the EPA has recommended section 304(a) water quality criteria for nutrients (Table 2). These criteria were developed with the aim of reducing and preventing eutrophication on a national scale. Eutrophication is the input of significant loading of nutrient such that the trophic level of a water body is changed. The trophic level of a water body is the chemical and biological characteristic that defines the habitat of the system. Highly eutrophied systems support increasingly less diversity and can be associated with odor problems and the production of noxious weeds. Criteria are also recommended for causal (total nitrogen and total phosphorus) variables. Results from the sampling effort are compared against these criteria to determine the potential of nutrients to increase the rate of eutrophication in Gages Slough.

Table 2. EPA recommended regional criteria for nutrients		
Water body type	Total nitrogen (mg/L)	Total phosphorus (mg/L)
Rivers and Streams	0.31	0.05

2.5 Regional Wetland Comparisons

The same regional criteria identified in 2004 were used to evaluate the relative quality of water within Gages Slough in 2005. Data collected in other wetlands (Azous and Horner

1997) located in the Puget Sound Lowlands were used to establish ambient conditions (Table 3). These data were used to provide a relative understanding of pollutant concentrations and identify sites that require further analyses. In this study, ambient water quality was established for wetlands with different levels of urbanization. The nonurbanized category had both < 4% impervious land cover and > 40% forest and highly urbanized sites had watersheds that were both > 20% impervious and < 7% forest by area.

The data for nonurbanized wetlands characterizes the Puget Sound Basin lowland palustrine wetlands as relatively unaffected by humans (Table 3). They are slightly acidic (median pH = 6.4) systems with dissolved oxygen levels often well below saturation. Suspended solids are routinely low but quite variable, reflecting the strong influence of storm runoff events on total suspended solids. Total dissolved nitrogen concentrations are higher than dissolved phosphorus, suggesting general limitation of plant and algal growth by phosphorus. Fecal coliform concentrations are low (< 10 colonies/100 mL), and heavy metals concentrations are in the low parts per billion range.

Table 3. Ambient values of water quality variables for wetlands with varying degrees of urbanization (adopted from Azous and Horner 1997)

Variable	Non-Urbanized	Highly Urbanized
pH	6.4	6.9
Dissolved oxygen (mg/L)	5.9	6.3
Total suspended solids (mg/L)	2.0	4.0
Ammonia (mg/L)	0.021	0.032
Nitrate+nitrite-nitrogen (mg/L)	0.112	0.376
Total phosphorus (mg/L)	0.029	0.069
Fecal coliform bacteria (CFU/100 mL)	9.0	61.0
Zinc (ug/L)	5.0	20.0

3.1 Bi-Monthly Sampling in Gages Slough

Within this section of the report of the bi-monthly monitoring for Gages Slough are presented. Data are analyzed to identify sites that exceed Federal, state, and ambient water quality criteria. Site 3 was not sampled in June 2007 because access to this site was unavailable at the time of sampling. The complete laboratory results are provided in Appendix A. In addition, field results and photographs for each sampling effort are found in Appendix B.

In addition to this report on the bi-monthly surface and storm water within Gages Slough a technical memoranda specifically addressing potential contamination from inputs to Gages Slough via Joe Leary Slough to the north of the City limits is being prepared.

3.1.1 Physical Parameters

pH:

The results for pH concentrations in 2007 within Gages Slough generally conform to observed pH levels for highly urbanized wetlands. Concentrations in 2007 were also all within the Ecology recommended range of criteria. Concentrations do not exceed a pH of 7.2. Values in the 6.8 to 7.2 range are very close to neutral and are unlikely to pose a risk to aquatic life, therefore pH is not a concern for water quality or aquatic organisms in Gages Slough.

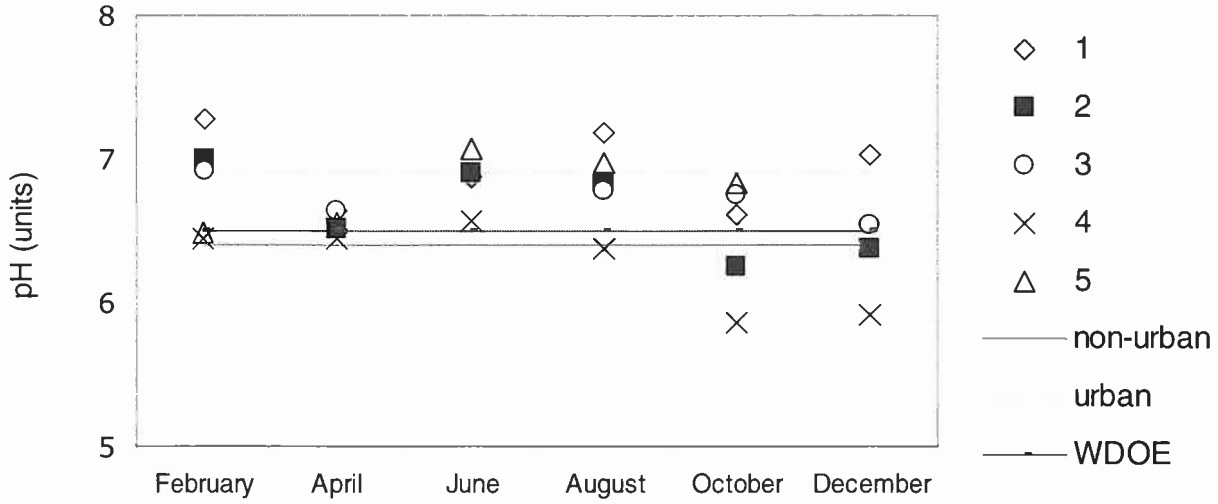

Figure 3. Levels of pH measured at study sites from February through December 2007

Dissolved oxygen:
DO concentrations were collected from February through December, 2007 (Figure 4). Levels were generally highest in February and lowest in August. All values reported in 2007 at each location sampled fell below Ecology criteria (9.5 mg/L). With the exception of DO reported in February at sites one and five, values also fell at or below urbanized ambient conditions at all sites (non-urbanized = 5.9; highly urbanized = 6.3).

Flowing streams are typically better oxygenated than wetlands. This is due to the constant mixing that occurs when water is moving. This is in contrast to the slow moving, shallow water in a wetland. DO is also inversely correlated to temperature. Therefore is not unexpected to see the lowest levels of DO occur at the time of year with the highest water temperatures. Although it is typical to see lower oxygen concentrations in wetlands in the summer, dissolved oxygen concentrations in Gages Slough from June through December were reduced to hypoxic levels that may be detrimental to aquatic organisms living in the system. Low DO concentrations (in the range between 2-3 mg/L)observed from June through December at several sites are considered hypoxic. Most fish cannot live below 30% DO saturation. A "healthy" aquatic environment should seldom experience DO less than 80% (reflected in the WDOE criteria).

Oxygen depletion in the slough could be the result of a number of factors including pollution associated with eutrophication and/or increased water temperatures during the summer months. Plant nutrients enter the slough and phytoplankton blooms are encouraged; when phytoplankton cells die, they sink towards the bottom and are decomposed by bacteria, a process that further reduces DO in the water column. Furthermore, phytoplankton blooms revert to oxidative respiration during the nighttime, reducing DO levels in the process. Additionally, the physical capacity for water to carry dissolved oxygen concentrations decreases as water temperature increases. If oxygen depletion progresses to hypoxia, water becomes unsuitable for many aquatic organisms. This process typically peaks during the summer months due both to phytoplankton activity and increased water temperatures, as is the case in Gages Slough. It is likely that both of these factors may be driving lower DO in this system.

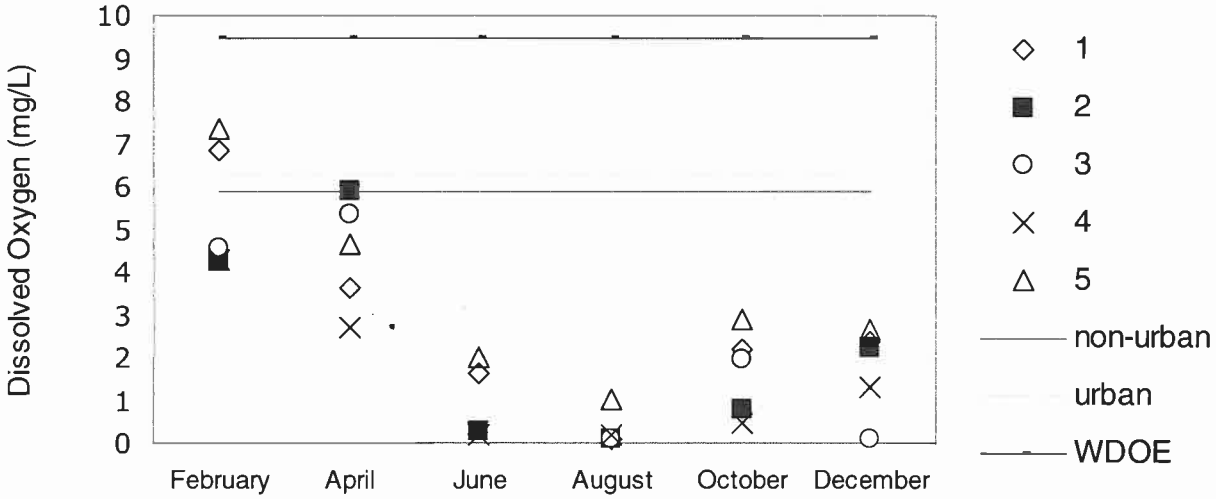

Figure 4. Dissolved oxygen concentrations at study sites from February through December 2007.

Water temperature:

Water temperature data are seasonally dependent with the highest recorded values in August (Figure 5). Values exceeding the Ecology criteria (> 16.0° C) were reported in August at all sites. Increased water temperatures typically occur during the summer months when air temperatures and insolation are highest and low water volumes and slow velocities are present (Brown 1969).

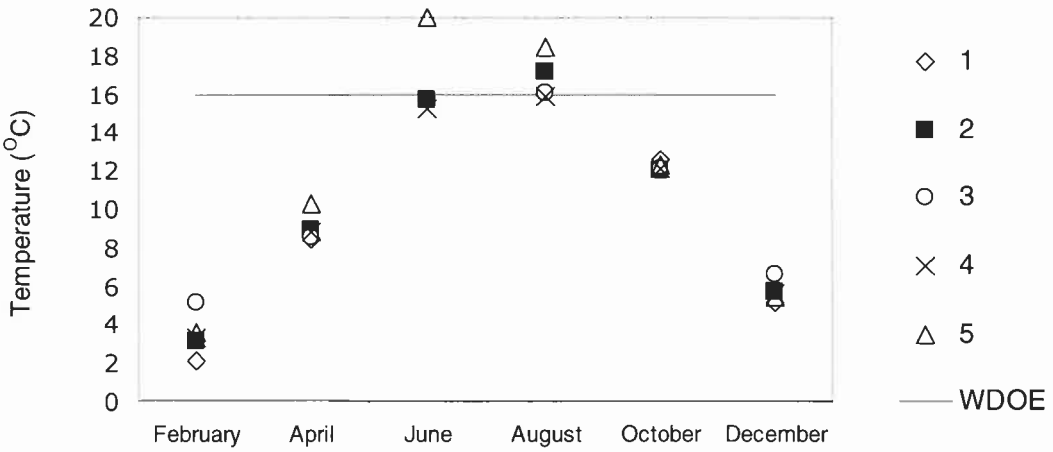

Figure 5. Water temperatures at study sites from February through December 2007.

Although values at some sites do exceed Ecology standards during the summer months, they are not atypical for lowland wetlands, and may in fact be lower than some lowland streams. Water temperatures did, however, exceed Ecology standards at the discharge point to the Skagit River during both June and August Sampling (Site 5).

Total suspended solids:

Concentrations of total suspended solids (TSS) varied seasonally and were generally above those observed in both non-urbanized (2.0 mg/L) and highly urbanized (4.0 mg/L) wetlands (Figure 6). Differences in concentrations between the sampling periods required that data be plotted on a logarithmic scale (Figure 6). Of the samples collected, 69 percent were above 4 mg/L. The highest concentrations were reported in August at site 3 (1175 mg/L). TSS values were also the highest at site 3 during February and December. Site 1 also had consistently elevated TSS (with the exception of the February sampling) with maximum values of 100 mg/L in April and minimum values of 23 mg/L in December. The lowest concentrations of TSS were observed in September and December.

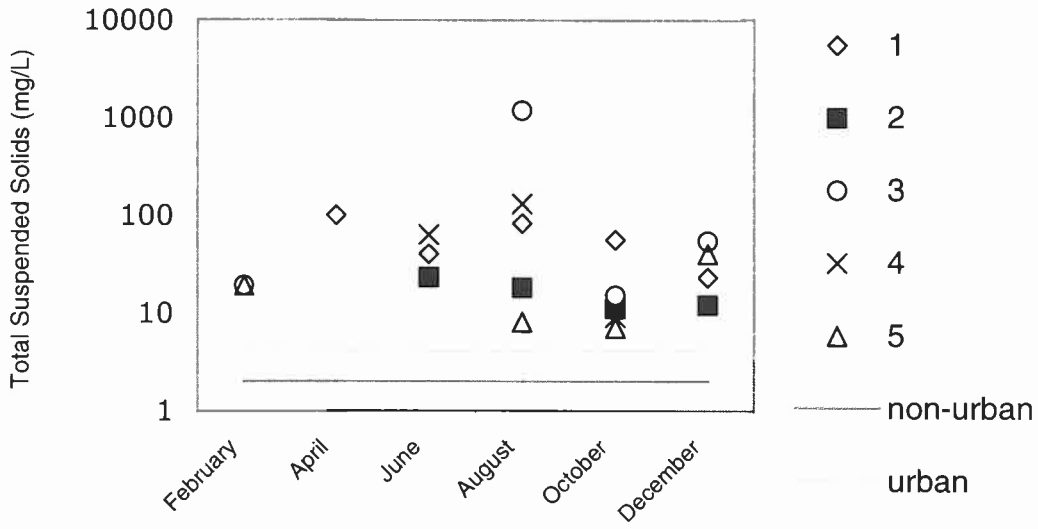

Figure 6. Total suspended solids concentrations at study sites from February through December 2007.

Suspended matter has a strong tendency to absorb and adsorb other pollutants (Stockdale 1991). Sedimentation, therefore, is a major mechanism of pollutant removal in wetlands, assuming there is adequate flow to mobilize material (Chan et al. 1981; Silverman 1983). Accordingly, sites further downstream in Gages Slough should have the lower

concentrations of sediment than sites upstream. This is generally the case in Gages Slough during the wetter months (February, April, October and December). However, Site 3 does seem to be a contributor of sedimentation, especially when conditions are dry.

TSS patterns also indicate that the sources of this parameter may be different during different times of the year. The highest concentrations of TSS are typically observed in most systems during the fall and winter months, especially following a long period of dry weather. This is due to the accumulation of particulates on street and other surfaces which are washed into stormwater. Although TSS concentrations in October and December do reflect runoff-associated TSS, the highest TSS values are observed in the summer months (June and Sugust). This suggests that sources other that urban particulates vectored by stormwater are entering the system and being measured in TSS concentrations. One such source may be phytoplankton. It is possible that increased phytoplankton, along with any particulates associated with street sweeping and construction activities, may be resulting in increases TSS concentrations. Further investigation of this parameter is warranted to determine potential sources, as well as vectors and the fractions of the specific materials comprising the TSS.

3.1.2 Inorganic Parameters

Nutrients:
Results for ammonia, nitrate+nitrite-nitrogen (N+N), and phosphorus are examined below. Data for these nutrients were collected from February through December (Figures 7, 8,and 9).

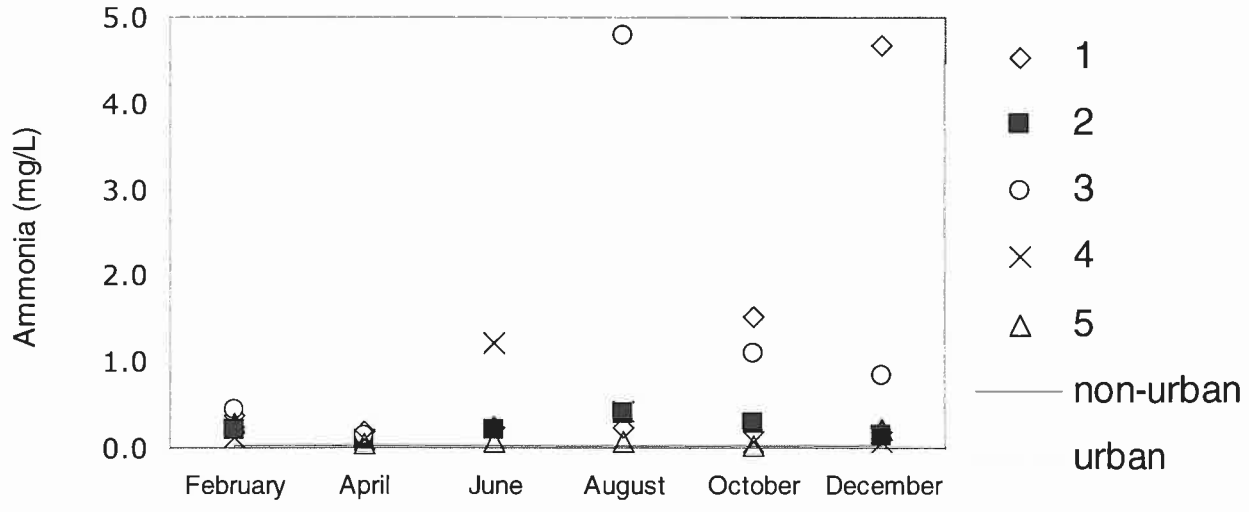

Figure 7. Ammonia concentrations at study sites from February through December 2007.

No consistent seasonal pattern of peak concentration was observed for ammonia (Figures 7). Thirty-four percent of the sampling results were above the typical ambient value reported for highly urbanized wetlands in Puget Sound. Sites 2 and 5 generally had concentrations below both the ambient values (nonurbanized = 0.021 mg/L; highly urbanized = 0.32 mg/L) during most months sampled. Concentrations exceeded these values at sites 1 and 3 during all sampling months except April.

Although wetlands do produce ammonia as a result of decomposing the abundant organic matter produced within the wetland itself (Mitsch and Gosselink 1993), it is possible that levels in Gages Slough reflect both naturally produced and external inputs of this parameter. Internal sources of ammonia may include those particular to the slough's hydrology and soil conditions. External sources may include inputs associated with land use activities within Burlington. Sources may include fertilizers and hobby farms which have been shown to be associated with ammonia enrichment (Ebbert et al. 2000).

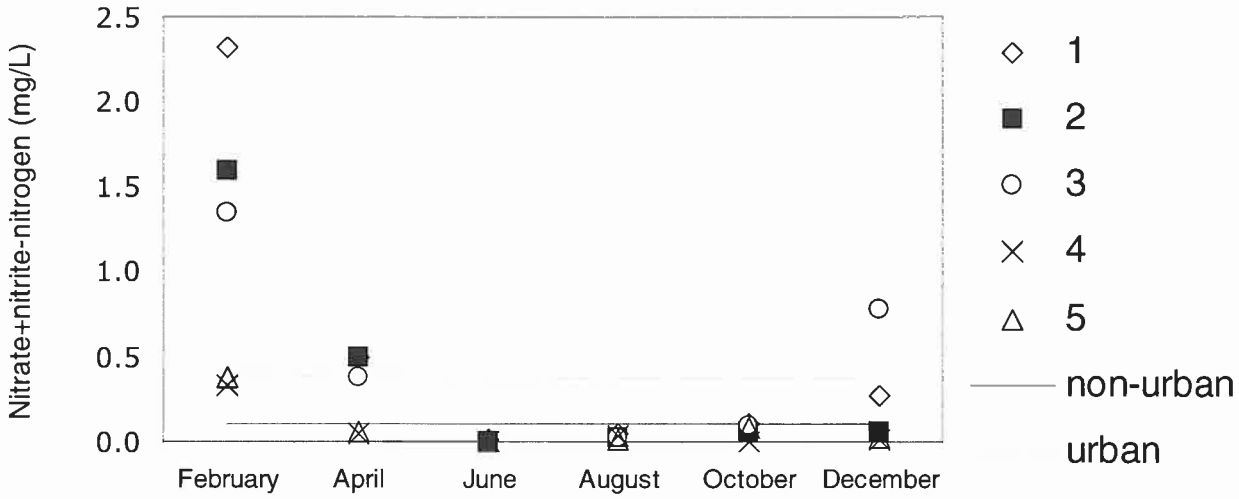

Figure 8. Nitrate+nitrite-nitrogen concentrations at study sites from February through December 2007.

N+N was highest in February with all sites having concentrations at or above urban wetland ambient values. Sites 1 and 2 had the highest concentrations (2.32 mg/L and 1.59 mg/L, respectively). Site 1 had the highest single concentration of N+N (2.14 mg/L) in February. As reported during in 2006, concentrations of N+N were highest at the sites located at or near the boundaries of the City (Sites 1 and 2) during the winter months. This again suggests

that nutrient inputs to Gages Slough may be contributed, at least in part, by sources outside of the City limits.

Concentrations for the remainder of the year were relatively low by comparison. June, August, and October samples had concentrations below those observed in non-urban areas (0.11 mg/L). This was also the case for December samples with the exception of Sites 1 and 3 which had concentrations above non-urban and urbanized conditions, respectively

Temporal comparisons of N+N indicate that this nutrient may be negatively correlated with TSS concentrations. In general, when N+N decreases, there is an increase in TSS concentration. As discussed above, if TSS is a possible indicator of phytoplankton accumulation in the water column, then N+N concentrations could also be linked to plant primary productivity within Gages Slough—decreasing in concentration as TSS values increase.

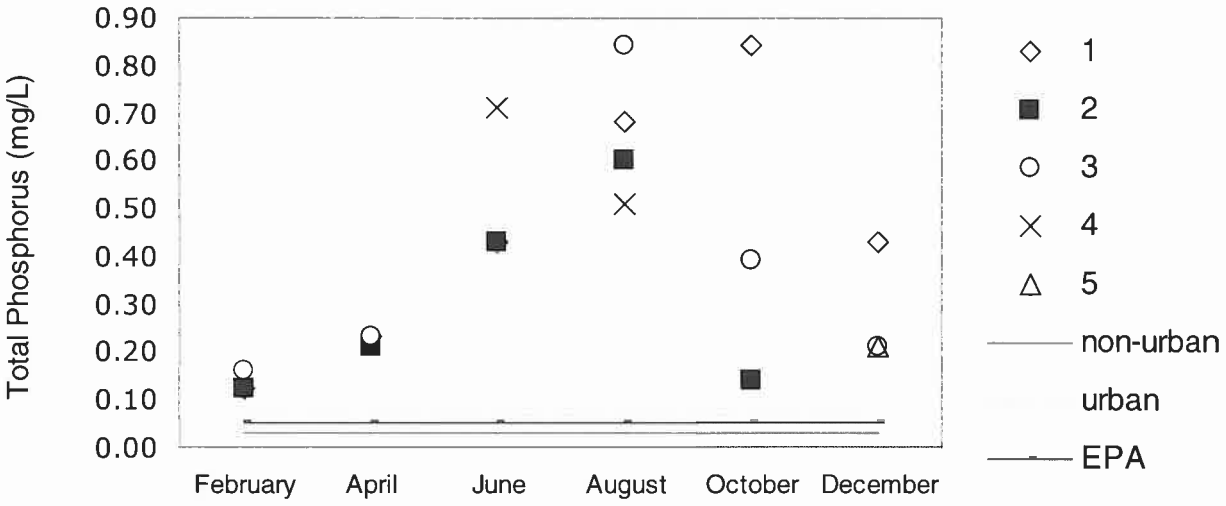

Figure 9. Total phosphorous concentrations at study sites from February through December 2007.

Another nutrient that can indicate the overall ecosystem health of aquatic systems is total phosphorus (TP). It is recognized that TP in concentrations greater than 0.05 mg/L is an indication of a eutrophic state (Welch 1980). This criterion was exceeded in many samples collected in 2007.

Concentrations were highest at Sites 1, 2, and 3. TP was above both EPA criteria and ambient wetland values at Sites 1 and 3 in all samples collected throughout the sampling year, and TP exceeded EPA criteria and ambient wetland values in 83 percent of the samples collected at Site 2. High concentrations at Site 1, especially during August, October and December indicate that areas upstream of the City of Burlington limits are, in part, contributing to the nutrient loading to Gages Slough. This is the same pattern of nutrient input observed in previous year (2004 through 2006) at Site 1 and may further indicate the potential addition of nutrients from upstream sources in Gages Slough. However, other sites had levels of phosphorus at or above those observed at Site 1 including Site 3 in February, April and August and Site 4 in June.

It should be noted, however, that although Gages Slough does contain TP concentrations at higher than recommended levels at most of the sample sites, levels at the discharge point to the Skagit River (Site 5) remained relatively low compared to the other locations. Concentrations at Site 5 were consistently below detection limits with the exception of samples collected in December. This may be the result of dilution at this site associated with input of water to Gages Slough from Gages Lake, and/or removal of phosphate due to uptake by aquatic plants, removal from the water column due to precipitation, etc.

The seasonal pattern of TP in the Gages Slough system shows low TP in February with an increase in TP in spring and a peak in the summer followed by a decline in concentrations in the Fall and a return to lower levels in December. This pattern may be due to low DO levels in the Slough during the summertime. As oxygen levels fall, insoluble phosphorus that may be associated with sediments in Gages Slough is released as soluble phosphorus, increasing the TP concentrations measured during this time period.

The high summer TP values may also be suggestive of a possible link to phytoplankton growth within the system. First, TP along with N+N concentrations may be contributing to phytoplankton blooms in the summer. Secondly, if that is the case there is an over abundance of TP in the system, as N+N concentrations decrease during the summer but TP concentrations remain high. This suggests that phosphorus is not a limiting nutrient for phytoplankton in the system, and is building up as N+N levels fall due to uptake by phytoplankton. In addition to the possible conversion of insoluble phosphorus associated with slough sediments to soluble reactive phosphorus noted above, other sources of TP may include phosphate-containing cleaning products as well as fertilizers, all introduced into Gages Slough from external sources.

The ability of the Gages Slough wetland system to uptake nutrients is a positive characteristic, but continued high levels of nutrient loading could become a concern. Data from 2005 and 2006 indicated that the wetlands in Gages Slough contain levels of nutrients

(both N+N and TP) that are above those observed in other wetland habitats in Puget Sound, even those experiencing a high degree of urbanization. When wetlands receive excessive nutrient loadings, ecosystem processes such as plant productivity and nutrient cycling are altered. Some of these alterations include changes in wetland structure and function (Carpenter et al. 1998) such as replacement of the slow growing native vegetation by faster growing invasive species (Davis 1991). Because concentrations of nutrients remain high in Gages Slough, eutrophication is a concern and monitoring of both nitrogen and phosphorous should continue. Furthermore, an investigation of the link between nutrient loading and phytoplankton growth in the Gages Slough system is highly advisable.

3.1.5 Biological Parameters

Fecal coliform (FC) bacteria are an indicator of pathogens from sewer and manure. FC concentrations levels have historically exceeded state standards in the Skagit River and its tributaries. As discussed earlier, a TMDL for FC in the Skagit River was prepared (Ecology 2000) to address contamination issues and loading of this pollutant. High FC levels can pose a public health threat with primary contact.

FC concentrations in Gages Slough were generally above Ecology criterion (criterion: not to exceed > 50 colonies/100 mL) at most sites with some seasonal variation (Figure 10). About 55 percent of the 29 samples collected in 2007 in Gages Slough were at or above Ecology criteria (50 colonies/100 mL). Results for Site 1 were consistently above both the DOE criterion and ambient wetland conditions (9 colonies/100 mL for non-urbanized and 61 colonies/100 mL for highly urbanized), with June, August and October values more than thirty times higher than the DOE criterion. In general, a pattern of increased FC loading at Sites 1 and 2 was noted during the summer months, suggesting a significant and continuous contribution to fecal coliform concentrations from upstream of the city limits—a contribution not associated with stormwater runoff as a vector (see below).

Generally FC concentrations tend to decrease spatially along the length of the slough, with the highest concentrations at Site 1 and the lowest concentrations at Sites 4 and 5. FC levels were above DOE criterion at Site 5 (near the outfall to the Skagit River) in February, August, and October samples but to a much lower magnitude than those observed at Site 1. Additionally, there appears to be a positive correlation with higher FC levels and increased water temperature, and an inverse correlation with FC levels and DO within the slough.

FC levels are the highest in Gages Slough at Site 1. At this location water within the slough enters the City of Burlington limits and is reflective of pollutant loading from upstream sources, which could include failing septic systems, hobby farms, and pet waste. A second

source of FC loading has also been identified at Site 3 and loading in April and October appears to increase at this site. FC loading was observed at Site 5 (at the site of discharge to the Skagit River) in February and October, although at lower levels than those observed at Sites 1 and 3 during the same sampling period. Because of the importance in preventing additional loading to the Skagit River, FC is considered a parameter of concern for the City of Burlington. However, it should be noted that the wetlands of Gages Slough appear to be providing a beneficial effect by reducing FC concentrations along the length of the slough. Also, the work being done in cooperation with the Dynes Egg Farm appears to be reducing concentrations at site 3 from those observed in previous years.

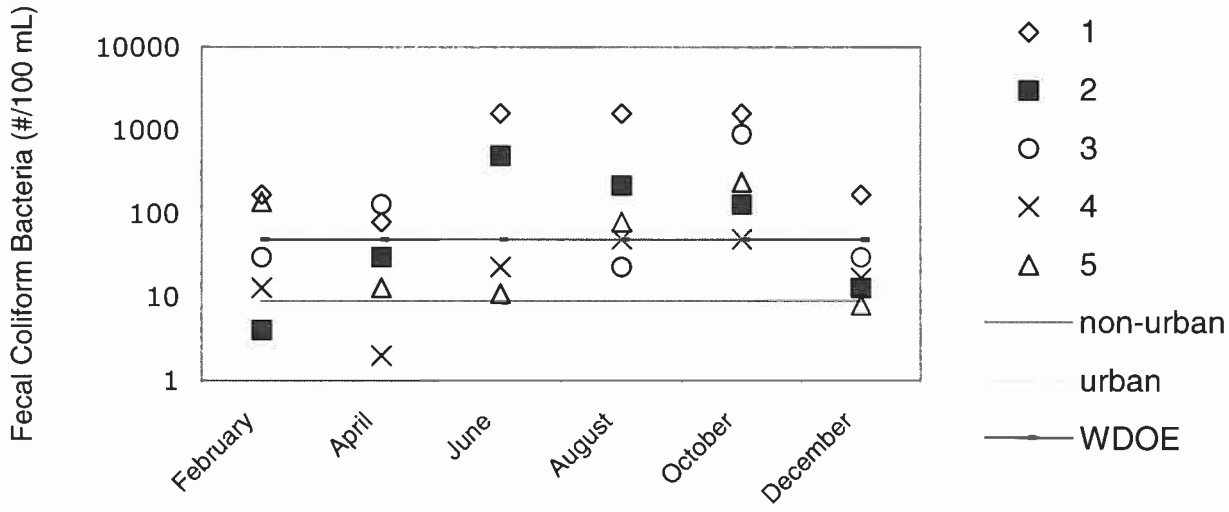

Figure 10. Fecal coliform bacteria concentrations at study sites from February through December 2007.

3.1.6 Stormwater Sampling Results

Stormwater samples were collected on October 30, 2007 at five locations (Figure 2). Three locations were sampled from runoff into Gages Slough (Sites 1, 5, and 8S) and two locations were sampled from runoff into the Skagit River (Sites 7S and 9S). Parameters tested included hydrocarbons (gasoline, diesel fuels, and heavy PAHs), the dissolved fraction of metals including copper, lead, and zinc, and pesticides and herbicides. Of these parameters tested, only heavy hydrocarbons and zinc were reported in concentrations above detection limits, and only those parameters above the detection limits are presented in Table 4.

Table 4. Stormwater Sampling Results for October 30, 2007					
Parameter	**Site 1**	**Site 5**	**Site 7S**	**Site 8S**	**Site 9S**
Zinc (mg/L)	0.056	0.027	0.076	0.034	ND
TSS (mg/L)	13	39	9	12	20
Heavy Hydrocarbons(mg/L)	ND	ND	ND	0.25	ND
pH	6.5	6.4	6.3	6.4	6.5
Hardness (mg/L)*	39.8	30.4	7.85	5.8	9.9
FC (MPN/100 mL)	>1600	500	110	1600	300

ND – This result indicates that the compound was not detected above the laboratory method reporting limit.
* - the lowest value for hardness reported if 5.8 mg/L was used as a conservative calculation for metals criteria.

Heavy hydrocarbons which include substances like motor oil were generally not detected within stormwater samples. However, at Site 8S concentration were reported of 0.25 mg/L, just above the detection limit of 0.20 mg/L. Ecology's threshold for clean-up of hydrocarbon is 0.5 mg/L. Stormwater concentration at Site 8S are below the clean-up threshold, however, this parameter should continue to be monitored in the stormwater samples.

Zinc concentrations in stormwater samples were above the hardness adjusted Ecology criterion (0.005 mg/L) at all sites sampled with the exception of site 9S at which zinc was not detected. They were also at or above the value typically observed (0.02 mg/L) in highly urbanized wetlands in the region.

Zinc is typically the most frequently detected metal in wetlands (Azous and Horner 1997). Furthermore, stormwater runoff tends to contain higher concentrations than surface water because zinc is collected on impervious surfaces where it accumulates over time and is then washed into receiving waters during a first flush storm event, and subsequently diluted. The most likely sources of zinc detected in stormwater runoff from the study area are associated with automobile tires, motor oil, and galvanized surfaces (e.g. roof materials).

High concentrations of zinc can interfere with the biological processes of wetland plants, resulting in impaired growth, mortality, and changes in plant communities. The degree to which plants bioaccumulate this metal is highly variable. Although zinc is frequently detected in wetland water samples, it is not often in quantities that exceed its Ecology toxic criterion. For example, Azous and Horner (1997) found that the zinc exceedence criterion was only violated in one of their study wetlands, a highly urbanized one, in individual samples during the entire program. The high concentrations reported for zinc in stormwater discharging to Gages Slough make this a parameter of concern in this system.

Stormwater samples were also analyzed for total suspended solids, pH, water hardness, and FC (Table 4). Concentrations of total suspended solids in stormwater were generally above those observed in both non-urbanized (2.0 mg/L) and highly urbanized (4.0 mg/L) wetlands (Table 4). Of the samples collected, all were above 4 mg/L. TSS serves as a binding medium were contaminants can accumulate over time. When it rains, this material is then washed into receiving waters were it deposits and contaminates the receiving water.

More evidence for a possible link between TSS and phytoplankton concentrations was suggested during this analysis. To further investigate that possibility, TSS values for stormwater samples collected at sites 1 and 5 were compared to bi-monthly samples collected at the same locations 10 days prior during dry conditions. Site 1 showed a pattern of TSS loading in dry versus storm events (13 mg/L TSS in stormwater vs. 56 mg/L in the October slough sample). This supports the possibility that TSS concentrations may be linked to phytoplankton rather than sediment sources. However, this comparison is not conclusive and warrants further sampling and analysis.

Fecal coliform bacteria (FC) concentrations in stormwater samples were above Ecology criteria (not to exceed > 50 colonies/100 mL) at all sites (Table 4). Results for Site 1 had the highest concentrations. This site is also consistently above both the DOE criterion and the ambient values for highly urbanized wetlands (61 /100 mL). Concentrations were high during both bi-monthly sampling and non-storm events, indicating that FC are introduced into Gages Slough both through storm events and via a continuous introduction into the system from one or more undetermined sources. High concentrations associated with stormwater were also detected within the Slough at site 8S (1600 /100 mL).

Discharge to the Skagit River at sites 7S, 8S, and 9S were also above Ecology criterion for stream systems, indicating that FC also remains a parameter of concern in stormwater runoff to the Skagit River.

Section 4—Water Quality Data Trends and Conditions

4.1 Consistent Parameters of Concern

Water quality results were examined for all monitoring years (2004 – 2007) at the bi-monthly sites (1 through 5) to identify parameters that may be degrading the health of the Gages Slough wetland system and water quality in the Skagit River (Table 5). Water quality data indicate that the parameters recognized consistently as potentially contributing to the degradation of water quality within Gages Slough include TSS, DO, fecal coliform bacteria, and nutrients (nitrogen, ammonia, and phosphorus). High concentrations of these parameters not within state and Federal standards, or exceeding those observed more typically in other highly urbanized wetlands in the Puget Sound Lowlands were repeatedly reported at one or more locations in a given year (Table 5).

Table 5. Comparison of water quality parameters of concern from 2004 to 2007

Parameter of Concern	2004	2005	2006	2007
TSS	X	X	X	X
Dissolved Oxygen		X	X	X
FC	X	X	X	X
Nutrients	X	X	X	X

X = indicated as a parameter of concern; na = data not available for this parameter

Generally , Gage Slough represents a relatively hypoxic environment throughout the year, and from year to year. Sampling data indicates that DO levels consistently are below the ambient levels for both urbanizing and non-urban wetlands, and are generally below levels known to cause stress to aquatic organisms (5-6 mg/L). Low DO levels also represent a parameter of concern due to potential interactions with other parameters of concern, such as TP levels and possible phytoplankton blooms (see below).

TSS concentrations are quite high throughout Gages Slough. In particular, summertime TSS levels are one or two orders of magnitude greater than ambient TSS levels for urbanized wetlands. This pattern indicates that TSS levels may show a seasonal variation in causal relationships, and that elevated summertime TSS levels cannot be attributed to sediment entering the system via stormwater, as might occur during the wet portion of the year. The pattern suggests that other sources of TSS are implicated in the summertime TSS measurements. One likely candidate for elevated summertime TSS levels is high phytoplankton concentrations; this possibility is supported by correlations of low DO and lower N+N concentrations during times of elevated TSS levels. Further investigation of the

TSS parameter is warranted to determine the fractions of the specific materials comprising the TSS, and to provide additional information on potential sources of elevated TSS levels.

There also appears to be a continuing trend toward eutrophication within the Gages Slough wetland complex as levels of both N and P are consistently reported in concentrations above both Ecology criteria and ambient values for urbanized wetlands. Total phosphorus in particular occurs at exceedingly high concentrations in Gages Slough. TP levels appear quite high in the summer and may be exacerbated by low DO, which could mobilize insoluble phosphorous associated with slough sediment into soluble phosphate species associated with the water column. Sources of both N+N and TP nutrient loading from outside of the City limits is indicated and could be a potential concern should these conditions persist. Potential in-City sources of nutrient loading also represent a concern. Possible interactions of N+N and TP with phytoplankton blooms has been suggested (see above) and bears additional investigation.

The wetlands of Gages Slough appear to be providing a beneficial effect by reducing longitudinal concentrations. The highest levels of FC are in Gages Slough where the slough enters the City of Burlington limits and is reflective of pollutant loading from upstream sources. Both upstream as well as in-City sources are likely to be causing the high levels of fecal contamination, however. For example, a second source of FC loading was also identified at bi-monthly Site 3.

Because of the importance in preventing additional FC loading to the Skagit River, fecal coliform concentration is considered a parameter of concern for the City of Burlington. However, as noted above, while water quality at the upper end of the slough is poor, the slough appears to provide a sink for FC as it moves downstream. In other words, fecal coliform bacteria measured during the bi-monthly monitoring were found in lower concentrations at the discharge point of the slough than where it enters the City limits. This "self cleaning" can occur in slow-flowing systems if bacteria are exposed to sunlight and/or water column predators or precipitate out as particulate matter settles.

4.2 Parameters of Concern to the Skagit River

Of particular concern to the Skagit River is the potential exacerbation of existing problems with parameters such as dissolved oxygen and fecal coliform bacteria. Therefore a comparison among years of the FC maxima, and the minima observed for DO concentrations was conducted at Site 5, the outlet to the Skagit River from Gages Slough (Table 6).

Table 6. Annual results comparison of FC and DO at Site 5				
Parameter	**2004**	**2005**	**2006**	**2007**
FC Maxima (colonies/100mL) and Month Measured	5000 (December)	130 (May)	500 (November)	240 (October)
Dissolved Oxygen (mg/L)	9.3*	2.85	1.46	1.03

* only measured in December in 2004.

FC exceedence percentages vary from 33-60% during the four years of sampling at Site 5, and DO minima were quite low for 2005, 2006, and 2007. In general, the highest FC concentrations appear to occur during the fall and winter. These four years of sampling suggest that high FC inputs at Site 5 are generally associated with runoff during the wet portion of the year, versus high FC concentrations upstream in the slough associated with the dry summer and early autumn months, as well as with runoff during the wet months. This provides further evidence that Gages Slough may not be a significant contributor of FC to the Skagit River during the dry season, and in fact may provide a relatively effective treatment for reducing high FC concentrations in water entrained through the slough, as noted above.

Dissolved oxygen concentrations were the lowest observed at Site 5 in 2007. Values have been low in general since 2005. These concentrations were all reported in the summer months when water temperatures are highest, water levels are lowest, and there is little or no flow through the slough. Data for 2004 were only collected in December when DO is typically higher. It should be noted that low concentrations of DO are not uncommon for wetlands (see section 3.1.1). Furthermore, this does not necessarily represent a water quality degradation to the Skagit River for this parameter, as the pump-house acts to aerate the flows discharging from Gages Slough into the Skagit River. However, the lowest DO concentrations in the ranges observed at Site 5 and other sites in the slough (1-3 mg/L) impose physiological stress on aquatic life, and prolonged exposure to such conditions can result in increased mortality, particularly for fish species.

4.3 Stormwater Conditions

Stormwater quality was improved in the 2007 sample for most parameters in both runoff to Gages Slough and the Skagit River. Heavy metals were much improved as both copper and lead were not detected in 2007 samples compared to 2004 samples. Zinc, however, was found in 2007 at concentrations above the Ecology criteria and the 20.0 µg/L reported for highly urbanized wetlands in nearly all of the samples collected. Furthermore in 2005 and

2006 storm sampling concentrations of copper were above the hardness-adjusted Ecology criterion at the discharge point of Gages Slough to Skagit River (Site 5) as well as the stormwater outfall locations sampled (sites 7S and 9S). Recent data suggests, therefore, that certain stormwater-borne metals (i.e. zinc and copper) associated with impervious surfaces continue to be a concern for both Gages Slough and the Skagit River, and further stormwater monitoring is warranted.

FC continues to be a parameter of concern in stormwater runoff. High concentrations of FC were introduced into both Gages Slough and the Skagit River during the 2007 monitored storm event and during previous years' monitored storms. These high FC concentrations were found both at monitoring sites that showed high FC concentrations during the bi-monthly monitoring and at monitoring sites that showed low FC concentrations during the bi-monthly monitoring. It appears that high FC concentrations associated with Gages Slough can be subdivided into two relatively distinct categories:

- "Resident" FC concentrations, present during the dry summer and early fall months, which appear to be introduced into the system in a more or less continuous fashion. Based on spatial positioning of the monitoring sites, these resident FC concentrations seem to decrease as they are entrained downstream through the slough.
- "Flush" FC concentrations, vectored into the system through stormwater during precipitation events in the wet months of the year. These flush FC concentrations show no obvious longitudinal spatial patterns within the slough, but likely display a "hot spot" pattern of very high concentrations locally in the immediate vicinity of stormwater outfalls, with decreasing concentrations due to diffusion as distance increases from the outfall.

FC levels have historically exceeded state standards in the Skagit River and its tributaries and this problem is being addressed as a contamination issues and loading of this pollutant. For example, current work being done by Ecology and the City in cooperation with the Dynes Egg Farm appears to be reducing concentrations at site 3 from those observed in previous years and this effort will continue in 2008.

FC contamination has been incorporated into the City's Phase II National Pollutant Discharge Elimination Permit (NPDES) permitting process. The possible addition of monitoring stations to bracket potential upstream and downstream source locations in relation to stormwater outfalls is being evaluated. Further suggestions include:

- Establish that FC material is introduced in large quantities during the "1st flush" storm event, and possibly establish additional stormwater monitoring events to quantify FC introductions during subsequent storm events Establishing additional monitoring events could also provide additional data, specific to the City of Burlington, on how copper and zinc concentrations vary in stormwater subsequent to a 1st flush event.

- Determine if the FC colonies entering the system during storms are maintaining themselves, or if there is a continuous source of FC to the system. Data suggests that a continuous introduction of FC is occurring in the absence of storm events during the summer months, but further investigation is warranted:
  - Determine if (and to what extent) low DO in the system may be supporting colony growth (or slowing colony declines)
  - Identify any possible septic systems or failing sewage systems within the City that may be contributing to the FC contamination.

Section 5—Summary

In general, Gages Slough characterizes a highly urbanized wetland system, with a number of parameters of concern occurring at levels of significant concern—including very low DO, elevated TSS levels, high N+N during certain times of the year, and high TP and FC levels throughout the year. Additionally, high FC and zinc concentrations appear to be associated with stormwater flushing into both Gages Slough and the Skagit River. Therefore, it is important to understand where potential sources of parameters of concern are and what measures can be taken to avoid further pollution of this wetland system. Continued focus on following the guidelines outlined in the City of Burlington Surface Water Management Plan as well as the list of recommended structural and nonstructural best management practices (BMPs) can help to achieve this. Further investigation into patterns and trends that the data suggest is also warranted, particularly with regard to refining information on potential sources of these parameters of concern, and the spatial and temporal dynamics within Gages Slough that affect the concentrations at which these parameters are observed. New mitigation and water quality treatment strategies are also being discussed with Ecology and the City of Burlington to ensure the continued health of the Gages Sough system and improve water quality being discharged to the Skagit River.

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Appendix—
Field Notes and Data Reports

CITY OF Burlington
SKAGIT COUNTY, WASHINGTON INCORPORATED 1902

PUBLIC WORKS ❖ ENGINEERING

900 E. Fairhaven Avenue
Burlington WA 98233-1904

(360) 755-9715 Fax: 755-0783

e-mail (Rod): rgarrett@ci.burlington.wa.us
e-mail (Mike): mharmon@ci.burlington.wa.us
e-mail (Scott): skidder@ci.burlington.wa.us

Memo to: Jenna Scholz and Chal Martin

Memo from: Becky Ziel

Date: 2-6-07

Subject: Water Quality Testing Field Notes

2-1-07 Field Notes:

Site #1 = 6.82 Dissolved Oxygen, 2.1 Degrees C.
High water level in pond and many ducks. I noticed a big piece of Styrofoam and a dead animal (could be a Nutria). A neighbor came out to speak to me. She was concerned about the change in the color of the water and erosion around the pond over the years. She said she used to be able to see bass fish feeding on the bottom of pond.

Site #2 = 4.22 Dissolved Oxygen, 3.1 Degrees C.
High water level, no flow movement, trash, shopping cart and oil slick on surface

Site #3 = 4.55 Dissolved Oxygen, 5.1 Degrees C.
High water (This site is under train tracks.)

Site #4 = 4.29 Dissolved Oxygen, 3.3 Degrees C.
Med. high water level, some flow movement. (This site is under I-5)

Site #5 = 7.36 Dissolved Oxygen, 3.6 Degrees C.
Med. high water level, some flow movement. Noticed a dead duck and 2 live ducks, some foamy scum on surface.

Site #6 = 5.92 Dissolved Oxygen, 8.3 Degrees C
High water level, swiftly moving, and orange water color

NOTE: Please see on the following pages the photos I took at each site.

Site #1 – Gages Slough @ Peacock Road 2-1-07

Site #1 – Gages Slough @ Peacock Road 2-1-07

Site #2 – Gages Slough @ Skagit/Rio Vista Avenue 2-1-07

Site #3 – Gages Slough @ Gilkey Road 2-1-07

Site #4 – Gages Slough @ I-5/Goldenrod Road 2-1-07

Site #5 – Gages Slough @ Pulver Road 2-1-07

Site #5 – Gages Slough @ Pulver Road 2-1-07

Site #6 – Joe Leary Slough @ Old 99 2-1-06

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SKAGIT COUNTY, WASHINGTON INCORPORATED 1902

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e-mail (Scott): skidder@ci.burlington.wa.us

Memo to: Jenna Scholz and Chal Martin

Memo from: Becky Ziel

Date: 4-10-07

Subject: Water Quality Testing Field Notes

4-4-07 Field Notes:

Site #1 = 3.63 Dissolved Oxygen, 8.4 Degrees C.
High water level in pond, no flow movement, and many ducks. Grass and tree debris in pond.

Site #2 = 5.90 Dissolved Oxygen, 8.9 Degrees C.
High water level, no flow movement, trash, and frogs

Site #3 = 5.35 Dissolved Oxygen, 8.5 Degrees C.
High water, no flow movement (This site is under train tracks.)

Site #4 = 2.72 Dissolved Oxygen, 8.8 Degrees C.
High water level, fast flow movement. (This site is under I-5)

Site #5 = 4.67 Dissolved Oxygen, 10.3 Degrees C.
High water level, no flow movement. Some foamy scum on surface.

Site #6 = 4.47 Dissolved Oxygen, 9.1 Degrees C
High water level, swiftly moving, and orange water color

NOTE: Please see on the following pages the photos I took at each site.

Site #1 – Gages Slough @ Peacock Road 4-4-07

Site #2 – Gages Slough @ Skagit/Rio Vista Avenue 4-4-07

Site #3 – Gages Slough @ Gilkey Road 4-4-07

Site #4 – Gages Slough @ I-5/Goldenrod Road 4-4-07

Site #5 – Gages Slough @ Pulver Road 4-4-07

Site #6 – Joe Leary Slough @ Old 99 4-4-07

CITY OF Burlington
SKAGIT COUNTY, WASHINGTON INCORPORATED 1902

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e-mail (Scott): skidder@ci.burlington.wa.us

Memo to: Jenna Scholz and Chal Martin

Memo from: Becky Ziel

Date: 6-14-07

Subject: Water Quality Testing Field Notes

6-4-07 Field Notes:

Site #1 = 1.61 Dissolved Oxygen, 20.3 Degrees C.
High water level in pond, no flow movement, and some ducks.

Site #2 = .27 Dissolved Oxygen, 15.7 Degrees C.
High water level, no flow movement, trash, and frogs. There was a tiny green clover covering much of the surface along with an oil slick.

Site #3 = New gate was installed by BNRR with a lock on gate. I will have to get a key made for the next water testing in August.

Site #4 = .20 Dissolved Oxygen, 15.2 Degrees C.
High water level, no flow movement. Tall grass and 2 snakes. (This site is under I-5)

Site #5 = 1.99 Dissolved Oxygen, 20.0 Degrees C.
High water level, slow flow movement. Oil scum on surface, tall grass and green ivy around edges.

Site #6 = 4.8 Dissolved Oxygen, 13.3 Degrees C.
Lower water level, slow moving, and orange water color. 2 leeches on boots.

6-5-07 3 new sites added to Burlington Hill Business Park

Site #7 = I collected samples here, however, Mike decided to cancel this site (too close to #8).

Site #8 = 1.33 Dissolved Oxygen, 14.6 C.
This is a manhole; collection was done with a bucket. 3 leeches were on the bucket.

Site # 9 = 2.52 Dissolved Oxygen, 14.1 C.
This is a manhole; collection was done with a bucket.

Site #10= .69 Dissolved Oxygen, 13.6 C.
This is a catch basin; collection was done with a bucket.

NOTE: Please see on the following pages the photos I took at each site (no pictures for sites 2 & 5 due to camera malfunction.

Site #1 – Gages Slough @ Peacock Road 6-4-07

Site #3 – Gages Slough @ Gilkey Road 6-4-07 locked gate.

Site #4 – Gages Slough @ I-5/Goldenrod Road 6-4-07

Site #6 – Joe Leary Slough @ Old 99 6-4-07

Site #7 – Ditch @ Gear Road/railroad tracks (site cancelled)

Site #8 – Manhole @ Gear Road near railroad tracks

Site #9 – Gear Road/Park Lane

Site #10 – Old 99 near Gear Road

CITY OF Burlington
SKAGIT COUNTY, WASHINGTON INCORPORATED 1902

PUBLIC WORKS ❖ ENGINEERING

833 S. Spruce Street
Burlington WA 98233-1904

(360) 755-9715 Fax: 755-0783

e-mail (Rod): rgarrett@ci.burlington.wa.us
e-mail (Mike): mharmon@ci.burlington.wa.us
e-mail (Scott): skidder@ci.burlington.wa.us

Memo to: Jenna Scholz and Chal Martin

Memo from: Becky Ziel

Date: 8-16-07

Subject: Water Quality Testing Field Notes

8-6-07 Field Notes:

Site #1 = .07 Dissolved Oxygen, 20.5 Degrees C.
Low water level in pond, no flow movement, and some ducks. Lots of tall grass and blackberries.

Site #2 = .08 Dissolved Oxygen, 17.2 Degrees C.
High water level, no flow movement, trash, and frogs. There was oil on the surface.

Site #3 = .08 Dissolved Oxygen, 16.1 Degrees C.
Very low water level, no flow.

Site #4 = .20 Dissolved Oxygen, 15.9 Degrees C.
High water level, no flow movement. Tall grass and oil on surface. (This site is under I-5)

Site #5 = 1.03 Dissolved Oxygen, 18.4 Degrees C.
Low water level, slow flow movement. I noticed some frogs.

Site #6 = 3.54 Dissolved Oxygen, 13.9 Degrees C.
Lower water level, slightly moving, and orange water color. Tall grass and lots of blackberries. Surface scum present.

6-5-07, 3 new sites were added to Burlington Hill Business Park

Site #7 = Mike decided to cancel this site (too close to #8).

Site #8 = .64 Dissolved Oxygen, 17.2 C.
This is a manhole; collection was done with a bucket.

Site # 9 = .14 Dissolved Oxygen, 18.7 C.
This is a manhole; collection was done with a bucket. Very black water.

Site #10= .88 Dissolved Oxygen, 16.0 C.
This is a catch basin; collection was done with a bucket. Very little water in catch basin, color was orange.

NOTE: Please see on the following pages the photos I took at each site. No picture for site #10.

Site #1 – Gages Slough @ Peacock Road 8-6-07

Site #2 – Gages Slough @ Skagit St./Rio Vista 8-6-07

Site #3 – Gages Slough @ Gilkey 8-6-07

Site #4 – Gages Slough @ I-5/Goldenrod Road 8-6-07

Site #5 – Gages Slough @ Pulver Road 8-6-07

Site #6 – Joe Leary Slough @ Old 99 8-6-07

Site #8 – Manhole @ Gear Road near railroad tracks 8-6-07

Site #9 – Gear Road/Park Lane 8-6-07

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SKAGIT COUNTY, WASHINGTON INCORPORATED 1902

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Burlington WA 98233-1904

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e-mail (Mike): mharmon@ci.burlington.wa.us
e-mail (Scott): skidder@ci.burlington.wa.us
e-mail (Becky): bziel@ci.burlington.wa.us

Memo to: Jenna Scholz and Chal Martin

Memo from: Becky Ziel

Date: 10-17-07

Subject: Storm Water Quality Testing Field Notes

10-4-07 Field Notes: This storm hit the day after I collected samples for Surface Water Testing

Site #1 = 3.45 Dissolved Oxygen, 10.4 Degrees C.
Very high water level in pond, tall grass and ducks

Site #5 = 3.63 Dissolved Oxygen, 9.6 Degrees C.
Very high water level, very fast flow, tall grass. Pumps were running.

Site #7 = 3.48 Dissolved Oxygen, 10.9 Degrees C.
Plenty of water

Site #8 = 3.49 Dissolved Oxygen, 11.5 Degrees C.
Plenty of water, lots of debris in water.

Site #9 = 3.34 Dissolved Oxygen, 9.1 Degrees C.
Very high water level, water flowing in, lots of tall grass and some debris

NOTE: Please see on the following pages some photos I took.

Site #1 – Gages Slough @ Peacock Road 10-4-07 Storm Water Testing

Site #7 – Burlington Sewer Dept. 10-4-07 Storm Water Testing

CITY OF Burlington
SKAGIT COUNTY, WASHINGTON INCORPORATED 1902

PUBLIC WORKS ❖ ENGINEERING

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e-mail (Mike): mharmon@ci.burlington.wa.us
e-mail (Scott): skidder@ci.burlington.wa.us
e-mail (Becky): bziel@ci.burlington.wa.us

Memo to: Jenna Scholz and Chal Martin

Memo from: Becky Ziel

Date: 12-17-07

Subject: Water Quality Testing Field Notes

12-17-07 Field Notes: It was a cloudy, rainy day and had rained the last 2 days

Site #1 = 2.38 Dissolved Oxygen, 5.1 Degrees C.
High water level in pond, slow flow movement, and a hundred-plus ducks. Lots of tall brown grass.

Site #2 = 2.23 Dissolved Oxygen, 5.7 Degrees C.
High water level, no flow movement, more trash.

Site #3 = .09 Dissolved Oxygen, 6.6 Degrees C.
High water level, no movement.

Site #4 = 1.31 Dissolved Oxygen, 5.6 Degrees C.
High water level, no flow movement. Tall brown grass and reeds. (This site is under I-5)

Site #5 = 2.66 Dissolved Oxygen, 5.4 Degrees C.
High water level, slow flow movement. Tall brown grass.

Site #6 = 3.13 Dissolved Oxygen, 6.8 Degrees C.
High water level, slow moving, and orange water color.

Site #7 = Cancelled (too close to #8).

Site #8 = 1.86 Dissolved Oxygen, 6.1 C.
This is a manhole; collection was done with a bucket.

Site # 9 = 1.98 Dissolved Oxygen, 6.1 C.
This is a manhole; collection was done with a bucket.

Site #10= 3.90 Dissolved Oxygen, 12.2 C.
This is a catch basin; collection was done with a bucket.

NOTE: Please see on the following pages the photos I took at some of the sites.

Site #5 – Gages Slough @ Pulver Road 12-17-07

Site #6 – Joe Leary Slough @ Old 99 12-17-07

Site #8 – Manhole @ Gear Road near railroad tracks 12-17-07

Site #9 – Gear Road/Park Lane 12-17-07

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Bellingham WA (Microbiology) | 805 Orchard Dr Suite 4 - 98225 | 360.671.0688 • 360.671.1577fax

Data Report

Client Name: Burlington, City of, Engineering
900 E Fairhaven
Burlington, WA 98233

Report Date: 2/13/2007
Reference Number: 07-01235
Project: Bi-Monthly Surface Water

Collected By:

Date Received: 2/1/2007
Supervisor:

Lab Number: 2643 Sample Description: #1 - Gages SI / Peacock Rd Sample Date: 2/1/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-14551	FECAL COLIFORM	170	2		per 100m	1.0	SM9221 E	2/6/2007	AV	M_070206MTF	
E-10139	HYDROGEN ION (pH)	7.28			pH Units	1.0	SM4500-H+ B	2/1/2007	SO	PH_070201	
E-10162	TOTAL SUSPENDED SOLIDS	ND	4	1.55	mg/L	1.0	SM2540 D	2/2/2007	SO	TSS_070202	
E-10173	TOTAL DISSOLVED SOLIDS	160	10	10	mg/L	1.0	SM2540 C	2/7/2007	SO	TDS_070207	
7723-14-0	TOTAL PHOSPHORUS	0.12	0.10	0.0282	mg/L	1.0	SM4500-P F	2/8/2007	BJ	TPHOS-070208	
7664-41-7	AMMONIA	0.37	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	2/12/2007	SO	NH3-070212	
E-10128	TOTAL NITRATE/NITRITE	2.32	0.010	0.0007	mg/L	1.0	SM4500-NO3 F	2/2/2007	SO	NO3NO2-070202	

Lab Number: 2644 Sample Description: #2 - Gages SI / Skagit / Rio Vista Sample Date: 2/1/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-14551	FECAL COLIFORM	4	2		per 100m	1.0	SM9221 E	2/6/2007	AV	M_070206mtf	
E-10139	HYDROGEN ION (pH)	7.00			pH Units	1.0	SM4500-H+ B	2/1/2007	SO	PH_070201	
E-10162	TOTAL SUSPENDED SOLIDS	ND	4	1.55	mg/L	1.0	SM2540 D	2/2/2007	SO	TSS_070202	
E-10173	TOTAL DISSOLVED SOLIDS	148	10	10	mg/L	1.0	SM2540 C	2/7/2007	SO	TDS_070207	
7723-14-0	TOTAL PHOSPHORUS	0.12	0.10	0.0282	mg/L	1.0	SM4500-P F	2/8/2007	BJ	TPHOS-070208	
7664-41-7	AMMONIA	0.22	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	2/8/2007	BJ	NH3-070208	
E-10128	TOTAL NITRATE/NITRITE	1.59	0.010	0.0007	mg/L	1.0	SM4500-NO3 F	2/2/2007	SO	NO3NO2-070202	

Lab Number: 2645 Sample Description: #3 - Gages SI / Gilkey Sample Date: 2/1/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-14551	FECAL COLIFORM	30	2		per 100m	1.0	SM9221 E	2/6/2007	AV	M_070206mtf	
E-10139	HYDROGEN ION (pH)	6.92			pH Units	1.0	SM4500-H+ B	2/1/2007	SO	PH_070201	
E-10162	TOTAL SUSPENDED SOLIDS	19	4	1.55	mg/L	1.0	SM2540 D	2/2/2007	SO	TSS_070202	
E-10173	TOTAL DISSOLVED SOLIDS	144	10	10	mg/L	1.0	SM2540 C	2/7/2007	SO	TDS_070207	
7723-14-0	TOTAL PHOSPHORUS	0.16	0.10	0.0282	mg/L	1.0	SM4500-P F	2/8/2007	BJ	TPHOS-070208	
7664-41-7	AMMONIA	0.45	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	2/8/2007	BJ	NH3-070208	
E-10128	TOTAL NITRATE/NITRITE	1.34	0.010	0.0007	mg/L	1.0	SM4500-NO3 F	2/2/2007	SO	NO3NO2-070202	

Lab Number: 2646 Sample Description: #4 - Gages SI / I-5 / Goldenrod Sample Date: 2/1/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-14551	FECAL COLIFORM	13	2		per 100m	1.0	SM9221 E	2/6/2007	AV	M_070206mtf	
E-10139	HYDROGEN ION (pH)	6.45			pH Units	1.0	SM4500-H+ B	2/1/2007	SO	PH_070201	

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL)
D.F. - Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

Reference Number: 07-01235
Report Date: 2/13/2007

Data Report

Collected By:

Date Received: 2/1/2007

E-10162	TOTAL SUSPENDED SOLIDS	ND	4	1.55	mg/L	1.0	SM2540 D	2/2/2007	SO	TSS_070202
E-10173	TOTAL DISSOLVED SOLIDS	80	10	10	mg/L	1.0	SM2540 C	2/7/2007	SO	TDS_070207
7723-14-0	TOTAL PHOSPHORUS	ND	0.10	0.0282	mg/L	1.0	SM4500-P F	2/8/2007	BJ	TPHOS-070208
7664-41-7	AMMONIA	0.11	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	2/8/2007	BJ	NH3-070208
E-10128	TOTAL NITRATE/NITRITE	0.33	0.010	0.0007	mg/L	1.0	SM4500-NO3 F	2/2/2007	SO	NO3NO2-070202

Lab Number: 2647 Sample Description: #5 - Gages / Pulver Rd Sample Date: 2/1/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-14551	FECAL COLIFORM	140	2		per 100m	1.0	SM9221 E	2/6/2007	AV	M_070206mtf	
E-10139	HYDROGEN ION (pH)	6.49			pH Units	1.0	SM4500-H+ B	2/1/2007	SO	PH_070201	
E-10162	TOTAL SUSPENDED SOLIDS	19	4	1.55	mg/L	1.0	SM2540 D	2/2/2007	SO	TSS_070202	
E-10173	TOTAL DISSOLVED SOLIDS	108	10	10	mg/L	1.0	SM2540 C	2/7/2007	SO	TDS_070207	
7723-14-0	TOTAL PHOSPHORUS	ND	0.10	0.0282	mg/L	1.0	SM4500-P F	2/8/2007	BJ	TPHOS-070208	
7664-41-7	AMMONIA	0.29	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	2/8/2007	BJ	NH3-070208	
E-10128	TOTAL NITRATE/NITRITE	0.38	0.010	0.0007	mg/L	1.0	SM4500-NO3 F	2/2/2007	SO	NO3NO2-070202	

Lab Number: 2648 Sample Description: #6 - Joe Leary @ Old 99 Sample Date: 2/1/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-14551	FECAL COLIFORM	500	2		per 100m	1.0	SM9221 E	2/6/2007	AV	M_070206mtf	
E-10139	HYDROGEN ION (pH)	6.29			pH Units	1.0	SM4500-H+ B	2/1/2007	SO	PH_070201	
E-10162	TOTAL SUSPENDED SOLIDS	68	4	1.55	mg/L	1.0	SM2540 D	2/2/2007	SO	TSS_070202	
E-10173	TOTAL DISSOLVED SOLIDS	192	10	10	mg/L	1.0	SM2540 C	2/7/2007	SO	TDS_070207	
7723-14-0	TOTAL PHOSPHORUS	0.48	0.10	0.0282	mg/L	1.0	SM4500-P F	2/8/2007	BJ	TPHOS-070208	
7664-41-7	AMMONIA	1.80	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	2/8/2007	BJ	NH3-070208	
E-10128	TOTAL NITRATE/NITRITE	2.13	0.010	0.0007	mg/L	1.0	SM4500-NO3 F	2/2/2007	SO	NO3NO2-070202	

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL)
D.F. - Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

Chain of Custody / Analysis Request

(Please complete all applicable shaded sections)

2,130 Page 1 of 1

Report to:	Burlington, City of, Engineering	Bill to:	Burlington, City of, Engineering
Ship Address:	900 E Fairhaven	Address:	900 E Fairhaven
City:	Burlington St: WA Zip: 98233	City:	Burlington St: WA Zip: 98233
Attn:	Becky Ziel	Phone:	FAX:
Phone:	360.755-9715 FAX:	P.O.#:	Attn:
Email:	bziel@ci.burlington.wa.us	☐ Visa ☐ M/C ☐ A/E	Expires /
Project	Bi-Monthly Surface Water	Card#:	

07-01235
2643 - 2648

Check Regulatory Program
- ☐ Safe Drinking Water Act
- ☐ Clean Water Act
- ☐ RCRA / CERCLA
- ☐ Other

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1620 S Walnut St
Burlington, WA 98233
1.800.755.9295

Microbiology
805 W. Orchard Dr. Suite 4
Bellingham, WA 98225

Instructions
1. Use one line per sample.
2. Be specific in analysis requests.
3. Check off analyses to be performed for each sample.
4. Enter number of containers.

Turn Around Time Required
- ☑ Standard CSD.
- ☐ Half-time (50% surcharge)
- ☐ Quickest (100% surcharge)
- ☐ Other

Analyses Requested

	Field ID	Location	Grab/ Comp.	Matrix	Date	Time	Fecal Coliform	NH3/NO3-NO2	T. Phos	pH, TSS, TDS					Number of Containers
1	#1	Gages Sl./Peacock Rd	G	SW	2-1-07	2 PM	☑	☑	☑	☑	☐	☐	☐	☐	
2	#2	" / Skagit/Rio Vista	"	"	"	2:20	☐	☐	☐	☐	☐	☐	☐	☐	
3	#3	" / Gilkey	"	"	"	2:45	☐	☐	☐	☐	☐	☐	☐	☐	
4	#4	" / I-5/Goldenrod	"	"	"	1 PM	☐	☐	☐	☐	☐	☐	☐	☐	
5	#5	" / Pulver Rd	"	"	"	1:15	☐	☐	☐	☐	☐	☐	☐	☐	
6	#6	Joel ear y @ Old 99	"	"	"	1:35	☐	☐	☐	☐	☐	☐	☐	☐	
7							☐	☐	☐	☐	☐	☐	☐	☐	
8							☐	☐	☐	☐	☐	☐	☐	☐	
9							☐	☐	☐	☐	☐	☐	☐	☐	
10							☐	☐	☐	☐	☐	☐	☐	☐	

CO002130

Special Instructions Conditions on Receipt

Sampled by: Phone: FAX: Email: Total Containers

Sample Receipt Request (Must include FAX or Email) ☐

Relinquished by	Date	Time	Received by	Date	Time
Becky Ziel	2-1-07	2:50	CDWaiteo	2/1/07	1450

	Yes	No	N/A
Custody seals intact	☐	☐	☑
Sample temp 6° C satisfactory	☐	☐	☐
Samples received intact	☑	☐	
Chain of custody & labels agree	☐	☐	

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Bellingham WA | 805 Orchard Dr Suite 4 - 98225
360.671.0688 • 360.671.1577fax

Jenna
FYI
Becky Ziel

Certificate Of Analysis

Client Name: Burlington, City of, Engineering
900 E Fairhaven
Burlington, WA 98233

Collected By:

Report Date: 4/13/2007
Reference Number: 07-03912
Project: Bi-Monthly Surface Water

Date Received: 4/4/2007
Supervisor:

Sample Description: #1 - Gages St / Peacock Rd — Sample Date: 4/4/2007
Lab Number: 8928

Analyte	Result	PQL	Units	Method	Analyzed	Analyst	Batch	Comments
FECAL COLIFORM	80	2	per 100mL	SM9221 E	4/5/2007	sk	MTF_070405	
TOTAL SUSPENDED SOLIDS	100 NH	4	mg/L	SM2540 D	4/5/2007	SO	TSS_070405	
TOTAL PHOSPHORUS	0.23	0.10	mg/L	SM4500-P F	4/10/2007	SO	TPHOS-070410	
AMMONIA	0.18	0.02	mg/L	SM4500-NH3 G	4/12/2007	SO	NH3-070412	
EPA Regulated (Secondary)								
TOTAL DISSOLVED SOLIDS	148	10	mg/L	SM2540 C	4/9/2007	SO	TDS_070409	
TOTAL NITRATE/NITRITE	0.49	0.010	mg/L	SM4500-NO3 F	4/10/2007	SO	NO3NO2-070410	
HYDROGEN ION (pH)	6.64		pH Units	SM4500-H+ B	4/4/2007	KJY	PH_070404	

Sample Description: #2 - Gages St / Skagit St / Rio Vista — Sample Date: 4/4/2007
Lab Number: 8929

Analyte	Result	PQL	Units	Method	Analyzed	Analyst	Batch	Comments
FECAL COLIFORM	30	2	per 100mL	SM9221 E	4/5/2007	sk	MTF_070405	
TOTAL SUSPENDED SOLIDS	ND	4	mg/L	SM2540 D	4/5/2007	SO	TSS_070405	
TOTAL PHOSPHORUS	0.21	0.10	mg/L	SM4500-P F	4/10/2007	SO	TPHOS-070410	
AMMONIA	0.10	0.02	mg/L	SM4500-NH3 G	4/12/2007	SO	NH3-070412	
EPA Regulated (Secondary)								
TOTAL DISSOLVED SOLIDS	146	10	mg/L	SM2540 C	4/9/2007	SO	TDS_070409	
TOTAL NITRATE/NITRITE	0.50	0.010	mg/L	SM4500-NO3 F	4/10/2007	SO	NO3NO2-070410	
HYDROGEN ION (pH)	6.51		pH Units	SM4500-H+ B	4/4/2007	KJY	PH_070404	

Sample Description: #3 - Gages St / Cliff — Sample Date: 4/4/2007
Lab Number: 8930

Analyte	Result	PQL	Units	Method	Analyzed	Analyst	Batch	Comments

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL)

Reference Number: 07-03912
Report Date: 4/13/2007

Certificate Of Analysis

Collected By:

Date Received: 4/4/2007

FECAL COLIFORM	130	2	per 100mL	SM9221 E	4/5/2007	sk	MTF_070405
TOTAL SUSPENDED SOLIDS	ND	4	mg/L	SM2540 D	4/5/2007	SO	TSS_070405
TOTAL PHOSPHORUS	0.23	0.10	mg/L	SM4500-P F	4/10/2007	SO	TPHOS-070410
AMMONIA	0.14	0.02	mg/L	SM4500-NH3 G	4/12/2007	SO	NH3-070412
EPA Regulated (Secondary)							
TOTAL DISSOLVED SOLIDS	164	10	mg/L	SM2540 C	4/9/2007	SO	TDS_070409
TOTAL NITRATE/NITRITE	0.38	0.010	mg/L	SM4500-NO3 F	4/10/2007	SO	NO3NO2-070410
HYDROGEN ION (pH)	6.64		pH Units	SM4500-H+ B	4/4/2007	KJY	PH_070404

Sample Description: #4 - Gages SI / I-5 / Goldenrod
Sample Date: 4/4/2007
Lab Number: 8931

Analyte	Result	PQL	Units	Method	Analyzed	Analyst	Batch	Comments
FECAL COLIFORM	<2	2	per 100mL	SM9221 E	4/5/2007	sk	MTF_070405	
TOTAL SUSPENDED SOLIDS	ND	4	mg/L	SM2540 D	4/5/2007	SO	TSS_070405	
TOTAL PHOSPHORUS	ND	0.10	mg/L	SM4500-P F	4/10/2007	SO	TPHOS-070410	
AMMONIA	0.09	0.02	mg/L	SM4500-NH3 G	4/12/2007	SO	NH3-070412	
EPA Regulated (Secondary)								
TOTAL DISSOLVED SOLIDS	122	10	mg/L	SM2540 C	4/9/2007	SO	TDS_070409	
TOTAL NITRATE/NITRITE	0.05	0.010	mg/L	SM4500-NO3 F	4/10/2007	SO	NO3NO2-070410	
HYDROGEN ION (pH)	6.45		pH Units	SM4500-H+ B	4/4/2007	KJY	PH_070404	

Sample Description: #5 - Gages SI / Pulver Rd
Sample Date: 4/4/2007
Lab Number: 8932

Analyte	Result	PQL	Units	Method	Analyzed	Analyst	Batch	Comments
FECAL COLIFORM	13	2	per 100mL	SM9221 E	4/5/2007	sk	MTF_070405	
TOTAL SUSPENDED SOLIDS	ND	4	mg/L	SM2540 D	4/5/2007	SO	TSS_070405	
TOTAL PHOSPHORUS	ND	0.10	mg/L	SM4500-P F	4/10/2007	SO	TPHOS-070410	
AMMONIA	0.04	0.02	mg/L	SM4500-NH3 G	4/12/2007	SO	NH3-070412	
EPA Regulated (Secondary)								
TOTAL DISSOLVED SOLIDS	100	10	mg/L	SM2540 C	4/9/2007	SO	TDS_070409	
TOTAL NITRATE/NITRITE	0.06	0.010	mg/L	SM4500-NO3 F	4/10/2007	SO	NO3NO2-070410	
HYDROGEN ION (pH)	6.56		pH Units	SM4500-H+ B	4/4/2007	KJY	PH_070404	

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL)

Reference Number: 07-03912
Report Date: 4/13/2007

Certificate Of Analysis

Collected By:

Date Received: 4/4/2007

Sample Description: #6 - Joe Leary Sl @ Old 99 Sample Date: 4/4/2007

Lab Number: 8933

Analyte	Result	PQL	Units	Method	Analyzed	Analyst	Batch	Comments
. ECAL COLIFORM	130	2	per 100mL	SM9221 E	4/5/2007	sk	MTF_070405	
TOTAL SUSPENDED SOLIDS	88	4	mg/L	SM2540 D	4/5/2007	SO	TSS_070405	
OTAL PHOSPHORUS	0.51	0.10	mg/L	SM4500-P F	4/10/2007	SO	TPHOS-070410	
AMMONIA	0.72	0.02	mg/L	SM4500-NH3 G	4/12/2007	SO	NH3-070412	
EPA Regulated (Secondary)								
OTAL DISSOLVED SOLIDS	210	10	mg/L	SM2540 C	4/9/2007	SO	TDS_070409	
TOTAL NITRATE/NITRITE	1.45	0.010	mg/L	SM4500-NO3 F	4/10/2007	SO	NO3NO2-070410	
HYDROGEN ION (pH)	6.36		pH Units	SM4500-H+ B	4/4/2007	KJY	PH_070404	

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL)

FORM: COA_Mult

CITY OF Burlington
SKAGIT COUNTY, WASHINGTON INCORPORATED 1902

ENGINEERING ϖ PUBLIC WORKS
900 E. Fairhaven Avenue
Burlington WA 98233-1904
(360) 755-9715 • FAX (360) 755-0783
email (Chal) cmartin@ci.burlington.wa.us
email (Mike) mharmon@ci.burlington.wa.us
email (Scott) skidder@ci.burlington.wa.us

LETTER OF TRANSMITTAL

TO: Jenna Scholz
Otak, Inc.
10230 NE Points Dr., Ste. 400
Kirkland WA 98033

DATE: 6-29-07
FROM: Becky Ziel
PROJECT: Bi Monthly Surface Water

COPIES	DATE	DESCRIPTION
1	6-19-07	Data Report of new sites that were added

TRANSMITTED AS CHECKED BELOW:

___ For approval
x For your use
___ As requested
___ For review/comment
___ Approved as submitted
___ Approved as noted
___ Returned for corrections
___ Other:

REMARKS

Copies to: _____ **Signed:** Becky Ziel BZ

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Corporate Office | 800.755.9295 • 360.757.1400 • 360.757.1402fax
Bellingham WA | 805 Orchard Dr Suite 4 - 98225
Microbiology | 360.671.0688 • 360.671.1577fax

Data Report

Client Name: Burlington, City of, Engineering
900 E Fairhaven
Burlington, WA 98233

Report Date: 6/19/2007
Reference Number: 07-06991
Project: Bi-Monthly Surface Water

Collected By:

Date Received: 6/5/2007
Supervisor:

Lab Number: 16247 Sample Description: #10 - Old 99 / Gear Rd Sample Date: 6/5/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.21			pH Units	1.0	SM4500-H+ B	6/6/2007	KJY	PH_070606	
E-10173	TOTAL DISSOLVED SOLIDS	295	10	10	mg/L	1.0	SM2540 C	6/12/2007	JMS	TDS_070612	
7723-14-0	TOTAL PHOSPHORUS	4.08	0.10	0.0282	mg/L	1.0	SM4500-P F	6/13/2007	BJ	TPHOS-070613	
E-10162	TOTAL SUSPENDED SOLIDS	900	4	1.55	mg/L	1.0	SM2540 D	6/7/2007	SO	TSS_070607	
E-14551	FECAL COLIFORM	240	2		per 100m	1.0	SM9221 E	6/11/2007	SK	MTF_070611	
7664-41-7	AMMONIA	0.84	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	6/7/2007	SO	NH3-070607	
E-10128	TOTAL NITRATE/NITRITE	0.06	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	6/6/2007	SO	NO3NO2-070606	
E-10264	TOTAL KJELDAHL NITROGEN	6.30	0.5	0.1391	mg/L	1.0	SM4500-Norg C	6/15/2007	BJ	TKN-070615	

Lab Number: 16248 Sample Description: #8 - Gear Rd Burl Biz Park Sample Date: 6/5/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.63			pH Units	1.0	SM4500-H+ B	6/5/2007	KJY	PH_070605	
E-10173	TOTAL DISSOLVED SOLIDS	210	10	10	mg/L	1.0	SM2540 C	6/12/2007	JMS	TDS_070612	
7723-14-0	TOTAL PHOSPHORUS	0.33	0.10	0.0282	mg/L	1.0	SM4500-P F	6/13/2007	BJ	TPHOS-070613	
E-10162	TOTAL SUSPENDED SOLIDS	22	4	1.55	mg/L	1.0	SM2540 D	6/7/2007	SO	TSS_070607	
E-14551	FECAL COLIFORM	220	2		per 100m	1.0	SM9221 E	6/11/2007	SK	MTF_070611	
7664-41-7	AMMONIA	1.07	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	6/7/2007	SO	NH3-070607	
E-10128	TOTAL NITRATE/NITRITE	0.23	0.010	0.0007	mg/L	1.0	SM4500-NO3 F	6/11/2007	BJ	NO3NO2-070611	
E-10264	TOTAL KJELDAHL NITROGEN	2.56	0.5	0.1391	mg/L	1.0	SM4500-Norg C	6/15/2007	BJ	TKN-070615	

Lab Number: 16249 Sample Description: #9 - Gear Rd Burl Biz Park Sample Date: 6/5/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.51			pH Units	1.0	SM4500-H+ B	6/5/2007	KJY	PH_070605	
E-10173	TOTAL DISSOLVED SOLIDS	205	10	10	mg/L	1.0	SM2540 C	6/12/2007	JMS	TDS_070612	
7723-14-0	TOTAL PHOSPHORUS	0.40	0.10	0.0282	mg/L	1.0	SM4500-P F	6/13/2007	BJ	TPHOS-070613	
E-10162	TOTAL SUSPENDED SOLIDS	36	4	1.55	mg/L	1.0	SM2540 D	6/7/2007	SO	TSS_070607	
E-14551	FECAL COLIFORM	17	2		per 100m	1.0	SM9221 E	6/11/2007	SK	MTF_070611	
7664-41-7	AMMONIA	0.92	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	6/7/2007	SO	NH3-070607	
E-10128	TOTAL NITRATE/NITRITE	0.26	0.010	0.0007	mg/L	1.0	SM4500-NO3 F	6/11/2007	BJ	NO3NO2-070611	
E-10264	TOTAL KJELDAHL NITROGEN	2.36	0.5	0.1391	mg/L	1.0	SM4500-Norg C	6/15/2007	BJ	TKN-070615	

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL)
D.F. - Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

Chain of Custody / Analysis Request (Please complete all applicable shaded sections)

2,781

07-06991
16247 - 16249

Report to:	Burlington, City of, Engineering	Bill to:	Burlington, City of, Engineering
Ship Address:	820 E Washington	Address:	900 E Fairhaven
City:	Burlington St: WA Zip: 98233	City:	Burlington St: WA Zip: 98233
Attn:		Phone:	FAX:
Phone:	FAX:	P.O.#:	Attn:
Email:		☐ Visa ☐ M/C ☐ A/E	Expires /
Project		Card#:	

Check Regulatory Program
- ☐ Safe Drinking Water Act
- ☐ Clean Water Act
- ☐ RCRA / CERCLA
- ☐ Other

EDGE ANALYTICAL
1620 S. Walnut St.
Burlington, WA 98233
1.800.755.9295

805 W. Orchard Dr. Suite 4
Bellingham, WA 98225

Instructions
1. Use one line per sample.
2. Be specific in analysis requests.
3. Check off analyses to be performed for each sample.
4. Enter number of containers.

Turn Around Time Required
- ☑ Standard CSO
- ☐ Half-time (50% surcharge)
- ☐ Quickest (100% surcharge)
- ☐ Other

Analyses Requested

CO002781

	Field ID	Location	Grab/ Comp.	Matrix	Date	Time	pH, TDS, TSS	TKN, NH3, N02/N03	T. Phos	Fecal					Number of Containers	Special Instructions Conditions on Receipt
1	# 7	Gear Rd.-Burl. Bizpark G	G	SW	6-5-07	12:13	☑	☑	☑	☑	DO	NOT	DOPBR			BECKY 6/5/07
2	# 8	" " "	"	"	"	11:45	☑	☑	☑	☑	☐	☐	☐	☐		
3	# 9	" " "	"	"	"	11:53	☑	☑	☑	☑	☐	☐	☐	☐		
4							☐	☐	☐	☐	☐	☐	☐	☐		
5							☐	☐	☐	☐	☐	☐	☐	☐		
6							☐	☐	☐	☐	☐	☐	☐	☐		
7							☐	☐	☐	☐	☐	☐	☐	☐		
8							☐	☐	☐	☐	☐	☐	☐	☐		
9							☐	☐	☐	☐	☐	☐	☐	☐		
10							☐	☐	☐	☐	☐	☐	☐	☐		

Sampled by: Phone: FAX: Email: Total Containers

Sample Receipt Request (Must include FAX or Email) ☐

Relinquished by	Date	Time	Received by	Date	Time
Becky Zick	6-5-07	2:45	CDeVeiter	6/5/07	1445

	Yes	No	N/A
Custody seals intact	☐	☐	☑
Sample temp 10° C satisfactory	☐	☐	☐
Samples received intact	☑	☐	
Chain of custody & labels agree	☐	☐	

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360.671.0688 • 360.671.1577fax

Data Report

Client Name: Burlington, City of, Engineering
900 E Fairhaven
Burlington, WA 98233

Report Date: 6/14/2007
Reference Number: 07-06919
Project: Bi-Monthly Surface Water

Collected By:

Date Received: 6/4/2007
Supervisor:

Lab Number: 16054 Sample Description: #1 - Gages SI/Peacock Rd Sample Date: 6/4/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.87			pH Units	1.0	SM4500-H+ B	6/4/2007	KJY	PH_070604	
E-10128	TOTAL NITRATE/NITRITE	0.01	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	6/6/2007	SO	NO3NO2-070606	
7723-14-0	TOTAL PHOSPHORUS	0.43	0.10	0.0282	mg/L	1.0	SM4500-P F/SM4500-P B	6/13/2007	BJ	TPHOS-070613	
E-10162	TOTAL SUSPENDED SOLIDS	40	4	1.55	mg/L	1.0	SM2540 D	6/5/2007	SO	TSS_070605	
E-14551	FECAL COLIFORM	>1600	1.1		MPN/10(	1.0	SM9221 E	6/6/2007	AS	MTF_070606	
7664-41-7	AMMONIA	0.23	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	6/7/2007	SO	NH3-070607	
E-10173	TOTAL DISSOLVED SOLIDS	180	10	10	mg/L	1.0	SM2540 C	6/6/2007	SO	TDS_070606	

Lab Number: 16055 Sample Description: #2 - Gages SI/Skagit St/Rio Vista Sample Date: 6/4/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.90			pH Units	1.0	SM4500-H+ B	6/4/2007	KJY	PH_070604	
E-10128	TOTAL NITRATE/NITRITE	ND	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	6/6/2007	SO	NO3NO2-070606	
7723-14-0	TOTAL PHOSPHORUS	0.43	0.10	0.0282	mg/L	1.0	SM4500-P F/SM4500-P B	6/13/2007	BJ	TPHOS-070613	
E-10162	TOTAL SUSPENDED SOLIDS	23	4	1.55	mg/L	1.0	SM2540 D	6/5/2007	SO	TSS_070605	
E-14551	FECAL COLIFORM	500	1.1		MPN/10(	1.0	SM9221 E	6/6/2007	AS	MTF_070606	
7664-41-7	AMMONIA	0.20	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	6/7/2007	SO	NH3-070607	
E-10173	TOTAL DISSOLVED SOLIDS	174	10	10	mg/L	1.0	SM2540 C	6/6/2007	SO	TDS_070606	

Lab Number: 16056 Sample Description: #4 - Gages SI/I-5, Goldenrod Sample Date: 6/4/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.57			pH Units	1.0	SM4500-H+ B	6/4/2007	KJY	PH_070604	
E-10128	TOTAL NITRATE/NITRITE	ND	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	6/6/2007	SO	NO3NO2-070606	
7723-14-0	TOTAL PHOSPHORUS	0.71	0.10	0.0282	mg/L	1.0	SM4500-P F/SM4500-P B	6/13/2007	BJ	TPHOS-070613	
E-10162	TOTAL SUSPENDED SOLIDS	63	4	1.55	mg/L	1.0	SM2540 D	6/5/2007	SO	TSS_070605	
E-14551	FECAL COLIFORM	23	1.1		MPN/10(	1.0	SM9221 E	6/6/2007	AS	MTF_070606	
7664-41-7	AMMONIA	1.22	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	6/7/2007	SO	NH3-070607	
E-10173	TOTAL DISSOLVED SOLIDS	156	10	10	mg/L	1.0	SM2540 C	6/6/2007	SO	TDS_070606	

Lab Number: 16057 Sample Description: #5 - Gages SI/Pulver Sample Date: 6/4/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	7.07			pH Units	1.0	SM4500-H+ B	6/4/2007	KJY	PH_070604	

PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL)
D.F. = Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

Reference Number: 07-06919
Report Date: 6/14/2007

Data Report

Collected By:

Date Received: 6/4/2007

E-10128	TOTAL NITRATE/NITRITE	ND	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	6/6/2007	SO	NO3NO2-070606
7723-14-0	TOTAL PHOSPHORUS	ND	0.10	0.0282	mg/L	1.0	SM4500-P F/SM4500-P B	6/13/2007	BJ	TPHOS-070613
E-10162	TOTAL SUSPENDED SOLIDS	ND	4	1.55	mg/L	1.0	SM2540 D	6/5/2007	SO	TSS_070605
E-14551	FECAL COLIFORM	11	1.1		MPN/10(	1.0	SM9221 E	6/6/2007	AB	MTF_070606
7664-41-7	AMMONIA	0.07	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	6/7/2007	SO	NH3-070607
E-10173	TOTAL DISSOLVED SOLIDS	168	10	10	mg/L	1.0	SM2540 C	6/6/2007	SO	TDS_070606

Lab Number: 16058 Sample Description: #6 - Joe Leary/Old 99 Sample Date: 6/4/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.75			pH Units	1.0	SM4500-H+ B	6/4/2007	KJY	PH_070604	
E-10128	TOTAL NITRATE/NITRITE	0.27	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	6/6/2007	SO	NO3NO2-070606	
7723-14-0	TOTAL PHOSPHORUS	0.17	0.10	0.0282	mg/L	1.0	SM4500-P F/SM4500-P B	6/13/2007	BJ	TPHOS-070613	
E-10162	TOTAL SUSPENDED SOLIDS	20	4	1.55	mg/L	1.0	SM2540 D	6/5/2007	SO	TSS_070605	
E-14551	FECAL COLIFORM	11	1.1		MPN/10(	1.0	SM9221 E	6/6/2007	AB	MTF_070606	
7664-41-7	AMMONIA	0.60	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	6/7/2007	SO	NH3-070607	
E-10173	TOTAL DISSOLVED SOLIDS	237	10	10	mg/L	1.0	SM2540 C	6/6/2007	SO	TDS_070606	

PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL)
D.F. = Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

ANALYTICAL LABORATORIES

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Corporate Office | 800.755.9295 • 360.757.1400 • 360.757.1402fax
Bellingham WA | 805 Orchard Dr Suite 4 - 98225
Microbiology | 360.671.0688 • 360.671.1577fax

Data Report

Client Name: Burlington, City of, Engineering
900 E Fairhaven
Burlington, WA 98233

Report Date: 8/14/2007
Reference Number: 07-10116
Project: Bi-Monthly Surface Water

Collected By:

Date Received: 8/6/2007
Peer Review:

Lab Number: 23030 Sample Description: #1 - Gages SI / Peacock Rd Sample Date: 8/6/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	7.18			pH Units	1.0	SM4500-H+ B	8/6/2007	KJY	PH_070806	
E-10173	TOTAL DISSOLVED SOLIDS	108	10	10	mg/L	1.0	SM2540 C	8/7/2007	CCN	TDS_070807	
7723-14-0	TOTAL PHOSPHORUS	0.68	0.10	0.0282	mg/L	1.0	SM4500-P F	8/14/2007	SO	TPHOS-070814	
E-10162	TOTAL SUSPENDED SOLIDS	82	4	1.55	mg/L	1.0	SM2540 D	8/7/2007	CCN	TSS_070807	
E-14551	FECAL COLIFORM	>1600	1.1		MPN/10(	1.0	SM9221 E	8/8/2007	AS	MPN_070808	
E-10128	TOTAL NITRATE/NITRITE	0.05	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	8/9/2007	SO	NO3NO2-070809	
E-10264	TOTAL KJELDAHL NITROGEN	4.48	0.5	0.1391	mg/L	1.0	SM4500-Norg C	8/10/2007	SO	TKN-070810	
7664-41-7	AMMONIA	0.23	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	8/9/2007	SO	NH3-070809	

Lab Number: 23031 Sample Description: #2 - Gages SI / Skagit St/ Rio Vista Sample Date: 8/6/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.83			pH Units	1.0	SM4500-H+ B	8/6/2007	KJY	PH_070806	
E-10173	TOTAL DISSOLVED SOLIDS	124	10	10	mg/L	1.0	SM2540 C	8/7/2007	CCN	TDS_070807	
7723-14-0	TOTAL PHOSPHORUS	0.60	0.10	0.0282	mg/L	1.0	SM4500-P F	8/14/2007	SO	TPHOS-070814	
E-10162	TOTAL SUSPENDED SOLIDS	18	4	1.55	mg/L	1.0	SM2540 D	8/7/2007	CCN	TSS_070807	
E-14551	FECAL COLIFORM	220	1.1		MPN/10(	1.0	SM9221 E	8/8/2007	AS	MPN_070808	
E-10128	TOTAL NITRATE/NITRITE	0.02	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	8/9/2007	SO	NO3NO2-070809	
E-10264	TOTAL KJELDAHL NITROGEN	2.28	0.5	0.1391	mg/L	1.0	SM4500-Norg C	8/10/2007	SO	TKN-070810	
7664-41-7	AMMONIA	0.39	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	8/9/2007	SO	NH3-070809	

Lab Number: 23032 Sample Description: #3 - Gages SI / Gilkey Sample Date: 8/6/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.78			pH Units	1.0	SM4500-H+ B	8/6/2007	KJY	PH_070806	
E-10173	TOTAL DISSOLVED SOLIDS	140	10	10	mg/L	1.0	SM2540 C	8/7/2007	CCN	TDS_070807	
7723-14-0	TOTAL PHOSPHORUS	0.84	0.10	0.0282	mg/L	1.0	SM4500-P F	8/14/2007	SO	TPHOS-070814	
E-10162	TOTAL SUSPENDED SOLIDS	1175	4	1.55	mg/L	1.0	SM2540 D	8/7/2007	CCN	TSS_070807	
E-14551	FECAL COLIFORM	23	1.1		MPN/10(	1.0	SM9221 E	8/8/2007	AS	MPN_070808	
E-10128	TOTAL NITRATE/NITRITE	0.02	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	8/9/2007	SO	NO3NO2-070809	
E-10264	TOTAL KJELDAHL NITROGEN	9.64	1	0.1391	mg/L	2.0	SM4500-Norg C	8/10/2007	SO	TKN-070810	
7664-41-7	AMMONIA	4.78	0.04	0.0015	mg/L	2.0	SM4500-NH3 G	8/9/2007	SO	NH3-070809	

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
D.F. - Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

Reference Number: 07-10116
Report Date: 8/14/2007

Data Report

Collected By:

Date Received: 8/6/2007

Lab Number: 23033 Sample Description: #4 - Gages SI / I-5 / goldenrod Sample Date: 8/6/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.37			pH Units	1.0	SM4500-H+ B	8/6/2007	KJY	PH_070806	
E-10173	TOTAL DISSOLVED SOLIDS	132	10	10	mg/L	1.0	SM2540 C	8/7/2007	CCN	TDS_070807	
7723-14-0	TOTAL PHOSPHORUS	0.51	0.10	0.0282	mg/L	1.0	SM4500-P F	8/14/2007	SO	TPHOS-070814	
E-10162	TOTAL SUSPENDED SOLIDS	130	4	1.55	mg/L	1.0	SM2540 D	8/7/2007	CCN	TSS_070807	
E-14551	FECAL COLIFORM	50	1.1		MPN/10(	1.0	SM9221 E	8/8/2007	AS	MPN_070808	
E-10128	TOTAL NITRATE/NITRITE	0.04	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	8/9/2007	SO	NO3NO2-070809	
E-10264	TOTAL KJELDAHL NITROGEN	1.90	0.5	0.1391	mg/L	1.0	SM4500-Norg C	8/10/2007	SO	TKN-070810	
7664-41-7	AMMONIA	0.42	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	8/9/2007	SO	NH3-070809	

Lab Number: 23034 Sample Description: #5 - Gages SI / Pulver Rd Sample Date: 8/6/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.97			pH Units	1.0	SM4500-H+ B	8/6/2007	KJY	PH_070806	
E-10173	TOTAL DISSOLVED SOLIDS	172	10	10	mg/L	1.0	SM2540 C	8/7/2007	CCN	TDS_070807	
7723-14-0	TOTAL PHOSPHORUS	ND	0.10	0.0282	mg/L	1.0	SM4500-P F	8/14/2007	SO	TPHOS-070814	
E-10162	TOTAL SUSPENDED SOLIDS	8	4	1.55	mg/L	1.0	SM2540 D	8/7/2007	CCN	TSS_070807	
E-14551	FECAL COLIFORM	80	1.1		MPN/10(	1.0	SM9221 E	8/8/2007	AS	MPN_070808	
E-10128	TOTAL NITRATE/NITRITE	0.01	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	8/9/2007	SO	NO3NO2-070809	
E-10264	TOTAL KJELDAHL NITROGEN	1.00	0.5	0.1391	mg/L	1.0	SM4500-Norg C	8/10/2007	SO	TKN-070810	
7664-41-7	AMMONIA	0.08	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	8/9/2007	SO	NH3-070809	

Lab Number: 23035 Sample Description: #6 - Joe Leary / Old 99 Sample Date: 8/6/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.70			pH Units	1.0	SM4500-H+ B	8/6/2007	KJY	PH_070806	
E-10173	TOTAL DISSOLVED SOLIDS	206	10	10	mg/L	1.0	SM2540 C	8/7/2007	CCN	TDS_070807	
7723-14-0	TOTAL PHOSPHORUS	ND	0.10	0.0282	mg/L	1.0	SM4500-P F	8/14/2007	SO	TPHOS-070814	
E-10162	TOTAL SUSPENDED SOLIDS	16	4	1.55	mg/L	1.0	SM2540 D	8/7/2007	CCN	TSS_070807	
E-14551	FECAL COLIFORM	140	1.1		MPN/10(	1.0	SM9221 E	8/8/2007	AS	MPN_070808	
E-10128	TOTAL NITRATE/NITRITE	0.27	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	8/9/2007	SO	NO3NO2-070809	
E-10264	TOTAL KJELDAHL NITROGEN	0.66	0.5	0.1391	mg/L	1.0	SM4500-Norg C	8/10/2007	SO	TKN-070810	
7664-41-7	AMMONIA	0.36	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	8/9/2007	SO	NH3-070809	

Lab Number: 23036 Sample Description: #8 - Gear Rd Sample Date: 8/6/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	7.02			pH Units	1.0	SM4500-H+ B	8/6/2007	KJY	PH_070806	
E-10173	TOTAL DISSOLVED SOLIDS	186	10	10	mg/L	1.0	SM2540 C	8/7/2007	CCN	TDS_070807	
7723-14-0	TOTAL PHOSPHORUS	0.25	0.10	0.0282	mg/L	1.0	SM4500-P F	8/14/2007	SO	TPHOS-070814	
E-10162	TOTAL SUSPENDED SOLIDS	54	4	1.55	mg/L	1.0	SM2540 D	8/7/2007	CCN	TSS_070807	
E-14551	FECAL COLIFORM	300	1.1		MPN/10(	1.0	SM9221 E	8/8/2007	AS	MPN_070808	

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
D.F. - Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

Reference Number: 07-10116
Report Date: 8/14/2007

Data Report

Collected By:

Date Received: 8/6/2007

E-10128	**TOTAL NITRATE/NITRITE**	**0.05**	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	8/9/2007	SO	NO3NO2-070809
E-10264	**TOTAL KJELDAHL NITROGEN**	**4.98**	0.5	0.1391	mg/L	1.0	SM4500-Norg C	8/10/2007	SO	TKN-070810
7664-41-7	**AMMONIA**	**2.72**	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	8/9/2007	SO	NH3-070809

Lab Number: 23037 Sample Description: #9 - Gear Rd / Park Ln Sample Date: 8/6/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	**HYDROGEN ION (pH)**	**6.94**			pH Units	1.0	SM4500-H+ B	8/6/2007	KJY	PH_070806	
E-10173	**TOTAL DISSOLVED SOLIDS**	**200**	10	10	mg/L	1.0	SM2540 C	8/7/2007	CCN	TDS_070807	
7723-14-0	**TOTAL PHOSPHORUS**	**6.08**	0.20	0.0282	mg/L	2.0	SM4500-P F	8/14/2007	SO	TPHOS-070814	
E-10162	**TOTAL SUSPENDED SOLIDS**	**565**	4	1.55	mg/L	1.0	SM2540 D	8/7/2007	CCN	TSS_070807	
E-14551	**FECAL COLIFORM**	**900**	1.1		MPN/10(	1.0	SM9221 E	8/6/2007	AS	MPN_070806	
E-10128	**TOTAL NITRATE/NITRITE**	**0.03**	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	8/9/2007	SO	NO3NO2-070809	
E-10264	**TOTAL KJELDAHL NITROGEN**	**23.7**	3	0.1391	mg/L	5.0	SM4500-Norg C	8/10/2007	SO	TKN-070810	
7664-41-7	**AMMONIA**	**6.62**	0.04	0.0015	mg/L	2.0	SM4500-NH3 G	8/9/2007	SO	NH3-070809	

Lab Number: 23038 Sample Description: #10 - Old 99 near Gear Rd Sample Date: 8/6/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	**HYDROGEN ION (pH)**	**6.44**			pH Units	1.0	SM4500-H+ B	8/6/2007	KJY	PH_070806	
E-10173	**TOTAL DISSOLVED SOLIDS**	**266**	10	10	mg/L	1.0	SM2540 C	8/7/2007	CCN	TDS_070807	
7723-14-0	**TOTAL PHOSPHORUS**	**2.72**	0.10	0.0282	mg/L	1.0	SM4500-P F	8/14/2007	SO	TPHOS-070814	
E-10162	**TOTAL SUSPENDED SOLIDS**	**315**	4	1.55	mg/L	1.0	SM2540 D	8/7/2007	CCN	TSS_070807	
E-14551	**FECAL COLIFORM**	**50**	1.1		MPN/10(	1.0	SM9221 E	8/6/2007	AS	MPN_070806	
E-10128	**TOTAL NITRATE/NITRITE**	**0.37**	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	8/9/2007	SO	NO3NO2-070809	
E-10264	**TOTAL KJELDAHL NITROGEN**	**5.74**	0.5	0.1391	mg/L	1.0	SM4500-Norg C	8/10/2007	SO	TKN-070810	
7664-41-7	**AMMONIA**	**1.09**	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	8/9/2007	SO	NH3-070809	

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D.F. - Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

3,229

Chain of Custody / Analysis Request

(Please complete all applicable shaded sections)

07-10116
23030 - 23038
10119

EDGE ANALYTICAL LABORATORIES
1620 S. Walnut St.
Burlington, WA 98233
1.800.755.9295

805 W. Orchard Dr. Suite 4
Bellingham, WA 98225

Report to:	Burlington, City of, Engineering
Ship Address:	900 E Fairhaven
City:	Burlington St: WA Zip: 98233
Attn:	Becky Ziel
Phone:	360.755-9715 FAX:
Email:	bziel@ci.burlington.wa.us
Project	Bi-Monthly Surface Water

Bill to:	
Address:	
City:	St: Zip:
Phone:	FAX:
P.O.#:	Attn:
☐ Visa ☐ M/C ☐ A/E	Expires /
Card#:	

Check Regulatory Program
- ☐ Safe Drinking Water Act
- ☐ Clean Water Act
- ☐ RCRA / CERCLA
- ☐ Other

Instructions
1. Use one line per sample.
2. Be specific in analysis requests.
3. Check off analyses to be performed for each sample.
4. Enter number of containers.

Turn Around Time Required
- ☑ Standard OP
- ☐ Half-time (50% surcharge)
- ☐ Quickest (100% surcharge)
- ☐ Other

CO003229

Analyses Requested

	Field ID	Location	Grab/ Comp.	Matrix	Date	Time	pH, TDS, TSS	TKN, NH3, N02/N03,	T. Phos	Fecal Coliform					Number of Containers	Special Instructions Conditions on Receipt
1	#1	Gages Sl./Peacock R	G	SW	8-6-07	10:15	✓	✓	✓	✓	☐	☐	☐	☐		
2	#2	" /Skagit St/Rio Vista	"	"	"	10:45	✓	✓	✓	✓	☐	☐	☐	☐		
3	#3	" /Gilkey	"	"	"	12:05	✓	✓	✓	✓	☐	☐	☐	☐		
4	#4	" /I5 /Goldenrod	"	"	"	11:20	✓	✓	✓	✓	☐	☐	☐	☐		
5	#5	" / Pulver Rd	"	"	"	11:40	✓	✓	✓	✓	☐	☐	☐	☐		
6	#6	JoeLeary/Old 99	"	"	"	12:25	✓	✓	✓	✓	☐	☐	☐	☐		
7	No #7					~~E10~~	✓	✓	✓	✓	☐	☐	☐	☐		
8	#8	Gear Rd.	"	"	"	1:10	✓	✓	✓	✓	☐	☐	☐	☐		
9	#9	Gear Rd/Park Ln.	"	"	"	1:00	✓	✓	✓	✓	☐	☐	☐	☐		
10	#10	Old 99 near Gear Rd.	"	"	"	12:40	✓	✓	✓	✓	☐	☐	☐	☐		

Sampled by: Phone: FAX: Email: Total Containers

Sample Receipt Request (Must include FAX or Email) ☐

Relinquished by	Date	Time	Received by	Date	Time
Becky Ziel	8-6-07	1:40	C DeVeriles	8/6/07	1340

	Yes	No	N/A
Custody seals intact	☐	☐	☒
Sample temp 17°C satisfactory	☐	☐	☐
Samples received intact	☒	☐	
Chain of custody & labels agree	☐	☐	

Jenna

FYI

ANALYTICAL LABORATORIES

Burlington WA (Corporate Office) | 1620 S Walnut St - 98233 | 800.755.9295 • 360.757.1400 • 360.757.1402fax

Bellingham WA (Microbiology) | 805 Orchard Dr Suite 4 - 98225 | 360.671.0688 • 360.671.1577fax

RECEIVED
OCT 18 2007
PW - Engineering

OTAK, INC.
OCT 19 2007
RECEIVED

Data Report

Client Name: Burlington, City of, Engineering
900 E Fairhaven
Burlington, WA 98233

Report Date: 10/12/2007
Reference Number: 07-13336
Project: Bi-Monthly Surface Water

Collected By:

Date Received: 10/3/2007
Peer Review:

Lab Number: 30297 Sample Description: #1 - Peacock Rd/ Gages Slough Sample Date: 10/3/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.61			pH Units	1.0	SM4500-H+ B	10/3/2007	CCN	PH_071003	
E-10173	TOTAL DISSOLVED SOLIDS	87	10	-	mg/L	1.0	SM2540 C	10/4/2007	CCN	TDS_071004	
7723-14-0	TOTAL PHOSPHORUS	0.84	0.10	0.0282	mg/L	1.0	SM4500-P F	10/11/2007	SO	TPHOS-071011	
E-10162	TOTAL SUSPENDED SOLIDS	56	4		mg/L	1.0	SM2540 D	10/4/2007	CCN	TSS_071004	
E-14551	FECAL COLIFORM	1600	2		per 100m	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-10128	TOTAL NITRATE/NITRITE	0.11	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	10/4/2007	SO	NO3NO2-071004	
E-10264	TOTAL KJELDAHL NITROGEN	6.34	0.5	0.1391	mg/L	1.0	SM4500-Norg C	10/8/2007	SO	TKN-071008	
7664-41-7	AMMONIA	1.51	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	10/8/2007	SO	NH3-071008A	

Lab Number: 30298 Sample Description: #2 - Gages Sl/Skagit St/Rio Vista Sample Date: 10/3/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.25			pH Units	1.0	SM4500-H+ B	10/3/2007	CCN	PH_071003	
E-10173	TOTAL DISSOLVED SOLIDS	32	10		mg/L	1.0	SM2540 C	10/4/2007	CCN	TDS_071004	
7723-14-0	TOTAL PHOSPHORUS	0.14	0.10	0.0282	mg/L	1.0	SM4500-P F	10/11/2007	SO	TPHOS-071011	
E-10162	TOTAL SUSPENDED SOLIDS	11	4		mg/L	1.0	SM2540 D	10/4/2007	CCN	TSS_071004	
E-14551	FECAL COLIFORM	130	2		per 100m	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-10128	TOTAL NITRATE/NITRITE	0.06	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	10/4/2007	SO	NO3NO2-071004	
E-10264	TOTAL KJELDAHL NITROGEN	0.96	0.5	0.1391	mg/L	1.0	SM4500-Norg C	10/8/2007	SO	TKN-071008	
7664-41-7	AMMONIA	0.29	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	10/8/2007	SO	NH3-071008A	

Lab Number: 30299 Sample Description: #3 - Gages Sl/Gilkey Rd Sample Date: 10/3/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.75			pH Units	1.0	SM4500-H+ B	10/3/2007	CCN	PH_071003	
E-10173	TOTAL DISSOLVED SOLIDS	68	10		mg/L	1.0	SM2540 C	10/4/2007	CCN	TDS_071004	
7723-14-0	TOTAL PHOSPHORUS	0.39	0.10	0.0282	mg/L	1.0	SM4500-P F	10/11/2007	SO	TPHOS-071011	
E-10162	TOTAL SUSPENDED SOLIDS	15	4		mg/L	1.0	SM2540 D	10/4/2007	CCN	TSS_071004	
E-14551	FECAL COLIFORM	900	2		per 100m	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-10128	TOTAL NITRATE/NITRITE	0.09	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	10/4/2007	SO	NO3NO2-071004	
E-10264	TOTAL KJELDAHL NITROGEN	3.02	0.5	0.1391	mg/L	1.0	SM4500-Norg C	10/8/2007	SO	TKN-071008	
7664-41-7	AMMONIA	1.09	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	10/8/2007	SO	NH3-071008A	

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
D.F. - Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

Reference Number: 07-13336
Report Date: 10/12/2007

ANALYTICAL LABORATORIES

Data Report

Collected By:

Date Received: 10/3/2007

Lab Number: 30300 Sample Description: #4 - Gages SI/I-5/Goldenrod Sample Date: 10/3/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	5.86			pH Units	1.0	SM4500-H+ B	10/3/2007	CCN	PH_071003	
E-10173	TOTAL DISSOLVED SOLIDS	40	10		mg/L	1.0	SM2540 C	10/4/2007	CCN	TDS_071004	
7723-14-0	TOTAL PHOSPHORUS	ND	0.10	0.0282	mg/L	1.0	SM4500-P F	10/11/2007	SO	TPHOS-071011	
E-10162	TOTAL SUSPENDED SOLIDS	9	4		mg/L	1.0	SM2540 D	10/4/2007	CCN	TSS_071004	
E-14551	FECAL COLIFORM	50	2		per 100m	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-10128	TOTAL NITRATE/NITRITE	ND	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	10/4/2007	SO	NO3NO2-071004	
E-10264	TOTAL KJELDAHL NITROGEN	0.66	0.5	0.1391	mg/L	1.0	SM4500-Norg C	10/8/2007	SO	TKN-071008	
7664-41-7	AMMONIA	0.06	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	10/8/2007	SO	NH3-071008A	

Lab Number: 30301 Sample Description: #5 - Gages SI/Pulver Rd Sample Date: 10/3/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.83			pH Units	1.0	SM4500-H+ B	10/3/2007	CCN	PH_071003	
E-10173	TOTAL DISSOLVED SOLIDS	64	10		mg/L	1.0	SM2540 C	10/4/2007	CCN	TDS_071004	
7723-14-0	TOTAL PHOSPHORUS	ND	0.10	0.0282	mg/L	1.0	SM4500-P F	10/11/2007	SO	TPHOS-071011	
E-10162	TOTAL SUSPENDED SOLIDS	7	4		mg/L	1.0	SM2540 D	10/4/2007	CCN	TSS_071004	
E-14551	FECAL COLIFORM	240	2		per 100m	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-10128	TOTAL NITRATE/NITRITE	0.08	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	10/4/2007	SO	NO3NO2-071004	
E-10264	TOTAL KJELDAHL NITROGEN	0.70	0.5	0.1391	mg/L	1.0	SM4500-Norg C	10/8/2007	SO	TKN-071008	
7664-41-7	AMMONIA	0.03	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	10/8/2007	SO	NH3-071008A	

Lab Number: 30302 Sample Description: #6 - Joe Leary/Old 99 Sample Date: 10/3/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.38			pH Units	1.0	SM4500-H+ B	10/3/2007	CCN	PH_071003	
E-10173	TOTAL DISSOLVED SOLIDS	147	10		mg/L	1.0	SM2540 C	10/4/2007	CCN	TDS_071004	
7723-14-0	TOTAL PHOSPHORUS	0.29	0.10	0.0282	mg/L	1.0	SM4500-P F	10/11/2007	SO	TPHOS-071011	
E-10162	TOTAL SUSPENDED SOLIDS	13	4		mg/L	1.0	SM2540 D	10/4/2007	CCN	TSS_071004	
E-14551	FECAL COLIFORM	>1600	2		per 100m	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-10128	TOTAL NITRATE/NITRITE	0.40	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	10/4/2007	SO	NO3NO2-071004	
E-10264	TOTAL KJELDAHL NITROGEN	1.24	0.5	0.1391	mg/L	1.0	SM4500-Norg C	10/8/2007	SO	TKN-071008	
7664-41-7	AMMONIA	0.32	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	10/8/2007	SO	NH3-071008A	

Lab Number: 30303 Sample Description: #8 - Gear Rd Sample Date: 10/3/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.48			pH Units	1.0	SM4500-H+ B	10/3/2007	CCN	PH_071003	
E-10173	TOTAL DISSOLVED SOLIDS	128	10		mg/L	1.0	SM2540 C	10/4/2007	CCN	TDS_071004	
7723-14-0	TOTAL PHOSPHORUS	1.84	0.10	0.0282	mg/L	1.0	SM4500-P F	10/11/2007	SO	TPHOS-071011	
E-10162	TOTAL SUSPENDED SOLIDS	40	4		mg/L	1.0	SM2540 D	10/4/2007	CCN	TSS_071004	
E-14551	FECAL COLIFORM	>1600	2		per 100m	1.0	SM9221 E	10/8/2007	AS	MTF_071008	

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
D.F. - Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

Reference Number: 07-13336
Report Date: 10/12/2007

Data Report

Collected By:

Date Received: 10/3/2007

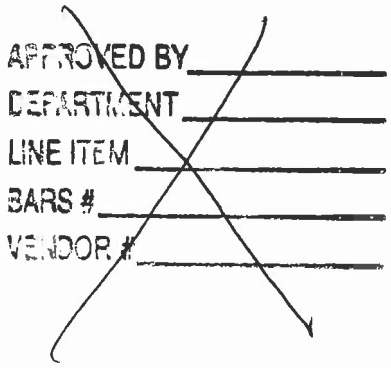
E-10128	**TOTAL NITRATE/NITRITE**	**0.01**	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	10/4/2007	SO	NO3NO2-071004
E-10264	**TOTAL KJELDAHL NITROGEN**	**4.00**	0.5	0.1391	mg/L	1.0	SM4500-Norg C	10/8/2007	SO	TKN-071008
7664-41-7	**AMMONIA**	**1.39**	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	10/8/2007	SO	NH3-071008A

Lab Number: 30304 Sample Description: #9 - Gear Rd/Park Ln Sample Date: 10/3/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	**HYDROGEN ION (pH)**	**6.33**			pH Units	1.0	SM4500-H+ B	10/3/2007	CCN	PH_071003	
E-10173	**TOTAL DISSOLVED SOLIDS**	**126**	10		mg/L	1.0	SM2540 C	10/4/2007	CCN	TDS_071004	
7723-14-0	**TOTAL PHOSPHORUS**	**1.84**	0.10	0.0282	mg/L	1.0	SM4500-P F	10/11/2007	SO	TPHOS-071011	
E-10162	**TOTAL SUSPENDED SOLIDS**	**31**	4		mg/L	1.0	SM2540 D	10/4/2007	CCN	TSS_071004	
E-14551	**FECAL COLIFORM**	**>1600**	2		per 100m	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-10128	**TOTAL NITRATE/NITRITE**	**0.02**	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	10/4/2007	SO	NO3NO2-071004	
E-10264	**TOTAL KJELDAHL NITROGEN**	**4.12**	0.5	0.1391	mg/L	1.0	SM4500-Norg C	10/8/2007	SO	TKN-071008	
7664-41-7	**AMMONIA**	**1.58**	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	10/8/2007	SO	NH3-071008A	

Lab Number: 30305 Sample Description: #10 - Old 00 near Gear Rd Sample Date: 10/3/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	**HYDROGEN ION (pH)**	**6.31**			pH Units	1.0	SM4500-H+ B	10/3/2007	CCN	PH_071003	
E-10173	**TOTAL DISSOLVED SOLIDS**	**174**	10		mg/L	1.0	SM2540 C	10/4/2007	CCN	TDS_071004	
7723-14-0	**TOTAL PHOSPHORUS**	**ND**	0.10	0.0282	mg/L	1.0	SM4500-P F	10/11/2007	SO	TPHOS-071011	
E-10162	**TOTAL SUSPENDED SOLIDS**	**6**	4		mg/L	1.0	SM2540 D	10/4/2007	CCN	TSS_071004	
E-14551	**FECAL COLIFORM**	**14**	2		per 100m	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-10128	**TOTAL NITRATE/NITRITE**	**0.08**	0.01	0.0007	mg/L	1.0	SM4500-NO3 F	10/4/2007	SO	NO3NO2-071004	
E-10264	**TOTAL KJELDAHL NITROGEN**	**0.68**	0.5	0.1391	mg/L	1.0	SM4500-Norg C	10/8/2007	SO	TKN-071008	
7664-41-7	**AMMONIA**	**0.35**	0.02	0.0015	mg/L	1.0	SM4500-NH3 G	10/8/2007	SO	NH3-071008A	



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D.F. - Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

3,229

Chain of Custody / Analysis Request (Please complete all applicable shaded sections)

Report to:	Burlington, City of, Engineering	Bill to:	07-33333 30297 - 30305
Ship Address:	900 E Fairhaven	Address:	
City:	Burlington St: WA Zip: 98233	City: St: Zip:	
Attn:	Becky Ziel	Phone: FAX:	
Phone:	360.755-9715 FAX:	P.O.#: Attn:	
Email:	bziel@ci.burlington.wa.us	☐ Visa ☐ M/C ☐ A/E Expires /	
Project	Bi-Monthly Surface Water	Card#:	

Check Regulatory Program
- ☐ Safe Drinking Water Act
- ☐ Clean Water Act
- ☐ RCRA / CERCLA
- ☐ Other

EDGE ANALYTICAL LABORATORIES
1620 S. Walnut St.
Burlington, WA 98233
1.800.755.9295

805 W. Orchard Dr. Suite 4
Bellingham, WA 98225

Instructions
1. Use one line per sample.
2. Be specific in analysis requests.
3. Check off analyses to be performed for each sample.
4. Enter number of containers.

Turn Around Time Required
- ☑ Standard 07
- ☐ Half-time (50% surcharge)
- ☐ Quickest (100% surcharge)
- ☐ Other

Analyses Requested

CO003229

	Field ID	Location	Grab/ Comp.	Matrix	Date	Time	pH, TDS, TSS	TKN, NH3, N02/N03,	T. Phos	Fecal Coliform					Number of Containers	Special Instructions Conditions on Receipt
1	#1	Gages Sl./Peacock Rd.	C	SW	10-3-07	10:30	☐	☐	☐	☐	☐	☐	☐	☐		
2	#2	" /Skagit St/Rio Vista	"	"	"	10:40	☐	☐	☐	☐	☐	☐	☐	☐		
3	#3	" /Gilkey Rd.	"	"	"	10:55	☐	☐	☐	☐	☐	☐	☐	☐		
4	#4	" /I-5/Goldenrod	"	"	"	12:05	☐	☐	☐	☐	☐	☐	☐	☐		
5	#5	" /Pulver Rd.	"	"	"	12:20	☐	☐	☐	☐	☐	☐	☐	☐		
6	#6	Joe Leary/Old 99	"	"	"	11:15	☐	☐	☐	☐	☐	☐	☐	☐		
7	No #7						☐	☐	☐	☐	☐	☐	☐	☐		
8	#8	Gear Rd.	"	"	"	11:45	☐	☐	☐	☐	☐	☐	☐	☐		
9	#9	Gear Rd./Park Ln.	"	"	"	11:38	☐	☐	☐	☐	☐	☐	☐	☐		
10	#10	Old 99 near Gear Rd.	"	"	"	11:25	☐	☐	☐	☐	☐	☐	☐	☐		

Sampled by: Phone: FAX: Email: Total Containers

Sample Receipt Request (Must include FAX or Email) ☐

Relinquished by	Date	Time	Received by	Date	Time
Becky Ziel	10-3-07	12:30		10-3-07	12:31

	Yes	No	N/A
Custody seals intact	☐	☐	☑
Sample temp 12 C satisfactory	☐	☐	☐
Samples received intact	☑	☐	
Chain of custody & labels agree	☐	☐	

EDGE ANALYTICAL LABORATORIES

Burlington WA | 1620 S Walnut St - 98233
Corporate Office | 800.755.9295 • 360.757.1400 • 360.757.1402fax
Bellingham WA | 805 Orchard Dr Suite 4 - 98225
Microbiology | 360.671.0688 • 360.671.1577fax

Data Report

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

Report Date: 10/12/2007
Reference Number: 07-13431
Project: Storm Water

Collected By:

Date Received: 10/4/2007
Peer Review:

Lab Number: 30508 Sample Description: #1 - Gages SI/Peacock Rd Sample Date: 10/4/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.59			pH Units	1.0	SM4500-H+ B	10/4/2007	MAK	PH_071004	
7440-50-8	COPPER	ND	0.02	0.003	mg/L	1.0	200.7/FILTER	10/8/2007	BJ	200.7-071008A	
E-10162	TOTAL SUSPENDED SOLIDS	13	4		mg/L	1.0	SM2540 D	10/5/2007	CCN	TSS_071005	
E-14551	FECAL COLIFORM	>1600	2		MPN/10(	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-11778	HARDNESS	39.8	3.30	0.055	mg/L	1.0	200.7	10/8/2007	BJ	200.7-071008A	
7439-92-1	LEAD	ND	0.001	9.71E-06	mg/L	1.0	200.8/FILTER	10/11/2007	MVP	200.8_071011	
7440-66-6	ZINC	0.056	0.02	0.0095	mg/L	1.0	200.7/FILTER	10/8/2007	BJ	200.7-071008A	

Lab Number: 30509 Sample Description: #5 - Gages / Pulver Rd Sample Date: 10/4/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.43			pH Units	1.0	SM4500-H+ B	10/4/2007	MAK	PH_071004	
7440-50-8	COPPER	ND	0.02	0.003	mg/L	1.0	200.7/FILTER	10/8/2007	BJ	200.7-071008A	
E-10162	TOTAL SUSPENDED SOLIDS	39	4		mg/L	1.0	SM2540 D	10/5/2007	CCN	TSS_071005	
E-14551	FECAL COLIFORM	500	2		MPN/10(	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-11778	HARDNESS	30.4	3.30	0.055	mg/L	1.0	200.7	10/8/2007	BJ	200.7-071008A	
7439-92-1	LEAD	ND	0.001	9.71E-06	mg/L	1.0	200.8/FILTER	10/11/2007	MVP	200.8_071011	
7440-66-6	ZINC	0.027	0.02	0.0095	mg/L	1.0	200.7/FILTER	10/8/2007	BJ	200.7-071008A	

Lab Number: 30510 Sample Description: #7 - MH @ Sewer Dept Sample Date: 10/4/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.34			pH Units	1.0	SM4500-H+ B	10/4/2007	MAK	PH_071004	
7440-50-8	COPPER	ND	0.02	0.003	mg/L	1.0	200.7/FILTER	10/8/2007	BJ	200.7-071008A	
E-10162	TOTAL SUSPENDED SOLIDS	9	4		mg/L	1.0	SM2540 D	10/5/2007	CCN	TSS_071005	
E-14551	FECAL COLIFORM	110	2		MPN/10(	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-11778	HARDNESS	7.85	3.30	0.055	mg/L	1.0	200.7	10/8/2007	BJ	200.7-071008A	
7439-92-1	LEAD	ND	0.001	9.71E-06	mg/L	1.0	200.8/FILTER	10/11/2007	MVP	200.8_071011	
7440-66-6	ZINC	0.076	0.02	0.0095	mg/L	1.0	200.7/FILTER	10/8/2007	BJ	200.7-071008A	

Lab Number: 30511 Sample Description: #8 - MH @ S Mall Entrance Sample Date: 10/4/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	HYDROGEN ION (pH)	6.40			pH Units	1.0	SM4500-H+ B	10/4/2007	MAK	PH_071004	
7440-50-8	COPPER	ND	0.02	0.003	mg/L	1.0	200.7/FILTER	10/8/2007	BJ	200.7-071008A	

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D.F. - Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

Reference Number: 07-13431
Report Date: 10/12/2007

Data Report

Collected By:

Date Received: 10/4/2007

E-10162	**TOTAL SUSPENDED SOLIDS**	**12**	4		mg/L	1.0	SM2540 D	10/5/2007	CCN	TSS_071005
E-14551	**FECAL COLIFORM**	**1600**	2		MPN/10(	1.0	SM9221 E	10/8/2007	AS	MTF_071008
E-11778	**HARDNESS**	**5.80**	3.30	0.055	mg/L	1.0	200.7	10/8/2007	BJ	200.7-071008A
7439-92-1	**LEAD**	**ND**	0.001	9.71E-06	mg/L	1.0	200.8/FILTER	10/11/2007	MVP	200.8_071011
7440-66-6	**ZINC**	**0.034**	0.02	0.0095	mg/L	1.0	200.7/FILTER	10/8/2007	BJ	200.7-071008A

Lab Number: 30512 Sample Description: #9 - Whitmarsh Rd Pump Sta Sample Date: 10/4/2007

CAS ID#	Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
E-10139	**HYDROGEN ION (pH)**	**6.52**			pH Units	1.0	SM4500-H+ B	10/4/2007	MAK	PH_071004	
7440-50-8	**COPPER**	**ND**	0.02	0.003	mg/L	1.0	200.7/FILTER	10/8/2007	BJ	200.7-071008A	
E-10162	**TOTAL SUSPENDED SOLIDS**	**20**	4		mg/L	1.0	SM2540 D	10/5/2007	CCN	TSS_071005	
E-14551	**FECAL COLIFORM**	**300**	2		MPN/10(	1.0	SM9221 E	10/8/2007	AS	MTF_071008	
E-11778	**HARDNESS**	**9.98**	3.30	0.055	mg/L	1.0	200.7	10/8/2007	BJ	200.7-071008A	
7439-92-1	**LEAD**	**ND**	0.001	9.71E-06	mg/L	1.0	200.8/FILTER	10/11/2007	MVP	200.8_071011	
7440-66-6	**ZINC**	**ND**	0.02	0.0095	mg/L	1.0	200.7/FILTER	10/8/2007	BJ	200.7-071008A	

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ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
D.F. - Dilution Factor

WSDOE Lab C1251
WSDOH Lab 046

FORM: MULT_RESULT

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Bellingham WA (Microbiology) | 805 Orchard Dr Suite 4 - 98225 | 360.671.0688 • 360.671.1577fax

WSDOE Lab C1251

DATA REPORT

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

Reference Number: 07-13431
Project: Storm Water

Lab Number: 30508
Field ID: #1
Sample Description: Gages SI/Peacock Rd
Matrix: Surface Water
Collect Date: 10/4/2007
Extraction Date: 10/8/2007
Extraction Method: 3510C

Report Date: 10/16/2007
Date Analyzed: 10/10/2007
Analyst: MM/C(
Peer Review: MVA
Analytical Method: 608

Pesticides and PCBs

CAS ID#	COMPOUNDS	RESULT*	Units	PQL	MDL	D.F.	Batch	COMMENT
	- Organochlorine Pesticides							
309-00-2	ALDRIN	**ND**	ug/L	0.05	0.020	1.0	608_071008	Limits TABLE 3 / Pt.1363,App.
319-84-6	BHC, ALPHA -	**ND**	ug/L	0.05	0.013	1.0		
319-85-7	BHC, BETA -	**ND**	ug/L	0.05	0.014	1.0		
58-89-9	LINDANE (BHC - GAMMA)	**ND**	ug/L	0.05	0.013	1.0		
319-86-8	BHC, DELTA -	**ND**	ug/L	0.05	0.017	1.0		
57-74-9	CHLORDANE	**0.3**	ug/L	0.20	0.017	1.0		GC/MS confirmed
50-29-3	4,4' - DDT	**ND**	ug/L	0.10	0.033	1.0		
72-55-9	4,4' - DDE	**ND**	ug/L	0.10	0.021	1.0		
72-54-8	4,4' - DDD	**ND**	ug/L	0.10	0.023	1.0		
60-57-1	DIELDRIN	**ND**	ug/L	0.10	0.016	1.0		
959-98-8	ENDOSUFAN I	**ND**	ug/L	0.10	0.016	1.0		
33213-65-9	ENDOSULFAN II	**ND**	ug/L	0.10	0.019	1.0		
1031-07-8	ENDOSULFAN SULFATE	**ND**	ug/L	0.10	0.016	1.0		
72-20-8	ENDRIN	**ND**	ug/L	0.10	0.019	1.0		
7421-93-4	ENDRIN ALDEHYDE	**ND**	ug/L	0.10	0.031	1.0		
76-44-8	HEPTACHLOR	**ND**	ug/L	0.05	0.015	1.0		
1024-57-3	HEPTACHLOR EPOXIDE "B"	**ND**	ug/L	0.05	0.015	1.0		
8001-35-2	TOXAPHENE	**ND**	ug/L	5.0	1	1.0		
	- PCBs							
12674-11-2	AROCLOR 1016	**ND**	ug/L	1.0	1.0	1.0	608_071008	
11104-28-2	AROCLOR 1221	**ND**	ug/L	1.0	1.0	1.0		
11141-16-5	AROCLOR 1232	**ND**	ug/L	1.0	1.0	1.0		
53469-21-9	AROCLOR 1242	**ND**	ug/L	1.0	1.0	1.0		
12672-29-6	AROCLOR 1248	**ND**	ug/L	1.0	1.0	1.0		
11097-69-1	AROCLOR 1254	**ND**	ug/L	1.0	1.0	1.0		
11096-82-5	AROCLOR 1260	**ND**	ug/L	1.0	1.0	1.0		

*Result of: NA - indicates the compound was not analyzed.
Alpha characters following a numeric value are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
ND - indicates the compound was not detected above the PQL or MDL.

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
D.F. - Dilution Factor.

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Bellingham WA | 805 Orchard Dr Suite 4 - 98225
Microbiology | 360.671.0688 • 360.671.1577fax

WSDOE Lab C1251

DATA REPORT

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

Lab Number: 30510
Field ID: #7
Sample Description: MH @ Sewer Dept
Matrix: Surface Water
Collect Date: 10/4/2007
Extraction Date: 10/8/2007
Extraction Method: 3510C

Reference Number: 07-13431
Project: Storm Water

Report Date: 10/15/2007
Date Analyzed: 10/10/2007
Analyst: MM/CC
Peer Review: MVA
Analytical Method: 608

Pesticides and PCBs

CAS ID#	COMPOUNDS	RESULT*	Units	PQL	MDL	D.F.	Batch	COMMENT
	- Organochlorine Pesticides							
309-00-2	ALDRIN	ND	ug/L	0.05	0.020	1.0	608_071008	Limits TABLE 3 / Pl.1363,App.
319-84-6	BHC, ALPHA -	ND	ug/L	0.05	0.013	1.0		
319-85-7	BHC, BETA -	ND	ug/L	0.05	0.014	1.0		
58-89-9	LINDANE (BHC - GAMMA)	ND	ug/L	0.05	0.013	1.0		
319-86-8	BHC, DELTA -	ND	ug/L	0.05	0.017	1.0		
57-74-9	CHLORDANE	ND	ug/L	0.20	0.017	1.0		
50-29-3	4,4' - DDT	ND	ug/L	0.10	0.033	1.0		
72-55-9	4,4' - DDE	ND	ug/L	0.10	0.021	1.0		
72-54-8	4,4' - DDD	ND	ug/L	0.10	0.023	1.0		
60-57-1	DIELDRIN	ND	ug/L	0.10	0.016	1.0		
959-98-8	ENDOSUFAN I	ND	ug/L	0.10	0.016	1.0		
33213-65-9	ENDOSULFAN II	ND	ug/L	0.10	0.019	1.0		
1031-07-8	ENDOSULFAN SULFATE	ND	ug/L	0.10	0.016	1.0		
72-20-8	ENDRIN	ND	ug/L	0.10	0.019	1.0		
7421-93-4	ENDRIN ALDEHYDE	ND	ug/L	0.10	0.031	1.0		
76-44-8	HEPTACHLOR	ND	ug/L	0.05	0.015	1.0		
1024-57-3	HEPTACHLOR EPOXIDE "B"	ND	ug/L	0.05	0.015	1.0		
8001-35-2	TOXAPHENE	ND	ug/L	5.0	1	1.0		
	- PCBs							
12674-11-2	AROCLOR 1016	ND	ug/L	1.0	1.0	1.0	608_071008	
11104-28-2	AROCLOR 1221	ND	ug/L	1.0	1.0	1.0		
11141-16-5	AROCLOR 1232	ND	ug/L	1.0	1.0	1.0		
53469-21-9	AROCLOR 1242	ND	ug/L	1.0	1.0	1.0		
12672-29-6	AROCLOR 1248	ND	ug/L	1.0	1.0	1.0		
11097-69-1	AROCLOR 1254	ND	ug/L	1.0	1.0	1.0		
11096-82-5	AROCLOR 1260	ND	ug/L	1.0	1.0	1.0		

*Result of: NA - indicates the compound was not analyzed.
Alpha characters following a numeric value are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
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WSDOE Lab C1251

DATA REPORT

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

Reference Number: 07-13431
Project: Storm Water

Lab Number: 30511
Field ID: #8
Sample Description: MH @ S Mall Entrance
Matrix: Surface Water
Collect Date: 10/4/2007
Extraction Date: 10/8/2007
Extraction Method: 3510C

Report Date: 10/15/2007
Date Analyzed: 10/10/2007
Analyst: MM/CC
Peer Review: MVA
Analytical Method: 608

Pesticides and PCBs

CAS ID#	COMPOUNDS	RESULT*	Units	PQL	MDL	D.F.	Batch	COMMENT
	- Organochlorine Pesticides							
309-00-2	ALDRIN	ND	ug/L	0.05	0.020	1.0	608_071008	Limits TABLE 3 / Pt.1363,App.
319-84-6	BHC, ALPHA -	ND	ug/L	0.05	0.013	1.0		
319-85-7	BHC, BETA -	ND	ug/L	0.05	0.014	1.0		
58-89-9	LINDANE (BHC - GAMMA)	ND	ug/L	0.05	0.013	1.0		
319-86-8	BHC, DELTA -	ND	ug/L	0.05	0.017	1.0		
57-74-9	CHLORDANE	ND	ug/L	0.20	0.017	1.0		
50-29-3	4,4' - DDT	ND	ug/L	0.10	0.033	1.0		
72-55-9	4,4' - DDE	ND	ug/L	0.10	0.021	1.0		
72-54-8	4,4' - DDD	ND	ug/L	0.10	0.023	1.0		
60-57-1	DIELDRIN	ND	ug/L	0.10	0.016	1.0		
959-98-8	ENDOSUFAN I	ND	ug/L	0.10	0.016	1.0		
33213-65-9	ENDOSULFAN II	ND	ug/L	0.10	0.019	1.0		
1031-07-8	ENDOSULFAN SULFATE	ND	ug/L	0.10	0.016	1.0		
72-20-8	ENDRIN	ND	ug/L	0.10	0.019	1.0		
7421-93-4	ENDRIN ALDEHYDE	ND	ug/L	0.10	0.031	1.0		
76-44-8	HEPTACHLOR	ND	ug/L	0.05	0.015	1.0		
1024-57-3	HEPTACHLOR EPOXIDE "B"	ND	ug/L	0.05	0.015	1.0		
8001-35-2	TOXAPHENE	ND	ug/L	5.0	1	1.0		
	- PCBs							
12674-11-2	AROCLOR 1016	ND	ug/L	1.0	1.0	1.0	608_071008	
11104-28-2	AROCLOR 1221	ND	ug/L	1.0	1.0	1.0		
11141-16-5	AROCLOR 1232	ND	ug/L	1.0	1.0	1.0		
53469-21-9	AROCLOR 1242	ND	ug/L	1.0	1.0	1.0		
12672-29-6	AROCLOR 1248	ND	ug/L	1.0	1.0	1.0		
11097-69-1	AROCLOR 1254	ND	ug/L	1.0	1.0	1.0		
11096-82-5	AROCLOR 1260	ND	ug/L	1.0	1.0	1.0		

*Result of: NA - indicates the compound was not analyzed.
Alpha characters following a numeric value are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
ND - indicates the compound was not detected above the PQL or MDL.

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
D.F. - Dilution Factor.

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WSDOE Lab C1251

DATA REPORT

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

Reference Number: 07-13431
Project: Storm Water

Lab Number: 30512
Field ID: #9
Sample Description: Whitmarsh Rd Pump Sta
Matrix: Surface Water
Collect Date: 10/4/2007
Extraction Date: 10/8/2007
Extraction Method: 3510C

Report Date: 10/15/2007
Date Analyzed: 10/10/2007
Analyst: MM/C(
Peer Review: MVA
Analytical Method: 608

Pesticides and PCBs

CAS ID#	COMPOUNDS	RESULT*	Units	PQL	MDL	D.F.	Batch	COMMENT
	- Organochlorine Pesticides							
309-00-2	ALDRIN	ND	ug/L	0.05	0.020	1.0	608_071008	Limits TABLE 3 / Pt.1363,App.
319-84-6	BHC, ALPHA -	ND	ug/L	0.05	0.013	1.0		
319-85-7	BHC, BETA -	ND	ug/L	0.05	0.014	1.0		
58-89-9	LINDANE (BHC - GAMMA)	ND	ug/L	0.05	0.013	1.0		
319-86-8	BHC, DELTA -	ND	ug/L	0.05	0.017	1.0		
57-74-9	CHLORDANE	ND	ug/L	0.20	0.017	1.0		
50-29-3	4,4' - DDT	ND	ug/L	0.10	0.033	1.0		
72-55-9	4,4' - DDE	ND	ug/L	0.10	0.021	1.0		
72-54-8	4,4' - DDD	ND	ug/L	0.10	0.023	1.0		
60-57-1	DIELDRIN	ND	ug/L	0.10	0.016	1.0		
959-98-8	ENDOSUFAN I	ND	ug/L	0.10	0.016	1.0		
33213-65-9	ENDOSULFAN II	ND	ug/L	0.10	0.019	1.0		
1031-07-8	ENDOSULFAN SULFATE	ND	ug/L	0.10	0.016	1.0		
72-20-8	ENDRIN	ND	ug/L	0.10	0.019	1.0		
7421-93-4	ENDRIN ALDEHYDE	ND	ug/L	0.10	0.031	1.0		
76-44-8	HEPTACHLOR	ND	ug/L	0.05	0.015	1.0		
1024-57-3	HEPTACHLOR EPOXIDE "B"	ND	ug/L	0.05	0.015	1.0		
8001-35-2	TOXAPHENE	ND	ug/L	5.0	1	1.0		
	- PCBs							
12674-11-2	AROCLOR 1016	ND	ug/L	1.0	1.0	1.0	608_071008	
11104-28-2	AROCLOR 1221	ND	ug/L	1.0	1.0	1.0		
11141-16-5	AROCLOR 1232	ND	ug/L	1.0	1.0	1.0		
53469-21-9	AROCLOR 1242	ND	ug/L	1.0	1.0	1.0		
12672-29-6	AROCLOR 1248	ND	ug/L	1.0	1.0	1.0		
11097-69-1	AROCLOR 1254	ND	ug/L	1.0	1.0	1.0		
11096-82-5	AROCLOR 1260	ND	ug/L	1.0	1.0	1.0		

*Result of: NA - indicates the compound was not analyzed.
Alpha characters following a numeric value are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
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WSDOE Lab C1251

DATA REPORT

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

Lab Number: 30509
Field ID: #5
Sample Description: Gages / Pulver Rd
Matrix: Surface Water
Collect Date: 10/4/2007
Extraction Date: 10/8/2007
Extraction Method: 3510C

Reference Number: 07-13431
Project: Storm Water

Report Date: 10/16/2007
Date Analyzed: 10/12/2007
Analyst: MM/C(
Peer Review: MVA
Analytical Method: 608

Pesticides and PCBs

CAS ID#	COMPOUNDS	RESULT*	Units	PQL	MDL	D.F.	Batch	COMMENT
	- Organochlorine Pesticides							
309-00-2	ALDRIN	ND	ug/L	0.05	0.020	1.0	608_071008	Limits TABLE 3 / Pt.1363,App.
319-84-6	BHC, ALPHA -	ND	ug/L	0.05	0.013	1.0		
319-85-7	BHC, BETA -	ND	ug/L	0.05	0.014	1.0		
58-89-9	LINDANE (BHC - GAMMA)	ND	ug/L	0.05	0.013	1.0		
319-86-8	BHC, DELTA -	ND	ug/L	0.05	0.017	1.0		
57-74-9	CHLORDANE	ND	ug/L	0.20	0.017	1.0		
50-29-3	4,4' - DDT	ND	ug/L	0.10	0.033	1.0		
72-55-9	4,4' - DDE	ND	ug/L	0.10	0.021	1.0		
72-54-8	4,4' - DDD	ND	ug/L	0.10	0.023	1.0		
60-57-1	DIELDRIN	ND	ug/L	0.10	0.016	1.0		
959-98-8	ENDOSUFAN I	ND	ug/L	0.10	0.016	1.0		
33213-65-9	ENDOSULFAN II	ND	ug/L	0.10	0.019	1.0		
1031-07-8	ENDOSULFAN SULFATE	ND	ug/L	0.10	0.016	1.0		
72-20-8	ENDRIN	ND	ug/L	0.10	0.019	1.0		
7421-93-4	ENDRIN ALDEHYDE	ND	ug/L	0.10	0.031	1.0		
76-44-8	HEPTACHLOR	ND	ug/L	0.05	0.015	1.0		
1024-57-3	HEPTACHLOR EPOXIDE "B"	ND	ug/L	0.05	0.015	1.0		
8001-35-2	TOXAPHENE	ND	ug/L	5.0	1	1.0		
	- PCBs							
12674-11-2	AROCLOR 1016	ND	ug/L	1.0	1.0	1.0	608_071008	
11104-28-2	AROCLOR 1221	ND	ug/L	1.0	1.0	1.0		
11141-16-5	AROCLOR 1232	ND	ug/L	1.0	1.0	1.0		
53469-21-9	AROCLOR 1242	ND	ug/L	1.0	1.0	1.0		
12672-29-6	AROCLOR 1248	ND	ug/L	1.0	1.0	1.0		
11097-69-1	AROCLOR 1254	ND	ug/L	1.0	1.0	1.0		
11096-82-5	AROCLOR 1260	ND	ug/L	1.0	1.0	1.0		

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CARBAMATES IN DRINKING WATER

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

System Name:
System ID Number:
DOH Source Number:
Multiple Sources:
Sample Type:
Sample Purpose: Investigative or Other
Sample Location: Gages SI/Peacock Rd
County:
Sampled By:
Sampler Phone:

Reference Number: 07-13431

Project: Storm Water

Field ID: #1
Lab Number: 04630508
Date Collected: 10/4/2007
Date Extracted: 531_071023
Date Analyzed: 10/23/2007
Report Date: 10/25/2007
Analyst: CO
Peer Review: MVA

EPA Method 531.2 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	Units	SRL	Trigger	MCL	COMMENT
	EPA Regulated						
148	OXYMAL	**ND**	ug/L	4.0	4.0	200	
146	CARBOFURAN	**ND**	ug/L	1.8	1.8	40	
	EPA Unregulated						
144	ALDICARB SULFOXIDE	**ND**	ug/L	1.0	1.0		
143	ALDICARB SULFONE	**ND**	ug/L	1.6	1.6		
147	METHOMYL	**ND**	ug/L	1.0	1.0		
141	3-HYDROXYCARBOFURAN	**ND**	ug/L	2.0	2.0		
142	ALDICARB	**ND**	ug/L	1.0	1.0		
145	CARBARYL	**ND**	ug/L	2.0	2.0		
	State Unregulated - Other						
326	PROPOXUR (BAYGON)	**ND**	ug/L	1.0			
327	METHIOCARB	**ND**	ug/L	4.0			

*- An amount of "ND" indicates that the compound was not detected above the Lab's Method Detection Limit - MDL.
**- Maximum Contaminant Level, maximum permissible level of a contaminant in water established by EPA, NPDWR. State Advisory Level (SAL) for Unregulated compounds.
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***- If a compound is detected > or = to the State Reporting Level, SRL, specified increased monitoring frequencies may occur per DOH.
****- Method Detection Limit is the lab's minimum concentration a compound can be measured and reported with 99% confidence that the compound concentration is greater than zero.
J - Estimated value.

ANALYTICAL LABORATORIES

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CARBAMATES IN DRINKING WATER

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

Reference Number: 07-13431

Project: Storm Water

System Name:
System ID Number:
DOH Source Number:
Multiple Sources:
Sample Type:
Sample Purpose: Investigative or Other
Sample Location: Gages / Pulver Rd
County:
Sampled By:
Sampler Phone:

Field ID: #5
Lab Number: 04630509
Date Collected: 10/4/2007
Date Extracted: 531_071023
Date Analyzed: 10/23/2007
Report Date: 10/25/2007
Analyst: CO
Peer Review: MVA

EPA Method 531.2 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	Units	SRL	Trigger	MCL	COMMENT
	EPA Regulated						
148	OXYMAL	**ND**	ug/L	4.0	4.0	200	
146	CARBOFURAN	**ND**	ug/L	1.8	1.8	40	
	EPA Unregulated						
144	ALDICARB SULFOXIDE	**ND**	ug/L	1.0	1.0		
143	ALDICARB SULFONE	**ND**	ug/L	1.6	1.6		
147	METHOMYL	**ND**	ug/L	1.0	1.0		
141	3-HYDROXYCARBOFURAN	**ND**	ug/L	2.0	2.0		
142	ALDICARB	**ND**	ug/L	1.0	1.0		
145	CARBARYL	**ND**	ug/L	2.0	2.0		
	State Unregulated - Other						
326	PROPOXUR (BAYGON)	**ND**	ug/L	1.0			
327	METHIOCARB	**ND**	ug/L	4.0			

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CARBAMATES IN DRINKING WATER

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

Reference Number: 07-13431

Project: Storm Water

System Name:
System ID Number:
DOH Source Number:
Multiple Sources:
Sample Type:
Sample Purpose: Investigative or Other
Sample Location: MH @ Sewer Dept
County:
Sampled By:
Sampler Phone:

Field ID: #7
Lab Number: 04630510
Date Collected: 10/4/2007
Date Extracted: 531_071023
Date Analyzed: 10/23/2007
Report Date: 10/25/2007
Analyst: CO
Peer Review: MVA

EPA Method 531.2 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	Units	SRL	Trigger	MCL	COMMENT
	EPA Regulated						
148	OXYMAL	**ND**	ug/L	4.0	4.0	200	
146	CARBOFURAN	**ND**	ug/L	1.8	1.8	40	
	EPA Unregulated						
144	ALDICARB SULFOXIDE	**ND**	ug/L	1.0	1.0		
143	ALDICARB SULFONE	**ND**	ug/L	1.6	1.6		
147	METHOMYL	**ND**	ug/L	1.0	1.0		
141	3-HYDROXYCARBOFURAN	**ND**	ug/L	2.0	2.0		
142	ALDICARB	**ND**	ug/L	1.0	1.0		
145	CARBARYL	**ND**	ug/L	2.0	2.0		
	State Unregulated - Other						
326	PROPOXUR (BAYGON)	**ND**	ug/L	1.0			
327	METHIOCARB	**ND**	ug/L	4.0			

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J - Estimated value.

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CARBAMATES IN DRINKING WATER

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

System Name:
System ID Number:
DOH Source Number:
Multiple Sources:
Sample Type:
Sample Purpose: Investigative or Other
Sample Location: MH @ S Mall Entrance
County:
Sampled By:
Sampler Phone:

Reference Number: 07-13431

Project: Storm Water

Field ID: #8
Lab Number: 04630511
Date Collected: 10/4/2007
Date Extracted: 531_071023
Date Analyzed: 10/23/2007
Report Date: 10/25/2007
Analyst: CO
Peer Review: MVA

EPA Method 531.2 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	Units	SRL	Trigger	MCL	COMMENT
	EPA Regulated						
148	OXYMAL	**ND**	ug/L	4.0	4.0	200	
146	CARBOFURAN	**ND**	ug/L	1.8	1.8	40	
	EPA Unregulated						
144	ALDICARB SULFOXIDE	**ND**	ug/L	1.0	1.0		
143	ALDICARB SULFONE	**ND**	ug/L	1.6	1.6		
147	METHOMYL	**ND**	ug/L	1.0	1.0		
141	3-HYDROXYCARBOFURAN	**ND**	ug/L	2.0	2.0		
142	ALDICARB	**ND**	ug/L	1.0	1.0		
145	CARBARYL	**ND**	ug/L	2.0	2.0		
	State Unregulated - Other						
326	PROPOXUR (BAYGON)	**ND**	ug/L	1.0			
327	METHIOCARB	**ND**	ug/L	4.0			

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EDGE ANALYTICAL LABORATORIES

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CARBAMATES IN DRINKING WATER

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

Reference Number: 07-13431

Project: Storm Water

System Name:
System ID Number:
DOH Source Number:
Multiple Sources:
Sample Type:
Sample Purpose: Investigative or Other
Sample Location: Whitmarsh Rd Pump Sta
County:
Sampled By:
Sampler Phone:

Field ID: #9
Lab Number: 04630512
Date Collected: 10/4/2007
Date Extracted: 531_071023
Date Analyzed: 10/23/2007
Report Date: 10/25/2007
Analyst: CO
Peer Review: MVA

EPA Method 531.2 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	Units	SRL	Trigger	MCL	COMMENT
	EPA Regulated						
148	OXYMAL	**ND**	ug/L	4.0	4.0	200	
146	CARBOFURAN	**ND**	ug/L	1.8	1.8	40	
	EPA Unregulated						
144	ALDICARB SULFOXIDE	**ND**	ug/L	1.0	1.0		
143	ALDICARB SULFONE	**ND**	ug/L	1.6	1.6		
147	METHOMYL	**ND**	ug/L	1.0	1.0		
141	3-HYDROXYCARBOFURAN	**ND**	ug/L	2.0	2.0		
142	ALDICARB	**ND**	ug/L	1.0	1.0		
145	CARBARYL	**ND**	ug/L	2.0	2.0		
	State Unregulated - Other						
326	PROPOXUR (BAYGON)	**ND**	ug/L	1.0			
327	METHIOCARB	**ND**	ug/L	4.0			

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J - Estimated value.

ANALYTICAL LABORATORIES

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WSDOE Lab C1251

DATA REPORT

Client Name: Burlington, City of, Engineering
833 S Spruce Street
Burlington, WA 98233

Method: NWTPH-HCID
Hydrocarbon ID in Water

Matrix: Surface Water

Reference Number: 07-13431
Report Date: 10/24/2007
Project: Storm Water

Analyst: JBG
Collect Date: 10/4/2007
Peer Review: MJA

Lab Number: 30508 Sample Description: #1 - Gages Sl/Peacock Rd Sample Date: 10/4/2007

COMPOUNDS	RESULT	DF	Cleanup Level	PQL	MDL	UNITS	DATE ANALYZED	Batch	COMMENT
GASOLINE (C8 - C12)	ND	1	1.0	0.25		mg/L	10/11/2007	HCIDW_071008	
DIESEL (C12 - C24)	ND	1	0.5	0.2		mg/L			
HEAVY HYDROCARBONS (>C24)	ND	1	0.5	0.2		mg/L			

Lab Number: 30509 Sample Description: #5 - Gages / Pulver Rd Sample Date: 10/4/2007

COMPOUNDS	RESULT	DF	Cleanup Level	PQL	MDL	UNITS	DATE ANALYZED	Batch	COMMENT
GASOLINE (C8 - C12)	ND	1	1.0	0.25		mg/L	10/11/2007	HCIDW_071008	
DIESEL (C12 - C24)	ND	1	0.5	0.2		mg/L			
HEAVY HYDROCARBONS (>C24)	ND	1	0.5	0.2		mg/L			

Lab Number: 30510 Sample Description: #7 - MH @ Sewer Dept Sample Date: 10/4/2007

COMPOUNDS	RESULT	DF	Cleanup Level	PQL	MDL	UNITS	DATE ANALYZED	Batch	COMMENT
GASOLINE (C8 - C12)	ND	1	1.0	0.25		mg/L	10/11/2007	HCIDW_071008	
DIESEL (C12 - C24)	ND	1	0.5	0.2		mg/L			
HEAVY HYDROCARBONS (>C24)	ND	1	0.5	0.2		mg/L			

Lab Number: 30511 Sample Description: #8 - MH @ S Mall Entrance Sample Date: 10/4/2007

COMPOUNDS	RESULT	DF	Cleanup Level	PQL	MDL	UNITS	DATE ANALYZED	Batch	COMMENT
GASOLINE (C8 - C12)	ND	1	1.0	0.25		mg/L	10/11/2007	HCIDW_071008	
DIESEL (C12 - C24)	ND	1	0.5	0.2		mg/L			
HEAVY HYDROCARBONS (>C24)	>0.2	1	0.5	0.2		mg/L			Est. Conc. 0.25 mg/L

Lab Number: 30512 Sample Description: #9 - Whitmarsh Rd Pump Sta Sample Date: 10/4/2007

COMPOUNDS	RESULT	DF	Cleanup Level	PQL	MDL	UNITS	DATE ANALYZED	Batch	COMMENT
GASOLINE (C8 - C12)	ND	1	1.0	0.25		mg/L	10/11/2007	HCIDW_071008	
DIESEL (C12 - C24)	ND	1	0.5	0.2		mg/L			
HEAVY HYDROCARBONS (>C24)	ND	1	0.5	0.2		mg/L			

Notation:

ND - A result of "ND" indicates that the compound was not detected above the Lab's Method Reporting Limit - MRL.
Cleanup Level - The regulatory limit for Method A Cleanup Levels (MTCA, Chapter173-340 WAC) contaminants in the specified matrix. Amended Feb 12, 2001

PQL = Practical Quantitation Limit is the lowest level that can be acheived within specified limits of precision and accuracy during routine laboratory operating conditions.
DF - Dilution Factor.

*** The Cleanup level for Gasoline Range Organics (GRO) is 100 mg/Kg for gas mixtures without benzene and when the total ethylbenzene, toluene and xylenes are less than 1% of the gasoline concentration. The Cleanup level for GRO is 30 mg/Kg for all other mixtures.**

FORM: HCID

QUALITY CONTROL REPORT
SURROGATE REPORT

Reference Number: 07-13431
Report Date: 10/24/07

Lab No	Analyte	Result	Qualifier	Units	Method	Limit
08_071008						
30508	DECACHLOROBIPHENYL (Surr)	84		%	608	Acceptance Limits 43-139%
	TETRACHLORO-M-XYLENE (Surr)	87		%		Acceptance Limits 42-137%
HCIDW_071008						
30508	O-TERPHENYL (Surr)	78		%	NWTPH-HCID	Acceptance Limits: 50-150%
608_071008						
30509	DECACHLOROBIPHENYL (Surr)	57		%	608	Acceptance Limits 43-139%
	TETRACHLORO-M-XYLENE (Surr)	77		%		Acceptance Limits 42-137%
HCIDW_071008						
30509	O-TERPHENYL (Surr)	72		%	NWTPH-HCID	Acceptance Limits: 50-150%
08_071008						
30510	DECACHLOROBIPHENYL (Surr)	65		%	608	Acceptance Limits 43-139%
	TETRACHLORO-M-XYLENE (Surr)	86		%		Acceptance Limits 42-137%
HCIDW_071008						
30510	O-TERPHENYL (Surr)	87		%	NWTPH-HCID	Acceptance Limits: 50-150%
608_071008						
30511	DECACHLOROBIPHENYL (Surr)	60		%	608	Acceptance Limits 43-139%
	TETRACHLORO-M-XYLENE (Surr)	90		%		Acceptance Limits 42-137%
HCIDW_071008						
30511	O-TERPHENYL (Surr)	98		%	NWTPH-HCID	Acceptance Limits: 50-150%
08_071008						
30512	DECACHLOROBIPHENYL (Surr)	63		%	608	Acceptance Limits 43-139%
	TETRACHLORO-M-XYLENE (Surr)	85		%		Acceptance Limits 42-137%
HCIDW_071008						
30512	O-TERPHENYL (Surr)	114		%	NWTPH-HCID	Acceptance Limits: 50-150%

*Notation:

A surrogate is a pure compound added to a sample in the laboratory just before processing so that the overall efficiency of a method can be determined.

The Acceptance Limits (or Control Limits) approximate a 99% confidence interval around the mean recovery.

Chain of Custody / Analysis Request (Please complete all applicable shaded sections)

3,692

07-13431
30508 - 30512

Report to:	Burlington, City of, Engineering	Bill to:	Burlington, City of, Engineering
Ship Address:	900 E Fairhaven	Address:	833 S Spruce Street
City:	Burlington St: WA Zip: 98233	City:	Burlington St: WA Zip: 98233
Attn:	Becky Ziel	Phone:	FAX:
Phone:	360.755-9715 FAX:	P.O.#:	Attn:
Email:	bziel@ci.burlington.wa.us	☐ Visa ☐ M/C ☐ A/E	Expires /
Project	Stormwater	Card#:	

Check Regulatory Program
- ☐ Safe Drinking Water Act
- ☐ Clean Water Act
- ☐ RCRA / CERCLA
- ☐ Other

ANALYTICAL LABORATORIES
1620 S. Walnut St.
Burlington, WA 98233
1.800.755.9295

805 W. Orchard Dr. Suite 4
Bellingham, WA 98225

Instructions
1. Use one line per sample.
2. Be specific in analysis requests.
3. Check off analyses to be performed for each sample.
4. Enter number of containers.

Turn Around Time Required
- ☒ Standard CVP
- ☐ Half-time (50% surcharge)
- ☐ Quickest (100% surcharge)
- ☐ Other

Analyses Requested

CO003692

	Field ID	Location	Grab/ Comp.	Matrix	Date	Time	Fecal Coliform	pH, TSS	Hardness	Diss Metals(Cu,Pb,Zn)	NWTPH-HCID	531	608		Number of Containers	Special Instructions Conditions on Receipt
1	#1	Gages Sl/Peacock Rd	G	SW	10-4-07	10:20AM	☐	☐	☐	☐	☐	☐	☐	☐		
2	#5	" /Pulver Rd	"	"	"	11:40AM	☐	☐	☐	☐	☐	☐	☐	☐		
3	#7	MH @ Sewer Dept.	"	"	"	10:00AM	☐	☐	☐	☐	☐	☐	☐	☐		
4	#8	MH @ S. mall entrance	"	"	"	11:10AM	☐	☐	☐	☐	☐	☐	☐	☐		
5	#9	Whitmarsh Rd Pump Sta.	"	"	"	10:45AM	☐	☐	☐	☐	☐	☐	☐	☐		~~used plastic for~~
6							☐	☐	☐	☐	☐	☐	☐	☐		
7							☐	☐	☐	☐	☐	☐	☐	☐		
8							☐	☐	☐	☐	☐	☐	☐	☐		
9							☐	☐	☐	☐	☐	☐	☐	☐		
10							☐	☐	☐	☐	☐	☐	☐	☐		
																Total Containers

Sampled by: Phone: FAX: Email:

Sample Receipt Request (Must include FAX or Email) ☐

Relinquished by	Date	Time	Received by	Date	Time
Becky Ziel	10-4-07	12 noon	CDeWeiter	10/4/07	1200

	Yes	No	N/A
Custody seals intact	☐	☐	☒
Sample temp 13 C satisfactory	☐	☐	☐
Samples received intact	☒	☐	
Chain of custody & labels agree	☐	☐	