Outfall Water Quality From Wet Detention Systems

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Southwest Florida Water Management District
Resource Projects Department – Environmental Section

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OUTFALL WATER QUALITY

FROM

WET DETENTION SYSTEMS

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Brooksville, Florida

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EXECUTIVE SUMMARY

A survey of permitted wet detention ponds was conducted between June 1992 and April 1993. Twenty-two systems in the Tampa Bay area were sampled; nine were natural wetlands and thirteen were constructed ponds. Data collection took place during fourteen sampling events. Samples were collected during system discharge from two locations: 1) in the system just before the outflow weir (***b*** side) and 2) after the outflow weir (***a*** side) but before it entered the receiving water. The ***a*** side is also referred to as the wet detention system effluent. Water quality sampling included eight metal species, six nutrient species, turbidity, total suspended solids, temperature, dissolved oxygen, pH and conductivity. Study goals were to; 1) compare the water quality in front of the outfall weir to that of its effluent, 2) determine whether the effluent complied with class III Florida State Water Quality Standards and 3) compare the effluent from constructed and natural systems for Standard compliance. Additional analyses were conducted to determine relationships between constituents.

Comparison of data to class III State Water Quality Standards - Data analysis was performed on each constituent that had a State Standard and a percent noncompliance was calculated. Data sets of all systems, natural systems and constructed systems were created. Data from each side of the weir within each data set were subjected to percent noncompliance calculation.

Many constituents measured during this study complied with Water Quality Standards 100 percent of the time. Those constituents included unionized ammonia, iron, manganese (class II Standard) and nickel. All other constituents complied with State Standards >65 percent of the time while most constituents complied >79 percent of the time except dissolved oxygen. Dissolved oxygen was in noncompliance 64 percent of the time on the ***b*** side and 63 percent of the time on the ***a*** side for the data set of all systems. Dissolved oxygen measured in the natural systems was in noncompliance 75 percent of the time on the ***b*** side and 48 percent of the time on the ***a*** side. Dissolved oxygen measured in the constructed systems was in noncompliance 56 percent of the time on the ***b*** side and 70 percent of the time on the ***a*** side.

In a comparison of the metals in noncompliance between the natural and constructed systems, the natural systems had a higher percent noncompliance than the constructed systems (ranging from two to nine times higher). Two factors influence a higher metal Standard noncompliance: 1) metal Standards are hardness dependant such that softer water has a lower

Standard than hard water and 2) natural systems generally have softer water than constructed systems. Despite these differences between system types, every metal complied with Water Quality Standards >65 percent of the time.

Relationships between constituents - Spearman correlation analyses were performed on four data sets: 1) the ***b*** side of all systems, 2) the ***a*** side of all systems, 3) the ***a*** side natural systems and 4) the ***a*** side constructed systems. Correlations that exhibited less than a moderate to strong relationship were not considered. Sixty-four moderate to strong relationships were found among the four data sets.

Differences between constituents - Two-tailed paired t-tests were performed with a 95 percent confidence interval to compare data collected on the ***b*** side to that of the ***a*** side. Statistical differences were noted. Separate t-tests were performed on the data sets of all systems, natural systems and constructed systems.

A comparison of the data from both sides of the weir in each of the data sets revealed that all constituents measured were not significantly different except dissolved oxygen, turbidity, temperature, and pH. Dissolved oxygen was significantly lower on the ***a*** side of the weir than the ***b*** side in each of the three data sets caused by aeration as water flowed over the weir. The pH was significantly higher on the ***a*** side of the weir in the constructed system data set. The elevated pH on the ***a*** side is thought to occur because of the tendency for pH to increase with dissolved oxygen.

Turbidity was significantly higher on the ***a*** side of the weir in the natural system data set. This suggests that the particulates in the water column subjected to agitation broke into smaller particles. Therefore, the number of particulates (i.e., turbidity) increased while the total particulate weight (i.e., total suspended solids) remained unaffected. The difference in turbidity observed in the natural systems and not in the constructed systems further suggests that the particulates measured may have been organic in nature.

The significantly higher temperature on the ***a*** side of the weir in the natural system data set was attributed to sample location. Temperatures on the ***b*** side were measured near the weir close to the bottom of the pond where shading from emergent and floating leaved vegetation likely affected the measurements. The temperatures on the ***a*** side were measured at the water's surface.

MANAGEMENT IMPLICATIONS

The following recommendations and conclusions are made based on report findings:

1) Both the constructed and natural systems are effective in discharging water that were in compliance with State Water Quality Standard goals for alkalinity, unionized ammonia, iron, nickel and other notorious stormwater pollutants such as turbidity, cadmium, zinc and lead. These findings emphasize the effectiveness of the current regulatory rules and design criteria.

2) The constructed systems displayed better Water Quality Standard compliance than the natural wetland systems for copper, lead, zinc, and cadmium. Better metal Standard compliance was observed in the constructed systems primarily because natural systems generally have softer water than constructed systems.

3) No statistical differences were found between the water quality on either side of the weir during discharge (except pH and dissolved oxygen). Thus, samples can be collected from the more accessible ***b*** side of the weir (just before the water discharged the weir inside the pond). Current requirements dictate that samples be taken from the ***a*** side (actual effluent inside the weir as the water exits the pond).

4) Methods to increase dissolved oxygen in ponds should be considered. Examples include aeration devices (i.e., fountains) and maintenance of a deeper area, devoid of vegetation immediately adjacent outfall weirs.

INTRODUCTION

Stormwater can be a major source of pollutants to rivers and lakes if not properly managed. The state of Florida recognizes this potential pollutant source and issue permits for the design of stormwater runoff systems to meet specific Water Quality Standards. One of the more commonly permitted surface water systems in Southwest Florida is wet detention. Wet detention ponds are water quality treatment systems that utilize a design water pool in association with water-tolerant vegetation to remove pollutants through settling, adsorption by soils and nutrient uptake by vegetation (SWFWMD, 1996). The wet detention systems selected for this study met the required design criteria and were permitted by one of Florida's State regulatory agencies (e.g., SWFWMD).

Since 1985, stormwater runoff from new development that discharges into state waters is required to meet Florida State Surface Water Quality Standards (40D-4 FAC). Class III Water Quality Standards were applicable to the systems in this study (as are the majority of systems in the Florida). To test for compliance of the Standards and to test the effectiveness of these systems, water quality sampling of the system discharge water (i.e., effluent) was necessary. Effluent sampling posed the following challenges to researchers:

1. Systems would often have short response times to storm events and discharge for a short period (as little as a few hours depending upon storm event intensity and duration) making data collection difficult.

2. Typical outflow structures are designed with heavy grates and deep drop boxes which makes taking a discharge sample impractical and/or hazardous.

These challenges limited site selection. Some systems were abandoned because of short response times. Any outfall structure that was physically hazardous to sample was excluded. At the conclusion of data collection, the survey included data from twenty-two constructed and natural wetland systems for fourteen separate events.

Water quality data were concurrently collected (by grab sample) in two places for each sampling event. One sample was taken as the water discharged the outfall weir or the ***a*** side (after or downstream of the weir) to determine system compliance to Water Quality Standards. The other sample was taken in open water near the outfall weir or the ***b*** side (before or upstream of the weir) for comparison. The data were split into two sets and discussed separately: 1) the water quality differences between the ***b*** and ***a*** sides of the weir and 2) a comparison of the water quality between the constructed and natural systems. Results from all data sets were compared to state Water Quality Standards.

Two systems included in this survey (a natural wetland and a constructed wet detention pond) were the subject of intensive study. These studies documented pollutant removal efficiencies, hydrologic water budgets, and sediment and vegetation analyses (Carr and Rushton, 1995 and Rushton and Dye, 1993). In addition, many systems in this study were included in two previous reports that analyzed water quality data from the ***b*** side of the weir. Kehoe (1993), surveyed constructed wet detention ponds while Kehoe et al. (1994) surveyed natural wetland systems.

PURPOSE

SWFWMD's Technical Services Department was interested to know if wet detention systems met state Water Quality Standards at the outfall of permitted wet-detention systems and requested that Resource Projects Environmental staff conduct research on these systems. The purpose of this study was to compare the effluent water quality of permitted constructed wet detention pond and natural wetland systems. Water quality data collected near the outflow weir (***b*** "before weir" side) were statistically compared with data collected as the systems discharged (***a*** "after weir" side). Data from both sides of the weir were collected concurrently.

METHODS

SITE DESCRIPTION

Twenty-two systems in the Tampa Bay, Florida area were selected (see Figure 1). Each of these wet-detention systems were permitted by either The Southwest Florida Water Management District (SWFWMD) pursuant to Florida Administrative Code (FAC) Chapters 40D-4 and 40D-40, or The Florida Department of Environmental Regulation (currently The Florida Department of Environmental Protection) pursuant to Chapter 17-25, FAC. Nine wet detention systems were natural wetlands while thirteen were constructed ponds (Table 1). The constructed sites were built during the late 1980s except for COPP constructed in 1976.

Table 1. Description of Wet Detention Systems Listed Alphabetically. Size Data Presented in Acres. (From Kehoe et al., 1994 and Rushton et al., 1989).

Pond	Natural/Constructed	Land Use	Size	Pond	Natural/Constructed	Land Use	Size
CARL	Constructed	LC	21.1	**LHBF**	Constructed	MF	0.3
COPP	Constructed	MF	3.5	**QRIG**	Natural	GC/SF	26.9
CRLS	Constructed	LC	2.3	**RGNC**	Natural	HC	28.8
CRNR	Natural	LC/MF	2.8	**SCRS**	Natural	GC/SF	9.4
FSQR	Constructed	HC	5.1	**SUSN**	Natural	HC	0.2
GTDS	Constructed	LC	3.7	**TMBR**	Natural	SF/AG	4.6
HGRN	Natural	GC/SF	2.2	**TOFF**	Constructed	LC	0.4
HRV1	Natural	LC	3.8	**TRCO**	Constructed	HC	0.2
HRV2	Natural	LC	3.2	**WBND**	Constructed	SF	1.1
KNMK	Constructed	HC	1.6	**WPAS**	Constructed	HC	-----
LHBB	Constructed	MF	1.4	**MBRV**	Constructed	MF	1.1

GC = Golf course, HC = Heavy commercial, LC = Light commercial, MF = Multi-family, SF = Single-family subdivision and AG = Light agriculture.

The systems in this study represent the typical, shallow (mean maximum depth 1.8 meters) wet-detention systems in Southwest Florida. Runoff flowed into the systems by way of stormwater drainage pipes numbering anywhere from a single inflow to eight. The systems received runoff from various land uses: light commercial, heavy commercial, single family subdivision, multi-family, golf course, and light agriculture (Table 1).

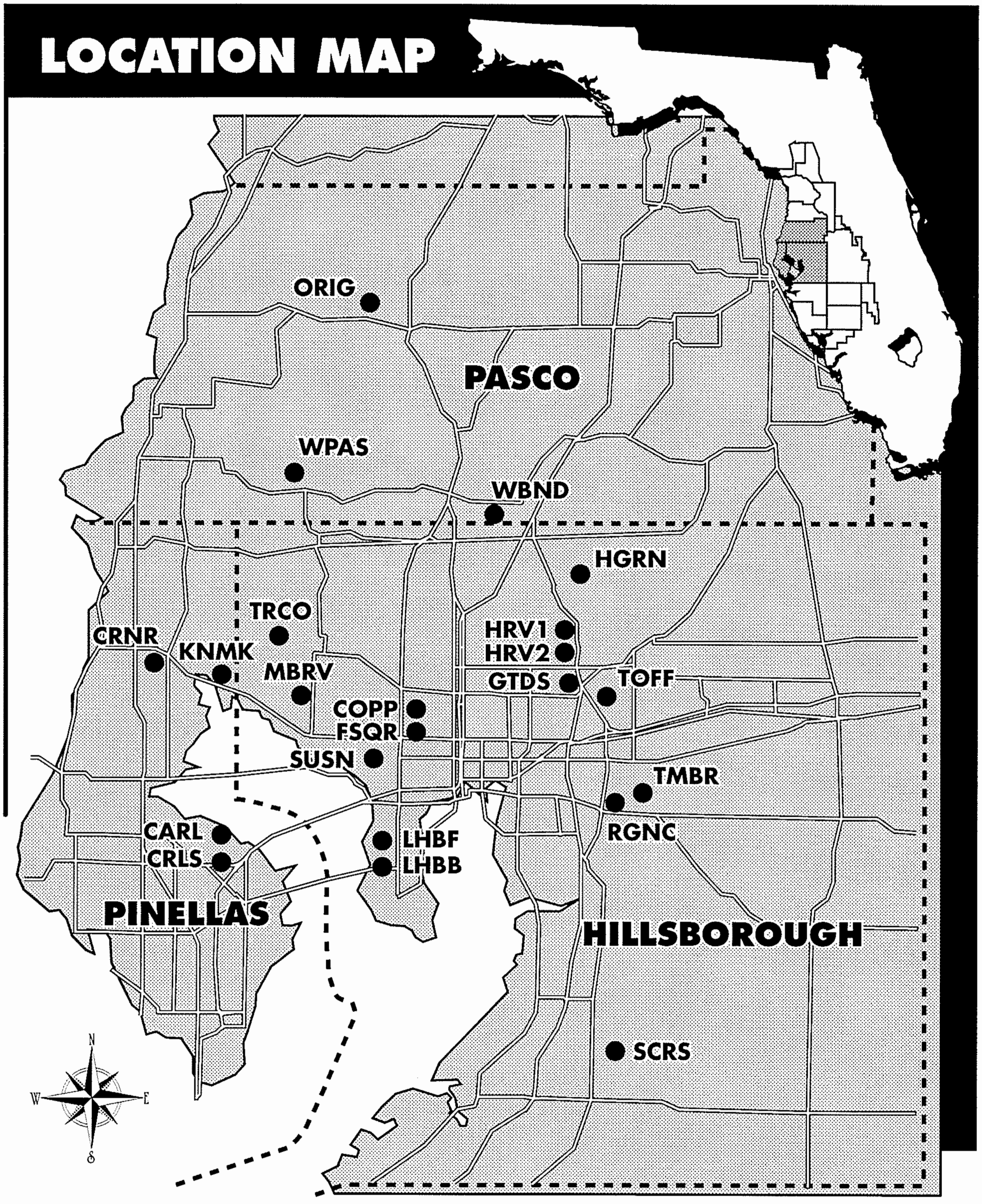

Figure 1. Location of the twenty-two Wet Detention Systems.

WATER QUALITY

All data were collected from two locations: 1) just before the outflow weir (***b*** side) and 2) after the outflow weir but before it entered the receiving water (***a*** side). Data collection took place between June 11, 1992 and April 2, 1993 and included fourteen separate sampling dates. Sampling trips began the day after area wide storm events. Travel time required two days to visit all sites. Water quality samples were collected for chemical analysis (e.g., metals, nutrients, and solids) and various field parameters were measured *in situ*.

The water quality samples were analyzed for a range of chemical constituents considered common stormwater pollutants. These constituents included cadmium, chromium, copper, iron, lead, manganese, nickel, zinc, ammonia, unionized ammonia, nitrate+nitrite, total phosphorus, ortho phosphorus, total suspended solids, turbidity and total organic carbon. The SWFWMD laboratory performed water quality analyses according to SWFWMD's Comprehensive Quality Assurance Plan (SWFWMD, 1992). The ***b*** side of the weir was sampled in the pond at the outflow weir while the ***a*** side samples were captured as the water discharged (sprang free) over the weir.

RAINFALL

Rainfall with its associated runoff volume and antecedent conditions affect the level of pollutants in runoff (Herricks, 1995 and Lazaro, 1990). To estimate the quantity of rainfall generated by each event sampled, rainfall data was obtained from gauges throughout Pasco, Pinellas and Hillsborough counties (Figure 2). The data from ninety-five rain gauges were used to calculate the mean rainfall in the Tampa Bay (tri county) area prior to each sampling date (Figure 3).

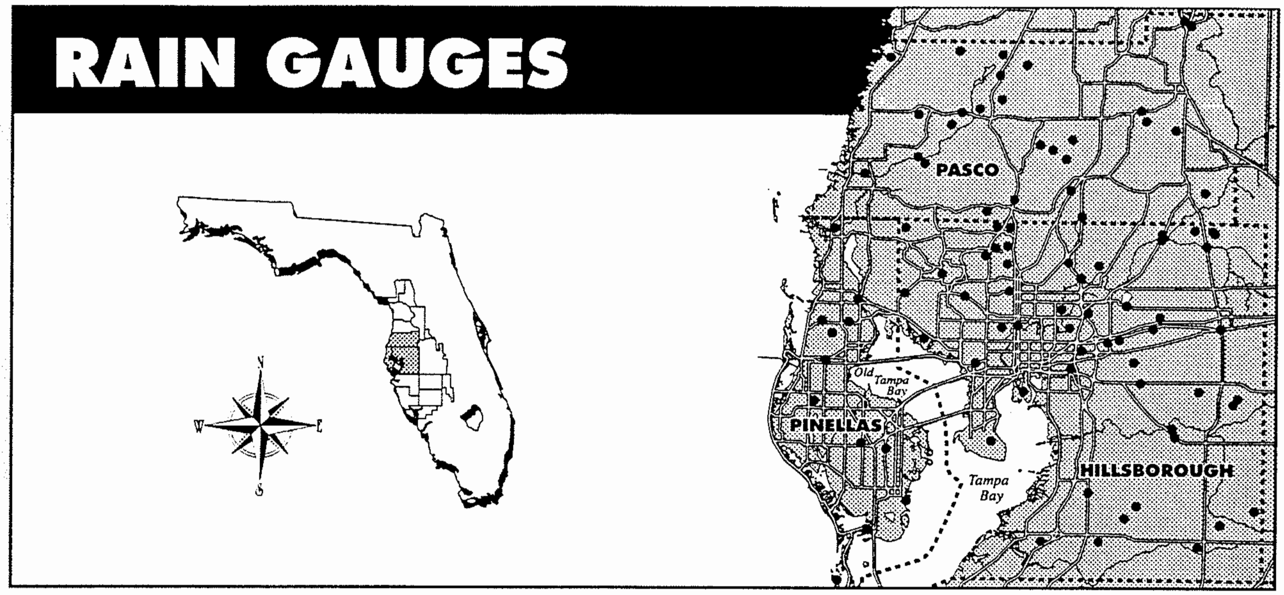

Figure 2. **Location of Pasco, Pinellas and Hillsborough County Rainfall Gauges (n=92)**

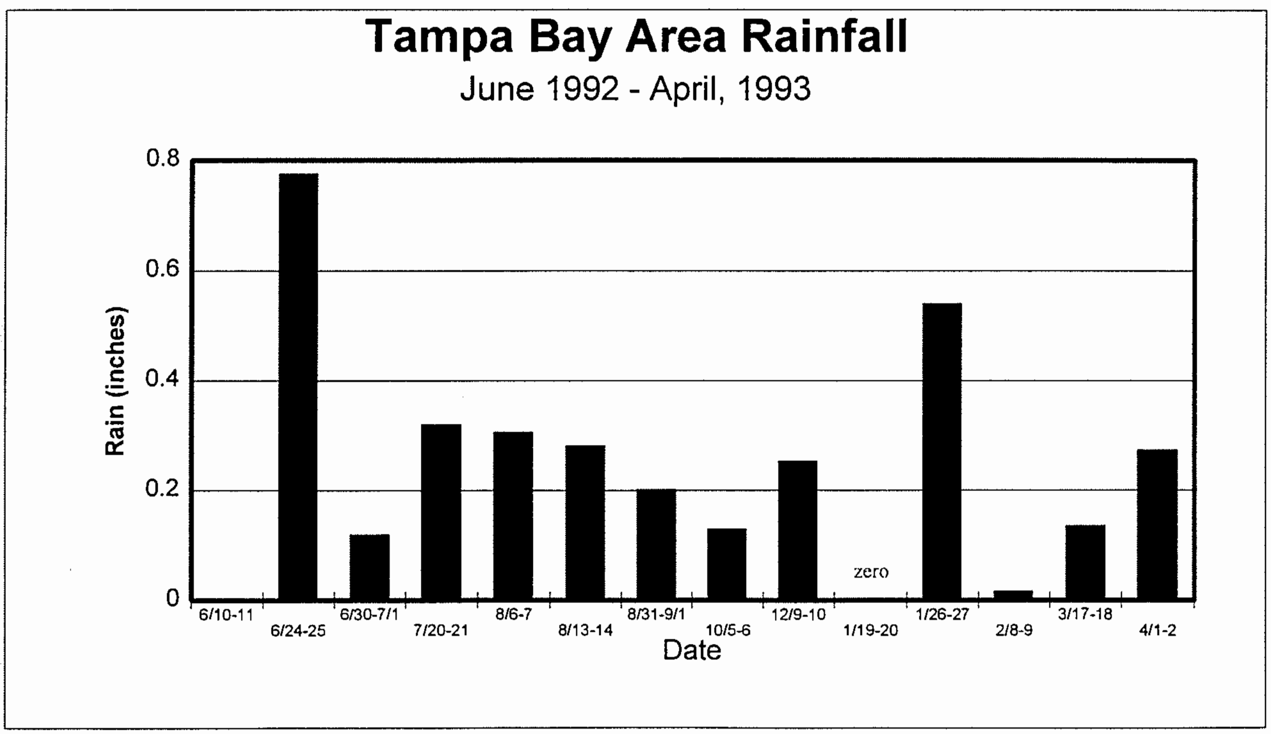

Figure 3. **Two-Day Mean Rainfall of Ninety-Two Gauges in the Pasco, Pinellas and Hillsborough Counties Prior to Each Sampling Event.**

FIELD PARAMETERS

Water quality field parameters were measured *in situ* on both sides of the outflow weir. A Hydrolab™ Surveyor II multi-sensor was used to collect instantaneous temperature, dissolved oxygen, pH, and conductivity data. The field parameter data collected before the weir were measured near the bottom in open water nearest each weir. The field parameter data collected after the weir were measured using one of two methods. At sites where the water inside the weir (side ***a***) was not the receiving water body, the multi-sensor was submersed in the water flow inside the weir for data collection. At sites where the water inside the weir was the receiving water body or there was no water present inside the weir, a 10-liter polypropylene container was partially filled with the discharging water and the multi-sensor was placed in it for data collection.

DATA AND STATISTICAL ANALYSIS

Data analysis involved organizing the water quality data into the following data sets: the entire set of all systems in the study, the natural systems, and the constructed systems (appendices A and B). In each of these data sets, the ***b*** side and ***a*** side data were kept separate to perform additional analysis. Analysis of the data included calculating percent noncompliance of Standards, statistical correlations and statistical differences between data.

Data Analysis

Just prior to the start of this project (February 1992), the Class III Water Quality Standards for several metals changed to incorporate water hardness. Standards were calculated using the exponential of a formula that included the natural log of the hardness value for each sample. These were the Standards used to compare the water quality data. The Water Quality Standards for the constituents analyzed in this study were compiled in Table 2.

The water quality data received from the lab were entered into a spreadsheet and separated into various data sets. Within each data set, the Water Quality Standard for each data point was observed or calculated. The number of data points that did not comply with each Standard was compared with the total number of data points in a given data set to determine the percent noncompliance of a particular pollutant constituent.

It is common for the pollutant concentration of metals to measure near or below the laboratory method detection limit (MDL). Whenever this occurred, the actual laboratory measurement was used despite the MDL as recommended by Gilbert (1987), the Environmental Protection Agency (1980) and the American Society of Testing Materials (1984).

Table 2. The State of Florida Class III Surface Water Quality Standards. Standards are in Non-Compliance When Pollutant Concentrations Were Greater Than the Values Given Below (except DO and pH). Units in ug/l Unless Indicated.

Constituent	February 1992 FAC Ch. 62-302
Alkalinity	20,000
Cadmium	$e^{(0.7852[lnH]-3.49)}$
Conductivity	Shall not be increased > 50% of NB or to 1275 (umhos/cm), whichever is greater.
Copper	$e^{(0.8545[lnH]-1.465)}$
Dissolved Oxygen (DO)	5000; complex, see rules
Iron	1000
Lead	$e^{(1.273[lnH]-4.705)}$; 50 max.
Manganese	100 mg/l (Class II)
Nickel	$e^{(0.846[lnH]+1.1645)}$
pH	6.0 min. 8.5 max. (SU) +/- 1.0 NB; complex, see rules
Turbidity	Not to exceed 29 NTU's above NB
Zinc	$e^{(0.8473[lnH]-0.7614)}$; $\geq$ 1000
NB = Natural background; SU = Standard Units; [lnH] = ln hardness as $CaCO_3$.	

Statistical Analysis

Constituents measured during the study were analyzed using the SAS version 6.08 and Quattro Pro version 6.02 software systems. Spearman correlation tests were performed using SAS on various data sets to examine relationships between constituents. Two-tailed paired t-tests were performed to determine the statistical differences between the ***b*** side data and the ***a*** side data.

Relationships between constituents were identified using correlation analysis specifically the PROC CORR procedure in SAS (the ten strongest correlations exhibited by each constituent were requested when the tests were performed). Correlation analyses measure the linear relationships between constituents and were performed using Spearman's rank-order correlation coefficient. The Spearman coefficient measures the strength of the linear relationships by reporting a coefficient that ranges from -1.0 to +1.0. The stronger the relationship between constituents the higher the coefficient (e.g., ±1.0=a perfect correlation).

Spearman correlation tests were performed on the following data sets: the ***a*** side data only, the ***b*** side data only, data collected from the natural systems, data collected from the constructed systems and the entire data set of all the systems in the study. Water quality constituents having a correlation coefficient of ≥0.50 (i.e., a moderate correlation) are presented together on XY graphs.

Two-tailed paired t-tests were performed to determine where significant differences occurred between the ***b*** side and ***a*** side of the weir. These data sets included only the events where data existed at both sides of the weir. T-tests were performed (with a 95% confidence interval) on the following data sets: constructed sites, natural sites and all sites; the ***b*** and ***a*** side constituent means as well as the t statistic from each data set resulted. If the absolute value of the t statistic for a given water quality constituent is greater than the absolute value of the critical two-tail value (sample size and confidence level dependant), then a significant difference (with 95% confidence) between the ***b*** and ***a*** side was concluded.

RESULTS AND DISCUSSIONS

WATER QUALITY DATA

Wet detention system design alternatives (i.e., alum injection, conservation design) have been approved by Florida regulatory agencies, but the actual design criterion has not changed since its inception in 1988. Nor were the criteria changed in response to changes in the Water Quality Standards in 1992. The rules are written with the presumption that Standard compliance will be achieved. By comparing the water quality data with State Water Quality Standards, the effectiveness of wet detention system design can be determined. The water quality data collected during this study were separated into three data sets: all of the systems, the natural systems and the constructed systems (Appendices A and B). Each data set lists the ***b*** and ***a*** side data separately for comparison.

COMPARISON OF DATA TO WATER QUALITY STANDARDS

One objective of this study was to determine whether the effluent of permitted wet detention systems met Florida State Class III Surface Water Quality Standards (FAC 62-302, 1992). The Standard for each individual constituent measured on each sampling date was calculated and presented with the three water quality data sets listed above. It is important to note that many constituents measured during this study complied with Water Quality Standards 100% of the time and include: unionized ammonia, iron, manganese (class II Standard) and nickel. Due to the sampling method and a different species of chromium reported by the lab, the testing of conductivity, nutrients, pH, turbidity and chromium for Standard compliance was impossible.

Data presented in these appendices which did not comply with State Water Quality Standards were shaded for visual identification and percent noncompliance was calculated. The summary of the water quality constituents in noncompliance with Standards is compiled in Table 3 and Figure 4. Forty-seven percent of the lead values that did not comply with the Standards were below the MDL (2.0 ug/l), therefore, lead data presented in Table 3 includes only the values above MDL. All other constituent values that did not comply with Standards were above their respective MDLs.

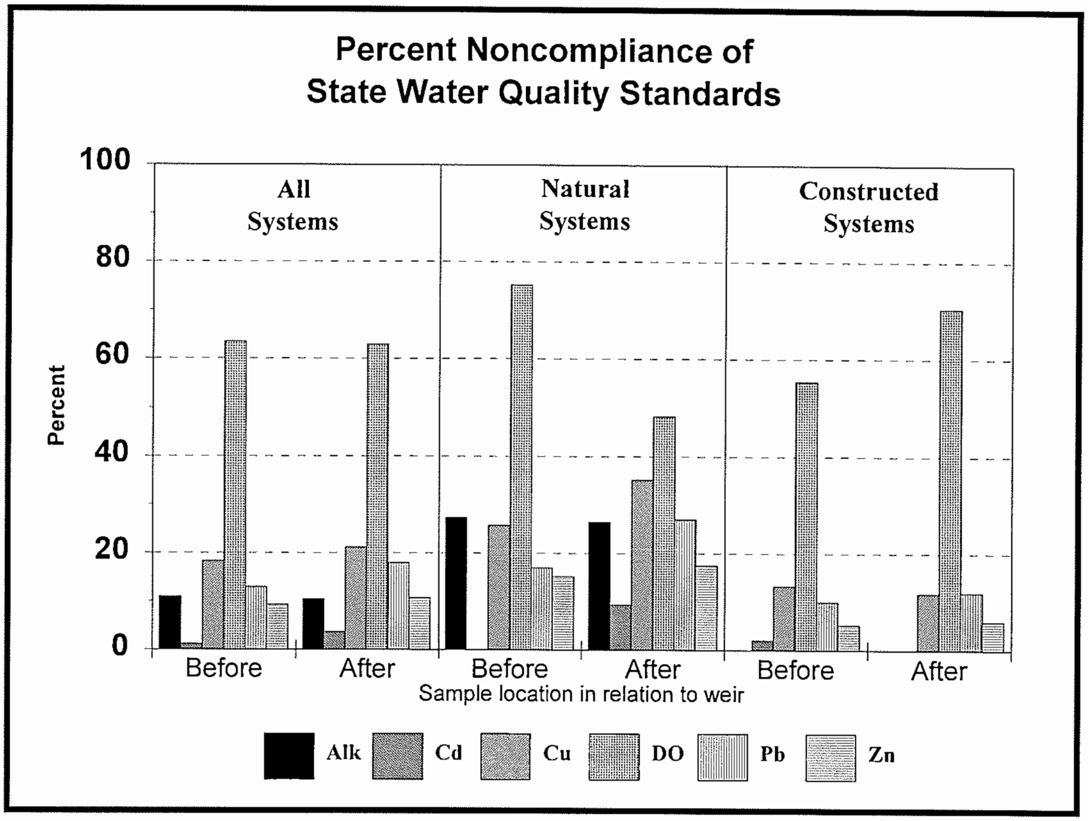

Figure 4. **Percent Non-Compliance of the Florida State Class III Surface Water Quality Standards for the Constituents Measured.**

Table 3. **Percent Non-Compliance of the Florida State Class III Surface Water Quality Standards (FAC 62-302, 1992) for the Constituents Measured.**

Constituent	All Systems		Natural Systems		Constructed Systems	
	b side	a side	b side	a side	b side	a side
Alkalinity	11	11	27	27	0	0
Cadmium	1	4	0	9	2	0
Copper	18	21	26	35	13	12
Dissolved Oxygen	64	63	75	48	56	70
Lead	13	18	17	27	10	12
Zinc	9	11	15	18	5	6

All systems - The percent of samples collected that did not comply with State Water Quality Standards were calculated and presented in Figure 4. There was negligible Standard noncompliance (<21%) found on either side of the weir with one exception. Dissolved oxygen values on either side of the weir (64% and 63%) exhibited the highest percent noncompliance among all constituents within the data set of all systems.

Natural systems - The percent of samples collected at the natural systems showed little difference (±3%) in noncompliance between samples on either side of the weir for alkalinity and zinc. Dissolved oxygen exhibited the greatest difference between the ***b*** and ***a*** side of the weir (75% and 48% respectively). As in the data set of all systems, dissolved oxygen had the highest percent noncompliance among the natural systems (>48%). Cadmium noncompliance among the natural systems was the lowest of all the constituents in noncompliance (<9%) as with the data set of all systems. The natural systems generally had greater percent noncompliance than the data set of all systems.

Constructed systems - The percent of samples collected at the constructed systems showed little difference (±2%) in Standard noncompliance between samples on either side of the weir with one exception. As in the natural systems and the data set of all systems, the highest level of noncompliance among the constructed systems was dissolved oxygen (>56%). Alkalinity, cadmium and zinc exhibited a low percent noncompliance (<6%) and may be considered close enough to zero to be in complete compliance.

Comparison of percent noncompliance between natural and constructed systems - Natural wet detention systems generally exhibited a greater percentage of constituent noncompliance than the constructed systems. One exception is that of dissolved oxygen on the ***a*** side of the weir. It would be expected that dissolved oxygen on the ***b*** side of the weir comply with the Standard less than the ***a*** side. Low dissolved oxygen (most pronounced in natural systems) on the ***a*** side (mean 2.27 mg/l) is due in part to the shallow vegetated area near the weirs where microbial and vegetative respiration is a factor. Natural systems of this type are commonly low in dissolved oxygen (Myers and Ewel, 1990) where anaerobic bottom sediments are often the case (Moss, 1988). One natural system included in this study was also part of an intensive study (HRV1) and measured low dissolved oxygen at the outflow (mean 1.44 mg/l) (Carr and Rushton, 1995). Higher dissolved oxygen on the ***a*** side is attributed to aeration of the water as it sprang free over the weir.

A higher noncompliance of metals (cadmium, copper, lead and zinc) in the natural systems compared with the constructed systems was observed. These differences were due to the softer water found in the natural systems (see hardness tables in appendices A and B). The hardness dependant State Standards for these metals decrease in softer water because metals are more available to the biota in soft water.

STATISTICAL ANALYSIS

Relationships Between Constituents

To determine linear relationships between the constituents measured, Spearman correlation tests were performed and the ten strongest correlations exhibited by each constituent were reported. Correlations with a resulting Spearman coefficient of $\geq \pm 0.50$ (moderate correlation) are presented in XY graphs (Figures 5-14) for visual inspection. The data collected during this study were separated into four data sets to compare constituent relationships: 1) the ***b*** side data set of all systems, 2) the ***a*** side data set of all systems, 3) the ***a*** side natural systems and 4) the ***a*** side constructed systems. The output files for each data set generated by SAS are included in Appendix C.

***b* side (all systems)** - Correlation analyses of the data collected from all systems before it discharged over the weir revealed ten moderate to strong correlations (Figures 5 and 6). The tendency for total and ortho phosphorus concentrations to increase together (Figure 5a) was expected since ortho phosphorus is the inorganic component of total phosphorus. Manganese was related to total phosphorus with a moderate correlation (Figure 5b). This relationship most likely occurred because manganese forms complexes with phosphorus in the particulate fraction of surface waters (Moore 1991) and manganese in wetlands is readily available for plant uptake (Mitsch and Gosselink, 1986) (i.e., algae), therefore, the algal phosphorus content would be a factor. Figure 5c illustrates the relationship between turbidity and phosphorus. Turbidity measures suspended solids in the water column by light refraction and more than half of the phosphorus in runoff is in the particulate fraction (Harper 1993) most likely suspended in the water column during a runoff event.

Figures 5d illustrates the relationships between turbidity and total suspended solids (TSS). Turbidity was positively correlated with TSS with a $Rs = .658$ (Figure 5d). Although TSS measures the suspended solids in the water column using a different method (dry weight rather than light refraction), they essentially measure the same particles and a correlation would be expected. Other researchers determined similar relationships between turbidity and TSS (Kehoe 1993 and WRI 1992).

Figures 6a illustrates the relationships between copper and ammonia. Copper forms strong complexes with ammonia in surface waters (Moore 1991) which most likely explains the correlation between concentrations of ammonia and copper (Figure 6a).

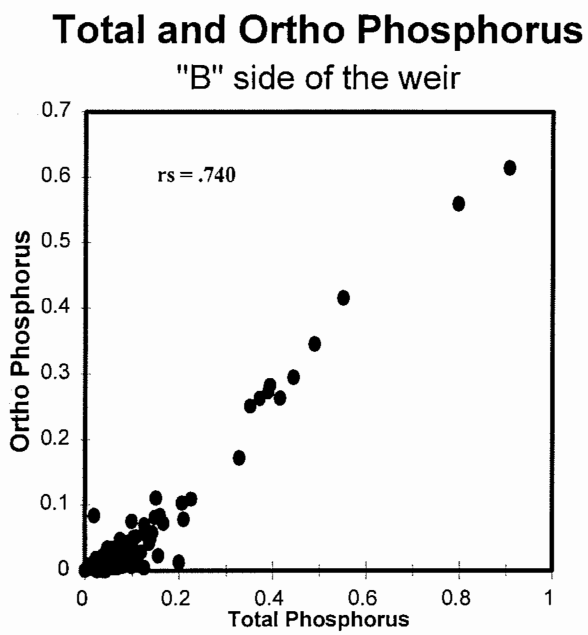

Figure 5a. Relationship Between Total and Ortho Phosphorus in the b-side Data Set.

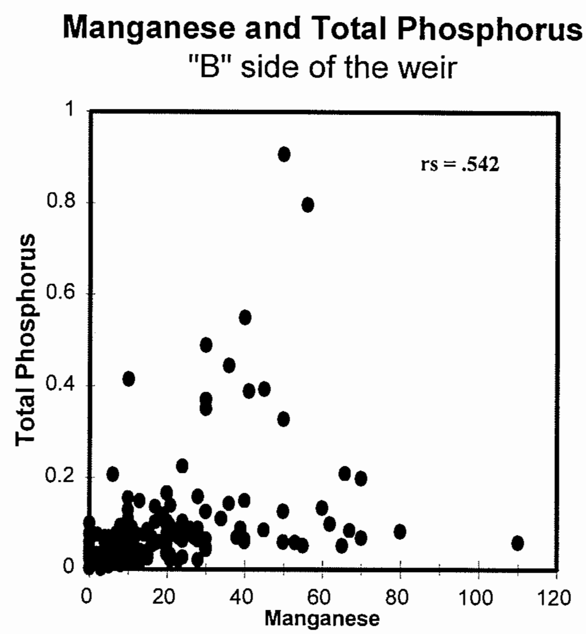

Figure 5b. Relationship Between Manganese and Total Phosphorus in the b-side Data Set.

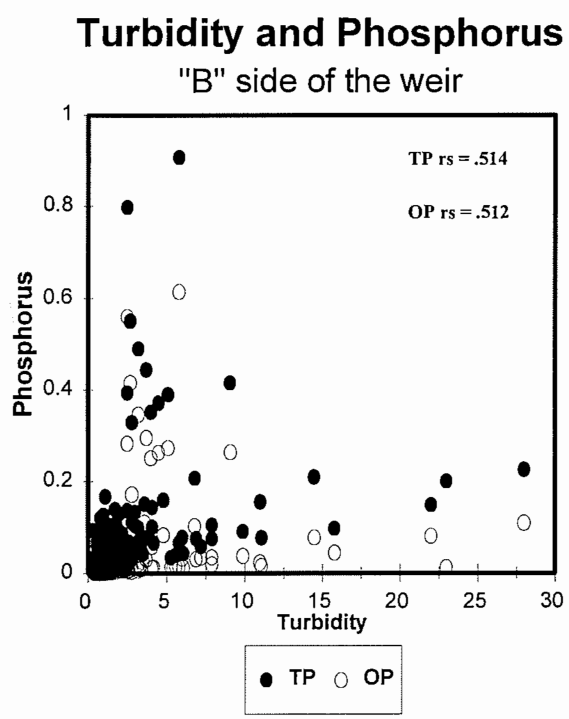

Figure 5c. Relationship Between Turbidity and Phosphorus in the b-side Data Set.

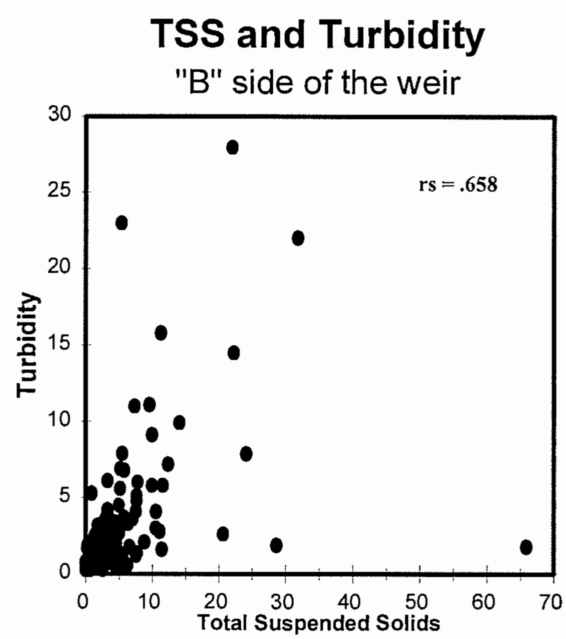

Figure 5d. Relationship Between TSS and Turbidity in the b-side Data Set.

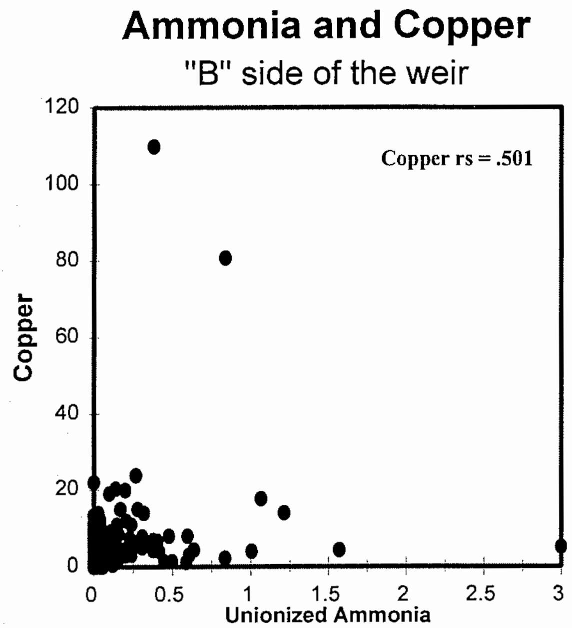

Figure 6a. **Relationship Between Ammonia and Copper in the b-side Data Set.**

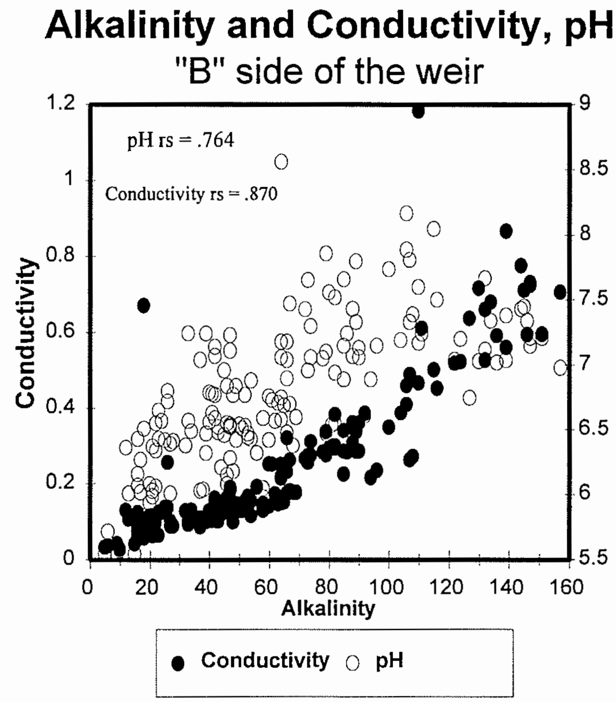

Figure 6b. **Relationship Between Alkalinity and Conductivity, pH in the b-side Data Set.**

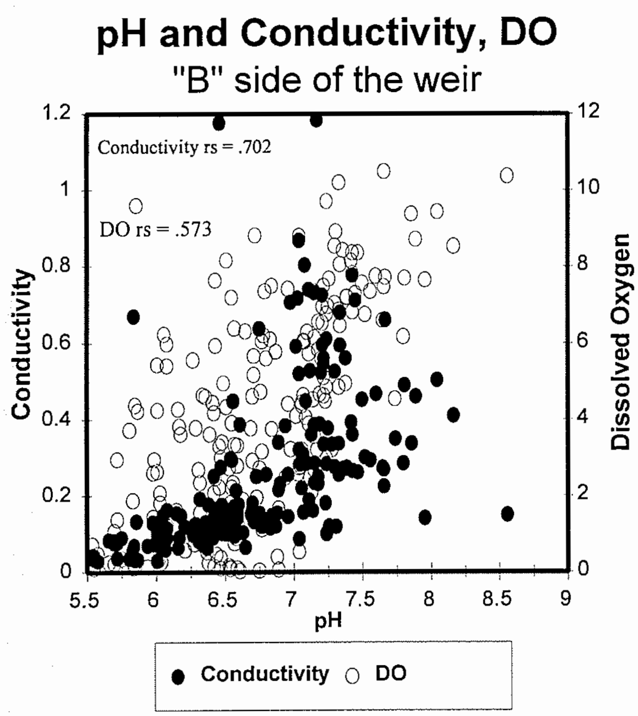

Figure 6c. **Relationship Between pH and Conductivity, DO in the b-side Data Set.**

Alkalinity was positively correlated with conductivity and pH (Figure 6b). Alkalinity is the measure of the ability to react with H^+ ions (quantification of the carbonate ions), pH is the negative logarithm of the H^+ ion and conductivity measures the ability of the water to conduct electrical current and is related to the inorganic dissolved substances in water (i.e., calcium). A correlation would be expected between alkalinity and pH because of their response to the H^+ ion concentration, whereas, alkalinity and conductivity relate because of their response to calcium carbonate concentrations. Figure 6c displays that pH was moderately correlated with conductivity and dissolved oxygen (DO). Kehoe, 1993 came to a similar conclusion that pH had a weak correlation with conductivity (Rs=0.28) and a strong correlation with DO (Rs=0.82) on the pond side (***b***) of twenty-four wet detention ponds in Florida. pH correlates with conductivity in the same manner as alkalinity, in response to the concentration of calcium carbonate in the water. The level of photosynthesis in the aquatic environment can affect the level of pH (Wetzel 1975). Since photosynthesis causes oxygen production, a relationship between pH and DO exist. In addition, a study of the water quality in a southwest Florida lake demonstrated that pH levels became elevated in response to supersaturated DO (Iricanin 1991).

a **side (all systems) -** Correlation analyses of the data collected from all systems after water flows over the weir revealed thirteen moderate to strong correlations. Correlations between turbidity and ortho phosphorus (Figure 7b), turbidity and total phosphorus (Figure 7b), manganese and total phosphorus (Figure 7c), total and ortho phosphorus (Figure 7d), alkalinity and conductivity (Figure 8d), and alkalinity and pH (Figure 8d) parallel the relationships observed in the ***b*** side data set above. TSS was correlated with total and ortho phosphorus (Figure 7a). Similar relationships between TSS and phosphorus at the outflow were observed in the intensive study of HRIV1 (Carr and Rushton 1995). The relationship of ammonia to pH depicted in Figure 8a exemplifies the dependence of the rate of ammonification (transformation of organic N to ammonia) on pH (Reddy and Patrick 1984). In addition, a high rate of nitrification tends to lower pH and alkalinity (Kadlec and Knight 1996). The relationship between total organic carbon and pH (Figure 8c) was attributed to the carbon associated with calcium carbonate in the water column which likely affects pH levels.

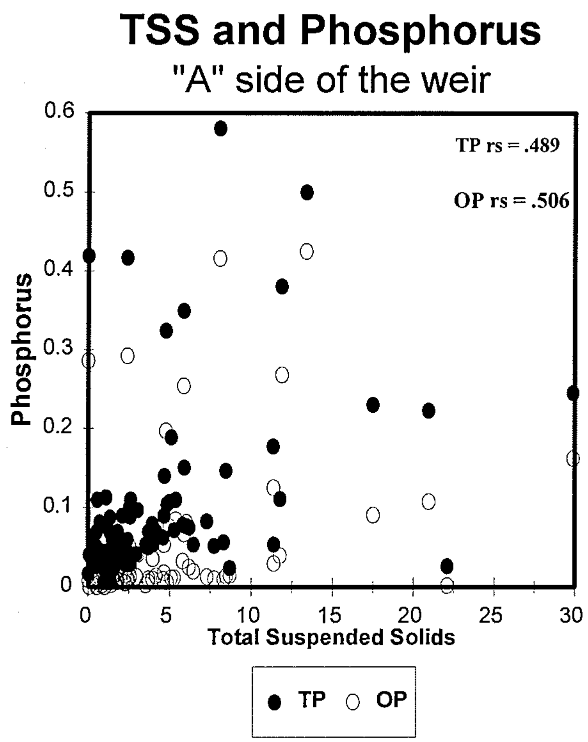

Figure 7a. Relationship Between TSS and Phosphorus in the a-side Data Set.

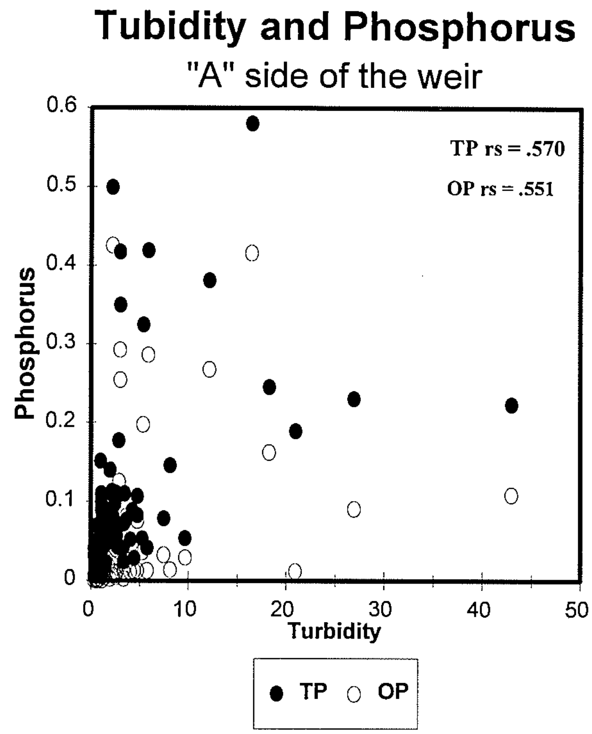

Figure 7b. Relationship Between Turbidity and Phosphorus in the a-side Data Set.

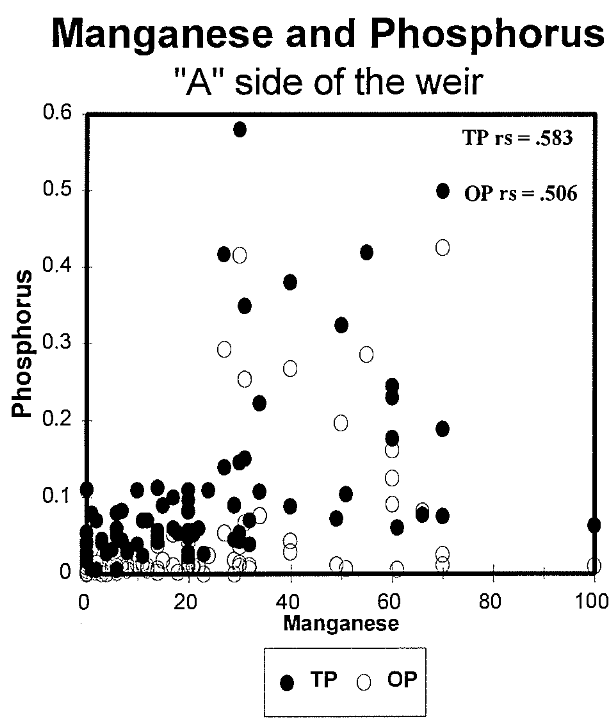

Figure 7c. Relationship Between Manganese and Phosphorus in the a-side Data Set.

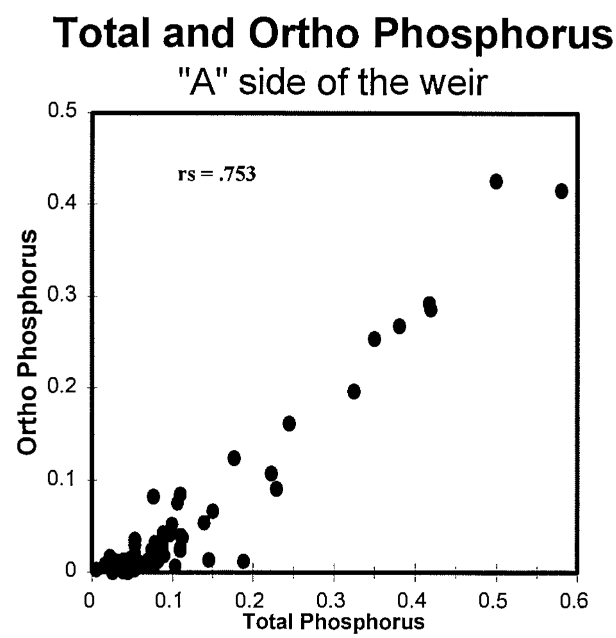

Figure 7d. Relationship Between Total and Ortho Phosphorus in the a-side Data Set.

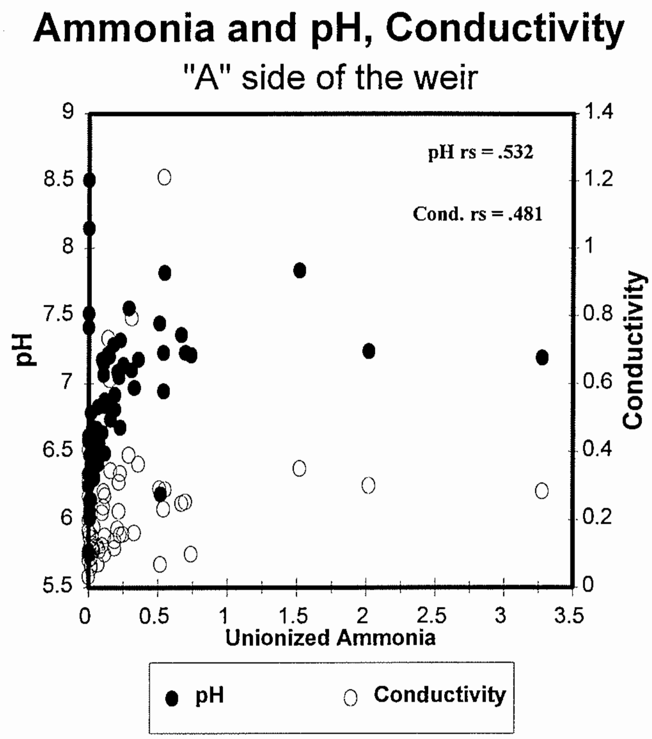

Figure 8a. **Relationship Between Ammonia, pH and Conductivity in the a-side Data Set.**

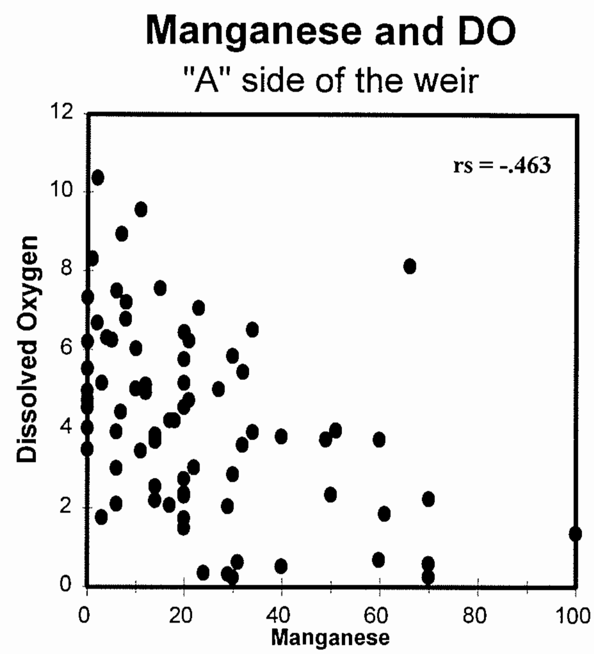

Figure 8b. **Relationship Between Manganese and DO in the a-side Data Set.**

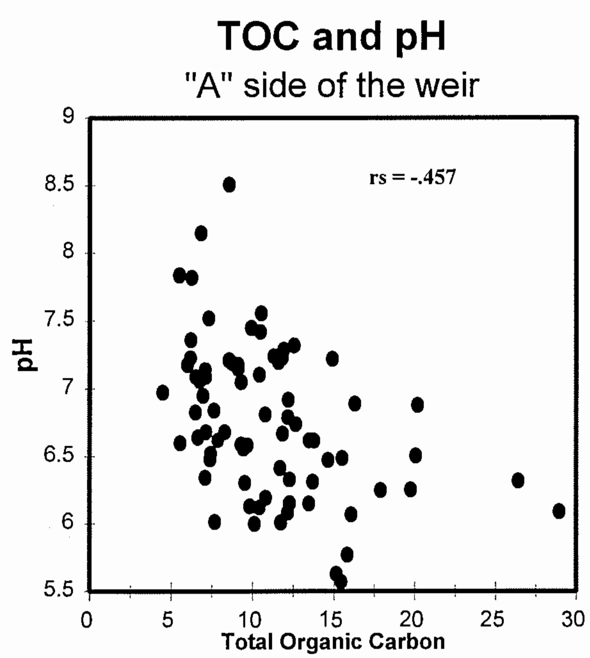

Figure 8c. **Relationship Between TOC and pH in the a-side Data Set.**

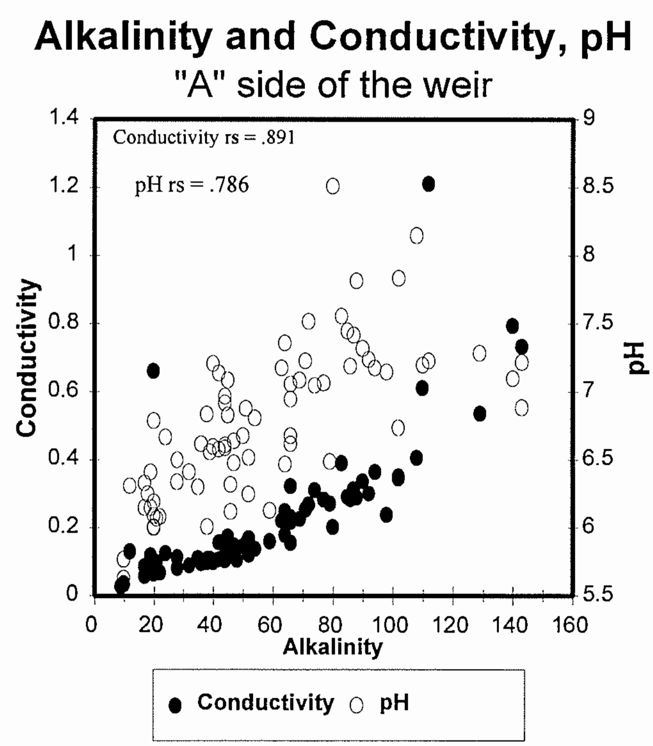

Figure 8d. **Relationship Between Alkalinity and Conductivity, pH in the a-side Data Set.**

Natural systems (*a* side) - Correlation analyses of the data collected from the natural systems on the ***a*** side of the weir revealed twenty-three moderate to strong correlations. Correlations between total and ortho phosphorus (Figure 9a), total phosphorus and TSS (Figure 9b), manganese and total phosphorus (Figure 9c), manganese and ortho phosphorus (Figure 9c), turbidity and ortho phosphorus (Figure 9d), turbidity and total phosphorus (Figure 9d), alkalinity and conductivity (Figure 10c), alkalinity and pH (Figure 10c), TSS and turbidity (Figure 11c), and pH and conductivity (Figure 11b) have relationships similar to those observed in the ***a*** and ***b*** side data sets discussed above.

Phosphates are naturally occurring substances that contribute to alkalinity levels in water (Friedmann and Hand 1989). The relationship between total phosphorus and alkalinity in the natural systems ***a*** side data set (Figure 9b) supports that concept. Studies have found relationships between metals and suspended particles in the water column (near pond outfalls) (Carr and Rushton 1995, Kehoe 1993 and Kehoe et al. 1994). While others have stated that metals are either sediment-adsorbed or complexed (Neary et al. 1988). The tendency for suspended particle metal relationships in this data set was exhibited only by the correlation between lead and turbidity (Figure 9d). No other suspended particle metal relationship was observed in this data set probably because TSS was measured at such low concentrations at the outflow (mean 4.40 mg/l).

Relationships involving nickel, lead, temperature, ammonia and nitrate+nitrite in the natural systems ***a*** side data set are shown in Figures 10a and b. Ninety-one percent of the nickel and seventy-three percent of the lead values from the natural systems were below MDL (4.3 ug/l and 2.0 ug/l respectively), therefore, little weight should be given to the correlations of temperature with lead and nickel (Figure 10a) and also ammonia and nickel (Figure 10b). Little confidence is given for the negative correlation observed in the data between temperature and nitrate+nitrite (Figure 10a) since the rate of nitrification (transformation of nitrite to nitrate) in ponds used for wastewater treatment increases with water temperature (Kadlec and Knight 1996) and many nitrate+nitrite values were below laboratory method detection limits.

Several alkalinity and pH relationships in the natural systems ***a*** side data set were revealed from the correlation analyses. The rate of ammonification (transformation of organic-N to ammonia) is pH dependant (Reddy and Patrick 1984) which the correlation between alkalinity and ammonia (Figure 10b) exhibited. Both alkalinity (Figure 10d) and pH (Figure 11b) had a

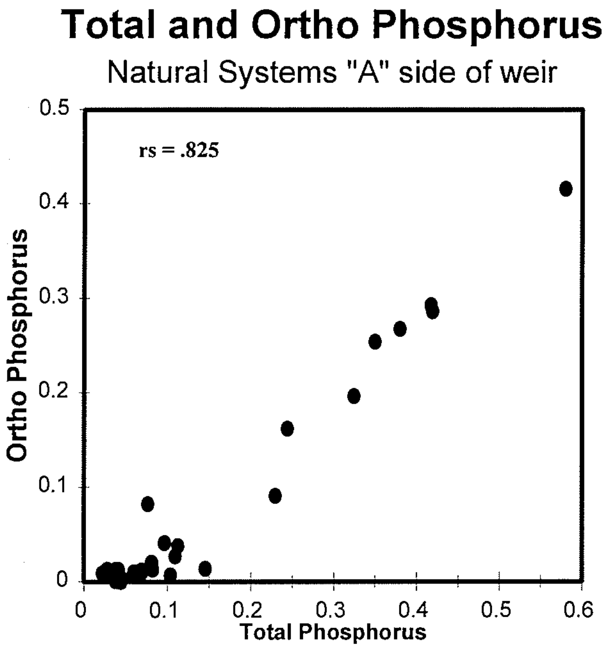

Figure 9a. **Relationship Between Total and Ortho Phosphorus in the Natural Systems a-side Data Set.**

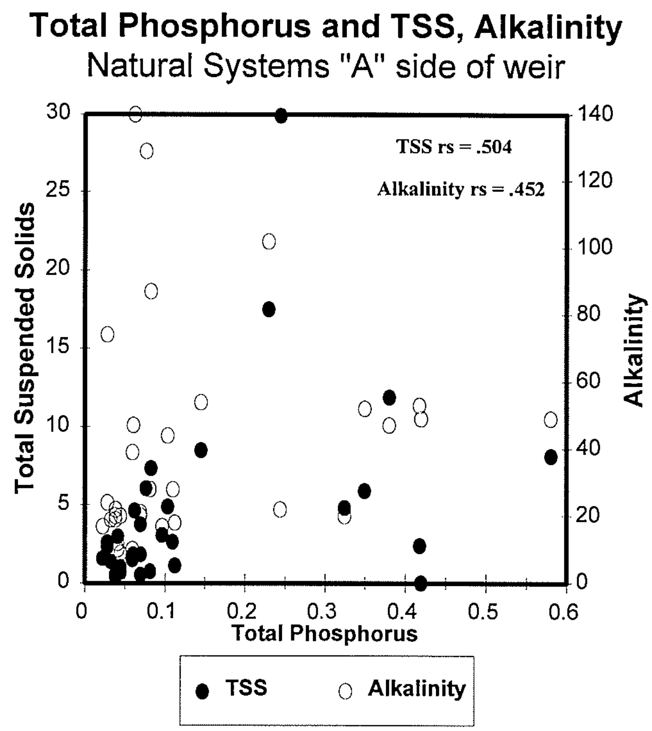

Figure 9b. **Relationship Between Total Phosphorus and TSS, Alkalinity in the Natural Systems a-side Data Set.**

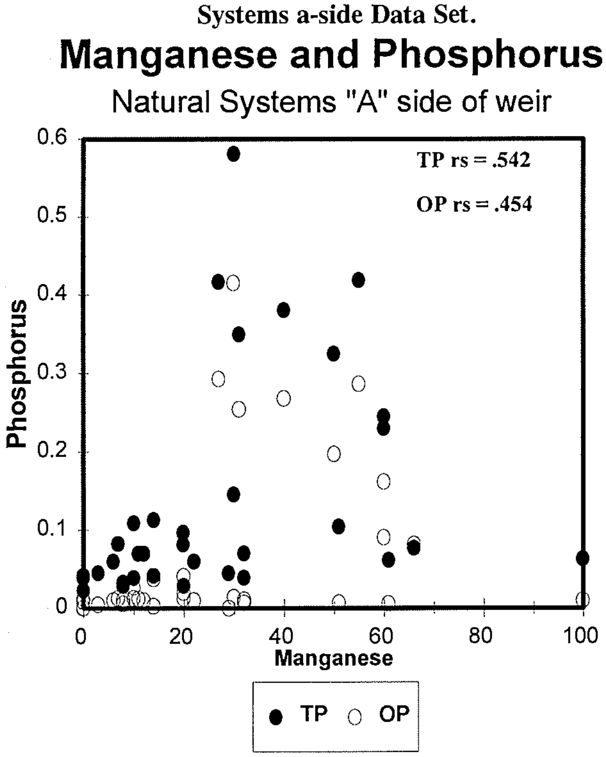

Figure 9c. **Relationship Between Manganese and Phosphorus in the Natural Systems a-side Data Set.**

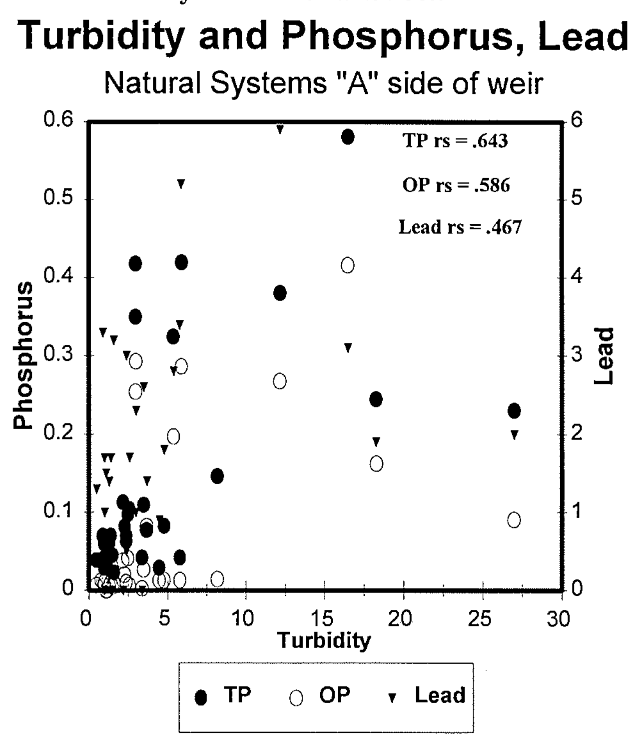

Figure 9d. **Relationship Between Turbidity and Phosphorus, Lead in the Natural Systems a-side Data Set.**

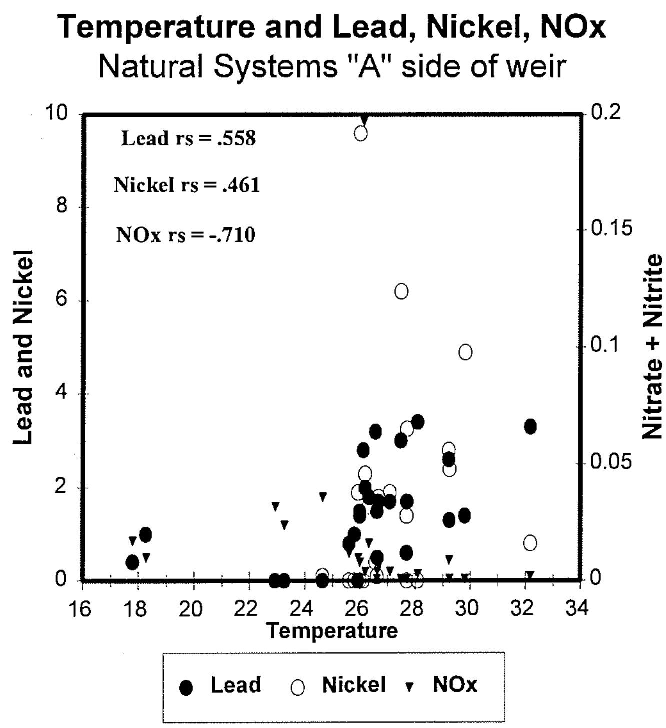

Figure 10a. **Relationship Between Temperature and Lead, Nickel, NOx in the Natural Systems a-side Data Set.**

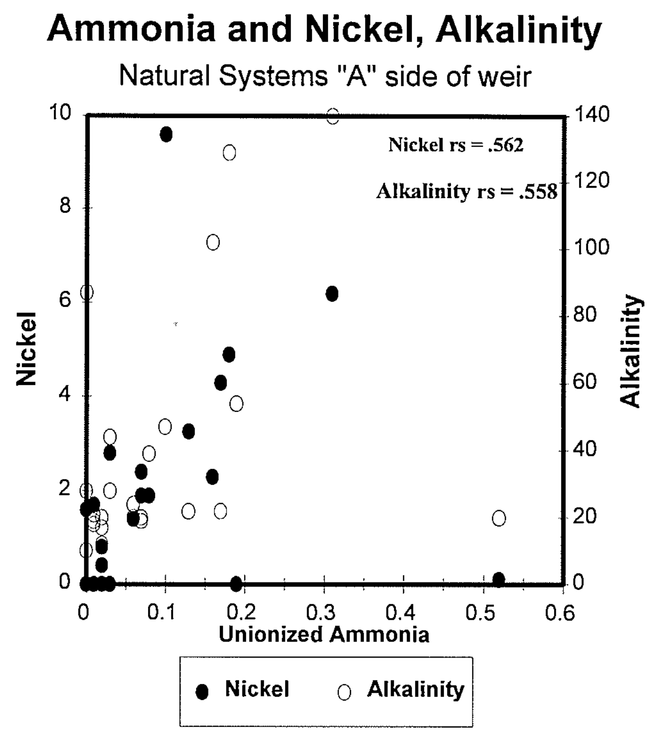

Figure 10b. **Relationship Between Ammonia and Nickel, Alkalinity in the Natural Systems a-side Data Set.**

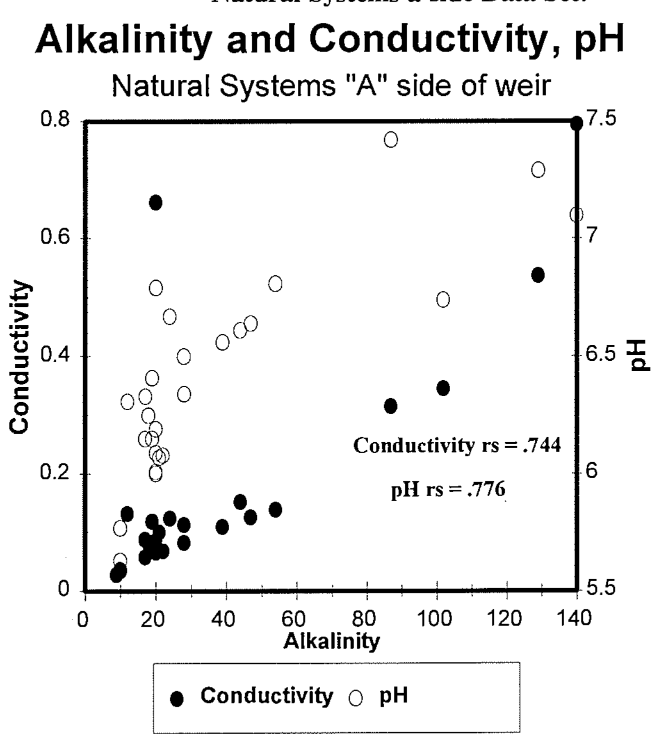

Figure 10c. **Relationship Between Alkalinity and Conductivity, pH in the Natural Systems a-side Data Set.**

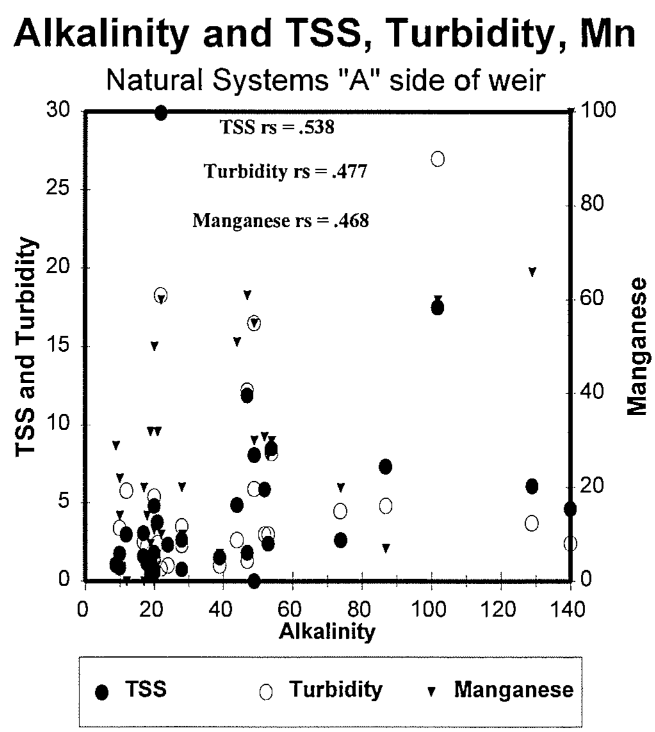

Figure 10d. **Relationship Between Alkalinity and TSS, Turbidity, Mn in the Natural Systems a-side Data Set.**

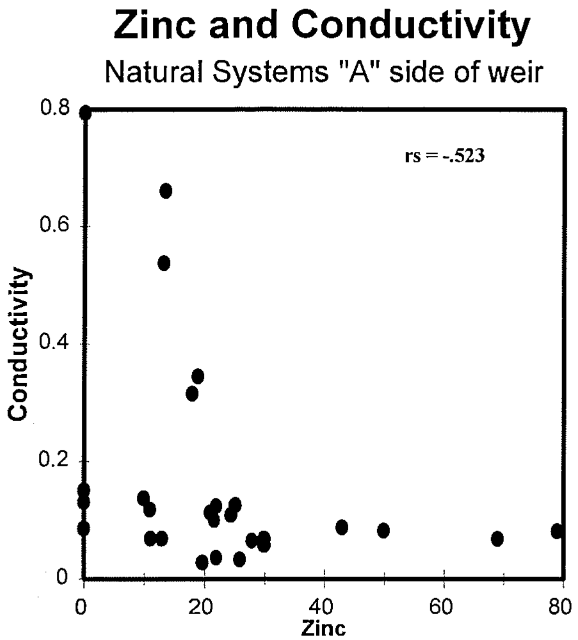

Figure 11a. **Relationship Between Zinc and Conductivity in the Natural Systems a-side Data Set.**

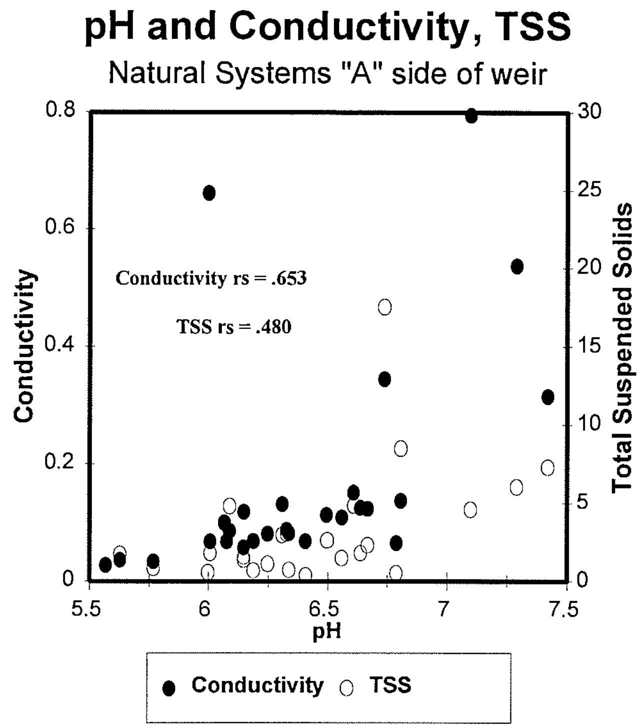

Figure 11b. Relationship Between pH and Conductivity, TSS in the Natural Systems a-side Data Set.

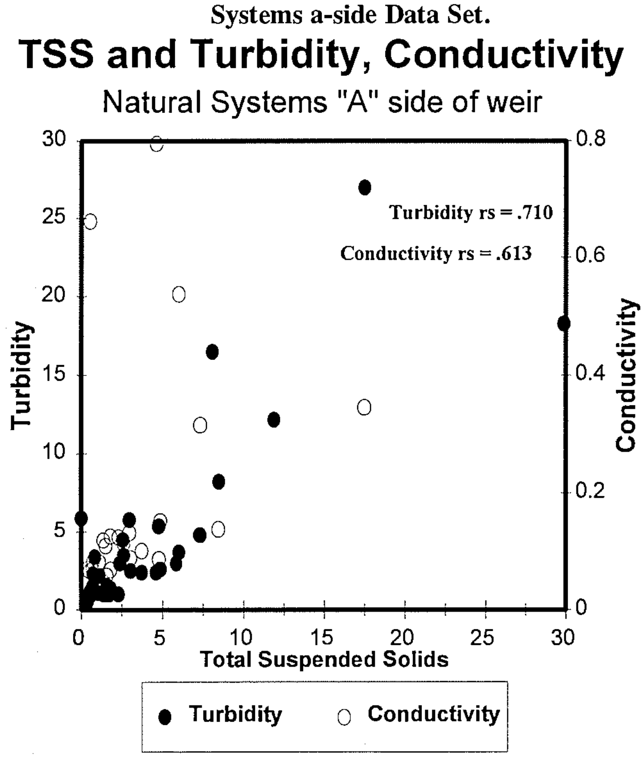

Figure 11c. Relationship Between TSS and Turbidity, Conductivity in the Natural Systems a-side Data Set.

relationship with TSS. Alkalinity and turbidity were also related (Figure 10d). Similarly, changes in pH (and with it alkalinity changes) in wastewater wetlands may contribute to suspended solids (Kadlec and Knight 1996). Increases in alkalinity with manganese concentrations (Figure 10d) suggest that manganese ions became adsorbed by calcium carbonates as found in soil solution experiments (Khattak and Page 1992).

Conductivity measured on the ***a*** side in the natural systems was correlated with zinc (Figure 11a) and TSS (Figure 11c). The relationship between conductivity (measure of dissolved substances) and TSS (measure of the undissolved substances) is perplexing but considered substantive for Kehoe 1993 found the same relationship. A possibility exists that alkalinity contributed to this correlation for both conductivity and TSS correlated individually to alkalinity. The negative relationship found between conductivity and zinc corresponds to what is found in the literature. Zinc does not readily exist in the dissolved fraction of natural waters. Zinc does however attach itself to particles in the water and/or is bound in the sediment (Harper 1985, Neary et al. 1988 and Rushton and Dye 1993).

Constructed systems (*a* side) - Correlation analyses of the data collected from the constructed systems on the ***a*** side of the weir revealed eighteen moderate to strong correlations. Correlations between total and ortho phosphorus (Figure 12a), total phosphorus and TSS (Figure 12b), ortho phosphorus and TSS (Figure 12b), turbidity and total phosphorus (Figure 12c), turbidity and ortho phosphorus (Figure 12c), manganese and total phosphorus (Figure 12d), manganese and ortho phosphorus (Figure 12d), ammonia and pH (Figure 13a), ammonia and conductivity (Figure 13a), DO and manganese (Figure 13b), DO and pH (Figure 13b), alkalinity and conductivity (Figure 13c), alkalinity and pH (Figure 13c), pH and conductivity (Figure 13d) and TSS and turbidity (Figure 14a) have similar relationships observed in the ***a*** side, ***b*** side and natural systems data sets above.

The relationships between TSS and copper, alkalinity and chromium (Figure 14b) and zinc and cadmium (Figure 14c) were the only correlations unique to the constructed systems that were not observed in the natural systems. The correlation between TSS and copper likely occurred because copper has been found to have a strong attraction to solids in the water column (McComish and Ong 1988). One-hundred percent of the chromium values in the constructed data set were below MDL (4.7 ug/l), therefore, little weight should be given to the relationship between alkalinity and chromium. Zinc and cadmium measured in stormwater runoff are most often associated with automobile usage (Whalen and Cullum 1988) and the correlation observed suggests a reaction to loading from street runoff.

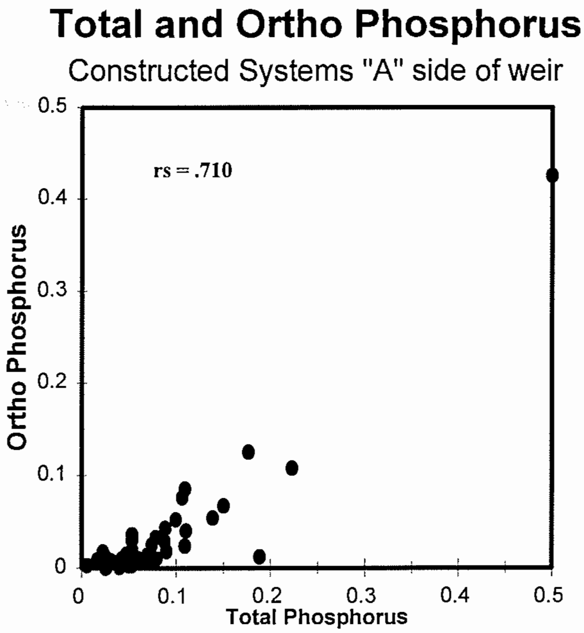

Figure 12a. **Relationship Between Total and Ortho Phosphorus in the Constructed Systems a-side Data Set.**

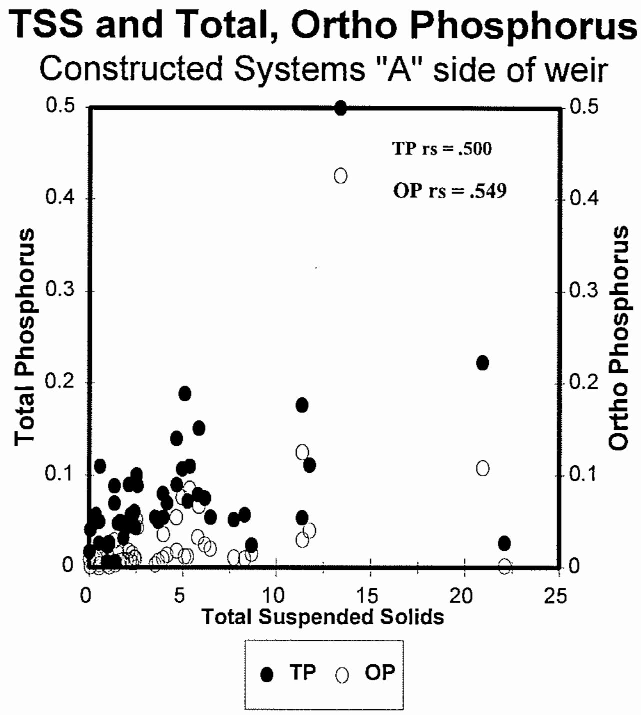

Figure 12b. **Relationship Between TSS and Total, Ortho Phosphorus in the Constructed Systems a-side Data Set.**

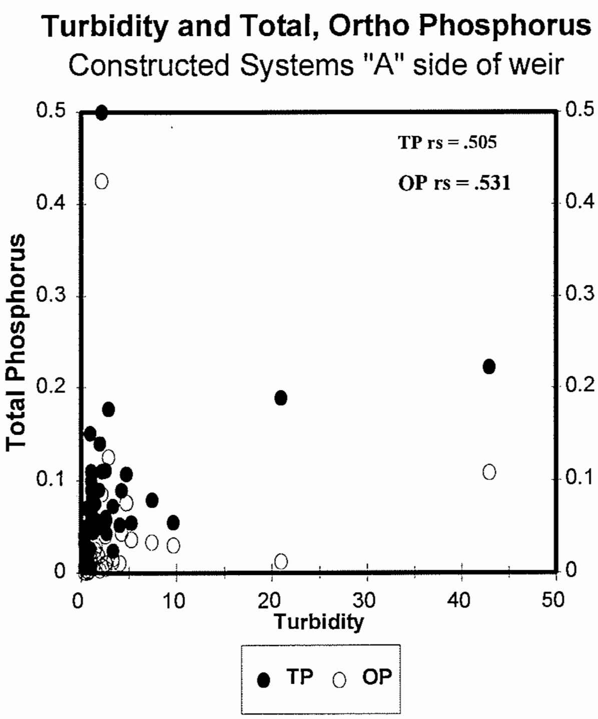

Figure 12c. **Relationship Between Turbidity and Total, Ortho Phosphorus in the Constructed Systems a-side Data Set.**

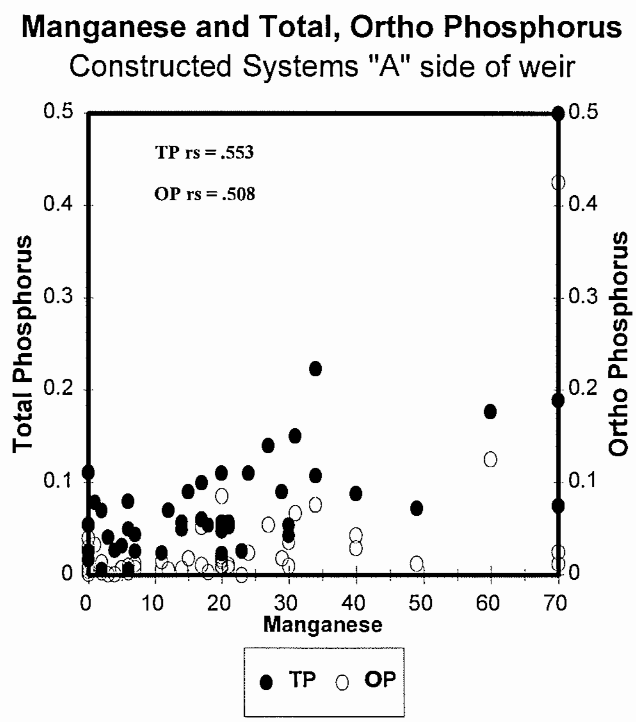

Figure 12d. **Relationship Between Manganese and Total, Ortho Phosphorus in the Constructed Systems a-side Data Set.**

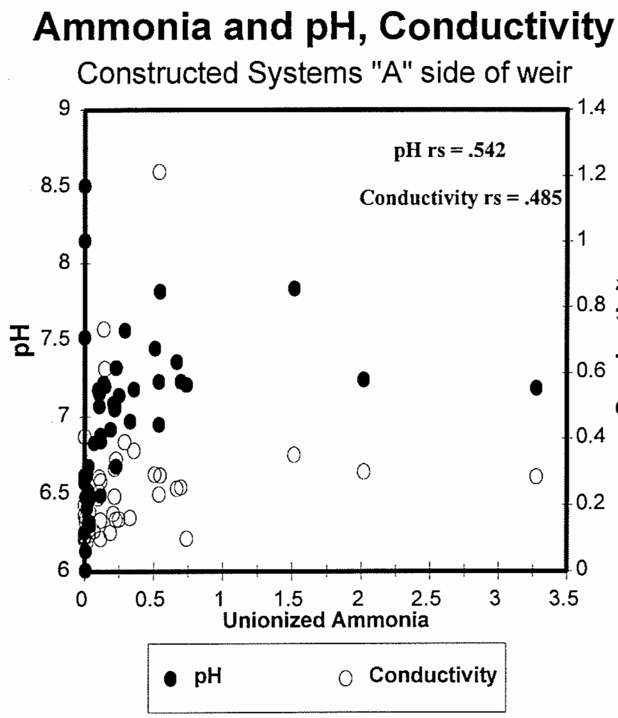

Figure 13a. Relationship Between Ammonia and pH, Conductivity in the Constructed Systems a-side Data Set.

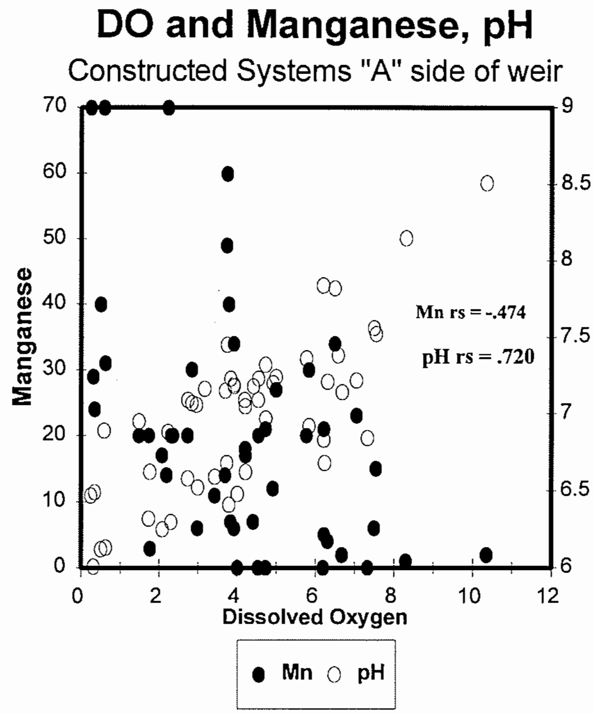

Figure 13b. Relationship Between DO and Manganese, pH in the Constructed Systems a-side Data Set.

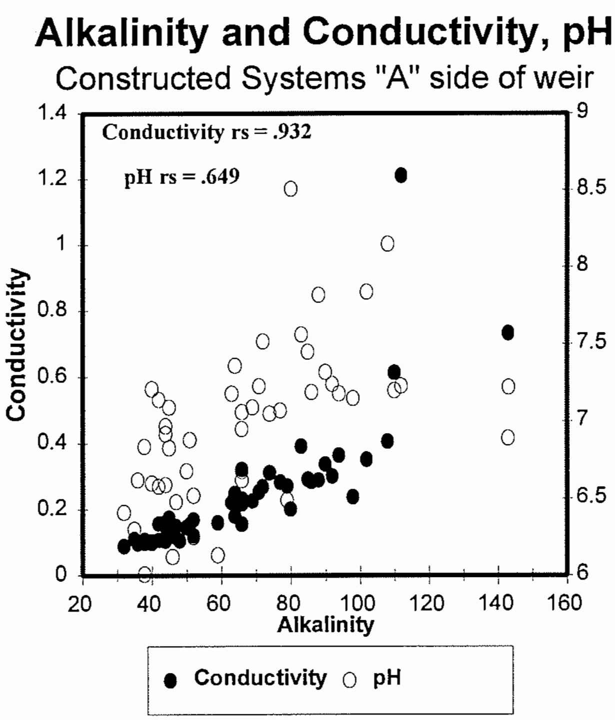

Figure 13c. Relationship Between Alkalinity and Conductivity, pH in the Constructed Systems a-side Data Set.

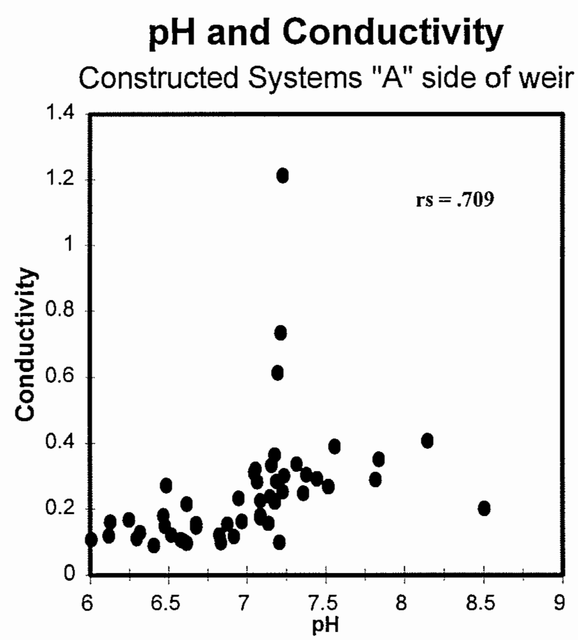

Figure 13d. Relationship Between pH and Conductivity in the Constructed Systems a-side Data Set.

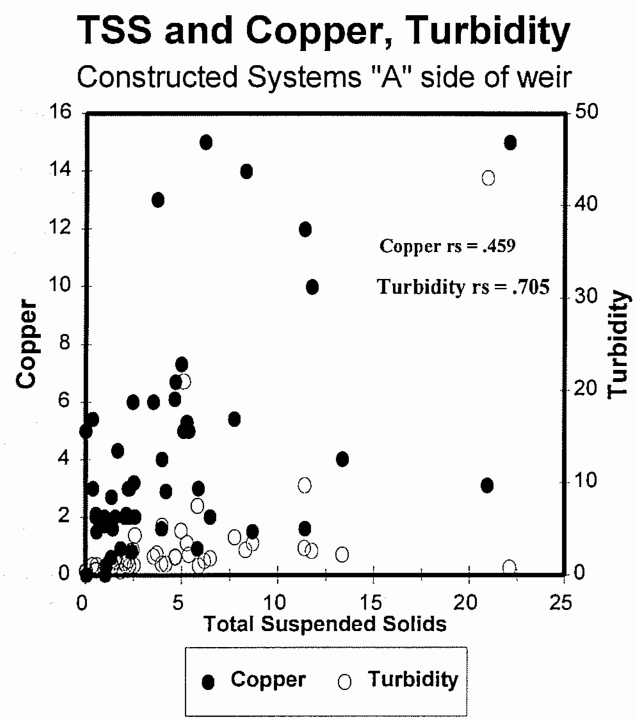

Figure 14a. **Relationship Between TSS and Copper, Turbidity in the Constructed Systems a-side Data Set.**

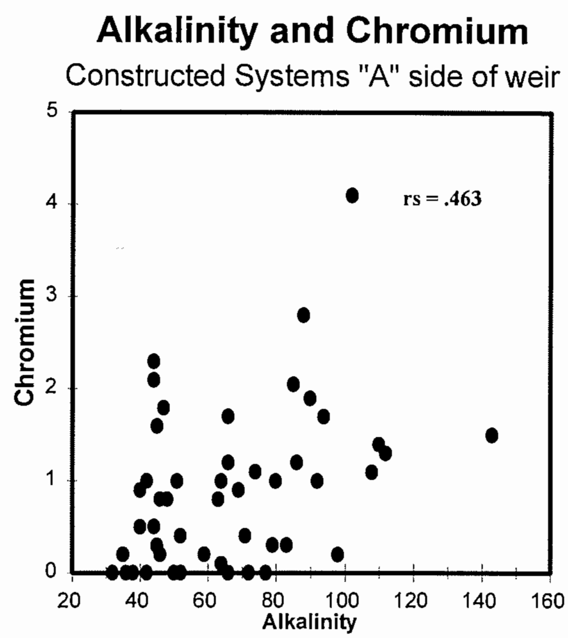

Figure 14b. **Relationship Between Alkalinity and Chromium in the Constructed Systems a-side Data Set.**

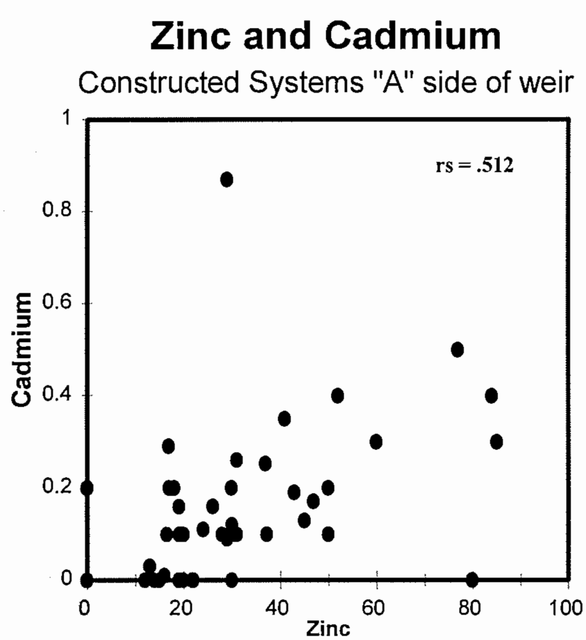

Figure 14c. **Relationship Between Zinc and Cadmium in the Constructed Systems a-side Data Set.**

Differences Between Constituents

One objective of this study was to determine statistical differences of the constituents measured between the ***b*** side and ***a*** side of the weir (these data sets included only the events where data existed on both sides of the weir). To achieve this objective, two-tailed paired t-tests were performed with a 95% confidence interval on the constructed systems, natural systems and all systems data sets. The null hypothesis is that a given ***b*** side constituent concentration equals that of the ***a*** side and that if the test statistic lies within the rejection region (t is greater than the absolute value of the critical value), then there is a significant difference.

All systems - A comparison of the data collected at all systems from both sides of the weir revealed that only three constituents had a test statistic value (t) in the rejection region (i.e., significantly different). The levels of dissolved oxygen, pH and turbidity measured on the ***b*** side of the weir were significantly different from the ***a*** side of the weir (Table 4). DO was higher on the ***a*** side of the weir due to aeration of the water as it flowed over the weir. The elevated pH on the ***a*** side is thought to occur because of the tendency for pH to increase with DO as mentioned above. It is suggested that the higher turbidity on the ***a*** side of the weir occurred due to turbulence as the water flowed over the weir. Turbidity is the measure of suspended particles in the water column detected by light refraction while TSS quantifies particulates by weight. No difference was observed in TSS on either side of the weir, therefore, the total weight of suspended particles was equal. Particulates in the water column subjected to agitation likely broke into smaller particles, increased the number of particulates while total particulate weight remained unaffected.

Natural systems - A comparison of the data collected at the natural systems from both sides of the weir revealed that four constituents had a test statistic value (t) in the rejection region (i.e., significantly different). The levels of dissolved oxygen, pH, temperature, and turbidity measured on the ***b*** side of the weir were significantly different from those of the ***a*** side of the weir (Table 5). The aerating action of water flowing over the weir elevated DO which affected pH levels as mentioned above in the data of all systems. It is reasoned that the temperature on the ***b*** side of the weir was significantly lower than the ***a*** side due to two factors: 1) shading by the extensive vegetative cover in the natural systems where the b side measurements were taken and 2) temperature on the ***b*** side was measured near the bottom while the ***a*** side measured water flow from near the surface.

Table 4. All Systems: The Results of a Two-Tailed Paired t-Test With a 95% Confidence Interval (n = 75-84). The *b* side Data is Significantly Different From The *a* side Data When 1.99<t<-1.99. All Units Are in ug/l Unless Indicated.

Constituent	*b* side Mean	*a* side Mean	t
Alkalinity (mg/l)	55.71	55.70	0.03
Cadmium	0.18	0.19	-0.09
Conductivity (mmhos/cm)	0.21	0.20	1.58
Copper	5.92	4.47	1.21
Dissolved Oxygen (mg/l)	3.13	4.22	**-5.21**
Iron	41.31	38.42	0.88
NH_3 (mg/l)	0.04	0.04	0.01
NO_2+NO_3 (mg/l)	0.01	0.02	-1.48
Ortho Phosphorus (mg/l)	0.04	0.05	-1.56
pH (SU)	6.67	6.75	**-3.93**
Temperature (°C)	26.64	26.76	-1.65
TOC (mg/l)	10.82	11.26	-1.05
Total Phosphorus (mg/l)	0.10	0.10	-1.24
TSS (mg/l)	5.13	4.73	0.41
Turbidity (NTU)	3.07	4.28	**-3.00**
Unionized NH_3	0.21	0.24	-0.89
Zinc	27.74	28.51	-0.33

Table 5. Natural Systems: The Results of a Two-Tailed Paired t-Test With a 95% Confidence Interval (n = 21-34). The *b* side Data is Significantly Different From The *a* side Data When 2.035<t<-2.035. All Units Are in ug/l Unless Indicated.

Constituent	*b* side Mean	*a* side Mean	t
Alkalinity (mg/l)	39.41	39.47	-0.11
Cadmium	0.14	0.24	-1.24
Conductivity (mmhos/cm)	0.18	0.17	1.83
Copper	4.22	4.80	-1.03
Dissolved Oxygen (mg/l)	2.27	4.47	**-4.23**
Iron	40.31	35.29	0.94
NH_3 (mg/l)	0.05	0.05	-0.07
NO_2+NO_3 (mg/l)	0.01	0.01	-1.01
Ortho Phosphorus (mg/l)	0.06	0.07	-2.01
pH (SU)	6.26	6.39	**-4.32**
Temperature (°C)	25.94	26.22	**-2.81**
TOC (mg/l)	12.52	13.41	-0.98
Total Phosphorus (mg/l)	0.13	0.14	-1.66
TSS (mg/l)	3.46	4.40	-0.93
Turbidity (NTU)	2.48	4.53	**-2.74**
Unionized NH_3	0.09	0.10	-0.02
Zinc	29.60	26.79	0.82

Constructed systems - A comparison of the data collected at the constructed systems from both sides of the weir revealed that only dissolved oxygen had a test statistic value (t) in the rejection region (i.e., significantly different) (Table 6). As mentioned above, DO on the ***a*** side of the weir was higher than the ***b*** side due to aeration from weir flow.

Table 6. Constructed Systems: The Results of a Two-Tailed Paired t-Test With a 95% Confidence Interval (n = 46-54). The *b* side Data is Significantly Different From The *a* side Data When 2.010<t<-2.010. All Units Are in ug/l Unless Indicated.

Constituent	*b* side Mean	*a* side Mean	t
Alkalinity (mg/l)	66.80	66.70	0.09
Cadmium	0.21	0.11	1.60
Conductivity (mmhos/cm)	0.22	0.21	-0.24
Copper	7.08	4.24	1.44
Dissolved Oxygen (mg/l)	3.60	4.09	**-3.56**
Iron	41.98	40.56	0.35
NH_3 (mg/l)	0.03	0.03	0.39
NO_2+NO_3 (mg/l)	0.02	0.02	-1.32
Ortho Phosphorus (mg/l)	0.03	0.03	-0.98
pH (SU)	6.91	6.96	-1.93
Temperature (°C)	27.03	27.06	-0.32
TOC (mg/l)	9.61	9.74	-0.38
Total Phosphorus (mg/l)	0.08	0.08	-0.59
TSS (mg/l)	6.23	4.95	0.87
Turbidity (NTU)	3.47	4.12	-1.47
Unionized NH_3	0.26	0.31	-0.98
Zinc	26.42	29.72	-1.03

Natural vs. Constructed systems - A comparison of the data collected at the constructed and natural systems from both sides of the weir revealed the response of dissolved oxygen was similar. On the other hand, additional significant differences in pH, temperature and turbidity were observed in the natural systems alone. The comparison of pH between each side of the weir in the constructed systems was nearly significant. Although the significance observed in the natural systems was admittedly greater, the greater capacity for the presence of vegetation in the natural systems compared with the constructed systems would likely effect the rate of photosynthesis and pH as described above. The presence of less vegetative cover in the constructed systems compared with the natural systems also attributed to the difference observed in temperature. Without the same level of vegetative cover in the constructed systems, the temperature observed on either side of the weir were not statistically different.

As with pH, the difference in turbidity exhibited in the natural systems was significant while the levels observed in the constructed systems were nearly significant. The significance observed in the natural systems and not in the constructed systems suggests that the particulates measured may have been organic in nature.

SUMMARY

This survey of permitted wet detention ponds was conducted to; 1) compare the water quality in front of the outfall weir to that of its effluent, 2) determine whether the effluent complies with class III Florida State Water Quality Standards and 3) compare Water Quality Standard compliance between constructed and natural systems. Additional analyses were conducted to determine relationships between constituents and differences between constituents. This summary is designed to review the most consequential results and reveal possible management implications.

The data collected during this study suggest that wet detention design criterion is adequate for effluent State Water Quality Standard compliance. In comparing the natural with the constructed systems, it was observed that the constructed systems exhibited lower alkalinity, copper and lead noncompliance than the natural systems. Though it may be advantageous to utilize constructed systems to maximize alkalinity, copper and lead Water Quality Standard compliance, the protection and/or restoration of natural wetland hydrology must be considered. Additional research in the area of constructed systems and their affects on natural wetland hydrology is needed.

The most consequential management implication was revealed during the comparison between the ***b*** side (in pond) data to the ***a*** side (pond effluent) data. Except for the physical action of water flowing over the weir which increased dissolved oxygen and sometimes pH, there was little difference between the ***b*** and ***a*** sides of the weir, therefore, collecting samples in front of the weir (during discharge) does not change the results. This conclusion is important, since it is more convenient, less time consuming, and safer to collect water quality samples in front of a weir. It is maintained that this survey of natural and constructed wet detention pond outfalls substantiates the method of sampling in front of the weir during pond discharge to determine compliance to State Water Quality Standards.

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APPENDIX A

Constituent Concentrations for The Natural Systems Separated By *b* Side and *a* Side Data.

Class III State Water Quality Standards for Each Constituent and Percent Non-Compliance of Standard Included.

Cadmium (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards are presented in bold underneath the concentrations reported by the laboratory.
Shaded data indicate that the water quality standard was exceeded.

NATURAL

LOC OS # SIDE	QRIG OS03B B	QRIG OS03A A	CRNR OS06B B	CRNR OS06A A	HRV1 OS07B B	HRV1 OS07A A	SUSN OS12B B	SUSN OS12A A	HGRN OS15B B	HGRN OS15A A	HRV2 OS16B B	HRV2 OS16A A	RGNC OS17B B	RGNC OS17A A	TMBR OS18B B	TMBR OS18A A	SCRS OS19B B	SCRS OS19A A
DATES																		
061192					0.00 **0.67**	0.00 **0.66**												
062592																		
070192			0.10 **1.06**						0.20 **0.63**	0.20 **0.45**			0.20 **0.32**	0.10 **0.37**			0.10 **0.32**	0.50 **0.32**
072192							0.40 **0.57**	0.30 **0.68**										
080792			0.00 **2.14**	1.90 **2.26**			0.00 **0.58**	0.00 **0.63**					0.00 **0.30**	0.00 **0.30**	0.10 **0.30**	0.10 **0.28**		
081492	0.30 **0.58**	0.30 **0.55**	0.40 **1.69**	0.30 **1.68**	0.10 **0.57**	0.20 **0.57**	0.50 **0.67**	0.30 **0.65**			0.10 **0.28**	0.10 **0.31**	0.10 **0.40**	0.10 **0.40**	0.20 **0.41**	0.10 **0.38**		
090192	0.00 **0.43**	0.00 **0.40**	0.19 **1.20**		0.00 **0.56**	0.00 **0.56**	0.18 **0.62**	0.23 **0.63**	0.48 **0.51**	0.69 **0.45**	0.17 **0.31**	1.68 **0.27**	0.00 **0.37**	0.00 **0.37**	0.00 **0.36**	0.00 **0.33**		
100692	0.22 **0.46**	0.23 **0.41**	0.01 **1.15**	0.00 **1.15**	0.13 **0.64**		0.32 **0.71**	0.08 **0.72**	0.14 **0.42**	0.06 **0.36**	0.07 **0.27**	0.05 **0.27**	0.11 **0.40**	0.04 **0.40**	0.00 **0.51**	0.02 **0.43**		
121092	0.10 **0.77**	0.10 **0.53**					0.30 **0.81**											
012093	0.10 **0.63**	0.00 **0.63**	0.10 **2.65**		0.00 **0.97**		0.20 **1.04**						0.20 **0.59**					
012793	0.10 **2.59**		0.00 **6.05**		0.00 **7.78**		0.20 **9.50**		0.00 **11.23**						0.30 **16.41**			
020993	0.03 **0.73**		0.02 **2.25**				0.06 **1.18**						0.11 **0.40**					
031893	0.10 **0.51**		0.10 **1.87**		0.00 **0.82**		0.20 **0.94**		0.20 **0.51**		0.10 **0.19**		0.10 **0.43**		0.00 **0.46**			
040293	0.04 **0.50**		0.00 **1.77**		0.00 **0.66**		0.06 **0.92**		0.02 **0.34**		0.10 **0.16**		0.00 **0.34**		0.00 **0.39**			
n	9	5	10	3	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	0.11	0.13	0.09	0.73	0.03	0.07	0.22	0.18	0.17	0.32	0.13	0.61	0.09	0.05	0.09	0.06	0.10	0.50
Median	0.10	0.10	0.06	0.30	0.00	0.00	0.20	0.23	0.17	0.20	0.15	0.10	0.10	0.04	0.00	0.06	0.10	0.50
Std	0.09	0.12	0.12	0.83	0.05	0.09	0.14	0.12	0.16	0.27	0.04	0.76	0.07	0.04	0.11	0.05	0.00	0.00
% Exceed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	33.3	0.0	0.0	0.0	0.0	0.0	100.0

SUMMARY OF CADMIUM DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	32	96	50	162	82
MEAN	0.116	0.240	0.194	0.148	0.160	0.180
MEDIAN	0.100	0.100	0.100	0.100	0.100	0.100
STD	0.122	0.431	0.446	0.162	0.360	0.300

PERCENT EXCEEDENCE OF STANDARD
CADMIUM

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**0.0**	**9.4**	**2.1**	**0.0**	**1.2**	**3.7**

Copper (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards are presented in bold underneath the concentrations reported by the laboratory.
Shaded data indicate that the water quality standard was exceeded.

NATURAL

LOC OS # SIDE	QRIG OS03B B	QRIG OS03A A	CRNR OS06B B	CRNR OS06A A	HRV1 OS07B B	HRV1 OS07A A	SUSN OS12B B	SUSN OS12A A	HGRN OS15B B	HGRN OS15A A	HRV2 OS16B B	HRV2 OS16A A	RGNC OS17B B	RGNC OS17A A	TMBR OS18B B	TMBR OS18A A	SCRS OS19B B	SCRS OS19A A
DATES																		
061192					7.00 **6.62**	9.00 **6.57**												
062592																		
070192			4.00 **11.01**	2.00 **10.39**					4.00 **6.20**	4.00 **4.35**			4.00 **3.62**	5.00 **3.62**			2.00 **3.62**	2.00 **3.62**
072192							7.00 **5.63**	8.00 **6.81**										
080792			15.00 **23.64**	18.00 **24.98**			11.00 **5.75**	12.00 **6.20**					7.00 **3.62**	8.50 **3.62**	5.00 **3.62**	10.00 **3.62**		
081492	1.00 **5.73**	2.00 **5.35**	9.60 **18.30**	4.30 **18.18**	7.50 **5.59**	9.60 **5.59**	3.00 **6.72**	2.00 **6.44**			1.50 **3.62**	1.20 **3.62**	1.60 **3.81**	0.50 **3.81**	2.40 **3.91**	3.20 **3.62**		
090192	0.00 **4.17**	0.00 **3.81**	2.60 **12.53**	2.80 **13.32**	3.50 **5.52**	2.90 **5.52**	4.60 **6.09**	6.80 **6.20**	3.70 **4.94**	4.20 **4.35**	7.40 **3.62**	4.00 **3.62**	1.40 **3.62**	1.80 **3.62**	3.30 **3.62**	4.50 **3.62**		
100692	3.50 **4.41**	1.40 **3.86**	2.90 **11.97**	0.00 **11.97**	1.80 **6.29**		0.50 **7.13**	1.50 **7.17**	1.20 **4.01**	1.40 **3.62**	1.80 **3.62**	3.40 **3.62**	4.20 **3.81**	2.00 **3.62**	4.00 **4.95**	4.20 **4.07**		
121092	2.40 **7.72**	1.60 **5.20**					8.60 **8.16**											
012093	3.80 **6.24**	19.30 **6.24**	7.50 **29.72**		7.90 **10.01**		12.40 **10.79**						9.30 **5.77**					
012793	1.00 **3.62**		4.20 **27.63**		2.20 **8.79**		4.10 **10.53**		0.40 **5.09**						1.00 **5.20**			
020993	0.00 **7.35**		0.00 **24.88**				1.10 **12.30**						0.00 **3.81**					
031893	4.10 **4.90**		7.50 **20.33**		11.40 **8.34**		6.30 **9.58**		9.20 **4.90**		9.80 **3.62**		12.40 **4.12**		4.60 **4.42**			
040293	3.10 **4.86**		1.90 **19.15**		4.90 **6.57**		5.80 **9.45**		2.00 **3.62**		3.10 **3.62**		1.30 **3.62**		2.20 **3.62**			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	2.10	4.86	5.52	5.42	5.78	7.17	5.85	6.06	3.42	3.20	4.72	2.87	4.58	3.56	3.21	5.48	2.00	2.00
Median	2.40	1.60	4.10	2.80	5.95	9.00	5.80	6.80	2.85	4.00	3.10	3.40	4.00	2.00	3.30	4.35	2.00	2.00
Std	1.53	7.25	4.21	6.44	3.07	3.03	3.60	3.92	2.88	1.28	3.30	1.20	3.95	2.88	1.33	2.66	0.00	0.00
% Exceed	0.0	20.0	0.0	0.0	37.5	66.7	36.4	60.0	16.7	0.0	40.0	33.3	55.6	40.0	28.6	75.0	0.0	0.0

SUMMARY OF COPPER DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	97	51	163	85
MEAN	4.46	4.80	7.48	4.17	6.26	4.42
MEDIAN	3.75	3.30	4.00	3.00	3.80	3.00
STD	3.47	4.59	14.01	3.78	11.13	4.03

PERCENT EXCEEDENCE OF STANDARD COPPER

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**25.8**	**35.3**	**13.4**	**11.8**	**18.4**	**21.2**

Iron (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Note: Class III Standard is less than or equal to 1000 ug/l.
There were no exceedences for Iron.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					40.0	40.0												
062592																		
070192			14.0	16.0					27.0	29.0			29.0	21.0			25.0	21.0
072192							10.0	17.0										
080792			34.0	30.0			19.0	24.0					30.0	31.5	80.0	19.0		
081492	18.0	28.0	26.0	32.0	45.0	51.0	20.0	20.0			35.0	41.0	30.0	29.0	84.0	46.0		
090192	21.0	21.0	33.7	41.6	29.0	59.0	23.9	132.7	33.0	31.8	47.8	41.9	27.5	28.5	86.0	12.0		
100692	15.2	15.2	93.0	89.0	11.4		63.4	27.0	38.8	32.3	37.6	34.8	53.3	26.5	11.2	11.0		
121092	94.0	88.0					15.0											
012093	96.0	11.9	16.2		93.0		29.8						23.7					
012793	11.5		76.0		37.0		24.5		14.5						21.0			
020993	75.0		13.0				24.5						11.1					
031893	77.0		17.3		50.0		127.1		16.8		19.0		10.0		84.0			
040293	14.8		12.4		63.0		29.8		16.2		24.0		31.2		28.7			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	46.9	32.8	33.6	41.7	46.1	50.0	35.2	44.1	24.4	31.0	32.7	39.2	27.3	27.3	56.4	22.0	25.0	21.0
Median	21.0	21.0	21.7	32.0	42.5	51.0	24.5	24.0	21.9	31.8	35.0	41.0	29.0	28.5	80.0	15.5	25.0	21.0
Std	35.1	28.1	26.9	25.0	22.7	7.8	31.9	44.4	9.2	1.5	10.2	3.2	11.9	3.5	31.7	14.2	0.0	0.0
% Excee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SUMMARY OF IRON DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	97	51	163	85
MEAN	37.7	35.3	42.9	40.4	41.0	39.0
MEDIAN	28.9	29.0	34.0	35.0	30.0	32.0
STD	27.3	24.6	29.2	23.7	28.6	24.2

Lead (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards are presented in bold underneath the concentrations reported by the laboratory.
Shaded data indicate that the water quality standard was exceeded.

NATURAL

LOC OS # SIDE	QRIG OS03B B	QRIG OS03A A	CRNR OS06B B	CRNR OS06A A	HRV1 OS07B B	HRV1 OS07 A	SUSN OS12B B	SUSN OS12A A	HGRN OS15B B	HGRN OS15A A	HRV2 OS16B B	HRV2 OS16A A	RGNC OS17B B	RGNC OS17A A	TMBR OS18B B	TMBR OS18A A	SCRS OS19B B	SCRS OS19A A
DATES																		
061192					3.60 **1.34**	1.50 **1.33**												
062592																		
070192			1.30 **2.86**	0.90 **2.63**					1.80 **1.22**	2.80 **0.72**			2.60 **0.54**	3.20 **0.54**			1.80 **0.54**	3.40 **0.54**
072192							4.00 **1.05**	3.10 **1.40**										
080792			2.50 **8.93**	3.00 **9.70**			1.80 **1.09**	5.90 **1.22**					0.00 **0.54**	0.60 **0.54**	0.10 **0.54**	1.90 **0.54**		
081492	0.70 **1.08**	1.70 **0.98**	2.40 **6.10**	1.40 **6.04**	1.60 **1.04**	1.40 **1.04**	2.80 **1.37**	1.00 **1.29**			0.90 **0.54**	1.50 **0.54**	1.20 **0.59**	0.60 **0.59**	1.50 **0.61**	1.30 **0.54**		
090192	0.10 **0.67**	0.50 **0.59**	2.70 **3.47**	2.00 **3.80**	0.90 **1.02**	0.00 **1.02**	3.40 **1.18**	5.20 **1.22**	1.00 **0.87**	2.60 **0.72**	1.90 **0.54**	1.70 **0.54**	3.30 **0.54**	1.70 **0.54**	3.50 **0.54**	3.30 **0.54**		
100692	0.00 **0.73**	1.00 **0.60**	0.70 **3.24**	1.80 **3.24**	0.00 **1.24**		1.30 **1.50**	2.30 **1.51**	0.00 **0.64**	0.00 **0.54**	0.00 **0.54**	0.00 **0.54**	0.00 **0.59**	0.00 **0.59**	0.80 **0.87**	0.80 **0.65**		
121092	0.30 **1.69**	0.40 **0.93**					7.10 **1.83**											
012093	0.60 **1.23**	1.00 **1.23**	1.30 **12.56**		1.50 **2.48**		3.40 **2.77**						0.40 **1.09**					
012793	0.90 **0.54**		0.90 **11.27**		0.80 **2.05**		3.80 **2.68**		0.50 **0.91**						1.10 **0.93**			
020993	0.10 **1.57**		0.40 **9.64**				3.20 **3.37**						0.90 **0.59**					
031893	0.20 **0.86**		0.60 **7.14**		0.00 **1.89**		2.10 **2.33**		0.10 **0.86**		0.40 **0.54**		0.20 **0.66**		0.50 **0.73**			
040293	0.00 **0.85**		0.54 **6.52**		0.42 **1.33**		2.54 **2.28**		0.41 **0.54**		0.00 **0.54**		0.00 **0.54**		0.00 **0.56**			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	0.32	0.92	1.33	1.82	1.10	0.97	3.22	3.50	0.64	1.80	0.64	1.07	0.96	1.22	1.07	1.83	1.80	3.40
Median	0.20	1.00	1.10	1.80	0.85	1.40	3.20	3.10	0.46	2.60	0.40	1.50	0.40	0.60	0.80	1.60	1.80	3.40
Std	0.31	0.46	0.84	0.70	1.10	0.68	1.47	1.82	0.61	1.28	0.71	0.76	1.15	1.13	1.11	0.94	0.00	0.00
% Exceed	0.0	0.0	0.0	0.0	12.5	0.0	63.6	80.0	0.0	66.7	0.0	0.0	22.2	20.0	14.3	25.0	0.0	100.0

SUMMARY OF LEAD DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	97	51	163	85
MEAN	1.29	1.75	1.44	1.12	1.38	1.38
MEDIAN	0.90	1.50	0.80	0.80	0.90	1.10
STD	1.36	1.37	2.45	1.17	2.08	1.29

PERCENT EXCEEDENCE OF STANDARD
LEAD

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**16.7**	**26.5**	**10.3**	**11.8**	**12.9**	**17.7**

Manganese (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Note: Class III Standards for Mn do not exist: the Class II Standard is less than or equal to 100,000 ug/l.
There were no exceedences in the class II Manganese standard.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					40.00	30.00												
062592																		
070192			0.00	20.00					50.00	50.00			0.00	0.00			0.00	0.00
072192							40.00	30.00										
080792			110.00	100.00			30.00	40.00					20.00	10.00	50.00	60.00		
081492	62.00	51.00	65.00	66.00	55.00	61.00	30.00	31.00			0.00	29.00	0.00	0.00	67.00	32.00		
090192	39.00	32.00	66.00	60.00	0.00	6.00	41.00	55.00	4.00	10.00	8.00	22.00	23.00	12.00	24.00	11.00		
100692	17.00	20.00	0.00	7.00	12.00		45.00	27.00	10.00	14.00	14.00	14.00	5.00	3.00	28.00	20.00		
121092	8.00	8.00					6.00											
012093	3.00	8.00	11.00		6.00		30.00						9.00					
012793	12.00		13.00		5.00		36.00		2.00						5.00			
020993	15.00		12.00				10.00						3.00					
031893	12.00		28.00		21.00		50.00		10.00		18.00		4.00		36.00			
040293	20.00		13.00		12.00		56.00		9.00		9.00		15.00		80.00			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	20.89	23.80	31.80	50.60	18.88	32.33	34.00	36.60	14.17	24.67	9.80	21.67	8.78	5.00	41.43	30.75	0.00	0.00
Median	15.00	20.00	13.00	60.00	12.00	30.00	36.00	31.00	9.50	14.00	9.00	22.00	5.00	3.00	36.00	26.00	0.00	0.00
Std	17.36	16.25	34.58	33.48	17.91	22.51	14.64	10.17	16.31	17.99	6.08	6.13	8.11	5.06	24.07	18.46	0.00	0.00
% Excee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SUMMARY OF MANGANESE DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	97	51	163	85
MEAN	23.24	27.62	17.73	20.86	19.96	23.56
MEDIAN	13.50	21.00	15.00	20.00	14.00	20.00
STD	22.82	23.14	14.64	18.12	18.59	20.55

PERCENT EXCEEDENCE OF STANDARD MANGANESE

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Nickel (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards are presented in bold underneath the concentrations reported by the laboratory.
There were no exceedences for Nickel.

NATURAL

LOC OS # SIDE	QRIG OS03B B	QRIG OS03A A	CRNR OS06B B	CRNR OS06A A	HRV1 OS07B B	HRV1 OS07A A	SUSN OS12B B	SUSN OS12A A	HGRN OS15B B	HGRN OS15A A	HRV2 OS16B B	HRV2 OS16A A	RGNC OS17B B	RGNC OS17A A	TMBR OS18B B	TMBR OS18A A	SCRS OS19B B	SCRS OS19A A
DATES																		
061192					0.00 **88.75**	0.00 **88.16**												
062592																		
070192			0.30 **146.93**	0.40 **138.78**					0.00 **83.24**	0.00 **58.54**			0.20 **48.80**	0.40 **48.80**			0.00 **48.80**	0.00 **48.80**
072192							1.50 **75.68**	0.30 **91.26**										
080792			6.40 **313.10**	6.20 **330.67**			3.60 **77.21**	3.00 **83.24**					4.40 **48.80**	3.25 **48.80**	2.80 **48.80**	4.30 **48.80**		
081492	0.00 **76.90**	0.00 **71.86**	18.00 **242.94**	4.90 **241.33**	0.30 **75.07**	9.60 **75.07**	0.40 **90.08**	0.00 **86.38**			0.10 **48.80**	0.10 **48.80**	0.10 **51.43**	1.40 **51.43**	1.10 **52.73**	2.40 **48.80**		
090192	1.20 **56.13**	1.70 **51.43**	1.20 **166.95**	2.30 **177.45**	2.60 **74.16**	1.90 **74.16**	1.70 **81.74**	1.90 **83.24**	2.20 **66.43**	2.80 **58.54**	1.30 **48.80**	1.80 **48.80**	2.00 **48.80**	1.90 **48.80**	1.90 **48.80**	0.80 **48.80**		
100692	0.00 **59.33**	0.00 **52.08**	1.50 **159.53**	1.60 **159.53**	0.00 **84.44**		2.00 **95.52**	1.90 **96.10**	0.00 **54.03**	0.00 **48.80**	0.00 **48.80**	0.00 **48.80**	0.00 **51.43**	0.10 **51.43**	0.60 **66.59**	0.00 **54.84**		
121092																		
012093																		
012793																		
020993																		
031893																		
040293																		
n	3	3	5	5	4	3	5	5	3	3	3	3	5	5	4	4	1	1
Mean	0.40	0.57	5.48	3.08	0.73	3.83	1.84	1.42	0.73	0.93	0.47	0.63	1.34	1.41	1.60	1.88	0.00	0.00
Median	0.00	0.00	1.50	2.30	0.15	1.90	1.70	1.90	0.00	0.00	0.10	0.10	0.20	1.40	1.50	1.60	0.00	0.00
Std	0.57	0.80	6.61	2.15	1.09	4.15	1.03	1.12	1.04	1.32	0.59	0.83	1.70	1.13	0.83	1.65	0.00	0.00
% Exceed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SUMMARY OF NICKEL DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	33	32	51	47	84	79
MEAN	1.74	1.72	2.26	1.36	2.06	1.50
MEDIAN	1.10	1.50	0.80	0.10	0.90	0.30
STD	3.22	2.12	4.57	2.09	4.10	2.11

PERCENT EXCEEDENCE OF STANDARD
NICKEL

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Zinc (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards are presented in bold underneath the concentrations reported by the laboratory.
Shaded data indicate that the water quality standard was exceeded.

NATURAL

LOC OS # SIDE	QRIG OS03B B	QRIG OS03A A	CRNR OS06B B	CRNR OS06A A	HRV1 OS07B B	HRV1 OS07A A	SUSN OS12B B	SUSN OS12A A	HGRN OS15B B	HGRN OS15A A	HRV2 OS16B B	HRV2 OS16A A	RGNC OS17B B	RGNC OS17A A	TMBR OS18B B	TMBR OS18A A	SCRS OS19B B	SCRS OS19A A
DATES																		
061192					17.00 **59.61**	10.00 **59.21**												
062592																		
070192			14.00 **98.76**	14.00 **93.28**					20.00 **55.90**	0.00 **39.29**			20.00 **32.75**	30.00 **32.75**			0.00 **32.75**	0.00 **32.75**
072192							60.00 **50.82**	40.00 **61.30**										
080792			20.00 **210.71**	0.00 **222.55**			50.00 **51.85**	70.00 **55.90**					0.00 **32.75**	30.00 **32.75**	0.00 **32.75**	20.00 **32.75**		
081492	28.00 **51.64**	0.00 **48.25**	19.60 **163.42**	13.20 **162.34**	16.50 **50.41**	25.20 **50.41**	96.00 **60.51**	62.00 **58.01**			34.50 **32.75**	19.70 **32.75**	17.50 **34.51**	13.50 **34.51**	15.40 **35.39**	11.10 **32.75**		
090192	16.90 **37.67**	21.70 **34.51**	16.00 **112.25**	19.00 **119.32**	11.90 **49.79**	24.50 **49.79**	45.00 **54.89**	48.00 **55.90**	22.00 **44.60**	21.00 **39.29**	23.00 **32.75**	22.00 **32.75**	81.00 **32.75**	69.00 **32.75**	19.00 **32.75**	28.00 **32.75**		
100692	55.00 **39.83**	43.00 **34.95**	90.00 **107.25**	18.00 **107.25**	28.00 **56.71**		26.00 **64.16**	37.00 **64.56**	33.00 **36.26**	79.00 **32.75**	39.00 **32.75**	26.00 **32.75**	15.00 **34.51**	13.00 **34.51**	50.00 **44.70**	50.00 **36.81**		
121092	24.00 **69.43**	22.00 **46.90**					11.10 **73.39**											
012093	11.00 **56.21**	11.00 **56.21**	19.00 **264.38**		11.00 **89.86**		37.00 **96.76**						45.00 **52.05**					
012793	30.00 **32.75**		24.00 **245.90**		25.00 **79.01**		51.00 **94.47**		13.00 **45.96**						16.00 **46.90**			
020993	15.00 **66.12**		12.00 **221.61**				28.00 **110.20**						14.00 **34.51**					
031893	28.00 **44.28**		17.00 **181.44**		14.00 **75.02**		47.00 **86.06**		12.00 **44.28**		22.00 **32.75**		70.00 **37.24**		18.00 **39.94**			
040293	14.40 **43.86**		81.00 **170.95**		18.40 **59.21**		81.40 **84.84**		11.10 **32.75**		26.40 **32.75**		71.00 **32.75**		76.00 **33.30**			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	24.70	19.54	31.26	12.84	17.73	19.90	48.41	51.40	18.52	33.33	28.98	22.57	37.06	31.10	27.77	27.28	0.00	0.00
Median	24.00	21.70	19.30	14.00	16.75	24.50	47.00	48.00	16.50	21.00	26.40	22.00	20.00	30.00	18.00	24.00	0.00	0.00
Std	12.55	14.25	27.38	6.80	5.63	7.01	23.26	12.71	7.66	33.41	6.66	2.60	28.47	20.38	24.07	14.42	0.00	0.00
% Exceed	11.1	20.0	0.0	0.0	0.0	0.0	18.2	40.0	0.0	33.3	40.0	0.0	33.3	20.0	28.6	25.0	0.0	0.0

SUMMARY OF ZINC DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	96	50	162	84
MEAN	30.20	26.79	32.03	30.53	32.03	29.02
MEDIAN	21.00	21.85	23.50	25.00	23.00	22.00
STD	22.84	20.20	34.26	19.52	30.15	19.88

PERCENT EXCEEDENCE OF STANDARD
ZINC

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**15.2**	**17.6**	**5.2**	**6.0**	**9.3**	**10.7**

Ammonia (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards do not exist for Ammonia.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					0.01	0.04												
062592																		
070192			0.02	0.01					0.02	0.02			0.03	0.02			0.01	0.01
072192							0.12	0.13										
080792			0.02	0.03			0.06	0.06					0.12	0.13	0.03	0.07		
081492	0.02	0.01	0.01	0.01	0.01	0.03	0.06	0.06			0.01	0.02	0.07	0.07	0.01	0.01		
090192	0.01	0.01	0.04	0.04	0.01	0.03	0.07	0.10	0.02	0.01	0.01	0.03	0.09	0.09	0.02	0.01		
100692	0.01	0.01	0.01	0.00	0.00		0.06	0.06	0.02	0.01	0.00	0.00	0.08	0.50	0.54	0.00		
121092	0.03	0.03					0.03											
012093	0.02	0.02	0.03		0.02		0.03						0.03					
012793	0.03		0.10		0.02		0.03		0.01						0.05			
020993	0.03		0.01				0.02						0.02					
031893	0.00		0.00		0.00		0.00		0.00		0.00		0.02		0.00			
040293	0.01		0.00		0.02		0.05		0.01		0.02		0.01		0.00			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	0.02	0.02	0.02	0.02	0.01	0.03	0.05	0.08	0.01	0.01	0.01	0.02	0.05	0.16	0.09	0.02	0.01	0.01
Median	0.02	0.01	0.01	0.01	0.01	0.03	0.05	0.06	0.01	0.01	0.01	0.02	0.03	0.09	0.02	0.01	0.01	0.01
Std	0.01	0.01	0.03	0.01	0.01	0.00	0.03	0.03	0.01	0.01	0.01	0.01	0.04	0.17	0.18	0.03	0.00	0.00

SUMMARY OF AMMONIA DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	96	62	162	96
MEAN	0.03	0.05	0.02	0.03	0.03	0.04
MEDIAN	0.02	0.02	0.01	0.02	0.02	0.02
STD	0.07	0.09	0.04	0.05	0.05	0.06

Unionized Ammonia (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
J = data outside acceptable range (not included in analysis).

Note: Class III Standard is less than or equal to 20.0 ug/l.
There were no exceedences for Unionized Ammonia.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					0.040	0.190												
062592																		
070192			0.420						J	0.020			0.030	0.020			0.020	0.020
072192							0.380											
080792			0.170	0.310			0.150						J	0.130	0.060	0.170		
081492	0.070	0.030	0.050	0.180	0.020	0.100	0.140				J	J	J	0.060	0.020	0.070		
090192	0.010	0.010	0.120	0.160	0.020	0.080	0.170		0.060	0.030	J	J	J	0.070	0.100	0.020		
100692	0.010	0.020	0.050	0.000	0.000		0.120		J	0.010	0.000	0.000	0.060	0.520	1.010	0.000		
121092	0.050	0.060					0.030											
012093	0.010	0.010	0.230		0.020		0.040						J					
012793	0.030		0.380		0.020		0.040		0.000						0.030			
020993	0.060		0.060				0.020						J					
031893	0.000		0.000		0.000		0.000		0.000		0.000		J		0.000			
040293	0.020		0.000		0.110		0.070		0.020		J		J		0.000			
n	9	5	10	4	8	3	11		4	3	2	1	2	5	7	4	1	1
Mean	0.029	0.026	0.148	0.163	0.029	0.123	0.105		0.020	0.020	0.000	0.000	0.045	0.160	0.174	0.065	0.020	0.020
Median	0.020	0.020	0.090	0.170	0.020	0.100	0.070		0.010	0.020	0.000	0.000	0.045	0.070	0.030	0.045	0.020	0.020
Std	0.024	0.019	0.144	0.110	0.033	0.048	0.103		0.024	0.008	0.000	0.000	0.015	0.183	0.343	0.066	0.000	0.000
% Exceed	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SUMMARY OF UNIONIZED AMMONIA DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	54	26	92	50	146	76
MEAN	0.084	0.088	0.220	0.298	0.170	0.226
MEDIAN	0.030	0.045	0.100	0.115	0.050	0.070
STD	0.158	0.115	0.403	0.568	0.341	0.476

PERCENT EXCEEDENCE OF STANDARD
UNIONIZED AMMONIA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Chromium (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards do not exist for Chromium in its unspeciated form as presented here.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					1.00	0.00												
062592																		
070192			1.10	1.10					2.20	2.80			3.50	1.50			1.40	2.30
072192							0.00	0.30										
080792			0.00	1.50			1.50	0.90					1.00	0.60	0.70	1.20		
081492	0.50	0.20	8.50	5.10	1.90	1.20	0.10	0.10			2.60	0.20	0.10	0.00	0.80	0.20		
090192	0.00	0.00	3.00	3.60	0.00	0.00	0.80	1.00	1.30	0.00	0.50	0.50	0.70	0.00	1.10	0.30		
100692	1.60	0.90	1.90	1.40	2.00		1.40	2.80	0.50	0.80	1.70	0.90	0.50	1.10	1.90	1.40		
121092	0.00	0.00					0.70											
012093	0.60	0.50	1.00		2.30		0.80						1.10					
012793	0.90		1.20		0.90		2.40		1.70						1.20			
020993	0.00		0.20				0.80						0.00					
031893	2.20		4.70		1.50		2.10		1.50		1.20		2.70		3.10			
040293	0.77		0.85		1.58		1.48		0.55		0.94		0.87		0.80			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	0.73	0.32	2.25	2.54	1.40	0.40	1.10	1.02	1.29	1.20	1.39	0.53	1.16	0.64	1.37	0.78	1.40	2.30
Median	0.60	0.20	1.15	1.50	1.54	0.00	0.80	0.90	1.40	0.80	1.20	0.50	0.87	0.60	1.10	0.75	1.40	2.30
Std	0.72	0.34	2.47	1.56	0.69	0.57	0.72	0.95	0.61	1.18	0.72	0.29	1.11	0.60	0.80	0.53	0.00	0.00

SUMMARY OF CHROMIUM DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	96	51	162	85
MEAN	1.34	1.01	1.21	0.94	1.26	0.97
MEDIAN	1.05	0.85	1.20	0.90	1.10	0.90
STD	1.28	1.14	0.95	0.88	1.10	0.99

NO2 + NO3 (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Specific Class III State Standards do not exist for NOx.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					0.01	0.01												
062592																		
070192			0.00	0.01					0.01	0.20			0.01	0.01			0.01	0.00
072192							0.00	0.00										
080792			0.00	0.00			0.00	0.00					0.00	0.00	0.00	0.00		
081492	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00		
090192	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00		
100692	0.02	0.02	0.01	0.02	0.01		0.02	0.02	0.04	0.02	0.03	0.03	0.03	0.04	0.01	0.01		
121092	0.02	0.02					0.49											
012093	0.01	0.01	0.01		0.01		0.01						0.01					
012793	0.00		0.00		0.00		0.01		0.01						0.01			
020993	0.00		0.01				0.02						0.01					
031893	0.00		0.00		0.00		0.00		0.00		0.00		0.01		0.00			
040293	0.01		0.00		0.01		0.01		0.01		0.01		0.01		0.00			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.08	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00
Median	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00
Std	0.01	0.01	0.00	0.01	0.00	0.00	0.14	0.01	0.01	0.09	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00

SUMMARY OF NOx DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	98	51	164	85
MEAN	0.02	0.01	0.02	0.02	0.02	0.02
MEDIAN	0.01	0.01	0.01	0.01	0.01	0.01
STD	0.06	0.03	0.04	0.05	0.05	0.04

Ortho Phosphorus (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Specific Class III State Standards do not exist for Ortho P.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					0.01	0.01												
062592																		
070192			0.01	0.01					0.17	0.20			0.01	0.01			0.02	0.01
072192							0.42	0.42										
080792			0.01	0.01			0.26	0.27					0.01	0.01	0.07	0.16		
081492	0.01	0.01	0.01	0.08	0.01	0.01	0.25	0.25			0.00	0.00	0.00	0.00	0.02	0.01		
090192	0.01	0.01	0.08	0.09	0.01	0.01	0.27	0.29	0.01	0.03	0.00	0.01	0.01	0.01	0.01	0.01		
100692	0.04	0.04	0.01	0.01	0.01		0.28	0.29	0.06	0.04	0.01	0.00	0.00	0.01	0.01	0.02		
121092	0.01	0.01					0.10											
012093	0.01	0.01	0.01		0.01		0.35						0.01					
012793	0.01		0.00		0.01		0.30		0.02						0.01			
020993	0.01		0.01				0.26						0.01					
031893	0.01		0.01		0.01		0.62		0.02		0.01		0.01		0.06			
040293	0.02		0.01		0.01		0.56		0.01		0.00		0.01		0.03			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	0.01	0.02	0.02	0.04	0.01	0.01	0.33	0.30	0.05	0.09	0.00	0.00	0.01	0.01	0.03	0.05	0.02	0.01
Median	0.01	0.01	0.01	0.01	0.01	0.01	0.28	0.29	0.02	0.04	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.01
Std	0.01	0.01	0.02	0.04	0.00	0.00	0.14	0.06	0.06	0.08	0.00	0.00	0.00	0.00	0.02	0.06	0.00	0.00

SUMMARY OF ORTHO P DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	98	51	164	85
MEAN	0.07	0.07	0.02	0.03	0.04	0.05
MEDIAN	0.01	0.01	0.01	0.01	0.01	0.01
STD	0.13	0.11	0.02	0.06	0.03	0.09

Total Phosphorus (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Specific Class III State Standards do not exist for Total P.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					0.06	0.15												
062592																		
070192			0.02	0.03					0.33	0.33			0.03	0.02			0.04	0.04
072192							0.55	0.58										
080792			0.06	0.06			0.37	0.38					0.03	0.04	0.13	0.25		
081492	0.10	0.10	0.05	0.08	0.05	0.06	0.35	0.35			0.05	0.05	0.04	0.04	0.09	0.04		
090192	0.09	0.07	0.21	0.23	0.04	0.06	0.39	0.42	0.07	0.11	0.04	0.06	0.07	0.07	0.09	0.07		
100692	0.14	0.10	0.10	0.08	0.04		0.39	0.42	0.13	0.11	0.04	0.04	0.05	0.05	0.06	0.08		
121092	0.03	0.03					0.21											
012093	0.03	0.03	0.05		0.04		0.49						0.04					
012793	0.02		0.01		0.03		0.45		0.03						0.01			
020993	0.02		0.08				0.42						0.02					
031893	0.04		0.02		0.02		0.91		0.16		0.06		0.03		0.14			
040293	0.11		0.04		0.07		0.80		0.05		0.03		0.03		0.08			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	0.06	0.07	0.06	0.10	0.04	0.09	0.48	0.43	0.13	0.18	0.04	0.05	0.04	0.04	0.09	0.11	0.04	0.04
Median	0.04	0.07	0.05	0.08	0.04	0.06	0.42	0.42	0.10	0.11	0.04	0.05	0.03	0.04	0.09	0.08	0.04	0.04
Std	0.04	0.03	0.05	0.07	0.02	0.04	0.19	0.08	0.10	0.10	0.01	0.01	0.01	0.02	0.04	0.08	0.00	0.00

SUMMARY OF TOTAL P DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	98	51	164	85
MEAN	0.13	0.14	0.07	0.08	0.09	0.10
MEDIAN	0.06	0.07	0.06	0.06	0.05	0.06
STD	0.18	0.14	0.05	0.08	0.17	0.11

Total Suspended Solids (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards do not exist for Total Suspended Solids.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					0.84	8.50												
062592																		
070192			2.60	2.60					2.10	4.80			1.80	1.60			5.20	3.00
072192							5.10	8.10										
080792			4.24	4.63			5.03	11.90					0.24		0.83	29.91		
081492	5.18	4.87	6.41	6.05	0.71	1.83	3.38	5.88			0.46	1.02	0.56	0.57	5.44	0.39		
090192	3.71	3.75	22.27	17.53	0.76	1.52	7.71	0.00	4.06	2.64	1.63	1.76	1.72	1.82	1.82	0.55		
100692	3.26	3.07	7.59	7.33	3.34		1.40	2.42	2.63	1.13	0.48	0.85	0.57	0.70	1.36	0.74		
121092	1.44	2.32					5.80											
012093	1.88	1.39	2.72		2.66		2.14						0.54					
012793	2.40		0.26		1.96		3.14		0.88						0.42			
020993	3.29		2.21				10.08						0.00					
031893	0.94		2.66		1.55		11.62		7.39		0.18		0.72		10.63			
040293	2.61		1.16		2.53		2.93		1.51		0.78		0.00		1.62			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	4	7	4	1	1
Mean	2.75	3.08	5.21	7.63	1.79	3.95	5.30	5.66	3.10	2.86	0.71	1.21	0.68	1.17	3.16	7.90	5.20	3.00
Median	2.61	3.07	2.69	6.05	1.76	1.83	5.03	5.88	2.37	2.64	0.48	1.02	0.56	1.15	1.62	0.65	5.20	3.00
Std	1.21	1.19	6.07	5.19	0.93	3.22	3.14	4.18	2.16	1.51	0.50	0.40	0.62	0.55	3.41	12.71	0.00	0.00

SUMMARY OF TSS DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	33	98	52	164	85
MEAN	3.11	4.40	5.63	4.80	4.61	4.64
MEDIAN	2.12	2.42	3.08	2.58	2.62	2.55
STD	3.50	5.81	8.60	5.20	7.12	5.45

Turbidity (NTU) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards for Turbidity cannot be applied to this data.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					1.80	8.20												
062592																		
070192			2.40	4.50					2.80	5.40			1.40	1.60			5.60	5.80
072192							2.70	16.50										
080792			3.20	2.40			4.50	12.20					0.90	0.80	1.00	18.30		
081492	3.20	2.60	3.30	3.70	0.80	1.30	4.00	3.00			0.80	1.10	1.10	1.20	1.00	0.50		
090192	1.80	2.40	14.50	27.00	0.60	1.00	5.10	5.90	2.30	3.50	0.90	1.00	1.50	1.40	0.90	0.90		
100692	2.50	2.50	4.10	4.80	6.10		2.50	3.00	2.00	2.20	0.90	3.40	1.00	1.50	1.10	2.30		
121092	0.80	1.00					6.80											
012093	1.20	1.00	1.40		2.30		3.20						1.00					
012793	2.10		0.70		1.80		3.70		1.00						0.80			
020993	1.20		1.70				9.10						0.30					
031893	0.80		1.10		1.20		5.80		11.00		0.60		0.30		4.10			
040293	1.30		0.80		3.30		2.50		2.60		1.20		0.80		1.00			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	1.66	1.90	3.32	8.48	2.24	3.50	4.54	8.12	3.62	3.70	0.88	1.83	0.92	1.30	1.41	5.50	5.60	5.80
Median	1.30	2.40	2.05	4.50	1.80	1.30	4.00	5.90	2.45	3.50	0.90	1.10	1.00	1.40	1.00	1.60	5.60	5.80
Std	0.77	0.74	3.88	9.30	1.67	3.33	1.96	5.37	3.35	1.31	0.19	1.11	0.39	0.28	1.10	7.42	0.00	0.00

SUMMARY OF TURBIDITY DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	98	52	164	86
MEAN	2.51	4.53	3.30	4.01	2.98	4.21
MEDIAN	1.60	2.45	1.60	1.60	1.60	1.95
STD	2.52	5.70	5.18	8.40	4.33	7.45

Total Organic Carbon (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards do not exist for Total Organic Carbon.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					8.93	10.84												
062592																		
070192			12.22	11.16					0.00	29.00			11.81	12.31			14.80	13.72
072192							20.37	19.90										
080792			11.88	10.47			16.60	15.89					12.06	12.20	9.73	11.15		
081492	14.51	13.83	12.92	11.94	5.66	6.68	15.07	15.04			15.86	15.49	11.90	10.16	9.59	11.73		
090192	15.01	16.12	14.16	12.70	9.24	9.46	13.74	10.58	15.84	20.10	13.65	15.21	11.95	11.78	10.61	12.21		
100692	11.72	12.29	11.09	10.51	6.77		15.09	14.45	16.26	19.76	13.72	15.86	11.10	10.84	13.06	7.13		
121092	12.28	11.86					16.28											
012093	13.14	13.50	11.27		11.34		23.77						12.53					
012793	12.93		12.54		9.18		23.22		15.34						11.46			
020993	12.76		12.53				22.49						11.09					
031893	13.55		11.46		8.43		17.15		17.97		16.92		10.35		16.20			
040293	14.57		12.36		11.17		20.28		20.86		18.54		11.99		19.29			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	13.39	13.52	12.24	11.36	8.84	8.99	18.55	15.17	14.38	22.95	15.74	15.52	11.64	11.46	12.85	10.56	14.80	13.72
Median	13.14	13.50	12.29	11.16	9.06	9.46	17.15	15.04	16.05	20.10	15.86	15.49	11.90	11.78	11.46	11.44	14.80	13.72
Std	1.05	1.49	0.86	0.86	1.82	1.73	3.42	2.98	6.69	4.28	1.88	0.27	0.63	0.83	3.38	2.01	0.00	0.00

SUMMARY OF TOC DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	96	50	162	84
MEAN	13.52	13.41	9.00	9.72	10.84	11.21
MEDIAN	12.84	12.25	8.34	8.60	10.34	10.54
STD	4.04	4.12	3.68	4.13	4.43	4.50

Alkalinity (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.

Note: Class III Standard is that waters shall not be depressed below 20 mg/l.

Shaded data indicate that the water quality standard was exceeded.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					52	54												
062592																		
070192			74	74					18	20			16	17			12	12
072192							58	49										
080792			139	140			47	47					20	22	21	22		
081492	42	44	127	129	47	47	53	52			5	9	18	20	22	19		
090192	21	21	92	102	39	39	50	49	34	28	15	10	21	20	23	20		
100692	17	17	85	87	40		52	53	21	18	10	10	17	20	28	28		
121092	24	24					32											
012093	20	19	147		49		53						16					
012793	23		136		45		62		13						16			
020993	26		151				69						17					
031893	16		124		51		66		27		6		16		22			
040293	25		122		45		60		18		9		20		22			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	23.78	25.00	119.70	106.40	46.00	46.67	54.73	50.00	21.83	22.00	9.00	9.67	17.89	19.80	22.00	22.25	12.00	12.00
Median	23.00	21.00	125.50	102.00	46.00	47.00	53.00	49.00	19.50	20.00	9.00	10.00	17.00	20.00	22.00	21.00	12.00	12.00
Std	7.21	9.78	25.50	24.84	4.44	6.13	9.70	2.19	6.87	4.32	3.52	0.47	1.85	1.60	3.25	3.49	0.00	0.00
% Exceed	22.2	40.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	33.3	100.0	100.0	66.7	20.0	14.3	25.0	100.0	100.0

SUMMARY OF ALKALINITY DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	97	52	163	86
MEAN	43.70	39.47	75.16	67.60	62.42	56.48
MEDIAN	26.50	23.00	67.00	65.00	54.00	49.00
STD	37.03	32.28	31.76	26.45	37.13	32.00

PERCENT EXCEEDENCE OF STANDARD ALKALINITY

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**27.3**	**26.5**	**0.0**	**0.0**	**11.0**	**10.5**

Temperature (Celsius) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Values obtained from field measurements taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS	
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A	
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	
DATES																			
061192					25.60	26.00													
062592																			
070192			31.50						26.07	26.13			26.61	26.57			28.41	28.10	
072192							27.20												
080792			27.00	27.50			25.40						27.76	27.72	26.84				
081492	27.85	27.71	28.52	29.81	25.50	26.00	26.53				26.32	26.62	27.70	27.70	28.85	29.25			
090192	26.54	26.64	25.89	26.20	25.87	25.95	25.62		28.74	29.23	25.45	26.68	27.05	27.10	32.43	32.19			
100692	25.85	25.81	24.44	26.33	22.19		22.73		23.09	23.27	22.64	22.94	24.69	24.66	25.76	25.62			
121092	17.92	17.81	17.26		14.73		18.84		20.21		15.18		16.09		15.37				
012093	17.77	18.30	19.66		15.90		18.93		16.46		16.34		18.18		19.13				
012793	17.37		16.29		13.12		16.48		12.00		12.65		18.45		17.61				
020993	16.53		16.59		16.21		14.27		17.53		15.73		14.04		13.44				
031893	16.76		16.06		15.77		15.73		17.01		15.44		15.64		17.34				
040293	22.95		20.91		23.54		21.88		25.74		21.68		19.52		19.84				
n	9.00	5.00	11.00	4.00	10.00	3.00	11.00		9.00	3.00	9.00	3.00	11.00	5.00	10.00	3.00	1.00	1.00	**108**
Mean	21.06	23.25	22.19	27.46	19.84	25.98	21.24		20.76	26.21	19.05	25.41	21.43	26.75	21.66	29.02	28.41	28.10	**22.34**
Median	17.92	25.81	20.91	26.92	19.20	26.00	21.88		20.21	26.13	16.34	26.62	19.52	27.10	19.49	29.25	28.41	28.10	**23.41**
Std	4.42	4.29	5.26	1.45	4.87	0.02	4.42		5.19	2.43	4.73	1.75	5.12	1.13	6.03	2.69	0.00	0.00	**5.21**

Dissolved Oxygen (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Values obtained from field measurements taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Note: Class III Standard is that waters shall not be less than 5.0 mg/l.
Shaded data indicate that the water quality standard was exceeded.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS	
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A	
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	
DATES																			
061192					1.13	0.25													
062592																			
070192			7.04						1.88	2.35			1.55	5.53			4.59	3.49	
072192							0.11												
080792			0.54	1.37			0.12						0.14	5.02	0.53				
081492	2.80	3.97	0.05	8.13	1.00	1.87	0.38				0.10	2.05	0.12	4.97	4.63	5.45			
090192	1.82	3.60	0.04	0.70	3.00	2.11	0.09		4.94	6.05	0.17	3.03	0.23	5.12	6.32	9.56			
100692	5.56	6.45	0.07	8.94	1.33		0.16		2.95	3.86	0.47	2.55	0.32	5.16	4.44	5.16			
121092	6.39	7.21	8.54		3.41		1.19		9.60		2.64		5.40		3.79				
012093	5.98	6.79	6.96		2.08		0.46		2.61		3.73		0.25		3.82				
012793	5.94		4.09		3.30		0.76		5.43		4.37		0.22		4.27				
020993	8.81		6.53		5.16		1.20		6.23		4.22		1.08		2.69				
031893	7.64		5.59		4.33		1.43		4.24		2.96		1.38		7.19				
040293	4.18		2.75		7.42		0.15		8.16		0.72		0.35		1.16				
n	9.00	5.00	11.00	4.00	10.00	3.00	11.00		9.00	3.00	9.00	3.00	11.00	5.00	10.00	3.00	1.00	1.00	**108**
Mean	5.46	5.60	3.84	4.79	3.22	1.41	0.55		5.12	4.09	2.15	2.54	1.00	5.16	3.88	6.72	4.59	3.49	**3.43**
Median	5.94	6.45	4.09	4.75	3.15	1.87	0.38		4.94	3.86	2.64	2.55	0.32	5.12	4.05	5.45	4.59	3.49	**3.17**
Std	2.09	1.51	3.13	3.77	1.92	0.83	0.49		2.43	1.52	1.69	0.40	1.48	0.20	1.95	2.01	0.00	0.00	**2.64**
%Exceed	33.3	20.0	54.5	50.0	80.0	100.0	100.0		55.6	66.7	100.0	100.0	90.9	0.0	80.0	0.0	100.0	100.0	**68.5**

pH (S.U.) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Values obtained from field measurements taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.

Class III State Standards for pH cannot be applied to this data.

NATURAL

LOC OS # SIDE	QRIG OS03B B	QRIG OS03A A	CRNR OS06B B	CRNR OS06A A	HRV1 OS07B B	HRV1 OS07A A	SUSN OS12B B	SUSN OS12A A	HGRN OS15B B	HGRN OS15A A	HRV2 OS16B B	HRV2 OS16A A	RGNC OS17B B	RGNC OS17A A	TMBR OS18B B	TMBR OS18A A	SCRS OS19B B	SCRS OS19A A
DATES																		
061192					6.77	6.81												
062592																		
070192			7.30						5.83	6.09			6.07	6.15			6.36	6.31
072192							6.59											
080792			7.04	7.10			6.54						5.94	6.08	6.37			
081492	6.59	6.61	6.75	7.29	6.52	6.64	6.47				5.55	5.57	5.84	6.00	6.34	6.41		
090192	6.03	6.07	6.61	6.74	6.47	6.56	6.54		6.49	6.50	5.55	5.63	5.84	6.01	6.65	6.79		
100692	6.27	6.33	6.89	7.42	6.56		6.53		5.99	6.25	5.58	5.77	6.02	6.19	6.41	6.34		
121092	6.57	6.67	7.30		6.48		6.38		5.86		6.01		6.08		6.29			
012093	6.08	6.15	7.21		6.42		6.44		5.98		5.81		5.66		6.17			
012793	6.43		7.02		6.46		6.57		6.01		5.85		5.70		6.16			
020993	6.72		7.21		6.71		6.60		6.06		5.87		5.70		6.31			
031893	6.43		7.20		6.51		6.48		6.01		5.72		5.72		6.55			
040293	6.42		7.04		6.96		6.42		6.51		5.54		5.75		6.06			

	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A	
n	9.00	5.00	11.00	4.00	10.00	3.00	11.00		9.00	3.00	9.00	3.00	11.00	5.00	10.00	3.00	1.00	1.00	**108**
Mean	6.39	6.37	7.05	7.14	6.59	6.67	6.51		6.08	6.28	5.72	5.66	5.85	6.09	6.33	6.51	6.36	6.31	**6.34**
Median	6.43	6.33	7.04	7.20	6.52	6.64	6.53		6.01	6.25	5.72	5.63	5.84	6.08	6.33	6.41	6.36	6.31	**6.40**
Std	0.22	0.24	0.22	0.26	0.16	0.10	0.07		0.23	0.17	0.16	0.08	0.15	0.07	0.17	0.20	0.00	0.00	**0.44**

Conductivity (mmhos/cm) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Values obtained from field measurements taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.

Class III State Standards for Conductivity cannot be applied to this data.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS	
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A	
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	
DATES																			
061192					0.13	0.14													
062592																			
070192			0.28						0.06	0.09			0.06	0.06			0.13	0.13	
072192							0.14												
080792			0.87	0.80			0.12						0.07	0.07	0.06				
081492	0.15	0.15	0.64	0.54	0.13	0.13	0.14				0.03	0.03	0.67	0.66	0.07	0.07			
090192	0.11	0.10	0.39	0.35	0.11	0.11	0.13		0.13	0.11	0.04	0.04	0.07	0.07	0.07	0.07			
100692	0.10	0.09	0.34	0.32	0.11		0.16		0.07	0.08	0.03	0.03	0.07	0.07	0.09	0.08			
121092	0.13	0.13	0.53		0.12		0.13		0.13		0.03		0.09		0.13				
012093	0.12	0.12	0.73		0.15		0.17		0.13		0.04		0.08		0.09				
012793	0.13		0.59		0.13		0.17		0.11		0.03		0.08		0.07				
020993	0.14		0.60		0.13		0.18		0.11		0.03		0.08		0.08				
031893	0.13		0.52		0.13		0.18		0.10		0.04		0.08		0.10				
040293	0.14		0.52		0.15		0.25		0.10		0.04		0.09		0.10				
n	9.00	5.00	11.00	4.00	10.00	3.00	11.00		9.00	3.00	9.00	3.00	11.00	5.00	10.00	3.00	1.00	1.00	**108**
Mean	0.12	0.12	0.54	0.50	0.13	0.12	0.16		0.10	0.09	0.04	0.03	0.13	0.19	0.09	0.07	0.13	0.13	**0.17**
Median	0.13	0.12	0.53	0.44	0.13	0.13	0.16		0.11	0.09	0.03	0.03	0.08	0.07	0.09	0.07	0.13	0.13	**0.12**
Std	0.02	0.02	0.16	0.19	0.01	0.01	0.03		0.02	0.01	0.00	0.00	0.17	0.24	0.02	0.01	0.00	0.00	**0.18**

Depth (cm) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Values obtained from field measurements taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS	
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A	
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	
DATES																			
061192					55.88		7.62						17.15						
062592					45.72														
070192			45.72		62.23				20.32				44.45				60.33		
072192							19.05												
080792	43.18		101.60				25.40						35.56		15.88				
081492	63.50		106.68		62.23		30.48		6.99		76.20		43.18		17.78				
090192	30.48		109.22		60.96		33.02		17.78		88.90		39.37		20.32				
100692	62.23		49.53		53.34		27.94		13.34		80.01		40.64		20.32				
121092	60.96		78.74		38.10		15.24		12.70		47.63		25.40		17.15				
012093	58.42		96.52		30.48		25.40		17.78		52.71		33.02		25.40				
012793	53.34		106.68		53.34		27.94		21.59		58.42		35.56		22.86				
020993	50.80		93.98		24.13		15.24		6.99		55.88		32.39		27.94				
031893	53.34		105.41		45.09		26.04		13.34		66.37		38.10		18.42				
040293	52.07		104.14		46.99		30.48		17.78		68.58		40.64		20.32				
n	10		11		12		12		10		9		12		10		1		**87**
Mean	52.83		90.75		48.21		23.65		14.86		66.08		35.45		20.64		60.33		**43.96**
Median	53.34		101.60		50.17		25.72		15.56		66.37		36.83		20.32		60.33		**39.37**
Std	9.47		21.90		11.84		7.36		4.84		12.93		7.46		3.59		0.00		**26.37**

Hardness (mg/l) measured at the outflow of natural and constructed systems used for stormwater treatment from June 1992 to Apr
Numbers obtained from grab samples taken (within 3 days of an event) in the treatment system before the weir and on the downst
Abbreviations: LOC = site location, OS # = sample identification number.

NATURAL

LOC	QRIG	QRIG	CRNR	CRNR	HRV1	HRV1	SUSN	SUSN	HGRN	HGRN	HRV2	HRV2	RGNC	RGNC	TMBR	TMBR	SCRS	SCRS
OS #	OS03B	OS03A	OS06B	OS06A	OS07B	OS07A	OS12B	OS12A	OS15B	OS15A	OS16B	OS16A	OS17B	OS17A	OS18B	OS18A	OS19B	OS19A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																		
061192					50.7	50.3												
062592																		
070192			92.0	86.0					47.0	31.0			25.0	25.0			25.0	25.0
072192							42.0	52.4										
080792			225.0	240.0			43.0	47.0					25.0	25.0	25.0	25.0		
081492	42.8	39.5	166.7	165.4	41.6	41.6	51.6	49.1			25.0	25.0	26.6	26.6	27.4	25.0		
090192	29.5	26.6	107.0	115.0	41.0	41.0	46.0	47.0	36.0	31.0	25.0	25.0	25.0	25.0	25.0	25.0		
100692	31.5	27.0	101.4	101.4	47.8		55.3	55.7	28.2	25.0	25.0	25.0	26.6	26.6	36.1	28.7		
121092	60.7	38.2					64.8											
012093	47.3	47.3	294.1		82.3		89.8						43.2					
012793	25.0		270.0		70.7		87.3		37.3						38.2			
020993	57.3		238.8				104.7						26.6					
031893	35.7		188.6		66.5		78.2		35.7		25.0		29.1		31.6			
040293	35.3		175.8		50.3		76.9		25.0		25.0		25.0		25.5			
n	9	5	10	5	8	3	11	5	6	3	5	3	9	5	7	4	1	1
Mean	40.6	35.7	185.9	141.6	56.4	44.3	67.2	50.2	34.9	29.0	25.0	25.0	28.0	25.6	29.8	25.9	25.0	25.0
Median	35.7	38.2	182.2	115.0	50.5	41.6	64.8	49.1	35.9	31.0	25.0	25.0	26.6	25.0	27.4	25.0	25.0	25.0
Std	11.7	7.9	67.7	56.0	14.0	4.2	20.4	3.4	7.0	2.8	0.0	0.0	5.5	0.8	5.1	1.6	0.0	0.0

APPENDIX B

Constituent Concentrations for The Constructed Systems Separated By *b* Side and *a* Side Data.

Class III State Water Quality Standards for Each Constituent and Percent Non-Compliance of Standard Included.

Cadmium (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards are presented in bold underneath the concentrations reported by the laboratory.
Shaded data indicate that the water quality standard was exceeded.

CONSTRUCTED

LOC OS # SIDE	WBND OS01B B	WBND OS01A A	WPAS OS05B B	WPAS OS05A A	GTDS OS08B B	GTDS OS08A A	FSQR OS09B B	FSQR OS09A A	KNMA OS10B B	KNMA OS10A A	MBRV OS11B B	MBRV OS11A A	COPP OS14B B	COPP OS14A A	LHBF OS20B B	LHBF OS20A A	LHBB OS21B B	LHBB OS21A A	CRLS OS22B B	CRLS OS22A A	CARL OS23B B	CARL OS23A A	TRCO OS24B B	TRCO OS24A A	TOFF OS25B B	TOFF OS25A A
DATES																										
061192	0.10 **0.70**	0.00 **0.70**			0.20 **1.12**	0.00 **1.12**																				
062592					0.00 **1.31**	0.10 **1.31**	0.00 **0.42**	0.00 **0.44**																		
070192	0.10 **1.37**	0.10 **0.88**			0.20 **0.87**		0.10 **1.08**	0.10 **0.96**					0.10 **0.60**		0.20 **0.68**	0.30 **0.65**	0.10 **1.01**	0.20 **0.98**			0.70 **1.64**	0.10	0.20 **2.99**	0.20 **1.53**		
072192	0.30 **0.62**	0.20 **0.58**			0.30 **1.13**	0.30 **1.13**	0.20 **0.71**	0.20 **0.67**																		
080792	0.00 **2.73**	0.00 **0.46**			0.60 **1.18**	0.00 **1.16**	0.00 **0.77**	0.00 **0.82**							0.00 **0.89**								0.90 **1.02**	0.00 **0.91**	0.10 **1.44**	0.13 **1.46**
081492	0.30 **0.56**	0.30 **0.55**			0.10 **0.85**	0.10 **0.85**	0.40 **0.67**	0.40 **0.70**					0.80 **1.32**	0.10 **1.32**	0.30 **0.93**	0.40 **0.93**					0.40 **1.67**	0.50 **1.67**	0.10 **0.73**	0.10 **0.75**		
090192	0.00 **0.54**	0.00 **0.53**	1.54 **1.08**	0.87 **1.08**	0.39 **0.75**	0.25 **0.75**	0.01 **0.52**	0.00 **0.52**	0.02 **0.94**	0.01 **0.94**	0.00 **0.61**				0.00 **0.90**	0.10 **0.90**	0.00 **1.03**	0.17 **1.03**	0.00 **0.98**	0.00 **0.98**	0.00 **1.42**	0.00 **1.42**	0.00 **0.65**	0.00 **0.62**		
100692	0.16 **0.60**	0.16 **0.60**	0.12 **0.99**	0.12 **0.99**	0.18 **1.05**	0.35 **1.05**	0.17 **0.61**	0.19 **0.65**	0.03 **0.83**	0.03 **0.84**	0.00 **0.54**	0.10 **0.54**			0.08 **1.06**	0.09 **1.05**	0.04 **0.98**	0.26 **1.00**	0.04 **1.03**	0.29 **1.06**		0.00 **1.80**	0.00 **0.57**	0.16 **0.57**	0.72 **1.69**	0.11 **1.70**
121092	0.00 **2.60**	0.00 **0.77**					0.10 **0.53**	0.20 **0.85**																		
012093	0.10 **0.91**	0.10 **0.91**			0.20 **1.82**		0.10 **0.99**						0.30 **2.67**		0.10 **1.45**				0.30 **2.10**		0.20 **2.26**		0.20 **1.05**		0.30 **2.67**	
012793	0.10 **0.86**				0.10 **1.66**		0.00 **0.92**								0.10 **1.43**		0.10 **1.61**		0.10 **1.99**		0.10 **2.18**		0.10 **0.98**		0.10 **2.42**	
020993	0.30 **0.98**				0.60 **1.61**		0.02 **0.90**														0.00 **2.21**					
031893	0.10 **0.53**		0.10 **1.31**		0.00 **1.18**		0.00 **0.67**		0.00 **1.13**						0.10 **1.07**				0.00 **1.45**		0.00 **2.03**		0.00 **0.90**		3.90 **2.05**	
040293	0.00 **0.60**		0.00 **1.29**		0.07 **1.19**		0.00 **0.61**		0.02 **1.01**		0.00 **0.81**				0.08 **0.83**		0.02 **1.06**		0.01 **1.59**		0.00 **1.87**		0.02 **0.86**		0.31 **2.02**	
n	13	9	4	2	13	7	13	8	4	2	3	1	3	1	9	4	5	3	6	2	8	4	9	5	6	2
Mean	0.12	0.10	0.44	0.50	0.23	0.16	0.08	0.14	0.02	0.02	0.05	0.10	0.40	0.10	0.11	0.22	0.05	0.21	0.08	0.15	0.18	0.15	0.17	0.09	0.91	0.12
Median	0.10	0.10	0.11	0.50	0.20	0.10	0.02	0.15	0.02	0.02	0.00	0.10	0.30	0.10	0.10	0.20	0.04	0.20	0.03	0.15	0.05	0.05	0.10	0.10	0.31	0.12
Std	0.11	0.10	0.64	0.38	0.19	0.13	0.11	0.13	0.01	0.01	0.07	0.00	0.29	0.00	0.09	0.13	0.04	0.04	0.11	0.15	0.24	0.21	0.27	0.08	1.36	0.01
% Exceed	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0

SUMMARY OF CADMIUM DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	32	96	50	162	82
MEAN	0.116	0.240	0.194	0.148	0.160	0.180
MEDIAN	0.100	0.100	0.100	0.100	0.100	0.100
STD	0.122	0.431	0.446	0.162	0.360	0.300

PERCENT EXCEEDENCE OF STANDARD
CADMIUM

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**0.0**	**9.4**	**2.1**	**0.0**	**1.2**	**3.7**

Copper (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards are presented in bold underneath the concentrations reported by the laboratory.
Shaded data indicate that the water quality standard was exceeded.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	4.00	5.00			8.00	2.00																				
	6.99	**6.99**			**11.63**	**11.63**																				
062592					4.00	6.00	2.00	2.00																		
					13.82	**13.82**	**3.98**	**4.23**																		
070192	4.00	4.00			7.90		6.00	2.00					3.00		9.00	10.00	5.00	12.00			14.00	4.00	2.00	5.00		
	14.50	**8.98**			**8.82**		**11.21**	**9.88**					**5.86**		**6.76**	**6.43**	**10.39**	**10.08**			**17.67**		**33.98**	**16.34**		
072192	6.00	3.00			8.00	3.00	3.00	2.00																		
	6.16	**5.70**			**11.72**	**11.76**	**7.08**	**6.72**																		
080792	20.00	15.00			110.00	14.00	14.00	15.00							12.00								15.00	13.00	14.00	1.60
	30.75	**4.47**			**12.33**	**12.13**	**7.75**	**8.29**							**9.04**								**10.50**	**9.35**	**15.38**	**15.57**
081492	5.00	3.00			3.10	2.00	1.00	3.00					4.30	3.10	2.00	6.00					3.00	2.00	2.80	5.30	4.30	3.10
	5.45	**5.40**			**8.61**	**8.61**	**6.72**	**6.99**					**13.95**	**14.03**	**9.50**	**9.50**					**17.98**	**18.02**	**7.27**	**7.54**	**13.95**	**14.03**
090192	1.20	0.80	5.90	4.30	4.40	2.90	3.60	2.10	2.90	1.50	2.90				6.70	6.70	6.00	6.10	3.80	2.10	2.60	2.70	2.90	1.60		
	5.30	**5.17**	**11.17**	**11.21**	**7.53**	**7.53**	**5.06**	**5.06**	**9.67**	**9.67**	**5.98**				**9.25**	**9.14**	**10.61**	**10.61**	**10.09**	**10.09**	**15.09**	**15.09**	**6.44**	**6.16**		
100692	3.00	5.40	0.80	1.60	3.20	2.00	1.00	0.60	3.00	0.00	1.00	0.30			7.40	5.40	5.10	7.30	0.00	1.70		0.00	0.00	1.50	0.30	0.90
	5.92	**5.87**	**10.15**	**10.15**	**10.91**	**10.91**	**6.01**	**6.48**	**8.43**	**8.48**	**5.25**	**5.25**			**10.96**	**10.91**	**10.09**	**10.35**	**10.66**	**10.96**		**19.54**	**5.54**	**5.54**	**18.29**	**18.36**
121092	1.30	0.90					3.10	3.20																		
	29.19	**7.72**					**5.20**	**8.60**																		
012093	11.10	5.00			6.80		5.20						17.70		11.10				19.10		3.70		8.80		17.70	
	9.32	**9.32**			**19.81**		**10.18**						**30.08**		**15.41**				**23.07**		**25.06**		**10.87**		**30.08**	
012793	1.10				1.40		0.00								80.90		23.80		2.10		1.50		0.00		1.20	
	8.79				**17.94**		**9.40**								**15.16**		**17.32**		**21.79**		**24.03**		**10.09**		**26.97**	
020993	0.00				1.30		0.00														0.00					
	10.09				**17.33**		**9.23**														**24.39**					
031893	8.60		7.00		13.50		4.90		5.70						22.10				5.20		9.30		5.20		8.50	
	5.11		**13.88**		**12.39**		**6.62**		**11.79**						**11.12**				**15.49**		**22.23**		**9.14**		**22.53**	
040293	2.40		2.30		4.50		1.60		1.90		2.10				9.10		20.30		1.20		3.60		1.50		2.20	
	5.96		**13.59**		**12.43**		**6.06**		**10.45**		**8.17**				**8.40**		**10.96**		**17.12**		**20.42**		**8.71**		**22.20**	
n	13	9	4	2	13	7	13	8	4	2	3	1	3	1	9	4	5	3	6	2	8	4	9	5	7	3
Mean	5.21	4.68	4.00	2.95	13.55	4.56	3.49	3.74	3.38	0.75	2.00	0.30	8.33	3.10	17.81	7.03	12.04	8.47	5.23	1.90	4.71	2.18	4.24	5.28	6.89	1.87
Median	4.00	4.00	4.10	2.95	4.50	2.90	3.00	2.05	2.95	0.75	2.10	0.30	4.30	3.10	9.10	6.35	6.00	7.30	2.95	1.90	3.30	2.35	2.80	5.00	4.30	1.60
Std	5.24	3.98	2.54	1.35	28.03	4.07	3.56	4.32	1.41	0.75	0.78	0.00	6.64	0.00	22.88	1.78	8.26	2.55	6.43	0.20	4.32	1.45	4.59	4.18	6.26	0.92
% Exceed	15.4	11.1	0.0	0.0	15.4	14.3	7.7	12.5	0.0	0.0	0.0	0.0	0.0	0.0	55.6	25.0	40.0	33.3	0.0	0.0	0.0	0.0	11.1	2.0	0.0	0.0

SUMMARY OF COPPER DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	97	51	163	85
MEAN	4.46	4.80	7.48	4.17	6.26	4.42
MEDIAN	3.75	3.30	4.00	3.00	3.80	3.00
STD	3.47	4.59	14.01	3.78	11.13	4.03

PERCENT EXCEEDENCE OF STANDARD
COPPER

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**25.8**	**35.3**	**13.4**	**11.8**	**18.4**	**21.2**

Iron (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Note: Class III Standard is less than or equal to 1000 ug/l.
There were no exceedences for Iron.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	70.0	70.0			40.0	50.0																				
062592					10.0	40.0	90.0	16.0																		
070192	12.0	76.0			14.0		34.0	29.0					21.0		18.0	17.0	27.0	38.0			19.0	35.0	99.0	13.0		
072192	60.0	40.0			30.0	50.0	18.0	26.0																		
080792	60.0	12.0			20.0	40.0	72.0	47.0							17.0								62.0	17.0	30.0	24.0
081492	60.0	60.0			47.0	32.0	29.0	18.0					67.0	84.0	80.0	90.0					10.0	80.0	33.0	22.0	67.0	84.0
090192	65.0	64.0	42.0	54.0	14.4	56.0	17.4	26.4	87.0	72.0	13.1				14.0	11.4	25.6	31.4	96.0	20.0	80.0	84.0	25.5	12.0		
100692	82.0	47.0	27.0	14.0	51.0	55.0	15.4	28.4	58.0	67.0	50.0	78.0			15.4	17.0	23.6	35.0	23.0	11.6		58.0	18.9	29.8	12.7	11.2
121092	56.0	53.0					18.5	25.7																		
012093	16.8	14.0			95.0		12.0						13.9		13.0				18.0		40.0		17.0		13.9	
012793	50.0				11.3		56.0								89.0		21.2		30.0		37.0		13.3		29.7	
020993	34.0				36.0		13.9														38.0					
031893	46.0		34.0		33.0		167.8		90.0						53.0				47.0		13.5		14.1		89.0	
040293	88.0		67.0		92.0		44.0		80.0		73.0				78.0		26.9		66.0		59.0		24.0		28.3	
n	13	9	4	2	13	7	13	8	4	2	3	1	3	1	9	4	5	3	6	2	8	4	9	5	7	3
Mean	53.8	48.4	42.5	34.0	38.0	46.1	45.2	27.1	78.8	69.5	45.4	78.0	34.0	84.0	41.9	33.9	24.9	34.8	46.7	15.8	37.1	64.3	34.1	18.8	38.7	39.7
Median	60.0	53.0	38.0	34.0	33.0	50.0	29.0	26.2	83.5	69.5	50.0	78.0	21.0	84.0	18.0	17.0	25.6	35.0	38.5	15.8	37.5	69.0	24.0	17.0	29.7	24.0
Std	21.6	21.6	15.1	20.0	27.0	8.3	42.5	8.7	12.5	2.5	24.7	0.0	23.5	0.0	30.9	32.5	2.2	2.7	27.3	4.2	22.2	19.6	26.9	6.5	26.4	31.7
% Exceed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SUMMARY OF IRON DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	97	51	163	85
MEAN	37.7	35.3	42.9	40.4	41.0	39.0
MEDIAN	28.9	29.0	34.0	35.0	30.0	32.0
STD	27.3	24.6	29.2	23.7	28.6	24.2

Lead (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards are presented in bold underneath the concentrations reported by the laboratory.
Shaded data indicate that the water quality standard was exceeded.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	0.00	0.60			3.00	0.10																				
	1.46	**1.46**			**3.10**	**3.10**																				
062592					0.20	0.00	0.30	0.80																		
					4.01	**4.01**	**0.63**	**0.69**																		
070192	2.60	1.60			3.60		2.20	0.70					2.20		2.60	3.50	1.90	5.10			15.20	0.00	2.00	3.10		
	4.31	**2.11**			**2.06**		**2.94**	**2.43**					**1.12**		**1.38**	**1.28**	**2.63**	**2.51**			**5.79**		**15.33**	**5.15**		
072192	1.60	0.80			1.40	1.20	1.30	1.20																		
	1.20	**1.07**			**3.14**	**3.16**	**1.48**	**1.37**																		
080792	0.80	2.50			15.40	1.10	1.40	0.00							0.10								11.60	0.70	0.80	1.50
	13.21	**0.75**			**3.39**	**3.30**	**1.70**	**1.87**							**2.13**								**2.66**	**2.24**	**4.71**	**4.79**
081492	2.20	1.10			1.40	1.10	1.20	1.00					3.10	2.90	0.80	1.10					1.10	0.20	1.30	1.60	3.10	2.90
	1.00	**0.99**			**1.98**	**1.98**	**1.37**	**1.46**					**4.07**	**4.11**	**2.30**	**2.30**					**5.94**	**5.96**	**1.54**	**1.63**	**4.07**	**4.11**
090192	0.80	0.10	1.00	0.10	1.00	0.60	1.60	1.60	3.20	1.90	2.40				3.00	3.30	0.10	0.80	0.40	0.00	0.00	0.00	1.10	0.10		
	0.96	**0.93**	**2.92**	**2.94**	**1.63**	**1.63**	**0.90**	**0.90**	**2.36**	**2.36**	**1.15**				**2.21**	**2.17**	**2.71**	**2.71**	**2.51**	**2.51**	**4.57**	**4.57**	**1.29**	**1.20**		
100692	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90	0.80	1.50	2.50			1.70	1.20	2.40	3.60	0.00	1.60		0.30	0.00	0.80	0.00	0.00
	1.14	**1.12**	**2.53**	**2.53**	**2.82**	**2.82**	**1.16**	**1.30**	**1.92**	**1.94**	**0.95**	**0.95**			**2.84**	**2.82**	**2.51**	**2.61**	**2.73**	**2.84**		**6.72**	**1.03**	**1.03**	**6.09**	**6.13**
121092	0.30	0.20					1.00	1.00																		
	12.23	**1.69**					**0.93**	**1.98**																		
012093	0.70	0.30			1.50		0.50						1.50		1.20				0.20		0.90		0.60		1.50	
	2.23	**2.23**			**6.86**		**2.54**						**12.78**		**4.72**				**8.61**		**9.74**		**2.81**		**12.78**	
012793	0.70				1.20		0.40								0.90		3.00		0.90		0.20		0.20		1.10	
	2.05				**5.92**		**2.26**								**4.61**		**5.62**		**7.91**		**9.15**		**2.51**		**10.87**	
020993	0.10				0.40		0.50														0.40					
	2.51				**5.62**		**2.20**														**9.36**					
031893	0.50		0.30		0.20		1.50		0.40						0.80				0.60		1.60		0.80		1.30	
	0.91		**4.04**		**3.41**		**1.34**		**3.17**						**2.90**				**4.76**		**8.15**		**2.17**		**8.32**	
040293	0.11		0.38		0.57		0.00		0.16		0.15				0.27		2.78		0.00		0.00		0.28		0.72	
	1.15		**3.92**		**3.43**		**1.17**		**2.65**		**1.83**				**1.91**		**2.84**		**5.52**		**7.18**		**2.02**		**8.13**	
n	13	9	4	2	13	7	13	8	4	2	3	1	3	1	9	4	5	3	6	2	8	4	9	5	7	3
Mean	0.80	0.80	0.42	0.05	2.30	0.59	0.92	0.79	1.42	1.35	1.35	2.50	2.20	3.10	1.26	2.28	2.04	3.17	0.35	0.80	2.43	0.13	1.99	1.26	1.22	1.47
Median	0.70	0.60	0.34	0.05	1.20	0.60	1.00	0.90	1.15	1.35	1.50	2.50	2.20	3.10	0.90	2.25	2.40	3.60	0.30	0.80	0.65	0.10	0.80	0.80	1.10	1.50
Std	0.81	0.77	0.36	0.05	3.92	0.51	0.66	0.52	1.23	0.55	0.92	0.00	0.57	0.00	0.94	1.13	1.04	1.78	0.33	0.80	4.86	0.13	3.45	1.04	0.89	1.18
% Exceed	7.7	11.1	0.0	0.0	15.4	0.0	0.0	0.0	25.0	0.0	33.3	100.0	33.3	0.0	22.2	50.0	0.0	66.7	0.0	0.0	12.5	0.0	11.1	0.0	0.0	0.0

SUMMARY OF LEAD DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	97	51	163	85
MEAN	1.29	1.75	1.44	1.12	1.38	1.38
MEDIAN	0.90	1.50	0.80	0.80	0.90	1.10
STD	1.36	1.37	2.45	1.17	2.08	1.29

PERCENT EXCEEDENCE OF STANDARD
LEAD

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**16.7**	**26.5**	**10.3**	**11.8**	**12.9**	**17.7**

Manganese (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Note: Class III Standards for Mn do not exist: the Class II Standard is less than or equal to 100,000 ug/l.
There were no exceedences in the class II Manganese standard.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	70.00	70.00			30.00	20.00																				
062592					30.00	30.00	30.00	40.00																		
070192	40.00	30.00			20.00		30.00	20.00					0.00		20.00	0.00	40.00	60.00			20.00	70.00	0.00	20.00		
072192	20.00	20.00			20.00	20.00	20.00	20.00																		
080792	0.00	0.00			0.00	20.00	60.00	70.00							50.00								30.00	20.00	0.00	0.00
081492	21.00	21.00			53.00	0.00	27.00	31.00					24.00	34.00	24.00	18.00					24.00	23.00	39.00	49.00	24.00	34.00
090192	26.00	17.00	6.00	14.00	39.00	2.00	28.00	29.00	19.00	24.00	38.00				9.00	15.00	21.00	27.00	8.00	6.00	5.00	12.00	10.00	6.00		
100692	17.00	14.00	3.00	2.00	9.00	7.00	21.00	40.00	4.00	3.00	1.00	4.00			9.00	21.00	28.00	34.00	3.00	6.00		7.00	6.00	11.00	2.00	1.00
121092	8.00	5.00					15.00	17.00																		
012093	5.00	0.00			34.00		7.00						7.00		0.20				12.00		7.00		9.00		7.00	
012793	7.00				11.00		11.00								4.00		9.00		7.00		5.00		8.00		13.00	
020993	13.00				15.00		17.00														8.00					
031893	10.00		11.00		21.00		70.00		16.00						20.00				9.00		20.00		8.00		14.00	
040293	9.00		4.00		16.00		45.00		7.00		15.00				21.00		24.00		23.00		7.00		13.00		20.00	
n	13	9	4	2	13	7	13	8	4	2	3	1	3	1	9	4	5	3	6	2	8	4	9	5	7	3
Mean	18.92	19.67	6.00	8.00	22.92	14.14	29.31	33.38	11.50	13.50	18.00	4.00	10.33	34.00	17.47	13.50	24.40	40.33	10.33	6.00	12.00	28.00	13.67	21.20	11.43	11.67
Median	13.00	17.00	5.00	8.00	20.00	20.00	27.00	30.00	11.50	13.50	15.00	4.00	7.00	34.00	20.00	16.50	24.00	34.00	8.50	6.00	7.50	17.50	9.00	20.00	13.00	1.00
Std	17.84	20.19	3.08	6.00	13.53	10.37	17.97	16.12	6.18	10.50	15.25	0.00	10.08	0.00	13.94	8.08	10.05	14.20	6.26	0.00	7.38	24.93	11.80	14.91	8.28	15.80
% Exceed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SUMMARY OF MANGANESE DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	97	51	163	85
MEAN	23.24	27.62	17.73	20.86	19.96	23.56
MEDIAN	13.50	21.00	15.00	20.00	14.00	20.00
STD	22.82	23.14	14.64	18.12	18.59	20.55

PERCENT EXCEEDENCE OF STANDARD
MANGANESE

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Nickel (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards are presented in bold underneath the concentrations reported by the laboratory.
There were no exceedences for Nickel.

CONSTRUCTED

LOC OS # SIDE	WBND OS01B B	WBND OS01A A	WPAS OS05B B	WPAS OS05A A	GTDS OS08B B	GTDS OS08A A	FSQR OS09B B	FSQR OS09A A	KNMA OS10B B	KNMA OS10A A	MBRV OS11B B	MBRV OS11A A
DATES												
061192	0.00 **93.76**	0.00 **93.76**			0.00 **155.13**	0.00 **155.13**						
062592					1.00 **183.96**	0.00 **183.96**	0.00 **53.71**	0.00 **56.94**				
070192	1.10 **193.00**	0.00 **120.11**			0.00 **118.01**		0.00 **149.62**	0.00 **131.92**				
072192	0.00 **82.64**	0.00 **76.60**			2.00 **156.33**	0.00 **156.86**	0.00 **94.93**	0.20 **90.08**				
080792	12.80 **406.12**	6.00 **60.13**			29.90 **164.31**	7.00 **161.66**	4.80 **103.78**	5.30 **110.94**				
081492	0.00 **73.24**	0.00 **72.62**			1.30 **115.19**	0.10 **115.19**	0.20 **90.08**	0.00 **93.76**				
090192	3.50 **71.24**	3.10 **69.54**	3.20 **149.09**	0.00 **149.62**	3.50 **100.90**	0.60 **100.90**	0.00 **67.99**	0.00 **67.99**	1.80 **129.16**	2.60 **129.16**	0.70 **80.23**	
100692	0.00 **79.48**	0.00 **78.87**	0.00 **135.49**	0.00 **135.49**	0.00 **145.57**	0.00 **145.57**	0.00 **80.69**	0.00 **86.97**	0.00 **112.78**	0.80 **113.49**	0.00 **70.62**	0.00 **70.62**
121092												
012093												
012793												
020993												
031893												
040293												
n	7	7	2	2	8	7	7	7	2	2	2	1
Mean	2.49	1.30	1.60	0.00	4.71	1.10	0.71	0.79	0.90	1.70	0.35	0.00
Median	0.00	0.00	1.60	0.00	1.15	0.00	0.00	0.00	0.90	1.70	0.35	0.00
Std	4.38	2.20	1.60	0.00	9.59	2.42	1.67	1.84	0.90	0.90	0.35	0.00
% Exceed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

LOC OS # SIDE	COPP OS14B B	COPP OS14A A	LHBF OS20B B	LHBF OS20A A	LHBB OS21B B	LHBB OS21A A	CRLS OS22B B	CRLS OS22A A	CARL OS23B B	CARL OS23A A	TRCO OS24B B	TRCO OS24A A	TOFF OS25B B	TOFF OS25A A
DATES														
061192														
062592														
070192	0.00 **78.72**		0.00 **90.67**	0.10 **86.23**	5.00 **138.78**	1.60 **134.67**			5.20 **234.65**	0.00	0.00 **448.40**	0.00 **217.16**		
072192														
080792			2.90 **120.81**								6.00 **140.14**	3.40 **125.00**	2.30 **204.51**	
081492	3.00 **185.74**	0.10 **186.81**	0.00 **126.94**	0.00 **126.94**					1.20 **238.74**	0.10 **239.23**	2.10 **97.41**	5.80 **101.04**	3.00 **185.77**	0.10 **186.81**
090192			0.80 **123.61**	2.20 **122.21**	4.90 **141.64**	4.60 **141.64**	3.60 **134.81**	5.50 **134.81**	3.70 **200.68**	3.30 **200.68**	4.10 **86.38**	4.40 **82.64**		
100692			1.70 **146.25**	0.50 **145.57**	0.00 **134.81**	5.10 **138.23**	0.00 **142.32**	0.60 **146.25**		0.80 **259.24**	0.00 **74.46**	0.00 **74.46**	0.00 **242.81**	0.00 **243.80**
121092														
012093														
012793														
020993														
031893														
040293														
n	2	1	5	4	3	3	2	2	3	4	5	5	3	2
Mean	1.50	0.10	1.08	0.70	3.30	3.77	1.80	3.05	3.37	1.05	2.44	2.72	1.77	0.05
Median	1.50	0.10	0.80	0.30	4.90	4.60	1.80	3.05	3.70	0.45	2.10	3.40	2.30	0.05
Std	1.50	0.00	1.11	0.89	2.33	1.55	1.80	2.45	1.65	1.34	2.34	2.35	1.28	0.05
% Exceed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SUMMARY OF NICKEL DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	33	32	51	47	84	79
MEAN	1.74	1.72	2.26	1.36	2.06	1.50
MEDIAN	1.10	1.50	0.80	0.10	0.90	0.30
STD	3.22	2.12	4.57	2.09	4.10	2.11

PERCENT EXCEEDENCE OF STANDARD
NICKEL

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Zinc (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards are presented in bold underneath the concentrations reported by the laboratory.
Shaded data indicate that the water quality standard was exceeded.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	27.00 **62.98**	15.00 **62.98**			22.00 **104.28**	19.00 **104.28**																				
062592					23.00 **123.70**	28.00 **123.70**	17.00 **36.05**	14.00 **38.22**																		
070192	30.00 **129.79**	20.00 **80.71**			0.00 **79.29**		20.00 **100.58**	30.00 **88.66**					20.00 **52.87**		40.00 **60.90**	60.00 **57.91**	18.00 **93.28**	17.00 **90.51**				20.00	60.00 **301.92**	50.00 **146.06**		
072192	0.00 **55.50**	30.00 **51.44**			30.00 **105.09**		80.00 **63.77**	0.00 **60.51**																		
080792	20.00 **273.42**	20.00 **40.36**			20.00 **110.47**	20.00 **108.68**	30.00 **69.72**	0.00 **74.54**							30.00 **81.18**								30.00 **94.19**	30.00 **84.00**	0.00 **137.54**	45.00 **139.25**
081492	27.00 **49.18**	85.00 **48.76**			37.10 **77.40**	37.20 **77.40**	13.00 **60.51**	52.00 **62.98**					28.10 **124.89**	19.10 **125.62**	50.00 **85.31**	84.00 **85.31**					24.00 **160.60**	77.00 **160.93**	18.40 **65.44**	16.50 **67.88**	28.10 **124.92**	19.10 **125.62**
090192	12.30 **47.83**	21.80 **46.69**	22.00 **100.22**	29.00 **100.58**	53.00 **67.78**	37.00 **67.78**	27.00 **45.65**	22.00 **45.65**	12.00 **86.80**	16.00 **86.80**	15.00 **53.88**				18.00 **83.06**	30.00 **82.12**	26.00 **95.20**	47.00 **95.20**	24.00 **90.60**	19.00 **90.60**	24.00 **134.96**	14.00 **134.96**	41.00 **58.01**	12.00 **55.50**		
100692	27.00 **53.37**	26.00 **52.97**	23.00 **91.07**	30.00 **91.07**	34.00 **97.85**	41.00 **97.85**	45.00 **54.19**	43.00 **58.41**	12.00 **75.78**	13.00 **76.26**	17.00 **47.42**	50.00 **47.42**			21.00 **98.31**	29.00 **97.85**	21.00 **90.60**	31.00 **92.91**	16.00 **95.66**	17.00 **98.31**		80.00 **174.41**	16.00 **50.00**	19.00 **50.00**	21.00 **163.34**	24.00 **164.01**
121092	31.00 **259.65**	19.00 **69.43**					26.00 **46.90**	18.00 **77.30**																		
012093	36.00 **83.72**	31.00 **83.72**			30.00 **176.79**		31.00 **91.34**						24.00 **267.50**		32.00 **137.79**				23.00 **205.62**		16.00 **223.26**		26.00 **97.49**		24.00 **267.50**	
012793	49.00 **79.01**				33.00 **160.26**		18.00 **84.47**								28.00 **135.65**		26.00 **154.74**		23.00 **194.32**		18.00 **214.11**		15.00 **90.60**		23.00 **240.10**	
020993	25.00 **90.60**				17.00 **154.83**		19.00 **82.88**														18.00 **217.35**					
031893	33.00 **46.17**		11.00 **124.22**		10.00 **111.00**		16.00 **59.61**		90.00 **105.72**						220.00 **99.76**				16.00 **138.56**		23.00 **198.26**		18.00 **82.12**		16.00 **200.90**	
040293	13.30 **53.78**		52.00 **121.69**		22.70 **111.36**		73.00 **54.59**		56.00 **93.74**		10.00 **73.48**				249.00 **75.49**		18.30 **98.31**		59.00 **152.98**		69.00 **182.18**		97.00 **78.25**		21.90 **197.94**	
n	13	9	4	2	13	6	13	8	4	2	3	1	3	1	9	4	5	3	6	2	7	4	9	5	7	3
Mean	25.43	29.76	27.00	29.50	25.52	30.37	31.92	22.38	42.50	14.50	14.00	50.00	15.60	1.91	29.54	50.75	21.86	31.67	26.83	18.00	27.43	47.75	35.71	25.50	19.14	29.37
Median	27.00	21.80	22.50	29.50	23.00	32.50	26.00	20.00	34.00	14.50	15.00	50.00	20.00	1.91	28.00	45.00	21.00	31.00	23.00	18.00	23.00	48.50	26.00	19.00	21.90	24.00
Std	11.70	20.15	15.18	0.50	12.65	8.62	20.70	17.51	32.78	1.50	2.94	0.00	9.19	0.00	9.55	22.88	3.54	12.26	14.76	1.00	17.24	30.84	25.67	13.61	8.50	11.23
% Exceed	0.0	12.5	0.0	0.0	0.0	0.0	15.4	0.0	0.0	0.0	0.0	100.0	0.0	0.0	22.2	25.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0

SUMMARY OF ZINC DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	96	50	162	84
MEAN	30.20	26.79	32.03	30.53	32.03	29.02
MEDIAN	21.00	21.85	23.50	25.00	23.00	22.00
STD	22.84	20.20	34.26	19.52	30.15	19.88

PERCENT EXCEEDENCE OF STANDARD
ZINC

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**15.2**	**17.6**	**5.2**	**6.0**	**9.3**	**10.7**

Ammonia (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards do not exist for Ammonia.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	0.02	0.02			0.04	0.03																				
062592					0.02	0.01	0.01	0.01																		
070192	0.08	0.03			0.02		0.02	0.02					0.13		0.01	0.02	0.02	0.02			0.03	0.08	0.02	0.02		
072192	0.01	0.00			0.06	0.06	0.02	0.02				0.12														
080792	0.02	0.02			0.04	0.04	0.02	0.02				0.06			0.02								0.04	0.02	0.03	0.03
081492	0.01	0.01			0.02	0.04	0.01	0.01				0.06	0.03	0.01	0.01	0.02					0.01	0.01	0.04	0.05	0.03	0.01
090192	0.01	0.00	0.00	0.01	0.06	0.02	0.00	0.01	0.06	0.01		0.07			0.01	0.00	0.02	0.10	0.01	0.01	0.01	0.01	0.04	0.01		
100692	0.01	0.00	0.00	0.00	0.01	0.01	0.01		0.01	0.01	0.00	0.06			0.02	0.02	0.34	0.34	0.00	0.03	0.00	0.05	0.02	0.00	0.00	0.00
121092	0.01	0.01					0.02	0.00				0.03														
012093	0.03	0.01			0.02		0.02	0.02				0.03	0.02		0.02				0.01		0.01		0.01		0.02	
012793	0.01				0.05		0.02					0.03			0.03		0.04		0.01		0.02		0.02		0.02	
020993	0.00				0.01		0.00					0.02									0.01					
031893	0.00		0.00		0.00		0.00		0.00			0.00			0.00				0.01		0.01		0.01		0.01	
040293	0.00		0.00		0.01		0.00		0.01	0.00		0.05			0.02		0.02		0.01		0.01		0.01		0.02	
n	13	9	4	2	13	7	13	8	4	3	1	11	3	1	9	4	5	3	6	2	9	4	9	5	7	3
Mean	0.02	0.01	0.00	0.01	0.03	0.03	0.01	0.01	0.02	0.00	0.00	0.05	0.06	0.01	0.02	0.01	0.09	0.16	0.01	0.02	0.01	0.04	0.02	0.02	0.02	0.02
Median	0.01	0.01	0.00	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.00	0.05	0.03	0.01	0.02	0.02	0.02	0.10	0.01	0.02	0.01	0.03	0.02	0.02	0.02	0.01
Std	0.02	0.01	0.00	0.01	0.02	0.02	0.01	0.01	0.02	0.00	0.00	0.03	0.05	0.00	0.01	0.01	0.13	0.14	0.00	0.01	0.01	0.03	0.01	0.02	0.01	0.01

SUMMARY OF AMMONIA DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	96	62	162	96
MEAN	0.03	0.05	0.02	0.03	0.03	0.04
MEDIAN	0.02	0.02	0.01	0.02	0.02	0.02
STD	0.07	0.09	0.04	0.05	0.05	0.06

Unionized Ammonia (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
J = data outside acceptable range (not included in analysis).
Note: Class III Standard is less than or equal to 20.0 ug/l.
There were no exceedences for Unionized Ammonia.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	0.120	0.120			0.600	0.670																				
062592					0.200	0.110	0.020	0.020																		
070192	0.420	0.190			0.310		0.040	0.040					0.610		0.100	0.210	0.310	0.510			0.320					
072192	0.030	0.000			0.480	0.540	0.030	0.040																		
080792	0.200	0.120			0.380	0.700	0.030	0.040							0.210								0.280	0.220	1.220	1.520
081492	0.040	0.070			0.240	0.330	0.020	0.010							0.110	0.220					0.120	0.140	0.200	0.230	1.570	0.550
090192	0.030	0.000	0.000	0.110	0.640	0.250	0.000	0.010	0.120	0.120					0.410	0.000	0.250	2.020	0.070	0.290	0.160	0.150	0.100	0.030		
100692	0.030	0.000	0.000	0.000	0.080	0.100	0.010		0.020	0.020	0.000	0.740			0.230	0.230	3.000	3.280	0.000	0.360	0.000	0.540	0.040	0.000	0.000	0.000
121092	0.030	0.030					0.010	0.000																		
012093	0.040	0.010			0.290		0.010	0.020							0.240				0.100		0.110		0.030		1.070	
012793	0.020				0.500		J								0.840		0.270		0.100		0.450		0.050		0.590	
020993	0.000				0.150		0.000														0.020					
031893	0.000		0.000		0.000		0.000		0.000			0.000			0.000				0.120		0.110		0.020		0.160	
040293	0.000		0.000		0.200		0.000		0.020	0.000					0.060		0.140		0.080		0.170		0.030		0.840	
n	13	9	4	2	13	7	12	8	4	3	1	2	1		9	4	5	3	6	2	9	3	8	4	7	3
Mean	0.074	0.060	0.000	0.055	0.313	0.386	0.014	0.023	0.040	0.047	0.000	0.370	0.610		0.244	0.165	0.794	1.937	0.078	0.325	0.162	0.277	0.094	0.120	0.779	0.690
Median	0.030	0.030	0.000	0.055	0.290	0.330	0.010	0.020	0.020	0.020	0.000	0.370	0.610		0.210	0.215	0.270	2.020	0.090	0.325	0.120	0.150	0.045	0.125	0.840	0.550
Std	0.113	0.065	0.000	0.055	0.190	0.234	0.013	0.015	0.047	0.052	0.000	0.370	0.000		0.239	0.096	1.104	1.132	0.038	0.035	0.134	0.186	0.090	0.106	0.526	0.628
% Exceed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SUMMARY OF UNIONIZED AMMONIA DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	54	26	92	50	146	76
MEAN	0.084	0.088	0.220	0.298	0.170	0.226
MEDIAN	0.030	0.045	0.100	0.115	0.050	0.070
STD	0.158	0.115	0.403	0.568	0.341	0.476

PERCENT EXCEEDENCE OF STANDARD
UNIONIZED AMMONIA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Chromium (ug/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards do not exist for Chromium in its unspeciated form as presented here.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	1.00	1.00			0.00	1.00																				
062592					1.00	0.00	0.00	0.00																		
070192	1.90	2.30					2.00	0.20					2.20		1.80	1.60	1.55	2.05			1.80	1.50	1.60	0.80		
072192	0.00	0.00			0.00	0.00	0.00	0.20																		
080792	0.10	0.00			1.20	0.40	0.30	0.10							0.40								3.60	0.90	1.80	4.10
081492	0.10	0.30			0.70	0.50	0.60	0.20					2.10	2.80	0.50	1.10					1.20	1.50	2.30	1.70	2.10	2.80
090192	0.00	0.00	1.30	0.20	2.20	1.00	1.20	0.00	0.00	0.30	0.70				0.00	0.00	1.60	1.00	1.50	0.30	0.40	1.40	2.20	0.40		
100692	1.70	0.90	0.40	1.00	1.00	0.80	1.20	0.80	0.70	1.20	1.30	0.50			1.50	1.90	1.40	1.20	0.30	1.70		1.30	0.70	2.10	2.10	1.10
121092	0.00	0.00					0.00	0.00																		
012093	1.80	1.80			0.90		0.40						1.30		0.30				0.00		1.10		0.00		1.30	
012793	1.40				1.50		1.20								1.00		1.70		1.80		0.70		1.50		3.20	
020993	0.00				0.20		0.40														0.00					
031893	2.00		3.10		2.00		3.90		1.90						1.50				2.50		3.70		4.20		2.60	
040293	0.78		0.94		1.29		0.89		0.61		1.08				0.53		0.66		0.48		1.35		1.26		1.84	
n	13	9	4	2	12	7	13	8	4	2	3	1	3	1	9	4	5	3	6	2	8	4	9	5	7	3
Mean	0.83	0.70	1.44	0.60	1.00	0.53	0.93	0.19	0.80	0.75	1.03	0.50	1.87	2.80	0.84	1.15	1.38	1.42	1.10	1.00	1.28	1.43	1.93	1.18	2.13	2.67
Median	0.78	0.30	1.12	0.60	1.00	0.50	0.60	0.15	0.66	0.75	1.08	0.50	2.10	2.80	0.53	1.35	1.55	1.20	0.99	1.00	1.15	1.45	1.60	0.90	2.10	2.80
Std	0.80	0.82	1.01	0.40	0.68	0.40	1.03	0.25	0.69	0.45	0.25	0.00	0.40	0.00	0.60	0.72	0.37	0.46	0.90	0.70	1.06	0.08	1.25	0.62	0.57	1.23

SUMMARY OF CHROMIUM DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	96	51	162	85
MEAN	1.34	1.01	1.21	0.94	1.26	0.97
MEDIAN	1.05	0.85	1.20	0.90	1.10	0.90
STD	1.28	1.14	0.95	0.88	1.10	0.99

NO2 + NO3 (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.

Specific Class III State Standards do not exist for NOx.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	0.00	0.00			0.01	0.01																				
062592					0.05	0.02	0.01	0.01																		
070192	0.01	0.09			0.01		0.00	0.00					0.01		0.02	0.04	0.02	0.02			0.01	0.02	0.01	0.01		
072192	0.00	0.00			0.01	0.02	0.00	0.00																		
080792	0.00	0.00			0.00	0.00	0.00	0.00							0.00								0.00	0.00	0.00	0.00
081492	0.00	0.00			0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00	0.00
090192	0.01	0.01	0.00	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.00				0.01	0.01	0.03	0.04	0.01	0.00	0.00	0.00	0.00	0.00		
100692	0.01	0.03	0.01	0.01	0.03	0.03	0.02	0.02	0.01	0.02	0.02	0.02			0.06	0.06	0.32	0.33	0.03	0.04	0.06	0.04	0.04	0.03	0.01	0.01
121092	0.01	0.02					0.02	0.02																		
012093	0.01	0.01			0.03		0.01						0.01		0.04				0.01		0.01		0.01		0.01	
012793	0.00				0.02		0.00								0.04		0.20		0.00		0.00		0.00		0.00	
020993	0.02				0.02		0.01														0.01					
031893	0.01		0.00		0.01		0.00		0.00						0.01				0.00		0.00		0.00		0.01	
040293	0.00		0.01		0.01		0.01		0.00		0.00				0.02		0.08		0.00		0.00		0.01		0.05	
n	13	9	4	2	13	7	13	8	4	2	3	1	3	1	9	4	5	3	6	2	9	4	9	5	7	3
Mean	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.01	0.01	0.02	0.01	0.00	0.02	0.02	0.13	0.13	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.00
Median	0.01	0.01	0.00	0.01	0.01	0.02	0.00	0.01	0.00	0.01	0.00	0.02	0.01	0.00	0.02	0.02	0.08	0.04	0.00	0.02	0.00	0.01	0.00	0.00	0.01	0.00
Std	0.01	0.03	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.02	0.02	0.12	0.14	0.01	0.02	0.02	0.01	0.01	0.01	0.02	0.01

SUMMARY OF NOx DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	98	51	164	85
MEAN	0.02	0.01	0.02	0.02	0.02	0.02
MEDIAN	0.01	0.01	0.01	0.01	0.01	0.01
STD	0.06	0.03	0.04	0.05	0.05	0.04

Ortho Phosphorus (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Specific Class III State Standards do not exist for Ortho P.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	0.01	0.01			0.02	0.02																				
062592					0.02	0.01	0.03	0.04																		
070192	0.01	0.04			0.02		0.04	0.02					0.02		0.03	0.04	0.11	0.13			0.07	0.43	0.08	0.09		
072192	0.01	0.01			0.02	0.02	0.02	0.02																		
080792	0.00	0.00			0.00	0.01	0.05	0.03							0.01								0.01	0.01	0.03	0.03
081492	0.01	0.01			0.01	0.01	0.02	0.07					0.11	0.11	0.01	0.00					0.00	0.00	0.01	0.01	0.11	0.11
090192	0.01	0.01	0.01	0.01	0.03	0.01	0.02	0.02	0.03	0.02	0.01				0.01	0.02	0.05	0.05	0.01	0.00	0.01	0.01	0.05	0.01		
100692	0.01	0.01	0.00	0.00	0.01	0.01	0.04	0.03	0.00	0.00	0.00	0.00			0.01	0.01	0.08	0.08	0.00	0.00	0.02	0.01	0.01	0.02	0.04	0.03
121092	0.01	0.01					0.04	0.05																		
012093	0.01	0.01			0.02		0.02						0.03		0.01				0.01		0.02		0.02		0.03	
012793	0.01				0.04		0.02								0.03		0.05		0.00		0.01		0.01		0.08	
020993	0.08				0.01		0.04														0.02					
031893	0.01		0.01		0.01		0.02		0.01						0.02				0.01		0.01		0.01		0.03	
040293	0.01		0.01		0.01		0.03		0.01		0.01				0.02		0.05		0.00		0.01		0.01		0.05	
n	13	9	4	2	13	7	13	8	4	2	3	1	3	1	9	4	5	3	6	2	9	4	9	5	7	3
Mean	0.02	0.01	0.01	0.01	0.02	0.01	0.03	0.03	0.01	0.01	0.00	0.00	0.05	0.11	0.02	0.02	0.07	0.09	0.00	0.00	0.02	0.11	0.02	0.03	0.05	0.06
Median	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03	0.01	0.01	0.01	0.00	0.03	0.11	0.01	0.01	0.05	0.08	0.01	0.00	0.01	0.01	0.01	0.01	0.04	0.03
Std	0.02	0.01	0.00	0.00	0.01	0.00	0.01	0.02	0.01	0.01	0.00	0.00	0.04	0.00	0.01	0.01	0.03	0.03	0.00	0.00	0.02	0.18	0.02	0.03	0.03	0.04

SUMMARY OF ORTHO P DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	98	51	164	85
MEAN	0.07	0.07	0.02	0.03	0.04	0.05
MEDIAN	0.01	0.01	0.01	0.01	0.01	0.01
STD	0.13	0.11	0.02	0.06	0.03	0.09

Total Phosphorus (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Specific Class III State Standards do not exist for Total P.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	0.20	0.19			0.05	0.05																				
062592					0.07	0.04	0.04	0.09																		
070192	0.07	0.05			0.11		0.05	0.02					0.08		0.08	0.11	0.15	0.18			0.17	0.50	0.10	0.11		
072192	0.06	0.05			0.04	0.05	0.06	0.05																		
080792	0.03	0.03			0.00	0.06	0.13	0.08							0.06								0.13	0.05	0.06	0.05
081492	0.03	0.06			0.06	0.06	0.07	0.15					0.23	0.22	0.06	0.05					0.03	0.03	0.07	0.07	0.23	0.22
090192	0.09	0.06	0.06	0.05	0.09	0.07	0.09	0.09	0.12	0.11	0.07				0.09	0.09	0.14	0.14	0.06	0.05	0.07	0.07	0.11	0.08		
100692	0.06	0.06	0.01	0.01	0.03	0.04	0.10	0.09	0.04	0.04	0.03	0.03			0.05	0.05	0.16	0.11	0.00	0.01	0.02	0.03	0.03	0.02	0.08	0.08
121092	0.03	0.03					0.09	0.10																		
012093	0.03	0.02			0.11		0.05						0.08		0.04				0.02		0.03		0.07		0.08	
012793	0.02				0.09		0.04								0.06		0.08		0.01		0.02		0.01		0.15	
020993	0.02				0.03		0.10														0.10					
031893	0.04		0.01		0.03		0.07		0.07						0.07				0.01		0.03		0.03		0.08	
040293	0.03		0.02		0.05		0.09		0.07		0.03				0.09		0.10		0.02		0.04		0.04		0.10	
n	13	9	4	2	13	7	13	8	4	2	3	1	3	1	9	4	5	3	6	2	9	4	9	5	7	3
Mean	0.05	0.06	0.03	0.03	0.06	0.05	0.08	0.08	0.07	0.08	0.04	0.03	0.13	0.22	0.07	0.08	0.13	0.14	0.02	0.03	0.06	0.16	0.07	0.07	0.11	0.12
Median	0.03	0.05	0.02	0.03	0.05	0.05	0.07	0.09	0.07	0.08	0.03	0.03	0.08	0.22	0.06	0.07	0.14	0.14	0.02	0.03	0.03	0.05	0.07	0.07	0.08	0.08
Std	0.05	0.05	0.02	0.02	0.03	0.01	0.03	0.03	0.03	0.03	0.02	0.00	0.07	0.00	0.02	0.02	0.03	0.03	0.02	0.02	0.05	0.20	0.04	0.03	0.05	0.07

SUMMARY OF TOTAL P DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	98	51	164	85
MEAN	0.13	0.14	0.07	0.08	0.09	0.10
MEDIAN	0.06	0.07	0.06	0.06	0.05	0.06
STD	0.18	0.14	0.05	0.08	0.17	0.11

Total Suspended Solids (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards do not exist for Total Suspended Solids.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	5.35	5.13			2.28	1.58																				
062592					10.00	2.50	2.90	2.60																		
070192	3.30	4.00			24.20		6.60	1.00					9.60		5.80	11.80	7.10	11.40			3.60	13.40	2.70	5.40		
072192	1.90	0.40			4.92	2.32	1.00	6.50																		
080792	1.00	22.14			2.12	8.35	10.59	6.21							2.37	1.28							3.73	3.73	12.43	11.42
081492	28.67	2.24			3.30	2.34	6.32	5.90					21.97	20.97	2.26	3.56					4.38	0.55	3.29	5.30	21.97	20.97
090192	0.29	2.43	1.74	1.69	8.90	4.20	1.09	2.14	2.20	0.59	11.54				3.25	4.70	3.31	4.69	3.00	0.56	1.14	1.37	65.91	3.98		
100692	0.74	0.38	2.28	1.44	2.10	2.06	0.64	1.38	1.20	0.10	5.62	1.10			4.60	7.77	7.70	5.00	0.86	0.98	0.54	1.06	4.44	8.72	5.56	5.83
121092	0.26	1.86					3.48	2.55																		
012093	1.56	0.04			11.14		0.33						7.85		1.38				2.06		1.54		20.71		7.85	
012793	0.38				14.09		0.62								2.06		1.96		1.20		1.68		2.66		31.87	
020993	0.54				0.94		5.62														2.63					
031893	7.76		3.21		0.28		1.84		0.00						4.68				0.48		7.61		2.69		5.25	
040293	5.88		0.65		4.55		1.58		0.58		3.88				3.15		4.20		0.00		0.82		2.52		11.35	
n	13	9	4	2	13	7	13	8	4	2	3	1	3	1	9	5	5	3	6	2	9	4	9	5	7	3
Mean	4.43	4.29	1.97	1.57	6.83	3.34	3.28	3.54	1.00	0.35	7.01	1.10	13.14	20.97	3.28	5.82	4.85	7.03	1.27	0.77	2.66	4.10	12.07	5.43	13.75	12.74
Median	1.56	2.24	2.01	1.57	4.55	2.34	1.84	2.58	0.89	0.35	5.62	1.10	9.60	20.97	3.15	4.70	4.20	5.00	1.03	0.77	1.68	1.22	3.29	5.30	11.35	11.42
Std	7.38	6.51	0.93	0.13	6.51	2.18	3.00	2.13	0.81	0.25	3.28	0.00	6.29	0.00	1.38	3.65	2.21	3.09	1.00	0.21	2.13	5.38	19.82	1.78	9.08	6.25

SUMMARY OF TSS DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	33	98	52	164	85
MEAN	3.11	4.40	5.63	4.80	4.61	4.64
MEDIAN	2.12	2.42	3.08	2.58	2.62	2.55
STD	3.50	5.81	8.60	5.20	7.12	5.45

Turbidity (NTU) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards for Turbidity cannot be applied to this data.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	23.00	21.00			1.90	1.50																				
062592					5.80	2.70	3.50	4.30																		
070192	4.20	5.30			7.90		1.80	0.80					11.10		3.70	2.60	3.60	2.90			1.10	2.20	1.30	2.20		
072192	1.30	1.10			1.30	1.00	1.00	1.80																		
080792	1.00	0.80			1.50	2.70	3.00	1.50							1.80	1.60							2.80	2.30	7.20	9.70
081492	1.90	1.60			1.60	2.60	0.60	1.00					28.00	43.00	1.80	2.00					0.60	0.60	3.30	3.40	28.00	43.00
090192	1.90	2.60	1.50	1.40	2.10	1.20	1.00	1.10	0.80	1.10	1.60				1.00	1.90	1.70	2.00	0.70	0.50	0.70	0.60	1.80	1.20		
100692	1.10	1.10	1.10	1.00	1.30	1.30	1.30	1.60	0.60	0.40	0.80	0.80			2.00	4.10	4.80	4.80	0.40	0.60	1.00	1.00	2.20	3.40	7.90	7.50
121092	0.40	0.40					1.10	1.10																		
012093	0.50	0.50			2.80		0.70						6.00		1.00				0.60		0.60		2.60		6.00	
012793	0.70				9.90		0.60								1.70		1.60		0.70		1.60		2.40		22.00	
020993	0.60				5.30		1.30														0.30					
031893	1.40		2.10		1.70		3.20		0.80						2.00				0.30		1.20		2.80		6.90	
040293	0.40		1.40		3.40		2.20		0.80		2.60				1.40		3.00		0.70		1.10		2.40		15.80	
n	13	9	4	2	13	7	13	8	4	2	3	1	3	1	9	5	5	3	6	2	9	4	9	5	7	3
Mean	2.95	3.82	1.53	1.20	3.58	1.86	1.64	1.65	0.75	0.75	1.67	0.80	15.03	43.00	1.82	2.44	2.94	3.23	0.57	0.55	0.91	1.10	2.40	2.50	13.40	20.07
Median	1.10	1.10	1.45	1.20	2.10	1.50	1.30	1.30	0.80	0.75	1.60	0.80	11.10	43.00	1.80	2.00	3.00	2.90	0.65	0.55	1.00	0.80	2.40	2.30	7.90	9.70
Std	5.87	6.24	0.36	0.20	2.69	0.71	0.98	1.05	0.09	0.35	0.74	0.00	9.40	0.00	0.76	0.89	1.20	1.17	0.16	0.05	0.37	0.66	0.56	0.83	8.09	16.24

SUMMARY OF TURBIDITY DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	98	52	164	86
MEAN	2.51	4.53	3.30	4.01	2.98	4.21
MEDIAN	1.60	2.45	1.60	1.60	1.60	1.95
STD	2.52	5.70	5.18	8.40	4.33	7.45

Total Organic Carbon (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards do not exist for Total Organic Carbon.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	18.76	20.23			6.64	6.26																				
062592																										
070192	11.82	12.26			6.60		9.40	9.59					9.09		7.84	6.55	0.00	9.96			21.04	16.31	7.57	7.98		
072192	9.66	9.70			8.16	6.98	24.86	26.46																		
080792	8.42	7.65			6.83	6.21	13.22	14.68							7.24	6.77							12.97	7.15	5.56	5.54
081492	8.01	6.56			4.56	4.54	9.28	9.87					6.16	6.29	8.14	9.33					13.66	14.95	10.33	8.33	6.16	6.29
090192	6.82	7.88	11.42	9.17	7.60	7.12	6.36	7.70	17.18	15.53	9.98				7.67	7.36	8.64	11.34	11.77	10.57	13.66	11.65	8.48	7.46		
100692	6.16	5.56	8.53	8.60	5.10	6.03	6.98	10.44	14.50	13.55	11.03	8.60			7.16	12.60	8.58	8.80	8.25	9.14	10.39	11.87	7.00	9.33	5.11	6.88
121092	7.62	7.16					17.76	17.93																		
012093	8.89	7.42			7.56		11.36						5.71		6.31				10.49		10.87		8.23		5.71	
012793	6.85				5.79		10.38								6.09		7.05		8.95		9.25		7.07		5.19	
020993	9.27				7.88		10.62														11.53					
031893	5.67		8.53		4.97		8.72		15.98						6.60				8.82		10.92		6.62		5.18	
040293	9.88		8.66		6.32		9.33		16.62		9.08				5.66		6.68		10.16		10.03		6.75		6.39	
n	13	9	4	2	12	6	12	7	4	2	3	1	3	1	9	5	5	3	6	2	9	4	9	5	7	3
Mean	9.06	9.38	9.29	8.89	6.50	6.19	11.52	13.81	16.07	14.54	10.03	8.60	6.99	6.29	6.97	8.52	6.19	10.03	9.74	9.86	12.37	13.70	8.34	8.05	5.61	6.24
Median	8.42	7.65	8.60	8.89	6.62	6.24	9.89	10.44	16.30	14.54	9.98	8.60	6.16	6.29	7.16	7.36	7.05	9.96	9.56	9.86	10.92	13.41	7.57	7.98	5.56	6.29
Std	3.24	4.25	1.23	0.29	1.15	0.84	4.93	6.09	1.00	0.99	0.80	0.00	1.50	0.00	0.80	2.26	3.19	1.04	1.19	0.71	3.38	2.00	1.97	0.76	0.47	0.55

SUMMARY OF TOC DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	96	50	162	84
MEAN	13.52	13.41	9.00	9.72	10.84	11.21
MEDIAN	12.84	12.25	8.34	8.60	10.34	10.54
STD	4.04	4.12	3.68	4.13	4.43	4.50

Alkalinity (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Numbers obtained from grab samples taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Note: Class III Standard is that waters shall not be depressed below 20 mg/l.
Shaded data indicate that the water quality standard was exceeded.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	54	51			64	64																				
062592					78	77	27	32																		
070192	46	44			47		39	35					26		47	45	86	85			130	143	48	48		
072192	43	42			66	66	47	46																		
080792	37	38			73	71	68	64							66	66							94	69	100	102
081492	42	45			42	44	56	59					89	88	74	74					147	143	64	66	89	88
090192	33	36	96	98	42	42	38	38	79	79	48				73	72	90	92	82	83	111	110	54	52		
100692	41	40	85	80	64	63	44	46	64	66	39	40			89	90	85	86	90	94	110	112	43	44	106	108
121092	49	50					46	52																		
012093	47	47			82		46								88				146		134		65		115	
012793	41				72		58								79		104		139		132		60		106	
020993	46				80		48														157					
031893	33		107		66		37		81						79				116		144		63		110	
040293	40		108		67		58		82		64				61		88		132		145		67		107	
n	13	9	4	2	13	7	13	8	4	2	3	1	2	1	9	5	5	3	6	2	9	4	9	5	7	3
Mean	42.46	43.67	99.00	89.00	64.85	61.00	47.08	46.50	76.50	72.50	50.33	40.00	57.50	88.00	72.89	69.40	90.60	87.67	117.50	88.50	134.44	127.00	62.00	55.80	104.71	99.33
Median	42.00	44.00	101.50	89.00	66.00	64.00	46.00	46.00	80.00	72.50	48.00	40.00	57.50	88.00	74.00	72.00	88.00	86.00	124.00	88.50	134.00	127.50	63.00	52.00	106.00	102.00
Std	5.83	4.88	9.35	9.00	12.97	12.21	10.45	10.65	7.30	6.50	10.34	0.00	31.50	0.00	12.57	14.55	6.92	3.09	24.16	5.50	15.06	16.02	13.70	9.93	7.67	8.38
% Exceed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SUMMARY OF ALKALINITY DATA

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
n	66	34	97	52	163	86
MEAN	43.70	39.47	75.16	67.60	62.42	56.48
MEDIAN	26.50	23.00	67.00	65.00	54.00	49.00
STD	37.03	32.28	31.76	26.45	37.13	32.00

PERCENT EXCEEDENCE OF STANDARD
ALKALINITY

	NATURAL		CONSTRUCTED		ALL SITES	
	B	A	B	A	B	A
%	**27.3**	**26.5**	**0.0**	**0.0**	**11.0**	**10.5**

Temperature (Celsius) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Values obtained from field measurements taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF	
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A	
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	
DATES																											
061192	27.29	27.29			30.31	30.33																					
062592					29.13	29.12	28.21	28.23																			
070192	26.56	26.78			26.99	27.08	30.16	30.28					26.13		27.02	27.81	28.65	29.11			30.25	27.41	30.53	29.95			
072192	27.63	27.58			30.60	30.64	28.81	29.37																			
080792	28.75	28.40			30.98	31.05	25.16	25.16							29.96	29.69							28.69	28.59	26.54	26.47	
081492	30.82	30.41			28.44	28.50	28.02	26.97							30.33	30.27					28.27	28.42	28.67	29.51	28.24	28.22	
090192	27.99	27.62	26.60	26.54	29.13	29.07	26.34	26.26	24.99	25.01	29.45				29.51	30.06	31.84	32.82	28.26	30.57	29.49	29.73	29.05	28.91			
100692	23.51	23.60	26.06	26.89	25.25	25.16	24.85	24.86	22.66	22.62	26.35	26.54			21.85	21.85	23.71	23.67	23.91	23.93	23.59	23.98	24.06	24.72	26.41	26.34	
121092	19.19	17.76	20.07		16.51	16.65	19.02	19.27			20.07				16.50		17.61		17.75		17.18		19.04				
012093	16.40	16.31	21.62		18.88	18.95	19.78				22.99				19.02		20.41		19.33		21.23		21.87		20.45		
012793	14.15		18.00		16.53		17.12		16.51		18.66				17.26		18.67		18.77		20.25		18.81		17.03		
020993	15.10		18.23		18.00		16.52		15.91		18.81				13.50		16.10		15.17		13.22		14.76				
031893	19.58		16.95		17.47		17.03		16.27		15.40				17.77		17.27		16.70		17.80		18.43		17.69		
040293	24.90		23.55		25.19		22.13		22.12		25.77				21.82		22.80		22.87		23.15		24.44		24.62		
n	13.00	9.00	8.00	2.00	14.00	10.00	13.00	8.00	6.00	2.00	8.00	1.00	1.00		11.00	5.00	9.00	3.00	8.00	2.00	10.00	4.00	11.00	5.00	7.00	3.00	**173**
Mean	23.22	25.08	21.39	26.72	24.53	26.66	23.32	26.30	19.74	23.82	22.19	26.54	26.13		22.23	27.94	21.90	28.53	20.35	27.25	22.44	27.39	23.49	28.34	23.00	27.01	**23.88**
Median	24.90	27.29	20.85	26.72	26.12	28.79	24.85	26.62	19.32	23.82	21.53	26.54	26.13		21.82	29.69	20.41	29.11	19.05	27.25	22.19	27.92	24.06	28.91	24.62	26.47	**24.90**
Std	5.44	4.63	3.47	0.18	5.54	4.75	4.76	3.21	3.63	1.19	4.44	0.00	0.00		5.76	3.17	5.11	3.76	4.06	4.70	5.65	2.46	5.31	2.09	4.56	1.05	**5.06**

Dissolved Oxygen (mg/l) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Values obtained from field measurements taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Note: Class III Standard is that waters shall not be less than 5.0 mg/l.
Shaded data indicate that the water quality standard was exceeded.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF	
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A	
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	
DATES																											
061192	0.40	2.24			5.84	5.78																					
062592					2.78	2.86	3.61	3.81																			
070192	3.76	5.85			4.49	4.21	2.35	2.32					5.60		3.89	4.55	2.98	3.76			2.58	0.60	1.05	2.38			
072192	1.02	2.75			1.52	1.50	0.74	1.75																			
080792	8.80	7.34			4.41	4.56	0.25	0.26							2.82	2.97							1.68	2.75	4.55	6.21	
081492	6.05	6.23			4.52	4.75	1.56	0.64							4.37	4.22					7.36	7.06	2.73	3.75	6.17	6.51	
090192	3.34	4.23	2.69	3.71	6.06	6.69	0.28	0.33	0.10	0.36	3.17				6.60	7.56	3.22	5.01	2.48	7.50	4.85	4.93	2.47	3.01			
100692	1.90	2.21	7.48	10.37	4.44	4.43	0.58	0.52	0.90	1.78	6.76	6.32			4.85	4.74	3.56	3.93	2.11	3.94	3.22	3.85	1.70	3.45	8.53	8.31	
121092	7.50	6.25	10.20		3.22	3.18	1.62	2.10			5.78				4.06		6.97		4.62		5.72		4.60				
012093	2.74	4.03	8.43		6.75	6.59	1.23				7.68				7.83		6.15		6.47		8.06		3.78		9.44		
012793	6.21		7.20		6.83		1.44		2.23		6.10				9.37		4.66		4.94		7.72		4.73		8.71		
020993	3.91		10.50		7.36		3.61		2.34		8.92				6.04		8.15		5.10		3.23		3.33				
031893	9.71		6.87		6.56		2.07		1.82		7.64				6.30		7.50		7.57		8.37		5.66		7.75		
040293	7.36		7.21		8.37		0.76		2.22		10.37				1.96		4.63		2.49		7.30		2.92		7.70		
n	13.00	9.00	8.00	2.00	14.00	10.00	13.00	8.00	6.00	2.00	8.00	1.00	1.00		11.00	5.00	9.00	3.00	8.00	2.00	10.00	4.00	11.00	5.00	7.00	3.00	**173**
Mean	4.82	4.57	7.57	7.04	5.23	4.46	1.55	1.47	1.60	1.07	7.05	6.32	5.60		5.28	4.81	5.31	4.23	4.47	5.72	5.84	4.11	3.15	3.07	7.55	7.01	**4.61**
Median	3.91	4.23	7.35	7.04	5.18	4.50	1.44	1.20	2.02	1.07	7.20	6.32	5.60		4.85	4.55	4.66	3.93	4.78	5.72	6.51	4.39	2.92	3.01	7.75	6.51	**4.43**
Std	2.88	1.81	2.26	3.33	1.86	1.56	1.08	1.17	0.83	0.71	2.03	0.00	0.00		2.09	1.51	1.83	0.55	1.86	1.78	2.11	2.33	1.37	0.49	1.55	0.93	**2.56**
%Exceed	53.8	55.6	12.5	50.0	50.0	70.0	100.0	100.0	100.0	100.0	12.5	0.0	0.0		54.5	80.0	55.6	66.7	62.5	50.0	40.0	75.0	90.9	100.0	14.3	0.0	**60.1**

pH (S.U.) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Values obtained from field measurements taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.

Class III State Standards for pH cannot be applied to this data.

CONSTRUCTION

LOC OS # SIDE	WBND OS01B B	WBND OS01A A	WPAS OS05B B	WPAS OS05A A	GTDS OS08B B	GTDS OS08A A	FSQR OS09B B	FSQR OS09A A	KNMA OS10B B	KNMA OS10A A	MBRV OS11B B	MBRV OS11A A	COPP OS14B B	COPP OS14A A	LHBF OS20B B	LHBF OS20A A	LHBB OS21B B	LHBB OS21A A	CRLS OS22B B	CRLS OS22A A	CARL OS23B B	CARL OS23A A	TRCO OS24B B	TRCO OS24A A	TOFF OS25B B	TOFF OS25A A	
DATES																											
061192	6.88	6.88			7.18	7.36																					
062592					7.05	7.07	6.39	6.41																			
070192	6.84	6.92			7.23	7.09	6.32	6.30					6.80		7.11	7.09	7.24	7.45			7.03	6.89					
072192	6.52	6.58			6.90	6.95	6.28	6.32																			
080792	7.04	6.84			6.96	7.23	6.38	6.47							7.04	7.06							6.89	7.09	7.74	7.84	
081492	6.77	6.83			7.14	6.97	6.32	6.13							7.06	7.05					7.15	7.22	6.75	6.68	7.80	7.82	
090192	6.57	6.62	7.15	7.15	7.07	7.14	6.04	6.01	6.47	6.49	6.77				7.65	7.52	7.06	7.24	6.94	7.56	7.24	7.20	6.43	6.52			
100692	6.63	6.60	7.66	8.51	7.06	7.18	6.21	6.12	6.58	6.62	7.24	7.21			7.33	7.32	7.15	7.19	7.13	7.18	7.17	7.23	6.48	6.59	8.17	8.15	
121092	6.84	6.68	7.33		7.28	7.16	6.15	6.25			6.87				7.09		7.25		7.22		7.11		6.70				
012093	6.53	6.48	7.36		7.52	7.38	6.08				7.26				7.43		7.15		7.34		7.34		6.69		8.05		
012793	6.78		7.39		7.43		5.98		6.46		6.83				7.86		7.19		7.38		7.67		6.76		7.89		
020993	6.55		7.66		7.56		6.18		6.56		7.31				7.08		7.42		7.22		6.98		6.59				
031893	7.24		7.33		7.18		6.03		6.54		7.96				7.10		7.22		7.50		7.43		6.71		7.60		
040293	6.79		7.39		7.47		6.05		6.55		8.56				6.73		7.07		7.12		7.45		6.70		7.81		
n	13.00	9.00	8.00	2.00	14.00	10.00	13.00	8.00	6.00	2.00	8.00	1.00	1.00		11.00	5.00	9.00	3.00	8.00	2.00	10.00	4.00	10.00	4.00	7.00	3.00	**171**
Mean	6.77	6.71	7.41	7.83	7.22	7.15	6.19	6.25	6.53	6.56	7.35	7.21	6.80		7.23	7.21	7.19	7.29	7.23	7.37	7.26	7.14	6.67	6.72	7.87	7.94	**7.02**
Median	6.78	6.68	7.38	7.83	7.18	7.15	6.18	6.28	6.55	6.56	7.25	7.21	6.80		7.10	7.09	7.19	7.24	7.22	7.37	7.21	7.21	6.70	6.64	7.81	7.84	**7.07**
Std	0.20	0.15	0.16	0.68	0.20	0.14	0.14	0.15	0.05	0.06	0.58	0.00	0.00		0.30	0.18	0.10	0.11	0.16	0.19	0.20	0.14	0.13	0.22	0.18	0.15	**0.49**

Conductivity (mmhos/cm) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Values obtained from field measurements taken within 3 days of an event.
Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.
Class III State Standards for Conductivity cannot be applied to this data.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF	
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A	
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	
DATES																											
061192	0.16	0.15			0.25	0.25																					
062592					0.28	0.28	0.09	0.09																			
070192	0.13	0.12			0.18	0.18	0.11	0.11					0.26		0.19	0.17	0.28	0.29			0.72		0.10	0.11			
072192	0.10	0.11			0.23	0.23	0.12	0.13																			
080792	0.09	0.10			0.26	0.25	0.18	0.18							0.32	0.32							0.22	0.23	0.35	0.35	
081492	0.12	0.12			0.16	0.16	0.19	0.16							0.31	0.31					0.73	0.73	0.16	0.16	0.29	0.29	
090192	0.09	0.10	0.24	0.24	0.16	0.16	0.11	0.11	0.28	0.27	0.12				0.27	0.27	0.29	0.30	0.38	0.39	0.61	0.61	0.12	0.12			
100692	0.10	0.10	0.23	0.20	0.22	0.22	0.12	0.12	0.22	0.22	0.10	0.10			0.34	0.34	0.29	0.29	0.36	0.36	1.18	1.21	0.10	0.11	0.41	0.41	
121092	0.15	0.15	0.26		0.34	0.33	0.16	0.17			0.12				0.45		0.38		0.56		0.74		0.17				
012093	0.15	0.15	0.27		0.30	0.31	0.16				0.12				0.36		0.39		0.60		0.68		0.15		0.50		
012793	0.13		0.27		0.27		0.13		1.18		0.12				0.34		0.39		0.56		0.66		0.14		0.46		
020993	0.14		0.27		0.29		0.15		0.45		0.12				0.80		0.39		0.55		0.71		0.16				
031893	0.10		0.26		0.23		0.11		0.30		0.14				0.29		0.34		0.45		0.78		0.15		0.47		
040293	0.13		0.27		0.26		0.15		0.29		0.15				0.25		0.31		0.53		0.71		0.18		0.49		
n	13.00	9.00	8.00	2.00	14.00	10.00	13.00	8.00	6.00	2.00	8.00	1.00	1.00		11.00	5.00	9.00	3.00	8.00	2.00	10.00	3.00	11.00	5.00	7.00	3.00	**172**
Mean	0.12	0.12	0.26	0.22	0.25	0.24	0.14	0.13	0.45	0.24	0.12	0.10	0.26		0.36	0.28	0.34	0.29	0.50	0.38	0.75	0.85	0.15	0.14	0.42	0.35	**0.28**
Median	0.13	0.12	0.27	0.22	0.25	0.24	0.13	0.12	0.30	0.24	0.12	0.10	0.26		0.32	0.31	0.34	0.29	0.54	0.38	0.71	0.73	0.15	0.12	0.46	0.35	**0.24**
Std	0.02	0.02	0.02	0.02	0.05	0.06	0.03	0.03	0.33	0.03	0.01	0.00	0.00		0.15	0.06	0.05	0.01	0.08	0.01	0.15	0.26	0.03	0.05	0.07	0.05	**0.20**

Depth (cm) measured at the outflow of natural (native wetlands) and constructed (permitted wet detention ponds) systems used for stormwater treatment from June 1992 to April 1993. Values obtained from field measurements taken within 3 days of an event. Abbreviations: LOC = site location, OS # = sample identification number, B = before the weir and, A = after the weir.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF	
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A	
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	
DATES																											
061192	43.18				43.18																						
062592					43.18		30.48																				
070192	91.44				35.56		24.77						31.75		22.86		33.02				14.61		25.40				
072192	38.10				34.29		11.43																				
080792	46.99				36.83		21.59		16.51						18.42		29.21		20.32		8.89		15.24		39.37		
081492	66.04				38.10		26.67								20.32		27.94				13.97		24.13		35.56		
090192	68.58		30.48		53.34		34.29		33.02		23.50				22.23		25.40		78.74		26.67		22.86				
100692	60.96		30.48		45.72		32.39		26.67		27.94				22.86		27.94		73.66		26.67		27.94		35.56		
121092	39.37		24.13		35.56		23.50				10.16				17.78		22.56		48.26		16.51		15.88				
012093	38.10		27.94		41.91		25.40				21.59				18.42		24.13		46.99		17.78		21.59		38.10		
012793	50.80		25.40		58.42		31.75		15.24		26.67				21.59		27.94		50.80		29.21		26.67		46.99		
020993	31.75		21.59		30.48		24.13		24.13		22.86				16.51		25.40		43.18		16.51		27.94				
031893	41.91		30.48		38.74		27.31		29.21		50.80				24.13		27.94		52.07		17.78		26.04		42.55		
040293	46.99		30.48		53.34		27.94		33.02		25.40				26.67		34.29		48.26		24.13		24.13		49.53		
n	13		8		14		13		7		8		1		11		11		9		11		11		7		**124**
Mean	51.09		27.62		42.05		26.28		25.40		26.11		31.75		21.07		27.80		51.36		19.34		23.44		41.09		**32.19**
Median	46.99		29.21		40.32		26.67		26.67		24.45		31.75		21.59		27.94		48.26		17.78		24.13		39.37		**27.94**
Std	15.89		3.28		7.89		5.62		6.72		10.64		0.00		2.94		3.36		16.04		6.10		4.16		5.09		**14.07**

Hardness (mg/l) measured at the outflow of natural and constructed systems used for stormwater treatment from June 1992 to April 1993.
Numbers obtained from grab samples taken (within 3 days of an event) in the treatment system before the weir and on the downstream side of the weir.
Abbreviations: LOC = site location, OS # = sample identification number.

CONSTRUCTED

LOC	WBND	WBND	WPAS	WPAS	GTDS	GTDS	FSQR	FSQR	KNMA	KNMA	MBRV	MBRV	COPP	COPP	LHBF	LHBF	LHBB	LHBB	CRLS	CRLS	CARL	CARL	TRCO	TRCO	TOFF	TOFF
OS #	OS01B	OS01A	OS05B	OS05A	OS08B	OS08A	OS09B	OS09A	OS10B	OS10A	OS11B	OS11A	OS14B	OS14A	OS20B	OS20A	OS21B	OS21A	OS22B	OS22A	OS23B	OS23A	OS24B	OS24A	OS25B	OS25A
SIDE	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
DATES																										
061192	54.1	54.1			98.1	98.1																				
062592					120.0	120.0	28.0	30.0																		
070192	127.0	72.5			71.0		94.0	81.0					44.0		52.0	49.0	86.0	83.0			160.0		344.0	146.0		
072192	46.6	42.6			99.0	99.4	54.9	51.6																		
080792	306.0	32.0			105.0	103.0	61.0	66.0							73.0	71.0							87.0	76.0	136.0	138.0
081492	40.4	40.0			69.0	69.0	51.6	54.1							77.4	77.4					163.3	163.7	56.6	59.1	121.4	122.2
090192	39.1	38.0	93.6	94.0	59.0	59.0	37.0	37.0	79.0	79.0	45.0				75.0	74.0	88.1	88.1	83.1	83.1	133.0	133.0	49.1	46.6		
100692	44.5	44.1	83.6	83.6	91.0	91.0	45.3	49.5	67.3	67.8	38.7	38.7			91.5	91.0	83.1	85.6	88.6	91.5	173.4	180.0	41.2	41.2	166.6	167.4
121092	287.9	60.7					38.2	68.9																		
012093	75.7	75.7			182.9		83.9						298.2		136.3				218.6		240.9		90.6		298.2	
012793	70.7				162.9		76.5								133.8		156.3		204.5		229.3		83.1		262.5	
020993	83.1				156.4		74.8														233.4					
031893	37.5		120.6		105.6		50.7		99.7						93.1				137.2		209.4		74.0		212.7	
040293	44.9		117.7		106.0		45.7		86.5		64.9				67.0		91.5		154.2		189.5		69.9		209.0	
n	13	9	4	2	13	7	13	8	4	2	3	1	2	0	9	5	5	3	6	2	9	3	9	5	7	3
Mean	96.7	51.1	103.9	88.8	109.7	91.4	57.0	54.8	83.1	73.4	49.5	38.7	171.1	ERR	88.8	72.5	101.0	85.6	147.7	87.3	192.5	158.9	99.5	73.8	200.9	142.5
Median	54.1	44.1	105.7	88.8	105.0	98.1	51.6	52.9	82.8	73.4	45.0	38.7	171.1	0.0	77.4	74.0	88.1	85.6	145.7	87.3	189.5	163.7	74.0	59.1	209.0	138.0
Std	88.7	14.7	15.7	5.2	36.0	19.3	19.1	15.7	11.8	5.6	11.2	0.0	127.1	ERR	27.3	13.6	27.8	2.1	51.8	4.2	35.7	19.5	87.9	38.0	60.0	18.7

APPENDIX C

Statistical and Correlation Analysis

Separated By Data Set.

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OPTIONS PS=80 LS=100;

DATA OSBDATA;

INFILE 'A:\OSSASB' LRECL=500 MISSOVER;

INPUT DATE LOC$ AB$ NC$ CD CU FE PB MN NI ZN NH3 UNNH3 CR NOX OP
TP TSS TURB TOC ALKAL TEMP DISSO PH COND;

PROC PRINT;
TITLE 'OUTFALL SURVEY';
TITLE2 'B SIDE DATA';


RUN;

PROC CORR SPEARMAN RANK BEST=10;
TITLE3 'NONPARAMETRIC STATS';
VAR CD CU FE PB MN NI ZN NH3 UNNH3 CR NOX OP TP TSS
    TURB TOC ALKAL TEMP DISSO PH COND;

RUN;
```

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3
1	61192	WBND	B	C	0.10	4.0	70.0	0.0	70	0.0	27.0	0.02	0.12
2	62592	WBND	B	C	.	.	.	.	.	.	.	.	.
3	70192	WBND	B	C	0.10	4.0	12.0	2.6	40	1.1	30.0	0.08	0.42
4	72192	WBND	B	C	0.30	6.0	60.0	1.6	20	0.0	0.0	0.01	0.03
5	80792	WBND	B	C	0.00	20.0	60.0	0.8	0	12.8	20.0	0.02	0.20
6	81492	WBND	B	C	0.30	5.0	60.0	2.2	21	0.0	27.0	0.01	0.04
7	90192	WBND	B	C	0.00	1.2	65.0	0.8	26	3.5	12.3	0.01	0.03
8	100692	WBND	B	C	0.16	3.0	82.0	0.0	17	0.0	27.0	0.01	0.03
9	121092	WBND	B	C	0.00	1.3	56.0	0.3	8	.	31.0	0.01	0.03
10	12093	WBND	B	C	0.10	11.1	16.8	0.7	5	.	36.0	0.03	0.04
11	12793	WBND	B	C	.	.	.	.	.	.	.	.	.
12	20993	WBND	B	C	.	.	.	.	.	.	.	.	.
13	31893	WBND	B	C	.	.	.	.	.	.	.	.	.
14	40293	WBND	B	C	.	.	.	.	.	.	.	.	.
15	61192	QRIG	B	N	.	.	.	.	.	.	.	.	.
16	62592	QRIG	B	N	.	.	.	.	.	.	.	.	.
17	70192	QRIG	B	N	.	.	.	.	.	.	.	.	.
18	72192	QRIG	B	N	.	.	.	.	.	.	.	.	.
19	80792	QRIG	B	N	.	.	.	.	.	.	.	.	.
20	81492	QRIG	B	N	0.30	1.0	18.0	0.7	62	0.0	28.0	0.02	0.07
21	90192	QRIG	B	N	0.00	0.0	21.0	0.1	39	1.2	16.9	0.01	0.01
22	100692	QRIG	B	N	0.22	3.5	15.2	0.0	17	0.0	55.0	0.01	0.01
23	121092	QRIG	B	N	0.10	2.4	94.0	0.3	8	.	24.0	0.03	0.05
24	12093	QRIG	B	N	0.10	3.8	96.0	0.6	3	.	11.0	0.02	0.01
25	12793	QRIG	B	N	.	.	.	.	.	.	.	.	.
26	20993	QRIG	B	N	.	.	.	.	.	.	.	.	.
27	31893	QRIG	B	N	.	.	.	.	.	.	.	.	.
28	40293	QRIG	B	N	.	.	.	.	.	.	.	.	.
29	61192	WPAS	B	C	.	.	.	.	.	.	.	.	.
30	62592	WPAS	B	C	.	.	.	.	.	.	.	.	.
31	70192	WPAS	B	C	.	.	.	.	.	.	.	.	.
32	72192	WPAS	B	C	.	.	.	.	.	.	.	.	.
33	80792	WPAS	B	C	.	.	.	.	.	.	.	.	.
34	81492	WPAS	B	C	.	.	.	.	.	.	.	.	.
35	90192	WPAS	B	C	1.54	5.9	42.0	1.0	6	3.2	22.0	0.00	0.00
36	100692	WPAS	B	C	0.12	0.8	27.0	0.0	3	0.0	23.0	0.00	0.00

OBS	CR	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
1	1.0	0.00	0.01	0.20	5.35	23.0	18.76	54	27.29	0.40	6.88	0.16
2	.	.	.	.	.	.	.	.	.	.	.	.
3	1.9	0.01	0.01	0.07	3.30	4.2	11.82	46	26.56	3.76	6.84	0.13
4	0.0	0.00	0.01	0.06	1.90	1.3	9.66	43	27.63	1.02	6.52	0.10
5	0.1	0.00	0.00	0.03	1.00	1.0	8.42	37	28.75	8.80	7.04	0.09
6	0.1	0.00	0.01	0.03	28.67	1.9	8.01	42	30.82	6.05	6.77	0.12
7	0.0	0.01	0.01	0.09	0.29	1.9	6.82	33	27.99	3.34	6.57	0.09
8	1.7	0.01	0.01	0.06	0.74	1.1	6.16	41	23.51	1.90	6.63	0.10
9	0.0	0.01	0.01	0.03	0.26	0.4	7.62	49	19.19	7.50	6.84	0.15
10	1.8	0.01	0.01	0.03	1.56	0.5	8.89	47	16.40	2.74	6.53	0.15
11	.	.	.	.	.	.	.	.	.	.	.	.
12	.	.	.	.	.	.	.	.	.	.	.	.
13	.	.	.	.	.	.	.	.	.	.	.	.
14	.	.	.	.	.	.	.	.	.	.	.	.
15	.	.	.	.	.	.	.	.	.	.	.	.
16	.	.	.	.	.	.	.	.	.	.	.	.
17	.	.	.	.	.	.	.	.	.	.	.	.
18	.	.	.	.	.	.	.	.	.	.	.	.
19	.	.	.	.	.	.	.	.	.	.	.	.
20	0.5	0.00	0.01	0.10	5.18	3.2	14.51	42	27.85	2.80	6.59	0.15
21	0.0	0.01	0.01	0.09	3.71	1.8	15.01	21	26.54	1.82	6.03	0.11
22	1.6	0.02	0.04	0.14	3.26	2.5	11.72	17	25.85	5.56	6.27	0.10
23	0.0	0.02	0.01	0.03	1.44	0.8	12.28	24	17.92	6.39	6.57	0.13
24	0.6	0.01	0.01	0.03	1.88	1.2	13.14	20	17.77	5.98	6.08	0.12
25	.	.	.	.	.	.	.	.	.	.	.	.
26	.	.	.	.	.	.	.	.	.	.	.	.
27	.	.	.	.	.	.	.	.	.	.	.	.
28	.	.	.	.	.	.	.	.	.	.	.	.
29	.	.	.	.	.	.	.	.	.	.	.	.
30	.	.	.	.	.	.	.	.	.	.	.	.
31	.	.	.	.	.	.	.	.	.	.	.	.
32	.	.	.	.	.	.	.	.	.	.	.	.
33	.	.	.	.	.	.	.	.	.	.	.	.
34	.	.	.	.	.	.	.	.	.	.	.	.
35	1.3	0.00	0.01	0.06	1.74	1.5	11.42	96	26.60	2.69	7.15	0.24
36	0.4	0.01	0.00	0.01	2.28	1.1	8.53	85	26.06	7.48	7.66	0.23

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3
37	121092	WPAS	B	C	.	.	.	.	.	.	.	.	.
38	12093	WPAS	B	C	.	.	.	.	.	.	.	.	.
39	12793	WPAS	B	C	.	.	.	.	.	.	.	.	.
40	20993	WPAS	B	C	.	.	.	.	.	.	.	.	.
41	31893	WPAS	B	C	.	.	.	.	.	.	.	.	.
42	40293	WPAS	B	C	.	.	.	.	.	.	.	.	.
43	61192	CRNR	B	N	.	.	.	.	.	.	.	.	.
44	62592	CRNR	B	N	.	.	.	.	.	.	.	.	.
45	70192	CRNR	B	N	.	4.0	14.0	1.3	0	0.3	14.0	0.02	.
46	72192	CRNR	B	N	.	.	.	.	.	.	.	.	.
47	80792	CRNR	B	N	0.00	15.0	34.0	2.5	110	6.4	20.0	0.02	0.17
48	81492	CRNR	B	N	0.40	9.6	26.0	2.4	65	18.0	19.6	0.01	0.05
49	90192	CRNR	B	N	.	2.6	33.7	2.7	66	1.2	16.0	0.04	0.12
50	100692	CRNR	B	N	0.01	2.9	93.0	0.7	0	1.5	90.0	0.01	0.05
51	121092	CRNR	B	N	.	.	.	.	.	.	.	.	.
52	12093	CRNR	B	N	.	.	.	.	.	.	.	.	.
53	12793	CRNR	B	N	.	.	.	.	.	.	.	.	.
54	20993	CRNR	B	N	.	.	.	.	.	.	.	.	.
55	31893	CRNR	B	N	.	.	.	.	.	.	.	.	.
56	40293	CRNR	B	N	.	.	.	.	.	.	.	.	.
57	61192	HRV1	B	N	0.00	7.0	40.0	3.6	40	0.0	17.0	0.01	0.04
58	62592	HRV1	B	N	.	.	.	.	.	.	.	.	.
59	70192	HRV1	B	N	.	.	.	.	.	.	.	.	.
60	72192	HRV1	B	N	.	.	.	.	.	.	.	.	.
61	80792	HRV1	B	N	.	.	.	.	.	.	.	.	.
62	81492	HRV1	B	N	0.10	7.5	45.0	1.6	55	0.3	16.5	0.01	0.02
63	90192	HRV1	B	N	0.00	3.5	29.0	0.9	0	2.6	11.9	0.01	0.02
64	100692	HRV1	B	N	.	.	.	.	.	.	.	.	.
65	121092	HRV1	B	N	.	.	.	.	.	.	.	.	.
66	12093	HRV1	B	N	.	.	.	.	.	.	.	.	.
67	12793	HRV1	B	N	.	.	.	.	.	.	.	.	.
68	20993	HRV1	B	N	.	.	.	.	.	.	.	.	.
69	31893	HRV1	B	N	.	.	.	.	.	.	.	.	.
70	40293	HRV1	B	N	.	.	.	.	.	.	.	.	.
71	61192	GTDS	B	C	0.20	8.0	40.0	3.0	30	0.0	22.0	0.04	0.60
72	62592	GTDS	B	C	0.00	4.0	10.0	0.2	30	1.0	23.0	0.02	0.20

OBS	CR	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
37	.	.	.	.	.	.	.	.	.	.	.	.
38	.	.	.	.	.	.	.	.	.	.	.	.
39	.	.	.	.	.	.	.	.	.	.	.	.
40	.	.	.	.	.	.	.	.	.	.	.	.
41	.	.	.	.	.	.	.	.	.	.	.	.
42	.	.	.	.	.	.	.	.	.	.	.	.
43	.	.	.	.	.	.	.	.	.	.	.	.
44	.	.	.	.	.	.	.	.	.	.	.	.
45	1.1	0.00	0.01	0.02	2.60	2.4	12.22	74	.	.	.	.
46	.	.	.	.	.	.	.	.	.	.	.	.
47	0.0	0.00	0.01	0.06	4.24	3.2	11.88	139	27.00	0.54	7.04	0.87
48	8.5	0.00	0.01	0.05	6.41	3.3	12.92	127	28.52	0.05	6.75	0.64
49	3.0	0.01	0.08	0.21	22.27	14.5	14.16	92	25.89	0.04	6.61	0.39
50	1.9	0.01	0.01	0.10	7.59	4.1	11.09	85	24.44	0.07	6.89	0.34
51	.	.	.	.	.	.	.	.	.	.	.	.
52	.	.	.	.	.	.	.	.	.	.	.	.
53	.	.	.	.	.	.	.	.	.	.	.	.
54	.	.	.	.	.	.	.	.	.	.	.	.
55	.	.	.	.	.	.	.	.	.	.	.	.
56	.	.	.	.	.	.	.	.	.	.	.	.
57	1.0	0.01	0.01	0.06	0.84	1.8	8.93	52	25.60	1.13	6.77	0.13
58	.	.	.	.	.	.	.	.	.	.	.	.
59	.	.	.	.	.	.	.	.	.	.	.	.
60	.	.	.	.	.	.	.	.	.	.	.	.
61	.	.	.	.	.	.	.	.	.	.	.	.
62	1.9	0.00	0.01	0.05	0.71	0.8	5.66	47	25.50	1.00	6.52	0.13
63	0.0	0.01	0.01	0.04	0.76	0.6	9.24	39	25.87	3.00	6.47	0.11
64	.	.	.	.	.	.	.	.	.	.	.	.
65	.	.	.	.	.	.	.	.	.	.	.	.
66	.	.	.	.	.	.	.	.	.	.	.	.
67	.	.	.	.	.	.	.	.	.	.	.	.
68	.	.	.	.	.	.	.	.	.	.	.	.
69	.	.	.	.	.	.	.	.	.	.	.	.
70	.	.	.	.	.	.	.	.	.	.	.	.
71	0.0	0.01	0.02	0.05	2.28	1.9	6.64	64	30.31	5.84	7.18	0.25
72	1.0	0.05	0.02	0.07	10.00	5.8	.	78	29.13	2.78	7.05	0.28

B SIDE DATA

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3
73	70192	GTDS	B	C	.	.	.	.	.	.	.	.	.
74	72192	GTDS	B	C	0.30	8.0	30.0	1.4	20	2.0	.	0.06	0.48
75	80792	GTDS	B	C	0.60	110.0	20.0	15.4	0	29.9	20.0	0.04	0.38
76	81492	GTDS	B	C	0.10	3.1	47.0	1.4	53	1.3	37.1	0.02	0.24
77	90192	GTDS	B	C	0.39	4.4	14.4	1.0	39	3.5	53.0	0.06	0.64
78	100692	GTDS	B	C	0.18	3.2	51.0	0.0	9	0.0	34.0	0.01	0.08
79	121092	GTDS	B	C	.	.	.	.	.	.	.	.	.
80	12093	GTDS	B	C	.	.	.	.	.	.	.	.	.
81	12793	GTDS	B	C	.	.	.	.	.	.	.	.	.
82	20993	GTDS	B	C	.	.	.	.	.	.	.	.	.
83	31893	GTDS	B	C	.	.	.	.	.	.	.	.	.
84	40293	GTDS	B	C	.	.	.	.	.	.	.	.	.
85	61192	FSQR	B	C	.	.	.	.	.	.	.	.	.
86	62592	FSQR	B	C	0.00	2.0	90.0	0.3	30	0.0	17.0	0.01	0.02
87	70192	FSQR	B	C	0.10	6.0	34.0	2.2	30	0.0	20.0	0.02	0.04
88	72192	FSQR	B	C	0.20	3.0	18.0	1.3	20	0.0	80.0	0.02	0.03
89	80792	FSQR	B	C	0.00	14.0	72.0	1.4	60	4.8	30.0	0.02	0.03
90	81492	FSQR	B	C	0.40	1.0	29.0	1.2	27	0.2	13.0	0.01	0.02
91	90192	FSQR	B	C	0.01	3.6	17.4	1.6	28	0.0	27.0	0.00	0.00
92	100692	FSQR	B	C	0.17	1.0	15.4	0.0	21	0.0	45.0	.	.
93	121092	FSQR	B	C	0.10	3.1	18.5	1.0	15	.	26.0	0.02	0.01
94	12093	FSQR	B	C	.	.	.	.	.	.	.	0.02	0.01
95	12793	FSQR	B	C	.	.	.	.	.	.	.	.	.
96	20993	FSQR	B	C	.	.	.	.	.	.	.	.	.
97	31893	FSQR	B	C	.	.	.	.	.	.	.	.	.
98	40293	FSQR	B	C	.	.	.	.	.	.	.	.	.
99	61192	KNMA	B	C	.	.	.	.	.	.	.	.	.
100	62592	KNMA	B	C	.	.	.	.	.	.	.	.	.
101	70192	KNMA	B	C	.	.	.	.	.	.	.	.	.
102	72192	KNMA	B	C	.	.	.	.	.	.	.	.	.
103	80792	KNMA	B	C	.	.	.	.	.	.	.	.	.
104	81492	KNMA	B	C	.	.	.	.	.	.	.	.	.
105	90192	KNMA	B	C	0.02	2.9	87.0	3.2	19	1.8	12.0	0.06	0.12
106	100692	KNMA	B	C	0.03	3.0	58.0	1.9	4	0.0	12.0	0.01	0.02
107	121092	KNMA	B	C	.	.	.	.	.	.	.	.	.
108	12093	KNMA	B	C	.	.	.	.	.	.	.	.	.

OBS	CR	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
73	.	.	.	.	.	.	.	.	26.99	4.49	7.23	0.18
74	0.0	0.01	0.02	0.04	4.92	1.3	8.16	66	30.60	1.52	6.90	0.23
75	1.2	0.00	0.00	0.00	2.12	1.5	6.83	73	30.98	4.41	6.96	0.26
76	0.7	0.00	0.01	0.06	3.30	1.6	4.56	42	28.44	4.52	7.14	0.16
77	2.2	0.01	0.03	0.09	8.90	2.1	7.60	42	29.13	6.06	7.07	0.16
78	1.0	0.03	0.01	0.03	2.10	1.3	5.10	64	25.25	4.44	7.06	0.22
79	.	.	.	.	.	.	.	.	16.51	3.22	7.28	0.34
80	.	.	.	.	.	.	.	.	18.88	6.75	7.52	0.30
81	.	.	.	.	.	.	.	.	.	.	.	.
82	.	.	.	.	.	.	.	.	.	.	.	.
83	.	.	.	.	.	.	.	.	.	.	.	.
84	.	.	.	.	.	.	.	.	.	.	.	.
85	.	.	.	.	.	.	.	.	.	.	.	.
86	0.0	0.01	0.03	0.04	2.90	3.5	.	27	28.21	3.61	6.39	0.09
87	2.0	0.00	0.04	0.05	6.60	1.8	9.40	39	30.16	2.35	6.32	0.11
88	0.0	0.00	0.02	0.06	1.00	1.0	24.86	47	28.81	0.74	6.28	0.12
89	0.3	0.00	0.05	0.13	10.59	3.0	13.22	68	25.16	0.25	6.38	0.18
90	0.6	0.00	0.02	0.07	6.32	0.6	9.28	56	28.02	1.56	6.32	0.19
91	1.2	0.00	0.02	0.09	1.09	1.0	6.36	38	26.34	0.28	6.04	0.11
92	1.2	0.02	0.04	0.10	0.64	1.3	6.98	44	24.85	0.58	6.21	0.12
93	0.0	0.02	0.04	0.09	3.48	1.1	17.76	46	19.02	1.62	6.15	0.16
94	.	.	.	.	.	.	.	.	.	.	.	.
95	.	.	.	.	.	.	.	.	.	.	.	.
96	.	.	.	.	.	.	.	.	.	.	.	.
97	.	.	.	.	.	.	.	.	.	.	.	.
98	.	.	.	.	.	.	.	.	.	.	.	.
99	.	.	.	.	.	.	.	.	.	.	.	.
100	.	.	.	.	.	.	.	.	.	.	.	.
101	.	.	.	.	.	.	.	.	.	.	.	.
102	.	.	.	.	.	.	.	.	.	.	.	.
103	.	.	.	.	.	.	.	.	.	.	.	.
104	.	.	.	.	.	.	.	.	.	.	.	.
105	0.0	0.00	0.03	0.12	2.20	0.8	17.18	79	24.99	0.10	6.47	0.28
106	0.7	0.01	0.00	0.04	1.20	0.6	14.50	64	22.66	0.90	6.58	0.22
107	.	.	.	.	.	.	.	.	.	.	.	.
108	.	.	.	.	.	.	.	.	.	.	.	.

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
109	12793	KNMA	B	C	.	.	.	.	.	.	.	.	.	.
110	20993	KNMA	B	C	.	.	.	.	.	.	.	.	.	.
111	31893	KNMA	B	C	.	.	.	.	.	.	.	.	.	.
112	40293	KNMA	B	C	.	.	.	.	.	.	.	0.01	0.02	.
113	61192	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
114	62592	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
115	70192	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
116	72192	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
117	80792	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
118	81492	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
119	90192	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
120	100692	MBRV	B	C	0.00	1.0	50.0	1.5	1	0.0	17.0	0.00	0.00	1.3
121	121092	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
122	12093	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
123	12793	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
124	20993	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
125	31893	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
126	40293	MBRV	B	C	.	.	.	.	.	.	.	.	.	.
127	61192	SUSN	B	N	.	.	.	.	.	.	.	.	.	.
128	62592	SUSN	B	N	.	.	.	.	.	.	.	.	.	.
129	70192	SUSN	B	N	.	.	.	.	.	.	.	.	.	.
130	72192	SUSN	B	N	0.40	7.0	10.0	4.0	40	1.5	60.0	0.12	.	0.0
131	80792	SUSN	B	N	0.00	11.0	19.0	1.8	30	3.6	50.0	0.06	.	1.5
132	81492	SUSN	B	N	0.50	3.0	20.0	2.8	30	0.4	96.0	0.06	.	0.1
133	90192	SUSN	B	N	0.18	4.6	23.9	3.4	41	1.7	45.0	0.07	.	0.8
134	100692	SUSN	B	N	0.32	0.5	63.4	1.3	45	2.0	26.0	0.06	.	1.4
135	121092	SUSN	B	N	.	.	.	.	.	.	.	.	.	.
136	12093	SUSN	B	N	.	.	.	.	.	.	.	.	.	.
137	12793	SUSN	B	N	.	.	.	.	.	.	.	.	.	.
138	20993	SUSN	B	N	.	.	.	.	.	.	.	.	.	.
139	31893	SUSN	B	N	.	.	.	.	.	.	.	.	.	.
140	40293	SUSN	B	N	.	.	.	.	.	.	.	.	.	.
141	61192	COPP	B	C	.	.	.	.	.	.	.	.	.	.
142	62592	COPP	B	C	.	.	.	.	.	.	.	.	.	.
143	70192	COPP	B	C	.	.	.	.	.	.	.	.	.	.
144	72192	COPP	B	C	.	.	.	.	.	.	.	.	.	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
109	.	.	.	.	.	.	.	.	.	.	.
110	.	.	.	.	.	.	.	.	.	.	.
111	.	.	.	.	.	.	.	.	.	.	.
112	.	.	.	.	.	.	.	.	.	.	.
113	.	.	.	.	.	.	.	.	.	.	.
114	.	.	.	.	.	.	.	.	.	.	.
115	.	.	.	.	.	.	.	.	.	.	.
116	.	.	.	.	.	.	.	.	.	.	.
117	.	.	.	.	.	.	.	.	.	.	.
118	.	.	.	.	.	.	.	.	.	.	.
119	.	.	.	.	.	.	.	.	.	.	.
120	0.02	0.00	0.03	5.62	0.8	11.03	39	26.35	6.76	7.24	0.10
121	.	.	.	.	.	.	.	.	.	.	.
122	.	.	.	.	.	.	.	.	.	.	.
123	.	.	.	.	.	.	.	.	.	.	.
124	.	.	.	.	.	.	.	.	.	.	.
125	.	.	.	.	.	.	.	.	.	.	.
126	.	.	.	.	.	.	.	.	.	.	.
127	.	.	.	.	.	.	.	.	.	.	.
128	.	.	.	.	.	.	.	.	.	.	.
129	.	.	.	.	.	.	.	.	.	.	.
130	0.00	0.42	0.55	5.10	2.7	20.37	58	.	.	.	.
131	0.00	0.26	0.37	5.03	4.5	16.60	47	.	.	.	.
132	0.00	0.25	0.35	3.38	4.0	15.07	53	.	.	.	.
133	0.01	0.27	0.39	7.71	5.1	13.74	50	.	.	.	.
134	0.02	0.28	0.39	1.40	2.5	15.09	52	.	.	.	.
135	.	.	.	.	.	.	.	.	.	.	.
136	.	.	.	.	.	.	.	.	.	.	.
137	.	.	.	.	.	.	.	.	.	.	.
138	.	.	.	.	.	.	.	.	.	.	.
139	.	.	.	.	.	.	.	.	.	.	.
140	.	.	.	.	.	.	.	.	.	.	.
141	.	.	.	.	.	.	.	.	.	.	.
142	.	.	.	.	.	.	.	.	.	.	.
143	.	.	.	.	.	.	.	.	.	.	.
144	.	.	.	.	.	.	.	.	.	.	.

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
145	80792	COPP	B	C	.	.	.	.	.	.	.	.	.	.
146	81492	COPP	B	C	0.80	4.3	67.0	3.1	24	3.0	28.1	0.03	.	2.1
147	90192	COPP	B	C	.	.	.	.	.	.	.	.	.	.
148	100692	COPP	B	C	.	.	.	.	.	.	.	.	.	.
149	121092	COPP	B	C	.	.	.	.	.	.	.	.	.	.
150	12093	COPP	B	C	.	.	.	.	.	.	.	.	.	.
151	12793	COPP	B	C	.	.	.	.	.	.	.	.	.	.
152	20993	COPP	B	C	.	.	.	.	.	.	.	.	.	.
153	31893	COPP	B	C	.	.	.	.	.	.	.	.	.	.
154	40293	COPP	B	C	.	.	.	.	.	.	.	.	.	.
155	61192	HGRN	B	N	.	.	.	.	.	.	.	.	.	.
156	62592	HGRN	B	N	.	.	.	.	.	.	.	.	.	.
157	70192	HGRN	B	N	0.20	4.0	27.0	1.8	50	0.0	20.0	0.02	.	2.2
158	72192	HGRN	B	N	.	.	.	.	.	.	.	.	.	.
159	80792	HGRN	B	N	.	.	.	.	.	.	.	.	.	.
160	81492	HGRN	B	N	.	.	.	.	.	.	.	.	.	.
161	90192	HGRN	B	N	0.48	3.7	33.0	1.0	4	2.2	22.0	0.02	0.06	1.3
162	100692	HGRN	B	N	0.14	1.2	38.8	0.0	10	0.0	33.0	0.02	.	0.5
163	121092	HGRN	B	N	.	.	.	.	.	.	.	.	.	.
164	12093	HGRN	B	N	.	.	.	.	.	.	.	.	.	.
165	12793	HGRN	B	N	.	.	.	.	.	.	.	.	.	.
166	20993	HGRN	B	N	.	.	.	.	.	.	.	.	.	.
167	31893	HGRN	B	N	.	.	.	.	.	.	.	.	.	.
168	40293	HGRN	B	N	.	.	.	.	.	.	.	.	.	.
169	61192	HRV2	B	N	.	.	.	.	.	.	.	.	.	.
170	62592	HRV2	B	N	.	.	.	.	.	.	.	.	.	.
171	70192	HRV2	B	N	.	.	.	.	.	.	.	.	.	.
172	72192	HRV2	B	N	.	.	.	.	.	.	.	.	.	.
173	80792	HRV2	B	N	.	.	.	.	.	.	.	.	.	.
174	81492	HRV2	B	N	0.10	1.5	35.0	0.9	0	0.1	34.5	0.01	.	2.6
175	90192	HRV2	B	N	0.17	7.4	47.8	1.9	8	1.3	23.0	0.01	.	0.5
176	100692	HRV2	B	N	0.07	1.8	37.6	0.0	14	0.0	39.0	0.00	0.00	1.7
177	121092	HRV2	B	N	.	.	.	.	.	.	.	.	.	.
178	12093	HRV2	B	N	.	.	.	.	.	.	.	.	.	.
179	12793	HRV2	B	N	.	.	.	.	.	.	.	.	.	.
180	20993	HRV2	B	N	.	.	.	.	.	.	.	.	.	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
145	.	.	.	.	.	.	.	.	.	.	.
146	0.00	0.11	0.23	21.97	28.0	6.16	89	.	.	.	.
147	.	.	.	.	.	.	.	.	.	.	.
148	.	.	.	.	.	.	.	.	.	.	.
149	.	.	.	.	.	.	.	.	.	.	.
150	.	.	.	.	.	.	.	.	.	.	.
151	.	.	.	.	.	.	.	.	.	.	.
152	.	.	.	.	.	.	.	.	.	.	.
153	.	.	.	.	.	.	.	.	.	.	.
154	.	.	.	.	.	.	.	.	.	.	.
155	.	.	.	.	.	.	.	.	.	.	.
156	.	.	.	.	.	.	.	.	.	.	.
157	0.01	0.17	0.33	2.10	2.8	0.00	18	26.07	1.88	5.83	0.06
158	.	.	.	.	.	.	.	.	.	.	.
159	.	.	.	.	.	.	.	.	.	.	.
160	.	.	.	.	.	.	.	.	.	.	.
161	0.01	0.01	0.07	4.06	2.3	15.84	34	28.74	4.94	6.49	0.13
162	0.04	0.06	0.13	2.63	2.0	16.26	21	23.09	2.95	5.99	0.07
163	.	.	.	.	.	.	.	.	.	.	.
164	.	.	.	.	.	.	.	.	.	.	.
165	.	.	.	.	.	.	.	.	.	.	.
166	.	.	.	.	.	.	.	.	.	.	.
167	.	.	.	.	.	.	.	.	.	.	.
168	.	.	.	.	.	.	.	.	.	.	.
169	.	.	.	.	.	.	.	.	.	.	.
170	.	.	.	.	.	.	.	.	.	.	.
171	.	.	.	.	.	.	.	.	.	.	.
172	.	.	.	.	.	.	.	.	.	.	.
173	.	.	.	.	.	.	.	.	.	.	.
174	0.00	0.00	0.05	0.46	0.8	15.86	5	26.32	0.10	5.55	0.03
175	0.01	0.00	0.04	1.63	0.9	13.65	15	25.45	0.17	5.55	0.04
176	0.03	0.01	0.04	0.48	0.9	13.72	10	22.64	0.47	5.58	0.03
177	.	.	.	.	.	.	.	.	.	.	.
178	.	.	.	.	.	.	.	.	.	.	.
179	.	.	.	.	.	.	.	.	.	.	.
180	.	.	.	.	.	.	.	.	.	.	.

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
181	31893	HRV2	B	N	.	.	.	.	.	.	.	.	.	.
182	40293	HRV2	B	N	.	.	.	.	.	.	.	.	.	.
183	61192	RGNC	B	N	.	.	.	.	.	.	.	.	.	.
184	62592	RGNC	B	N	.	.	.	.	.	.	.	.	.	.
185	70192	RGNC	B	N	0.20	4.0	29.0	2.6	0	0.2	20.0	0.03	0.03	3.50
186	72192	RGNC	B	N	.	.	.	.	.	.	.	.	.	.
187	80792	RGNC	B	N	0.00	7.0	30.0	0.0	20	4.4	0.0	0.12	.	1.00
188	81492	RGNC	B	N	0.10	1.6	30.0	1.2	0	0.1	17.5	0.07	.	0.10
189	90192	RGNC	B	N	0.00	1.4	27.5	3.3	23	2.0	81.0	0.09	.	0.70
190	100692	RGNC	B	N	0.11	4.2	53.3	0.0	5	0.0	15.0	0.08	0.06	0.50
191	121092	RGNC	B	N	.	.	.	.	.	.	.	.	.	.
192	12093	RGNC	B	N	.	.	.	.	.	.	.	.	.	.
193	12793	RGNC	B	N	.	.	.	.	.	.	.	.	.	.
194	20993	RGNC	B	N	.	.	.	.	.	.	.	.	.	.
195	31893	RGNC	B	N	.	.	.	.	.	.	.	.	.	.
196	40293	RGNC	B	N	.	.	.	.	.	.	.	.	.	.
197	61192	TMBR	B	N	.	.	.	.	.	.	.	.	.	.
198	62592	TMBR	B	N	.	.	.	.	.	.	.	.	.	.
199	70192	TMBR	B	N	.	.	.	.	.	.	.	.	.	.
200	72192	TMBR	B	N	.	.	.	.	.	.	.	.	.	.
201	80792	TMBR	B	N	0.10	5.0	80.0	0.1	50	2.8	0.0	0.03	0.06	0.70
202	81492	TMBR	B	N	0.20	2.4	84.0	1.5	67	1.1	15.4	0.01	0.02	0.80
203	90192	TMBR	B	N	0.00	3.3	86.0	3.5	24	1.9	19.0	0.02	0.10	1.10
204	100692	TMBR	B	N	0.00	4.0	11.2	0.8	28	0.6	50.0	0.54	1.01	1.90
205	121092	TMBR	B	N	.	.	.	.	.	.	.	.	.	.
206	12093	TMBR	B	N	.	.	.	.	.	.	.	.	.	.
207	12793	TMBR	B	N	.	.	.	.	.	.	.	.	.	.
208	20993	TMBR	B	N	.	.	.	.	.	.	.	.	.	.
209	31893	TMBR	B	N	.	.	.	.	.	.	.	.	.	.
210	40293	TMBR	B	N	.	.	.	.	.	.	.	.	.	.
211	61192	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
212	62592	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
213	70192	SCRS	B	N	0.10	2.0	25.0	1.8	0	0.0	0.0	0.01	0.02	1.40
214	72192	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
215	80792	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
216	81492	SCRS	B	N	.	.	.	.	.	.	.	.	.	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
181	.	.	.	.	.	.	.	.	.	.	.
182	.	.	.	.	.	.	.	.	.	.	.
183	.	.	.	.	.	.	.	.	.	.	.
184	.	.	.	.	.	.	.	.	.	.	.
185	0.01	0.01	0.03	1.80	1.4	11.81	16	26.61	1.55	6.07	0.06
186	.	.	.	.	.	.	.	.	.	.	.
187	0.00	0.01	0.03	.	0.9	12.06	20	27.76	0.14	5.94	0.07
188	0.00	0.00	0.04	0.56	1.1	11.90	18	27.70	0.12	5.84	0.67
189	0.01	0.01	0.07	1.72	1.5	11.95	21	27.05	0.23	5.84	0.07
190	0.03	0.00	0.05	0.57	1.0	11.10	17	24.69	0.32	6.02	0.07
191	.	.	.	.	.	.	.	.	.	.	.
192	.	.	.	.	.	.	.	.	.	.	.
193	.	.	.	.	.	.	.	.	.	.	.
194	.	.	.	.	.	.	.	.	.	.	.
195	.	.	.	.	.	.	.	.	.	.	.
196	.	.	.	.	.	.	.	.	.	.	.
197	.	.	.	.	.	.	.	.	.	.	.
198	.	.	.	.	.	.	.	.	.	.	.
199	.	.	.	.	.	.	.	.	.	.	.
200	.	.	.	.	.	.	.	.	.	.	.
201	0.00	0.07	0.13	0.83	1.0	9.73	21	.	.	.	.
202	0.00	0.02	0.09	5.44	1.0	9.59	22	28.85	4.63	6.34	0.07
203	0.00	0.01	0.09	1.82	0.9	10.61	23	32.43	6.32	6.65	0.07
204	0.01	0.01	0.06	1.36	1.1	13.06	28	25.76	4.44	6.41	0.09
205	.	.	.	.	.	.	.	.	.	.	.
206	.	.	.	.	.	.	.	.	.	.	.
207	.	.	.	.	.	.	.	.	.	.	.
208	.	.	.	.	.	.	.	.	.	.	.
209	.	.	.	.	.	.	.	.	.	.	.
210	.	.	.	.	.	.	.	.	.	.	.
211	.	.	.	.	.	.	.	.	.	.	.
212	.	.	.	.	.	.	.	.	.	.	.
213	0.01	0.02	0.04	5.20	5.6	14.80	12	28.41	4.59	6.36	0.13
214	.	.	.	.	.	.	.	.	.	.	.
215	.	.	.	.	.	.	.	.	.	.	.
216	.	.	.	.	.	.	.	.	.	.	.

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
217	90192	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
218	100692	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
219	121092	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
220	12093	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
221	12793	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
222	20993	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
223	31893	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
224	40293	SCRS	B	N	.	.	.	.	.	.	.	.	.	.
225	61192	LHBF	B	C	.	.	.	.	.	.	.	.	.	.
226	62592	LHBF	B	C	.	.	.	.	.	.	.	.	.	.
227	70192	LHBF	B	C	0.20	9.0	18.0	2.6	20	0.0	40.0	0.01	0.10	1.80
228	72192	LHBF	B	C	.	.	.	.	.	.	.	.	.	.
229	80792	LHBF	B	C	.	.	.	.	.	.	.	.	.	.
230	81492	LHBF	B	C	0.30	2.0	80.0	0.8	24	0.0	50.0	0.01	0.11	0.50
231	90192	LHBF	B	C	0.00	6.7	14.0	3.0	9	0.8	18.0	0.01	0.41	0.00
232	100692	LHBF	B	C	0.08	7.4	15.4	1.7	9	1.7	21.0	0.02	0.23	1.50
233	121092	LHBF	B	C	.	.	.	.	.	.	.	.	.	.
234	12093	LHBF	B	C	.	.	.	.	.	.	.	.	.	.
235	12793	LHBF	B	C	.	.	.	.	.	.	.	.	.	.
236	20993	LHBF	B	C	.	.	.	.	.	.	.	.	.	.
237	31893	LHBF	B	C	.	.	.	.	.	.	.	.	.	.
238	40293	LHBF	B	C	.	.	.	.	.	.	.	.	.	.
239	61192	LHBB	B	C	.	.	.	.	.	.	.	.	.	.
240	62592	LHBB	B	C	.	.	.	.	.	.	.	.	.	.
241	70192	LHBB	B	C	0.10	5.0	27.0	1.9	40	5.0	18.0	0.02	0.31	1.55
242	72192	LHBB	B	C	.	.	.	.	.	.	.	.	.	.
243	80792	LHBB	B	C	.	.	.	.	.	.	.	.	.	.
244	81492	LHBB	B	C	.	.	.	.	.	.	.	.	.	.
245	90192	LHBB	B	C	0.00	6.0	25.6	0.1	21	4.9	26.0	0.02	0.25	1.60
246	100692	LHBB	B	C	0.04	5.1	23.6	2.4	28	0.0	21.0	0.34	3.00	1.40
247	121092	LHBB	B	C	.	.	.	.	.	.	.	.	.	.
248	12093	LHBB	B	C	.	.	.	.	.	.	.	.	.	.
249	12793	LHBB	B	C	.	.	.	.	.	.	.	.	.	.
250	20993	LHBB	B	C	.	.	.	.	.	.	.	.	.	.
251	31893	LHBB	B	C	.	.	.	.	.	.	.	.	.	.
252	40293	LHBB	B	C	.	.	.	.	.	.	.	.	.	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
217	.	.	.	.	.	.	.	.	.	.	.
218	.	.	.	.	.	.	.	.	.	.	.
219	.	.	.	.	.	.	.	.	.	.	.
220	.	.	.	.	.	.	.	.	.	.	.
221	.	.	.	.	.	.	.	.	.	.	.
222	.	.	.	.	.	.	.	.	.	.	.
223	.	.	.	.	.	.	.	.	.	.	.
224	.	.	.	.	.	.	.	.	.	.	.
225	.	.	.	.	.	.	.	.	.	.	.
226	.	.	.	.	.	.	.	.	.	.	.
227	0.02	0.03	0.08	5.80	3.7	7.84	47	27.02	3.89	7.11	0.19
228	.	.	.	.	.	.	.	.	.	.	.
229	.	.	.	2.37	1.8	7.24	66	29.96	2.82	7.04	0.32
230	0.00	0.01	0.06	2.26	1.8	8.14	74	30.33	4.37	7.06	0.31
231	0.01	0.01	0.09	3.25	1.0	7.67	73	29.51	6.60	7.65	0.27
232	0.06	0.01	0.05	4.60	2.0	7.16	89	21.85	4.85	7.33	0.34
233	.	.	.	.	.	.	.	.	.	.	.
234	.	.	.	.	.	.	.	.	.	.	.
235	.	.	.	.	.	.	.	.	.	.	.
236	.	.	.	.	.	.	.	.	.	.	.
237	.	.	.	.	.	.	.	.	.	.	.
238	.	.	.	.	.	.	.	.	.	.	.
239	.	.	.	.	.	.	.	.	.	.	.
240	.	.	.	.	.	.	.	.	.	.	.
241	0.02	0.11	0.15	7.10	3.6	0.00	86	28.65	2.98	7.24	0.28
242	.	.	.	.	.	.	.	.	.	.	.
243	.	.	.	.	.	.	.	.	.	.	.
244	.	.	.	.	.	.	.	.	.	.	.
245	0.03	0.05	0.14	3.31	1.7	8.64	90	31.84	3.22	7.06	0.29
246	0.32	0.08	0.16	7.70	4.8	8.58	85	23.71	3.56	7.15	0.29
247	.	.	.	.	.	.	.	.	.	.	.
248	.	.	.	.	.	.	.	.	.	.	.
249	.	.	.	.	.	.	.	.	.	.	.
250	.	.	.	.	.	.	.	.	.	.	.
251	.	.	.	.	.	.	.	.	.	.	.
252	.	.	.	.	.	.	.	.	.	.	.

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
253	61192	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
254	62592	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
255	70192	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
256	72192	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
257	80792	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
258	81492	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
259	90192	CRLS	B	C	0.00	3.8	96.0	0.4	8	3.6	24.0	0.01	0.07	1.5
260	100692	CRLS	B	C	0.04	0.0	23.0	0.0	3	0.0	16.0	0.00	0.00	0.3
261	121092	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
262	12093	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
263	12793	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
264	20993	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
265	31893	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
266	40293	CRLS	B	C	.	.	.	.	.	.	.	.	.	.
267	61192	CARL	B	C	.	.	.	.	.	.	.	.	.	.
268	62592	CARL	B	C	.	.	.	.	.	.	.	.	.	.
269	70192	CARL	B	C	0.70	14.0	19.0	15.2	20	5.2	.	0.03	.	1.8
270	72192	CARL	B	C	.	.	.	.	.	.	.	.	.	.
271	80792	CARL	B	C	.	.	.	.	.	.	.	.	.	.
272	81492	CARL	B	C	0.40	3.0	10.0	1.1	24	1.2	24.0	0.01	0.12	1.2
273	90192	CARL	B	C	0.00	2.6	80.0	0.0	5	3.7	24.0	0.01	0.16	0.4
274	100692	CARL	B	C	.	.	.	.	.	.	.	0.00	0.00	.
275	121092	CARL	B	C	.	.	.	.	.	.	.	.	.	.
276	12093	CARL	B	C	.	.	.	.	.	.	.	.	.	.
277	12793	CARL	B	C	.	.	.	.	.	.	.	.	.	.
278	20993	CARL	B	C	.	.	.	.	.	.	.	.	.	.
279	31893	CARL	B	C	.	.	.	.	.	.	.	.	.	.
280	40293	CARL	B	C	.	.	.	.	.	.	.	.	.	.
281	61192	TRCO	B	C	.	.	.	.	.	.	.	.	.	.
282	62592	TRCO	B	C	.	.	.	.	.	.	.	.	.	.
283	70192	TRCO	B	C	0.20	2.0	99.0	2.0	0	0.0	60.0	0.02	.	1.6
284	72192	TRCO	B	C	.	.	.	.	.	.	.	.	.	.
285	80792	TRCO	B	C	0.90	15.0	62.0	11.6	30	6.0	30.0	0.04	0.28	3.6
286	81492	TRCO	B	C	0.10	2.8	33.0	1.3	39	2.1	18.4	0.04	0.20	2.3
287	90192	TRCO	B	C	0.00	2.9	25.5	1.1	10	4.1	41.0	0.04	0.10	2.2
288	100692	TRCO	B	C	0.00	0.0	18.9	0.0	6	0.0	16.0	0.02	0.04	0.7

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
253	.	.	.	.	.	.	.	.	.	.	.
254	.	.	.	.	.	.	.	.	.	.	.
255	.	.	.	.	.	.	.	.	.	.	.
256	.	.	.	.	.	.	.	.	.	.	.
257	.	.	.	.	.	.	.	.	.	.	.
258	.	.	.	.	.	.	.	.	.	.	.
259	0.01	0.01	0.06	3.00	0.7	11.77	82	28.26	2.48	6.94	0.38
260	0.03	0.00	0.00	0.86	0.4	8.25	90	23.91	2.11	7.13	0.36
261	.	.	.	.	.	.	.	.	.	.	.
262	.	.	.	.	.	.	.	.	.	.	.
263	.	.	.	.	.	.	.	.	.	.	.
264	.	.	.	.	.	.	.	.	.	.	.
265	.	.	.	.	.	.	.	.	.	.	.
266	.	.	.	.	.	.	.	.	.	.	.
267	.	.	.	.	.	.	.	.	.	.	.
268	.	.	.	.	.	.	.	.	.	.	.
269	0.01	0.07	0.17	3.60	1.1	21.04	130	30.25	2.58	7.03	.
270	.	.	.	.	.	.	.	.	.	.	.
271	.	.	.	.	.	.	.	.	.	.	.
272	0.00	0.00	0.03	4.38	0.6	13.66	147	28.27	7.36	7.15	0.73
273	0.00	0.01	0.07	1.14	0.7	13.66	111	29.49	4.85	7.24	0.61
274	0.06	0.02	0.02	0.54	1.0	10.39	110	23.59	3.22	7.17	1.18
275	.	.	.	.	.	.	.	.	.	.	.
276	.	.	.	.	.	.	.	.	.	.	.
277	.	.	.	.	.	.	.	.	.	.	.
278	.	.	.	.	.	.	.	.	.	.	.
279	.	.	.	.	.	.	.	.	.	.	.
280	.	.	.	.	.	.	.	.	.	.	.
281	.	.	.	.	.	.	.	.	.	.	.
282	.	.	.	.	.	.	.	.	.	.	.
283	0.01	0.08	0.10	2.70	1.3	7.57	48	30.53	1.05	.	0.10
284	.	.	.	.	.	.	.	.	.	.	.
285	0.00	0.01	0.13	3.73	2.8	12.97	94	28.69	1.68	6.89	0.22
286	0.00	0.01	0.07	3.29	3.3	10.33	64	28.67	2.73	6.75	0.16
287	0.00	0.05	0.11	65.91	1.8	8.48	54	29.05	2.47	6.43	0.12
288	0.04	0.01	0.03	4.44	2.2	7.00	43	24.06	1.70	6.48	0.10

B SIDE DATA

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
289	121092	TRCO	B	C	.	.	.	.	.	.	.	.	.	.
290	12093	TRCO	B	C	.	.	.	.	.	.	.	.	.	.
291	12793	TRCO	B	C	.	.	.	.	.	.	.	.	.	.
292	20993	TRCO	B	C	.	.	.	.	.	.	.	.	.	.
293	31893	TRCO	B	C	.	.	.	.	.	.	.	.	.	.
294	40293	TRCO	B	C	.	.	.	.	.	.	.	.	.	.
295	61192	TOFF	B	C	.	.	.	.	.	.	.	.	.	.
296	62592	TOFF	B	C	.	.	.	.	.	.	.	.	.	.
297	70192	TOFF	B	C	.	.	.	.	.	.	.	.	.	.
298	72192	TOFF	B	C	.	.	.	.	.	.	.	.	.	.
299	80792	TOFF	B	C	0.10	14.0	30.0	0.8	0	.	0.0	0.03	1.22	1.8
300	81492	TOFF	B	C	.	4.3	67.0	3.1	24	3.0	28.1	0.03	1.57	2.1
301	90192	TOFF	B	C	.	.	.	.	.	.	.	.	.	.
302	100692	TOFF	B	C	0.72	0.3	12.7	0.0	2	0.0	21.0	0.00	0.00	2.1
303	121092	TOFF	B	C	.	.	.	.	.	.	.	.	.	.
304	12093	TOFF	B	C	.	.	.	.	.	.	.	.	.	.
305	12793	TOFF	B	C	.	.	.	.	.	.	.	.	.	.
306	20993	TOFF	B	C	.	.	.	.	.	.	.	.	.	.
307	31893	TOFF	B	C	.	.	.	.	.	.	.	.	.	.
308	40293	TOFF	B	C	.	.	.	.	.	.	.	.	.	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
289	.	.	.	.	.	.	.	.	.	.	.
290	.	.	.	.	.	.	.	.	.	.	.
291	.	.	.	.	.	.	.	.	.	.	.
292	.	.	.	.	.	.	.	.	.	.	.
293	.	.	.	.	.	.	.	.	.	.	.
294	.	.	.	.	.	.	.	.	.	.	.
295	.	.	.	.	.	.	.	.	.	.	.
296	.	.	.	.	.	.	.	.	.	.	.
297	.	.	.	.	.	.	.	.	.	.	.
298	.	.	.	.	.	.	.	.	.	.	.
299	0.00	0.03	0.06	12.43	7.2	5.56	100	26.54	4.55	7.74	0.35
300	0.00	0.11	0.23	21.97	28.0	6.16	89	28.24	6.17	7.80	0.29
301	.	.	.	.	.	.	.	.	.	.	.
302	0.01	0.04	0.08	5.56	7.9	5.11	106	26.41	8.53	8.17	0.41
303	.	.	.	.	.	.	.	.	.	.	.
304	.	.	.	.	.	.	.	.	.	.	.
305	.	.	.	.	.	.	.	.	.	.	.
306	.	.	.	.	.	.	.	.	.	.	.
307	.	.	.	.	.	.	.	.	.	.	.
308	.	.	.	.	.	.	.	.	.	.	.

Correlation Analysis

21 'VAR' Variables:	CD	CU	FE	PB	MN	NI	ZN	NH3
	UNNH3	CR	NOX	OP	TP	TSS	TURB	TOC
	ALKAL	TEMP	DISSO	PH	COND			

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum
CD	81	0.182716	0.250235	0.100000	0	1.540000
CU	84	5.919048	12.127878	3.750000	0	110.000000
FE	84	41.304762	25.901137	31.500000	10.000000	99.000000
PB	84	1.801190	2.627312	1.300000	0	15.400000
MN	84	23.238095	21.146431	20.000000	0	110.000000
NI	78	2.138462	4.256797	1.050000	0	29.900000
ZN	82	27.735366	18.753182	23.000000	0	96.000000
NH3	86	0.035581	0.069258	0.020000	0	0.540000
UNNH3	70	0.200429	0.439441	0.050000	0	3.000000
CR	84	1.168452	1.181988	1.050000	0	8.500000
NOX	85	0.013882	0.036125	0.010000	0	0.320000
OP	85	0.040824	0.072477	0.010000	0	0.420000
TP	85	0.097294	0.097838	0.060000	0	0.550000
TSS	85	5.040353	8.375345	3.000000	0.260000	65.910000
TURB	86	3.029070	4.911113	1.650000	0.400000	28.000000
TOC	84	10.768095	4.324398	10.500000	0	24.860000
ALKAL	86	56.465116	31.811096	48.500000	5.000000	147.000000
TEMP	81	26.428889	3.453185	26.990000	16.400000	32.430000
DISSO	81	3.129136	2.334474	2.800000	0.040000	8.800000
PH	80	6.710125	0.543890	6.750000	5.550000	8.170000
COND	80	0.222500	0.194549	0.160000	0.030000	1.180000

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

CD

CD	PB	ZN	TURB	CR
1.00000	0.21966	0.21599	0.21117	0.20961
0.0	0.0488	0.0559	0.0584	0.0604
81	81	79	81	81
TEMP	OP	TSS	NOX	ALKAL
0.20666	0.19241	0.19221	-0.17279	0.15541
0.0773	0.0853	0.0876	0.1229	0.1659
74	81	80	81	81

CU

CU	UNNH3	PB	NI	NH3
1.00000	0.50130	0.44704	0.43967	0.31246
0.0	0.0001	0.0001	0.0001	0.0040
84	67	84	78	83
ALKAL	PH	NOX	TEMP	TSS
0.24781	0.23791	-0.23218	0.22502	0.21063
0.0230	0.0398	0.0336	0.0507	0.0560
84	75	84	76	83

FE

FE	TSS	NOX	TURB	ZN
1.00000	-0.18842	-0.18445	-0.17889	-0.17686
0.0	0.0880	0.0930	0.1035	0.1119
84	83	84	84	82
NH3	CR	COND	OP	CD
-0.15333	-0.14577	-0.13656	-0.12440	-0.11630
0.1664	0.1858	0.2427	0.2596	0.3012
83	84	75	84	81

PB

PB	CU	TEMP	UNNH3	NH3
1.00000	0.44704	0.34742	0.34685	0.33438
0.0	0.0001	0.0021	0.0040	0.0020
84	84	76	67	83
NOX	TSS	MN	TP	NI
-0.29994	0.28878	0.27516	0.26916	0.24686
0.0056	0.0081	0.0113	0.0133	0.0293
84	83	84	84	78

MN

MN	TP	OP	TURB	TSS
1.00000	0.54210	0.42416	0.37984	0.29846
0.0	0.0001	0.0001	0.0004	0.0061
84	84	84	84	83
PB	UNNH3	NH3	NOX	TEMP
0.27516	0.26116	0.23915	-0.21732	0.20944
0.0113	0.0328	0.0294	0.0471	0.0694
84	67	83	84	76

NI

NI	CU	UNNH3	TEMP	NH3
1.00000	0.43967	0.42887	0.36583	0.34677
0.0	0.0001	0.0006	0.0018	0.0020
78	78	61	70	77
ALKAL	NOX	COND	PB	TP
0.33365	-0.31286	0.26216	0.24686	0.22288
0.0028	0.0053	0.0295	0.0293	0.0498
78	78	69	78	78

ZN

ZN	TP	OP	CD	UNNH3
1.00000	0.34342	0.26103	0.21599	0.20485
0.0	0.0016	0.0179	0.0559	0.0990
82	82	82	79	66

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

ZN

CR	TURB	FE	NH3	MN
0.18930	0.18180	-0.17686	0.16005	0.12182
0.0885	0.1021	0.1119	0.1535	0.2756
82	82	82	81	82

NH3

NH3	UNNH3	TP	NI	OP
1.00000	0.71746	0.34722	0.34677	0.34084
0.0	0.0001	0.0012	0.0020	0.0015
86	70	84	77	84
PB	CU	TURB	MN	TSS
0.33438	0.31246	0.30834	0.23915	0.21317
0.0020	0.0040	0.0043	0.0294	0.0530
83	83	84	83	83

UNNH3

UNNH3	NH3	CU	PH	TEMP
1.00000	0.71746	0.50130	0.43670	0.43522
0.0	0.0001	0.0001	0.0002	0.0002
70	70	67	67	67
NI	TURB	TSS	PB	COND
0.42887	0.36202	0.34710	0.34685	0.33404
0.0006	0.0024	0.0037	0.0040	0.0057
61	68	68	67	67

CR

CR	TURB	TSS	TP	CD
1.00000	0.31696	0.28021	0.21183	0.20961
0.0	0.0033	0.0103	0.0531	0.0604
84	84	83	84	81
UNNH3	ZN	OP	TOC	CU
0.19192	0.18930	0.18313	-0.16606	0.15357
0.1197	0.0885	0.0954	0.1360	0.1631
67	82	84	82	84

NOX

NOX	TEMP	NI	PB	CU
1.00000	-0.46118	-0.31286	-0.29994	-0.23218
0.0	0.0001	0.0053	0.0056	0.0336
85	77	78	84	84
MN	FE	CD	DISSO	UNNH3
-0.21732	-0.18445	-0.17279	0.13107	-0.12304
0.0471	0.0930	0.1229	0.2558	0.3175
84	84	81	77	68

OP

OP	TP	TURB	TSS	MN
1.00000	0.73918	0.51171	0.43954	0.42416
0.0	0.0001	0.0001	0.0001	0.0001
85	85	85	84	84
NH3	ZN	PB	CD	CR
0.34084	0.26103	0.23841	0.19241	0.18313
0.0015	0.0179	0.0290	0.0853	0.0954
84	82	84	81	84

TP

TP	OP	MN	TURB	TSS
1.00000	0.73918	0.54210	0.51350	0.38931
0.0	0.0001	0.0001	0.0001	0.0003
85	85	84	85	84
NH3	ZN	UNNH3	PB	NI
0.34722	0.34342	0.31548	0.26916	0.22288
0.0012	0.0016	0.0088	0.0133	0.0498
84	82	68	84	78

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

TSS

TSS	TURB	OP	TP	ALKAL
1.00000	0.65796	0.43954	0.38931	0.36721
0.0	0.0001	0.0001	0.0003	0.0005
85	85	84	84	85

UNNH3	TEMP	COND	PH	MN
0.34710	0.33694	0.33241	0.33005	0.29846
0.0037	0.0027	0.0033	0.0036	0.0061
68	77	76	76	83

TURB

TURB	TSS	TP	OP	MN
1.00000	0.65796	0.51350	0.51171	0.37984
0.0	0.0001	0.0001	0.0001	0.0004
86	85	85	85	84

UNNH3	CR	NH3	PB	ALKAL
0.36202	0.31696	0.30834	0.23901	0.22629
0.0024	0.0033	0.0043	0.0286	0.0362
68	84	84	84	86

TOC

TOC	PH	DISSO	NH3	UNNH3
1.00000	-0.43106	-0.33074	0.19990	-0.19568
0.0	0.0001	0.0035	0.0718	0.1153
84	75	76	82	66

CR	TP	ALKAL	TEMP	COND
-0.16606	0.16446	-0.13997	-0.11992	-0.11708
0.1360	0.1374	0.2041	0.3021	0.3171
82	83	84	76	75

ALKAL

ALKAL	COND	PH	TSS	NI
1.00000	0.86867	0.76439	0.36721	0.33365
0.0	0.0001	0.0001	0.0005	0.0028
86	77	77	85	78

UNNH3	CU	TURB	PB	TEMP
0.32235	0.24781	0.22629	0.20298	0.16719
0.0073	0.0230	0.0362	0.0641	0.1435
68	84	86	84	78

TEMP

TEMP	NOX	UNNH3	NI	PB
1.00000	-0.46118	0.43522	0.36583	0.34742
0.0	0.0001	0.0002	0.0018	0.0021
81	77	67	70	76

TSS	CU	MN	CD	TURB
0.33694	0.22502	0.20944	0.20666	0.19618
0.0027	0.0507	0.0694	0.0773	0.0852
77	76	76	74	78

DISSO

DISSO	PH	TOC	TP	MN
1.00000	0.57286	-0.33074	-0.17560	-0.16072
0.0	0.0001	0.0035	0.1266	0.1655
81	80	76	77	76

UNNH3	TEMP	TSS	NH3	NOX
0.15492	0.15227	0.14395	-0.13367	0.13107
0.2106	0.1748	0.2117	0.2497	0.2558
67	81	77	76	77

PH

PH	ALKAL	COND	DISSO	UNNH3
1.00000	0.76439	0.70239	0.57286	0.43670
0.0	0.0001	0.0001	0.0001	0.0002
80	77	79	80	67

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

PH

	TOC	TSS	CU	TURB	NI
	-0.43106	0.33005	0.23791	0.21353	0.18489
	0.0001	0.0036	0.0398	0.0622	0.1283
	75	76	75	77	69

COND

	COND	ALKAL	PH	UNNH3	TSS
	1.00000	0.86867	0.70239	0.33404	0.33241
	0.0	0.0001	0.0001	0.0057	0.0033
	80	77	79	67	76
	NI	TURB	CU	FE	DISSO
	0.26216	0.20426	0.16738	-0.13656	0.12601
	0.0295	0.0748	0.1512	0.2427	0.2654
	69	77	75	75	80

```
OPTIONS PS=80 LS=100;

DATA OSADATA;

INFILE 'A:\OSSASA' LRECL=500 MISSOVER;

INPUT DATE LOC$ AB$ NC$ CD CU FE PB MN NI ZN NH3 UNNH3 CR NOX OP
TP TSS TURB TOC ALKAL TEMP DISSO PH COND;

PROC PRINT;
TITLE 'OUTFALL SURVEY';
TITLE2 ' A SIDE DATA';


RUN;

PROC CORR SPEARMAN RANK BEST=10;
TITLE3 'NONPARAMETRIC STATS';
VAR CD CU FE PB MN NI ZN NH3 UNNH3 CR NOX OP TP TSS
    TURB TOC ALKAL TEMP DISSO PH COND;

RUN;
```

A SIDE DATA

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
1	61192	WBND	A	C	0.00	5.0	70.0	0.6	70	0.0	15.0	0.02	0.12	1.0
2	62592	WBND	A	C	.	.	.	.	.	.	.	.	.	.
3	70192	WBND	A	C	0.10	4.0	76.0	1.6	30	0.0	20.0	0.03	0.19	2.3
4	72192	WBND	A	C	0.20	3.0	40.0	0.8	20	0.0	30.0	0.00	0.00	0.0
5	80792	WBND	A	C	0.00	15.0	12.0	2.5	0	6.0	20.0	0.02	0.12	0.0
6	81492	WBND	A	C	0.30	3.0	60.0	1.1	21	0.0	85.0	0.01	0.07	0.3
7	90192	WBND	A	C	0.00	0.8	64.0	0.1	17	3.1	21.8	0.00	0.00	0.0
8	100692	WBND	A	C	0.16	5.4	47.0	0.0	14	0.0	26.0	0.00	0.00	0.9
9	121092	WBND	A	C	0.00	0.9	53.0	0.2	5	.	19.0	0.01	0.03	0.0
10	12093	WBND	A	C	0.10	5.0	14.0	0.3	0	.	31.0	0.01	0.01	1.8
11	12793	WBND	A	C	.	.	.	.	.	.	.	.	.	.
12	20993	WBND	A	C	.	.	.	.	.	.	.	.	.	.
13	31893	WBND	A	C	.	.	.	.	.	.	.	.	.	.
14	40293	WBND	A	C	.	.	.	.	.	.	.	.	.	.
15	61192	QRIG	A	N	.	.	.	.	.	.	.	.	.	.
16	62592	QRIG	A	N	.	.	.	.	.	.	.	.	.	.
17	70192	QRIG	A	N	.	.	.	.	.	.	.	.	.	.
18	72192	QRIG	A	N	.	.	.	.	.	.	.	.	.	.
19	80792	QRIG	A	N	.	.	.	.	.	.	.	.	.	.
20	81492	QRIG	A	N	0.30	2.0	28.0	1.7	51	0.0	0.0	0.01	0.03	0.2
21	90192	QRIG	A	N	0.00	0.0	21.0	0.5	32	1.7	21.7	0.01	0.01	0.0
22	100692	QRIG	A	N	0.23	1.4	15.2	1.0	20	0.0	43.0	0.01	0.02	0.9
23	121092	QRIG	A	N	0.10	1.6	88.0	0.4	8	.	22.0	0.03	0.06	0.0
24	12093	QRIG	A	N	0.00	19.3	11.9	1.0	8	.	11.0	0.02	0.01	0.5
25	12793	QRIG	A	N	.	.	.	.	.	.	.	.	.	.
26	20993	QRIG	A	N	.	.	.	.	.	.	.	.	.	.
27	31893	QRIG	A	N	.	.	.	.	.	.	.	.	.	.
28	40293	QRIG	A	N	.	.	.	.	.	.	.	.	.	.
29	61192	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
30	62592	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
31	70192	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
32	72192	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
33	80792	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
34	81492	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
35	90192	WPAS	A	C	0.87	4.3	54.0	0.1	14	0.0	29.0	0.01	0.11	0.2
36	100692	WPAS	A	C	0.12	1.6	14.0	0.0	2	0.0	30.0	0.00	0.00	1.0

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
1	0.00	0.01	0.19	5.13	21.0	20.23	51	27.29	2.24	6.88	0.15
2	.	.	.	.	.	.	.	.	.	.	.
3	0.09	0.04	0.05	4.00	5.3	12.26	44	26.78	5.85	6.92	0.12
4	0.00	0.01	0.05	0.40	1.1	9.70	42	27.58	2.75	6.58	0.11
5	0.00	0.00	0.03	22.14	0.8	7.65	38	28.40	7.34	6.84	0.10
6	0.00	0.01	0.06	2.24	1.6	6.56	45	30.41	6.23	6.83	0.12
7	0.01	0.01	0.06	2.43	2.6	7.88	36	27.62	4.23	6.62	0.10
8	0.03	0.01	0.06	0.38	1.1	5.56	40	23.60	2.21	6.60	0.10
9	0.02	0.01	0.03	1.86	0.4	7.16	50	17.76	6.25	6.68	0.15
10	0.01	0.01	0.02	0.04	0.5	7.42	47	16.31	4.03	6.48	0.15
11	.	.	.	.	.	.	.	.	.	.	.
12	.	.	.	.	.	.	.	.	.	.	.
13	.	.	.	.	.	.	.	.	.	.	.
14	.	.	.	.	.	.	.	.	.	.	.
15	.	.	.	.	.	.	.	.	.	.	.
16	.	.	.	.	.	.	.	.	.	.	.
17	.	.	.	.	.	.	.	.	.	.	.
18	.	.	.	.	.	.	.	.	.	.	.
19	.	.	.	.	.	.	.	.	.	.	.
20	0.00	0.01	0.10	4.87	2.6	13.83	44	27.71	3.97	6.61	0.15
21	0.00	0.01	0.07	3.75	2.4	16.12	21	26.64	3.60	6.07	0.10
22	0.02	0.04	0.10	3.07	2.5	12.29	17	25.81	6.45	6.33	0.09
23	0.02	0.01	0.03	2.32	1.0	11.86	24	17.81	7.21	6.67	0.13
24	0.01	0.01	0.03	1.39	1.0	13.50	19	18.30	6.79	6.15	0.12
25	.	.	.	.	.	.	.	.	.	.	.
26	.	.	.	.	.	.	.	.	.	.	.
27	.	.	.	.	.	.	.	.	.	.	.
28	.	.	.	.	.	.	.	.	.	.	.
29	.	.	.	.	.	.	.	.	.	.	.
30	.	.	.	.	.	.	.	.	.	.	.
31	.	.	.	.	.	.	.	.	.	.	.
32	.	.	.	.	.	.	.	.	.	.	.
33	.	.	.	.	.	.	.	.	.	.	.
34	.	.	.	.	.	.	.	.	.	.	.
35	0.00	0.01	0.05	1.69	1.4	9.17	98	26.54	3.71	7.15	0.24
36	0.01	0.00	0.01	1.44	1.0	8.60	80	26.89	10.37	8.51	0.20

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
37	121092	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
38	12093	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
39	12793	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
40	20993	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
41	31893	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
42	40293	WPAS	A	C	.	.	.	.	.	.	.	.	.	.
43	61192	CRNR	A	N	.	.	.	.	.	.	.	.	.	.
44	62592	CRNR	A	N	.	.	.	.	.	.	.	.	.	.
45	70192	CRNR	A	N	.	2.0	16.0	0.9	20	0.4	14.0	0.01	.	1.1
46	72192	CRNR	A	N	.	.	.	.	.	.	.	.	.	.
47	80792	CRNR	A	N	1.90	18.0	30.0	3.0	100	6.2	0.0	0.03	0.31	1.5
48	81492	CRNR	A	N	0.30	4.3	32.0	1.4	66	4.9	13.2	0.01	0.18	5.1
49	90192	CRNR	A	N	.	2.8	41.6	2.0	60	2.3	19.0	0.04	0.16	3.6
50	100692	CRNR	A	N	0.00	0.0	89.0	1.8	7	1.6	18.0	0.00	0.00	1.4
51	121092	CRNR	A	N	.	.	.	.	.	.	.	.	.	.
52	12093	CRNR	A	N	.	.	.	.	.	.	.	.	.	.
53	12793	CRNR	A	N	.	.	.	.	.	.	.	.	.	.
54	20993	CRNR	A	N	.	.	.	.	.	.	.	.	.	.
55	31893	CRNR	A	N	.	.	.	.	.	.	.	.	.	.
56	40293	CRNR	A	N	.	.	.	.	.	.	.	.	.	.
57	61192	HRV1	A	N	0.00	9.0	40.0	1.5	30	0.0	10.0	0.04	0.19	0.0
58	62592	HRV1	A	N	.	.	.	.	.	.	.	.	.	.
59	70192	HRV1	A	N	.	.	.	.	.	.	.	.	.	.
60	72192	HRV1	A	N	.	.	.	.	.	.	.	.	.	.
61	80792	HRV1	A	N	.	.	.	.	.	.	.	.	.	.
62	81492	HRV1	A	N	0.20	9.6	51.0	1.4	61	9.6	25.2	0.03	0.10	1.2
63	90192	HRV1	A	N	0.00	2.9	59.0	0.0	6	1.9	24.5	0.03	0.08	0.0
64	100692	HRV1	A	N	.	.	.	.	.	.	.	.	.	.
65	121092	HRV1	A	N	.	.	.	.	.	.	.	.	.	.
66	12093	HRV1	A	N	.	.	.	.	.	.	.	.	.	.
67	12793	HRV1	A	N	.	.	.	.	.	.	.	.	.	.
68	20993	HRV1	A	N	.	.	.	.	.	.	.	.	.	.
69	31893	HRV1	A	N	.	.	.	.	.	.	.	.	.	.
70	40293	HRV1	A	N	.	.	.	.	.	.	.	.	.	.
71	61192	GTDS	A	C	0.00	2.0	50.0	0.1	20	0.0	19.0	0.03	0.67	1.0
72	62592	GTDS	A	C	0.10	6.0	40.0	0.0	30	0.0	28.0	0.01	0.11	0.0

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
37	.	.	.	.	.	.	.	.	.	.	.
38	.	.	.	.	.	.	.	.	.	.	.
39	.	.	.	.	.	.	.	.	.	.	.
40	.	.	.	.	.	.	.	.	.	.	.
41	.	.	.	.	.	.	.	.	.	.	.
42	.	.	.	.	.	.	.	.	.	.	.
43	.	.	.	.	.	.	.	.	.	.	.
44	.	.	.	.	.	.	.	.	.	.	.
45	0.01	0.01	0.03	2.60	4.5	11.16	74	.	.	.	.
46	.	.	.	.	.	.	.	.	.	.	.
47	0.00	0.01	0.06	4.63	2.4	10.47	140	27.50	1.37	7.10	0.80
48	0.00	0.08	0.08	6.05	3.7	11.94	129	29.81	8.13	7.29	0.54
49	0.00	0.09	0.23	17.53	27.0	12.70	102	26.20	0.70	6.74	0.35
50	0.02	0.01	0.08	7.33	4.8	10.51	87	26.33	8.94	7.42	0.32
51	.	.	.	.	.	.	.	.	.	.	.
52	.	.	.	.	.	.	.	.	.	.	.
53	.	.	.	.	.	.	.	.	.	.	.
54	.	.	.	.	.	.	.	.	.	.	.
55	.	.	.	.	.	.	.	.	.	.	.
56	.	.	.	.	.	.	.	.	.	.	.
57	0.01	0.01	0.15	8.50	8.2	10.84	54	26.00	0.25	6.81	0.14
58	.	.	.	.	.	.	.	.	.	.	.
59	.	.	.	.	.	.	.	.	.	.	.
60	.	.	.	.	.	.	.	.	.	.	.
61	.	.	.	.	.	.	.	.	.	.	.
62	0.00	0.01	0.06	1.83	1.3	6.68	47	26.00	1.87	6.64	0.13
63	0.01	0.01	0.06	1.52	1.0	9.46	39	25.95	2.11	6.56	0.11
64	.	.	.	.	.	.	.	.	.	.	.
65	.	.	.	.	.	.	.	.	.	.	.
66	.	.	.	.	.	.	.	.	.	.	.
67	.	.	.	.	.	.	.	.	.	.	.
68	.	.	.	.	.	.	.	.	.	.	.
69	.	.	.	.	.	.	.	.	.	.	.
70	.	.	.	.	.	.	.	.	.	.	.
71	0.01	0.02	0.05	1.58	1.5	6.26	64	30.33	5.78	7.36	0.25
72	0.02	0.01	0.04	2.50	2.7	.	77	29.12	2.86	7.07	0.28

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
73	70192	GTDS	A	C	.	.	.	.	.	.	.	.	.	.
74	72192	GTDS	A	C	0.30	3.0	50.0	1.2	20	0.0	.	0.06	0.54	0.0
75	80792	GTDS	A	C	0.00	14.0	40.0	1.1	20	7.0	20.0	0.04	0.70	0.4
76	81492	GTDS	A	C	0.10	2.0	32.0	1.1	0	0.1	37.2	0.04	0.33	0.5
77	90192	GTDS	A	C	0.25	2.9	56.0	0.6	2	0.6	37.0	0.02	0.25	1.0
78	100692	GTDS	A	C	0.35	2.0	55.0	0.0	7	0.0	41.0	0.01	0.10	0.8
79	121092	GTDS	A	C	.	.	.	.	.	.	.	.	.	.
80	12093	GTDS	A	C	.	.	.	.	.	.	.	.	.	.
81	12793	GTDS	A	C	.	.	.	.	.	.	.	.	.	.
82	20993	GTDS	A	C	.	.	.	.	.	.	.	.	.	.
83	31893	GTDS	A	C	.	.	.	.	.	.	.	.	.	.
84	40293	GTDS	A	C	.	.	.	.	.	.	.	.	.	.
85	61192	FSQR	A	C	.	.	.	.	.	.	.	.	.	.
86	62592	FSQR	A	C	0.00	2.0	16.0	0.8	40	0.0	14.0	0.01	0.02	0.0
87	70192	FSQR	A	C	0.10	2.0	29.0	0.7	20	0.0	30.0	0.02	0.04	0.2
88	72192	FSQR	A	C	0.20	2.0	26.0	1.2	20	0.2	0.0	0.02	0.04	0.2
89	80792	FSQR	A	C	0.00	15.0	47.0	0.0	70	5.3	0.0	0.02	0.04	0.1
90	81492	FSQR	A	C	0.40	3.0	18.0	1.0	31	0.0	52.0	0.01	0.01	0.2
91	90192	FSQR	A	C	0.00	2.1	26.4	1.6	29	0.0	22.0	0.01	0.01	0.0
92	100692	FSQR	A	C	0.19	0.6	28.4	0.0	40	0.0	43.0	.	.	0.8
93	121092	FSQR	A	C	0.20	3.2	25.7	1.0	17	.	18.0	0.00	0.00	0.0
94	12093	FSQR	A	C	.	.	.	.	.	.	.	0.02	0.02	.
95	12793	FSQR	A	C	.	.	.	.	.	.	.	.	.	.
96	20993	FSQR	A	C	.	.	.	.	.	.	.	.	.	.
97	31893	FSQR	A	C	.	.	.	.	.	.	.	.	.	.
98	40293	FSQR	A	C	.	.	.	.	.	.	.	.	.	.
99	61192	KNMA	A	C	.	.	.	.	.	.	.	.	.	.
100	62592	KNMA	A	C	.	.	.	.	.	.	.	.	.	.
101	70192	KNMA	A	C	.	.	.	.	.	.	.	.	.	.
102	72192	KNMA	A	C	.	.	.	.	.	.	.	.	.	.
103	80792	KNMA	A	C	.	.	.	.	.	.	.	.	.	.
104	81492	KNMA	A	C	.	.	.	.	.	.	.	.	.	.
105	90192	KNMA	A	C	0.01	1.5	72.0	1.9	24	2.6	16.0	0.01	0.12	0.3
106	100692	KNMA	A	C	0.03	0.0	67.0	0.8	3	0.8	13.0	0.01	0.02	1.2
107	121092	KNMA	A	C	.	.	.	.	.	.	.	.	.	.
108	12093	KNMA	A	C	.	.	.	.	.	.	.	.	.	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
73	.	.	.	.	.	.	.	27.08	4.21	7.09	0.18
74	0.02	0.02	0.05	2.32	1.0	6.98	66	30.64	1.50	6.95	0.23
75	0.00	0.01	0.06	8.35	2.7	6.21	71	31.05	4.56	7.23	0.25
76	0.00	0.01	0.06	2.34	2.6	4.54	44	28.50	4.75	6.97	0.16
77	0.02	0.01	0.07	4.20	1.2	7.12	42	29.07	6.69	7.14	0.16
78	0.03	0.01	0.04	2.06	1.3	6.03	63	25.16	4.43	7.18	0.22
79	.	.	.	.	.	.	.	16.65	3.18	7.16	0.33
80	.	.	.	.	.	.	.	18.95	6.59	7.38	0.31
81	.	.	.	.	.	.	.	.	.	.	.
82	.	.	.	.	.	.	.	.	.	.	.
83	.	.	.	.	.	.	.	.	.	.	.
84	.	.	.	.	.	.	.	.	.	.	.
85	.	.	.	.	.	.	.	.	.	.	.
86	0.01	0.04	0.09	2.60	4.3	.	32	28.23	3.81	6.41	0.09
87	0.00	0.02	0.02	1.00	0.8	9.59	35	30.28	2.32	6.30	0.11
88	0.00	0.02	0.05	6.50	1.8	26.46	46	29.37	1.75	6.32	0.13
89	0.00	0.03	0.08	6.21	1.5	14.68	64	25.16	0.26	6.47	0.18
90	0.00	0.07	0.15	5.90	1.0	9.87	59	26.97	0.64	6.13	0.16
91	0.01	0.02	0.09	2.14	1.1	7.70	38	26.26	0.33	6.01	0.11
92	0.02	0.03	0.09	1.38	1.6	10.44	46	24.86	0.52	6.12	0.12
93	0.02	0.05	0.10	2.55	1.1	17.93	52	19.27	2.10	6.25	0.17
94	.	.	.	.	.	.	.	.	.	.	.
95	.	.	.	.	.	.	.	.	.	.	.
96	.	.	.	.	.	.	.	.	.	.	.
97	.	.	.	.	.	.	.	.	.	.	.
98	.	.	.	.	.	.	.	.	.	.	.
99	.	.	.	.	.	.	.	.	.	.	.
100	.	.	.	.	.	.	.	.	.	.	.
101	.	.	.	.	.	.	.	.	.	.	.
102	.	.	.	.	.	.	.	.	.	.	.
103	.	.	.	.	.	.	.	.	.	.	.
104	.	.	.	.	.	.	.	.	.	.	.
105	0.00	0.02	0.11	0.59	1.1	15.53	79	25.01	0.36	6.49	0.27
106	0.02	0.00	0.04	0.10	0.4	13.55	66	22.62	1.78	6.62	0.22
107	.	.	.	.	.	.	.	.	.	.	.
108	.	.	.	.	.	.	.	.	.	.	.

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
109	12793	KNMA	A	C	.	.	.	.	.	.	.	.	.	.
110	20993	KNMA	A	C	.	.	.	.	.	.	.	.	.	.
111	31893	KNMA	A	C	.	.	.	.	.	.	.	.	.	.
112	40293	KNMA	A	C	.	.	.	.	.	.	.	0.00	0.00	.
113	61192	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
114	62592	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
115	70192	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
116	72192	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
117	80792	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
118	81492	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
119	90192	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
120	100692	MBRV	A	C	0.10	0.3	78.0	2.5	4	0.0	50.0	0.06	0.74	0.5
121	121092	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
122	12093	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
123	12793	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
124	20993	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
125	31893	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
126	40293	MBRV	A	C	.	.	.	.	.	.	.	.	.	.
127	61192	SUSN	A	N	.	.	.	.	.	.	.	.	.	.
128	62592	SUSN	A	N	.	.	.	.	.	.	.	.	.	.
129	70192	SUSN	A	N	.	.	.	.	.	.	.	.	.	.
130	72192	SUSN	A	N	0.30	8.0	17.0	3.1	30	0.3	40.0	0.13	.	0.3
131	80792	SUSN	A	N	0.00	12.0	24.0	5.9	40	3.0	70.0	0.06	.	0.9
132	81492	SUSN	A	N	0.30	2.0	20.0	1.0	31	0.0	62.0	0.06	.	0.1
133	90192	SUSN	A	N	0.23	6.8	132.7	5.2	55	1.9	48.0	0.10	.	1.0
134	100692	SUSN	A	N	0.08	1.5	27.0	2.3	27	1.9	37.0	0.06	.	2.8
135	121092	SUSN	A	N	.	.	.	.	.	.	.	.	.	.
136	12093	SUSN	A	N	.	.	.	.	.	.	.	.	.	.
137	12793	SUSN	A	N	.	.	.	.	.	.	.	.	.	.
138	20993	SUSN	A	N	.	.	.	.	.	.	.	.	.	.
139	31893	SUSN	A	N	.	.	.	.	.	.	.	.	.	.
140	40293	SUSN	A	N	.	.	.	.	.	.	.	.	.	.
141	61192	COPP	A	C	.	.	.	.	.	.	.	.	.	.
142	62592	COPP	A	C	.	.	.	.	.	.	.	.	.	.
143	70192	COPP	A	C	.	.	.	.	.	.	.	.	.	.
144	72192	COPP	A	C	.	.	.	.	.	.	.	.	.	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
109	.	.	.	.	.	.	.	.	.	.	.
110	.	.	.	.	.	.	.	.	.	.	.
111	.	.	.	.	.	.	.	.	.	.	.
112	.	.	.	.	.	.	.	.	.	.	.
113	.	.	.	.	.	.	.	.	.	.	.
114	.	.	.	.	.	.	.	.	.	.	.
115	.	.	.	.	.	.	.	.	.	.	.
116	.	.	.	.	.	.	.	.	.	.	.
117	.	.	.	.	.	.	.	.	.	.	.
118	.	.	.	.	.	.	.	.	.	.	.
119	.	.	.	.	.	.	.	.	.	.	.
120	0.02	0.00	0.03	1.10	0.8	8.60	40	26.54	6.32	7.21	0.10
121	.	.	.	.	.	.	.	.	.	.	.
122	.	.	.	.	.	.	.	.	.	.	.
123	.	.	.	.	.	.	.	.	.	.	.
124	.	.	.	.	.	.	.	.	.	.	.
125	.	.	.	.	.	.	.	.	.	.	.
126	.	.	.	.	.	.	.	.	.	.	.
127	.	.	.	.	.	.	.	.	.	.	.
128	.	.	.	.	.	.	.	.	.	.	.
129	.	.	.	.	.	.	.	.	.	.	.
130	0.00	0.42	0.58	8.10	16.5	19.90	49	.	.	.	.
131	0.00	0.27	0.38	11.90	12.2	15.89	47	.	.	.	.
132	0.00	0.25	0.35	5.88	3.0	15.04	52	.	.	.	.
133	0.01	0.29	0.42	0.00	5.9	10.58	49	.	.	.	.
134	0.02	0.29	0.42	2.42	3.0	14.45	53	.	.	.	.
135	.	.	.	.	.	.	.	.	.	.	.
136	.	.	.	.	.	.	.	.	.	.	.
137	.	.	.	.	.	.	.	.	.	.	.
138	.	.	.	.	.	.	.	.	.	.	.
139	.	.	.	.	.	.	.	.	.	.	.
140	.	.	.	.	.	.	.	.	.	.	.
141	.	.	.	.	.	.	.	.	.	.	.
142	.	.	.	.	.	.	.	.	.	.	.
143	.	.	.	.	.	.	.	.	.	.	.
144	.	.	.	.	.	.	.	.	.	.	.

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
145	80792	COPP	A	C	.	.	.	.	.	.	.	.	.	.
146	81492	COPP	A	C	0.10	3.1	84.0	2.9	34	0.10	19.1	0.01	.	2.8
147	90192	COPP	A	C	.	.	.	.	.	.	.	.	.	.
148	100692	COPP	A	C	.	.	.	.	.	.	.	.	.	.
149	121092	COPP	A	C	.	.	.	.	.	.	.	.	.	.
150	12093	COPP	A	C	.	.	.	.	.	.	.	.	.	.
151	12793	COPP	A	C	.	.	.	.	.	.	.	.	.	.
152	20993	COPP	A	C	.	.	.	.	.	.	.	.	.	.
153	31893	COPP	A	C	.	.	.	.	.	.	.	.	.	.
154	40293	COPP	A	C	.	.	.	.	.	.	.	.	.	.
155	61192	HGRN	A	N	.	.	.	.	.	.	.	.	.	.
156	62592	HGRN	A	N	.	.	.	.	.	.	.	.	.	.
157	70192	HGRN	A	N	0.20	4.0	29.0	2.8	50	0.00	0.0	0.02	.	2.8
158	72192	HGRN	A	N	.	.	.	.	.	.	.	.	.	.
159	80792	HGRN	A	N	.	.	.	.	.	.	.	.	.	.
160	81492	HGRN	A	N	.	.	.	.	.	.	.	.	.	.
161	90192	HGRN	A	N	0.69	4.2	31.8	2.6	10	2.80	21.0	0.01	0.03	0.0
162	100692	HGRN	A	N	0.06	1.4	32.3	0.0	14	0.00	79.0	0.01	.	0.8
163	121092	HGRN	A	N	.	.	.	.	.	.	.	.	.	.
164	12093	HGRN	A	N	.	.	.	.	.	.	.	.	.	.
165	12793	HGRN	A	N	.	.	.	.	.	.	.	.	.	.
166	20993	HGRN	A	N	.	.	.	.	.	.	.	.	.	.
167	31893	HGRN	A	N	.	.	.	.	.	.	.	.	.	.
168	40293	HGRN	A	N	.	.	.	.	.	.	.	.	.	.
169	61192	HRV2	A	N	.	.	.	.	.	.	.	.	.	.
170	62592	HRV2	A	N	.	.	.	.	.	.	.	.	.	.
171	70192	HRV2	A	N	.	.	.	.	.	.	.	.	.	.
172	72192	HRV2	A	N	.	.	.	.	.	.	.	.	.	.
173	80792	HRV2	A	N	.	.	.	.	.	.	.	.	.	.
174	81492	HRV2	A	N	0.10	1.2	41.0	1.5	29	0.10	19.7	0.02	.	0.2
175	90192	HRV2	A	N	1.68	4.0	41.9	1.7	22	1.80	22.0	0.03	.	0.5
176	100692	HRV2	A	N	0.05	3.4	34.8	0.0	14	0.00	26.0	0.00	0.00	0.9
177	121092	HRV2	A	N	.	.	.	.	.	.	.	.	.	.
178	12093	HRV2	A	N	.	.	.	.	.	.	.	.	.	.
179	12793	HRV2	A	N	.	.	.	.	.	.	.	.	.	.
180	20993	HRV2	A	N	.	.	.	.	.	.	.	.	.	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
145	.	.	.	.	.	.	.	.	.	.	.
146	0.00	0.11	0.22	20.97	43.0	6.29	88	.	.	.	.
147	.	.	.	.	.	.	.	.	.	.	.
148	.	.	.	.	.	.	.	.	.	.	.
149	.	.	.	.	.	.	.	.	.	.	.
150	.	.	.	.	.	.	.	.	.	.	.
151	.	.	.	.	.	.	.	.	.	.	.
152	.	.	.	.	.	.	.	.	.	.	.
153	.	.	.	.	.	.	.	.	.	.	.
154	.	.	.	.	.	.	.	.	.	.	.
155	.	.	.	.	.	.	.	.	.	.	.
156	.	.	.	.	.	.	.	.	.	.	.
157	0.20	0.20	0.33	4.80	5.4	29.00	20	26.13	2.35	6.09	0.09
158	.	.	.	.	.	.	.	.	.	.	.
159	.	.	.	.	.	.	.	.	.	.	.
160	.	.	.	.	.	.	.	.	.	.	.
161	0.01	0.03	0.11	2.64	3.5	20.10	28	29.23	6.05	6.50	0.11
162	0.02	0.04	0.11	1.13	2.2	19.76	18	23.27	3.86	6.25	0.08
163	.	.	.	.	.	.	.	.	.	.	.
164	.	.	.	.	.	.	.	.	.	.	.
165	.	.	.	.	.	.	.	.	.	.	.
166	.	.	.	.	.	.	.	.	.	.	.
167	.	.	.	.	.	.	.	.	.	.	.
168	.	.	.	.	.	.	.	.	.	.	.
169	.	.	.	.	.	.	.	.	.	.	.
170	.	.	.	.	.	.	.	.	.	.	.
171	.	.	.	.	.	.	.	.	.	.	.
172	.	.	.	.	.	.	.	.	.	.	.
173	.	.	.	.	.	.	.	.	.	.	.
174	0.00	0.00	0.05	1.02	1.1	15.49	9	26.62	2.05	5.57	0.03
175	0.01	0.01	0.06	1.76	1.0	15.21	10	26.68	3.03	5.63	0.04
176	0.03	0.00	0.04	0.85	3.4	15.86	10	22.94	2.55	5.77	0.03
177	.	.	.	.	.	.	.	.	.	.	.
178	.	.	.	.	.	.	.	.	.	.	.
179	.	.	.	.	.	.	.	.	.	.	.
180	.	.	.	.	.	.	.	.	.	.	.

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
181	31893	HRV2	A	N	.	.	.	.	.	.	.	.	.	.
182	40293	HRV2	A	N	.	.	.	.	.	.	.	.	.	.
183	61192	RGNC	A	N	.	.	.	.	.	.	.	.	.	.
184	62592	RGNC	A	N	.	.	.	.	.	.	.	.	.	.
185	70192	RGNC	A	N	0.10	5.0	21.0	3.2	0	0.40	30.0	0.02	0.02	1.50
186	72192	RGNC	A	N	.	.	.	.	.	.	.	.	.	.
187	80792	RGNC	A	N	0.00	8.5	31.5	0.6	10	3.25	30.0	0.13	.	0.60
188	81492	RGNC	A	N	0.10	0.5	29.0	0.6	0	1.40	13.5	0.07	.	0.00
189	90192	RGNC	A	N	0.00	1.8	28.5	1.7	12	1.90	69.0	0.09	.	0.00
190	100692	RGNC	A	N	0.04	2.0	26.5	0.0	3	0.10	13.0	0.50	0.52	1.10
191	121092	RGNC	A	N	.	.	.	.	.	.	.	.	.	.
192	12093	RGNC	A	N	.	.	.	.	.	.	.	.	.	.
193	12793	RGNC	A	N	.	.	.	.	.	.	.	.	.	.
194	20993	RGNC	A	N	.	.	.	.	.	.	.	.	.	.
195	31893	RGNC	A	N	.	.	.	.	.	.	.	.	.	.
196	40293	RGNC	A	N	.	.	.	.	.	.	.	.	.	.
197	61192	TMBR	A	N	.	.	.	.	.	.	.	.	.	.
198	62592	TMBR	A	N	.	.	.	.	.	.	.	.	.	.
199	70192	TMBR	A	N	.	.	.	.	.	.	.	.	.	.
200	72192	TMBR	A	N	.	.	.	.	.	.	.	.	.	.
201	80792	TMBR	A	N	0.10	10.0	19.0	1.9	60	4.30	20.0	0.07	0.17	1.20
202	81492	TMBR	A	N	0.10	3.2	46.0	1.3	32	2.40	11.1	0.01	0.07	0.20
203	90192	TMBR	A	N	0.00	4.5	12.0	3.3	11	0.80	28.0	0.01	0.02	0.30
204	100692	TMBR	A	N	0.02	4.2	11.0	0.8	20	0.00	50.0	0.00	0.00	1.40
205	121092	TMBR	A	N	.	.	.	.	.	.	.	.	.	.
206	12093	TMBR	A	N	.	.	.	.	.	.	.	.	.	.
207	12793	TMBR	A	N	.	.	.	.	.	.	.	.	.	.
208	20993	TMBR	A	N	.	.	.	.	.	.	.	.	.	.
209	31893	TMBR	A	N	.	.	.	.	.	.	.	.	.	.
210	40293	TMBR	A	N	.	.	.	.	.	.	.	.	.	.
211	61192	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
212	62592	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
213	70192	SCRS	A	N	0.50	2.0	21.0	3.4	0	0.00	0.0	0.01	0.02	2.30
214	72192	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
215	80792	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
216	81492	SCRS	A	N	.	.	.	.	.	.	.	.	.	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
181	.	.	.	.	.	.	.	.	.	.	.
182	.	.	.	.	.	.	.	.	.	.	.
183	.	.	.	.	.	.	.	.	.	.	.
184	.	.	.	.	.	.	.	.	.	.	.
185	0.01	0.01	0.02	1.60	1.6	12.31	17	26.57	5.53	6.15	0.06
186	.	.	.	.	.	.	.	.	.	.	.
187	0.00	0.01	0.04	.	0.8	12.20	22	27.72	5.02	6.08	0.07
188	0.00	0.00	0.04	0.57	1.2	10.16	20	27.70	4.97	6.00	0.66
189	0.00	0.01	0.07	1.82	1.4	11.78	20	27.10	5.12	6.01	0.07
190	0.04	0.01	0.05	0.70	1.5	10.84	20	24.66	5.16	6.19	0.07
191	.	.	.	.	.	.	.	.	.	.	.
192	.	.	.	.	.	.	.	.	.	.	.
193	.	.	.	.	.	.	.	.	.	.	.
194	.	.	.	.	.	.	.	.	.	.	.
195	.	.	.	.	.	.	.	.	.	.	.
196	.	.	.	.	.	.	.	.	.	.	.
197	.	.	.	.	.	.	.	.	.	.	.
198	.	.	.	.	.	.	.	.	.	.	.
199	.	.	.	.	.	.	.	.	.	.	.
200	.	.	.	.	.	.	.	.	.	.	.
201	0.00	0.16	0.25	29.91	18.3	11.15	22	.	.	.	.
202	0.00	0.01	0.04	0.39	0.5	11.73	19	29.25	5.45	6.41	0.07
203	0.00	0.01	0.07	0.55	0.9	12.21	20	32.19	9.56	6.79	0.07
204	0.01	0.02	0.08	0.74	2.3	7.13	28	25.62	5.16	6.34	0.08
205	.	.	.	.	.	.	.	.	.	.	.
206	.	.	.	.	.	.	.	.	.	.	.
207	.	.	.	.	.	.	.	.	.	.	.
208	.	.	.	.	.	.	.	.	.	.	.
209	.	.	.	.	.	.	.	.	.	.	.
210	.	.	.	.	.	.	.	.	.	.	.
211	.	.	.	.	.	.	.	.	.	.	.
212	.	.	.	.	.	.	.	.	.	.	.
213	0.00	0.01	0.04	3.00	5.8	13.72	12	28.10	3.49	6.31	0.13
214	.	.	.	.	.	.	.	.	.	.	.
215	.	.	.	.	.	.	.	.	.	.	.
216	.	.	.	.	.	.	.	.	.	.	.

A SIDE DATA

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
217	90192	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
218	100692	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
219	121092	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
220	12093	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
221	12793	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
222	20993	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
223	31893	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
224	40293	SCRS	A	N	.	.	.	.	.	.	.	.	.	.
225	61192	LHBF	A	C	.	.	.	.	.	.	.	.	.	.
226	62592	LHBF	A	C	.	.	.	.	.	.	.	.	.	.
227	70192	LHBF	A	C	0.30	10.0	17.0	3.5	0	0.1	60.0	0.02	0.21	1.60
228	72192	LHBF	A	C	.	.	.	.	.	.	.	.	.	.
229	80792	LHBF	A	C	.	.	.	.	.	.	.	.	.	.
230	81492	LHBF	A	C	0.40	6.0	90.0	1.1	18	0.0	84.0	0.02	0.22	1.10
231	90192	LHBF	A	C	0.10	6.7	11.4	3.3	15	2.2	30.0	0.00	0.00	0.00
232	100692	LHBF	A	C	0.09	5.4	17.0	1.2	21	0.5	29.0	0.02	0.23	1.90
233	121092	LHBF	A	C	.	.	.	.	.	.	.	.	.	.
234	12093	LHBF	A	C	.	.	.	.	.	.	.	.	.	.
235	12793	LHBF	A	C	.	.	.	.	.	.	.	.	.	.
236	20993	LHBF	A	C	.	.	.	.	.	.	.	.	.	.
237	31893	LHBF	A	C	.	.	.	.	.	.	.	.	.	.
238	40293	LHBF	A	C	.	.	.	.	.	.	.	.	.	.
239	61192	LHBB	A	C	.	.	.	.	.	.	.	.	.	.
240	62592	LHBB	A	C	.	.	.	.	.	.	.	.	.	.
241	70192	LHBB	A	C	0.20	12.0	38.0	5.1	60	1.6	17.0	0.02	0.51	2.05
242	72192	LHBB	A	C	.	.	.	.	.	.	.	.	.	.
243	80792	LHBB	A	C	.	.	.	.	.	.	.	.	.	.
244	81492	LHBB	A	C	.	.	.	.	.	.	.	.	.	.
245	90192	LHBB	A	C	0.17	6.1	31.4	0.8	27	4.6	47.0	0.10	2.02	1.00
246	100692	LHBB	A	C	0.26	7.3	35.0	3.6	34	5.1	31.0	0.34	3.28	1.20
247	121092	LHBB	A	C	.	.	.	.	.	.	.	.	.	.
248	12093	LHBB	A	C	.	.	.	.	.	.	.	.	.	.
249	12793	LHBB	A	C	.	.	.	.	.	.	.	.	.	.
250	20993	LHBB	A	C	.	.	.	.	.	.	.	.	.	.
251	31893	LHBB	A	C	.	.	.	.	.	.	.	.	.	.
252	40293	LHBB	A	C	.	.	.	.	.	.	.	.	.	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
217	.	.	.	.	.	.	.	.	.	.	.
218	.	.	.	.	.	.	.	.	.	.	.
219	.	.	.	.	.	.	.	.	.	.	.
220	.	.	.	.	.	.	.	.	.	.	.
221	.	.	.	.	.	.	.	.	.	.	.
222	.	.	.	.	.	.	.	.	.	.	.
223	.	.	.	.	.	.	.	.	.	.	.
224	.	.	.	.	.	.	.	.	.	.	.
225	.	.	.	.	.	.	.	.	.	.	.
226	.	.	.	.	.	.	.	.	.	.	.
227	0.04	0.04	0.11	11.80	2.6	6.55	45	27.81	4.55	7.09	0.17
228	.	.	.	.	.	.	.	.	.	.	.
229	.	.	.	1.28	1.6	6.77	66	29.69	2.97	7.06	0.32
230	0.00	0.00	0.05	3.56	2.0	9.33	74	30.27	4.22	7.05	0.31
231	0.01	0.02	0.09	4.70	1.9	7.36	72	30.06	7.56	7.52	0.27
232	0.06	0.01	0.05	7.77	4.1	12.60	90	21.85	4.74	7.32	0.34
233	.	.	.	.	.	.	.	.	.	.	.
234	.	.	.	.	.	.	.	.	.	.	.
235	.	.	.	.	.	.	.	.	.	.	.
236	.	.	.	.	.	.	.	.	.	.	.
237	.	.	.	.	.	.	.	.	.	.	.
238	.	.	.	.	.	.	.	.	.	.	.
239	.	.	.	.	.	.	.	.	.	.	.
240	.	.	.	.	.	.	.	.	.	.	.
241	0.02	0.13	0.18	11.40	2.9	9.96	85	29.11	3.76	7.45	0.29
242	.	.	.	.	.	.	.	.	.	.	.
243	.	.	.	.	.	.	.	.	.	.	.
244	.	.	.	.	.	.	.	.	.	.	.
245	0.04	0.05	0.14	4.69	2.0	11.34	92	32.82	5.01	7.24	0.30
246	0.33	0.08	0.11	5.00	4.8	8.80	86	23.67	3.93	7.19	0.29
247	.	.	.	.	.	.	.	.	.	.	.
248	.	.	.	.	.	.	.	.	.	.	.
249	.	.	.	.	.	.	.	.	.	.	.
250	.	.	.	.	.	.	.	.	.	.	.
251	.	.	.	.	.	.	.	.	.	.	.
252	.	.	.	.	.	.	.	.	.	.	.

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
253	61192	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
254	62592	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
255	70192	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
256	72192	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
257	80792	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
258	81492	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
259	90192	CRLS	A	C	0.00	2.1	20.0	0.0	6	5.5	19.0	0.01	0.29	0.3
260	100692	CRLS	A	C	0.29	1.7	11.6	1.6	6	0.6	17.0	0.03	0.36	1.7
261	121092	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
262	12093	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
263	12793	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
264	20993	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
265	31893	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
266	40293	CRLS	A	C	.	.	.	.	.	.	.	.	.	.
267	61192	CARL	A	C	.	.	.	.	.	.	.	.	.	.
268	62592	CARL	A	C	.	.	.	.	.	.	.	.	.	.
269	70192	CARL	A	C	0.10	4.0	35.0	0.0	70	0.0	.	0.08	.	1.5
270	72192	CARL	A	C	.	.	.	.	.	.	.	.	.	.
271	80792	CARL	A	C	.	.	.	.	.	.	.	.	.	.
272	81492	CARL	A	C	0.50	2.0	80.0	0.2	23	0.1	77.0	0.01	0.14	1.5
273	90192	CARL	A	C	0.00	2.7	84.0	0.0	12	3.3	14.0	0.01	0.15	1.4
274	100692	CARL	A	C	.	.	.	.	.	.	.	0.05	0.54	.
275	121092	CARL	A	C	.	.	.	.	.	.	.	.	.	.
276	12093	CARL	A	C	.	.	.	.	.	.	.	.	.	.
277	12793	CARL	A	C	.	.	.	.	.	.	.	.	.	.
278	20993	CARL	A	C	.	.	.	.	.	.	.	.	.	.
279	31893	CARL	A	C	.	.	.	.	.	.	.	.	.	.
280	40293	CARL	A	C	.	.	.	.	.	.	.	.	.	.
281	61192	TRCO	A	C	.	.	.	.	.	.	.	.	.	.
282	62592	TRCO	A	C	.	.	.	.	.	.	.	.	.	.
283	70192	TRCO	A	C	0.20	5.0	13.0	3.1	20	0.0	50.0	0.02	.	0.8
284	72192	TRCO	A	C	.	.	.	.	.	.	.	.	.	.
285	80792	TRCO	A	C	0.00	13.0	17.0	0.7	20	3.4	30.0	0.02	0.22	0.9
286	81492	TRCO	A	C	0.10	5.3	22.0	1.6	49	5.8	16.5	0.05	0.23	1.7
287	90192	TRCO	A	C	0.00	1.6	12.0	0.1	6	4.4	12.0	0.01	0.03	0.4
288	100692	TRCO	A	C	0.16	1.5	29.8	0.8	11	0.0	19.0	0.00	0.00	2.1

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
253	.	.	.	.	.	.	.	.	.	.	.
254	.	.	.	.	.	.	.	.	.	.	.
255	.	.	.	.	.	.	.	.	.	.	.
256	.	.	.	.	.	.	.	.	.	.	.
257	.	.	.	.	.	.	.	.	.	.	.
258	.	.	.	.	.	.	.	.	.	.	.
259	0.00	0.00	0.05	0.56	0.5	10.57	83	30.57	7.50	7.56	0.39
260	0.04	0.00	0.01	0.98	0.6	9.14	94	23.93	3.94	7.18	0.36
261	.	.	.	.	.	.	.	.	.	.	.
262	.	.	.	.	.	.	.	.	.	.	.
263	.	.	.	.	.	.	.	.	.	.	.
264	.	.	.	.	.	.	.	.	.	.	.
265	.	.	.	.	.	.	.	.	.	.	.
266	.	.	.	.	.	.	.	.	.	.	.
267	.	.	.	.	.	.	.	.	.	.	.
268	.	.	.	.	.	.	.	.	.	.	.
269	0.02	0.43	0.50	13.40	2.2	16.31	143	27.41	0.60	6.89	.
270	.	.	.	.	.	.	.	.	.	.	.
271	.	.	.	.	.	.	.	.	.	.	.
272	0.00	0.00	0.03	0.55	0.6	14.95	143	28.42	7.06	7.22	0.73
273	0.00	0.01	0.07	1.37	0.6	11.65	110	29.73	4.93	7.20	0.61
274	0.04	0.01	0.03	1.06	1.0	11.87	112	23.98	3.85	7.23	1.21
275	.	.	.	.	.	.	.	.	.	.	.
276	.	.	.	.	.	.	.	.	.	.	.
277	.	.	.	.	.	.	.	.	.	.	.
278	.	.	.	.	.	.	.	.	.	.	.
279	.	.	.	.	.	.	.	.	.	.	.
280	.	.	.	.	.	.	.	.	.	.	.
281	.	.	.	.	.	.	.	.	.	.	.
282	.	.	.	.	.	.	.	.	.	.	.
283	0.01	0.09	0.11	5.40	2.2	7.98	48	29.95	2.38	.	0.11
284	.	.	.	.	.	.	.	.	.	.	.
285	0.00	0.01	0.05	3.73	2.3	7.15	69	28.59	2.75	7.09	0.23
286	0.00	0.01	0.07	5.30	3.4	8.33	66	29.51	3.75	6.68	0.16
287	0.00	0.01	0.08	3.98	1.2	7.46	52	28.91	3.01	6.52	0.12
288	0.03	0.02	0.02	8.72	3.4	9.33	44	24.72	3.45	6.59	0.11

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
289	121092	TRCO	A	C	.	.	.	.	.	.	.	.	.	.
290	12093	TRCO	A	C	.	.	.	.	.	.	.	.	.	.
291	12793	TRCO	A	C	.	.	.	.	.	.	.	.	.	.
292	20993	TRCO	A	C	.	.	.	.	.	.	.	.	.	.
293	31893	TRCO	A	C	.	.	.	.	.	.	.	.	.	.
294	40293	TRCO	A	C	.	.	.	.	.	.	.	.	.	.
295	61192	TOFF	A	C	.	.	.	.	.	.	.	.	.	.
296	62592	TOFF	A	C	.	.	.	.	.	.	.	.	.	.
297	70192	TOFF	A	C	.	.	.	.	.	.	.	.	.	.
298	72192	TOFF	A	C	.	.	.	.	.	.	.	.	.	.
299	80792	TOFF	A	C	0.13	1.6	24.0	1.5	0	.	45.0	0.03	1.52	4.1
300	81492	TOFF	A	C	.	3.1	84.0	2.9	34	0.1	19.1	0.01	0.55	2.8
301	90192	TOFF	A	C	.	.	.	.	.	.	.	.	.	.
302	100692	TOFF	A	C	0.11	0.9	11.2	0.0	1	0.0	24.0	0.00	0.00	1.1
303	121092	TOFF	A	C	.	.	.	.	.	.	.	.	.	.
304	12093	TOFF	A	C	.	.	.	.	.	.	.	.	.	.
305	12793	TOFF	A	C	.	.	.	.	.	.	.	.	.	.
306	20993	TOFF	A	C	.	.	.	.	.	.	.	.	.	.
307	31893	TOFF	A	C	.	.	.	.	.	.	.	.	.	.
308	40293	TOFF	A	C	.	.	.	.	.	.	.	.	.	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
289	.	.	.	.	.	.	.	.	.	.	.
290	.	.	.	.	.	.	.	.	.	.	.
291	.	.	.	.	.	.	.	.	.	.	.
292	.	.	.	.	.	.	.	.	.	.	.
293	.	.	.	.	.	.	.	.	.	.	.
294	.	.	.	.	.	.	.	.	.	.	.
295	.	.	.	.	.	.	.	.	.	.	.
296	.	.	.	.	.	.	.	.	.	.	.
297	.	.	.	.	.	.	.	.	.	.	.
298	.	.	.	.	.	.	.	.	.	.	.
299	0.00	0.03	0.05	11.42	9.7	5.54	102	26.47	6.21	7.84	0.35
300	0.00	0.11	0.22	20.97	43.0	6.29	88	28.22	6.51	7.82	0.29
301	.	.	.	.	.	.	.	.	.	.	.
302	0.01	0.03	0.08	5.83	7.5	6.88	108	26.34	8.31	8.15	0.41
303	.	.	.	.	.	.	.	.	.	.	.
304	.	.	.	.	.	.	.	.	.	.	.
305	.	.	.	.	.	.	.	.	.	.	.
306	.	.	.	.	.	.	.	.	.	.	.
307	.	.	.	.	.	.	.	.	.	.	.
308	.	.	.	.	.	.	.	.	.	.	.

Correlation Analysis

21 'VAR' Variables: CD CU FE PB MN NI ZN NH3 UNNH3 CR NOX OP TP TSS TURB TOC ALKAL TEMP DISSO PH COND

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum
CD	81	0.186049	0.303672	0.100000	0	1.900000
CU	84	4.473810	4.153185	3.000000	0	19.300000
FE	84	38.423810	24.415261	31.450000	11.000000	132.700000
PB	84	1.385714	1.300430	1.100000	0	5.900000
MN	84	23.761905	20.711221	20.000000	0	100.000000
NI	78	1.513462	2.133464	0.250000	0	9.600000
ZN	82	28.507317	19.407017	22.000000	0	85.000000
NH3	86	0.035465	0.067085	0.020000	0	0.500000
UNNH3	70	0.241571	0.496581	0.090000	0	3.280000
CR	84	0.964881	1.005041	0.850000	0	5.100000
NOX	85	0.017412	0.042849	0.010000	0	0.330000
OP	85	0.047882	0.086974	0.010000	0	0.430000
TP	85	0.103294	0.111424	0.060000	0.010000	0.580000
TSS	85	4.644471	5.482775	2.550000	0	29.910000
TURB	86	4.212791	7.497730	1.950000	0.400000	43.000000
TOC	84	11.214286	4.531895	10.540000	4.540000	29.000000
ALKAL	86	56.476744	32.189412	49.000000	9.000000	143.000000
TEMP	81	26.545309	3.485368	26.970000	16.310000	32.820000
DISSO	81	4.218272	2.312516	3.970000	0.250000	10.370000
PH	80	6.779000	0.560516	6.765000	5.570000	8.510000
COND	80	0.219750	0.190223	0.155000	0.030000	1.210000

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

CD

CD	NI	PB	ZN	CR
1.00000	-0.25611	0.24834	0.23950	0.22300
0.0	0.0266	0.0254	0.0335	0.0454
81	75	81	79	81
COND	OP	ALKAL	UNNH3	MN
0.21411	0.18937	0.15221	0.12040	0.11969
0.0689	0.0904	0.1749	0.3394	0.2872
73	81	81	65	81

CU

CU	NI	MN	PB	TSS
1.00000	0.33431	0.33311	0.32024	0.31150
0.0	0.0028	0.0020	0.0030	0.0041
84	78	84	84	83
NH3	UNNH3	TEMP	TP	OP
0.27919	0.25265	0.21969	0.20978	0.19388
0.0106	0.0391	0.0565	0.0555	0.0772
83	67	76	84	84

FE

FE	UNNH3	MN	PH	ALKAL
1.00000	0.25562	0.18530	0.17574	0.15293
0.0	0.0368	0.0915	0.1315	0.1649
84	67	84	75	84
COND	TSS	OP	CU	PB
0.14481	-0.13455	-0.10749	-0.10631	-0.10358
0.2151	0.2252	0.3304	0.3358	0.3484
75	83	84	84	84

PB

PB	TURB	TSS	TP	OP
1.00000	0.37355	0.36238	0.35270	0.33552
0.0	0.0005	0.0008	0.0010	0.0018
84	84	83	84	84
CU	NH3	CD	UNNH3	NI
0.32024	0.28356	0.24834	0.24714	0.23268
0.0030	0.0094	0.0254	0.0438	0.0404
84	83	81	67	78

MN

MN	TP	OP	DISSO	TURB
1.00000	0.58328	0.50592	-0.46266	0.42214
0.0	0.0001	0.0001	0.0001	0.0001
84	84	84	76	84
TSS	CU	TOC	PB	ALKAL
0.33876	0.33311	0.31471	0.22933	0.21831
0.0017	0.0020	0.0040	0.0359	0.0460
83	84	82	84	84

NI

NI	CU	UNNH3	NOX	NH3
1.00000	0.33431	0.30589	-0.30360	0.28528
0.0	0.0028	0.0165	0.0069	0.0119
78	78	61	78	77
CD	COND	ZN	PB	TEMP
-0.25611	0.23980	-0.23500	0.23268	0.20358
0.0266	0.0472	0.0410	0.0404	0.0910
75	69	76	78	70

ZN

ZN	CD	NI	TOC	DISSO
1.00000	0.23950	-0.23500	-0.23102	0.22391
0.0	0.0335	0.0410	0.0392	0.0551
82	79	76	80	74

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

ZN

OP	MN	PH	NH3	COND
0.14407	-0.13860	0.11874	0.11061	-0.10443
0.1966	0.2143	0.3170	0.3256	0.3759
82	82	73	81	74

NH3

NH3	UNNH3	NI	PB	CU
1.00000	0.80400	0.28528	0.28356	0.27919
0.0	0.0001	0.0119	0.0094	0.0106
86	70	77	83	83
MN	OP	TSS	TP	DISSO
0.19869	0.18943	0.18590	0.16726	-0.13765
0.0718	0.0844	0.0924	0.1283	0.2357
83	84	83	84	76

UNNH3

UNNH3	NH3	PH	COND	ALKAL
1.00000	0.80400	0.53201	0.48097	0.43717
0.0	0.0001	0.0001	0.0001	0.0002
70	70	67	67	68
CR	NI	TEMP	FE	CU
0.31304	0.30589	0.29259	0.25562	0.25265
0.0099	0.0165	0.0163	0.0368	0.0391
67	61	67	67	67

CR

CR	TURB	ALKAL	PH	UNNH3
1.00000	0.38836	0.35899	0.34954	0.31304
0.0	0.0003	0.0008	0.0021	0.0099
84	84	84	75	67
COND	TSS	PB	OP	CD
0.31193	0.23375	0.23036	0.22472	0.22300
0.0064	0.0334	0.0350	0.0399	0.0454
75	83	84	84	81

NOX

NOX	TEMP	NI	MN	CR
1.00000	-0.47347	-0.30360	-0.18354	0.18233
0.0	0.0001	0.0069	0.0947	0.0969
85	77	78	84	84
PB	TSS	CU	OP	PH
-0.11375	-0.10856	-0.10814	0.10696	0.09173
0.3029	0.3256	0.3275	0.3299	0.4306
84	84	84	85	76

OP

OP	TP	TURB	MN	TSS
1.00000	0.75313	0.55087	0.50592	0.50573
0.0	0.0001	0.0001	0.0001	0.0001
85	85	85	84	84
PB	CR	CU	DISSO	NH3
0.33552	0.22472	0.19388	-0.19247	0.18943
0.0018	0.0399	0.0772	0.0935	0.0844
84	84	84	77	84

TP

TP	OP	MN	TURB	TSS
1.00000	0.75313	0.58328	0.56997	0.48940
0.0	0.0001	0.0001	0.0001	0.0001
85	85	84	85	84
PB	DISSO	TOC	CU	NH3
0.35270	-0.26640	0.21156	0.20978	0.16726
0.0010	0.0192	0.0549	0.0555	0.1283
84	77	83	84	84

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

TSS

TSS	TURB	OP	TP	PB
1.00000	0.66263	0.50573	0.48940	0.36238
0.0	0.0001	0.0001	0.0001	0.0008
85	85	84	84	83
MN	CU	PH	ALKAL	COND
0.33876	0.31150	0.30628	0.29594	0.24227
0.0017	0.0041	0.0071	0.0060	0.0350
83	83	76	85	76

TURB

TURB	TSS	TP	OP	MN
1.00000	0.66263	0.56997	0.55087	0.42214
0.0	0.0001	0.0001	0.0001	0.0001
86	85	85	85	84
CR	PB	CU	PH	ALKAL
0.38836	0.37355	0.18729	0.17492	0.14236
0.0003	0.0005	0.0880	0.1281	0.1910
84	84	84	77	86

TOC

TOC	PH	MN	ZN	ALKAL
1.00000	-0.45675	0.31471	-0.23102	-0.22918
0.0	0.0001	0.0040	0.0392	0.0360
84	75	82	80	84
COND	TP	DISSO	UNNH3	TEMP
-0.22550	0.21156	-0.21140	-0.20994	-0.20635
0.0518	0.0549	0.0668	0.0907	0.0737
75	83	76	66	76

ALKAL

ALKAL	COND	PH	UNNH3	CR
1.00000	0.89079	0.78590	0.43717	0.35899
0.0	0.0001	0.0001	0.0002	0.0008
86	77	77	68	84
TSS	TOC	MN	NI	FE
0.29594	-0.22918	0.21831	0.17969	0.15293
0.0060	0.0360	0.0460	0.1154	0.1649
85	84	84	78	84

TEMP

TEMP	NOX	UNNH3	PH	CU
1.00000	-0.47347	0.29259	0.23852	0.21969
0.0	0.0001	0.0163	0.0331	0.0565
81	77	67	80	76
TOC	NI	PB	TSS	DISSO
-0.20635	0.20358	0.19311	0.17826	0.17217
0.0737	0.0910	0.0947	0.1209	0.1243
76	70	76	77	81

DISSO

DISSO	MN	PH	TP	ZN
1.00000	-0.46266	0.43084	-0.26640	0.22391
0.0	0.0001	0.0001	0.0192	0.0551
81	76	80	77	74
TOC	OP	TEMP	NH3	NI
-0.21140	-0.19247	0.17217	-0.13765	0.12209
0.0668	0.0935	0.1243	0.2357	0.3140
76	77	81	76	70

PH

PH	ALKAL	COND	UNNH3	TOC
1.00000	0.78590	0.73574	0.53201	-0.45675
0.0	0.0001	0.0001	0.0001	0.0001
80	77	79	67	75

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

PH

	DISSO	CR	TSS	TEMP	FE
PH	0.43084	0.34954	0.30628	0.23852	0.17574
	0.0001	0.0021	0.0071	0.0331	0.1315
	80	75	76	80	75

COND

	COND	ALKAL	PH	UNNH3	CR
COND	1.00000	0.89079	0.73574	0.48097	0.31193
	0.0	0.0001	0.0001	0.0001	0.0064
	80	77	79	67	75

	TSS	NI	TOC	CD	FE
COND	0.24227	0.23980	-0.22550	0.21411	0.14481
	0.0350	0.0472	0.0518	0.0689	0.2151
	76	69	75	73	75

```
OPTIONS PS=80 LS=100;

DATA OSANDATA;

INFILE 'A:\OSSASAN' LRECL=500 MISSOVER;

INPUT DATE LOC$ AB$ NC$ CD CU FE PB MN NI ZN NH3 UNNH3 CR NOX OP
TP TSS
    TURB TOC ALKAL TEMP DISSO PH COND;
PROC PRINT;
TITLE 'OUTFALL SURVEY';
TITLE2 'NATURAL A SIDE DATA';


RUN;

PROC CORR SPEARMAN RANK BEST=10;
TITLE3 'NONPARAMETRIC STATS';
VAR CD CU FE PB MN NI ZN NH3 UNNH3 CR NOX OP TP TSS
    TURB TOC ALKAL TEMP DISSO PH COND;

RUN;
```

NATURAL A SIDE DATA

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3
1	100692	HRV2	A	N	0.05	3.4	34.8	0.0	14	0.00	26.0	0.00	0.00
2	90192	HRV1	A	N	0.00	2.9	59.0	0.0	6	1.90	24.5	0.03	0.08
3	72192	RGNC	A	N	.	.	.	.	.	.	.	.	.
4	70192	RGNC	A	N	0.10	5.0	21.0	3.2	0	0.40	30.0	0.02	0.02
5	81492	HRV1	A	N	0.20	9.6	51.0	1.4	61	9.60	25.2	0.03	0.10
6	90192	CRNR	A	N	.	2.8	41.6	2.0	60	2.30	19.0	0.04	0.16
7	81492	CRNR	A	N	0.30	4.3	32.0	1.4	66	4.90	13.2	0.01	0.18
8	61192	HRV1	A	N	0.00	9.0	40.0	1.5	30	0.00	10.0	0.04	0.19
9	100692	CRNR	A	N	0.00	0.0	89.0	1.8	7	1.60	18.0	0.00	0.00
10	90192	TMBR	A	N	0.00	4.5	12.0	3.3	11	0.80	28.0	0.01	0.02
11	81492	TMBR	A	N	0.10	3.2	46.0	1.3	32	2.40	11.1	0.01	0.07
12	100692	TMBR	A	N	0.02	4.2	11.0	0.8	20	0.00	50.0	0.00	0.00
13	70192	SCRS	A	N	0.50	2.0	21.0	3.4	0	0.00	0.0	0.01	0.02
14	80792	TMBR	A	N	0.10	10.0	19.0	1.9	60	4.30	20.0	0.07	0.17
15	81492	RGNC	A	N	0.10	0.5	29.0	0.6	0	1.40	13.5	0.07	0.06
16	80792	RGNC	A	N	0.00	8.5	31.5	0.6	10	3.25	30.0	0.13	0.13
17	100692	RGNC	A	N	0.04	2.0	26.5	0.0	3	0.10	13.0	0.50	0.52
18	90192	RGNC	A	N	0.00	1.8	28.5	1.7	12	1.90	69.0	0.09	0.07
19	80792	CRNR	A	N	1.90	18.0	30.0	3.0	100	6.20	0.0	0.03	0.31
20	70192	HGRN	A	N	0.20	4.0	29.0	2.8	50	0.00	0.0	0.02	0.02
21	100692	SUSN	A	N	0.08	1.5	27.0	2.3	27	1.90	37.0	0.06	.
22	100692	HGRN	A	N	0.06	1.4	32.3	0.0	14	0.00	79.0	0.01	0.01
23	90192	HGRN	A	N	0.69	4.2	31.8	2.6	10	2.80	21.0	0.01	0.03
24	80792	SUSN	A	N	0.00	12.0	24.0	5.9	40	3.00	70.0	0.06	.
25	72192	SUSN	A	N	0.30	8.0	17.0	3.1	30	0.30	40.0	0.13	.
26	90192	SUSN	A	N	0.23	6.8	132.7	5.2	55	1.90	48.0	0.10	.
27	81492	SUSN	A	N	0.30	2.0	20.0	1.0	31	0.00	62.0	0.06	.
28	121092	HGRN	A	N	.	.	.	.	.	.	.	.	.
29	81492	HRV2	A	N	0.10	1.2	41.0	1.5	29	0.10	19.7	0.02	.
30	12093	QRIG	A	N	0.00	19.3	11.9	1.0	8	.	11.0	0.02	0.01
31	70192	CRNR	A	N	.	2.0	16.0	0.9	20	0.40	14.0	0.01	.
32	90192	HRV2	A	N	1.68	4.0	41.9	1.7	22	1.80	22.0	0.03	.
33	121092	QRIG	A	N	0.10	1.6	88.0	0.4	8	.	22.0	0.03	0.06
34	90192	QRIG	A	N	0.00	0.0	21.0	0.5	32	1.70	21.7	0.01	0.01
35	81492	QRIG	A	N	0.30	2.0	28.0	1.7	51	0.00	0.0	0.01	0.03
36	100692	QRIG	A	N	0.23	1.4	15.2	1.0	20	0.00	43.0	0.01	0.02

OBS	CR	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
1	0.9	0.03	0.00	0.04	0.85	3.4	15.86	10	22.94	2.55	5.77	0.03
2	0.0	0.01	0.01	0.06	1.52	1.0	9.46	39	25.95	2.11	6.56	0.11
3	.	.	.	.	.	.	.	.	.	.	.	.
4	1.5	0.01	0.01	0.02	1.60	1.6	12.31	17	26.57	5.53	6.15	0.06
5	1.2	0.00	0.01	0.06	1.83	1.3	6.68	47	26.00	1.87	6.64	0.13
6	3.6	0.00	0.09	0.23	17.53	27.0	12.70	102	26.20	0.70	6.74	0.35
7	5.1	0.00	0.08	0.08	6.05	3.7	11.94	129	29.81	8.13	7.29	0.54
8	0.0	0.01	0.01	0.15	8.50	8.2	10.84	54	26.00	0.25	6.81	0.14
9	1.4	0.02	0.01	0.08	7.33	4.8	10.51	87	26.33	8.94	7.42	0.32
10	0.3	0.00	0.01	0.07	0.55	0.9	12.21	20	32.19	9.56	6.79	0.07
11	0.2	0.00	0.01	0.04	0.39	0.5	11.73	19	29.25	5.45	6.41	0.07
12	1.4	0.01	0.02	0.08	0.74	2.3	7.13	28	25.62	5.16	6.34	0.08
13	2.3	0.00	0.01	0.04	3.00	5.8	13.72	12	28.10	3.49	6.31	0.13
14	1.2	0.00	0.16	0.25	29.91	18.3	11.15	22	.	.	.	.
15	0.0	0.00	0.00	0.04	0.57	1.2	10.16	20	27.70	4.97	6.00	0.66
16	0.6	0.00	0.01	0.04	.	0.8	12.20	22	27.72	5.02	6.08	0.07
17	1.1	0.04	0.01	0.05	0.70	1.5	10.84	20	24.66	5.16	6.19	0.07
18	0.0	0.00	0.01	0.07	1.82	1.4	11.78	20	27.10	5.12	6.01	0.07
19	1.5	0.00	0.01	0.06	4.63	2.4	10.47	140	27.50	1.37	7.10	0.80
20	2.8	0.20	0.20	0.33	4.80	5.4	29.00	20	26.13	2.35	6.09	0.09
21	2.8	0.02	0.29	0.42	2.42	3.0	14.45	53	.	.	.	.
22	0.8	0.02	0.04	0.11	1.13	2.2	19.76	18	23.27	3.86	6.25	0.08
23	0.0	0.01	0.03	0.11	2.64	3.5	20.10	28	29.23	6.05	6.50	0.11
24	0.9	0.00	0.27	0.38	11.90	12.2	15.89	47	.	.	.	.
25	0.3	0.00	0.42	0.58	8.10	16.5	19.90	49	.	.	.	.
26	1.0	0.01	0.29	0.42	0.00	5.9	10.58	49	.	.	.	.
27	0.1	0.00	0.25	0.35	5.88	3.0	15.04	52	.	.	.	.
28	.	.	.	.	.	.	.	.	.	.	.	.
29	0.2	0.00	0.00	0.05	1.02	1.1	15.49	9	26.62	2.05	5.57	0.03
30	0.5	0.01	0.01	0.03	1.39	1.0	13.50	19	18.30	6.79	6.15	0.12
31	1.1	0.01	0.01	0.03	2.60	4.5	11.16	74	.	.	.	.
32	0.5	0.01	0.01	0.06	1.76	1.0	15.21	10	26.68	3.03	5.63	0.04
33	0.0	0.02	0.01	0.03	2.32	1.0	11.86	24	17.81	7.21	6.67	0.13
34	0.0	0.00	0.01	0.07	3.75	2.4	16.12	21	26.64	3.60	6.07	0.10
35	0.2	0.00	0.01	0.10	4.87	2.6	13.83	44	27.71	3.97	6.61	0.15
36	0.9	0.02	0.04	0.10	3.07	2.5	12.29	17	25.81	6.45	6.33	0.09

Correlation Analysis

21 'VAR' Variables:								
	CD	CU	FE	PB	MN	NI	ZN	NH3
	UNNH3	CR	NOX	OP	TP	TSS	TURB	TOC
	ALKAL	TEMP	DISSO	PH	COND			

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum
CD	32	0.240000	0.437574	0.100000	0	1.900000
CU	34	4.797059	4.659528	3.300000	0	19.300000
FE	34	35.285294	25.010097	29.000000	11.000000	132.700000
PB	34	1.750000	1.393981	1.500000	0	5.900000
MN	34	27.617647	23.492120	21.000000	0	100.000000
NI	32	1.717188	2.150417	1.500000	0	9.600000
ZN	34	26.791176	20.507122	21.850000	0	79.000000
NH3	34	0.049412	0.087002	0.025000	0	0.500000
UNNH3	26	0.088077	0.116996	0.045000	0	0.520000
CR	34	1.011765	1.155950	0.850000	0	5.100000
NOX	34	0.013529	0.034455	0.005000	0	0.200000
OP	34	0.069412	0.110452	0.010000	0	0.420000
TP	34	0.136176	0.143654	0.070000	0.020000	0.580000
TSS	33	4.399091	5.902162	2.420000	0	29.910000
TURB	34	4.526471	5.782592	2.450000	0.500000	27.000000
TOC	34	13.407941	4.179978	12.250000	6.680000	29.000000
ALKAL	34	39.470588	32.765684	23.000000	9.000000	140.000000
TEMP	27	26.216296	3.013529	26.570000	17.810000	32.190000
DISSO	27	4.471852	2.441733	4.970000	0.250000	9.560000
PH	27	6.388148	0.458728	6.330000	5.570000	7.420000
COND	27	0.171852	0.195783	0.100000	0.030000	0.800000

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

CD

CD	MN	PB	TEMP	TURB
1.00000	0.34005	0.32248	0.29362	0.24972
0.0	0.0569	0.0718	0.1454	0.1681
32	32	32	26	32
OP	CR	ZN	COND	UNNH3
0.24582	0.22811	-0.22717	0.20961	0.19556
0.1750	0.2092	0.2112	0.3041	0.3489
32	32	32	26	25

CU

CU	NI	PB	UNNH3	MN
1.00000	0.43197	0.39057	0.34773	0.33489
0.0	0.0136	0.0224	0.0817	0.0529
34	32	34	26	34
NH3	PH	OP	NOX	ALKAL
0.25438	0.25248	0.23138	-0.21848	0.21428
0.1466	0.2039	0.1879	0.2145	0.2236
34	27	34	34	34

FE

FE	NI	DISSO	UNNH3	PH
1.00000	0.33543	-0.29025	0.26024	0.23954
0.0	0.0606	0.1419	0.1992	0.2288
34	32	27	26	27
TOC	OP	NOX	COND	ALKAL
-0.19734	-0.19650	0.13398	0.13361	0.12850
0.2633	0.2653	0.4500	0.5064	0.4689
34	34	34	27	34

PB

PB	TEMP	TURB	TP	OP
1.00000	0.55809	0.46741	0.42271	0.41489
0.0	0.0025	0.0053	0.0128	0.0147
34	27	34	34	34
CU	CR	TSS	CD	MN
0.39057	0.35190	0.32575	0.32248	0.28954
0.0224	0.0413	0.0643	0.0718	0.0967
34	34	33	32	34

MN

MN	TP	ALKAL	OP	TSS
1.00000	0.54152	0.46801	0.45421	0.44668
0.0	0.0009	0.0053	0.0070	0.0092
34	34	34	34	33
DISSO	TURB	NOX	NI	CD
-0.41165	0.40547	-0.36993	0.35147	0.34005
0.0329	0.0174	0.0313	0.0485	0.0569
27	34	34	32	32

NI

NI	UNNH3	TEMP	CU	NOX
1.00000	0.56177	0.46144	0.43197	-0.42656
0.0	0.0043	0.0202	0.0136	0.0149
32	24	25	32	32
ALKAL	MN	FE	NH3	TOC
0.38592	0.35147	0.33543	0.31237	-0.28752
0.0291	0.0485	0.0606	0.0818	0.1106
32	32	32	32	32

ZN

ZN	COND	OP	TP	UNNH3
1.00000	-0.52258	0.38335	0.31791	-0.30665
0.0	0.0052	0.0252	0.0669	0.1276
34	27	34	34	26

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

ZN

PH	TEMP	CD	DISSO	NH3
-0.25310	-0.23735	-0.22717	0.21655	0.18935
0.2027	0.2332	0.2112	0.2780	0.2835
27	27	32	27	34

NH3

NH3	UNNH3	DISSO	NI	OP
1.00000	0.74816	-0.35751	0.31237	0.26321
0.0	0.0001	0.0671	0.0818	0.1326
34	26	27	32	34
CU	**TP**	**NOX**	**ALKAL**	**ZN**
0.25438	0.24281	-0.21152	0.19680	0.18935
0.1466	0.1665	0.2298	0.2646	0.2835
34	34	34	34	34

UNNH3

UNNH3	NH3	NI	ALKAL	TOC
1.00000	0.74816	0.56177	0.49215	-0.42696
0.0	0.0001	0.0043	0.0107	0.0296
26	26	24	26	26
NOX	**CU**	**PH**	**DISSO**	**MN**
-0.36800	0.34773	0.32818	-0.31192	0.30728
0.0644	0.0817	0.1092	0.1290	0.1268
26	26	25	25	26

CR

CR	TURB	PB	OP	MN
1.00000	0.41394	0.35190	0.35021	0.26859
0.0	0.0149	0.0413	0.0423	0.1246
34	34	34	34	34
CD	**PH**	**ALKAL**	**TSS**	**CU**
0.22811	0.22723	0.22068	0.21586	0.21224
0.2092	0.2543	0.2098	0.2276	0.2282
32	27	34	33	34

NOX

NOX	TEMP	NI	MN	UNNH3
1.00000	-0.71045	-0.42656	-0.36993	-0.36800
0.0	0.0001	0.0149	0.0313	0.0644
34	27	32	34	26
PB	**COND**	**TSS**	**CU**	**NH3**
-0.28319	-0.23912	-0.22702	-0.21848	-0.21152
0.1046	0.2297	0.2039	0.2145	0.2298
34	27	33	34	34

OP

OP	TP	TURB	MN	TSS
1.00000	0.82522	0.58609	0.45421	0.44334
0.0	0.0001	0.0003	0.0070	0.0098
34	34	34	34	33
ALKAL	**PB**	**ZN**	**PH**	**CR**
0.42852	0.41489	0.38335	0.37665	0.35021
0.0115	0.0147	0.0252	0.0528	0.0423
34	34	34	27	34

TP

TP	OP	TURB	MN	TSS
1.00000	0.82522	0.64273	0.54152	0.50386
0.0	0.0001	0.0001	0.0009	0.0028
34	34	34	34	33
ALKAL	**PB**	**PH**	**ZN**	**COND**
0.45179	0.42271	0.36458	0.31791	0.27816
0.0073	0.0128	0.0615	0.0669	0.1601
34	34	27	34	27

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

TSS

TSS	TURB	COND	ALKAL	TP
1.00000	0.71027	0.61317	0.53827	0.50386
0.0	0.0001	0.0009	0.0012	0.0028
33	33	26	33	33

PH	MN	OP	PB	UNNH3
0.47974	0.44668	0.44334	0.32575	0.25692
0.0131	0.0092	0.0098	0.0643	0.2151
26	33	33	33	25

TURB

TURB	TSS	TP	OP	ALKAL
1.00000	0.71027	0.64273	0.58609	0.47690
0.0	0.0001	0.0001	0.0003	0.0043
34	33	34	34	34

PB	COND	CR	MN	PH
0.46741	0.44603	0.41394	0.40547	0.30688
0.0053	0.0197	0.0149	0.0174	0.1195
34	27	34	34	27

TOC

TOC	PH	UNNH3	COND	ALKAL
1.00000	-0.42962	-0.42696	-0.33819	-0.32063
0.0	0.0253	0.0296	0.0845	0.0645
34	27	26	27	34

NI	OP	TP	TSS	TURB
-0.28752	0.28141	0.27778	0.23414	0.20999
0.1106	0.1069	0.1117	0.1897	0.2333
32	34	34	33	34

ALKAL

ALKAL	PH	COND	TSS	UNNH3
1.00000	0.77617	0.74400	0.53827	0.49215
0.0	0.0001	0.0001	0.0012	0.0107
34	27	27	33	26

TURB	MN	TP	OP	NI
0.47690	0.46801	0.45179	0.42852	0.38592
0.0043	0.0053	0.0073	0.0115	0.0291
34	34	34	34	32

TEMP

TEMP	NOX	PB	NI	CD
1.00000	-0.71045	0.55809	0.46144	0.29362
0.0	0.0001	0.0025	0.0202	0.1454
27	27	27	25	26

UNNH3	ZN	MN	DISSO	ALKAL
0.24265	-0.23735	0.15164	0.14107	0.12471
0.2425	0.2332	0.4502	0.4828	0.5354
25	27	27	27	27

DISSO

DISSO	MN	NH3	UNNH3	FE
1.00000	-0.41165	-0.35751	-0.31192	-0.29025
0.0	0.0329	0.0671	0.1290	0.1419
27	27	27	25	27

TURB	TSS	ZN	TP	PH
-0.25535	-0.22500	0.21655	-0.19066	0.17069
0.1986	0.2691	0.2780	0.3408	0.3946
27	26	27	27	27

PH

PH	ALKAL	COND	TSS	TOC
1.00000	0.77617	0.65277	0.47974	-0.42962
0.0	0.0001	0.0002	0.0131	0.0253
27	27	27	26	27

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

PH

OP	TP	UNNH3	TURB	PB
0.37665	0.36458	0.32818	0.30688	0.26833
0.0528	0.0615	0.1092	0.1195	0.1760
27	27	25	27	27

COND

COND	ALKAL	PH	TSS	ZN
1.00000	0.74400	0.65277	0.61317	-0.52258
0.0	0.0001	0.0002	0.0009	0.0052
27	27	27	26	27
TURB	TOC	UNNH3	TP	NI
0.44603	-0.33819	0.30552	0.27816	0.24643
0.0197	0.0845	0.1375	0.1601	0.2350
27	27	25	27	25

```
OPTIONS PS=80 LS=100;

DATA OSACDATA;

INFILE 'A:\OSSASAC' LRECL=500 MISSOVER;

INPUT DATE LOC$ AB$ NC$ CD CU FE PB MN NI ZN NH3 UNNH3 CR NOX OP
TP TSS TURB TOC ALKAL TEMP DISSO PH COND;

PROC PRINT;
TITLE 'OUTFALL SURVEY';
TITLE2 'CONSTRUCTED A SIDE DATA';


RUN;

PROC CORR SPEARMAN RANK BEST=10;
TITLE3 'NONPARAMETRIC STATS';
VAR CD CU FE PB MN NI ZN NH3 UNNH3 CR NOX OP TP TSS
    TURB TOC ALKAL TEMP DISSO PH COND;

RUN;
```

CONSTRUCTED A SIDE DATA

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
1	81492	COPP	A	C	0.10	3.1	84.0	2.9	34	0.1	19.1	0.01	.	2.80
2	70192	TRCO	A	C	0.20	5.0	13.0	3.1	20	0.0	50.0	0.02	.	0.80
3	80792	TRCO	A	C	0.00	13.0	17.0	0.7	20	3.4	30.0	0.02	0.22	0.90
4	100692	CARL	A	C	0.00	0.0	58.0	0.3	7	0.8	80.0	0.05	0.54	1.30
5	81492	CARL	A	C	0.50	2.0	80.0	0.2	23	0.1	77.0	0.01	0.14	1.50
6	90192	CARL	A	C	0.00	2.7	84.0	0.0	12	3.3	14.0	0.01	0.15	1.40
7	81492	TRCO	A	C	0.10	5.3	22.0	1.6	49	5.8	16.5	0.05	0.23	1.70
8	81492	TOFF	A	C	.	3.1	84.0	2.9	34	0.1	19.1	0.01	0.55	2.80
9	100692	TOFF	A	C	0.11	0.9	11.2	0.0	1	0.0	24.0	0.00	0.00	1.10
10	80792	TOFF	A	C	0.13	1.6	24.0	1.5	0	.	45.0	0.03	1.52	4.10
11	90192	TRCO	A	C	0.00	1.6	12.0	0.1	6	4.4	12.0	0.01	0.03	0.40
12	100692	TRCO	A	C	0.16	1.5	29.8	0.8	11	0.0	19.0	0.00	0.00	2.10
13	90192	LHBF	A	C	0.10	6.7	11.4	3.3	15	2.2	30.0	0.00	0.00	0.00
14	100692	LHBF	A	C	0.09	5.4	17.0	1.2	21	0.5	29.0	0.02	0.23	1.90
15	81492	LHBF	A	C	0.40	6.0	90.0	1.1	18	0.0	84.0	0.02	0.22	1.10
16	70192	LHBF	A	C	0.30	10.0	17.0	3.5	0	0.1	60.0	0.02	0.21	1.60
17	80792	LHBF	A	C	.	.	.	.	.	.	.	.	.	.
18	70192	LHBB	A	C	0.20	12.0	38.0	5.1	60	1.6	17.0	0.02	0.51	2.05
19	100692	CRLS	A	C	0.29	1.7	11.6	1.6	6	0.6	17.0	0.03	0.36	1.70
20	70192	CARL	A	C	0.10	4.0	35.0	0.0	70	0.0	20.0	0.08	.	1.50
21	90192	CRLS	A	C	0.00	2.1	20.0	0.0	6	5.5	19.0	0.01	0.29	0.30
22	90192	LHBB	A	C	0.17	6.1	31.4	0.8	27	4.6	47.0	0.10	2.02	1.00
23	100692	LHBB	A	C	0.26	7.3	35.0	3.6	34	5.1	31.0	0.34	3.28	1.20
24	70192	GTDS	A	C	.	.	.	.	.	.	.	.	.	.
25	72192	GTDS	A	C	0.30	3.0	50.0	1.2	20	0.0	.	0.06	0.54	0.00
26	62592	GTDS	A	C	0.10	6.0	40.0	0.0	30	0.0	28.0	0.01	0.11	0.00
27	100692	WPAS	A	C	0.12	1.6	14.0	0.0	2	0.0	30.0	0.00	0.00	1.00
28	61192	GTDS	A	C	0.00	2.0	50.0	0.1	20	0.0	19.0	0.03	0.67	1.00
29	80792	GTDS	A	C	0.00	14.0	40.0	1.1	20	7.0	20.0	0.04	0.70	0.40
30	121092	GTDS	A	C	.	.	.	.	.	.	.	.	.	.
31	12093	GTDS	A	C	.	.	.	.	.	.	.	.	.	.
32	100692	GTDS	A	C	0.35	2.0	55.0	0.0	7	0.0	41.0	0.01	0.10	0.80
33	81492	GTDS	A	C	0.10	2.0	32.0	1.1	0	0.1	37.2	0.04	0.33	0.50
34	90192	GTDS	A	C	0.25	2.9	56.0	0.6	2	0.6	37.0	0.02	0.25	1.00
35	72192	WBND	A	C	0.20	3.0	40.0	0.8	20	0.0	30.0	0.00	0.00	0.00
36	80792	WBND	A	C	0.00	15.0	12.0	2.5	0	6.0	20.0	0.02	0.12	0.00

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
1	0.00	0.11	0.22	20.97	43.0	6.29	88	.	.	.	.
2	0.01	0.09	0.11	5.40	2.2	7.98	48	29.95	2.38	.	0.11
3	0.00	0.01	0.05	3.73	2.3	7.15	69	28.59	2.75	7.09	0.23
4	0.04	0.01	0.03	1.06	1.0	11.87	112	23.98	3.85	7.23	1.21
5	0.00	0.00	0.03	0.55	0.6	14.95	143	28.42	7.06	7.22	0.73
6	0.00	0.01	0.07	1.37	0.6	11.65	110	29.73	4.93	7.20	0.61
7	0.00	0.01	0.07	5.30	3.4	8.33	66	29.51	3.75	6.68	0.16
8	0.00	0.11	0.22	20.97	43.0	6.29	88	28.22	6.51	7.82	0.29
9	0.01	0.03	0.08	5.83	7.5	6.88	108	26.34	8.31	8.15	0.41
10	0.00	0.03	0.05	11.42	9.7	5.54	102	26.47	6.21	7.84	0.35
11	0.00	0.01	0.08	3.98	1.2	7.46	52	28.91	3.01	6.52	0.12
12	0.03	0.02	0.02	8.72	3.4	9.33	44	24.72	3.45	6.59	0.11
13	0.01	0.02	0.09	4.70	1.9	7.36	72	30.06	7.56	7.52	0.27
14	0.06	0.01	0.05	7.77	4.1	12.60	90	21.85	4.74	7.32	0.34
15	0.00	0.00	0.05	3.56	2.0	9.33	74	30.27	4.22	7.05	0.31
16	0.04	0.04	0.11	11.80	2.6	6.55	45	27.81	4.55	7.09	0.17
17	.	.	.	1.28	1.6	6.77	66	29.69	2.97	7.06	0.32
18	0.02	0.13	0.18	11.40	2.9	9.96	85	29.11	3.76	7.45	0.29
19	0.04	0.00	0.01	0.98	0.6	9.14	94	23.93	3.94	7.18	0.36
20	0.02	0.43	0.50	13.40	2.2	16.31	143	27.41	0.60	6.89	.
21	0.00	0.00	0.05	0.56	0.5	10.57	83	30.57	7.50	7.56	0.39
22	0.04	0.05	0.14	4.69	2.0	11.34	92	32.82	5.01	7.24	0.30
23	0.33	0.08	0.11	5.00	4.8	8.80	86	23.67	3.93	7.19	0.29
24	.	.	.	.	.	.	.	27.08	4.21	7.09	0.18
25	0.02	0.02	0.05	2.32	1.0	6.98	66	30.64	1.50	6.95	0.23
26	0.02	0.01	0.04	2.50	2.7	.	77	29.12	2.86	7.07	0.28
27	0.01	0.00	0.01	1.44	1.0	8.60	80	26.89	10.37	8.51	0.20
28	0.01	0.02	0.05	1.58	1.5	6.26	64	30.33	5.78	7.36	0.25
29	0.00	0.01	0.06	8.35	2.7	6.21	71	31.05	4.56	7.23	0.25
30	.	.	.	.	.	.	.	16.65	3.18	7.16	0.33
31	.	.	.	.	.	.	.	18.95	6.59	7.38	0.31
32	0.03	0.01	0.04	2.06	1.3	6.03	63	25.16	4.43	7.18	0.22
33	0.00	0.01	0.06	2.34	2.6	4.54	44	28.50	4.75	6.97	0.16
34	0.02	0.01	0.07	4.20	1.2	7.12	42	29.07	6.69	7.14	0.16
35	0.00	0.01	0.05	0.40	1.1	9.70	42	27.58	2.75	6.58	0.11
36	0.00	0.00	0.03	22.14	0.8	7.65	38	28.40	7.34	6.84	0.10

OBS	DATE	LOC	AB	NC	CD	CU	FE	PB	MN	NI	ZN	NH3	UNNH3	CR
37	70192	WBND	A	C	0.10	4.0	76.0	1.6	30	0.0	20.0	0.03	0.19	2.30
38	61192	WBND	A	C	0.00	5.0	70.0	0.6	70	0.0	15.0	0.02	0.12	1.00
39	62592	WBND	A	C	.	.	.	.	.	.	.	.	.	.
40	81492	WBND	A	C	0.30	3.0	60.0	1.1	21	0.0	85.0	0.01	0.07	0.30
41	12093	WBND	A	C	0.10	5.0	14.0	0.3	0	.	31.0	0.01	0.01	1.80
42	90192	WPAS	A	C	0.87	4.3	54.0	0.1	14	0.0	29.0	0.01	0.11	0.20
43	121092	WBND	A	C	0.00	0.9	53.0	0.2	5	.	19.0	0.01	0.03	0.00
44	90192	WBND	A	C	0.00	0.8	64.0	0.1	17	3.1	21.8	0.00	0.00	0.00
45	100692	WBND	A	C	0.16	5.4	47.0	0.0	14	0.0	26.0	0.00	0.00	0.90
46	62592	FSQR	A	C	0.00	2.0	16.0	0.8	40	0.0	14.0	0.01	0.02	0.00
47	90192	MBRV	A	C	.	.	.	.	.	.	.	0.07	.	.
48	100692	MBRV	A	C	0.10	0.3	78.0	2.5	4	0.0	50.0	0.06	0.74	0.50
49	81492	MBRV	A	C	.	.	.	.	.	.	.	0.06	.	.
50	72192	MBRV	A	C	.	.	.	.	.	.	.	0.12	.	.
51	80792	MBRV	A	C	.	.	.	.	.	.	.	0.06	.	.
52	121092	MBRV	A	C	.	.	.	.	.	.	.	0.03	.	.
53	31893	MBRV	A	C	.	.	.	.	.	.	.	0.00	0.00	.
54	40293	MBRV	A	C	.	.	.	.	.	.	.	0.05	.	.
55	20993	MBRV	A	C	.	.	.	.	.	.	.	0.02	.	.
56	12093	MBRV	A	C	.	.	.	.	.	.	.	0.03	.	.
57	12793	MBRV	A	C	.	.	.	.	.	.	.	0.03	.	.
58	81492	FSQR	A	C	0.40	3.0	18.0	1.0	31	0.0	52.0	0.01	0.01	0.20
59	90192	FSQR	A	C	0.00	2.1	26.4	1.6	29	0.0	22.0	0.01	0.01	0.00
60	80792	FSQR	A	C	0.00	15.0	47.0	0.0	70	5.3	0.0	0.02	0.04	0.10
61	70192	FSQR	A	C	0.10	2.0	29.0	0.7	20	0.0	30.0	0.02	0.04	0.20
62	72192	FSQR	A	C	0.20	2.0	26.0	1.2	20	0.2	0.0	0.02	0.04	0.20
63	100692	FSQR	A	C	0.19	0.6	28.4	0.0	40	0.0	43.0	.	.	0.80
64	100692	KNMA	A	C	0.03	0.0	67.0	0.8	3	0.8	13.0	0.01	0.02	1.20
65	40293	KNMA	A	C	.	.	.	.	.	.	.	0.00	0.00	.
66	90192	KNMA	A	C	0.01	1.5	72.0	1.9	24	2.6	16.0	0.01	0.12	0.30
67	121092	FSQR	A	C	0.20	3.2	25.7	1.0	17	.	18.0	0.00	0.00	0.00
68	12093	FSQR	A	C	.	.	.	.	.	.	.	0.02	0.02	.

OBS	NOX	OP	TP	TSS	TURB	TOC	ALKAL	TEMP	DISSO	PH	COND
37	0.09	0.04	0.05	4.00	5.3	12.26	44	26.78	5.85	6.92	0.12
38	0.00	0.01	0.19	5.13	21.0	20.23	51	27.29	2.24	6.88	0.15
39	.	.	.	.	.	.	.	.	.	.	.
40	0.00	0.01	0.06	2.24	1.6	6.56	45	30.41	6.23	6.83	0.12
41	0.01	0.01	0.02	0.04	0.5	7.42	47	16.31	4.03	6.48	0.15
42	0.00	0.01	0.05	1.69	1.4	9.17	98	26.54	3.71	7.15	0.24
43	0.02	0.01	0.03	1.86	0.4	7.16	50	17.76	6.25	6.68	0.15
44	0.01	0.01	0.06	2.43	2.6	7.88	36	27.62	4.23	6.62	0.10
45	0.03	0.01	0.06	0.38	1.1	5.56	40	23.60	2.21	6.60	0.10
46	0.01	0.04	0.09	2.60	4.3	.	32	28.23	3.81	6.41	0.09
47	.	.	.	.	.	.	.	.	.	.	.
48	0.02	0.00	0.03	1.10	0.8	8.60	40	26.54	6.32	7.21	0.10
49	.	.	.	.	.	.	.	.	.	.	.
50	.	.	.	.	.	.	.	.	.	.	.
51	.	.	.	.	.	.	.	.	.	.	.
52	.	.	.	.	.	.	.	.	.	.	.
53	.	.	.	.	.	.	.	.	.	.	.
54	.	.	.	.	.	.	.	.	.	.	.
55	.	.	.	.	.	.	.	.	.	.	.
56	.	.	.	.	.	.	.	.	.	.	.
57	.	.	.	.	.	.	.	.	.	.	.
58	0.00	0.07	0.15	5.90	1.0	9.87	59	26.97	0.64	6.13	0.16
59	0.01	0.02	0.09	2.14	1.1	7.70	38	26.26	0.33	6.01	0.11
60	0.00	0.03	0.08	6.21	1.5	14.68	64	25.16	0.26	6.47	0.18
61	0.00	0.02	0.02	1.00	0.8	9.59	35	30.28	2.32	6.30	0.11
62	0.00	0.02	0.05	6.50	1.8	26.46	46	29.37	1.75	6.32	0.13
63	0.02	0.03	0.09	1.38	1.6	10.44	46	24.86	0.52	6.12	0.12
64	0.02	0.00	0.04	0.10	0.4	13.55	66	22.62	1.78	6.62	0.22
65	.	.	.	.	.	.	.	.	.	.	.
66	0.00	0.02	0.11	0.59	1.1	15.53	79	25.01	0.36	6.49	0.27
67	0.02	0.05	0.10	2.55	1.1	17.93	52	19.27	2.10	6.25	0.17
68	.	.	.	.	.	.	.	.	.	.	.

Correlation Analysis

21 'VAR' Variables: CD CU FE PB MN NI ZN NH3 UNNH3 CR NOX OP TP TSS TURB TOC ALKAL TEMP DISSO PH COND

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum
CD	50	0.147800	0.163511	0.100000	0	0.870000
CU	51	4.170588	3.813046	3.000000	0	15.000000
FE	51	40.900000	23.904251	35.000000	11.200000	90.000000
PB	51	1.121569	1.177678	0.800000	0	5.100000
MN	51	20.862745	18.296469	20.000000	0	70.000000
NI	47	1.359574	2.112042	0.100000	0	7.000000
ZN	50	30.534000	19.716197	25.000000	0	85.000000
NH3	62	0.029677	0.047112	0.020000	0	0.340000
UNNH3	50	0.298200	0.573847	0.115000	0	3.280000
CR	51	0.940196	0.891629	0.900000	0	4.100000
NOX	51	0.020000	0.047791	0.010000	0	0.330000
OP	51	0.033529	0.064275	0.010000	0	0.430000
TP	51	0.081373	0.077538	0.060000	0.010000	0.500000
TSS	52	4.800192	5.252682	2.575000	0.040000	22.140000
TURB	52	4.007692	8.482227	1.600000	0.400000	43.000000
TOC	50	9.722600	4.172818	8.600000	4.540000	26.460000
ALKAL	52	67.596154	26.709226	65.000000	32.000000	143.000000
TEMP	54	26.709815	3.714642	27.495000	16.310000	32.820000
DISSO	54	4.091481	2.257903	3.935000	0.260000	10.370000
PH	53	6.978113	0.502360	7.060000	6.010000	8.510000
COND	53	0.244151	0.184416	0.200000	0.090000	1.210000

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

CD

CD	ZN	NI	PB	NOX
1.00000	0.51667	-0.39536	0.19374	0.18466
0.0	0.0001	0.0065	0.1776	0.1992
50	49	46	50	50
CR	OP	COND	ALKAL	CU
0.16072	0.14699	0.12256	0.11639	0.09402
0.2649	0.3084	0.4066	0.4209	0.5161
50	50	48	50	50

CU

CU	TSS	MN	TP	TURB
1.00000	0.45856	0.33873	0.33744	0.31553
0.0	0.0007	0.0150	0.0155	0.0241
51	51	51	51	51
TEMP	PB	NI	NH3	OP
0.29859	0.28375	0.27780	0.23540	0.21400
0.0352	0.0436	0.0587	0.0998	0.1316
50	51	47	50	51

FE

FE	UNNH3	MN	TSS	CR
1.00000	0.24979	0.23967	-0.19764	0.13886
0.0	0.0904	0.0903	0.1645	0.3311
51	47	51	51	51
CU	TOC	NI	OP	COND
-0.13209	0.12151	-0.11944	-0.10465	0.10124
0.3555	0.4056	0.4239	0.4649	0.4888
51	49	47	51	49

PB

PB	TSS	UNNH3	NH3	OP
1.00000	0.41385	0.37346	0.32809	0.29956
0.0	0.0025	0.0097	0.0200	0.0327
51	51	47	50	51
TURB	CU	TP	CD	NI
0.29505	0.28375	0.25813	0.19374	0.18514
0.0356	0.0436	0.0674	0.1776	0.2128
51	51	51	50	47

MN

MN	TP	OP	DISSO	TURB
1.00000	0.55328	0.50756	-0.47389	0.42158
0.0	0.0001	0.0001	0.0005	0.0021
51	51	51	50	51
TOC	CU	TSS	FE	PH
0.40186	0.33873	0.26631	0.23967	-0.23781
0.0042	0.0150	0.0589	0.0903	0.0999
49	51	51	51	49

NI

NI	CD	UNNH3	COND	ZN
1.00000	-0.39536	0.33792	0.32318	-0.32020
0.0	0.0065	0.0267	0.0304	0.0301
47	46	43	45	46
CU	ALKAL	NH3	PH	TSS
0.27780	0.25389	0.22369	0.19672	0.18883
0.0587	0.0851	0.1351	0.1953	0.2037
47	47	46	45	47

ZN

ZN	CD	NI	TOC	DISSO
1.00000	0.51667	-0.32020	-0.29436	0.28120
0.0	0.0001	0.0301	0.0423	0.0503
50	49	46	48	49

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

ZN

PH	MN	UNNH3	NOX	NH3
0.23390	-0.21345	0.19545	0.15123	0.14664
0.1096	0.1367	0.1930	0.2945	0.3147
48	50	46	50	49

NH3

NH3	UNNH3	PB	CR	TSS
1.00000	0.85788	0.32809	0.27352	0.24861
0.0	0.0001	0.0200	0.0546	0.0817
62	50	50	50	50
TEMP	CU	NI	PH	COND
0.24675	0.23540	0.22369	0.21411	0.18811
0.0874	0.0998	0.1351	0.1439	0.2004
49	50	46	48	48

UNNH3

UNNH3	NH3	PH	COND	CR
1.00000	0.85788	0.54215	0.48492	0.41949
0.0	0.0001	0.0001	0.0006	0.0033
50	50	47	47	47
ALKAL	PB	NI	TEMP	FE
0.40625	0.37346	0.33792	0.32235	0.24979
0.0046	0.0097	0.0267	0.0271	0.0904
47	47	43	47	47

CR

CR	ALKAL	PH	COND	UNNH3
1.00000	0.46325	0.44322	0.42412	0.41949
0.0	0.0006	0.0014	0.0024	0.0033
51	51	49	49	47
TURB	NH3	DISSO	TSS	NOX
0.34604	0.27352	0.24277	0.23520	0.22506
0.0129	0.0546	0.0894	0.0966	0.1123
51	50	50	51	51

NOX

NOX	TEMP	CR	CD	NH3
1.00000	-0.42561	0.22506	0.18466	0.16865
0.0	0.0021	0.1123	0.1992	0.2417
51	50	51	50	50
OP	NI	ZN	PH	TP
0.16324	-0.15616	0.15123	0.13339	-0.09470
0.2524	0.2945	0.2945	0.3609	0.5086
51	47	50	49	51

OP

OP	TP	TSS	TURB	MN
1.00000	0.71039	0.54930	0.53059	0.50756
0.0	0.0001	0.0001	0.0001	0.0001
51	51	51	51	51
DISSO	PB	CU	NOX	CD
-0.31421	0.29956	0.21400	0.16324	0.14699
0.0263	0.0327	0.1316	0.2524	0.3084
50	51	51	51	50

TP

TP	OP	MN	TURB	TSS
1.00000	0.71039	0.55328	0.50457	0.49964
0.0	0.0001	0.0001	0.0002	0.0002
51	51	51	51	51
CU	DISSO	PB	TEMP	ZN
0.33744	-0.27351	0.25813	0.15898	-0.12887
0.0155	0.0546	0.0674	0.2701	0.3724
51	50	51	50	50

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

TSS

TSS	TURB	OP	TP	CU
1.00000	0.70480	0.54930	0.49964	0.45856
0.0	0.0001	0.0001	0.0002	0.0007
52	52	51	51	51
PB	MN	NH3	CR	UNNH3
0.41385	0.26631	0.24861	0.23520	0.20313
0.0025	0.0589	0.0817	0.0966	0.1709
51	51	50	51	47

TURB

TURB	TSS	OP	TP	MN
1.00000	0.70480	0.53059	0.50457	0.42158
0.0	0.0001	0.0001	0.0002	0.0021
52	52	51	51	51
CR	CU	PB	PH	TOC
0.34604	0.31553	0.29505	0.21218	-0.20054
0.0129	0.0241	0.0356	0.1391	0.1626
51	51	51	50	50

TOC

TOC	MN	DISSO	ZN	PH
1.00000	0.40186	-0.37380	-0.29436	-0.27263
0.0	0.0042	0.0082	0.0423	0.0608
50	49	49	48	48
TURB	TEMP	ALKAL	UNNH3	FE
-0.20054	-0.18887	0.17963	-0.13309	0.12151
0.1626	0.1937	0.2119	0.3835	0.4056
50	49	50	45	49

ALKAL

ALKAL	COND	PH	CR	UNNH3
1.00000	0.93232	0.64923	0.46325	0.40625
0.0	0.0001	0.0001	0.0006	0.0046
52	50	50	51	47
NI	TOC	DISSO	NH3	CD
0.25389	0.17963	0.17948	0.16574	0.11639
0.0851	0.2119	0.2076	0.2500	0.4209
47	50	51	50	50

TEMP

TEMP	NOX	UNNH3	CU	NH3
1.00000	-0.42561	0.32235	0.29859	0.24675
0.0	0.0021	0.0271	0.0352	0.0874
54	50	47	50	49
TOC	CR	TSS	MN	PH
-0.18887	-0.18510	0.16444	0.16428	0.16325
0.1937	0.1981	0.2489	0.2543	0.2428
49	50	51	50	53

DISSO

DISSO	PH	MN	TOC	OP
1.00000	0.71965	-0.47389	-0.37380	-0.31421
0.0	0.0001	0.0005	0.0082	0.0263
54	53	50	49	50
COND	ZN	TP	UNNH3	CR
0.29266	0.28120	-0.27351	0.24831	0.24277
0.0335	0.0503	0.0546	0.0924	0.0894
53	49	50	47	50

PH

PH	DISSO	COND	ALKAL	UNNH3
1.00000	0.71965	0.70874	0.64923	0.54215
0.0	0.0001	0.0001	0.0001	0.0001
53	53	52	50	47

Correlation Analysis

Spearman Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

PH

CR	TOC	MN	ZN	NH3
0.44322	-0.27263	-0.23781	0.23390	0.21411
0.0014	0.0608	0.0999	0.1096	0.1439
49	48	49	48	48

COND

COND	ALKAL	PH	UNNH3	CR
1.00000	0.93232	0.70874	0.48492	0.42412
0.0	0.0001	0.0001	0.0006	0.0024
53	50	52	47	49
NI	DISSO	NH3	CD	FE
0.32318	0.29266	0.18811	0.12256	0.10124
0.0304	0.0335	0.2004	0.4066	0.4888
45	53	48	48	49