2009

SHELBYVILLE LAKE

WATER QUALITY

REPORT

U.S. ARMY CORPS OF ENGINEERS, ST. LOUIS DISTRICT
ENVIRONMENTAL QUALITY SECTION – WATER QUALITY

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WATER QUALITY MONITORING PROGRAM

1.0 GENERAL OVERVIEW

This report summarizes water quality activities of the St. Louis District for Fiscal Year 2009 in accordance with ER 1110-2-8154 Water Quality & Environmental management for Corps Civil Works Projects and ETL 1110-2-362 Environmental Engineering Initiatives for Water Management.

Water quality monitoring remains one of the Sections major responsibilities. The objective is to maintain a reasonable environmental monitoring program for the Mississippi River and the 5 lakes under the St. Louis District's control. The District's reservoirs consist of Mark Twain and Wappapello Lakes in Missouri, and Shelbyville, Carlyle and Rend Lakes in Illinois. Water quality sampling is conducted within the lakes and their tributaries to establish trend analysis and maintain water quality at or above state and federal regulations.

The main objective is to provide technical expertise of an environmental nature to all Corps elements requesting assistance in accordance with ER 1110-2-8154. This would include updating the water quality management priorities for the district's projects to ensure water quality meets the state and federal regulations, for protection of human health and the environment, and for the safety and economic welfare of those at Corps projects. Ongoing goals include ensuring that downstream water quality meets all state and federal regulations, is suitable for aquatic and human life, and continue to evaluate trend analysis in relation to baseline conditions at all projects.

Water quality data is provided to the Illinois Environmental Protection Agency (IEPA) to be used in the Illinois Integrated Water Quality Report which is required every two years by the Clean Water Act Sections 303(d) and 305(b). IEPA does not typically monitor the three Corps lakes in Illinois. However, IEPA has stated that since the Corps lakes are the 3 largest lakes in the state, it is critical that their quality be routinely assessed. The state indicated that having the federally collected water quality data available now and in the future is critical to the state of Illinois meeting their mission in complying with the Clean Water Act Sections 305(b) and 303(d).

The National Water Quality Inventory Report to Congress 305(b) report is the primary vehicle for informing Congress and the public about general water quality conditions in the United States. This document characterizes our water quality, identifies widespread water quality problems of national significance, and describes various programs implemented to restore and protect our waters.

Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop a list of water quality limited segments. These waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for water on the lists and develop action plans, called as Total Maximum Daily Loads (TMDL), to improve water quality.

Currently the Illinois Environmental Protection Agency (IEPA) has listed Shelbyville Lake impaired for Total Suspended Solids and aquatic plants. The lists of sources for these impairments are runoff, crop production, shore modifications, and recreational pollution. Continued monitoring of the lake and its tributaries is vital in assisting the future assessment of the lake for these and other possible impairments. The water quality monitoring program represents the single metric that encompasses the overall health of the watershed as it is a direct measure of how well the environmental stewardship programs are working.

1.1 INTRODUCTION

Shelbyville Lake is within the Kaskaskia River basin in central Illinois. The lake serves as a heavy recreational usage lake. The land surrounding the lake is used predominately for agriculture. Surrounding communities have existing industrial/commercial operations and residents which discharge wastewater into municipal wastewater treatment plants which ultimately discharge treated water into the Kaskaskia River basin. Agricultural runoff and municipal wastewater treatment facilities are the primary potential source of pollution into the Shelbyville Lake watershed. Additional sources are marinas, recreational watercraft discharges and wildlife fecal material runoff.

Water quality monitoring was conducted during 2009 to assure the safe conditions for human recreation, wildlife and aquatic life was maintained and managed within the lake system. The 2009 water quality monitoring program began in March and continued through September. During each sampling period one site was selected for quality control duplication and denoted as SBV-15. The locations of the six sampling sites are depicted on the lake map in Figure 1.

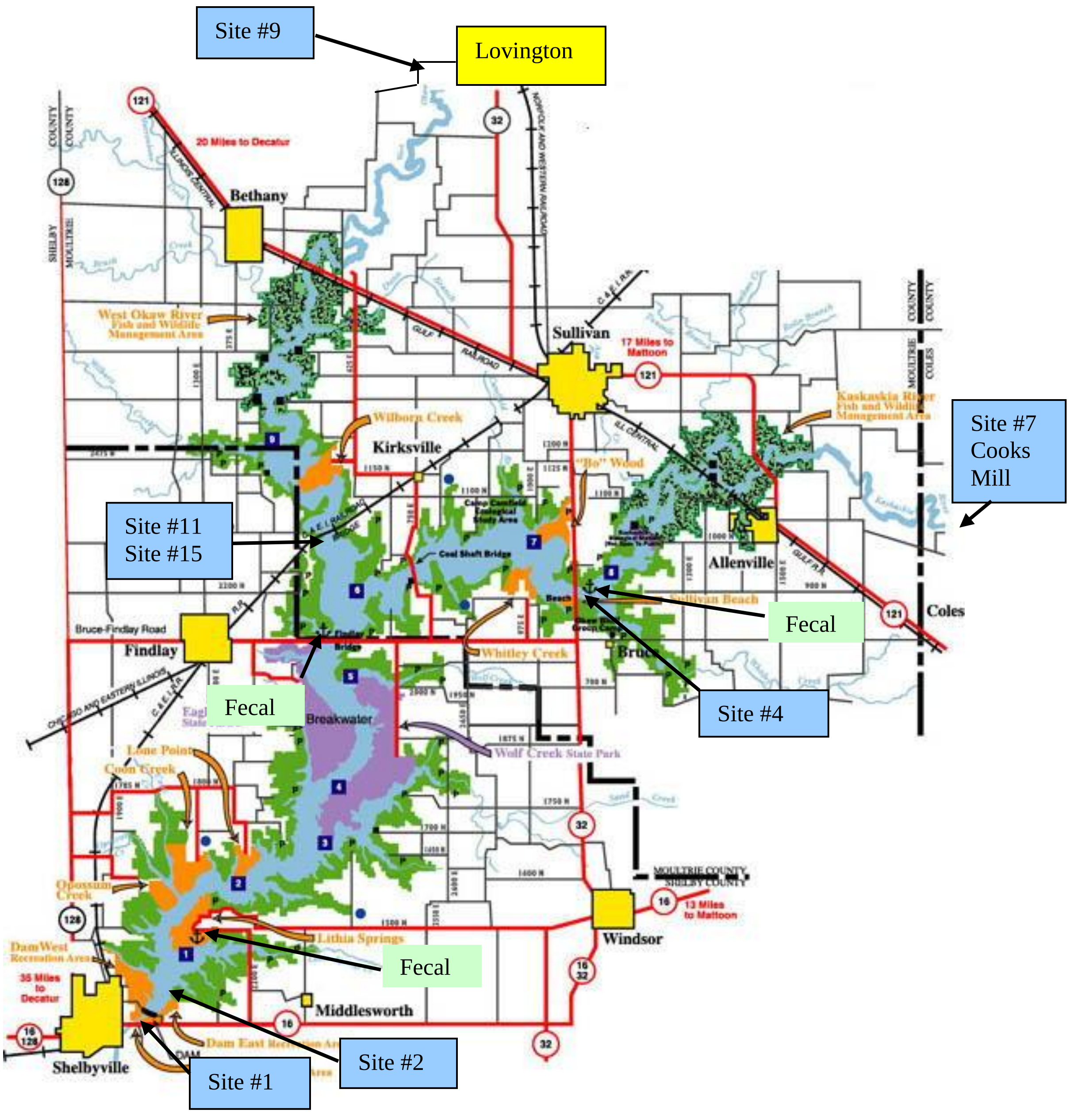


Figure 1
Location of sample sites

2.0 WATER QUALITY ASSESSMENT CRITERIA

2.1 Water Quality

The water quality assessment criteria were based upon the State of Illinois regulatory limits for certain contaminants, which has been generally accepted criteria for sustaining adequate aquatic plant and animal growth. The samplings and analysis which were conducted at the Shelbyville Lake sites reflect the minimal set of parameters needed to analyze the current status of water quality for the Shelbyville Lake system.

The following parameters were analyzed in the Fiscal Year 2009 samplings at Shelbyville Lake: Total Organic Carbon (TOC), iron, manganese, ammonia-nitrogen, nitrate-nitrogen, orthophosphate, total phosphate, Total Suspended Solids (TSS), Total Volatile Suspended Solids (TVSS), fecal coliform, pH, temperature, dissolved oxygen, specific conductance, oxidation-reduction potential (ORP), chlorophyll, pheophytin-a, atrazine and alachlor,

The Illinois Environmental Protection Agency in Title 35, Subtitle, C, classifies water quality criteria based on end usage. Subpart B contains regulations for general use water, while subparts C and D delineate those for public and food processing water and secondary contact and indigenous aquatic life standards, respectively. These standards are used to determine the aquatic water quality of the lake. Table 2.1 provides a listing of the regulatory limits for the parameters analyzed where a limit has been established.

TABLE 2.1

State of Illinois
Water Quality Standards

PARAMETER	LIMIT
Temperature	Rise of < 2.8^{o}C above normal seasonal temp
Ammonia Nitrogen	< 15 mg/L
Nitrate Nitrogen	10 mg/L
Iron	2.0 mg/L
Manganese	1.0 mg/L
Total Phosphate	0.05 mg/L
Fecal Coliform	< 500 colonies/100 ml
pH	Range: 6.5 to 9.0
DO	> 5.0 mg/L
Atrazine	0.003 mg/L (Drinking Water Standard)
Alachlor	0.002 mg/L (Drinking Water Standard)
Conductivity	1,667 *u*S/cm≈TDS of 1,000 mg/L
Total Suspended Solids (TSS)	116mg/L (Streams); ≥12mg/L (Lakes)

Nitrogen is an essential component of proteins, genetic material, chlorophyll, and other key organic molecules. All organisms require nitrogen in order to survive. Nitrogen exists in several forms. These forms include gaseous nitrogen (N_2), nitrites (NO_2), nitrate (NO_3), ammonia nitrogen (NH_3-N), and ammonium (NH_4). Ammonia can be toxic to fish and other aquatic organisms at certain levels. Unlike ammonia, ammonium (NH4) is not toxic to aquatic organisms and is readily available for uptake by plankton and macrophytes. Nitrogen levels have increased as human activities have accelerated the rate of fixed nitrogen being put into circulation. High nitrogen levels can cause eutrophication. Eutrophication increases biomass of phytoplankton, decrease water transparency, and causes oxygen depletion. Ammonia nitrogen is monitored so that the effects on fish spawning, hatching, growth rate and pathologic changes in gills, liver and kidney tissue can be related to the detected levels of ammonia nitrogen. Nitrate-nitrogen degrades to nitrite or produces ammonia which has a detrimental effect on aquatic life and, therefore, has been monitored to assure levels are below the regulatory "safe" limit.

Phosphate has been analyzed as phosphorus and has been monitored due to the potential for uptake by nuisance algae. Levels of phosphate can indicate the potential for rapid growth of algae (algae bloom) which can cause serious oxygen depletion during the algae decay process. Phosphorous is typically the limiting nutrient in a water body. Therefore, addition of phosphorous to the ecosystem stimulates the growth of plants and algae. Phosphorous is delivered to lakes and streams by way of storm water runoff from agricultural fields, residential property, and construction sites. Other sources of phosphorous are anaerobic decomposition of organic matter, leaking sewer systems, waterfowl, and point source pollution. The general standard for phosphorous in lake water is 0.05mg/L. Dissolved phosphorous also called ortho-phosphorous is generally found in much smaller concentrations than total phosphorous and is readily available for uptake. For this reason dissolved phosphorous concentrations are variable and difficult to use as an indicator of nutrient availability.

The metals manganese and iron are nutrients for both plants and animals. Living organisms require trace amounts of metals. However, excessive amounts can be harmful to the organism. Heavy metals exist in surface waters in three forms, colloidal, particulate, and dissolved. Water chemistry determines the rate of adsorption and desorption of metals to and from sediment. Metals are desorbed from the sediment if the water experiences increases in salinity, decreases in redox potential, or decreases in pH. Metals in surface waters can be from natural or human sources. Currently human sources contribute more metals than natural sources. Metals levels in surface water may pose a health risk to humans and the environment.

Photosynthetic activity can be hindered by the levels of total suspended solids. Total suspended solids concentrations, which cause the photosynthetic activity to be reduced by more than 10% from the seasonably established norm, can have a detrimental effect on aquatic life. Soil particles, organic material, and other debris comprise suspended solids in the water column. Secchi disk measurements are inverse to suspended solid measurements. As the total suspended solids (TSS) increase, the secchi disk depth or water transparency decreases. Total suspended solids can be an important indicator of the type and degree of turbidity. TSS measurements represent a combination volatile suspended solids (VSS) which is comprised of organic material and nonvolatile suspended solids (NVSS) which is comprised of inorganic mineral particles in the water. In order to more accurately determine the types and amounts of suspended solids, volatile suspended solids (VSS) are analyzed. VSS concentration represents the organic portion of the total suspended solids. Organic material often includes plankton and additional plant and animal debris that is present in water. Total volatile solids indicate the presence of organics in suspension and, therefore, show additional demand levels of oxygen. Illinois recommends a TSS standard of 116mg/L for streams and ≥12mg/L for lakes. Literature suggests that Nonvolatile Suspended Solids (NVSS) which is a subdivision of TSS above 15mg/L could highly impair recreational lake use and a NVSS of 3 to 7mg/L might cause slight impairment.

Chlorophyll and pheophytin-a are monitored to provide indicators of algae growth and, therefore, potential oxygen depletion activity. Chlorophyll is measured in lakes to estimate the type and amount of algal productivity in the water column. Chlorophyll a is present in green algae, blue-green algae, and in diatoms. Chlorophyll a is often used to indicate the degree of eutrophication. Chlorophyll b and c are used to estimate the extent of algal diversity and productivity. Chlorophyll b is common in green algae and is used as an auxiliary pigment for photosynthesis. Chlorophyll c is most common in diatom species and serves as an auxiliary pigment. Algal productivity and diversity can be determined by the concentrations of the individual pigments. For example high concentrations of chlorophyll a and b would indicate that green algae is abundant. High concentrations of chlorophyll a would indicate abundance of blue-green algae and concentrations of chlorophyll a and c would indicate diatoms are the dominant species. Chlorophyll production is currently being connected with hypoxia.

Fecal coliform bacteria is monitored for the protection of human health as it relates to full body contact of recreational waters. People can be exposed to disease-causing organisms, such as bacteria, viruses and protozoa in beach and recreational waters mainly through accidental ingestion of contaminated water or through skin contact. These organisms, called pathogens, usually come from the feces of humans and other warm-blooded animals. If taken into the body, pathogens can cause various illnesses and on rare occasions, even death. Waterborne illnesses include diseases resulting from bacteria infection such as cholera, salmonellosis, and gastroenteritis, viral infections such as hepatitis, gastroenteritis, and intestinal diseases, and protozoan infections such as ameobic dysentery and giardiasis. The most commonly monitored recreational water indicator organisms are fecal coliform, Escherichia coli, (E. coli) and enterococci. Fecal coliform are bacteria that live in the intestinal tracts of warm-blooded animals. The standard for fecal coliform is less than 500 colonies per 100ml of sample water. Fecal coliform was originally recommended in 1968 by the Federal Water Pollution Control Administration (predecessor to EPA) as an effective water quality indicator organism for recreational waters. Recent studies indicate that fecal coliform show less correlation to illness than other indicator organisms such as E. coli and enterococci. The Environmental Protection Agency (EPA) currently recommends E. coli or enterococci as an indicator organism for fresh waters. Although E. coli and enterococci are more costly they may become the standard in the near future.

Atrazine and Alachlor herbicides are commonly used agricultural chemicals which can be readily transported by rainfall runoff. Both compounds are suspected of causing cancer and, therefore, were monitored for the protection of human and aquatic health. Organic compounds include many pesticides. A pesticide can be any substance that is intended to prevent, destroy, repel, or mitigate any pest. This includes insecticides, herbicides, fungicides, fumigants, algaecides and other substances. Herbicides which are pesticides used to kill vegetation are the most widely used and sampled. Ten of the most frequently used herbicides and detected in water are Atrazine, Metolachlor, Alachlor, 2,4-D, Trifluralin, Glyphosate, Dicamba, Cyanazine, Simazine, and 2,4,5-T. Two of the most widely used pesticides are Atrazine and Alachlor.

Atrazine is a preemergence or postemergence herbicide use to control broadleaf weeds and annual grasses. Atrazine is most commonly detected in ground and surface water due to its wide use, and its ability to persist in soil and move in water. Alachlor is a Restricted Use Pesticide (RUP) due to the potential to contaminate groundwater. The drinking water standard for Atrazine is 0.003mg/L and 0.002 mg/L for Alachlor.

Temperature, dissolved oxygen and pH are monitored for the protection of aquatic life. Temperature is important because it controls several aspects of water quality. Cold water holds more dissolved oxygen which is required by aquatic organisms. Plants grow more rapidly and use more oxygen in warmer water. Decomposition of organic matter which uses oxygen is accelerated in warmer water. Temperature can also determine the availability of toxic compounds such as ammonia. Since aquatic organisms are cold blooded, water temperature regulates their metabolism and ability to survive. The number and kinds of organisms that are found in streams or lakes is directly related to temperature. Certain organisms require a specific temperature range, such as trout, which require water temperatures below 20^{o}C. Most aquatic organisms require a minimum concentration of dissolved oxygen to survive. In spring, surface waters of the lake mix with the water below through wind and thermal action. This mixing diminishes as the upper layer of water becomes warmer and less dense. Solar insulation during the summer months stratifies the lake into three zones. The upper warmer water zone is called the epilimnion and the lower cooler water zone is called the hypolimnion. The epilimnion and the hypolimnion zones are divided by a transition zone known as the metalimnion. The thermocline located within the metalimnion exhibits a rapid change in water temperature. During the summer months the hypolimnion may become anaerobic. In this anaerobic zone, chemical reduction of iron and manganese, or the production of methane and sulfides can occur. Iron rapidly oxidizes in aerobic environments, but manganese oxidizes slowly and can remain in the reduced state for long distances down stream even in aerobic environments. The degree of acidity of water is measured by a logarithmetic scale ranging from 0 to 14 and is known as the pH scale. A reading of 7 indicates neutrality and readings below seven are acidic and above are alkaline. Most Illinois lakes range from 6 to 9 on the pH scale. The buffering capacity of water is the ability to neutralize acid better known as alkalinity. A high alkalinity concentration indicates an increased ability to neutralize pH and resist changes, whereas a low alkalinity concentration indicates that a water body is vulnerable to changes in pH.

Conductivity is a measure of a water's ability to conduct an electrical current. The ability to carry a current is often driven by the dissolved materials present in a water column. These materials can include dissolved ions and other materials in the water and thus are directly proportional to the concentration of total dissolved solids (TDS) present in the water column. Typically TDS concentrations represent 50-60% of the conductivity measurements. Conductivity is also affected by water temperature. The warmer the water, the higher the conductivity. Conductivity in streams and rivers is affected by the geology of the area. Streams running through granite areas tend to have lower conductivity due to granite being composed of inert material, materials that do not ionize or dissolve into ionic compounds in water. On the other hand streams that run through areas of limestone or clay soils tend to have higher conductivity readings because of the presence of materials that ionize. Conductivity is useful as a general measure of water quality. A stream tends to have a relatively constant range of conductivity that once establish can be used as a baseline. Significant changes either high or low might indicate a source of pollution has been introduced into the water. The pollution source could be a treatment plant which raises the conductivity or an oil spill which would lower the conductivity.

Redox or Oxidation-Reduction Potential (ORP) is a measurement to oxidize materials. Oxidation involves an exchange of electrons between 2 atoms. The atom that loses an electron is oxidized and the one that gains an electron is reduced. ORP sensors measure the electrochemical potential between the solution and a reference electrode. Readings are expressed in millivolts with positive readings indicating increased oxidizing potential and negative readings being increased reduction. The ORP probe is essentially a millivolt meter, measuring the voltage across 2 electrodes with the water in between. ORP values are used much like pH values to determine water quality. While pH readings characterize the state of a system relative to the receiving or donating hydrogen ions (base or acid), ORP readings characterize the relative state of losing or gaining electrons. The conversion of ammonia (NH_3) requires an oxidating environment to convert it into nitrites (NO_2) and nitrates (NO_3). Ammonia levels as low as 0.002mg/L can be harmful to fish. Generally ORP readings above 400mV are harmful to aquatic life. However, ORP is a non-specific measurement which is a reflection of a combination of effects of all the dissolved materials in the water. Therefore, the measurement of ORP in relatively clean water has only limited utility unless a predominant redox-active material is known to be present.

Water clarity is intuitively used by the public to judge water quality. Secchi depth has been used for many years as a limnological characterization tool for characterizing water clarity. Secchi depth is a measure of light penetration into a waterbody and is a function of the absorption and scattering of light in the water. There are three characteristics of water which affect the penetration of light. The three factors are the color of water, amount of phytoplankton in the water column, and amount of inorganic material in the water column. Secchi depth integrates the combined impacts of all the factors which influence water clarity. Water transparency was measured using a Secchi disk. Secchi disk readings were taken at all lake sites.

2.2 Sediment

In accordance with EM-1110-2-1201, sediment samples should be taken to monitor and assess potential impacts to aquatic and human health. To assess ecological risk, sample values were compared against toxicity information published in the National Oceanic Atmospheric Administrations (NOAA) Screening Quick Reference Tables (SQRT) or similar references for ecological receptors in freshwater sediment. Without standards or other widely applicable numerical tools, NOAA scientists found it difficult to estimate the possible toxicological significance of chemical concentrations in sediment. Therefore, numerical sediment quality guidelines (SQG's) were developed as informal, interpretive tools. The SQGs were not promulgated as regulatory standards, but rather as informal, non-regulatory guidelines for interpreting chemical data from analyses of sediments. For potential ecological risk from inorganic contaminants, seven metals are typically of "most concern" with regards to fish and wildlife: Arsenic, Copper, Cadmium, Selenium, Mercury, Lead, and Zinc. Avian species are thought to be particularly sensitive to arsenic, but is also considered a carcinogenic, mutagenic, and teratogenic contaminant in a variety of species in elevated doses over time. Avian species are also known to be particularly sensitive to lead in the environment with effects ranging from mortality, reduced growth and reproductive output, behavior changes, blood chemistry alterations, and lesions of major organs. Finally, the embryo stages in fish and avian species are known to be the most sensitive life stage to selenium effecting reproductive success.

It is recommended that the next round of sediment samples focus on organochlorines in freshwater sediment to assess potential chronic aquatic impacts (e.g. aldrin, chlordane, endrin, endosulfan, DDT, methoxychlor).

For potential human health risk, there are no known values in Illinois for sediments. While not a direct correlation, sample results were compared against Illinois Tiered Approach to Corrective Action Objectives (TACO) and Non-TACO lowest default target levels for all soil types and exposure pathways for soils.

3.0 SUMMARY OF MONITORING RESULTS

3.1 Water Quality Summary

The seasonal change brought on gradual lake stratification during the summer months. Fecal coli are sampled at the marinas to ensure that the marina areas are not being contaminated by boats with restroom facilities. Bacteria levels for all the marinas were below the Illinois standard of 500 colonies/100ml of sample water.

Total iron and total manganese are sampled above the dam near the bottom of the channel (SBV-2-10) and in the spillway area (SBV-1). As was previously stated living organisms require trace amounts of metals, however excessive amounts can be harmful to the organism. Manganese did not exceed the IL standard of 1.0mg/L for general use. Iron cycling is a function of oxidation-reduction processes. Elevated levels of iron near the bottom of a lake is not an immediately detrimental to the overall lake system. Iron oxidizes relatively rapidly (minutes to hours); therefore any iron released through the spillway will be oxidized in a short period of time. Illinois does not currently have a general use standard for iron.

Nitrogen and phosphates are sampled at all sites. The 2009 total phosphate results at all sites are above the 0.05 mg/L standard. The tributaries contribute high levels of phosphates into the lake. However, the lake reduces these amounts by consuming phosphate before it is discharged downstream through the dam. In effect the lake is improving water quality. Phosphorous in water is not considered directly toxic to humans and animals therefore, no drinking water standards have been established for phosphorous. However, phosphorous can cause health threats through the stimulation of toxic algal blooms and the resulting oxygen depletion. Nitrates can pose a threat to human and animal health. Nitrate in water is toxic at high levels and has been linked to toxic effects of livestock and to blue baby disease (methemoglobinemia) in infants. The Maximum Contaminant Level (MCL) for nitrate-N in drinking water is 10mg/L to protect babies 3 to 6 months of age. The Illinois Water Quality Standard for ammonia nitrogen (NH_3-N) is 15mg/L. The increased levels of phosphate in combination with nitrogen and other lake conditions, such as temperature, pH and stagnant lake conditions, can lead to increased algae growth. Eutrophication is currently the most widespread water quality problem in the U.S. and many other countries. Restoration of eutrophic waters requires the reduction of nonpoint inputs of phosphorous and nitrogen. The resulting detrimental effects of algae toxins and oxygen depletion could result in health problems for fish and other aquatic species as well as land animals utilizing the water supply. There were no signs of any of these effects throughout 2009. Sample site SBV-9 which is in a tributary to the lake showed elevated levels of nitrogen, but overall levels remained fairly constant throughout the lake. The lake appears to be capturing and utilizing this nutrient thus improving down stream water quality.

Chlorophyll *a* was sampled at 4 sites, SBV-2, SBV-4, SBV-11, and SBV-15. Chlorophyll a is a green pigment found in plants. Chlorophyll *a* concentrations are an indicator of phytoplankton abundance and biomass. They can be an effective measure of trophic status, and used as a measure of water quality. Chlorophyll levels were relatively low during the 3 sampling events. High levels often indicate poor water quality and low levels suggest good conditions. However, elevated levels are not necessarily bad. It is the long term persistence of elevated levels that is the problem. It is natural for chlorophyll *a* levels to fluctuate over time. Chlorophyll *a* tends to be higher after storm events and during the summer months when water temperatures and light levels are elevated. Chlorophyll can reduce the clarity of the water and the amount of oxygen available to other organisms. Illinois does not currently have a standard for chlorophyll. The data indicates a normal increase in chlorophyll levels during the warmer summer months, which is not a concern.

Atrazine and Alachlor are pesticides that were sampled at all sites. These chemicals are herbicides used to control weed growth. Normally pesticides are detected early in the year, in the months of April and May when farmers apply the chemicals. However, due to the delay in funding, sampling was not initiated until late summer, therefore missing the best opportunity to capture these chemicals. Pesticides did not exceed the Illinois standards. These substances can enter water bodies as a result of drift during spraying, surface runoff, and leaching through soil. In order to eliminate pesticide contamination of waters it is important for the public to be educated and institute best manage practices when using these chemicals.

Total Suspended Solids (TSS) and Total Volatile Suspended Solids (TVSS) samples are collected at all sites. Solids can affect water quality by increasing temperature through the absorption of sunlight by the particles in the water, which also affects the clarity of the water. This can then affect the amount of oxygen in the water. Illinois recommends a TSS standard of 116mg/L for streams and ≥12mg/L for lakes. Literature suggests that Nonvolatile Suspended Solids (NVSS) which is a subdivision of TSS above 15mg/L could highly impair recreational lake use and a NVSS of 3 to 7mg/L might cause slight impairment. Suspended solids within the lake were significantly decreased from levels in the tributaries. The solids may be dropping out of the water column as the water moves toward the dam. This results in improved water quality down stream.

Total Organic Carbon (TOC) is collected at all sites. TOC is an indicator of the organic character of water. The larger the carbon or organic content, the more oxygen is consumed. The highest values for TOC occurred in September. This may be a result of plant material, which had grown all summer and begins to decay. Illinois does not currently have a standard for TOC.

Temperature and dissolved oxygen levels were taken at all sites. Measurements were taken at 1 meter intervals at the lake sites. During the summer months the lake stratifies and a boundary is formed between the upper warmer water and the lower cooler water. This transition area is known as the thermocline, the area where the temperature drops significantly. Oxygen levels can also change drastically as a function of depth. This area where the oxygen level significantly drops is called the oxycline. The depth of the thermocline and oxycline can have an effect on the aquatic organisms. Occasionally the thermocline and oxycline are at or near the same depth.

pH is taken at all sites and at 1 meter intervals at lake sites. All sites were within the 6 to 9 pH range. Variances in pH can be caused by a rainfall event. Another cause may be that photosynthesis uses up dissolved carbon dioxide, which acts like carbonic acid (H_2CO_3) in water. CO_2 removal in effect reduces the acidity of the water thus the pH increases.

Conductivity and redox are taken at all sites and at 1 meter intervals at lake sites. Illinois does not currently have a standard for conductivity or redox. Illinois does not currently have a standard for redox, but does have a standard of less than 1,667 uS/cm for conductivity. No sampling sites even approached this standard.

The remote sensor in the spillway was monitored and maintained throughout the year to allow the project as well as water quality personnel to remotely monitor temperature and oxygen readings to avoid fish kills. During low flow, water is discharged through the sluice gates from the bottom of the lake. This water is low in oxygen and can create a low oxygen area below the dam. The sensor will allow the project to track oxygen levels below the dam and make appropriate adjustments to avoid a possible fish kill. Normally allowing water to spill through the tainter gates will alleviate low oxygen levels below the dam.

The monitoring program for Shelbyville Lake during Fiscal Year 2009 revealed good water quality when compared to limits established by the Illinois Environmental Protection Agency (IEPA) for general use, secondary contact, and indigenous aquatic life. Agricultural nutrient runoffs were primary concerns for the lake's water quality. Better land management practices, erosion control and buffering zones are methods used to reduce such contaminants from entering the lake. The St. Louis District personnel have been working continuously with lake personnel, area communities and other agencies in the implementation of educational programs and implementation planning to bring about the use of better management techniques to improve the lake's water quality.

3.2 Sediment Summary

Sediment sampling was not conducted in 2009.

4.0 <u>PLANNED 2009 STUDIES</u>

The Shelbyville Lake water quality monitoring will continue in Fiscal Year 2010 on a limited basis. Because of budgetary constraints the number of sampling events will be cut drastically. Reduction of the number of sampling events results in the inability to evaluate water quality trends, the inability to scientifically defend operations, the inability to confirm state water quality standards, and the inability to adequately protect human health and safety. Shelbyville Lake provides water supplies to many communities and is a high usage recreational lake. The monitoring of water quality is imperative to assure the water quality is within acceptable limits for the designated usage.

The sampling sites include the following: Site 1 SBV-1 Spillway, Site 2 SBV-02 Lake side in front of Dam, Site 4 SBV-04 Kaskaskia River arm near Sullivan Marina, Site 7, SBV-7, at Cooks Mill, Site 9 SBV-9, at Hwy 32 at Lovington, and Site 11 SBV-11, Okaw River Arm near the C. & E. I. railroad bridge. This combination of sites effectively represents the incoming contaminants and their effects on the lake.

In addition, water quality personnel will continue to remotely monitor the DO & temperature probe in the spillway.

APPENDIX A

DATA

LAB DATA
WATER SAMPLES

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Acetochlor	1.0	0.30
SBV-1	06/23/2009	10:15	WT	0.51	J	ug/L	Acetochlor	1.1	0.31
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Acetochlor	1.0	0.29
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Acetochlor	1.0	0.30
SBV-11	06/23/2009	11:57	WT	1.2		ug/L	Acetochlor	1.0	0.30
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Acetochlor	1.0	0.30
SBV-15	06/23/2009	11:58	WT	1.2		ug/L	Acetochlor	1.0	0.30
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Acetochlor	1.0	0.30
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Acetochlor	1.0	0.29
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Acetochlor	1.1	0.31
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Acetochlor	1.1	0.31
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Acetochlor	1.1	0.32
SBV-4	06/23/2009	12:27	WT	0.5	J	ug/L	Acetochlor	1.1	0.31
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Acetochlor	1.0	0.30
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Acetochlor	1.0	0.30
SBV-7	06/23/2009	11:53	WT	0.72	J	ug/L	Acetochlor	1.1	0.32
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Acetochlor	1.1	0.32
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Acetochlor	1.0	0.30
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Acetochlor	1.0	0.29
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Acetochlor	1.0	0.30
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Alachlor	1.0	0.33
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Alachlor	1.1	0.34
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Alachlor	1.0	0.32
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Alachlor	1.0	0.33
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Alachlor	1.0	0.33
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Alachlor	1.0	0.33
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Alachlor	1.0	0.33
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Alachlor	1.0	0.33
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Alachlor	1.0	0.32
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Alachlor	1.1	0.34

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Alachlor	1.1	0.34
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Alachlor	1.1	0.35
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Alachlor	1.1	0.34
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Alachlor	1.0	0.33
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Alachlor	1.0	0.33
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Alachlor	1.1	0.35
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Alachlor	1.1	0.35
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Alachlor	1.0	0.33
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Alachlor	1.0	0.32
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Alachlor	1.0	0.33
SBV Cowden	09/10/2009	14:50	WT	0.18		mg/L	Ammonia-N	0.100	0.04
SBV-1	06/23/2009	10:15	WT	0.16		mg/L	Ammonia-N	0.100	0.04
SBV-1	08/12/2009	11:35	WT	0.37		mg/L	Ammonia-N	0.100	0.04
SBV-1	09/10/2009	11:00	WT	0.91		mg/L	Ammonia-N	0.100	0.04
SBV-11	06/23/2009	11:57	WT	0.06	J	mg/L	Ammonia-N	0.100	0.04
SBV-11	08/12/2009	13:22	WT	0.09	J	mg/L	Ammonia-N	0.100	0.04
SBV-11	09/10/2009	12:17	WT	0.13		mg/L	Ammonia-N	0.100	0.04
SBV-15	06/23/2009	11:58	WT	0.13		mg/L	Ammonia-N	0.100	0.04
SBV-15	08/12/2009	14:15	WT	0.09	J	mg/L	Ammonia-N	0.100	0.04
SBV-15	09/10/2009	12:23	WT	0.06	J	mg/L	Ammonia-N	0.100	0.04
SBV-2	06/23/2009	10:54	WT	0.19		mg/L	Ammonia-N	0.100	0.04
SBV-2	08/12/2009	12:18	WT	0.05	J	mg/L	Ammonia-N	0.100	0.04
SBV-2	09/10/2009	11:00	WT	0.06	J	mg/L	Ammonia-N	0.100	0.04
SBV-2-10	06/23/2009	10:58	WT	0.19		mg/L	Ammonia-N	0.100	0.04
SBV-2-10	08/12/2009	12:23	WT	0.05	J	mg/L	Ammonia-N	0.100	0.04
SBV-2-10	09/10/2009	11:08	WT	0.18		mg/L	Ammonia-N	0.100	0.04
SBV-4	06/23/2009	12:27	WT	0.15		mg/L	Ammonia-N	0.100	0.04
SBV-4	08/12/2009	14:12	WT	0.06	J	mg/L	Ammonia-N	0.100	0.04
SBV-4	09/10/2009	13:00	WT	0.12		mg/L	Ammonia-N	0.100	0.04
SBV-7	06/23/2009	11:53	WT	0.16		mg/L	Ammonia-N	0.100	0.04
SBV-7	08/12/2009	13:23	WT	0.1		mg/L	Ammonia-N	0.100	0.04
SBV-7	09/10/2009	11:27	WT	1.33		mg/L	Ammonia-N	0.100	0.04
SBV-9	06/23/2009	13:00	WT	0.08	J	mg/L	Ammonia-N	0.100	0.04
SBV-9	8/12/2009			0			Ammonia-N		
SBV-9	09/10/2009	13:15	WT	0.53		mg/L	Ammonia-N	0.100	0.04

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV Cowden	09/10/2009	14:50	WT	0.76	J	ug/L	Atrazine	1.0	0.14
SBV-1	06/23/2009	10:15	WT	1.4		ug/L	Atrazine	1.1	0.15
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Atrazine	1.0	0.14
SBV-1	09/10/2009	11:00	WT	0.78	J	ug/L	Atrazine	1.0	0.14
SBV-11	06/23/2009	11:57	WT	4		ug/L	Atrazine	1.0	0.15
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Atrazine	1.0	0.15
SBV-15	06/23/2009	11:58	WT	3.2		ug/L	Atrazine	1.0	0.15
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Atrazine	1.0	0.14
SBV-15	09/10/2009	12:23	WT	0.72	J	ug/L	Atrazine	1.0	0.14
SBV-2	06/23/2009	10:54	WT	1.1		ug/L	Atrazine	1.1	0.15
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Atrazine	1.1	0.15
SBV-2	09/10/2009	11:00	WT	0.82	J	ug/L	Atrazine	1.1	0.15
SBV-4	06/23/2009	12:27	WT	2.4		ug/L	Atrazine	1.1	0.15
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Atrazine	1.0	0.15
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Atrazine	1.0	0.14
SBV-7	06/23/2009	11:53	WT	1.6		ug/L	Atrazine	1.1	0.15
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Atrazine	1.1	0.15
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Atrazine	1.0	0.14
SBV-9	06/23/2009	13:00	WT	1.2		ug/L	Atrazine	1.0	0.14
SBV-9	09/10/2009	13:15	WT	0.96	J	ug/L	Atrazine	1.0	0.15
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Bromacil	1.0	0.28
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Bromacil	1.1	0.29
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Bromacil	1.0	0.27
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Bromacil	1.0	0.28
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Bromacil	1.0	0.28
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Bromacil	1.0	0.28
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Bromacil	1.0	0.28
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Bromacil	1.0	0.28
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Bromacil	1.0	0.27
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Bromacil	1.1	0.29
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Bromacil	1.1	0.29
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Bromacil	1.1	0.29
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Bromacil	1.1	0.29
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Bromacil	1.0	0.28

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Bromacil	1.0	0.28
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Bromacil	1.1	0.30
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Bromacil	1.1	0.29
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Bromacil	1.0	0.28
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Bromacil	1.0	0.27
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Bromacil	1.0	0.28
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Butachlor	1.0	0.26
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Butachlor	1.1	0.27
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Butachlor	1.0	0.25
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Butachlor	1.0	0.26
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Butachlor	1.0	0.26
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Butachlor	1.0	0.26
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Butachlor	1.0	0.26
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Butachlor	1.0	0.26
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Butachlor	1.0	0.25
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Butachlor	1.1	0.27
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Butachlor	1.1	0.27
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Butachlor	1.1	0.27
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Butachlor	1.1	0.26
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Butachlor	1.0	0.26
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Butachlor	1.0	0.26
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Butachlor	1.1	0.28
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Butachlor	1.1	0.27
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Butachlor	1.0	0.26
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Butachlor	1.0	0.25
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Butachlor	1.0	0.26
SBV-11	06/23/2009	11:57	WT	14.95		mg/m3	Chlorophyll a		
SBV-11	08/12/2009	13:22	WT	8.54		mg/m3	Chlorophyll a		
SBV-11	09/10/2009	12:17	WT	74.76		mg/m3	Chlorophyll a		
SBV-15	06/23/2009	11:58	WT	10.68		mg/m3	Chlorophyll a		
SBV-15	08/12/2009	14:15	WT	10.68		mg/m3	Chlorophyll a		
SBV-15	09/10/2009	12:23	WT	70.49		mg/m3	Chlorophyll a		
SBV-2	06/23/2009	10:54	WT	3.2		mg/m3	Chlorophyll a		
SBV-2	08/12/2009	12:18	WT	4.27		mg/m3	Chlorophyll a		
SBV-2	09/10/2009	11:00	WT	4.27		mg/m3	Chlorophyll a		

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-4	06/23/2009	12:27	WT	14.95		mg/m3	Chlorophyll a		
SBV-4	08/12/2009	14:12	WT	10.68		mg/m3	Chlorophyll a		
SBV-4	09/10/2009	13:00	WT	68.35		mg/m3	Chlorophyll a		
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Chlorpyrifos	1.0	0.34
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Chlorpyrifos	1.1	0.35
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Chlorpyrifos	1.0	0.33
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Chlorpyrifos	1.0	0.34
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Chlorpyrifos	1.0	0.34
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Chlorpyrifos	1.0	0.34
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Chlorpyrifos	1.0	0.34
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Chlorpyrifos	1.0	0.34
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Chlorpyrifos	1.0	0.33
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Chlorpyrifos	1.1	0.35
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Chlorpyrifos	1.1	0.35
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Chlorpyrifos	1.1	0.36
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Chlorpyrifos	1.1	0.35
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Chlorpyrifos	1.0	0.34
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Chlorpyrifos	1.0	0.34
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Chlorpyrifos	1.1	0.36
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Chlorpyrifos	1.1	0.36
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Chlorpyrifos	1.0	0.34
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Chlorpyrifos	1.0	0.33
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Chlorpyrifos	1.0	0.34
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Cyanizine	1.0	0.34
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Cyanizine	1.1	0.35
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Cyanizine	1.0	0.33
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Cyanizine	1.0	0.34
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Cyanizine	1.0	0.34
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Cyanizine	1.0	0.34
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Cyanizine	1.0	0.34
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Cyanizine	1.0	0.34
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Cyanizine	1.0	0.33
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Cyanizine	1.1	0.35
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Cyanizine	1.1	0.35

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Cyanizine	1.1	0.36
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Cyanizine	1.1	0.35
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Cyanizine	1.0	0.34
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Cyanizine	1.0	0.34
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Cyanizine	1.1	0.36
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Cyanizine	1.1	0.36
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Cyanizine	1.0	0.34
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Cyanizine	1.0	0.33
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Cyanizine	1.0	0.34
SBV-1	06/23/2009	10:15	WT	0.28		mg/L	Iron, Total	0.030	0.010
SBV-1	08/12/2009	11:35	WT	0.2		mg/L	Iron, Total	0.030	0.010
SBV-1	09/10/2009	11:00	WT	0.14		mg/L	Iron, Total	0.030	0.010
SBV-2-10	06/23/2009	10:58	WT	0.072		mg/L	Iron, Total	0.030	0.010
SBV-2-10	08/12/2009	12:23	WT	0.059		mg/L	Iron, Total	0.030	0.010
SBV-2-10	09/10/2009	11:08	WT	0.064		mg/L	Iron, Total	0.030	0.010
SBV-1	06/23/2009	10:15	WT	0.068		mg/L	Manganese, Total	0.0025	0.00083
SBV-1	08/12/2009	11:35	WT	0.15		mg/L	Manganese, Total	0.0025	0.00083
SBV-1	09/10/2009	11:00	WT	0.096		mg/L	Manganese, Total	0.0025	0.00083
SBV-2-10	06/23/2009	10:58	WT	0.0069		mg/L	Manganese, Total	0.0025	0.00083
SBV-2-10	08/12/2009	12:23	WT	0.01		mg/L	Manganese, Total	0.0025	0.00083
SBV-2-10	09/10/2009	11:08	WT	0.0065		mg/L	Manganese, Total	0.0025	0.00083
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Metolachlor	1.0	0.20
SBV-1	06/23/2009	10:15	WT	0.57	J	ug/L	Metolachlor	1.1	0.20
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Metolachlor	1.0	0.19
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Metolachlor	1.0	0.20
SBV-11	06/23/2009	11:57	WT	1.8		ug/L	Metolachlor	1.0	0.20
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Metolachlor	1.0	0.20
SBV-15	06/23/2009	11:58	WT	1.7		ug/L	Metolachlor	1.0	0.20
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Metolachlor	1.0	0.20
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Metolachlor	1.0	0.19
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Metolachlor	1.1	0.20
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Metolachlor	1.1	0.20
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Metolachlor	1.1	0.21
SBV-4	06/23/2009	12:27	WT	0.86	J	ug/L	Metolachlor	1.1	0.20
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Metolachlor	1.0	0.20

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Metolachlor	1.0	0.20
SBV-7	06/23/2009	11:53	WT	2.3		ug/L	Metolachlor	1.1	0.21
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Metolachlor	1.1	0.21
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Metolachlor	1.0	0.20
SBV-9	06/23/2009	13:00	WT	1.4		ug/L	Metolachlor	1.0	0.19
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Metolachlor	1.0	0.20
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Metribuzin	1.0	0.30
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Metribuzin	1.1	0.31
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Metribuzin	1.0	0.29
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Metribuzin	1.0	0.30
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Metribuzin	1.0	0.30
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Metribuzin	1.0	0.30
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Metribuzin	1.0	0.30
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Metribuzin	1.0	0.30
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Metribuzin	1.0	0.29
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Metribuzin	1.1	0.31
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Metribuzin	1.1	0.31
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Metribuzin	1.1	0.32
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Metribuzin	1.1	0.31
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Metribuzin	1.0	0.30
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Metribuzin	1.0	0.30
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Metribuzin	1.1	0.32
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Metribuzin	1.1	0.32
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Metribuzin	1.0	0.30
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Metribuzin	1.0	0.29
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Metribuzin	1.0	0.30
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Molinate	1.0	0.12
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Molinate	1.1	0.13
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Molinate	1.0	0.12
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Molinate	1.0	0.12
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Molinate	1.0	0.12
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Molinate	1.0	0.13
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Molinate	1.0	0.12
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Molinate	1.0	0.12

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Molinate	1.0	0.12
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Molinate	1.1	0.13
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Molinate	1.1	0.13
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Molinate	1.1	0.13
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Molinate	1.1	0.13
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Molinate	1.0	0.13
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Molinate	1.0	0.12
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Molinate	1.1	0.13
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Molinate	1.1	0.13
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Molinate	1.0	0.12
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Molinate	1.0	0.12
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Molinate	1.0	0.13
SBV Cowden	09/10/2009	14:50	WT	3.1		mg/L	Nitrate-N	0.20	0.020
SBV-1	06/23/2009	10:15	WT	6.1		mg/L	Nitrate-N	0.20	0.020
SBV-1	08/12/2009	11:35	WT	3.5		mg/L	Nitrate-N	0.20	0.020
SBV-1	09/10/2009	11:00	WT	2.6		mg/L	Nitrate-N	0.20	0.020
SBV-11	06/23/2009	11:57	WT	5.1		mg/L	Nitrate-N	0.20	0.020
SBV-11	08/12/2009	13:22	WT	3.4		mg/L	Nitrate-N	0.20	0.020
SBV-11	09/10/2009	12:17	WT	1.2		mg/L	Nitrate-N	0.20	0.020
SBV-15	06/23/2009	11:58	WT	5.9		mg/L	Nitrate-N	0.20	0.020
SBV-15	08/12/2009	14:15	WT	3.1		mg/L	Nitrate-N	0.20	0.020
SBV-15	09/10/2009	12:23	WT	1.2		mg/L	Nitrate-N	0.20	0.020
SBV-2	06/23/2009	10:54	WT	5.8		mg/L	Nitrate-N	0.20	0.020
SBV-2	08/12/2009	12:18	WT	3.9		mg/L	Nitrate-N	0.20	0.020
SBV-2	09/10/2009	11:00	WT	2.6		mg/L	Nitrate-N	0.20	0.020
SBV-2-10	06/23/2009	10:58	WT	6		mg/L	Nitrate-N	0.20	0.020
SBV-2-10	08/12/2009	12:23	WT	4		mg/L	Nitrate-N	0.20	0.020
SBV-2-10	09/10/2009	11:08	WT	2.6		mg/L	Nitrate-N	0.20	0.020
SBV-4	06/23/2009	12:27	WT	5.2		mg/L	Nitrate-N	0.20	0.020
SBV-4	08/12/2009	14:12	WT	3.1		mg/L	Nitrate-N	0.20	0.020
SBV-4	09/10/2009	13:00	WT	0.66		mg/L	Nitrate-N	0.20	0.020
SBV-7	06/23/2009	11:53	WT	7.7		mg/L	Nitrate-N	0.20	0.020
SBV-7	08/12/2009	13:23	WT	1.7		mg/L	Nitrate-N	0.20	0.020
SBV-7	09/10/2009	11:27	WT	2.2		mg/L	Nitrate-N	0.20	0.020
SBV-9	06/23/2009	13:00	WT	10.3		mg/L	Nitrate-N	0.20	0.020

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-9	8/12/2009			0			Nitrate-N		
SBV-9	09/10/2009	13:15	WT	0.2	U	mg/L	Nitrate-N	0.20	0.020
SBV Cowden	09/10/2009	14:50	WT	0.0063	J	mg/L	Orthophosphate	0.020	0.0040
SBV-1	06/23/2009	10:15	WT	0.0095	J	mg/L	Orthophosphate	0.020	0.0040
SBV-1	08/12/2009	11:35	WT	0.02	U	mg/L	Orthophosphate	0.020	0.0040
SBV-1	09/10/2009	11:00	WT	0.02	U	mg/L	Orthophosphate	0.020	0.0040
SBV-11	06/23/2009	11:57	WT	0.02	U	mg/L	Orthophosphate	0.020	0.0040
SBV-11	08/12/2009	13:22	WT	0.0095	J	mg/L	Orthophosphate	0.020	0.0040
SBV-11	09/10/2009	12:17	WT	0.0079	J	mg/L	Orthophosphate	0.020	0.0040
SBV-15	06/23/2009	11:58	WT	0.1		mg/L	Orthophosphate	0.020	0.0040
SBV-15	08/12/2009	14:15	WT	0.011	J	mg/L	Orthophosphate	0.020	0.0040
SBV-15	09/10/2009	12:23	WT	0.011	J	mg/L	Orthophosphate	0.020	0.0040
SBV-2	06/23/2009	10:54	WT	0.02	U	mg/L	Orthophosphate	0.020	0.0040
SBV-2	08/12/2009	12:18	WT	0.02	U	mg/L	Orthophosphate	0.020	0.0040
SBV-2	09/10/2009	11:00	WT	0.02	U	mg/L	Orthophosphate	0.020	0.0040
SBV-2-10	06/23/2009	10:58	WT	0.02	U	mg/L	Orthophosphate	0.020	0.0040
SBV-2-10	08/12/2009	12:23	WT	0.0063	J	mg/L	Orthophosphate	0.020	0.0040
SBV-2-10	09/10/2009	11:08	WT	0.0063	J	mg/L	Orthophosphate	0.020	0.0040
SBV-4	06/23/2009	12:27	WT	0.0048	J	mg/L	Orthophosphate	0.020	0.0040
SBV-4	08/12/2009	14:12	WT	0.011	J	mg/L	Orthophosphate	0.020	0.0040
SBV-4	09/10/2009	13:00	WT	0.066		mg/L	Orthophosphate	0.020	0.0040
SBV-7	06/23/2009	11:53	WT	0.17		mg/L	Orthophosphate	0.020	0.0040
SBV-7	08/12/2009	13:23	WT	0.15		mg/L	Orthophosphate	0.020	0.0040
SBV-7	09/10/2009	11:27	WT	0.17		mg/L	Orthophosphate	0.020	0.0040
SBV-9	06/23/2009	13:00	WT	0.089		mg/L	Orthophosphate	0.020	0.0040
SBV-9	09/10/2009	13:15	WT	0.0063	J	mg/L	Orthophosphate	0.020	0.0040
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.26
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Pendimethalin(Prowl)	1.1	0.27
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.25
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.26
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.26
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.26
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.26
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.26

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.25
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Pendimethalin(Prowl)	1.1	0.27
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Pendimethalin(Prowl)	1.1	0.27
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Pendimethalin(Prowl)	1.1	0.27
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Pendimethalin(Prowl)	1.1	0.26
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.26
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.26
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Pendimethalin(Prowl)	1.1	0.28
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Pendimethalin(Prowl)	1.1	0.27
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.26
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.25
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Pendimethalin(Prowl)	1.0	0.26
SBV-11	06/23/2009	11:57	WT	1		mg/m3	Pheophytin a		
SBV-11	08/12/2009	13:22	WT	1		mg/m3	Pheophytin a		
SBV-11	09/10/2009	12:17	WT	1		mg/m3	Pheophytin a		
SBV-15	06/23/2009	11:58	WT	1		mg/m3	Pheophytin a		
SBV-15	08/12/2009	14:15	WT	4.27		mg/m3	Pheophytin a		
SBV-15	09/10/2009	12:23	WT	1		mg/m3	Pheophytin a		
SBV-2	06/23/2009	10:54	WT	1		mg/m3	Pheophytin a		
SBV-2	08/12/2009	12:18	WT	1		mg/m3	Pheophytin a		
SBV-2	09/10/2009	11:00	WT	7.69		mg/m3	Pheophytin a		
SBV Cowden	09/10/2009	14:50	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-1	06/23/2009	10:15	WT	0.036	J	mg/L	Phosphorus, Total	0.10	0.025
SBV-1	08/12/2009	11:35	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-1	09/10/2009	11:00	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-11	06/23/2009	11:57	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-11	08/12/2009	13:22	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-11	09/10/2009	12:17	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-15	06/23/2009	11:58	WT	0.065	J	mg/L	Phosphorus, Total	0.10	0.025
SBV-15	08/12/2009	14:15	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-15	09/10/2009	12:23	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-2	06/23/2009	10:54	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-2	08/12/2009	12:18	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-2	09/10/2009	11:00	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-2-10	06/23/2009	10:58	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-2-10	08/12/2009	12:23	WT	0.17		mg/L	Phosphorus, Total	0.10	0.025
SBV-2-10	09/10/2009	11:08	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-4	06/23/2009	12:27	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-4	08/12/2009	14:12	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-4	09/10/2009	13:00	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV-7	06/23/2009	11:53	WT	0.23		mg/L	Phosphorus, Total	0.10	0.025
SBV-7	08/12/2009	13:23	WT	0.14		mg/L	Phosphorus, Total	0.10	0.025
SBV-7	09/10/2009	11:27	WT	0.066	J	mg/L	Phosphorus, Total	0.10	0.025
SBV-9	06/23/2009	13:00	WT	0.23		mg/L	Phosphorus, Total	0.10	0.025
SBV-9	09/10/2009	13:15	WT	0.1	U	mg/L	Phosphorus, Total	0.10	0.025
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Prometon	1.0	0.25
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Prometon	1.1	0.26
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Prometon	1.0	0.24
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Prometon	1.0	0.25
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Prometon	1.0	0.25
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Prometon	1.0	0.25
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Prometon	1.0	0.25
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Prometon	1.0	0.25
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Prometon	1.0	0.24
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Prometon	1.1	0.26
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Prometon	1.1	0.26
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Prometon	1.1	0.26
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Prometon	1.1	0.25
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Prometon	1.0	0.25
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Prometon	1.0	0.25
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Prometon	1.1	0.27
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Prometon	1.1	0.26
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Prometon	1.0	0.25
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Prometon	1.0	0.24
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Prometon	1.0	0.25
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Propachlor	1.0	0.18
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Propachlor	1.1	0.18
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Propachlor	1.0	0.17
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Propachlor	1.0	0.18

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Propachlor	1.0	0.18
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Propachlor	1.0	0.18
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Propachlor	1.0	0.18
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Propachlor	1.0	0.18
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Propachlor	1.0	0.17
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Propachlor	1.1	0.18
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Propachlor	1.1	0.18
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Propachlor	1.1	0.18
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Propachlor	1.1	0.18
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Propachlor	1.0	0.18
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Propachlor	1.0	0.18
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Propachlor	1.1	0.19
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Propachlor	1.1	0.18
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Propachlor	1.0	0.18
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Propachlor	1.0	0.17
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Propachlor	1.0	0.18
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Simazine	1.0	0.26
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Simazine	1.1	0.27
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Simazine	1.0	0.25
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Simazine	1.0	0.26
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Simazine	1.0	0.26
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Simazine	1.0	0.26
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Simazine	1.0	0.26
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Simazine	1.0	0.26
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Simazine	1.0	0.25
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Simazine	1.1	0.27
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Simazine	1.1	0.27
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Simazine	1.1	0.27
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Simazine	1.1	0.26
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Simazine	1.0	0.26
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Simazine	1.0	0.26
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Simazine	1.1	0.28
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Simazine	1.1	0.27
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Simazine	1.0	0.26
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Simazine	1.0	0.25

SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Simazine	1.0	0.26
SBV Cowden	09/10/2009	14:50	WT	3.6		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-1	06/23/2009	10:15	WT	3.6		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-1	08/12/2009	11:35	WT	4.2		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-1	09/10/2009	11:00	WT	4.8		mg/L	Total Organic Carbon (TOC)	2.0	0.40
SBV-11	06/23/2009	11:57	WT	4.8		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-11	08/12/2009	13:22	WT	4.4		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-11	09/10/2009	12:17	WT	7.6		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-15	06/23/2009	11:58	WT	4.9		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-15	08/12/2009	14:15	WT	5.2		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-15	09/10/2009	12:23	WT	6		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-2	06/23/2009	10:54	WT	4.6		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-2	08/12/2009	12:18	WT	4.8		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-2	09/10/2009	11:00	WT	2.6		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-2-10	06/23/2009	10:58	WT	4.2		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-2-10	08/12/2009	12:23	WT	4.8		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-2-10	09/10/2009	11:08	WT	4.1		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-4	06/23/2009	12:27	WT	4.7		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-4	08/12/2009	14:12	WT	6.6		mg/L	Total Organic Carbon (TOC)	2.0	0.40
SBV-4	09/10/2009	13:00	WT	5.8		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-7	06/23/2009	11:53	WT	4.3		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-7	08/12/2009	13:23	WT	4.8		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-7	09/10/2009	11:27	WT	4.3		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-9	06/23/2009	13:00	WT	3.5		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV-9	09/10/2009	13:15	WT	6.8		mg/L	Total Organic Carbon (TOC)	1.0	0.20
SBV Cowden	09/10/2009	14:50	WT	44		mg/L	Total Suspended Solids	5	5
SBV-1	06/23/2009	10:15	WT	5	U	mg/L	Total Suspended Solids	5	5
SBV-1	08/12/2009	11:35	WT	8		mg/L	Total Suspended Solids	5	5
SBV-1	09/10/2009	11:00	WT	9		mg/L	Total Suspended Solids	5	5
SBV-11	06/23/2009	11:57	WT	6		mg/L	Total Suspended Solids	5	5
SBV-11	08/12/2009	13:22	WT	6		mg/L	Total Suspended Solids	5	5
SBV-11	09/10/2009	12:17	WT	18		mg/L	Total Suspended Solids	5	5
SBV-15	06/23/2009	11:58	WT	13		mg/L	Total Suspended Solids	5	5
SBV-15	08/12/2009	14:15	WT	10		mg/L	Total Suspended Solids	5	5
SBV-15	09/10/2009	12:23	WT	17		mg/L	Total Suspended Solids	5	5
SBV-2	06/23/2009	10:54	WT	8		mg/L	Total Suspended Solids	5	5

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-2	08/12/2009	12:18	WT	5	U	mg/L	Total Suspended Solids	5	5
SBV-2	09/10/2009	11:00	WT	5	U	mg/L	Total Suspended Solids	5	5
SBV-2-10	06/23/2009	10:58	WT	5	U	mg/L	Total Suspended Solids	5	5
SBV-2-10	08/12/2009	12:23	WT	5	U	mg/L	Total Suspended Solids	5	5
SBV-2-10	09/10/2009	11:08	WT	5		mg/L	Total Suspended Solids	5	5
SBV-4	06/23/2009	12:27	WT	5	U	mg/L	Total Suspended Solids	5	5
SBV-4	08/12/2009	14:12	WT	12		mg/L	Total Suspended Solids	5	5
SBV-4	09/10/2009	13:00	WT	32		mg/L	Total Suspended Solids	5	5
SBV-7	06/23/2009	11:53	WT	48		mg/L	Total Suspended Solids	5	5
SBV-7	08/12/2009	13:23	WT	36		mg/L	Total Suspended Solids	5	5
SBV-7	09/10/2009	11:27	WT	38		mg/L	Total Suspended Solids	5	5
SBV-9	06/23/2009	13:00	WT	117		mg/L	Total Suspended Solids	5	5
SBV-9	09/10/2009	13:15	WT	28		mg/L	Total Suspended Solids	5	5
SBV Cowden	09/10/2009	14:50	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-1	06/23/2009	10:15	WT	1.1	U	ug/L	Trifluralin	1.1	0.12
SBV-1	08/12/2009	11:35	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-1	09/10/2009	11:00	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-11	06/23/2009	11:57	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-11	08/12/2009	13:22	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-15	06/23/2009	11:58	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-15	08/12/2009	14:15	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-15	09/10/2009	12:23	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-2	06/23/2009	10:54	WT	1.1	U	ug/L	Trifluralin	1.1	0.12
SBV-2	08/12/2009	12:18	WT	1.1	U	ug/L	Trifluralin	1.1	0.12
SBV-2	09/10/2009	11:00	WT	1.1	U	ug/L	Trifluralin	1.1	0.12
SBV-4	06/23/2009	12:27	WT	1.1	U	ug/L	Trifluralin	1.1	0.12
SBV-4	08/12/2009	14:12	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-4	09/10/2009	13:00	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-7	06/23/2009	11:53	WT	1.1	U	ug/L	Trifluralin	1.1	0.12
SBV-7	08/12/2009	13:23	WT	1.1	U	ug/L	Trifluralin	1.1	0.12
SBV-7	09/10/2009	11:27	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-9	06/23/2009	13:00	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV-9	09/10/2009	13:15	WT	1	U	ug/L	Trifluralin	1.0	0.11
SBV Cowden	09/10/2009	14:50	WT	5	U	mg/L	Volatile Suspended Solids	5	5

Sample Site	Date Collected	Time Collected	Matrix	Result	Qualifier	Unit	Analyte	Reporting Limit	mdl
SBV-1	06/23/2009	10:15	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-1	08/12/2009	11:35	WT	6		mg/L	Volatile Suspended Solids	5	5
SBV-1	09/10/2009	11:00	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-11	06/23/2009	11:57	WT	6		mg/L	Volatile Suspended Solids	5	5
SBV-11	08/12/2009	13:22	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-11	09/10/2009	12:17	WT	11		mg/L	Volatile Suspended Solids	5	5
SBV-15	06/23/2009	11:58	WT	9		mg/L	Volatile Suspended Solids	5	5
SBV-15	08/12/2009	14:15	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-15	09/10/2009	12:23	WT	11		mg/L	Volatile Suspended Solids	5	5
SBV-2	06/23/2009	10:54	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-2	08/12/2009	12:18	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-2	09/10/2009	11:00	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-2-10	06/23/2009	10:58	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-2-10	08/12/2009	12:23	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-2-10	09/10/2009	11:08	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-4	06/23/2009	12:27	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-4	08/12/2009	14:12	WT	6		mg/L	Volatile Suspended Solids	5	5
SBV-4	09/10/2009	13:00	WT	12		mg/L	Volatile Suspended Solids	5	5
SBV-7	06/23/2009	11:53	WT	5	U	mg/L	Volatile Suspended Solids	5	5
SBV-7	08/12/2009	13:23	WT	6		mg/L	Volatile Suspended Solids	5	5
SBV-7	09/10/2009	11:27	WT	5		mg/L	Volatile Suspended Solids	5	5
SBV-9	06/23/2009	13:00	WT	17		mg/L	Volatile Suspended Solids	5	5
SBV-9	09/10/2009	13:15	WT	11		mg/L	Volatile Suspended Solids	5	5

Marinas

Site	Date	Time	Matrix	Result	Unit	Analyte
SBV-FIN MARINA	6/23/2009	1130	WT	10	cfu/100ml	Fecal Coliform
SBV-LS MARINA	6/23/2009	1120	WT	162	cfu/100ml	Fecal Coliform
SBV-SUL MARINA	6/23/2009	1315	WT	99	cfu/100ml	Fecal Coliform
SBV-FIN MARINA	8/12/2009	1310	WT	10	cfu/100ml	Fecal Coliform
SBV-LS MARINA	8/12/2009	1215	WT	10	cfu/100ml	Fecal Coliform
SBV-SUL MARINA	8/12/2009	1418	WT	10	cfu/100ml	Fecal Coliform
SBV-FIN MARINA	9/10/2009	1210	WT	10	cfu/100ml	Fecal Coliform
SBV-LS MARINA	9/10/2009	1117	WT	10	cfu/100ml	Fecal Coliform
SBV-SUL MARINA	9/10/2009	1312	WT	10	cfu/100ml	Fecal Coliform

FIELD DATA

Site	Date	Depth	H2OTemp (oC)	Redox	Cond	D.0.%	D.O.(mg/L)	pH	Time	Seechi
1	6/23/2009	0.87	20.73	214	415	84.6	7.43	7.44	1015	
1	8/12/2009	1.13	24.86	300	297.2	105	8.57	7.67	1135	
1	9/10/2009		23.86	406	364.7	106.1	8.87	8.07	1100	-
2	6/23/2009	0.6	31.09	400	389	171	12.5	8.62	1054	36
2	6/23/2009	1	30.9	368	388	171	12.5	8.62		
2	6/23/2009	2	26	393	403	117	9.3	8.38		
2	6/23/2009	3	24.9	417	408	81	6.5	8.02		
2	6/23/2009	4	24.1	442	406	45	3.5	7.7		
2	6/23/2009	5	23.8	459	404	34	2.9	7.7		
2	6/23/2009	6	23.6	466	404	25	2.1	7.6		
2	6/23/2009	7	23.6	469	404	25	2.1	7.6		
2	6/23/2009	8	23.5	471	405	21	1.8	7.5		
2	6/23/2009	9	23.2	476	405	14	1.2	7.5		
2	6/23/2009	10	22.3	478	406	2.5	0.2	7.4		
2	6/23/2009	11	21.8	454	399	1.3	0.1	7.4		
2	6/23/2009	12	21.5	436	403	1.2	0.1	7.4		
2	8/12/2009	0.12	27.74	276	377.9	126.5	9.81	8.5	1218	46
2	8/12/2009	1.01	27.73	276	377.8	126.8	9.83	8.5		
2	8/12/2009	2.03	27.67	276	378.1	126	9.77	8.5		
2	8/12/2009	3	27.64	276	378	125.4	9.74	8.51	1220	
2	8/12/2009	4.03	27.63	276	378	125.4	9.74	8.51		
2	8/12/2009	4.98	27.63	277	377.8	125.2	9.73	8.51		
2	8/12/2009	6.01	27.61	278	377.8	125	9.69	8.51	1222	
2	8/12/2009	7.02	27.61	278	377.8	124.7	9.69	8.51		
2	8/12/2009	8.01	27.56	279	377.8	123.3	9.59	8.5		
2	8/12/2009	90.3	27.51	281	378	122.1	9.5	8.49	1226	
2	8/12/2009	10.05	26.33	284	380.1	117.6	9.29	8.48		
2	8/12/2009	10.47	26.31	296	383.9	80	6.7	8.12		
2	8/12/2009	11	26.38	302	383.9	51.7	4.09	7.74	1228	
2	8/12/2009	12.05	25.19	315	388.9	24.7	1.99	7.53		
2	8/12/2009	13.03	24.99	312	390.2	6.3	0.5	7.41		
2	8/12/2009	14.01	24.58	297	394.5	1.8	0.15	7.38	1230	

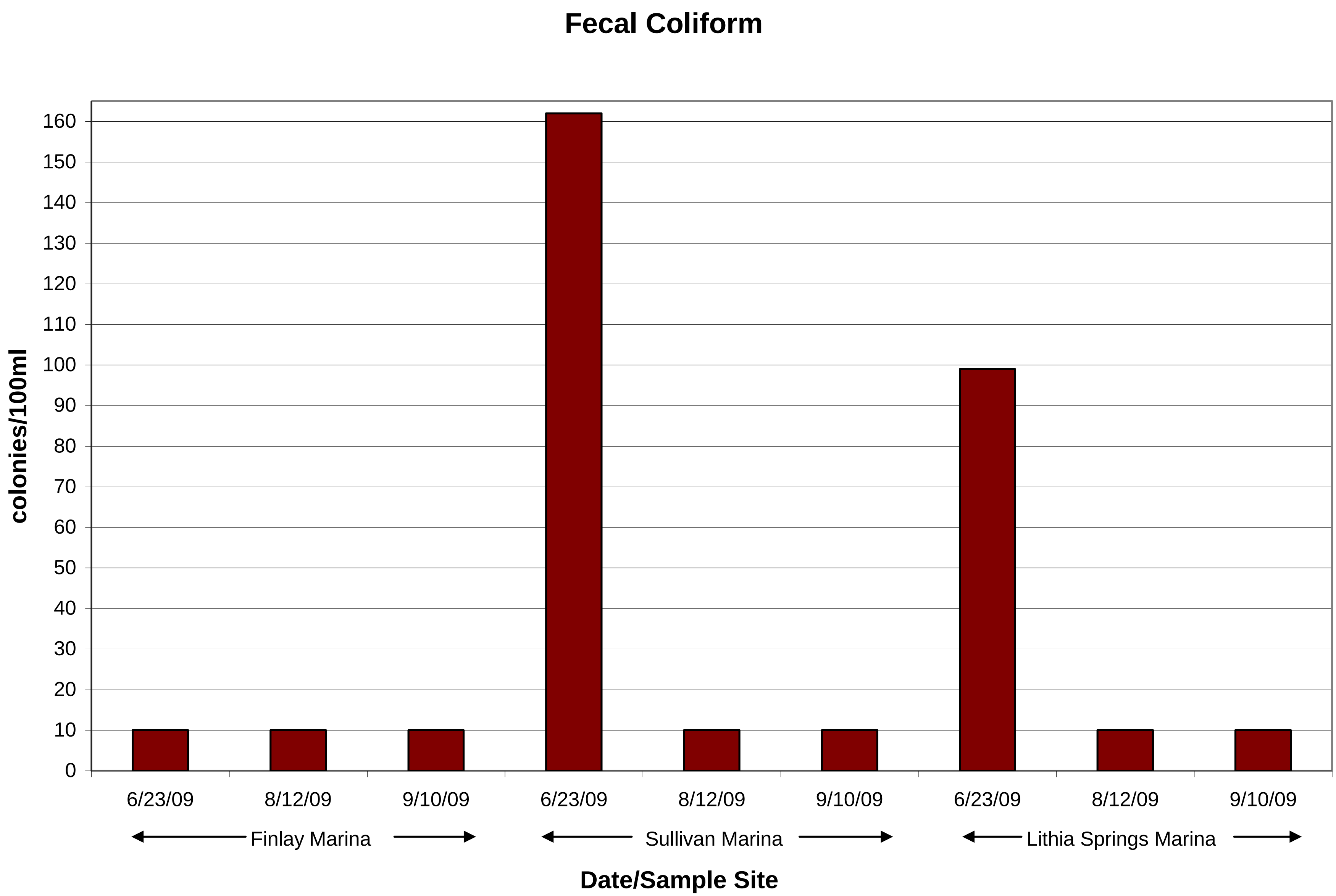
Site	Date	Depth	H2OTemp (oC)	Redox	Cond	D.0.%	D.O.(mg/L)	pH	Time	Seechi
2	9/10/2009	0.5	26.1	344	366	143	11.6	8.8	1132	36
2	9/10/2009	1	26.0	341	365	148	11.9	8.8		
2	9/10/2009	2	25.9	340	365	148	11.9	8.8		
2	9/10/2009	3	25.5	342	367	137	11.0	8.7		
2	9/10/2009	4	25.1	342	368	128	10.4	8.7		
2	9/10/2009	5	25.1	343	368	125	10.2	8.7		
2	9/10/2009	6	25.0	345	370	115	9.4	8.6		
2	9/10/2009	7	25.0	346	371	110	9.0	8.5		
2	9/10/2009	8	24.9	345	371	110	9.0	8.5		
2	9/10/2009	9	24.9	346	371	108	8.9	8.5		
2	9/10/2009	10	23.9	358	376	62	5.2	8.0		
2	9/10/2009	11	23.8	360	376	58	4.9	8.0		
2	9/10/2009	12	23.7	364	378	41	3.4	3.4		
2	9/10/2009	13	23.6	366	378	32	2.9	2.9		
2	9/10/2009	14	23.4	370	383	8	0.6	0.6		
2	9/10/2009	15	20.2	120	460	2	0.2	0.2		
4	6/23/2009	0.2	30.7	401	351	171	12.6	8.6	1227	13
4	6/23/2009	1	28	427	345	97	7.5	7.9		
4	6/23/2009	2	24.8	464	329	52	4.2	7.3		
4	6/23/2009	3	24.7	470	329	48	3.9	7.3		
4	6/23/2009	4	24.6	472	328	46	3.8	7.3		
4	6/23/2009	5	24.4	473	329	38	3.1	7.2		
4	8/12/2009	0.33	28.82	239	434.9	141.7	13.07	8.59	1412	
4	8/12/2009	1.01	28.7	244	436.1	169	12.84	8.53		
4	8/12/2009	2.03	27.83	257	460.7	121.3	9.38	8.26		
4	8/12/2009	3.05	27.3	268	464.4	79.2	6.19	7.97		
4	8/12/2009	4.01	27.1	275	470.5	42	3.24	7.57	1419	
4	9/10/2009	0.5	24.5	314	466	116	9.5	8.4	1300	9
4	9/10/2009	1	23.9	320	469	92	7.7	8.1		
4	9/10/2009	2	23.7	324	471	78	6.5	8.0		
7	6/23/2009	0.23	24.66	193	424.5	142	11.39	7.3	1153	
7	8/12/2009	0.11	26.25	252	689	108.7	8.62	8.12	1323	

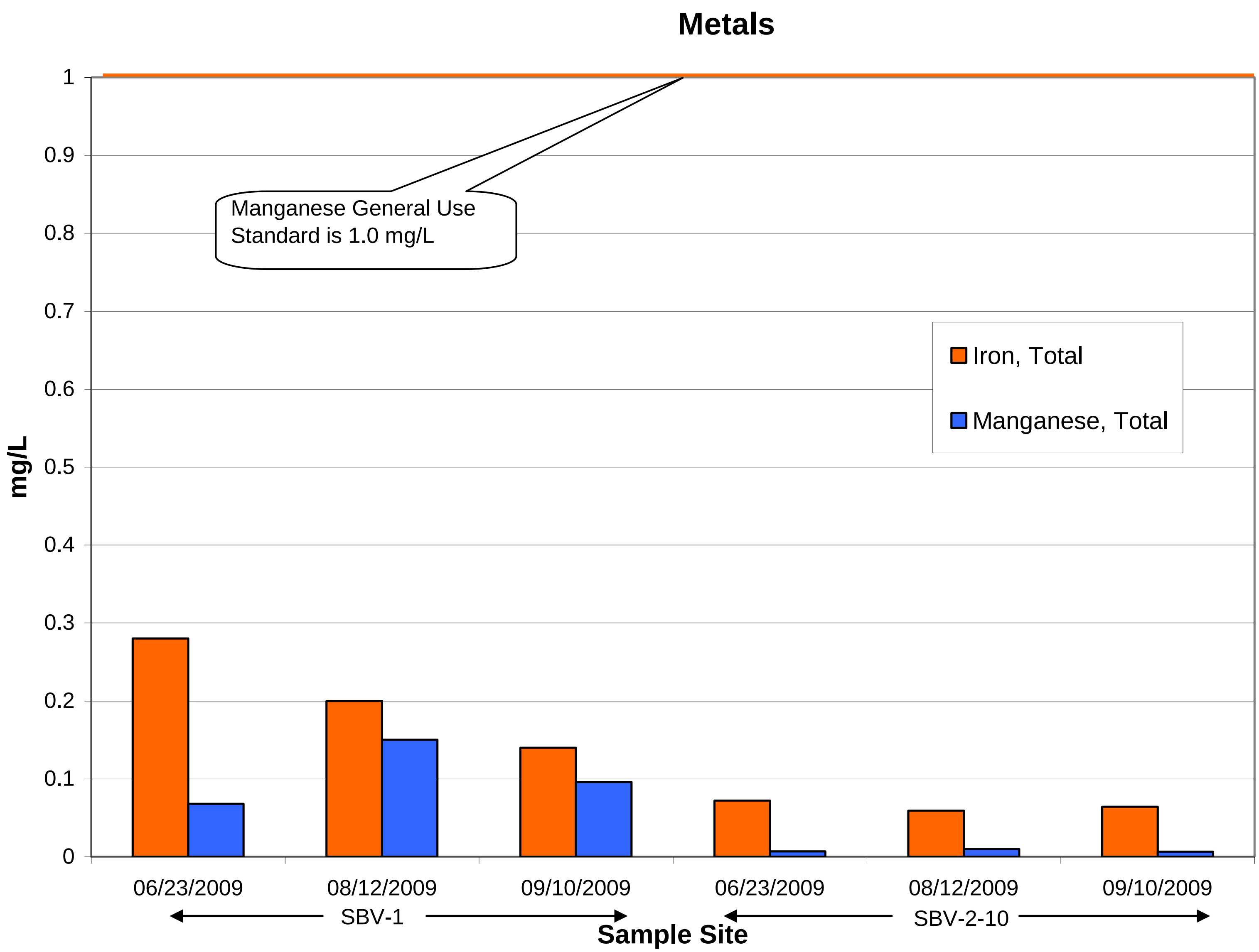
Site	Date	Depth	H2OTemp (oC)	Redox	Cond	D.0.%	D.O.(mg/L)	pH	Time	Seechi
7	9/10/2009	1.9	22.15	409	687.6	85.1	7.32	8.0	1127	-
9	6/23/2009	1.67	20.68	204	543.8	83.5	7.33	7.42	1300	
9	8/12/2009		0			0	0	0		
9	9/10/2009	1.7	23.58	374	309.5	135.9	11.42	8.41	1315	-
11	6/23/2009	0.2	30.3	392	309	219	16.1	8.9	1157	36
11	6/23/2009	1	26.7	419	351	110	8.6	8.3		
11	6/23/2009	2	25.5	444	364	60	4.7	7.9		
11	6/23/2009	3	24.7	451	375	40	3.3	7.6		
11	6/23/2009	4	23.7	476	382	25	2.1	7.4		
11	6/23/2009	5	23.2	482	377	25	2.1	7.3		
11	6/23/2009	6	22.5	489	363	20	1.7	7.2		
11	6/23/2009	7	22.1	492	366	11	0.9	7.2		
11	6/23/2009	8	21.7	492	394	3	0.3	7.2		
11	6/23/2009	9	21.2	481	422	1.5	0.1	7.2		
11	6/23/2009	10	21.1	469	436	1.3	0.1	7.2		
11	8/12/2009	0.46	27.66	244	371.5	138	10.66	8.45	1322	32
11	8/12/2009	1	27.61	246	371.6	133.3	10.47	8.48		
11	8/12/2009	2.02	26.8	260	380.5	82.1	6.36	8.04		
11	8/12/2009	3.02	26.31	269	383.2	55.1	4.5	7.86	1326	
11	8/12/2009	4.05	26.12	275	385.7	43.1	3.42	7.67		
11	8/12/2009	5.03	26.05	279	387	33.5	2.65	7.59		
11	8/12/2009	6.07	25.79	283	389.7	14.7	1.15	7.44	1330	
11	8/12/2009	7.02	25.55	278	393.2	1.5	0.12	7.35		
11	8/12/2009	8	25.39	146	395.2	1.2	0.09	7.33		
11	8/12/2009	8.98	24.34	75	396.9	1.1	0.08	7.33		
11	9/10/2009	0.5	25.1	300	347	183	15.0	9.0	1217	16
11	9/10/2009	1	25.1	297	347	188	15.3	9.0		
11	9/10/2009	2	25.0	299	347	179	14.7	8.9		
11	9/10/2009	3	23.3	322	370	87	7.3	8.1		
11	9/10/2009	4	23.0	332	374	20	1.7	7.7		
11	9/10/2009	5	22.9	334	375	8	0.6	7.5		
11	9/10/2009	6	22.9	304	377	4	0.4	7.5		

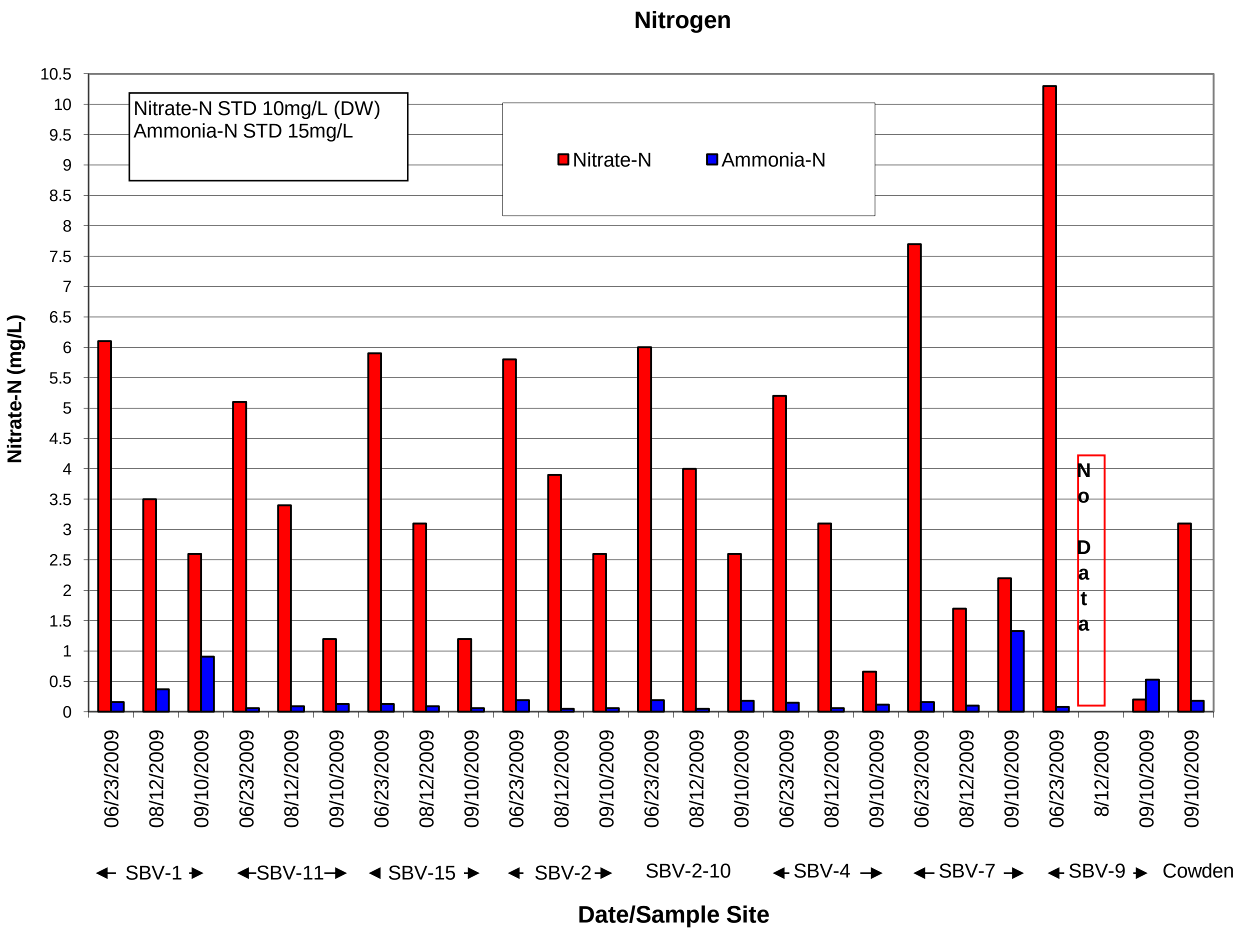
Site	Date	Depth	H2OTemp (oC)	Redox	Cond	D.0.%	D.O.(mg/L)	pH	Time	Seechi
11	9/10/2009	7	22.7	244	382	3	0.3	7.4		
Cowden	9/10/2009	2.8	23.96	396	374.3	96.4	8.05	8.06	1450	-

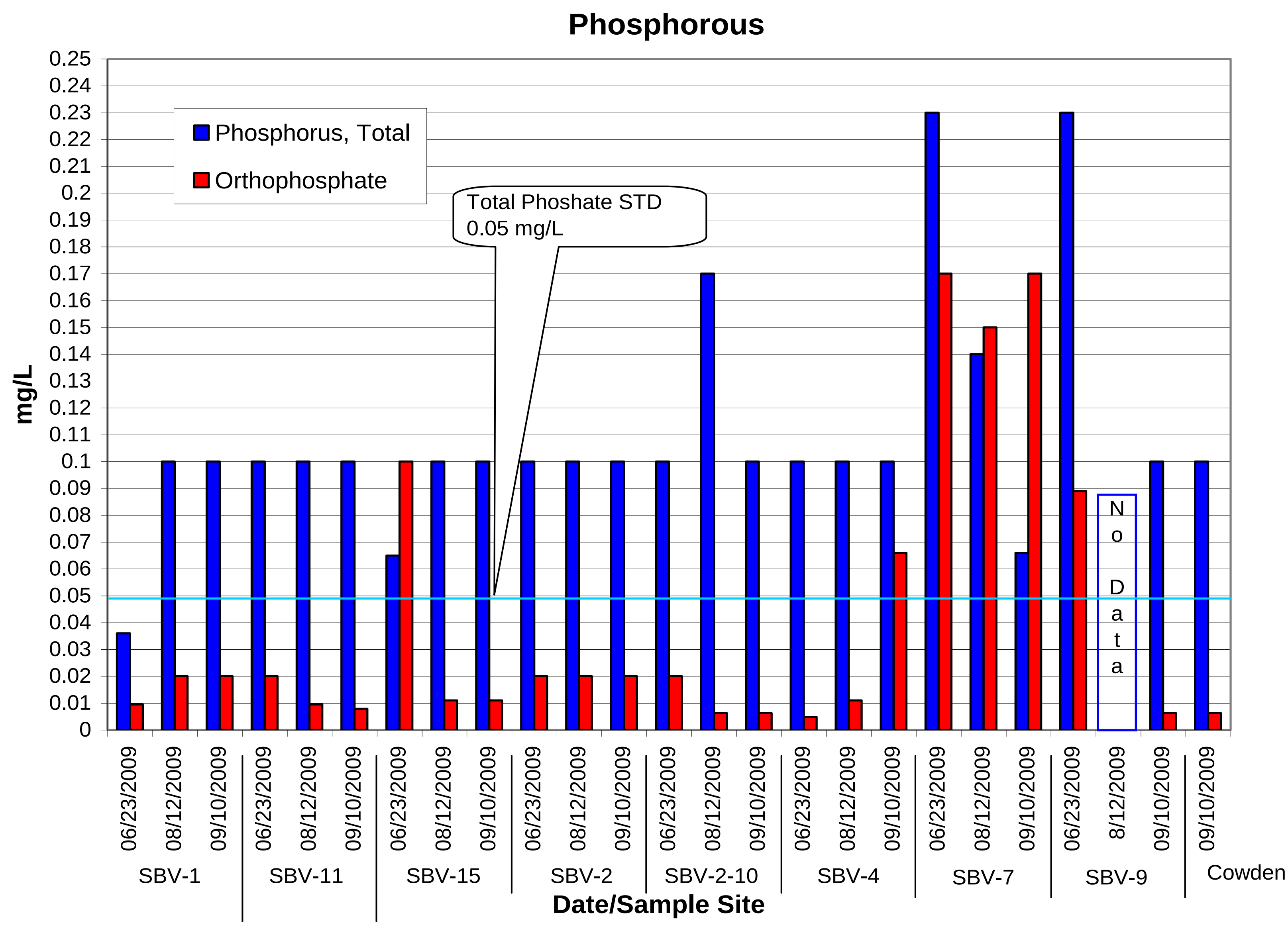
APPENDIX B

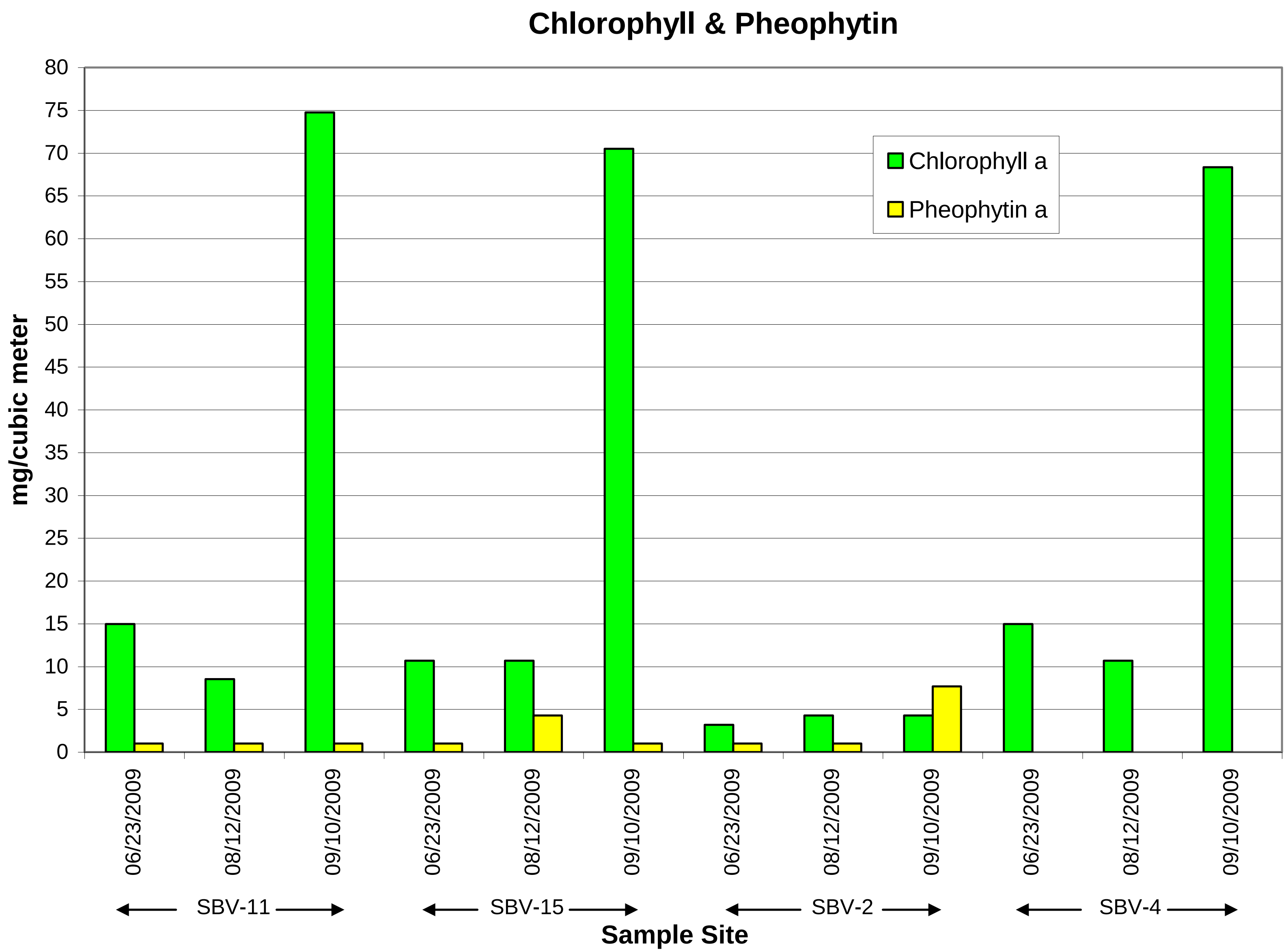
LAB DATA
GRAPHS

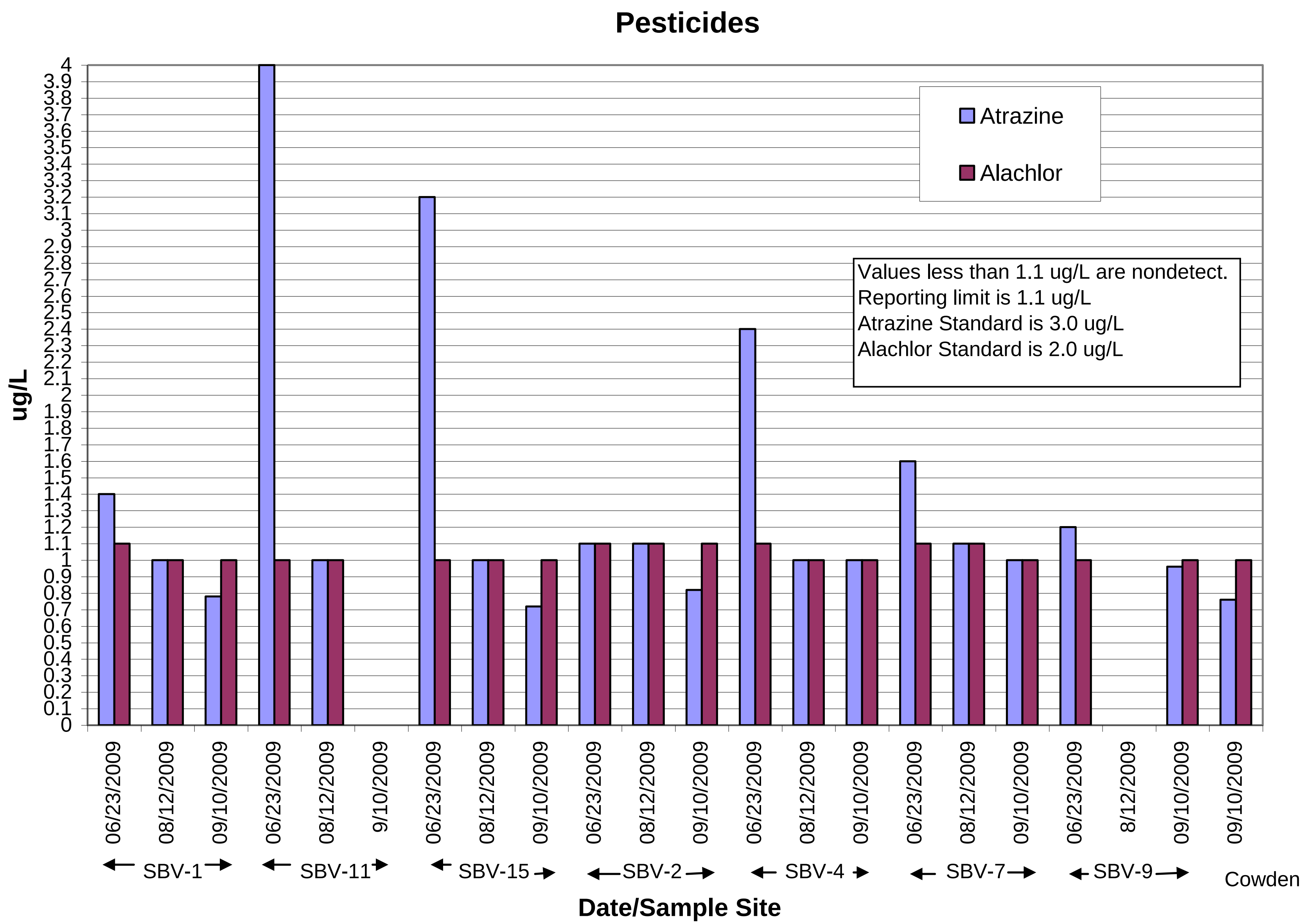

Fecal Coliform
colonies/100ml
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
6/23/09
8/12/09
9/10/09
6/23/09
8/12/09
9/10/09
6/23/09
8/12/09
9/10/09
Finlay Marina
Sullivan Marina
Lithia Springs Marina
Date/Sample Site

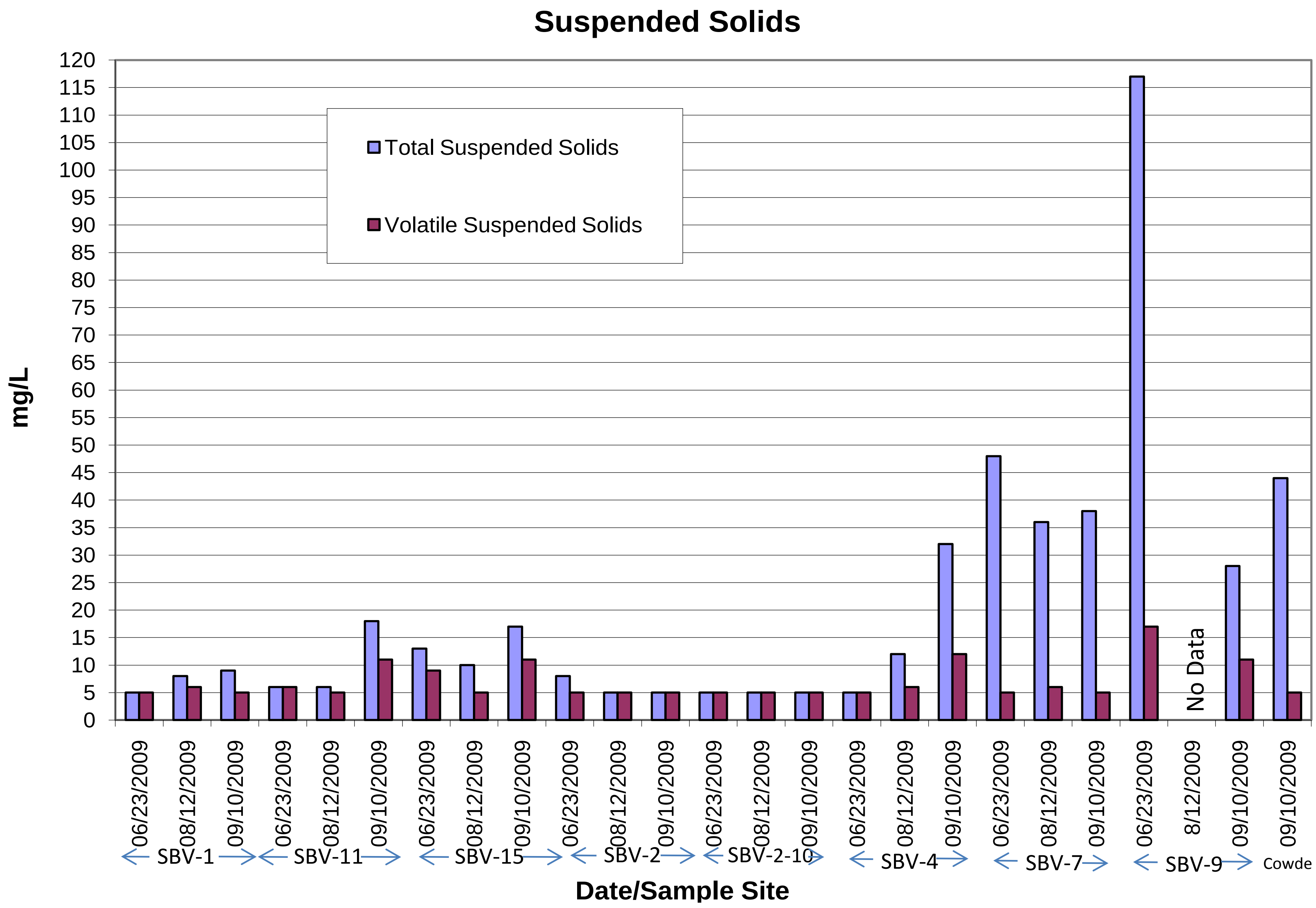

Metals
Manganese General Use Standard is 1.0 mg/L
Iron, Total
Manganese, Total
mg/L
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
SBV-1
SBV-2-10
Sample Site

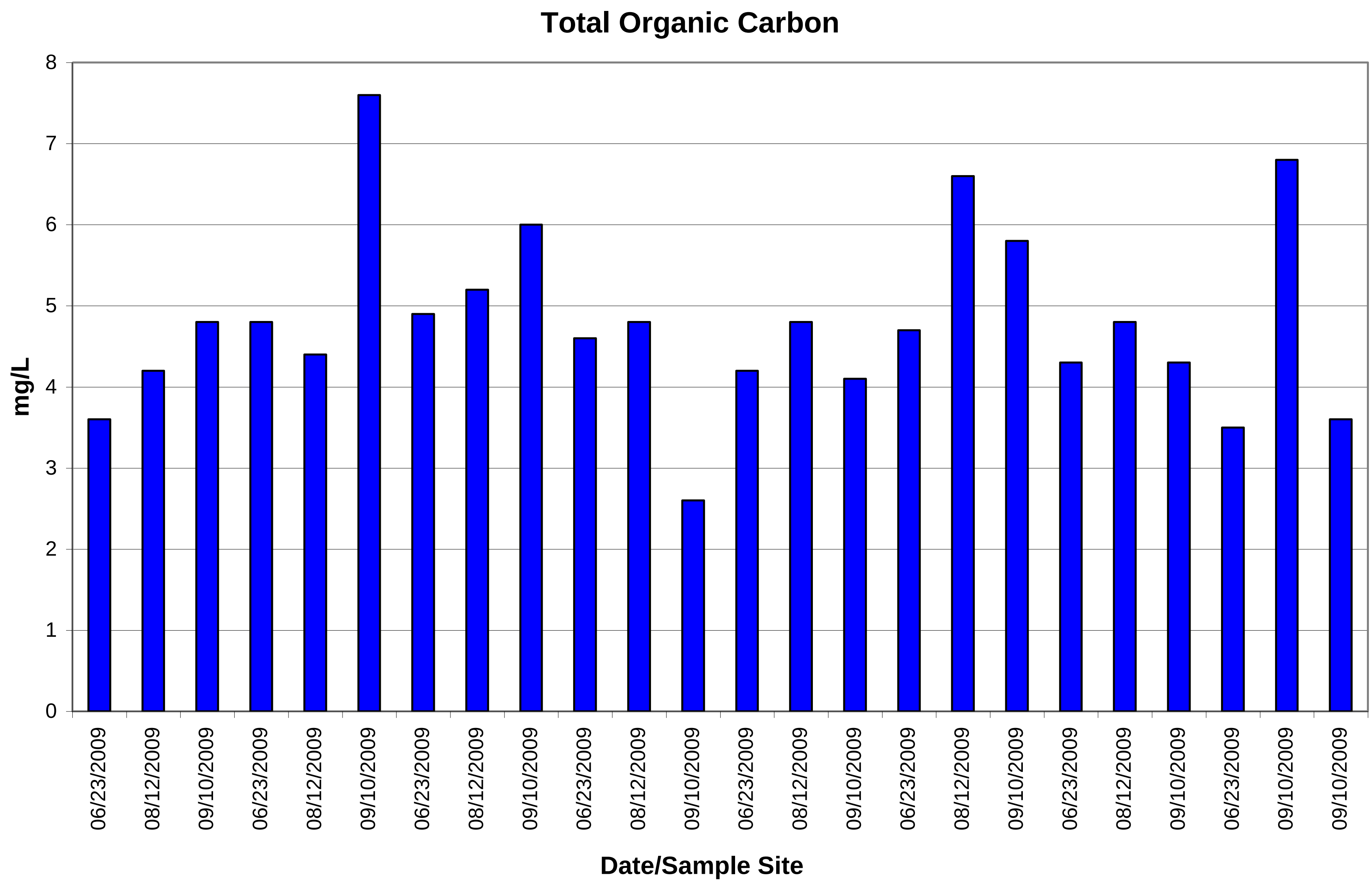

Nitrogen
Nitrate-N (mg/L)
Nitrate-N STD 10mg/L (DW)
Ammonia-N STD 15mg/L
Nitrate-N
Ammonia-N
N o D a t a
06/23/2009
08/12/2009
09/10/2009
8/12/2009
SBV-1
SBV-11
SBV-15
SBV-2
SBV-2-10
SBV-4
SBV-7
SBV-9
Cowden
Date/Sample Site


Phosphorous
mg/L
0.25
0.24
0.23
0.22
0.21
0.2
0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Phosphorus, Total
Orthophosphate
Total Phoshate STD
0.05 mg/L
N
o
D
a
t
a
06/23/2009
08/12/2009
09/10/2009
SBV-1
SBV-11
SBV-15
SBV-2
SBV-2-10
SBV-4
SBV-7
SBV-9
8/12/2009
Cowden
Date/Sample Site


Chlorophyll & Pheophytin
mg/cubic meter
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
Chlorophyll a
Pheophytin a
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
SBV-11
SBV-15
SBV-2
SBV-4
Sample Site

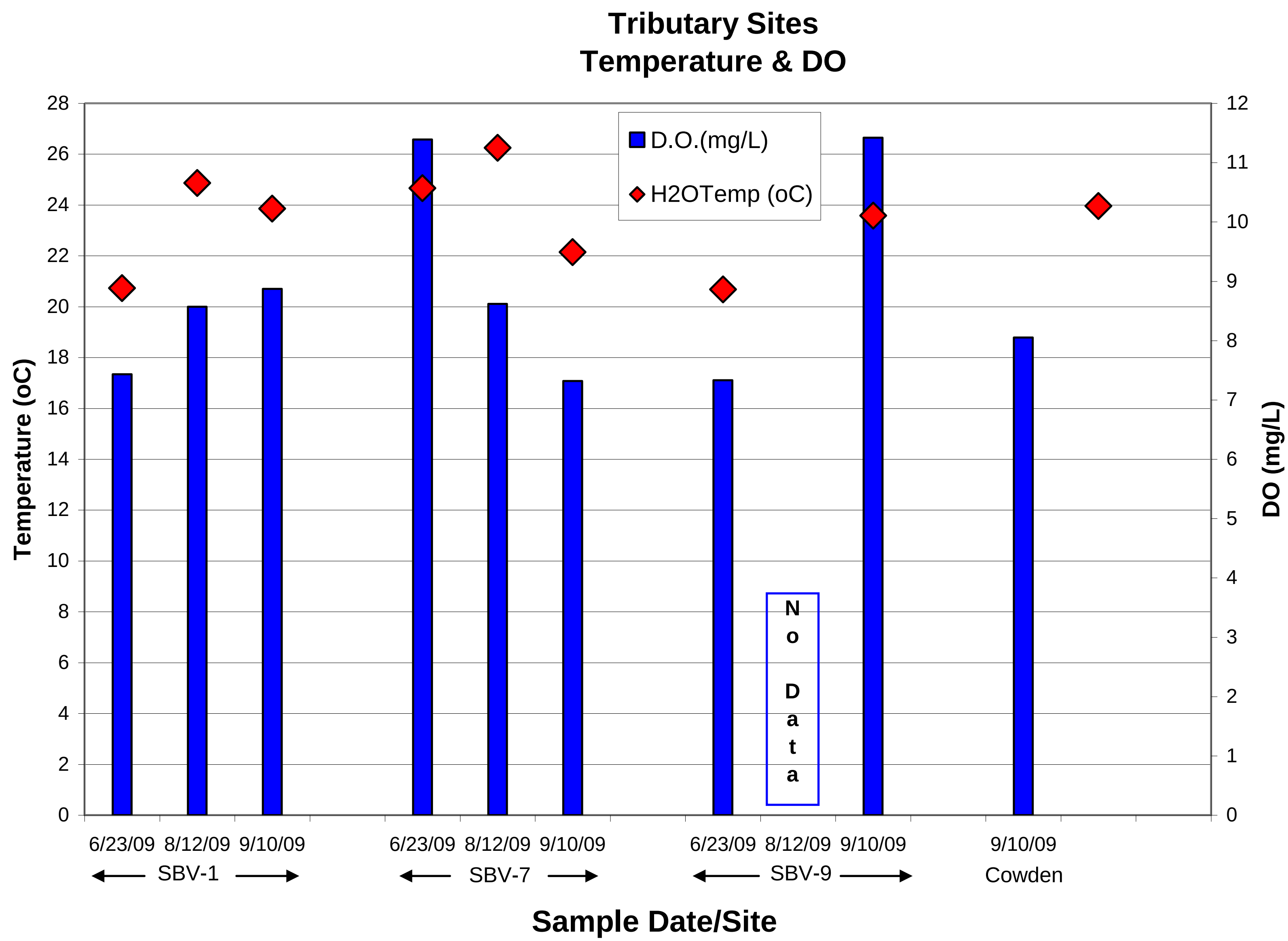

Pesticides
ug/L
4
3.9
3.8
3.7
3.6
3.5
3.4
3.3
3.2
3.1
3
2.9
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Atrazine
Alachlor
Values less than 1.1 ug/L are nondetect.
Reporting limit is 1.1 ug/L
Atrazine Standard is 3.0 ug/L
Alachlor Standard is 2.0 ug/L
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
9/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
8/12/2009
09/10/2009
09/10/2009
SBV-1
SBV-11
SBV-15
SBV-2
SBV-4
SBV-7
SBV-9
Cowden
Date/Sample Site

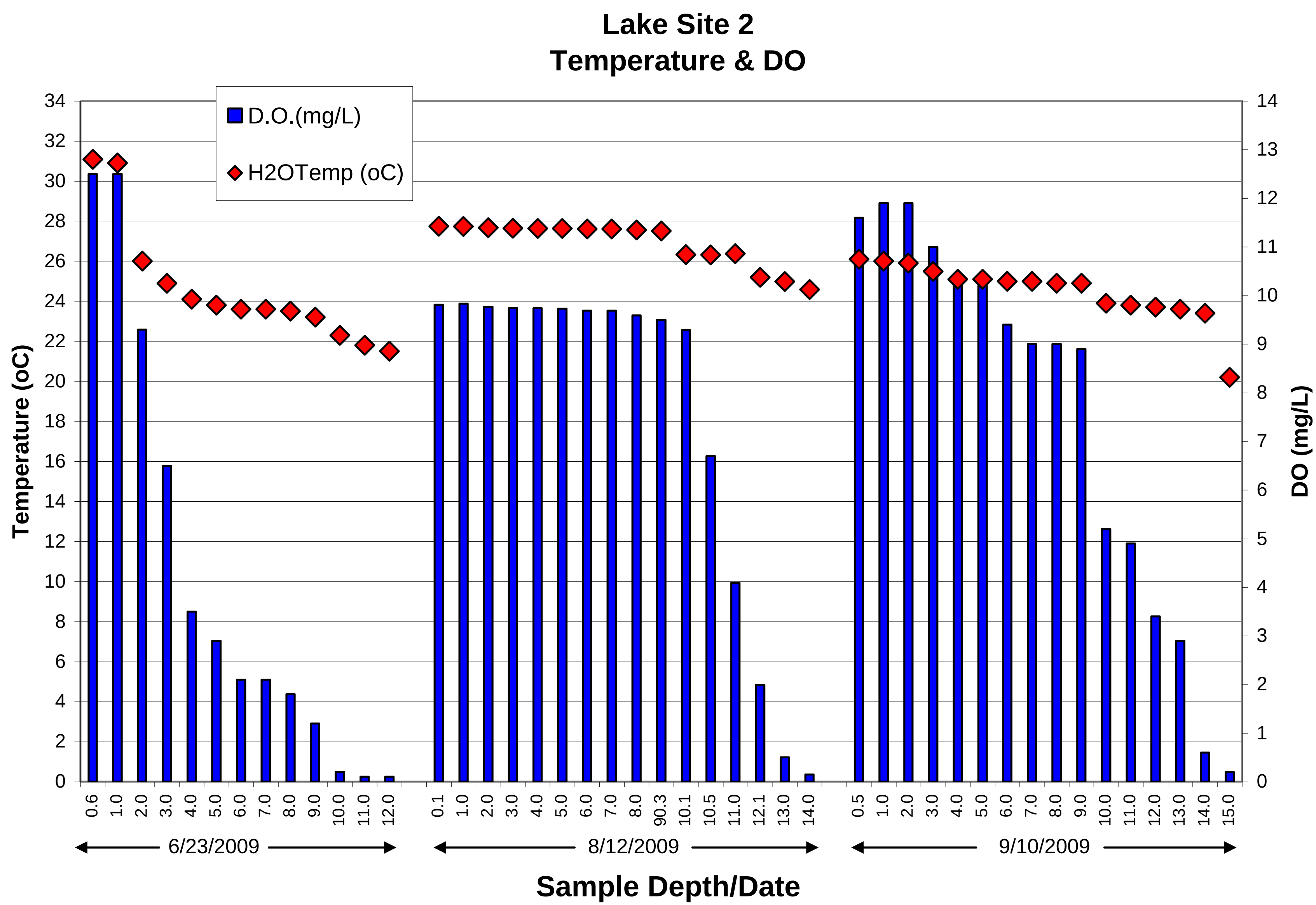

Suspended Solids
mg/L
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Total Suspended Solids
Volatile Suspended Solids
No Data
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
8/12/2009
09/10/2009
09/10/2009
SBV-1
SBV-11
SBV-15
SBV-2
SBV-2-10
SBV-4
SBV-7
SBV-9
Cowde
Date/Sample Site

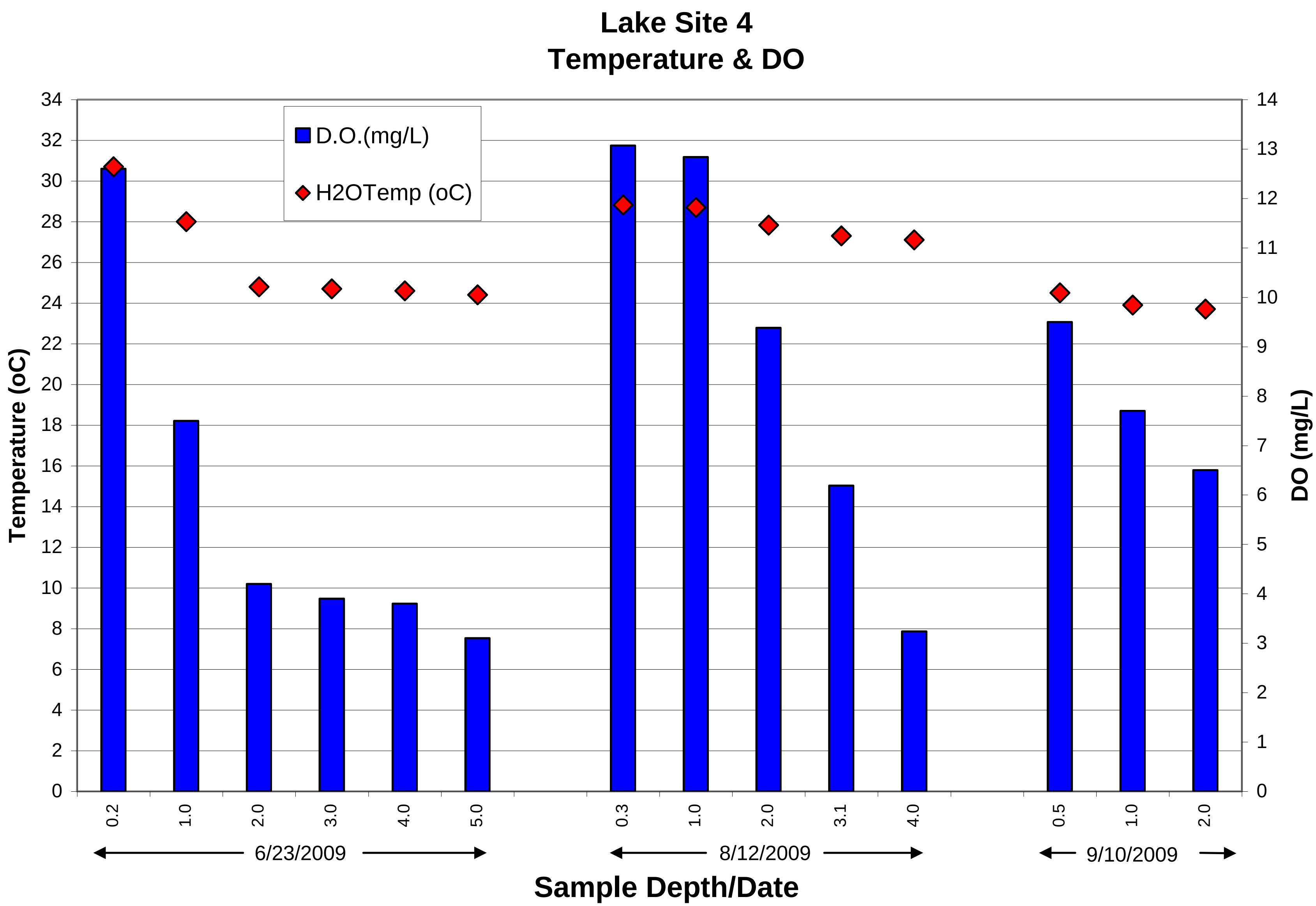

Total Organic Carbon
mg/L
0
1
2
3
4
5
6
7
8
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
08/12/2009
09/10/2009
06/23/2009
09/10/2009
09/10/2009
Date/Sample Site

APPENDIX C

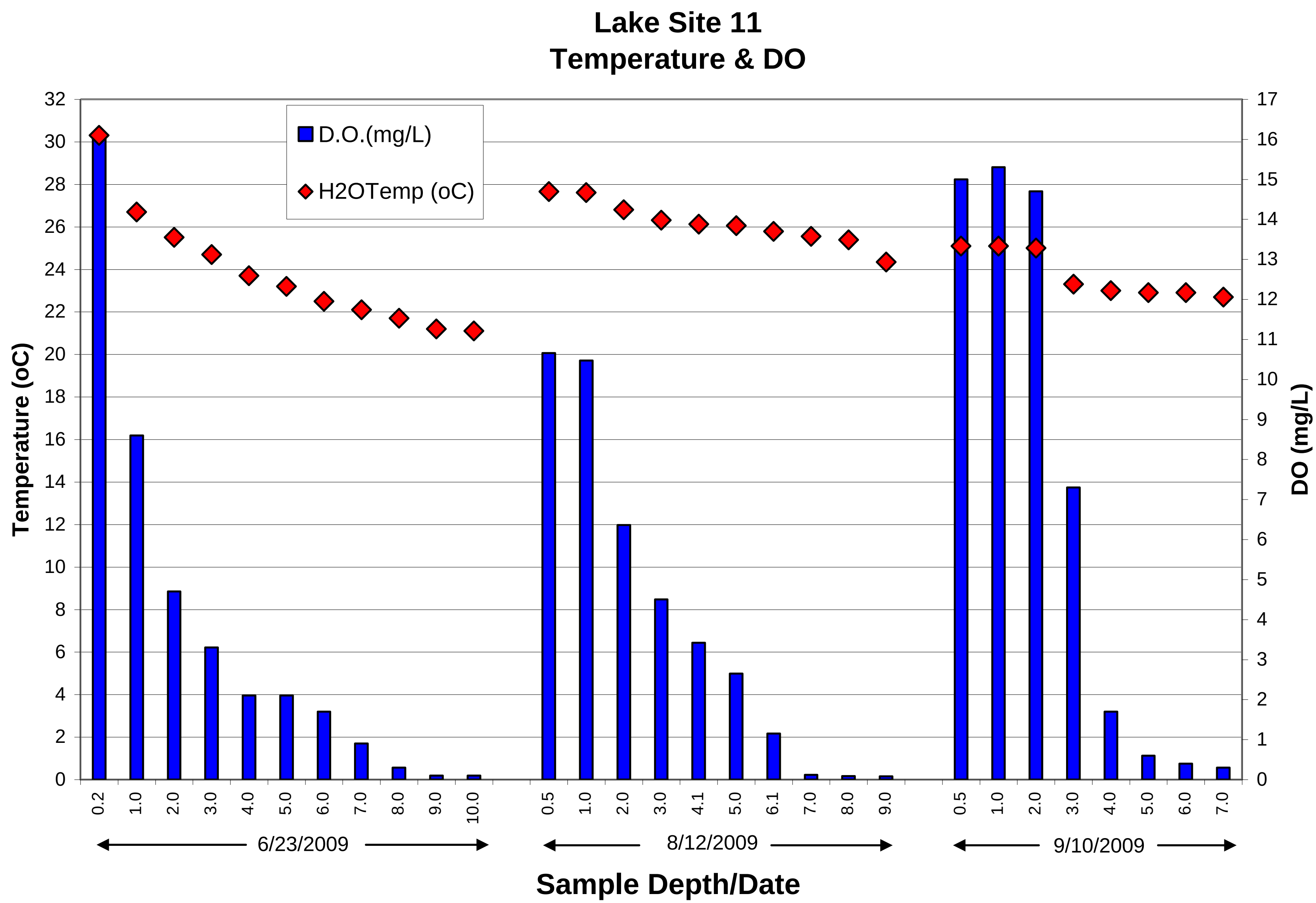
FIELD DATA
GRAPHS

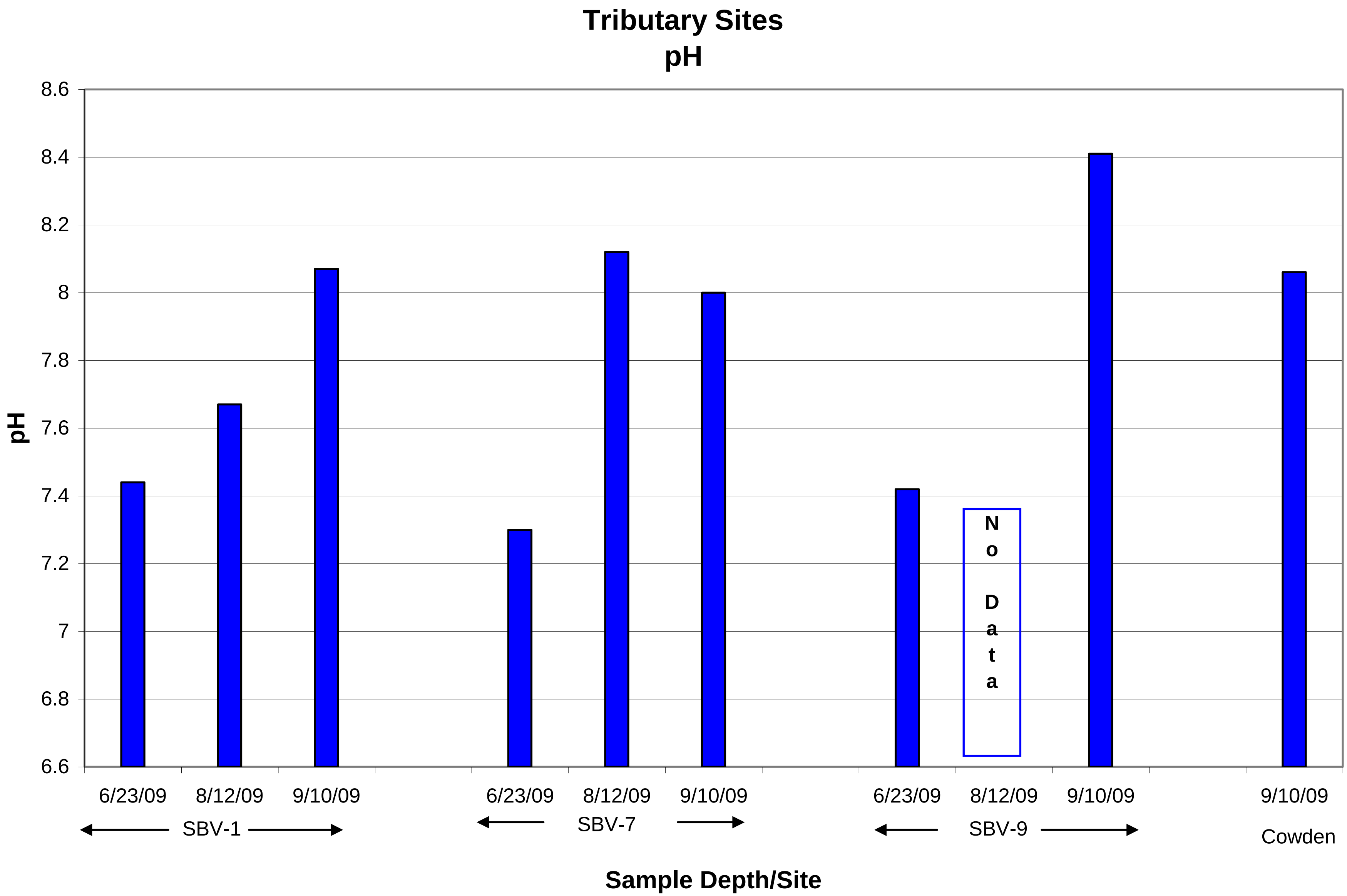

Tributary Sites
Temperature & DO
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Temperature (oC)
12
11
10
9
8
7
6
5
4
3
2
1
0
DO (mg/L)
D.O.(mg/L)
H2OTemp (oC)
No Data
6/23/09 8/12/09 9/10/09
SBV-1
6/23/09 8/12/09 9/10/09
SBV-7
6/23/09 8/12/09 9/10/09
SBV-9
9/10/09
Cowden
Sample Date/Site

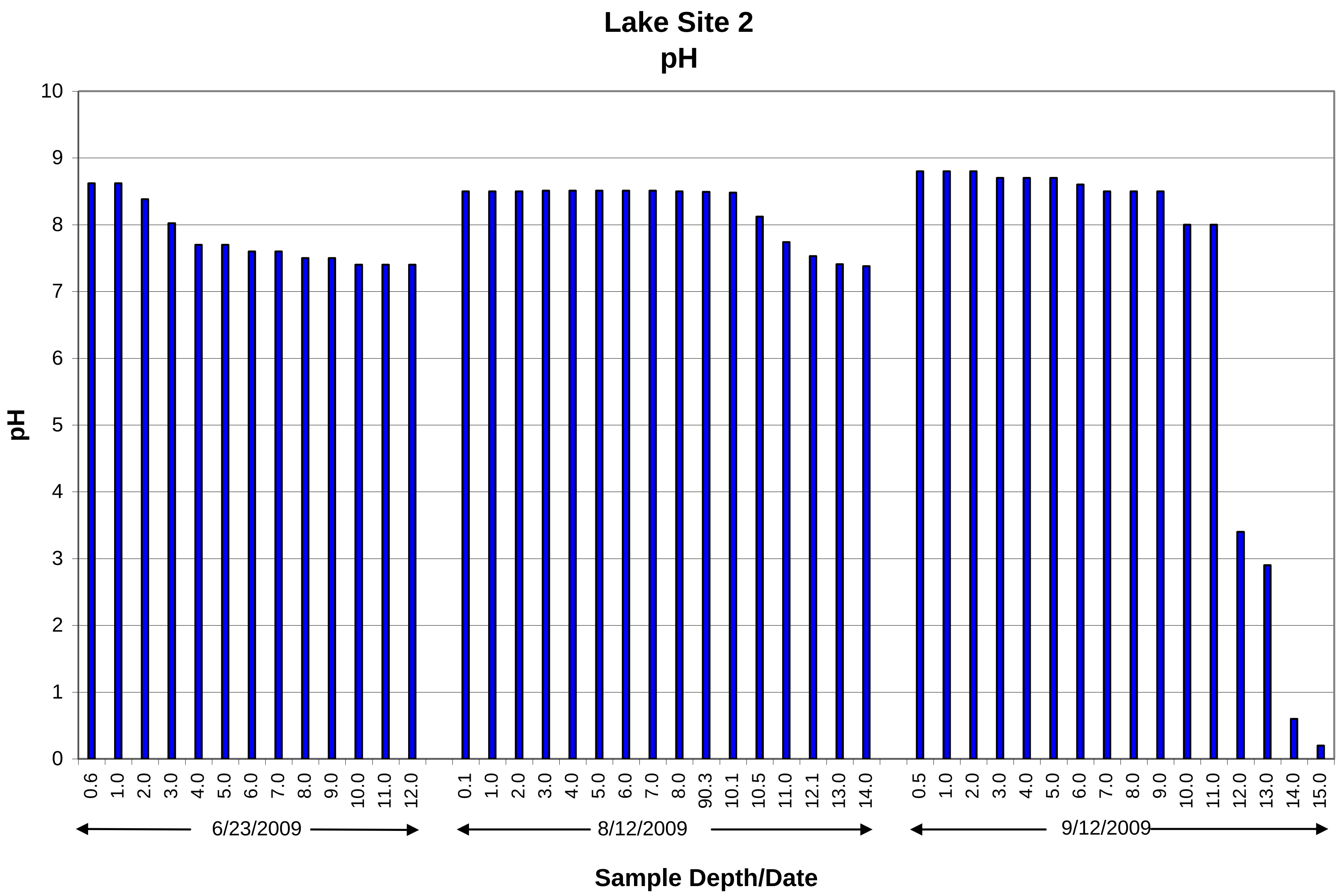

Lake Site 2
Temperature & DO
D.O.(mg/L)
H2OTemp (oC)
Temperature (oC)
DO (mg/L)
6/23/2009
8/12/2009
9/10/2009
Sample Depth/Date

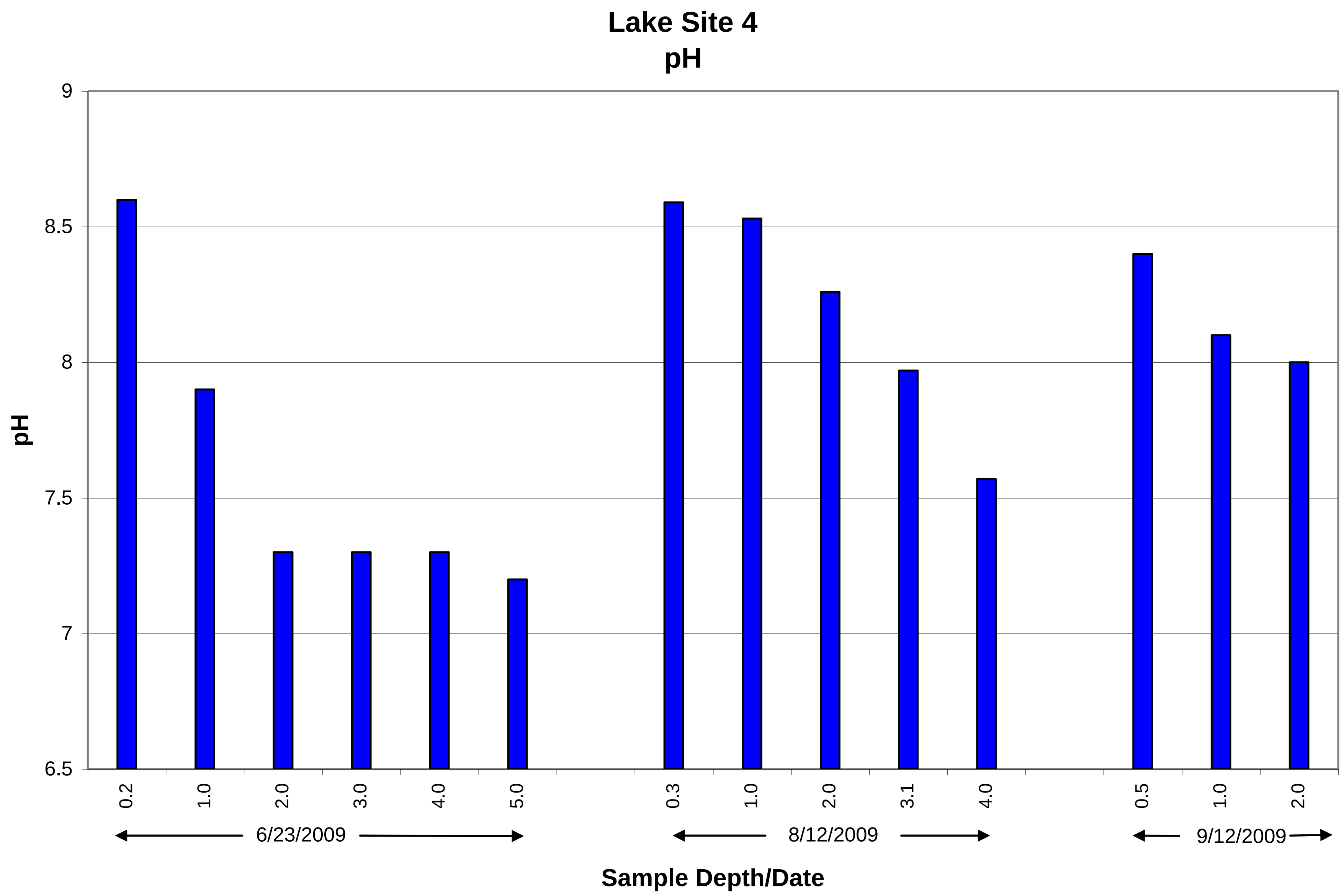


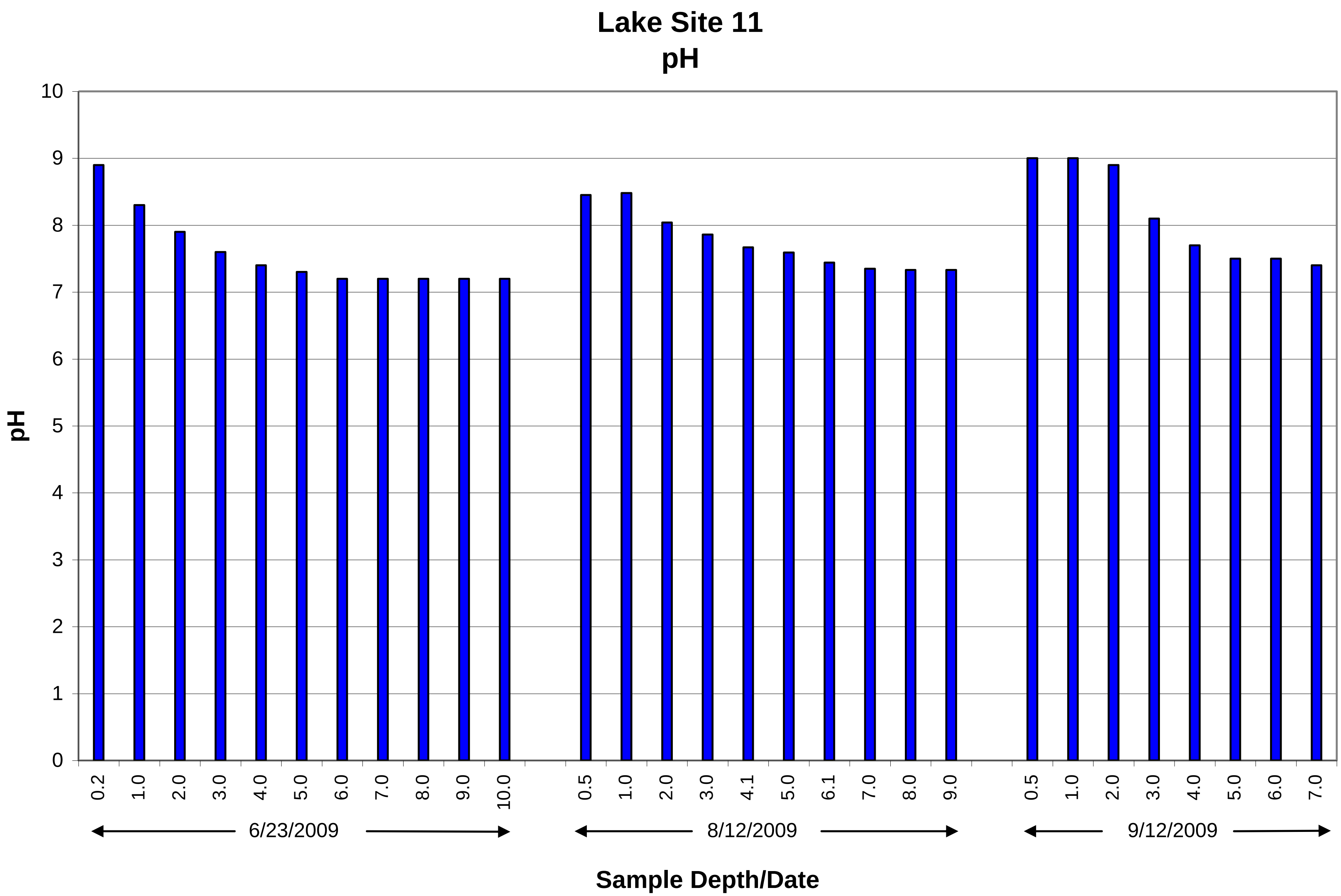
Lake Site 4
Temperature & DO
D.O.(mg/L)
H2OTemp (oC)
Temperature (oC)
DO (mg/L)
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0.2
1.0
2.0
3.0
4.0
5.0
0.3
1.0
2.0
3.1
4.0
0.5
1.0
2.0
6/23/2009
8/12/2009
9/10/2009
Sample Depth/Date

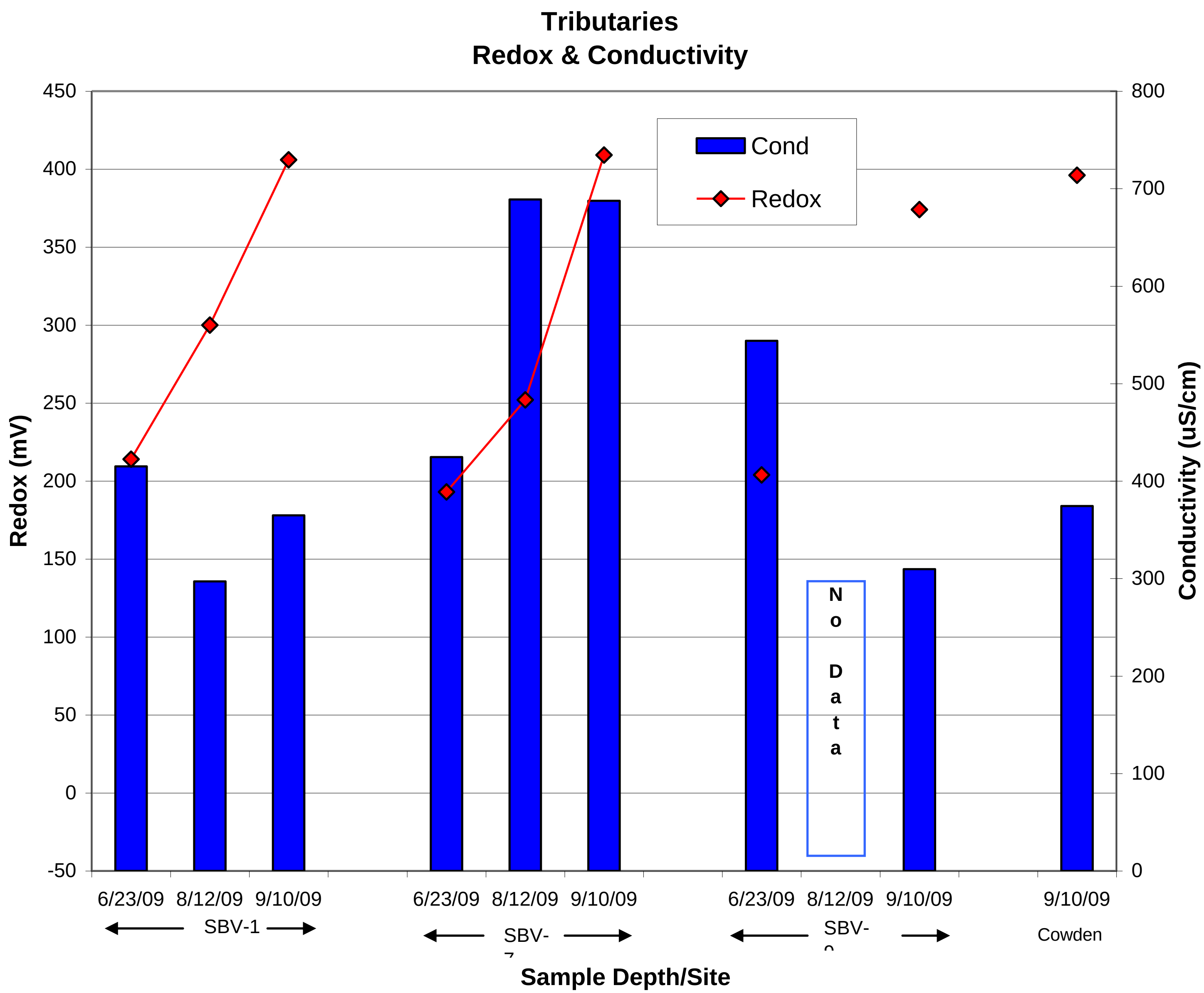

Lake Site 11
Temperature & DO
D.O.(mg/L)
H2OTemp (oC)
Temperature (oC)
DO (mg/L)
0.2
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
0.5
1.0
2.0
3.0
4.1
5.0
6.1
7.0
8.0
9.0
0.5
1.0
2.0
3.0
4.0
5.0
6.0
7.0
6/23/2009
8/12/2009
9/10/2009
Sample Depth/Date

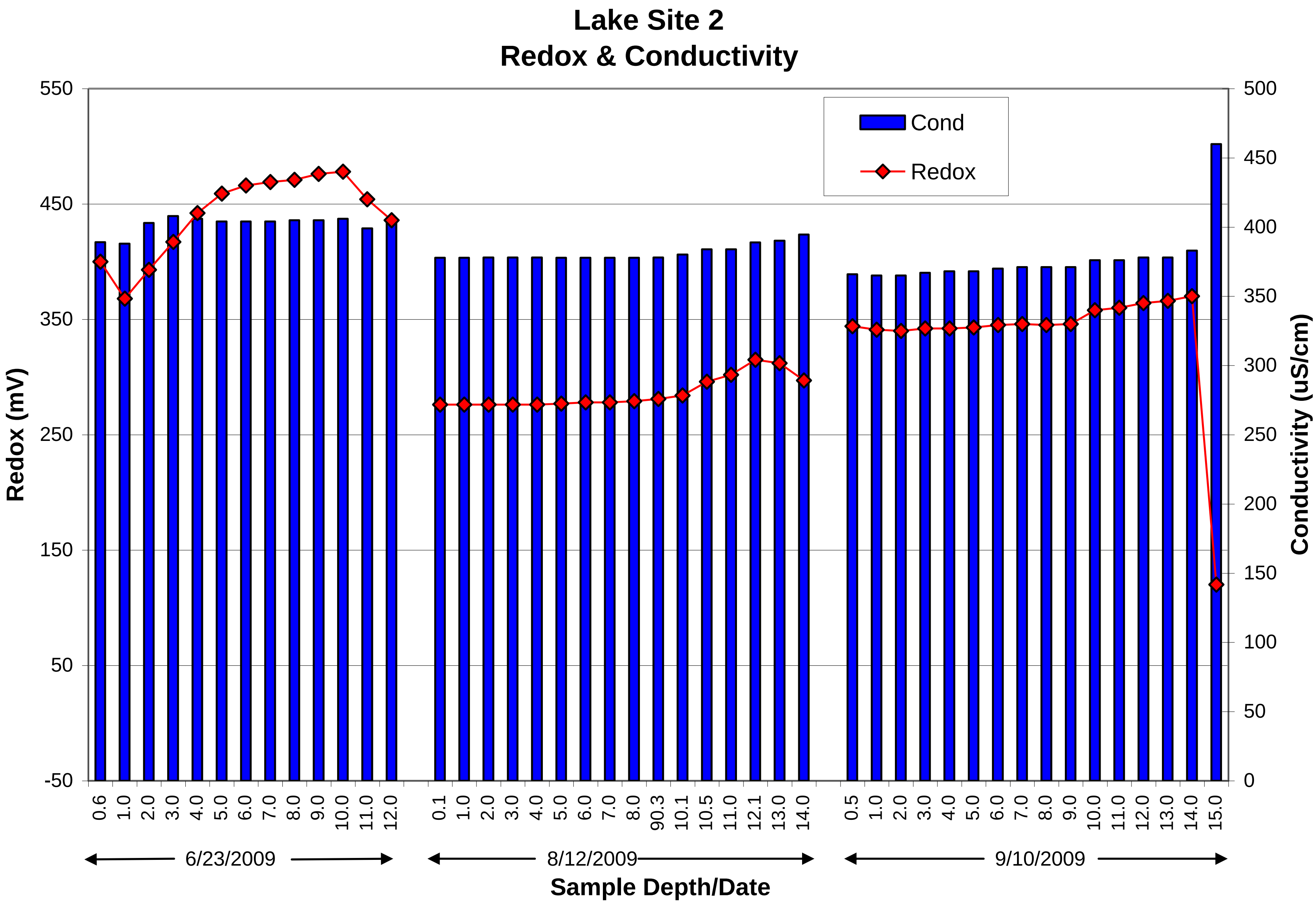

Tributary Sites
pH
pH
8.6
8.4
8.2
8
7.8
7.6
7.4
7.2
7
6.8
6.6
No Data
6/23/09
8/12/09
9/10/09
6/23/09
8/12/09
9/10/09
6/23/09
8/12/09
9/10/09
9/10/09
SBV-1
SBV-7
SBV-9
Cowden
Sample Depth/Site

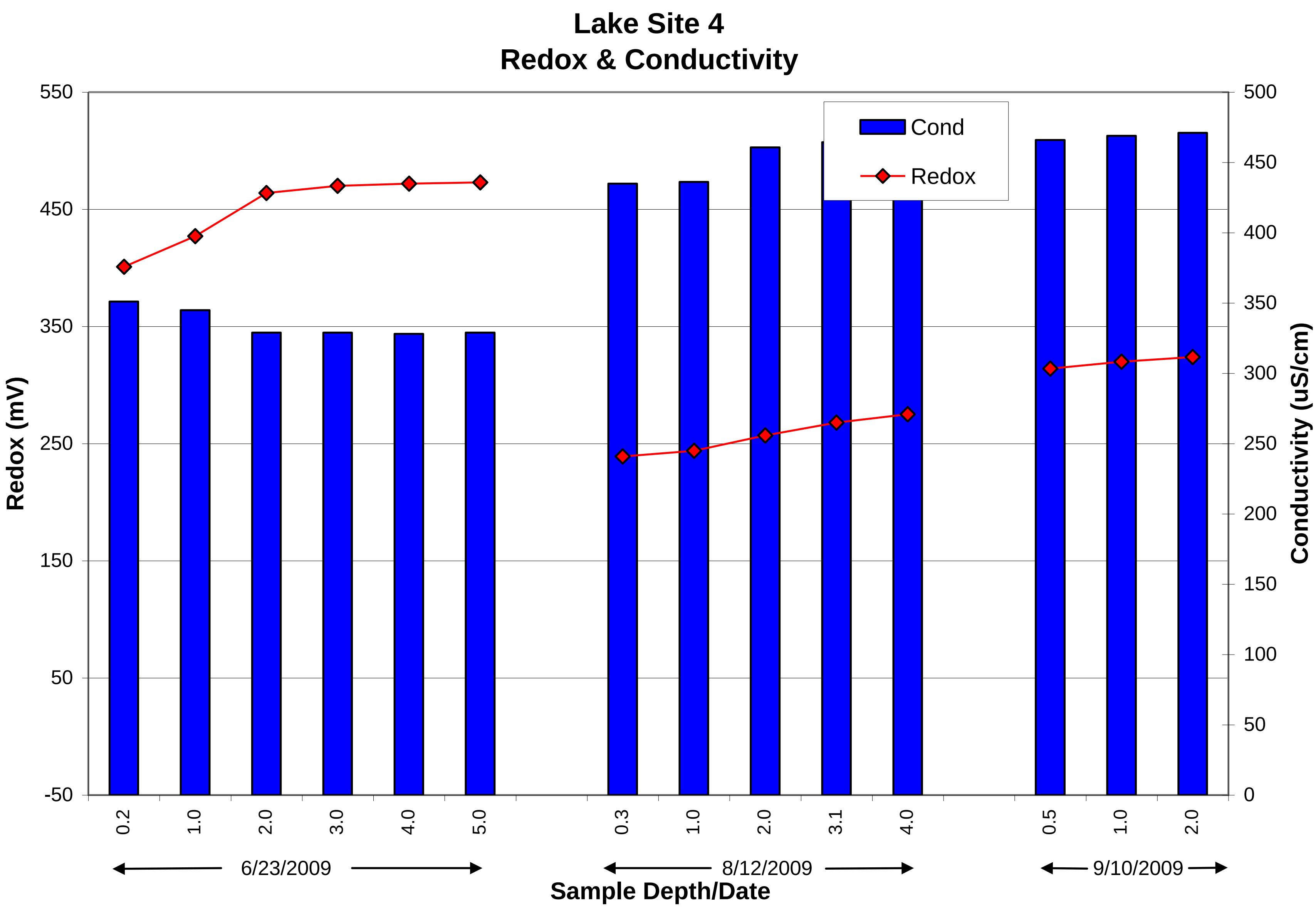

Lake Site 2
pH
10
9
8
7
6
5
4
3
2
1
0
pH
0.6
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
0.1
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
90.3
10.1
10.5
11.0
12.1
13.0
14.0
0.5
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
14.0
15.0
6/23/2009
8/12/2009
9/12/2009
Sample Depth/Date

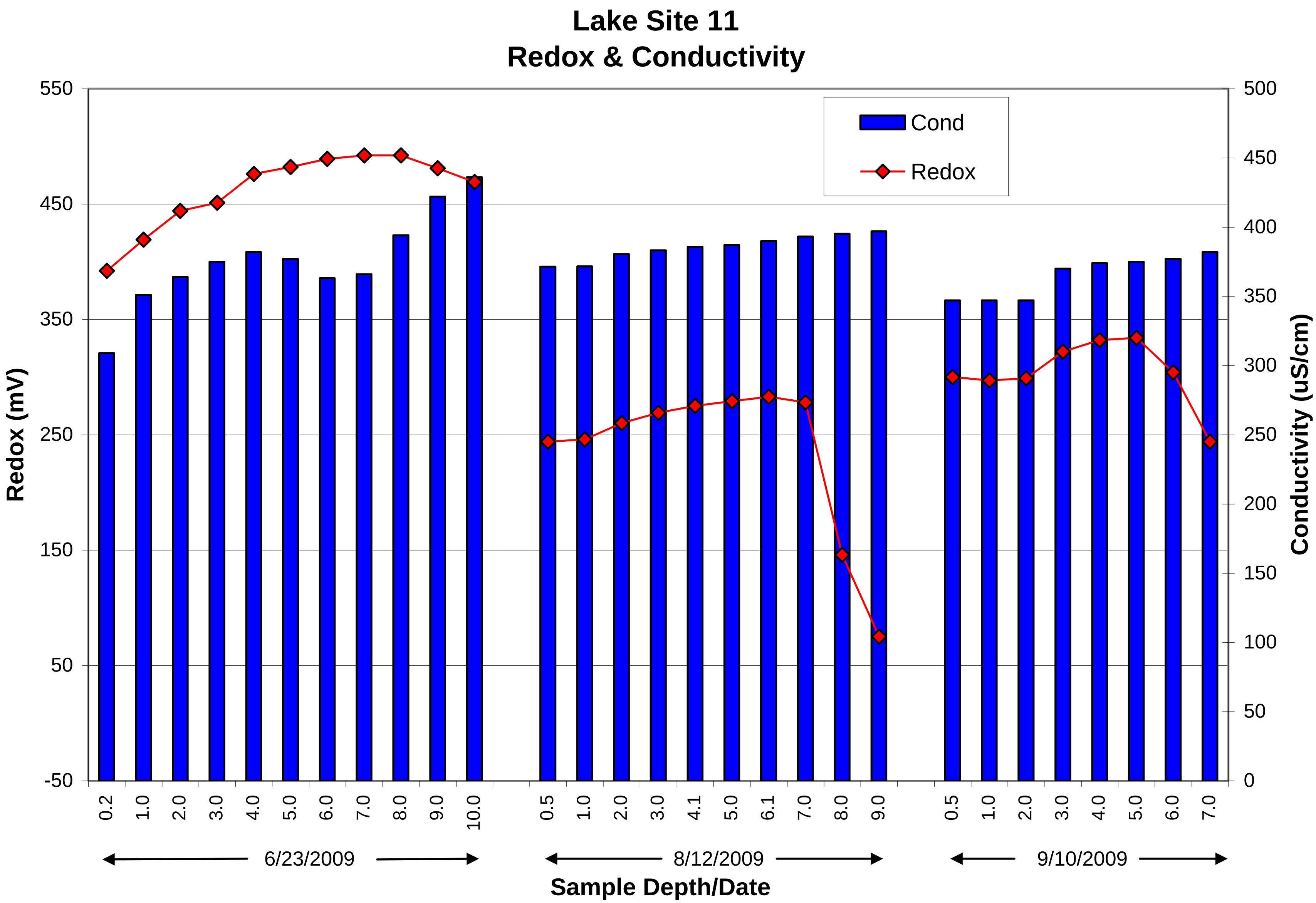

Lake Site 4
pH
9
8.5
8
7.5
7
6.5
pH
0.2
1.0
2.0
3.0
4.0
5.0
0.3
1.0
2.0
3.1
4.0
0.5
1.0
2.0
6/23/2009
8/12/2009
9/12/2009
Sample Depth/Date

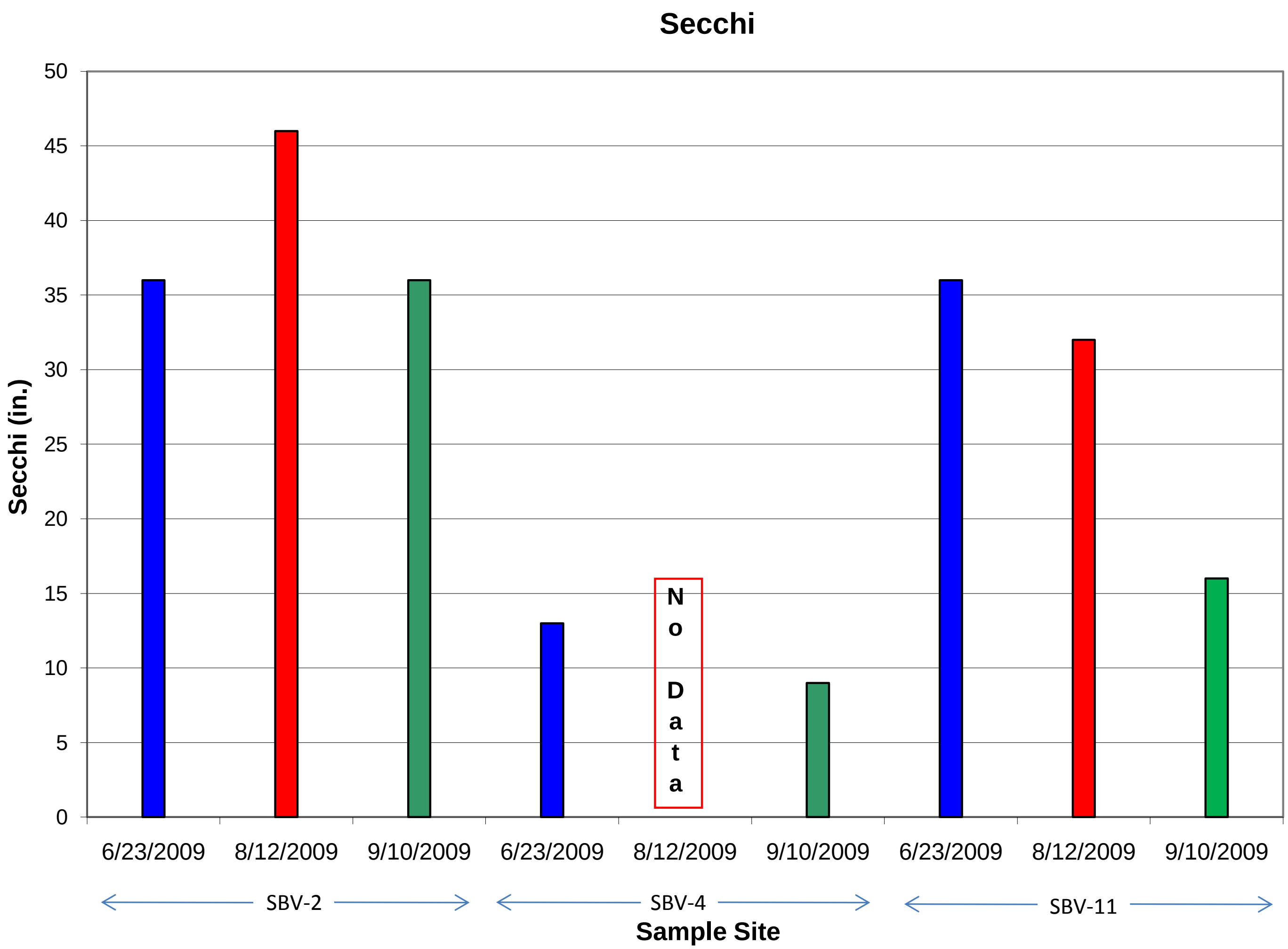

Lake Site 11
pH
pH
10
9
8
7
6
5
4
3
2
1
0
0.2
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
0.5
1.0
2.0
3.0
4.1
5.0
6.1
7.0
8.0
9.0
0.5
1.0
2.0
3.0
4.0
5.0
6.0
7.0
6/23/2009
8/12/2009
9/12/2009
Sample Depth/Date


Tributaries
Redox & Conductivity
Redox (mV)
Conductivity (uS/cm)
Cond
Redox
No Data
6/23/09 8/12/09 9/10/09
SBV-1
6/23/09 8/12/09 9/10/09
SBV-
6/23/09 8/12/09 9/10/09
SBV-
9/10/09
Cowden
Sample Depth/Site


Lake Site 2
Redox & Conductivity
Cond
Redox
Redox (mV)
Conductivity (uS/cm)
550
450
350
250
150
50
-50
500
450
400
350
300
250
200
150
100
50
0
0.6
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
0.1
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
90.3
10.1
10.5
11.0
12.1
13.0
14.0
0.5
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
14.0
15.0
6/23/2009
8/12/2009
9/10/2009
Sample Depth/Date


Lake Site 4
Redox & Conductivity
Redox (mV)
Conductivity (uS/cm)
Cond
Redox
550
450
350
250
150
50
-50
500
450
400
350
300
250
200
150
100
50
0
0.2
1.0
2.0
3.0
4.0
5.0
0.3
1.0
2.0
3.1
4.0
0.5
1.0
2.0
6/23/2009
8/12/2009
9/10/2009
Sample Depth/Date


Lake Site 11
Redox & Conductivity
Cond
Redox
Redox (mV)
Conductivity (uS/cm)
550
450
350
250
150
50
-50
500
400
300
200
100
0
0.2
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
0.5
4.1
6.1
6/23/2009
8/12/2009
9/10/2009
Sample Depth/Date


Secchi
Secchi (in.)
50
45
40
35
30
25
20
15
10
5
0
No Data
6/23/2009
8/12/2009
9/10/2009
6/23/2009
8/12/2009
9/10/2009
6/23/2009
8/12/2009
9/10/2009
SBV-2
SBV-4
SBV-11
Sample Site