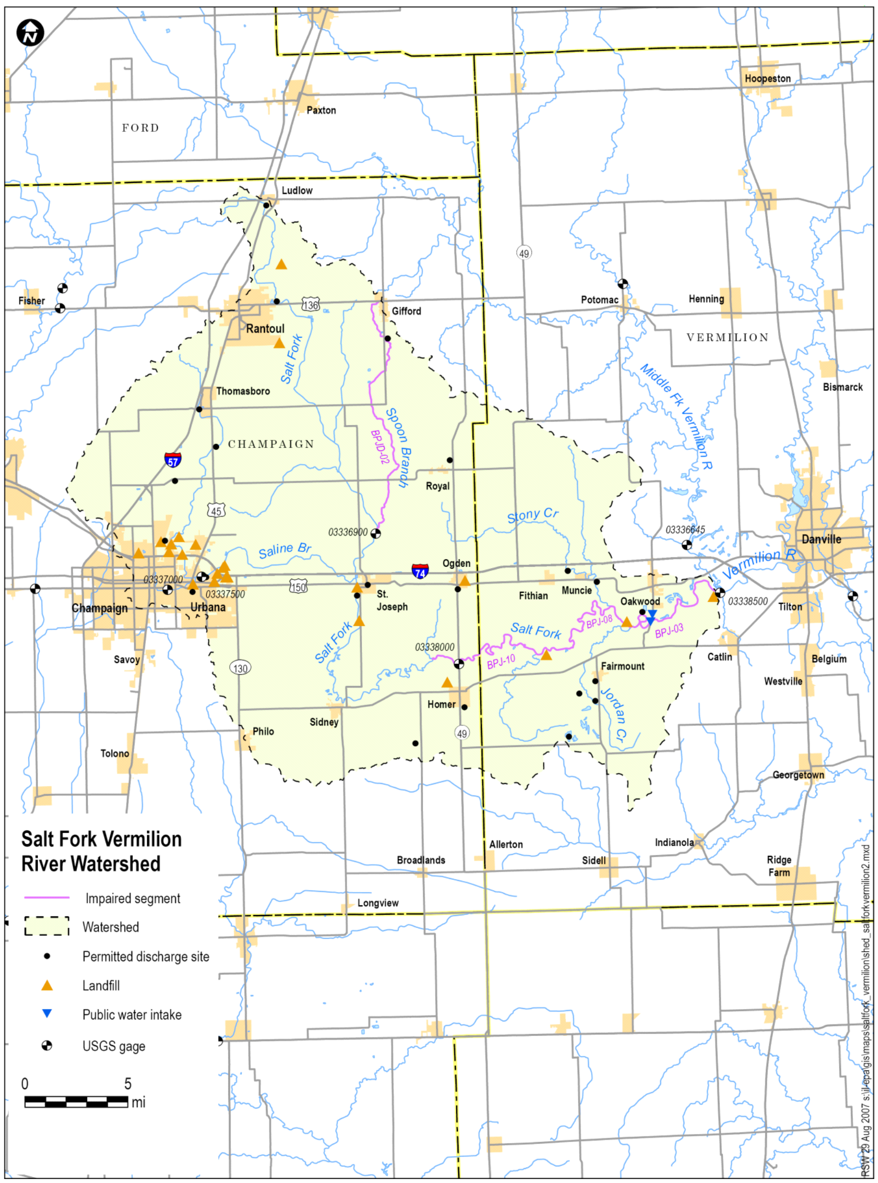
Illinois
Environmental
Protection Agency

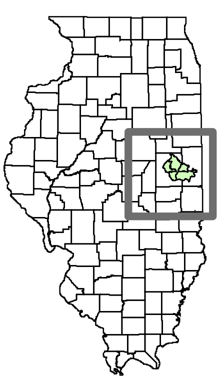
Bureau of Water
P.O. Box 19276
Springfield, IL 62794-9276

October 2007

IEPA/BOW/07-021

SALT FORK VERMILION RIVER WATERSHED TMDL REPORT





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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

WW-16J

SEP 28 2007

Marcia Willhite, Chief
Bureau of Water
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

Dear Ms. Willhite:

The United States Environmental Protection Agency (U.S. EPA) has conducted a complete review of the final Total Maximum Daily Load (TMDL) submittal, including supporting documentation and information, for Salt Fork Vermilion River segments BPJ-10, BPJ-08 and BPJ-03, which are located in Champaign and Vermilion Counties, Illinois. The TMDLs are for nitrates and fecal coliform. Based on this review, U.S. EPA has determined that Illinois' TMDLs for Salt Fork Vermilion River segments BPJ-10, BPJ-08 and BPJ-03 meet the requirements of Section 303(d) of the Clean Water Act (CWA), and U.S. EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, by this letter, U.S. EPA hereby approves these four TMDLs which address seven impairments. The statutory and regulatory requirements, and U.S. EPA's review of Illinois' compliance with each requirement, are described in the enclosed decision document.

We appreciate your hard work in this area and the submittal of the TMDL as required. If you have any questions, please contact Mr. Dean Maraldo, TMDL Program Manager at 312-353-2098

Sincerely yours,

Kevin M. Pierard
Acting Director, Water Division

Enclosure

cc: Trevor Sample, IEPA

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TMDL Development for the Salt Fork Vermilion River Watershed

Stage One Report: Watershed Characterization and Water Quality Analysis

FINAL STAGE ONE REPORT

March 8, 2006

Submitted to:
Illinois Environmental Protection Agency
1021 N. Grand Avenue East
Springfield, IL 62702

Submitted by:
Tetra Tech, Inc.
Water Resources TMDL Center

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As part of the Section 303(d) listing process, the Illinois Environmental Protection Agency has identified ten waterbodies in the Salt Fork Vermilion River watershed as impaired:

- Spoon Branch (segment BPJD02)
- Boneyard Creek (segment BPJCA)
- Saline Branch (segment BPJC08)
- Saline Branch (segment BPJC06)
- Salt Fork Vermilion River (segment BPJ09)
- Salt Fork Vermilion River (segment BPJ12)
- Homer Lake (segment RBO)
- Salt Fork Vermilion River (segment BPJ10)
- Salt Fork Vermilion River (segment BPJ08)
- Salt Fork Vermilion River (segment BPJ03)

The purpose of this report is to describe the watershed in which these waters are located and review the available water quality data to confirm the impairments. This report also identifies several potential options for proceeding with developing total maximum daily loads (TMDLs) for these waters.

Among the key findings described in this report are the following:

- Many of the 303(d) listings are for parameters without numeric water quality standards and therefore TMDLs are not being developed at this time.

- Many of the 303(d) listings are associated with a fish kill that occurred in the watershed in July 2002. Because this was a known, one-time event, TMDLs are not recommended for these listings unless ambient data also suggest impaired conditions.

- Insufficient data are available to determine the impairment status for three segment/cause combinations and additional sampling data are recommended:

    - Dissolved Oxygen for Spoon Branch (segment BPJD02)
    - Dissolved Oxygen for Saline Branch (BPJC08)
    - pH for Salt Fork Vermilion River (BPJ08)

- Sufficient data are available to proceed with TMDL development for the following segment/cause combinations:

    - Boron TMDL for Saline Branch (segment BPJC06)
    - Total Phosphorus TMDL for Homer Lake (segment RBO)
    - Nitrate TMDL for Salt Fork Vermilion River (segment BPJ10)
    - Nitrate TMDL for Salt Fork Vermilion River (segment BPJ08)
    - Nitrate TMDL for Salt Fork Vermilion River (segment BPJ03)

- Proposed technical approaches for TMDL development include both simple and advanced water quality models as well as a non-modeling approach.

1 Introduction

The Salt Fork Vermilion River watershed (ILBPJ03) is located in east-central Illinois and drains approximately 500 square miles. Approximately 362 square miles (73 percent) are in eastern Champaign County and 138 square miles are in western Vermilion County.

As part of the Section 303(d) listing process, the Illinois Environmental Protection Agency (Illinois EPA) has identified ten waterbodies in the watershed as impaired:

- Boneyard Creek (segment BPJCA)
- Homer Lake (segment RBO)
- Saline Branch (segment BPJC06)
- Saline Branch (segment BPJC08)
- Salt Fork Vermilion River (segment BPJ03)
- Salt Fork Vermilion River (segment BPJ08)
- Salt Fork Vermilion River (segment BPJ09)
- Salt Fork Vermilion River (segment BPJ10)
- Salt Fork Vermilion River (segment BPJ12)
- Spoon Branch (segment BPJD02)

Table 1-1 shows the potential causes of impairment for each listed waterbody. They include dissolved oxygen, habitat assessment, DDT, hexachlor, PCB, total nitrogen, boron, total ammonia, fish kills, total suspended solids (TSS), dieldrin, methoxychlor, total phosphorus (TP), pH, excessive algal growth, nitrate, and iron.

The Clean Water Act and USEPA regulations require that states develop total maximum daily loads (TMDLs) for waters on the Section 303(d) lists. Illinois EPA is currently developing TMDLs for pollutants that have numeric water quality standards. Of the 17 causes of impairment in the Salt Fork River watershed, dissolved oxygen, boron, total ammonia, nitrate, TP (lakes only), pH, and iron have numeric water quality standards. Illinois EPA believes that addressing impairments with numeric water quality standards should lead to an overall improvement in water quality due to the interrelated nature of some of the other listed pollutants. For example, many best management practices are effective at reducing loads of multiple pollutants.

A TMDL is defined as "the sum of the individual wasteload allocations for point sources and load allocations for nonpoint sources and natural background" such that the capacity of the waterbody to assimilate pollutant loadings is not exceeded. A TMDL is also required to be developed with seasonal variations and must include a margin of safety that addresses the uncertainty in the analysis. The overall goals and objectives in developing the Salt Fork Vermilion River TMDLs include:

- Assess the water quality of the impaired waterbodies and identify key issues associated with the impairments and potential pollutant sources.

- Use the best available science and available data to determine the maximum load the waterbodies can receive and fully support all of their designated uses.

- Use the best available science and available data to determine current loads of pollutants to the impaired waterbodies.

- If current loads exceed the maximum allowable load, determine the load reduction that is needed.

- Identify feasible and cost-effective actions that can be taken to reduce loads.
- Inform and involve the public throughout the project to ensure that key concerns are addressed and the best available information is used.
- Submit a final TMDL report to USEPA for review and approval.

The project is being initiated in three stages. Stage One involves the characterization of the watershed, an assessment of the available water quality data, and identification of potential technical approaches. Stage Two will involve additional data collection, if necessary. Stage Three will involve model development and calibration, TMDL scenarios, and implementation planning. This report documents the results of Stage One.

Table 1-1. 2004 303(d) List Information for the Salt Fork Vermilion River Watershed (ILBPJ03).

Segment (Area)	Name	Designated Uses and Support Status	Causes of Impairment	Potential Sources of Impairment
BPJD02 (13.8 miles)	Spoon Branch	Aquatic Life Support (Partial)	Dissolved Oxygen, Habitat Assessment	Agriculture, Hydromodification
BPJCA (3.2 miles)	Boneyard Creek	Aquatic Life Support (Not Supporting)	Habitat Assessment, DDT, Hexachlor, PCB	Urban Runoff/Storm Sewers, Hydromodification, Contaminated Sediments
BPJC08 (15.5 miles)	Saline Branch	Aquatic Life Support (Partial)	Total Nitrogen, Dissolved Oxygen, Habitat Assessment	Agriculture, Hydromodification
BPJC06 (10.3 miles)	Saline Branch	Aquatic Life Support (Partial)	Boron, Total Ammonia, Habitat Assessment, Fish Kills, TSS, DDT, Dieldrin, Methoxychlor, Total Phosphorus	Municipal Point Sources, Agriculture, Hydromodification, Channelization, Contaminated Sediments, Source Unknown
BPJ09 (13.7 miles)	Salt Fork Vermilion River	Aquatic Life Support (Partial), Fish Consumption (Partial)	Total Ammonia, Total Nitrogen, pH, Fish Kills, TSS, Total Phosphorus	Municipal Point Sources, Agriculture
BPJ12 (3.07 miles)	Salt Fork Vermilion River	Aquatic Life Support (Partial), Fish Consumption (Not Assessed)	Total Ammonia, Total Nitrogen, pH, Fish Kills, TSS, Total Phosphorus	Municipal Point Sources, Agriculture
RBO (80.80 acres)	Homer Lake	Overall Use (Partial), Aquatic Life Support (Full), Fish Consumption (Full), Primary Contact (Partial), Secondary Contact (Partial), Drinking Water Supply (Not Assessed)	TSS, Excessive Algal Growth, Total Phosphorus	Agriculture– crop related sources, Construction– land development, Habitat modification, Forest/grassland/ parkland
BPJ10 (13.6 miles)	Salt Fork Vermilion River	Aquatic Life Support (Partial), Drinking Water Supply (Partial)	Total Ammonia, Total Nitrogen, Nitrate, pH, Fish Kills, TSS, Total Phosphorus	Municipal Point Sources, Agriculture, Source Unknown
BPJ08 (3.17 miles)	Salt Fork Vermilion River	Aquatic Life Support (Partial), Drinking Water Supply (Partial)	Iron, Total Ammonia, Total Nitrogen, Nitrate, pH, Fish Kills, TSS, Total Phosphorus	Municipal Point Sources, Agriculture, Source Unknown
BPJ03 (9.97 miles)	Salt Fork Vermilion River	Aquatic Life Support (Partial), Fish Consumption (Not Assessed), Drinking Water Supply (Partial)	Iron, Total Nitrogen, Nitrate, Fish Kills, TSS, Total Phosphorus	Municipal Point Sources, Agriculture, Source Unknown

Source: Illinois EPA, 2004.

2 Watershed Characteristics

The physical characteristics of the Salt Fork Vermilion River watershed are described in the following sections. For the purposes of this characterization, the watershed was subdivided into ten subwatersheds according to the respective Illinois water body segment identifications. These subwatersheds correspond to the upstream contributing areas of Spoon Branch (BPJD02), Boneyard Creek (BPJCA), Saline Branch (BPJC08), Saline Branch (BPJC06), Salt Fork Vermilion River (BPJ09), Homer Lake (RBO), Salt Fork Vermilion River (BPJ10), Salt Fork Vermilion River (BPJ08), and Salt Fork Vermilion River (BPJ03). The subwatersheds were defined using digital elevation data, and the delineation process is discussed in section 3.2.2. This type of watershed subdivision allows for a more pertinent discussion of land use and soils information for each of the listed waterbodies.

2.1 Location

The Salt Fork Vermilion River watershed (Figure 2-1) is located in east-central Illinois and drains approximately 500 square miles. Approximately 362 square miles (73 percent) are in eastern Champaign County and 138 square miles are in western Vermilion County.

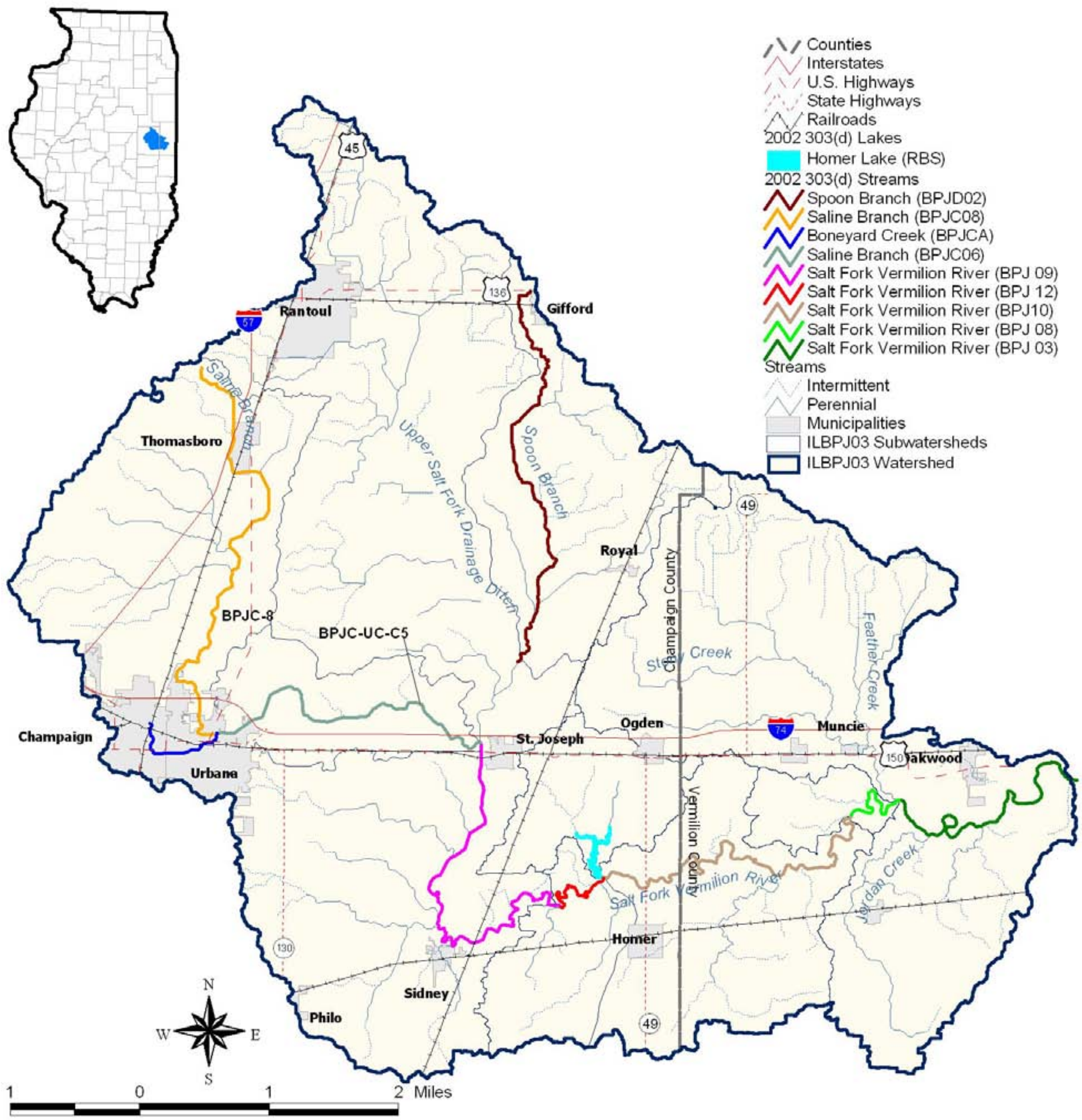

Figure 2-1. Location of the Salt Fork Vermilion River watershed.

2.2 Topography

Topography is an important factor in watershed management because stream types, precipitation, and soil types can vary significantly by elevation. Digital elevation models (DEM) containing 30-meter grid resolution elevation data were used to assess the topography of the Salt Fork Vermilion River watershed. Elevation in the Salt Fork Vermilion River watershed ranges from 836 feet above sea level in the headwaters to 523 feet at the most downstream point of the watershed (Figure 2-2). The absolute elevation change is 122 feet over the 46.8-mile stream length of Salt Fork Vermilion River, which yields a stream gradient of 2.6 feet per mile. Stream gradients for Saline Branch and Spoon Branch are 3.1 feet per mile and 8.9 feet per mile, respectively.

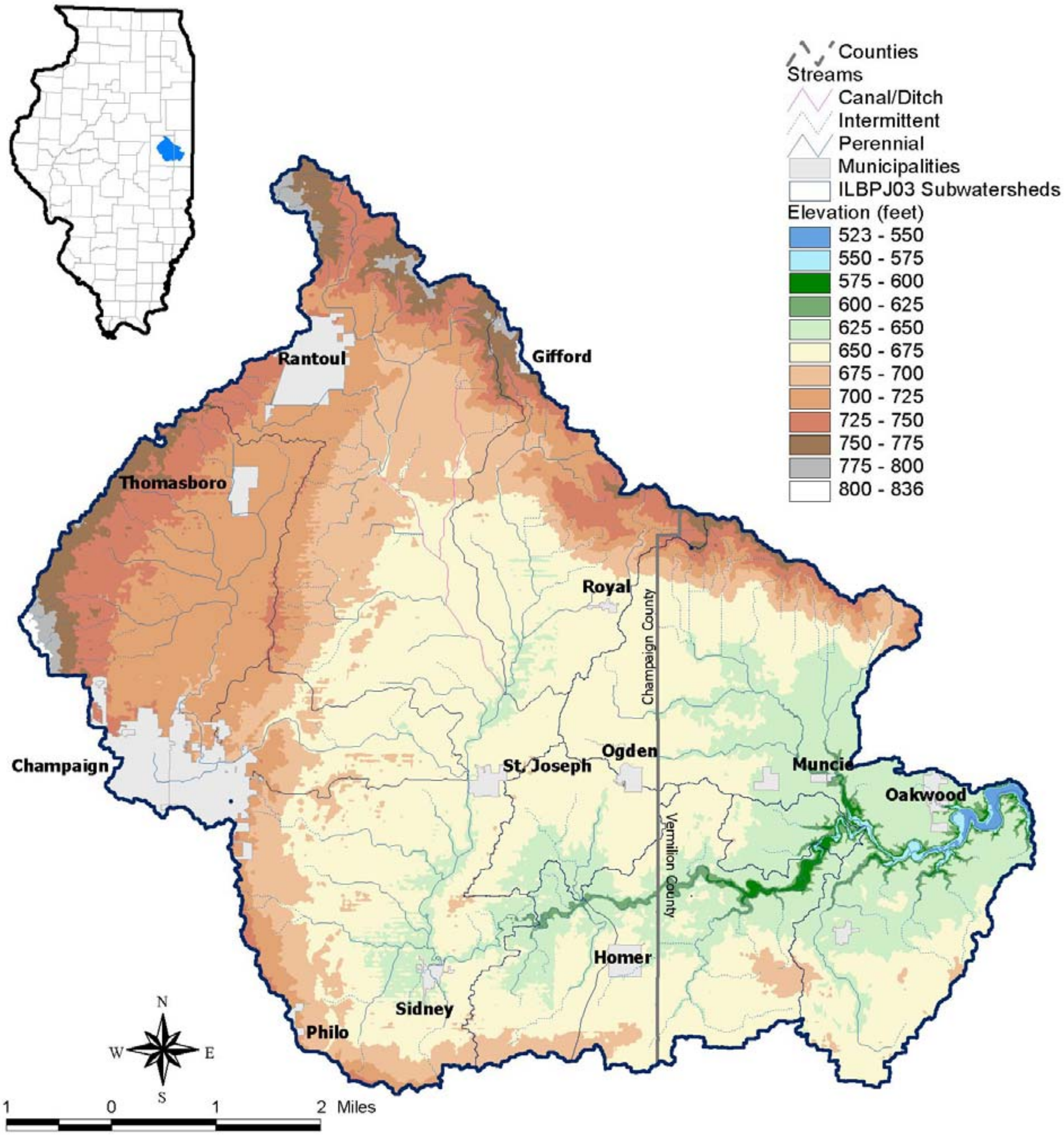

Figure 2-2. Elevation in the Salt Fork Vermilion River watershed.

2.3 Land Use and Land Cover

General land cover data for the Salt Fork Vermilion River watershed were extracted from the Illinois Natural History Survey's GAP Analysis Land cover database (INHS, 2003). This database was derived from satellite imagery taken during 1999 and 2000 and is the most current detailed land cover data known to be available for the watershed. Each 98-foot by 98-foot pixel contained within the satellite image is classified according to its reflective characteristics. Figure 2-3 displays land use and land cover in the watershed. A complete listing of the Illinois GAP land cover categories is provided in Appendix A.

The land cover data reveal that approximately 448 square miles (or nearly 88 percent of the total watershed area) are devoted to agricultural activities. Approximately 8 percent of the watershed is classified as rural grasslands and 7 percent is classified as urban. Land use and land cover are described and summarized for each of the listed water bodies, and their respective subwatershed areas, in the following sections.

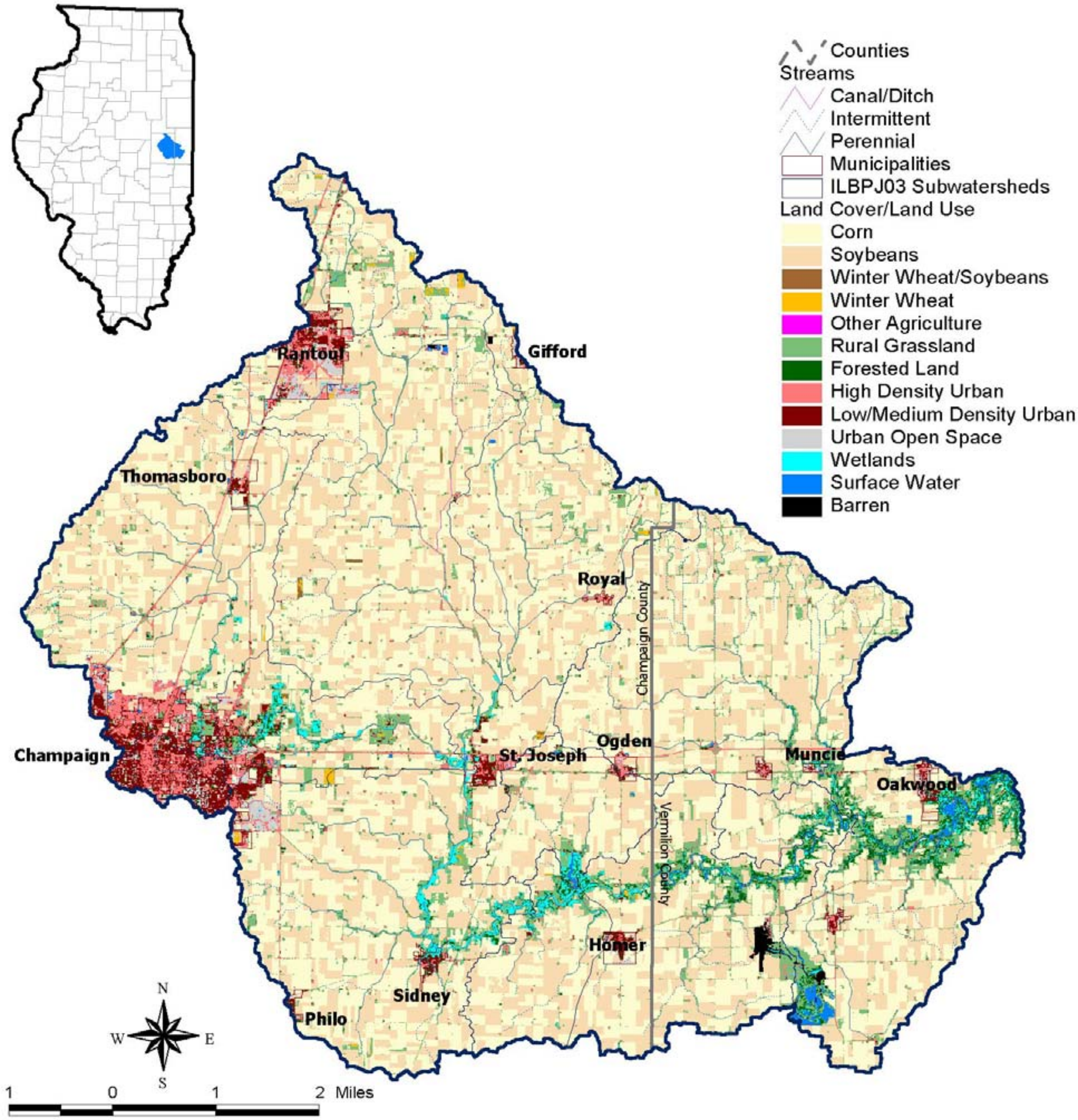

Figure 2-3. GAP land use/land cover in the Salt Fork Vermilion River watershed.

2.3.1 Spoon Branch (BPJD02)

Land use and land cover in the Spoon Branch subwatershed is summarized in Table 2-1. Corn and soybeans dominate land cover, accounting for 49 and 42 percent of subwatershed area, respectively. Rural grassland and urban land uses represent six and two percent of the subwatershed area, respectively. All other cover types represent less than one percent of the subwatershed area.

Table 2-1. Land Use and Land Cover in the Spoon Branch Subwatershed (Segment BPJD02).

Land Use / Land Cover Description	Area		Percent of Watershed Area
	Acres	Square Miles	
Corn	13,725.7	21.4	49.66
Soybeans	11,612.3	18.1	42.01
Rural Grassland	1,609.5	2.5	5.82
Urban	524.4	0.8	1.90
Winter Wheat	52.0	0.1	0.19
Wetlands	37.6	0.1	0.14
Forested Land	35.4	0.1	0.13
Barren	20.9	<0.1	0.08
Winter Wheat/Soybeans	11.8	<0.1	0.04
Surface Water	10.7	<0.1	0.04
Total	**27,640.2**	**43.2**	**100.00**

2.3.2 Boneyard Creek (Illinois Water Body Segment BPJCA)

Urban land use is the dominant cover type in the Boneyard Creek subwatershed and accounts for 97 percent of the total subwatershed area (Table 2-2). Forested lands account for approximately three percent of the subwatershed area and all other land use types are less than 1 percent.

Table 2-2. Land Use and Land Cover in the Boneyard Creek Subwatershed (Segment BPJCA).

Land Use / Land Cover Description	Watershed Area		Percent of Watershed Area
	Acres	Square Miles	
Urban	3,597.2	5.6	96.56
Forested Land	109.4	0.2	2.94
Wetlands	12.0	<0.1	0.32
Soybeans	2.2	<0.1	0.06
Corn	1.3	<0.1	0.04
Winter Wheat	1.3	<0.1	0.04
Rural Grassland	1.1	<0.1	0.03
Surface Water	0.7	<0.1	0.02
Total	**3,725.3**	**5.8**	**100.00**

2.3.3 Saline Branch (Illinois Water Body Segment BPJC08)

Of the 62 square miles draining the upper Saline Branch subwatershed, slightly less than 83 percent are dedicated to agricultural activities. The dominant crop types are corn and soybeans (see Table 2-3), with each representing approximately 41 percent of the subwatershed acreage. Urban lands account for 12 percent of the subwatershed area, while rural grasslands account for approximately 5 percent of the subwatershed area.

Table 2-3. Land Use and Land Cover in the Saline Branch Subwatershed (Segment BPJC08).

Land Use / Land Cover Description	Watershed Area		Percent of Watershed Area
	Acres	Square Miles	
Corn	16,499.2	25.8	41.28
Soybeans	16,200.5	25.3	40.53
Urban	4,656.9	7.3	11.65
Rural Grassland	1,953.3	3.1	4.89
Forested Land	344.0	0.5	0.86
Wetlands	231.5	0.4	0.58
Surface Water	63.4	0.1	0.16
Winter Wheat	16.5	<0.1	0.04
Winter Wheat/Soybeans	4.4	<0.1	0.01
Total	**39,969.8**	**62.5**	**100.00**

2.3.4 Saline Branch (Illinois Water Body Segment BPJC06)

The lower Saline Branch subwatershed drains approximately 90 square miles (Table 2-4). Of this area, approximately 65 square miles are dedicated to agricultural land use, representing nearly 72 percent of the total watershed area. Urban lands account for slightly less than 18 percent of the watershed area, while rural grassland, forested land uses, and wetlands account for approximately seven percent, two percent, and two percent of the watershed area, respectively.

Table 2-4. Land Use and Land Cover in the Saline Branch Subwatershed within Illinois (Segment BPJC06).

Land Use / Land Cover Description	Watershed Area		Percent of Watershed Area
	Acres	Square Miles	
Corn	21,212.2	33.1	36.75
Soybeans	20,418.4	31.9	35.37
Urban	10,249.0	16.0	17.76
Rural Grassland	3,843.9	6.0	6.66
Forested Land	902.7	1.4	1.56
Wetlands	879.1	1.4	1.52
Surface Water	102.5	0.2	0.18
Winter Wheat	81.8	0.1	0.14
Winter Wheat/Soybeans	32.0	0.1	0.06
Total	**57,721.7**	**90.2**	**100.00**

2.3.5 Salt Fork Vermilion River (Illinois Water Body Segment BPJ09)

Land use and land cover in the Salt Fork Vermilion River (BPJ09) subwatershed is summarized in Table 2-5. The table shows that agricultural land uses account for 250 square miles, representing nearly 83 percent of the subwatershed area. Corn and soybeans dominate land cover, accounting for 40 and 38 percent of subwatershed area, respectively. Urban land uses represent nine percent, while rural grasslands and wetlands characterize six percent and one percent of subwatershed area, respectively. All other cover types represent less that one percent of the subwatershed area.

Table 2-5. Land Use and Land Cover in the Salt Fork Vermilion River Subwatershed (Segment BPJ09).

Land Use / Land Cover Description	Watershed Area		Percent of Watershed Area
	Acres	Square Miles	
Corn	85,591.4	133.7	44.03
Soybeans	74,266.5	116.0	38.21
Urban	17,662.1	27.6	9.09
Rural Grassland	12,295.3	19.2	6.33
Wetlands	2,018.7	3.2	1.04
Forested Land	1,667.5	2.6	0.86
Winter Wheat	487.3	0.8	0.25
Surface Water	193.5	0.3	0.10
Winter Wheat/Soybeans	153.2	0.2	0.08
Barren	45.1	0.1	0.02
Total	**194,380.5**	**303.7**	**100.00**

2.3.6 Salt Fork Vermilion River (Illinois Water Body Segment BPJ12)

Land use and land cover in the Salt Fork Vermilion River (BPJ12) subwatershed is summarized in Table 2-6. The table shows that agricultural land uses account for 265 square miles, representing nearly 83 percent of the subwatershed area. Urban land uses represent nearly nine percent, while rural grasslands and wetlands characterize six percent and one percent of subwatershed area, respectively. All other cover types represent approximately one percent of the subwatershed area.

Table 2-6. Land Use and Land Cover in the Salt Fork Vermilion River Subwatershed (Segment BPJ12).

Land Use / Land Cover Description	Watershed Area		Percent of Watershed Area
	Acres	Square Miles	
Corn	90,399.8	141.2	44.05
Soybeans	78,799.5	123.1	38.40
Urban	17,831.5	27.9	8.69
Rural Grassland	13,016.5	20.3	6.34
Wetlands	2,377.6	3.7	1.16
Forested Land	1,889.5	3.0	0.92
Winter Wheat	499.3	0.8	0.24
Surface Water	194.4	0.3	0.09
Winter Wheat/Soybeans	153.2	0.2	0.07
Barren	45.1	0.1	0.02
Total	**205,206.5**	**320.6**	**100.00**

2.3.7 Homer Lake (Illinois Water Body Segment RBO)

Land use and land cover in the Homer Lake subwatershed is summarized in Table 2-7. The table shows that agricultural land uses account for nearly 87 percent of the subwatershed area. Rural grassland, urban land uses, and wetlands represent seven percent, three percent, and two percent of the subwatershed area, respectively. All other cover types represent less that one percent of the subwatershed area. Land use around the lake is mostly wetlands, forest, and rural grasslands.

Table 2-7. Land Use and Land Cover in the Homer Lake Subwatershed (Segment RBO).

Land Use / Land Cover Description	Watershed Area		Percent of Watershed Area
	Acres	Square Miles	
Corn	5,251.4	8.2	46.35
Soybeans	4,637.8	7.2	40.93
Rural Grassland	753.0	1.2	6.65
Urban	334.5	0.5	2.95
Wetlands	162.1	0.3	1.43
Surface Water	98.7	0.2	0.87
Forested Land	90.1	0.1	0.79
Winter Wheat	2.2	<0.1	0.02
Winter Wheat/Soybeans	1.1	<0.1	0.01
Total	**11,331.0**	**17.7**	**100.00**

2.3.8 Salt Fork Vermilion River (Illinois Water Body Segment BPJ10)

The Salt Fork Vermilion River subwatershed (segment BPJ10) drains more than 380 square miles of the entire watershed. Approximately 82 percent of the subwatershed area is dedicated to agricultural activities. Urban land uses account for nearly eight percent of the subwatershed area, while rural grassland account for 16,916 acres (6.93 percent) of the subwatershed area. Wetlands and forest land each account for approximately 3,000 acres (1.23 percent) of the subwatershed area.

Table 2-8. Land Use and Land Cover in the Salt Fork Vermilion River Subwatershed (Segment BPJ10).

Land Use / Land Cover Description	Watershed Area		Percent of Watershed Area
	Acres	Square Miles	
Corn	106,726.2	166.8	43.74
Soybeans	93,874.3	146.7	38.47
Urban	18,855.0	29.5	7.73
Rural Grassland	16,916.8	26.4	6.93
Wetlands	3,005.7	4.7	1.23
Forested Land	2,997.9	4.7	1.23
Surface Water	527.3	0.8	0.22
Winter Wheat	522.4	0.8	0.21
Barren	420.3	0.7	0.17
Winter Wheat/Soybeans	160.3	0.3	0.07
Other Agriculture	2.2	<0.1	<0.01
Total	**244,008.4**	**381.3**	**100.00**

2.3.9 Salt Fork Vermilion River (Illinois Water Body Segment BPJ08)

Of the 389 square miles draining segment BPJ08, slightly greater than 82 percent are dedicated to agricultural activities. Urban lands account for almost eight percent of the subwatershed area, while rural grassland, forested land uses, and wetlands account for approximately seven percent, one percent, and one percent of the subwatershed area, respectively.

Table 2-9. Land Use and Land Cover in the Salt Fork Vermilion River Subwatershed (Segment BPJ08).

Land Use / Land Cover Description	Watershed Area		Percent of Watershed Area
	Acres	Square Miles	
Corn	109,207.2	170.6	43.86
Soybeans	95,386.3	149.0	38.31
Urban	18,898.6	29.5	7.59
Rural Grassland	17,419.2	27.2	7.00
Forested Land	3,255.4	5.1	1.31
Wetlands	3,102.8	4.8	1.25
Surface Water	605.8	0.9	0.24
Winter Wheat	522.4	0.8	0.21
Barren	420.3	0.7	0.17
Winter Wheat/Soybeans	160.3	0.3	0.06
Other Agriculture	3.8	<0.1	<0.01
Total	**248,982.3**	**389.0**	**100.00**

2.3.10 Salt Fork Vermilion River (Illinois Water Body Segment BPJ03)

The lower Salt Fork Vermilion River subwatershed represents the entire Salt Fork Vermilion River watershed and drains approximately 500 square miles (Figure 2-1). Of this area, approximately 82 percent are dedicated to agricultural activities. Rural grasslands account for slightly less than eight percent of the watershed area, while urban land uses, forested lands, and wetlands account for more than seven percent, slightly less than two percent, and one percent of the watershed area.

Table 2-10. Land Use and Land Cover in the Salt Fork Vermilion River Subwatershed (Segment BPJ03).

Land Use / Land Cover Description	Watershed Area		Percent of Watershed Area
	Acres	Square Miles	
Corn	140,132.9	219.0	43.84
Soybeans	121,319.7	189.6	37.96
Rural Grassland	24,667.3	38.5	7.72
Urban	20,907.5	32.7	6.54
Forested Land	5,669.3	8.9	1.77
Wetlands	3,985.5	6.2	1.25
Surface Water	1,689.7	2.6	0.53
Barren	550.2	0.9	0.17
Winter Wheat	524.6	0.8	0.16
Winter Wheat/Soybeans	175.2	0.3	0.05
Other Agriculture	9.8	<0.1	<0.01
Total	**319,631.7**	**499.4**	**100.00**

2.4 Tillage Practices and Agricultural Best Management Practices

Tillage system practices are not available specifically for the Salt Fork Vermilion River watershed; however, county-wide tillage system surveys have been undertaken by the Illinois Department of Agriculture (2002; 2004). It is assumed that the general tillage practice trends evidenced throughout Champaign and Vermilion Counties are applicable to the Salt Fork Vermilion River watershed and the results of these surveys are presented in Table 2-11. The percentage of fields using conventional versus reduced tillage practices remained fairly similar between 2002 and 2004.

The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners and a number of farmers in the Salt Fork River watershed participate in the program. Through CRP, farmers receive annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland. The extent of various CRP practices in the watershed is provided below (Sharyl Walker, Champaign County Soil and Water Conservation District, personal communications April 22, 2005):

- Grass filter strips: 2436 acres
- Tree buffers: 170 acres
- Grass waterways: 354 acres

Table 2-11. Percentage of Agricultural Fields Surveyed with Indicated Tillage System in Champaign and Vermilion Counties, Illinois, in 2002 and 2004.

Champaign County 2002 Transect Survey				
Crop Field Type	Tillage Practice			
	Conventional	Reduced-till	Mulch-till	No-till
Corn	74	20	4	2
Soybean	14	41	23	22
Small Grain	0	0	100	0
Champaign Count 2004 Transect Survey				
Crop Field Type	Tillage Practice			
	Conventional	Reduced-till	Mulch-till	No-till
Corn	73	21	3	3
Soybean	5	31	32	32
Small Grain	0	0	0	100
Vermilion County 2002 Transect Survey				
Crop Field Type	Tillage Practice			
	Conventional	Reduced-till	Mulch-till	No-till
Corn	92	6	1	2
Soybean	31	24	9	36
Small Grain	50	0	0	50
Vermilion County 2004 Transect Survey				
Crop Field Type	Tillage Practice			
	Conventional	Reduced-till	Mulch-till	No-till
Corn	89	8	2	0
Soybean	21	24	14	41
Small Grain	100	0	0	0

Source: Illinois Department of Agriculture, 2002; 2004.

2.5 Soils

Soils data and GIS coverages from the Natural Resources Conservation Service (NRCS) were used to characterize soils in the Salt Fork Vermilion River watershed. General soils data and map unit delineations for the country are provided as part of the State Soil Geographic (STATSGO) database. GIS coverages provide locations for the soil map units at a scale of 1:250,000 (USDA, 1995) and a map unit is composed of several soil series having similar properties. It should be noted that map units can be highly variable and the following maps are meant as general representations. Figure 2-4 displays the STATSGO soil map units in the Salt Fork Vermilion River watershed. Identification fields in the GIS coverage can be linked to a database that provides information on chemical and physical soil characteristics for each map unit. Of particular interest for water resource studies are the hydrologic soil group, the K-factor of the Universal Soil Loss Equation, and depth to water table. The following sections describe and summarize the specified soil characteristics for each of the listed water bodies, and their respective subwatersheds, in the Salt Fork Vermilion River watershed.

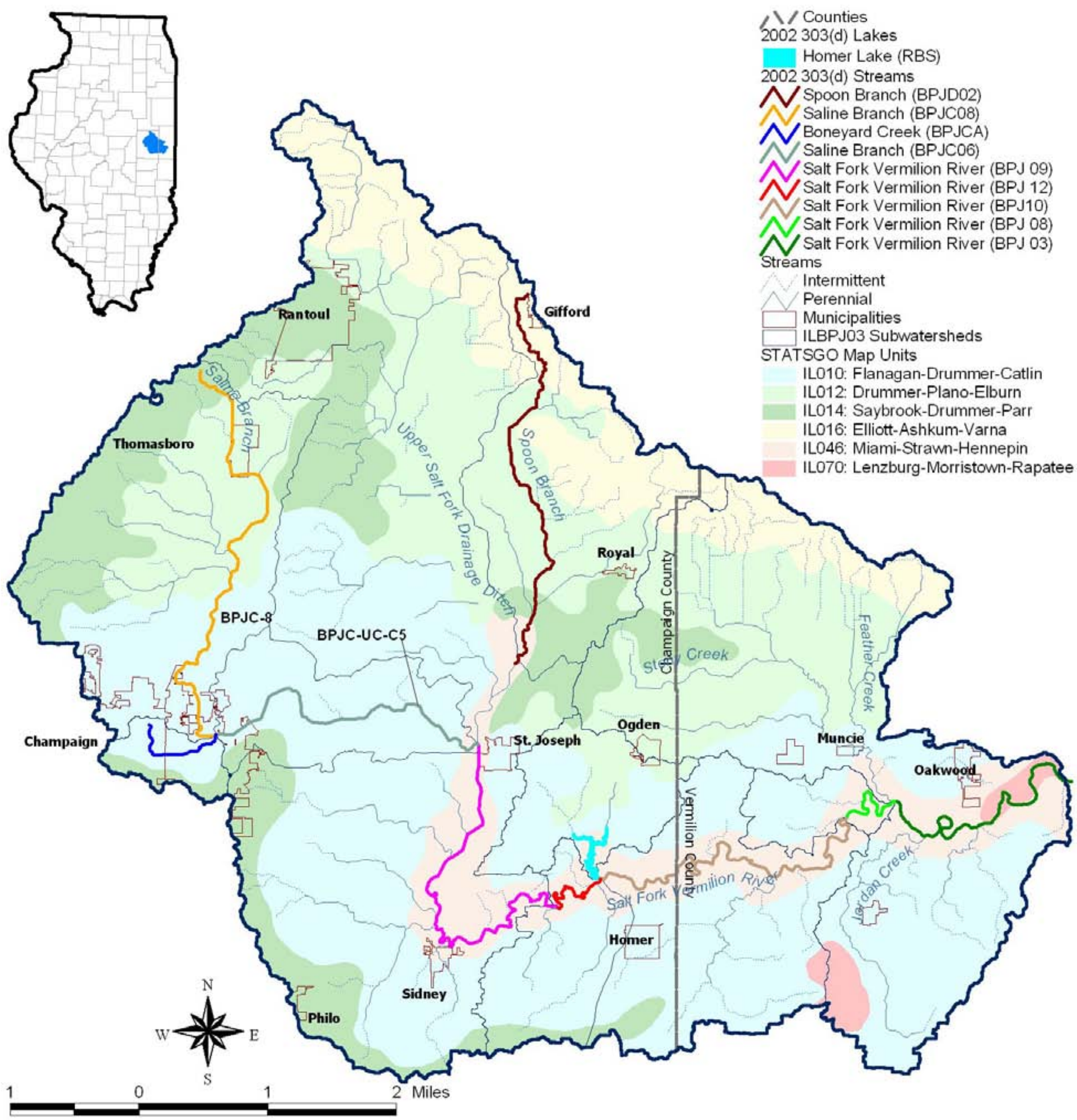

Figure 2-4. Distribution of STATSGO Map Units in the Salt Fork Vermilion River watershed.

2.5.1 Hydrologic Soil Group

The hydrologic soil group classification is a means for grouping soils by similar infiltration and runoff characteristics during periods of prolonged wetting. Typically, clay soils that are poorly drained have lower infiltration rates, while well-drained sandy soils have the greatest infiltration rates. NRCS (2001) has defined four hydrologic groups for soils as listed in Table 2-12. In addition, soils with tile drainage in Illinois should be designated as Class B soils (i.e., due to the presence of tile drainage the soil takes on the attribute of a Class B soil ((McKenna, personal communications, December 15, 2004)). Figure 2-5 presents the general distribution of hydrologic soil groups in the Salt Fork Vermilion River watershed.

The figure shows the dominant hydrologic group in the basin is B. Hydrologic group C soils are found only in the northernmost region of the watershed.

Table 2-12. NRCS Hydrologic Soil Groups.

Hydrologic Soil Group	Description
A	Soils with high infiltrations rates. Usually deep, well drained sands or gravels. Little runoff.
B	Soils with moderate infiltration rates. Usually moderately deep, moderately well drained soils.
C	Soils with slow infiltration rates. Soils with finer textures and slow water movement.
D	Soils with very slow infiltration rates. Soils with high clay content and poor drainage. High amounts of runoff.

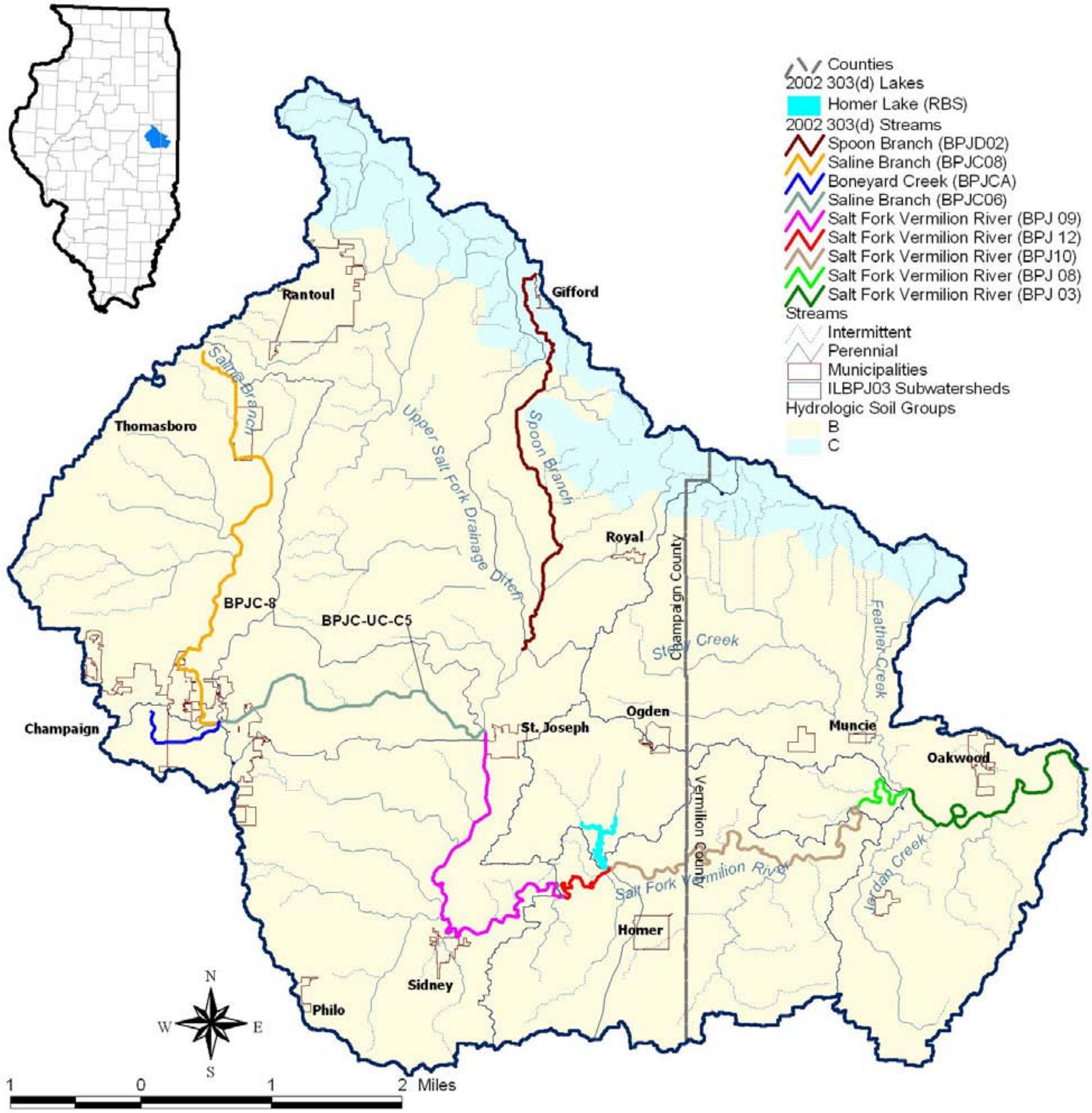

Figure 2-5. Hydrologic soil group distribution in the Salt Fork Vermilion River watershed.

2.5.2 K-Factor

A commonly used soil attribute is the K-factor, a component of the Universal Soil Loss Equation (USLE) (Wischmeier and Smith, 1978). The K-factor is a dimensionless measure of a soil's natural susceptibility to erosion, and factor values may range from 0 for water surfaces to 1.00 (although in practice, maximum factor values do not generally exceed 0.67). Large K-factor values reflect greater inherent soil erodibility. The distribution of K-factor values in the Salt Fork Vermilion River watershed is shown in Figure 2-6. The figure indicates that soils with moderate erosion potential (e.g., K-factors ranging from 0.20 to 0.37) comprise more than 99 percent of the watershed. Figure 2-6 also shows that less than one percent of K-factor values exceed 0.37.

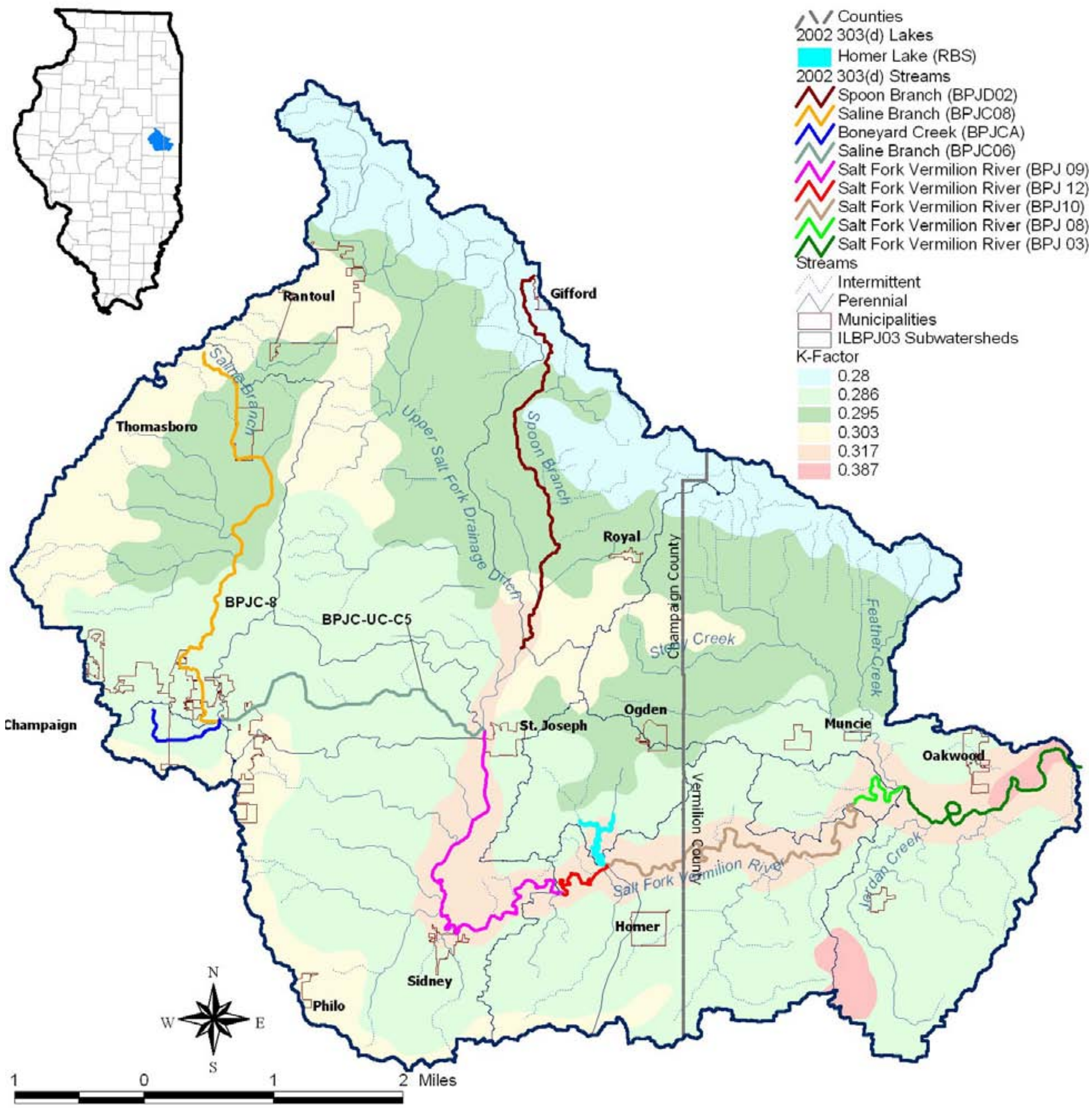

Figure 2-6. USLE K-Factor distribution in the Salt Fork Vermilion River watershed.

2.5.3 Depth to Water Table

Water table depth as described in the STATSGO database is the range in depth to the seasonally high water table level for a specified month. The STATSGO database reports depth to water table as both a minimum and maximum depth. Values were summarized to reflect the weighted sum of the minimum depth to water table for the surface layer of all soil sequences composing a single STATSGO map unit. Figure 2-7 displays the distribution of depth to water table for the basin and shows that depths range from 2.44 feet to 6 feet and generally increase moving from the headwaters down stream. Minimum depths occur along the northeast margin of the watershed and maximum depths occur in two localized areas; one southwest of Fairmount and the second at mouth of the Salt Fork Vermilion.

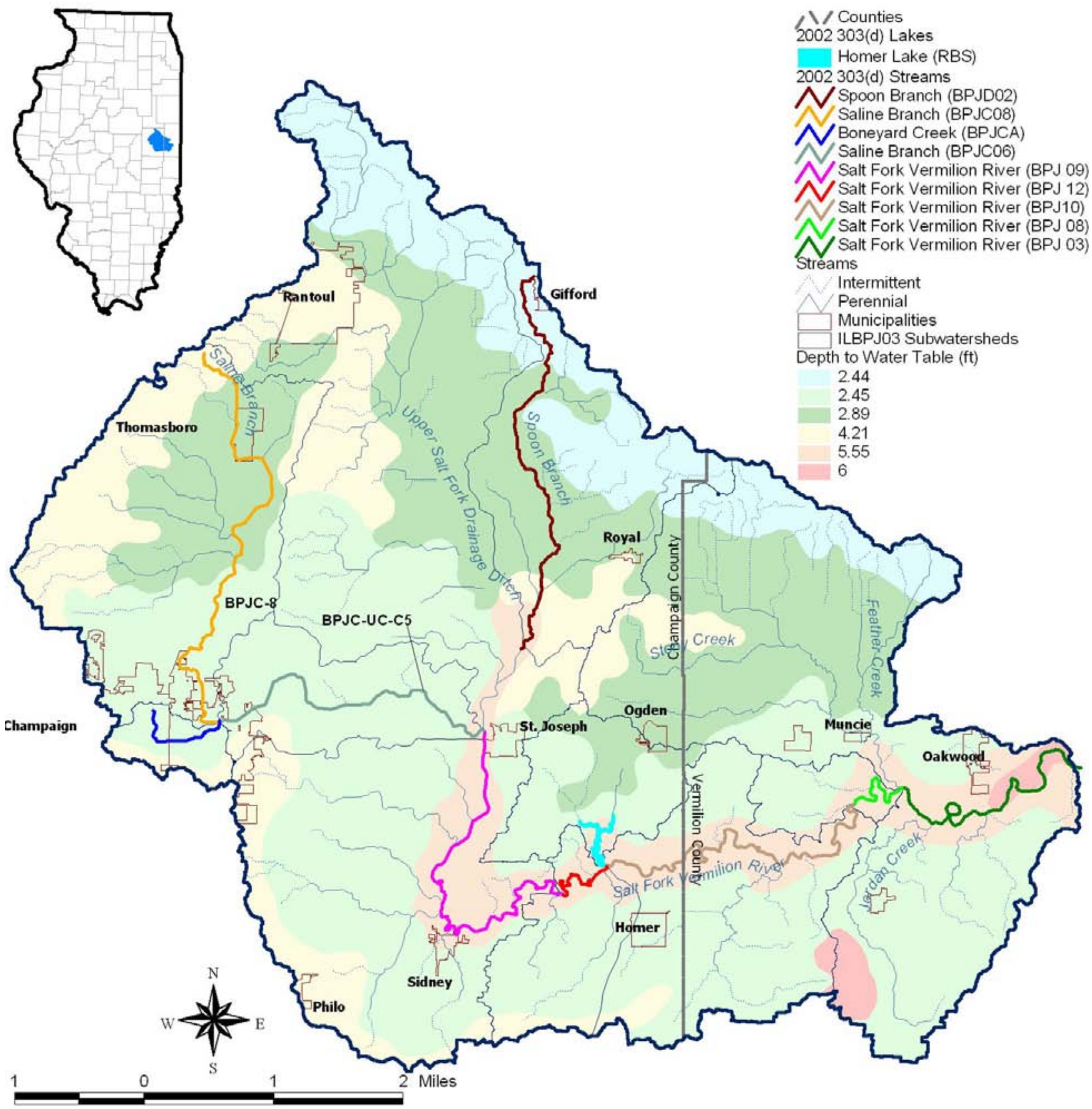

Figure 2-7. Depth to water table in the Salt Fork Vermilion River watershed

2.6 Population

Total watershed population is not directly available but may be calculated from the 2000 U.S. Census data. The 2000 U.S. Census data were downloaded for all towns, cities, and counties whose boundaries lie wholly or partially in the watershed (Census, 2000). Urban and nonurban populations were estimated for the watershed area and were summed to obtain an estimate of total watershed population. The following paragraphs describe how urban and nonurban population estimates were determined from town, city, and county Census data.

Urban watershed population is the sum of population for all towns and cities located entirely in the watershed. In the instance where a city or town is located partially in the watershed, a population weighting method was used to estimate a place's contribution to urban watershed population. Nonurban population for each county was determined by first subtracting the total county urban population from the total county population. Since only portions of counties are found in the watershed, a nonurban population weighting method was also used to estimate each county's contribution of nonurban population to the total watershed population. It is assumed that the nonurban population for each county is uniformly distributed throughout the nonurban portion of the county.

Watershed population is summarized in Table 2-13 for the contributing watershed of each waterbody segment. Approximately 94,000 people are estimated to reside in the Salt Fork Vermilion River watershed. The watershed's urban and nonurban population totals are given for each county in Table 2-13. Table 2-13 indicates that 15,924 people, or 16.85 percent of the population, live in nonurban areas, while 78,596 people (83.15 percent) reside in urban areas.

Table 2-13. ILBPJ03 Watershed Population Summarized by County.

County	Watershed Population	Percent Watershed Population [a]	Nonurban Population	Percent Nonurban Population [a]	Urban Population	Percent Urban Population [a]
Champaign	88,100	93.21	12,172	12.88	75,928	80.33
Vermilion	6,421	6.79	3,753	3.97	2,668	2.82
Total	**94,521**	**100.00**	**15,925**	**16.85**	**78,596**	**83.15**

[a] Percentages are a proportion of the total watershed population.
Source: U.S. 2000 Census and GIS analysis.

The urban population centers in the watershed are shown in Figure 2-1 and Table 2-14. Urbana and Champaign are the largest urban areas in the watershed and account for 30,846 people and 26,952 people, respectively. Other urban centers include Rantoul, St. Joseph, Thomasboro, Homer, Sidney, and Oakwood. All other urban centers have populations less than 1,000. Table 2-14 also provides information on population change for the ten-year period between 1990 and 2000 and indicates that the estimated watershed population remained fairly stable during this period.

Table 2-14. Population Centers and Population Change in the ILBPJ03 Watershed.

County	Municipality	1990 Population	2000 Population	Absolute Change	Percent Change
Champaign County	Nonurban	11,539	12,172	633	5.49
	Urbana	30,803	30,846	43	0.14
	Champaign	25,349	26,952	1,603	6.32
	Rantoul	13,205	9,864	-3,341	-25.3
	St. Joseph	2,052	2,912	860	41.91
	Thomasboro	1,250	1,233	-17	-1.36
	Homer	1,264	1,200	-64	-5.06
	Sidney	1,027	1,062	35	3.41
	Ogden	671	743	72	10.73
	Philo	338	432	94	27.82
	Gifford	399	385	-14	-3.55
	Royal	217	279	62	28.57
	Ludlow	20	20	0	0.31
Vermilion County	Nonurban	4,369	3,753	-615	-14.09
	Oakwood	1,395	1,367	-28	-2.02
	Fairmount	678	640	-38	-5.6
	Fithian	512	506	-6	-1.17
	Muncie	182	155	-27	-14.84
	Total	**95,269**	**94,521**	**-748**	**-0.79**

Source: U.S. 2000 Census and GIS analysis.

3 Climate and Hydrology

3.1 Climate

East central Illinois has a temperate climate with hot summers and cold, snowy winters. Average annual precipitation is 41.06 inches. On average there are 124 days with at least 0.01 inches of precipitation. Annual average snowfall is 26.2 inches. Monthly variation of total precipitation, snowfall, and temperature is presented for Urbana (Cooperative ID 118740) in Figure 3-1 below. The figure shows that although precipitation occurs throughout the year, May through August are the wettest months. Much of the annual snowfall occurs in the months of December through February, with the most snow typically occurring in January.

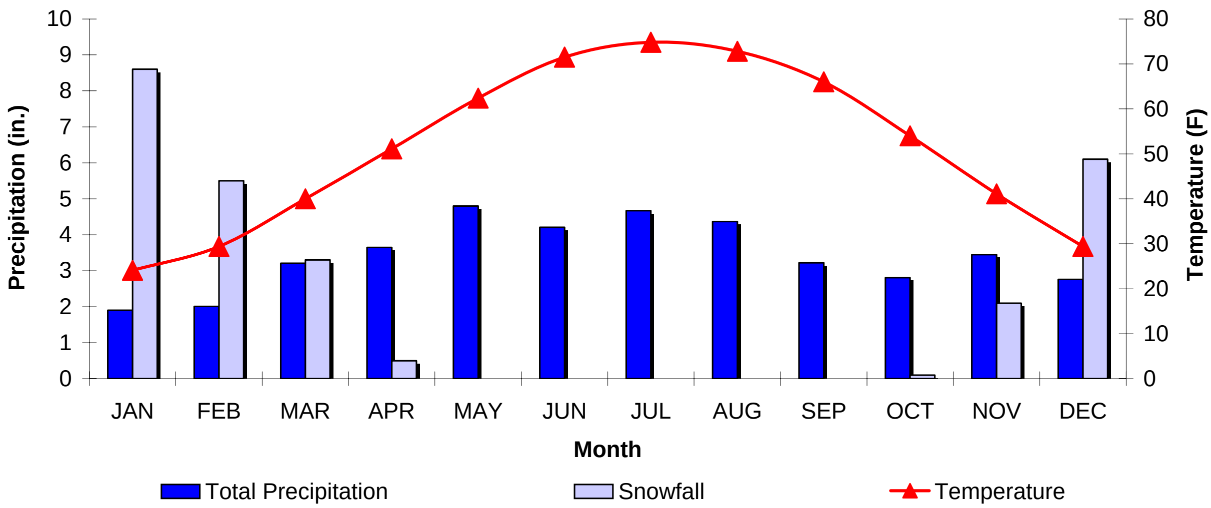

Figure 3-1. Climate summary for the Urbana Station (118740).

3.2 Hydrology

This section presents information related to the general hydrology, streams types, and subbasins found within the Salt Fork Vermilion River watershed.

3.2.1 Stream Types

The National Hydrography Data (NHD) provided by USEPA and USGS identified five different stream types in the Salt Fork Vermilion River Basin (Table 3-1 and Figure 3-2) (NHD, 2003). Approximately 50 percent of the streams were classified as perennial streams and 50 percent were classified as intermittent streams. Perennial streams flow year-round whereas intermittent streams have flow only for short periods during the course of a year, usually initiated by rainfall. Several streams were also classified as canals/ditches, artificial paths, and connectors.

Table 3-1. Summary of Stream Type in the Salt Fork Vermilion River Basin.

Stream Type	**Stream Length (miles)**	**Percent**
Perennial Stream	255.2	52.64
Intermittent Stream	213.8	44.10
Canal/Ditch	14.3	2.95
Artificial Path	1.1	0.22
Connector	0.4	0.09
Total	484.8	**100.00**

Figure 3-2. Stream types in the Salt Fork Vermilion River watershed.

3.2.2 Subbasin Delineation

Subbasins were delineated using the ArcView interface for the Soil Water Assessment Tool (SWAT) model. The SWAT interface requires digital elevation data (DEM) for the entire Salt Fork Vermilion River watershed and these data were downloaded from the GEOCommunity <www.geocomm.com> web site. Subbasin delineation is based on the DEM data coupled with a "burn-in" of the National Hydrography Data set (NHD) spatial database of stream reaches to ensure that the resulting subbasin boundaries conform to both topographic and stream segment. The SWAT delineated subbasins conformed very well to the Illinois 12-digit Hydrologic Unit Code (HUC) subbasins in the lower portion of the Salt Fork Vermilion River Watershed. In the middle and upper reaches of the watershed, however, the SWAT delineated basins poorly represented the 12-digit HUC boundaries. This is most likely the result of the combination of minor errors in the DEM coverage and the low relief in this portion of the watershed. As a result, a combination of the SWAT delineated basins and the Illinois 12-digit HUC coverage was used to define the drainage areas for each impaired waterbody (Figure 2-1).

3.2.3 Tile Drainage

The Salt Fork Vermilion River watershed, as with many other watersheds in Illinois, is extensively underlain by drain tile designed to remove standing water from the soil surface for agricultural purposes. Subsurface drainage is designed to remove excess water from the soil profile. The water table level is controlled through a series of drainage pipes (tile or tubing) that are installed below the soil surface, usually just below the root zone. In Illinois, subsurface drainage pipes are typically installed at a depth of 3 to 4 feet and at a spacing of 80 to 120 feet. The subsurface drainage network generally outlets to an open ditch or stream.

Researchers at the University of Illinois and elsewhere have studied the impact of tile drainage on hydrology and water quality. Some impacts are relatively well understood while others are not. Zucker and Brown (1998) provided the following summary of the impacts (statements compare agricultural land with subsurface drainage to that without subsurface drainage):

- The percentage of rain that falls on a site with subsurface drainage and leaves the site through the subsurface drainage system can range up to 63 percent.
- The reduction in the total runoff that leaves the site as overland flow ranges from 29 to 65 percent.
- The reduction in the peak runoff rate ranges from 15 to 30 percent.
- Total discharge (total of runoff and subsurface drainage) is similar to flows on land without subsurface drainage, if flows are considered over a sufficient period of time before, during, and after the rainfall/runoff event.
- The reduction in sediment loss by water erosion from a site ranges between 16 to 65 percent. This reduction relates to the reduction in total runoff and peak runoff rate.
- The reduction in loss of phosphorus ranges up to 45 percent, and is related to the reductions in total runoff, peak runoff rate, and soil loss. However, in high phosphorus content soils, dissolved phosphorus levels in tile flow can be high.
- In terms of total nutrient loss, by reducing runoff volume and peak runoff rate, the reduction in soil-bound nutrients is 30 to 50 percent.
- In terms of total nitrogen losses (sum of all nitrogen species), there is a reduction. However, nitrate-N, a soluble nitrogen ion, has great potential to move wherever water moves. Numerous studies throughout the Midwest and southeast U.S., and Canada document that the presence of a subsurface drainage system enhances the movement of nitrate-N to surface waters. Proper management of drainage waters along with selected in-field best management practices helps reduce this potential loss.

3.2.4 Flow Data

The USGS National Water Information System (NWIS) online database lists three flow gages with current and historic flow data in the Salt Fork Vermilion River basin (Table 3-2 and Figure 4-1). Flow data for the entire period of record at USGS gage 3336900 is shown in Figure 3-3 and indicates no significant trend in flow over the period of record.
Figure 3-4 shows average daily flow values for both gages on the Salt Fork Vermilion River. It is important to note that the periods of record for the two gages do not overlap and that no current flow data exists. However, no significant trend occurs at gage 3336900 and, assuming that flow conditions at gage

3338000 show a similar trend, it is appropriate to compare the magnitude of flow between the two gages. The figure shows that flow increases from the upstream station (USGS 3336900) to the downstream station (USGS 3338000) because of the increase in contributing drainage area. Flow at both gages is at its maximum in the spring (March through May) as a result of increased precipitation. Flows decrease throughout the summer (June through August) and reach their minimum in late August. Discharge then slightly increases again throughout the fall (September through November).

Table 3-2. Current and historical USGS gages on the Salt Fork Vermilion River.

Station ID	Station Location	Start	End	Drainage Area (mi^2)
3336900	Salt Fork Vermilion River near St. Joseph, IL	1958	1991	134
3338000	Salt Fork Vermilion River near Homer, IL	1944	1958	340
3337000	Boneyard Creek at Urbana, IL	1948	2004	4.46
3337100	Boneyard Creek at Lincoln Ave at Urbana, Il	2001	2004	4.78

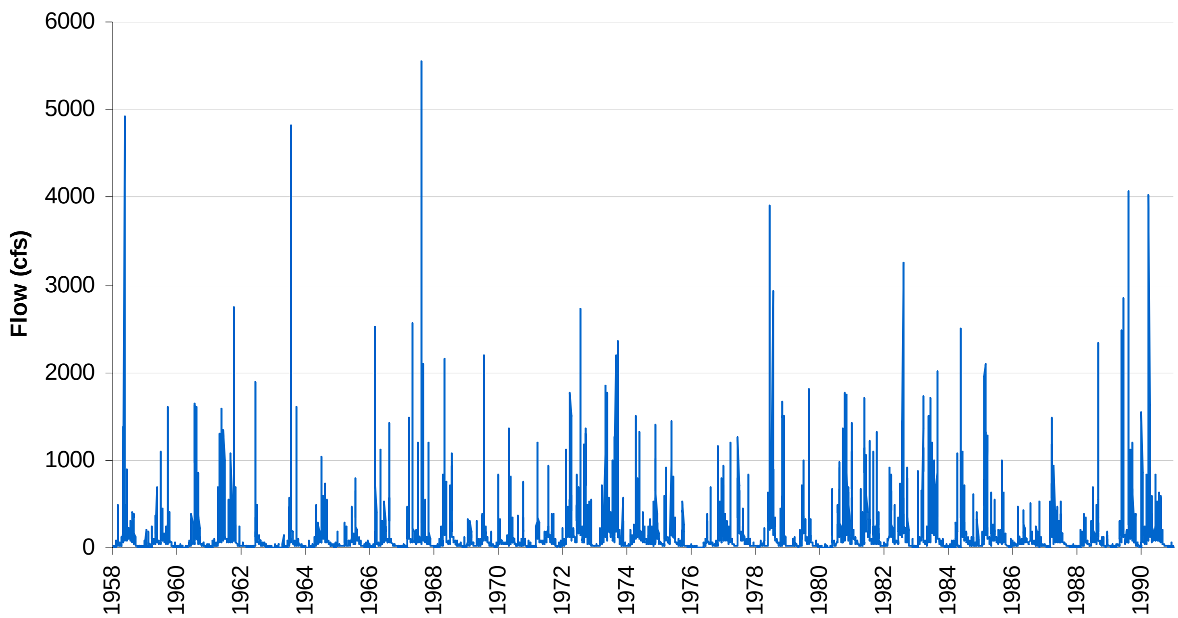

Figure 3-3. Historical flow data for USGS gage 3336900.

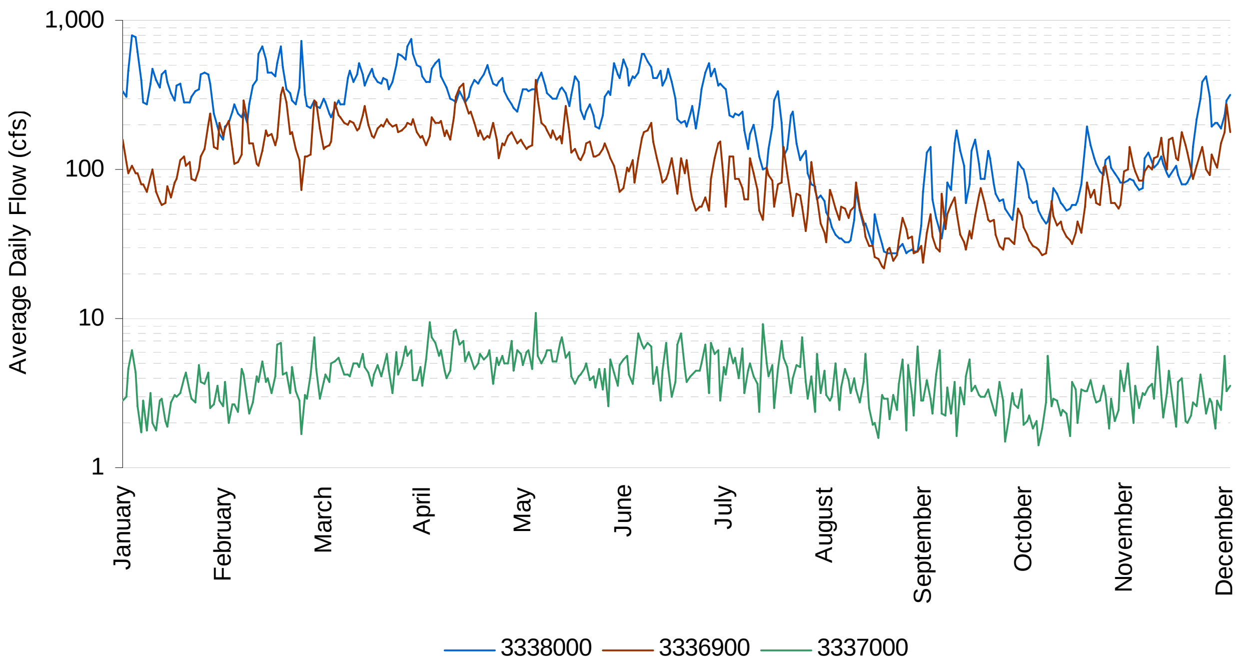

Figure 3-4. Average daily flow for USGS gages 3336900 and 3338000.

4 Inventory and Assessment of Water Quality Data

This section presents a summary of the available water quality data for all the listed waterbodies in the Salt Fork Vermilion River watershed. A description of the parameters of concern and the applicable water quality standards is presented first, followed by an analysis of the available water quality data. A complete listing of the water quality data is provided in Appendix B.

4.1 Parameters of Concern

The following sections provide a summary of the parameters identified on the Illinois 2004 303(d) list as causing impairments within the Salt Fork Vermilion River watershed. The purpose of these sections is to provide an overview of the parameters, units, sampling methods, and potential sources associated with each cause of impairment. The relevance of each cause of impairment to the various beneficial uses is also briefly discussed.

4.1.1 Nutrients/Organic Enrichment/Low DO/Excessive Algal Growth

The term *nutrients* usually refers to the various forms of nitrogen and phosphorus found in a waterbody. Both nitrogen and phosphorus are necessary for aquatic life, and both elements are needed at some level in a waterbody to sustain life. The natural amount of nutrients in a waterbody varies depending on the type of system. A pristine mountain spring might have little to almost no nutrients, whereas a lowland, mature stream flowing through wetland areas might have naturally high nutrient concentrations. Various forms of nitrogen and phosphorus can exist at one time in a waterbody, although not all forms can be used by aquatic life. Common phosphorus sampling parameters are total phosphorus (TP), dissolved phosphorus, and orthophosphate.

The dissolved phosphorus component of total phosphorus is the form that is most readily available to plants. It consists of soluble phosphorus that is not bound to particulates. In waterbodies with relatively short residence times, such as fast-flowing streams, dissolved phosphorus is of greater interest than TP because it is the only form that is readily available to support algal growth. However, in lakes and reservoirs, where residence times are much longer, particulate phosphorus can be transformed to dissolved phosphorus through microbial action. TP is therefore considered an adequate estimation of bioavailable phosphorus within lakes (USEPA, 1999).

Common nitrogen sampling parameters are total nitrogen (TN), nitrite (NO_2), nitrate (NO_3), total Kjeldahl nitrogen (TKN), and ammonia (NH_3). Concentrations are measured in the lab and are typically reported in milligrams per liter.

Nutrients generally do not pose a direct threat to the beneficial uses of a waterbody. However, excess nutrients can cause an undesirable abundance of plant and algae growth. This process is called eutrophication or organic enrichment. Organic enrichment can have many effects on a stream or lake. One possible effect of eutrophication is low dissolved oxygen concentrations. Aquatic organisms need oxygen to live and they can experience lowered reproduction rates and mortality with lowered dissolved oxygen concentrations. Dissolved oxygen concentrations are measured in the field and are typically reported in milligrams per liter. Ammonia, which is toxic to fish at high concentrations, can be released from decaying organic matter when eutrophication occurs. Recreational uses can be impaired because of eutrophication. Nuisance plant and algae growth can interfere with swimming, boating, and fishing. Nutrients generally do not pose a threat to agricultural uses.

Nitrogen and phosphorus exist in rocks and soils and are naturally weathered and transported into waterbodies. Organic matter is also a natural source of nutrients. Systems rich with organic matter (e.g., wetlands and bogs) can have naturally high nutrient concentrations. Phosphorus and nitrogen are potentially released into the environment through different anthropogenic sources including septic systems, wastewater treatment plants, fertilizer application, and animal feeding operations.

4.1.2 Sedimentation/Siltation

Extreme sedimentation can impair aquatic life, drinking water, and recreational designated uses. Excessive sediments deposited on the bottom of streams and lakes can choke spawning gravels, thereby reducing fish survival and growth rates, impair fish food sources, and reduce habitat complexity in stream channels. Furthermore, high sediment levels can clog fish gills, causing direct physical harm. Related to drinking water supply, sediments can cause taste and odor problems, block water supply intakes, foul treatment systems, and fill reservoirs. High levels of sediment can impair swimming and boating by altering channel form, creating hazards due to reductions in water clarity, and adversely affecting the general aesthetics of the waterbody.

Sediment is delivered to a receiving waterbody through various erosional processes such as sheetwash, gully and rill erosion, wind, landslides, and human excavation. Additionally, sediments are often produced through the stream channel and stream bank erosion, and by channel disturbance.

4.1.3 Boron

Boron is a naturally occurring dark brown/black substance found throughout the environment. It only occurs in combined form, usually as borax, colemanite, boronatrocalcite, and boracite. The highest concentrations of boron are found in sediments and sedimentary rock, particularly clay rich marine sediments. Boron can also be found naturally in soils at concentrations of 5 to 150 parts per million (ppm). Anthropogenic sources of boron in the environment include sewage sludge and effluents, coal combustion, glass, cleaning compounds and agrochemicals.

Generally, environmental concentrations of boron found in surface water are below levels identified as toxic to aquatic organisms. Boron retention in soil depends on the concentration in the soil solution, soil pH, texture, organic matter, cation exchange capacity, type of clay and mineral coating on the clay. Boron is an essential trace element for the growth of terrestrial crop plants and some algae, fungi and bacteria, but can be toxic in excess. Toxicity to aquatic organisms, including vertebrates, invertebrates and plants can vary depending on the organism's life stage and environment with early stages more sensitive to boron than later ones (Government of British Columbia, 2003). Boron concentrations are also typically associated with chlorides, which suggests that concentrations might be controlled by evaporative processes (USGS, 2003).

4.1.4 pH

The pH of a sample of water is a measure of the concentration of hydrogen ions. The pH of water determines the solubility (amount that can be dissolved in the water) and biological availability (amount that can be utilized by aquatic life) of chemical constituents such as nutrients (phosphorus, nitrogen, and carbon) and heavy metals (lead, copper, cadmium, etc.). For example, in addition to affecting how much and what form of phosphorus is most abundant in the water, pH may also determine whether aquatic life can use it. In the case of heavy metals, the degree to which they are soluble determines their toxicity. Metals tend to be more toxic at lower pH because they are more soluble. A pH range of 6.5 to 9.0 appears to provide protection for the life of freshwater fish and bottom dwelling invertebrates.

4.1.5 Iron

Iron is a trace element required by both plants and animals. It is a vital part of the oxygen transport mechanism in the blood (hemoglobin) of all vertebrate and some invertebrate animals. Ferrous and ferric ions are the primary forms of concern in the aquatic environment. Other forms may be in either organic or inorganic wastewater streams. The ferrous form can persist in water with no dissolved oxygen and usually originates from groundwater or mines that are pumped or drained. Taste thresholds of iron in water are 0.1 mg/L for ferrous iron and 0.2 mg/L ferric iron, giving a bitter or an astringent taste. Black or brown swamp waters may contain low iron concentrations in the presence or absence of dissolved oxygen, but this iron form has little effect on aquatic life.

4.1.6 DDT

DichloroDiphenylTrichloroethane (DDT) is an insecticide that was first synthesized in the early 1900s. DDT is effective against many organisms, but is especially effective against the Anopheles mosquito that transmits malaria and was therefore widely used during most of the last century. However, DDT is a "hard" insecticide in that its residues accumulate in the environment because it is concentrated by lower organisms such as plankton and accumulates in the fatty tissues of fish and birds. The toxicity of DDT was first noted in 1949 by the U.S. Fish and Wildlife and the insecticide was eventually banned in 1972 by the USEPA.

4.2 Applicable Water Quality Standards

A description of the designated use support for waters within Illinois and a narrative of Illinois EPA's water quality standards are presented in this section. Additionally, numerical water quality criteria for the parameters of interest in this TMDL are listed as well.

4.2.1 Use Support Guidelines

To assess the designated use support for Illinois waterbodies the Illinois EPA uses rules and regulations adopted by the Illinois Pollution Control Board (IPCB). The following are the use support designations provided by the IPCB for waterbodies in the Salt Fork Vermilion River watershed:

a. *General Use Standards* - These standards protect for aquatic life, wildlife, agricultural, primary contact (where physical configuration of the waterbody permits it, any recreational or other water use in which there is prolonged and intimate contact with the water involving considerable risk of ingesting water in quantities sufficient to pose a significant health hazard, such as swimming and water skiing), secondary contact (any recreational or other water use in which contact with the water is either incidental or accidental and in which the probability of ingesting appreciable quantities of water is minimal, such as fishing, commercial and recreational boating, and any limited contact incident to shoreline activity), and most industrial uses. These standards are also designed to ensure the aesthetic quality of the state's aquatic environment.

b. *Public and Food Processing Water Supply Standards* - These standards protect for any water use in which water is withdrawn from surface waters of the state for human consumption or for processing of food products intended for human consumption.

4.2.2 Numeric Standards

Numeric water quality standards for the State of Illinois for general use and Public and food processing and water supply are presented in Table 4-1.

Table 4-1. Illinois Numeric Water Quality Standards.

Parameter	Units	General Use	Public and Food Processing Water Supply
Boron	µg/L	1,000	1,000
DDT	µg/L	None	50
Dissolved Iron	µg/L	1,000	300
Dissolved Oxygen	mg/L	6.0 minimum for at least 16 hours in any 24 hour period; 5.0 minimum	6.0 minimum for at least 16 hours in any 24 hour period; 5.0 minimum
Nitrates	mg/L	None	10.0
pH	SU	6.5 minimum 9.0 maximum	6.5 minimum 9.0 maximum
Total Ammonia[1]	mg/L	15	15
Total Phosphorus[2]	mg/L	0.05	0.05

[1]The allowable concentration of total ammonia varies with water temperature and pH. In general, as both temperature and pH decrease, the allowable concentration of ammonia increases.
[2]The total phosphorus standard only applies to lakes.

4.3 Assessment Methodology

Illinois EPA assesses whether streams are fully supporting their aquatic life uses primarily based on biological information, supplemented by chemical water data and physical habitat information. The primary biological measures used are the Index of Biotic Integrity for fish and the Macroinvertebrate Biotic Index. Physical habitat information used in making assessments includes quantitative measures of stream-bottom composition and qualitative descriptors of channel and riparian conditions. Chemical water data includes measures of “conventional” parameters (i.e., dissolved oxygen, pH, temperature) as well as a variety of other pollutants.

For a large majority of streams, the assessment of aquatic life use relies more on biological information than on chemical water data or habitat information. Conversely, chemical data (from water and sediment) and habitat information play primary roles in determining potential causes and sources of aquatic life use impairment (Illinois EPA, 2004b). In other words, if the biological data indicate impaired conditions the chemical data are used for identifying causes based on comparison to numeric water quality standards or guidelines.

4.4 Water Quality Assessment

Water quality data for each listed waterbody in the Salt Fork Vermilion River watershed were downloaded from the STORET and USGS NWIS databases and obtained directly from Illinois EPA. The location of the monitoring stations located within the watershed is shown in Figure 4-1, Figure 4-2 displays the location of sites in the vicinity of Urbana/Champaign, and Figure 4-3 displays the monitoring stations located in Homer Lake. Summary statistics, including the period of record, for all available water quality data are presented in this section, and are organized by impaired waterbody segment. The individual results of each sampling event are provided in Appendix B.

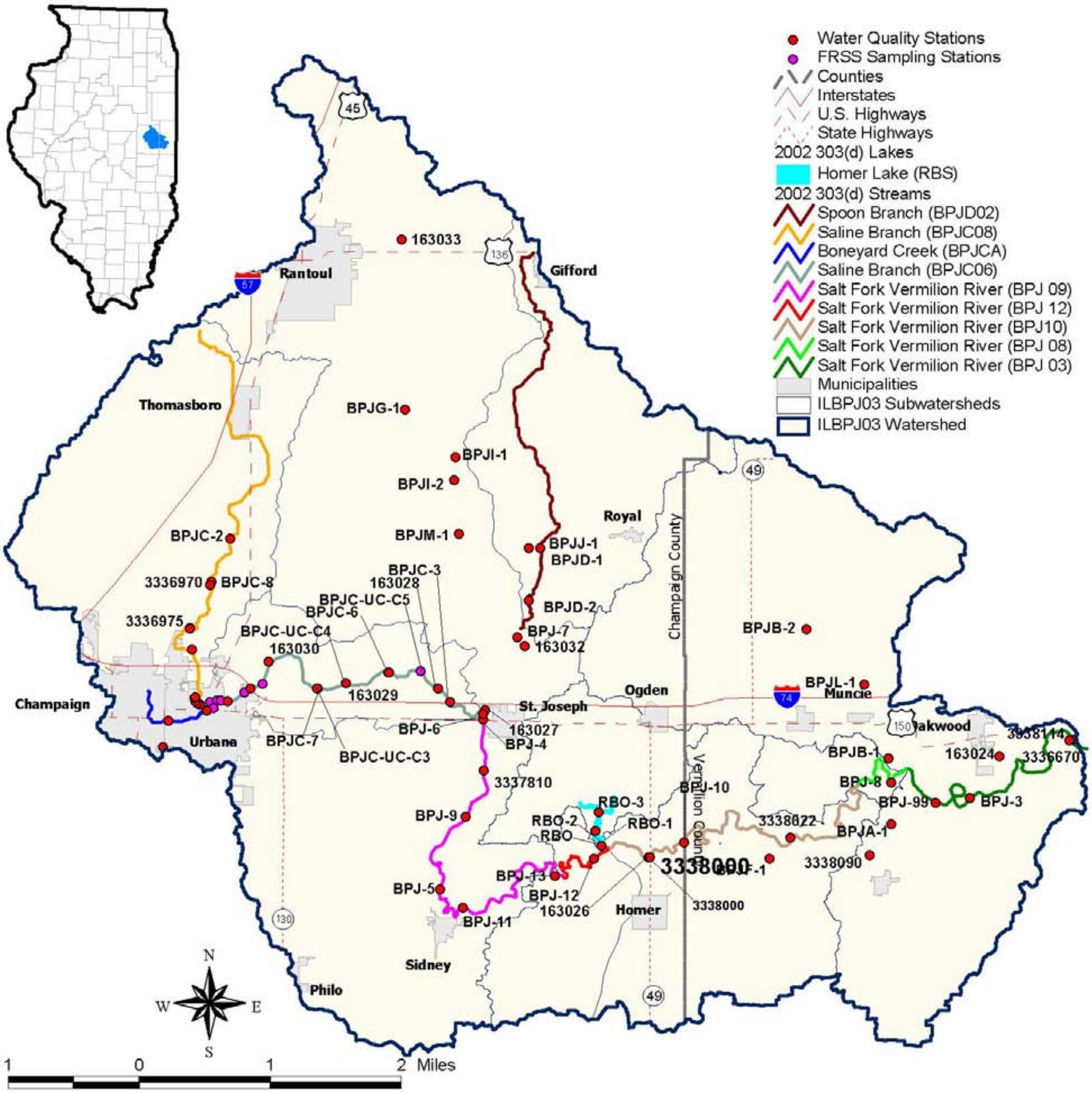

Figure 4-1. Water quality sampling stations in the Salt Fork Vermilion River watershed.

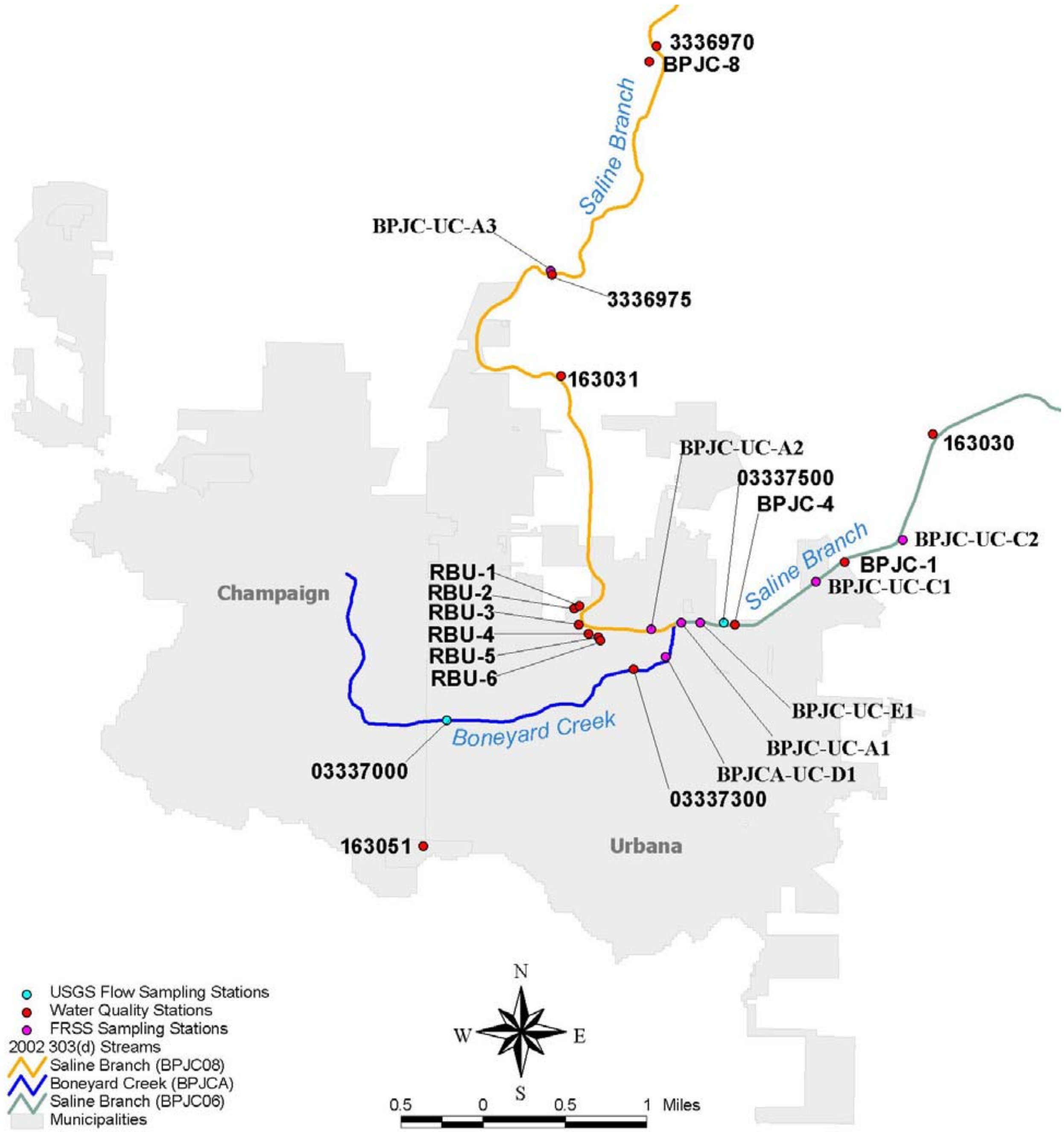

Figure 4-2. Water quality sampling stations in the vicinity of Urbana/Champaign.

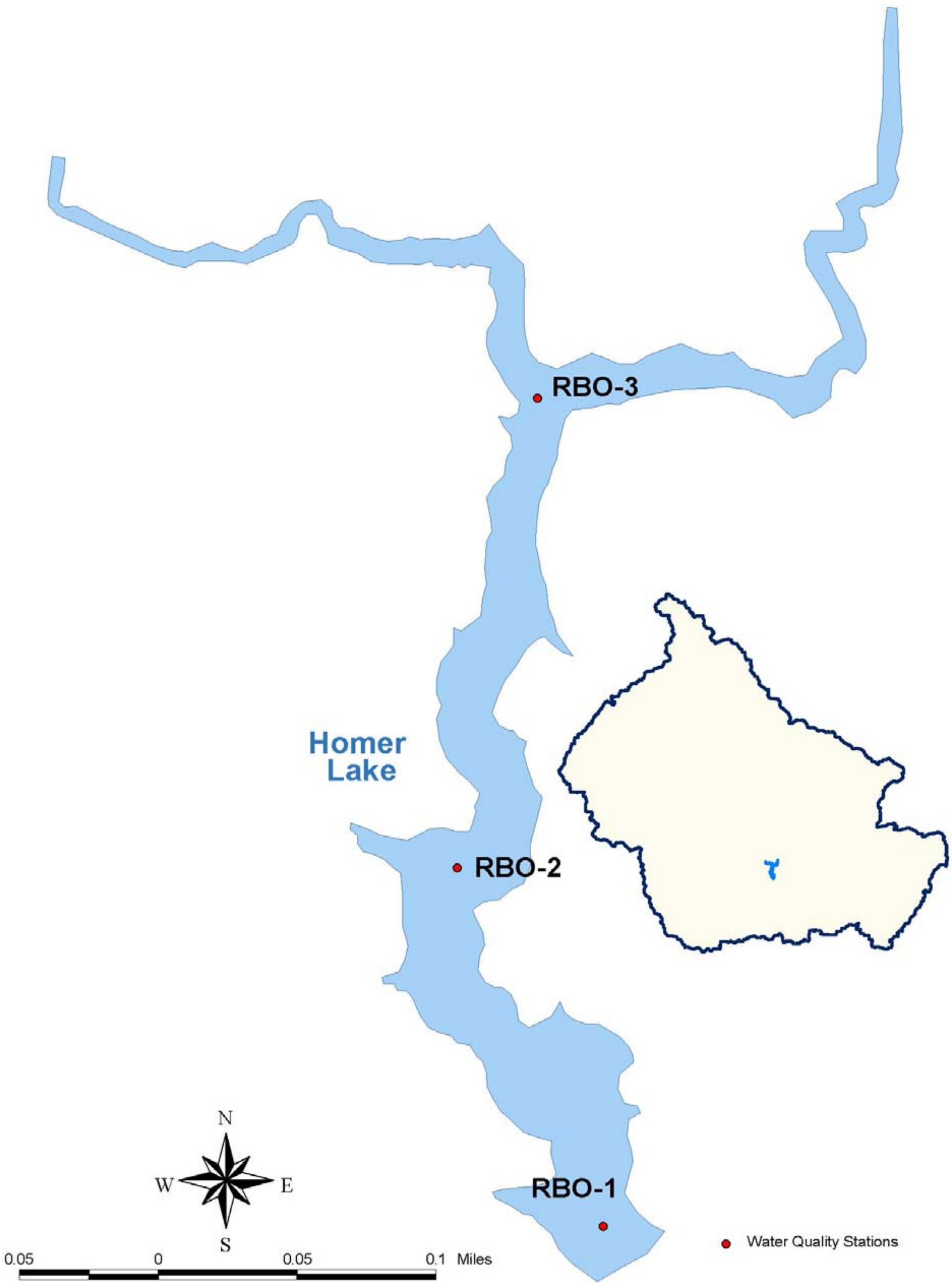

Figure 4-3. Water quality sampling stations in Homer Lake (Segment RB0).

4.4.1 Spoon Branch (BPJD02)

Spoon Branch is listed as being impaired due to dissolved oxygen and habitat. Water quality data collected in Spoon Branch at Illinois EPA monitoring stations BPJD-02 are available from 1986 to 2001. A summary of these data is presented in the selections below.

4.4.1.1 Dissolved Oxygen

The applicable water quality standard for dissolved oxygen (DO) in Illinois has two parts:

- A minimum concentration of 5.0 mg/L must be maintained.
- Concentrations shall not be less than 6.0 mg/L during at least 16 hours in any 24-hour period.

Table 4-2 and Table 4-3 summarize the available DO data in Spoon Branch and the data are presented graphically in Table 4-3. Relatively few data are available but one of the available six samples violated the water quality standard. This occurred on August 14, 2001 when flow was 1.27 cfs. There are insufficient data to assess the 6.0 mg/L 24-hour standard. Additional data are required to confirm the DO impairment for this segment.

Table 4-2. Summary Statistics for Dissolved Oxygen in Spoon Branch (Segment BPJD02).

Parameter	Samples (Count)	Start	End	Minimum (mg/L)	Average (mg/L)	Maximum (mg/L)	CV*
Dissolved Oxygen	6	8/7/1986	10/3/2001	4.80	7.81	10.30	0.29

*CV = standard deviation/average

Table 4-3. Dissolved Oxygen Violations in Spoon Branch (Segment BPJD02).

Parameter	Samples (Count)	Violations (Count)	Percent Violating	Samples (Count), 1998 to Present	Violations (Count), 1998 to present	Percent Violating, 1998 to Present
Dissolved Oxygen	6	1	16.00	3	1	33

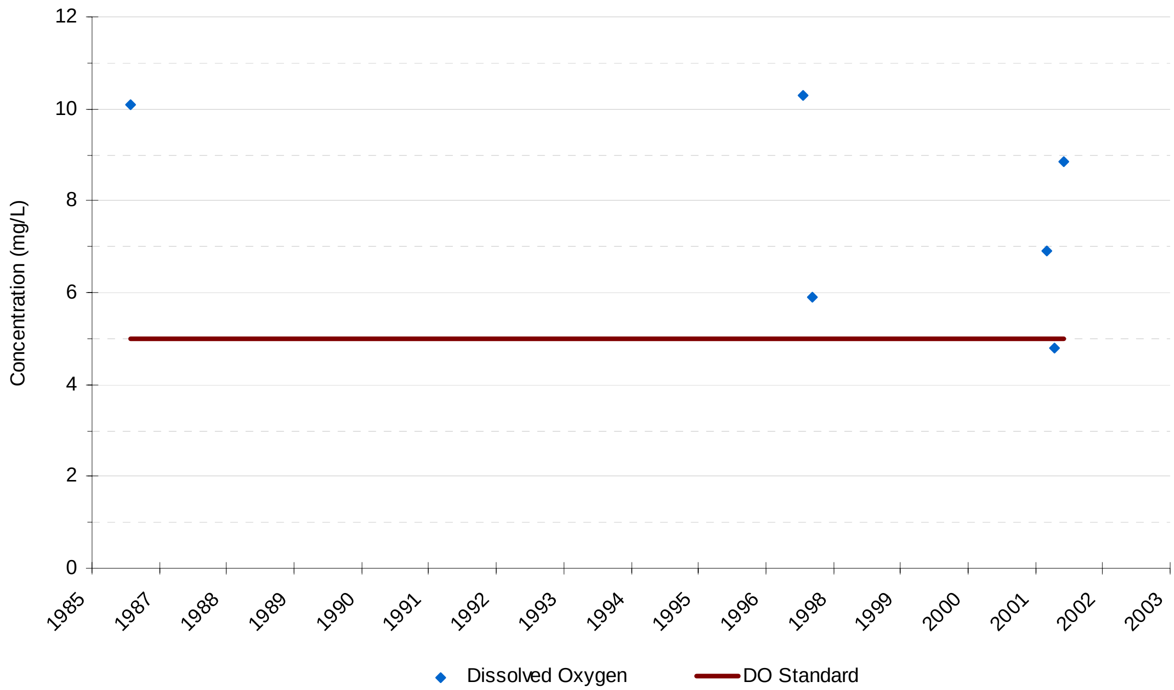

Figure 4-4. Dissolved oxygen observations in Spoon Branch (Segment BPJD02).

4.4.2 Boneyard Creek (BPJCA)

Boneyard Creek runs through the urbanized area of Champaign/Urbana and is listed as being impaired due to habitat assessment, DDT, hexachlor, and PCB. The DDT, hexachlor, and PCB listings were made based on impaired biological conditions and elevated concentrations of bed sediments using the process described in section 4.3. The bed sediment concentrations exceeded the "Highly Elevated" concentrations listed in Table 1, Classification of Illinois EPA Sieved Stream Sediment Data Collected from 1982 Through 1995 (Short, 1997). These values are not standards, but rather criteria that are used solely to identify potential causes of impairment. However, since Illinois does not have numeric water quality standards for DDT, hexachlor, or PCBs, these data are not presented in this report and no TMDL will be developed for these parameters at this time.

4.4.3 Saline Branch (BPJC08)

Water quality data collected in Saline Branch at Illinois EPA monitoring station BPJC08, USEPA monitoring station 163031, and USGS monitoring stations 03336970 and 03336975 are available from 1966 to 2001. Additionally, Facility-Related Stream Survey (FRSS) data are available at stations BPJC-UC-A2 and BPJC-UC-A3. A summary of all the water quality data is presented in the following sections. This stream segment is listed for dissolved oxygen, total nitrogen, and poor habitat but only the dissolved oxygen data are presented below because no numeric water quality standards exist for total nitrogen or habitat.

4.4.3.1 Dissolved Oxygen

Table 4-4 and Table 4-5 summarize the available dissolved oxygen data in Saline Branch. Additionally, Figure 4-5 presents the data graphically and Figure 4-6 presents monthly mean and median concentrations.

A review of the data reveals that three violations of the 5.0 mg/L minimum dissolved oxygen standard occurred in Saline Branch segment BPJC08 over the period of record. (A fourth violation also occurred just downstream of segment BPJC08 at the BPJC-UC-A1 monitoring station). The most recent of these violations occurred on August 13, 2001 and there are insufficient data to assess the 6.0 mg/L 24-hour standard. Additional data are required to confirm the DO impairment for this segment.

Table 4-4. Summary Statistics for Dissolved Oxygen in Saline Branch (Segment BPJC08).

Parameter	Samples (Count)	Start	End	Minimum (mg/L)	Average (mg/L)	Maximum (mg/L)	CV*
Dissolved Oxygen	14	4/12/1966	10/3/2001	4.10	9.11	18.80	0.49
Dissolved Oxygen (FRSS Data)	9	10/23/1960	8/13/1997	3.90	8.24	12.10	0.32

*CV = standard deviation/average

Table 4-5. Dissolved Oxygen Violations (Segment BPJC08).

Parameter	Samples (Count)	Violations (Count)	Percent Violating	Samples (Count), 1998 to Present	Violations (Count), 1998 to present	Percent Violating, 1998 to Present
Dissolved Oxygen	14	2	14.29	3	1	33.33
Dissolved Oxygen (FRSS Data)	9	1	11.11	0	0	0.00

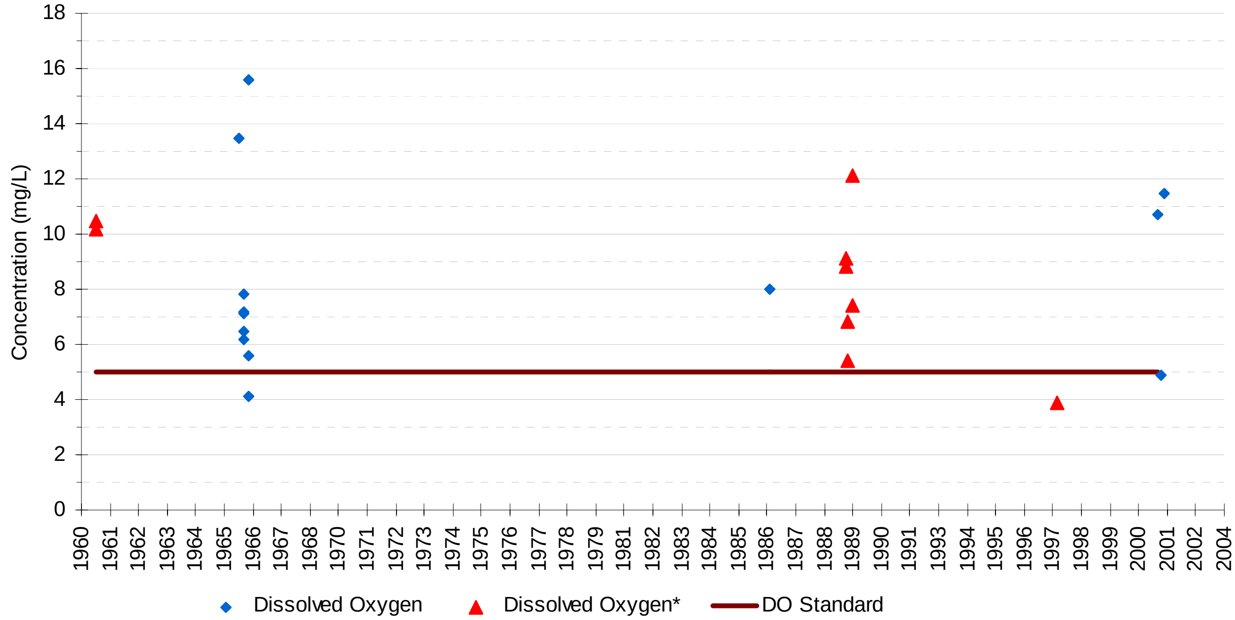

Figure 4-5. Dissolved oxygen observations in Saline Branch (BPJC08) (*indicates FRSS data).

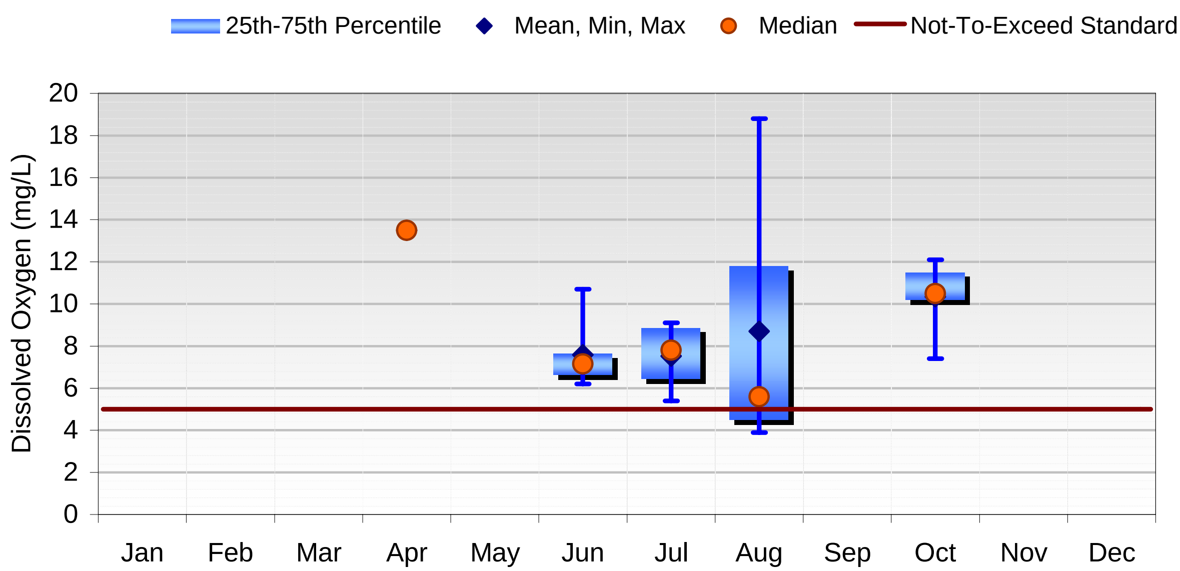

Figure 4-6. Monthly statistics for dissolved oxygen in Saline Branch (Segment BPJC08), 1966–2001.

4.4.4 Saline Branch (BPJC06)

Water quality data collected in Saline Branch at Illinois EPA monitoring stations BPJC-01, BPJC-03, BPJC-04 BPJC-06 and BPJC-07 and U.S. EPA monitoring stations 163028, 163029, and 163030 are available from 1966 to 2004. Additional FRSS water quality data was collected at stations BPJC-UC-A1, BPJC-UC-C1, BPJC-UC-C2, BPJC-UC-C3, BPJC-UC-C4, and BPJC-UC-C5. This segment is listed as impaired by boron, total ammonia, total nitrogen, habitat assessment, fish kills, TSS, DDT, dieldrin, methoxychlor, and total phosphorus. The DDT, dieldrin, and methoxychlor listings were made based on impaired biological conditions and elevated concentrations of bed sediments using the process described in section 4.3. However, since Illinois does not have numeric water quality standards for DDT, dieldrin, and methoxychlor, these data are not presented in this report and no TMDL will be developed for these parameters at this time.

A summary of a fish kill that prompted several of the 303(d) listings is provided below, followed by a review of the available data for all parameters with numeric water quality standards is presented below.

4.4.4.1 Fish Kill

On July 12, 2002, the Illinois EPA regional office in Champaign was informed of a fish kill in the Saline Branch. After notifying the Illinois Department of Natural Resources ("DNR"), the Illinois EPA met with personnel from the Urbana & Champaign Sanitary District (UCSD). UCSD's wastewater treatment facility ("Northeast WWTF") discharged effluent with concentrations and mass loading of ammonia-nitrogen in excess of allowable limits. This discharge resulted from the flow of ammonia-laden wastewater to the UCSD Northeast WWTF from the University of Illinois Abbott power plant, where a contractor was cleaning boilers with powerful chemical agents. Receiving waters for the UCSD Northeast WWTF discharge is the Saline Branch, then the Salt Fork River and then the Vermillion River segment of the Wabash river drainage basin. The DNR commenced a fish kill investigation that spanned the Saline Branch and later, on July 16 through 19, 2002, the Salt Fork River. The Illinois EPA also inspected the affected reaches of the Saline Branch and the Salt Fork and took water chemistry samples. UCSD filed a non-compliance report on July 17, 2002 as required by the standard conditions of its NPDES permit and indicated the excursion on its monthly Discharge Monitoring Report ("DMR"). The non-compliance report indicated that the downstream ammonia nitrogen concentration was measured at an elevated level of 16.1 mg/L.

DNR found that the release resulted in the death of 79,935 fish with a value of $41,492.15 on July 14, 2002 plus investigation costs of $1,269.63. Fish species observed during the fish kill investigation included smallmouth bass, longear sunfish, bluegill, white crappie, rosyface shiner, spotfin shiner, stonerollers, hornyhead chubs, greenside darter, logperch, orangethroat darter, johnny darter, golden redhorse, silver redhorse, northern hog sucker, white sucker, spotted sucker, grass pickerill, carp, yellow bullheads, stripe shiners and gizzard shad. The upper limit of the fish kill was located at T19N R9E Section 9 in the Saline Branch at the UCSD WWTF, with the lower limit occurring at the confluence of the Saline Branch and the Salt Fork River at T19N R10E Section 10SE.

DNR further found that the release resulted in the death of 35,508 fish with a value of $53,094.43 on July 16 to 19, 2002 plus investigation costs of $2,633.73. Fish species observed during the fish kill investigation included smallmouth bass, longear sunfish, rock bass, bluegill, shorthead redhorse, silver redhorse, golden redhorse, river redhorse, madtoms, emerald shiner, creek chub, carp, stripe shiner, greenside darter, bluebreast darter, johnny darter, slenderhead darter, northern hog sucker and white sucker. The upper limit of the fish kill was located at T18N R10E Section 2NE on Road 2300E in the Salt Fork River, with the lower limit occurring at T19N R12W Section 30NW.

The Illinois EPA has referred this case to the Office of the Illinois Attorney General for further enforcement proceedings. The Illinois EPA, the Illinois Department of Natural Resources, and the Attorney General are pursuing claims for violations of the Illinois Environmental Protection Act and claims for Natural Resource Damage under the federal Comprehensive Environmental Response Compensation and Liability Act.

The State expects to soon reach an agreed resolution with UCSD and the University. However, litigation will continue with respect to CEDA, Inc. (CEDA, Inc. is the contractor who performed the boiler cleaning, which led to the ammonia release).

Based on data from ambient stations BPJ-07 and BPJ-03, along with biological samples collected at BPJ-03 in 2001, the Salt Fork Vermilion River would have been rated as fully supporting the aquatic life use. However, five segments downstream from the confluence with Saline Branch were assessed as partially supporting the aquatic life use based on the extensive fish kill on Saline Branch (BPJC) and Salt Fork (BPJ) in July 2002.

Because the spill resulted in the release of a slug of high ammonia wastes, sampling attempted to follow the slug downstream as the fish kill occurred. The assignment of causes related to the fish kill (ammonia and pH), were extrapolated to the effected segments (note that ammonia and pH were mistakenly left off BPJ-03). No actual data was collected from segment BPJ-12 as part of the investigation nor was there any fixed, continuous monitoring conducted to measure exposure times. Figure 4-7 shows the locations of the fish kill sampling sites in the Saline Branch and Salt Fork Vermilion River and Table 4-6 presents the results of stream sampling in the Saline Branch (Segment BPJC06) following the ammonia discharge.

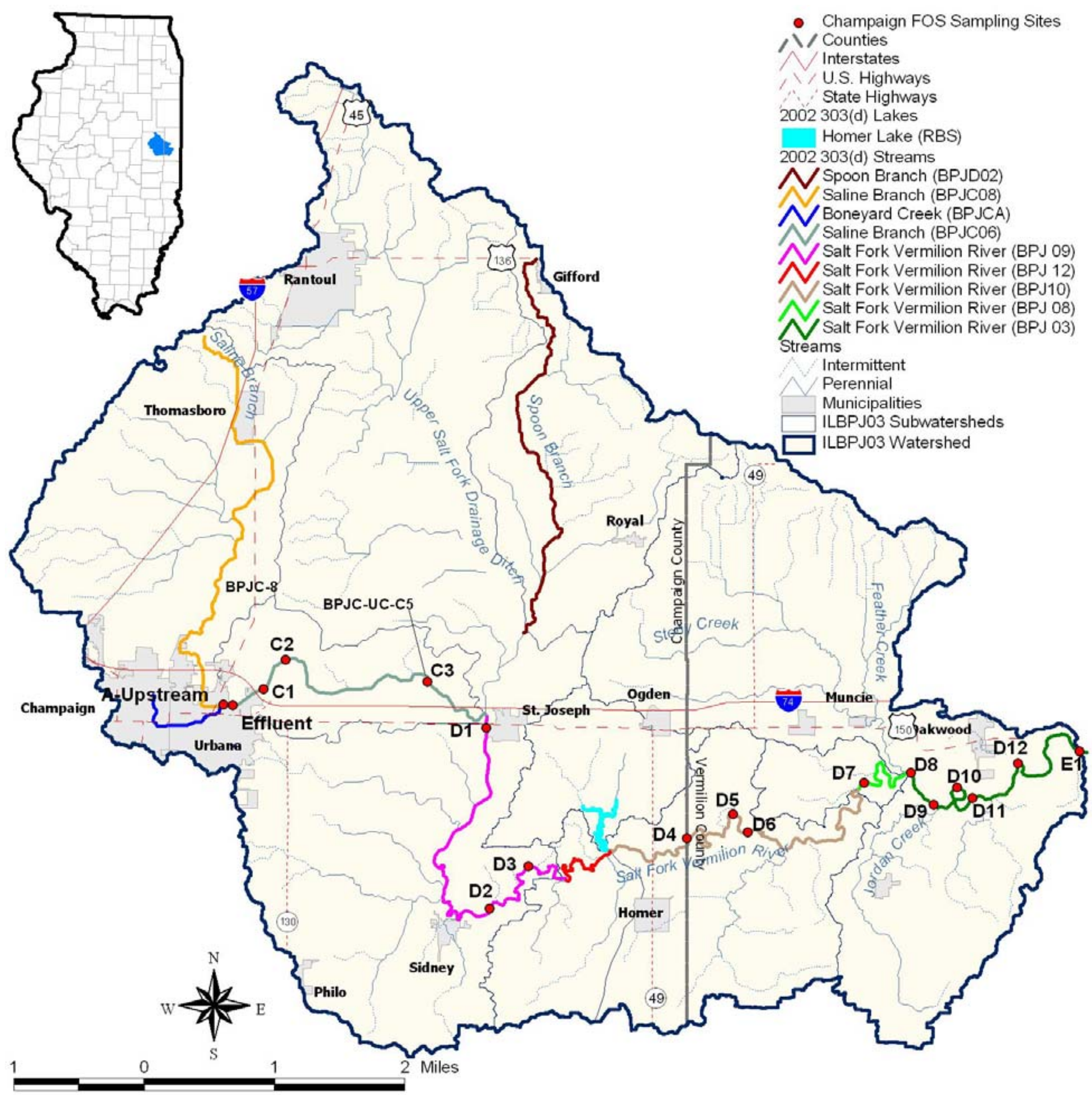

Figure 4-7. Location of Champaign Field Operations Section (FOS) sampling sites on the Salt Fork Vermilion River.

Table 4-6. Sample results collected by Champaign Field Operations Section from the Saline Branch (Segment BPJC06).

Station	Waterbody Segment	Date	pH	Water Temp (C)	Total Ammonia N mg/L	Chronic Standard (mg/L)	Acute Standard (mg/L)
A-upstream	BPJC-06	7/12/02	7.1	22.4	0.21	3.41	15
Effluent	BPJC-06	7/12/02			30		
C1	BPJC-06	7/12/02	8.4	22.6	18*	0.77	3.9
C2	BPJC-06	7/12/02	8.3	22.8	19*	0.89	4.7
C3	BPJC-06	7/12/02	8.3	23.9	11*	0.83	4.7

*exceedence of General Use Acute Ammonia Standard

4.4.4.2 Boron

The applicable water quality standard for boron in Illinois is a maximum concentration of 1,000 µg/L. Table 4-7 and Table 4-8 summarize the available boron data in Saline Branch segment BPJC06. Additionally, Figure 4-8 presents a graphical representation of the boron sampling activity. All data were taken at station BPJC06 except for the FRSS data, which represents data from multiple stations (refer to Figure 4-1, Figure 4-2, and Appendix B for details) . A review of the data indicates that approximately five percent of all boron samples violated the water quality standard, including 11 percent of the 54 samples collected after January 1, 1998 (Table 4-8).

Table 4-7. Summary Statistics for Boron in Saline Branch (Segment BPJC06).

Parameter	Samples (Count)	Start	End	Minimum (µg/L)	Average (µg/L)	Maximum (µg/L)	CV*
Boron	313	12/15/1977	1/29/2004	0.00	376.90	1504.00	0.84
Boron (FRSS Data)	27	7/6/1989	8/13/1997	0.50	456.83	970.00	0.77

*CV = standard deviation/average

Table 4-8. Boron Violations (Segment BPJC06).

Parameter	Samples (Count)	Violations (Count)	Percent Violating	Samples (Count), 1998 to Present	Violations (Count), 1998 to present	Percent Violating, 1998 to Present
Boron	313	16	5.11	54	6	11.11
Boron (FRSS Data)	27	0	0.00	0	0	0

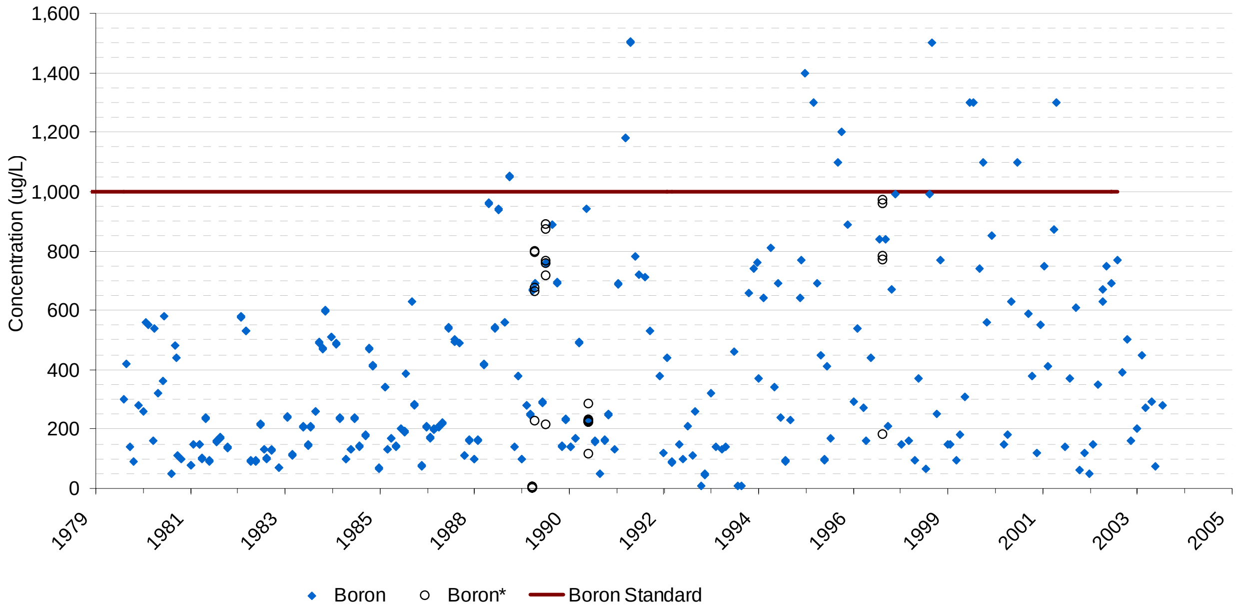

Figure 4-8. Boron observations in Saline Branch (Segment BPJC06) (* indicates FRSS data).

Monthly median and mean boron concentrations for the period of record are presented in Figure 4-9. The figure shows that the water quality standard of 1000 µg/L has been exceeded in January, July, August, October, and December. Additionally, median and mean monthly boron concentrations display seasonal variability with minimum concentrations from March through May, increasing concentrations from June through August, and decreasing concentrations through the rest of the year.

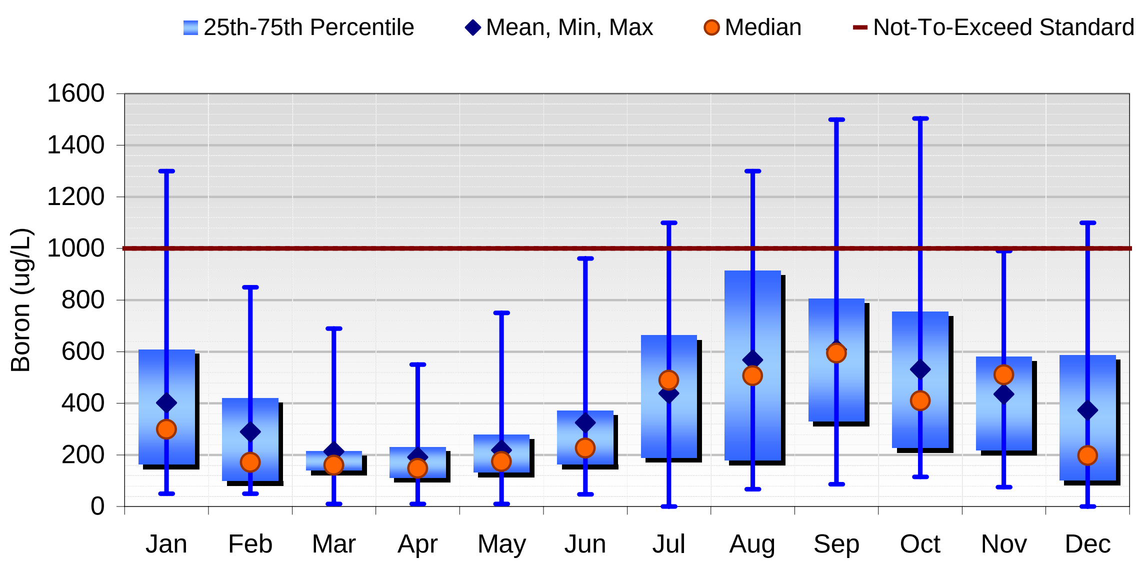

Figure 4-9. Monthly statistics for boron in Saline Branch (Segment BPJC06), 1977-2004.

Additional boron data have been sampled along Saline Branch in response to seepage that has been identified at the closed Urbana Municipal Landfill. A citizen complaint in September 2002 lead to the discovery of a "black oily substance…oozing from the old landfill and into Saline Creek which borders the north side of the landfill" (IEPA, 2002a). Follow-up sampling confirmed that this substance was a petroleum product with high concentrations of arsenic, lead, mercury, and benzene (IEPA, 2002b). A clear liquid was also observed to be oozing from the north side of the landfill into a small creek that eventually discharges to Saline Branch. As a result of this incident the City of Urbana constructed a leachate interceptor trench that collects the leachate for periodic pumping and treatment. A small drainage ditch cutting through the landfill was also re-constructed and two new groundwater monitoring wells were installed. The construction of the trench, ditch, and monitoring wells was completed in June 2005. Periodic sampling has also occurred at monitoring sites upstream and downstream of the landfill as shown in Figure 4-10 and Table 4-9. None of these sampling data have exceeded the water quality standard and there is no clear pattern as to whether boron concentrations increase or decrease moving downstream past the landfill.

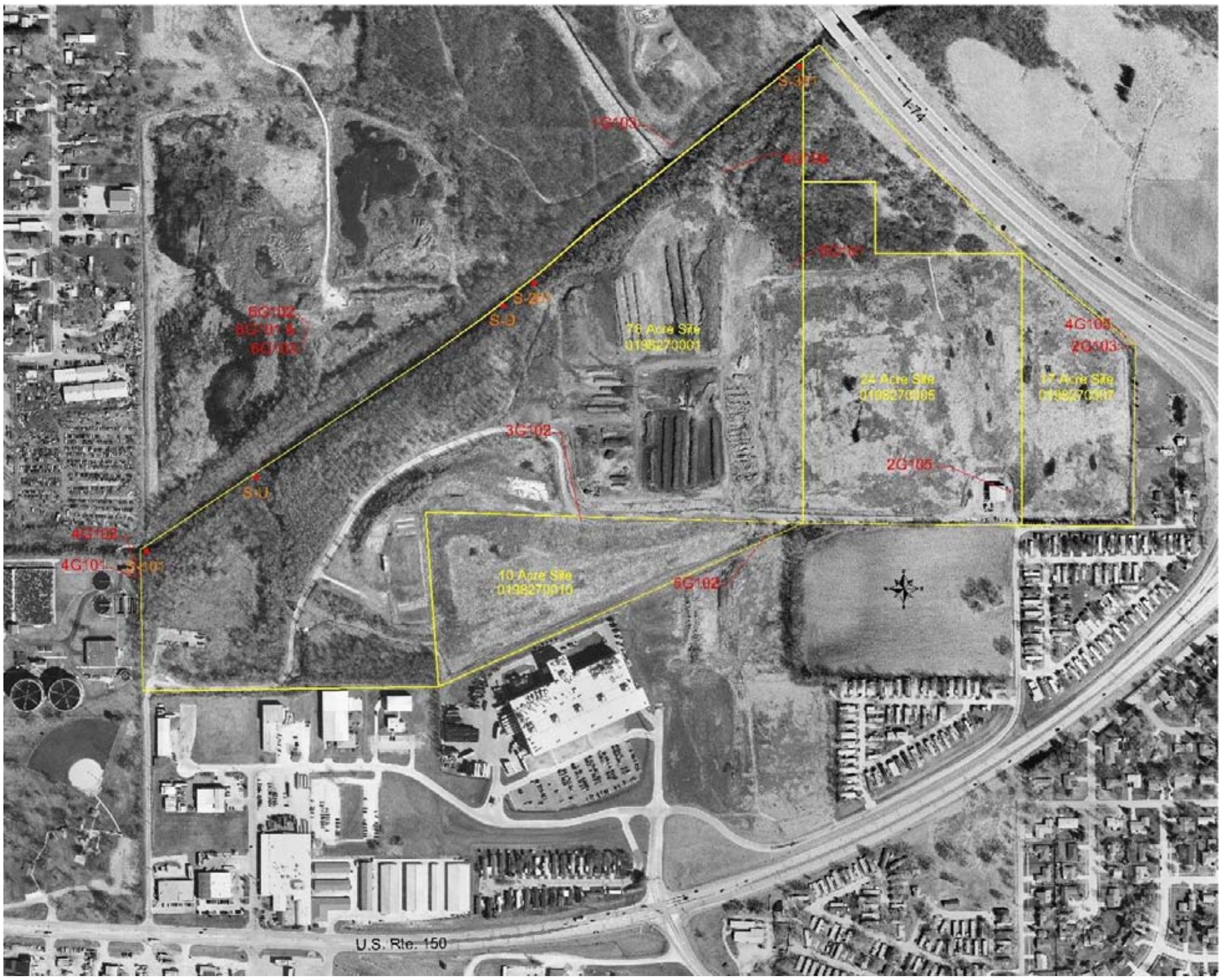

Figure 4-10. Location of monitoring sites for closed Urbana Municipal Landfill.

Table 4-9. Boron sampling upstream and downstream of closed Urbana Municipal Landfill.

Site	Date	Result (µg/L)
Split sample	10/23/2002	570
Site 101 (Upstream Saline Ditch)	4/8/2003	370
Site 102 Downstream Saline Ditch	4/8/2003	410
Site 101 (Upstream Saline Ditch)	7/16/2003	410
Site 102 Downstream Saline Ditch	7/16/2003	320
Site 101 (Upstream Saline Ditch)	10/16/2003	320
Site 102 Downstream Saline Ditch	10/16/2003	390
Site 101 (Upstream Saline Ditch)	1/26/2004	520
Site 102 Downstream Saline Ditch	1/26/2004	340
Site 101 (Upstream Saline Ditch)	4/30/2004	420
Site 102 Downstream Saline Ditch	4/30/2004	350
Site 101 (Upstream Saline Ditch)	9/2/2004	720
Site 102 Downstream Saline Ditch	9/2/2004	690
Site 101 (Upstream Saline Ditch)	2/25/2005	370
Site 102 Downstream Saline Ditch	2/25/2005	380
Site 101 (Upstream Saline Ditch)	4/15/2005	280
Site 102 Downstream Saline Ditch	4/15/2005	300

4.4.4.3 Total Ammonia

The applicable water quality standard for total ammonia in Illinois consists of a maximum concentration of 15 mg/L and acute, chronic, and sub-chronic allowable concentrations that vary depending on temperature, pH, and the life stage of aquatic organisms. The chronic ammonia standard is based on the average of at least four samples collected at weekly intervals for a 30 day sampling period while the sub-chronic standard is evaluated by comparing samples from four consecutive days to the calculated sub-chronic standard. Insufficient data are available for Saline Branch segment BPJC06 to directly address either the chronic or sub-chronic total ammonia standard; therefore only the 15 mg/L maximum concentration and the acute standards are applied.

Table 4-10 and Table 4-11 summarize the available total ammonia data in Saline Branch. Additionally, Figure 4-11 presents a graphical representation of the total ammonia sampling activity as well as the corresponding acute water quality standard (which varies with pH and temperature). A review of the data reveals that 3.49 percent of historic total ammonia samples violated the water quality standard. However, none of the 44 ammonia samples taken since January 1, 1998 violated the calculated acute standard.

Monthly median and mean total ammonia concentrations for the period of record are presented in Figure 4-12. The figure shows that the water quality standard of 15 mg/L has only been exceeded in September. Additionally, median and mean monthly total ammonia concentrations display seasonal variability. Median and mean monthly total ammonia concentrations are elevated yet fairly steady during the fall and winter. Concentrations are at their minimum in July, increase in August and September, then decrease in October and November, and are elevated in December through February.

The ammonia listing for Saline Branch segment BPJC06 is related to a fish kill that occurred in this segment on July 12, 2002. Section 4.4.4.1 discusses the details of the spill and Table 4-6 presents the results of ammonia sampling that occurred immediately after the fish kill. Table 4-6 indicates that three ammonia samples exceed the general use acute ammonia standard and a fourth sample of 30 mg/L exceeded the 15 mg/L maximum ammonia standard. However, because this was a known, one-time event, and because the other data for this segment do not suggest ammonia impairment, no TMDL will be developed.

Table 4-10. Summary Statistics for Total Ammonia and Related Nutrients in Saline Branch (Segment BPJC06).

Parameter	Samples (Count)	Start	End	Minimum (mg/L)	Average (mg/L)	Maximum (mg/L)	CV*
Ammonia	258	6/14/1966	1/29/2004	0.01	1.17	17.00	2.03
Ammonia (FRSS Data)	28	7/6/1989	8/13/1997	0.04	0.21	0.68	0.81

*CV = standard deviation/average

Table 4-11. Total Ammonia Violations (Segment BPJC06).

Parameter	Samples (Count)	Violations (Count)	Percent Violating	Samples (Count), 1998 to Present	Violations (Count), 1998 to present	Percent Violating, 1998 to Present
Ammonia	258	9	3.49	44	0	0.00
Ammonia (FRSS Data)	28	0	0.00	0	0	0

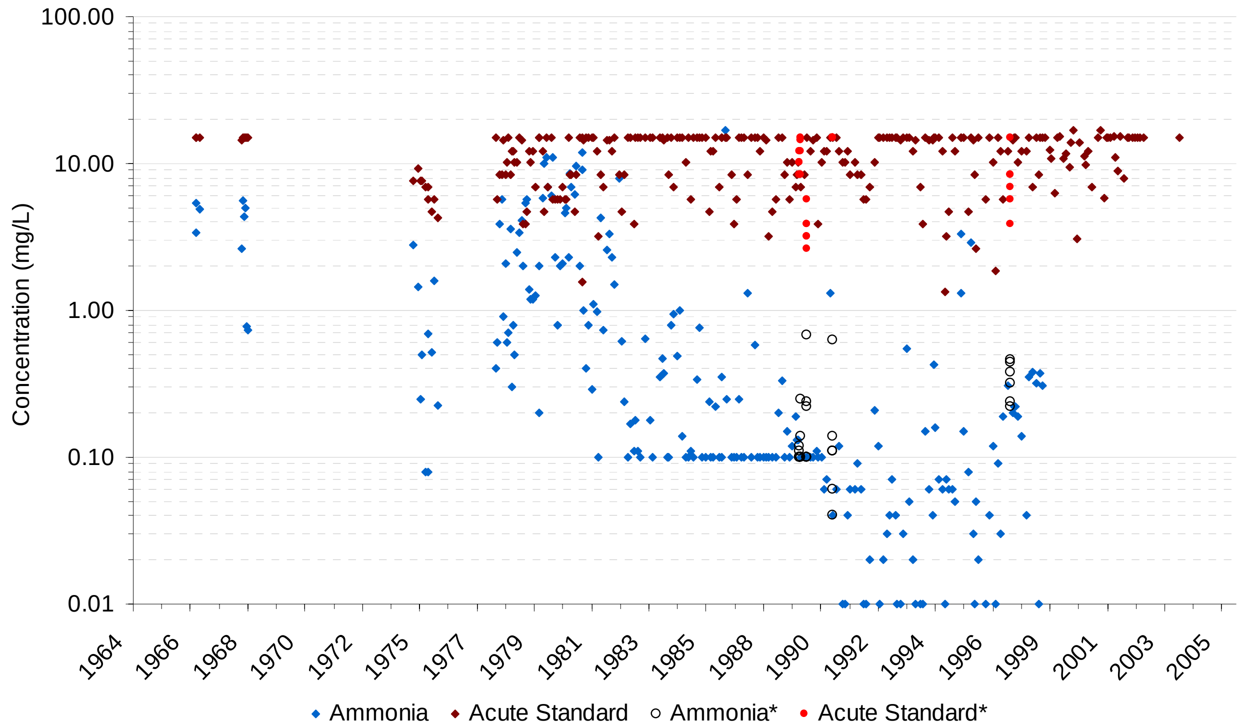

Figure 4-11. Total ammonia observations in Saline Branch (Segment BPJC06) (* indicates FRSS data).

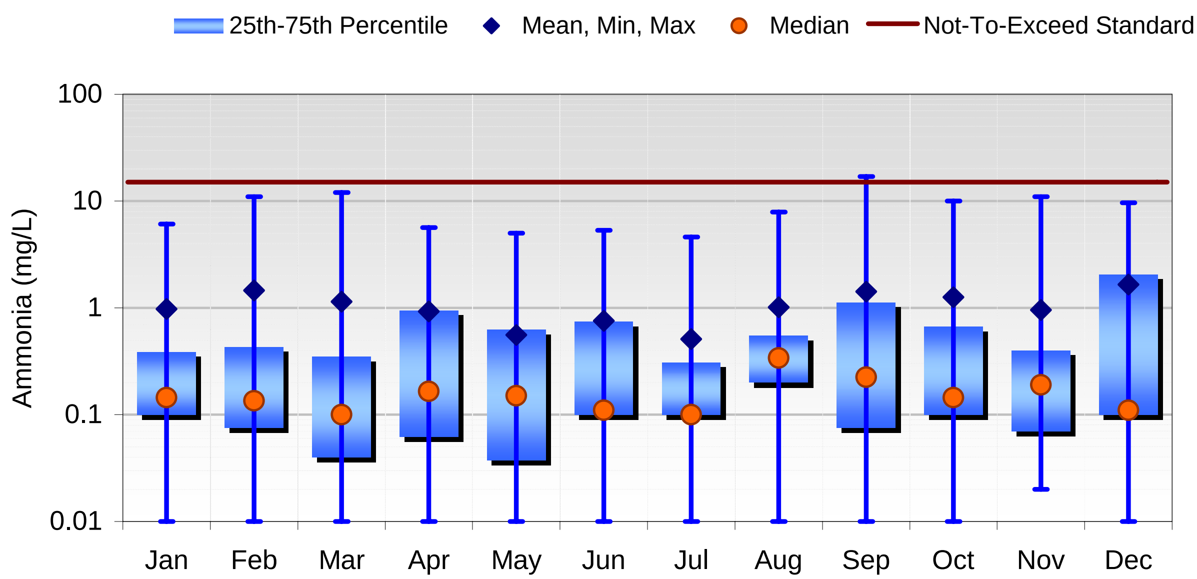

Figure 4-12. Monthly statistics for total ammonia in Saline Branch (Segment BPJC06), 1966–2004.

4.4.5 Salt Fork Vermilion River (BPJ09)

Water quality data collected in the Salt Fork Vermilion River segment BPJ09 are from Illinois EPA monitoring stations BPJ-04, BPJ-05, BPJ-06, BPJ-09, BPJ-11, BPJ-13, U.S. EPA monitoring station 163027, and USGS monitoring station 03337810. The data cover the period from 1966 to 1997. This segment is listed as impaired by pH, total ammonia, total nitrogen, fish kills, TSS, and total phosphorus. A review of the data for parameters with numeric water quality standards is presented below.

4.4.5.1 pH

The applicable water quality standard for pH in Illinois is a minimum of 6.5 and a maximum of 9.0. Table 4-12 and Table 4-13 summarize the available pH data in the Salt Fork Vermilion River segment BPJ09. Additionally, Figure 4-13 presents a graphical representation of the pH sampling activity. No samples have ever exceeded the pH standard. Monthly median and mean pH concentrations for the period of record are presented in Figure 4-14 and show little variation throughout the year.

The pH listing for the Salt Fork Vermilion River (segment BPJ09) is related to the same fish kill that was discussed in Section 4.4.4.1. pH data from the July 12, 2002 fish kill for segment BPJ09 are presented in Table 4-14 and, although no violations were observed, violations were observed in segments BPJ08 and BPJ03 downstream and were extrapolated to BPJ09. However, because this was a known, one-time event, and because the other data for this segment do not suggest a pH impairment, no TMDL will be developed.

Table 4-12. Summary Statistics for pH in Salt Fork Vermilion River (Segment BPJ09).

Parameter	Samples (Count)	Start	End	Minimum (mg/L)	Average (mg/L)	Maximum (mg/L)	CV*
pH	105	4/13/1966	9/2/1997	6.80	7.94	8.70	0.04

*CV = standard deviation/average

Table 4-13. pH Violations (Segment BPJ09).

Parameter	Samples (Count)	Violations (Count)	Percent Violating	Samples (Count), 1998 to Present	Violations (Count), 1998 to present	Percent Violating, 1998 to Present
pH	105	0	0.00	0	0	0

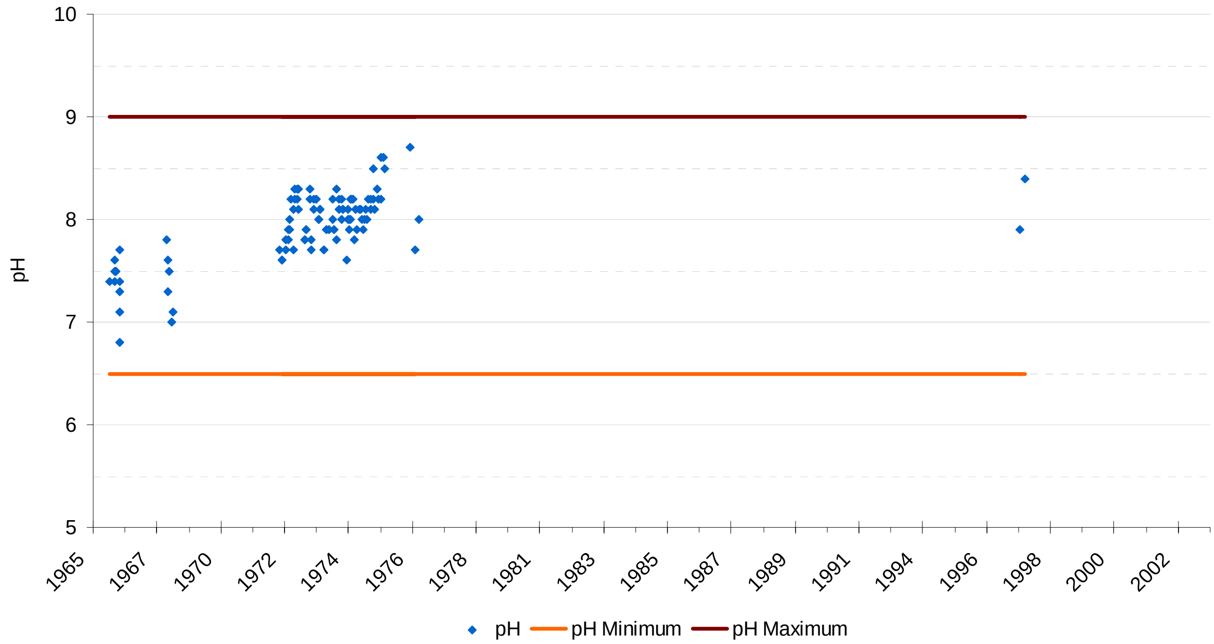

Figure 4-13. pH observations in Salt Fork Vermilion River (Segment BPJ09).

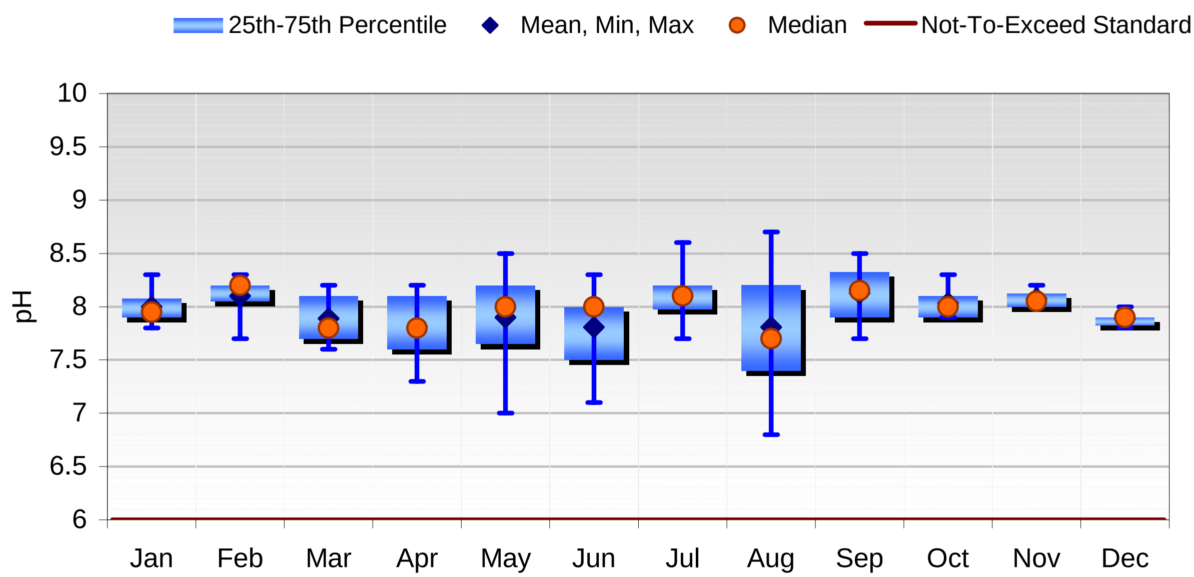

Figure 4-14. Monthly statistics for pH in Salt Fork Vermilion River (Segment BPJ09), 1966–1997.

Table 4-14. Sample results collected by Champaign Field Operations Section (FOS) from the Salt Fork Vermilion River (Segment BPJ09).

Station	Waterbody Segment	Date	pH	Water Temp (C)	Total Ammonia N (mg/L)	Chronic Standard (mg/L)	Acute Standard (mg/L)
D-1	BPJ-09	7/12/02	8.4	24.5	1.9	0.68	3.9
D-1	BPJ-09	7/13/02	8.4	23.5	5.6*	0.72	3.9
D-2	BPJ-09	7/16/02	8.4	25.3	0.13	0.64	3.9
D-3	BPJ-09	7/16/02	8.7	27.3	0.13	0.34	2.2

*exceedence of Ammonia Standard

4.4.5.2 Total Ammonia

As discussed in section 4.4.4.3 the applicable water quality standard for total ammonia in Illinois consists of a maximum concentration of 15 mg/L and an acute, chronic, and sub-chronic allowable concentration that vary in accordance with temperature, pH, and current life stage of aquatic organisms.

Table 4-15 and Table 4-16 summarize the available total ammonia data in the Salt Fork Vermilion River segment BPJ09. Additionally, Figure 4-15 presents a graphical representation of the total ammonia sampling activity and monthly median and mean total ammonia concentrations for the period of record are presented in Figure 4-16. None of these data have exceeded water quality standards.

The ammonia listing for Salt Fork River segment BJP09 is related to the July 12, 2002 fish kill. Section 4.4.4.1 discusses the details of the spill and Table 4-15 presents the results of ammonia sampling that occurred immediately after the fish kill. Table 4-14 indicates that one ammonia sample exceeded the acute standard. However, because this was a known, one-time event, and because the other data for this segment do not suggest an ammonia impairment, no TMDL will be developed.

Table 4-15. Summary Statistics for Total Ammonia and Related Nutrients in Salt Fork Vermilion River (Segment BPJ09).

Parameter	Samples (Count)	Start	End	Minimum (mg/L)	Average (mg/L)	Maximum (mg/L)	CV*
Ammonia	30	6/14/1966	9/2/1997	0.00	0.90	5.80	1.48

*CV = standard deviation/average

Table 4-16. Total Ammonia Violations (Segment BPJ09).

Parameter	Samples (Count)	Violations (Count)	Percent Violating	Samples (Count), 1998 to Present	Violations (Count), 1998 to present	Percent Violating, 1998 to Present
Ammonia	30	0	0.00	0	0	0

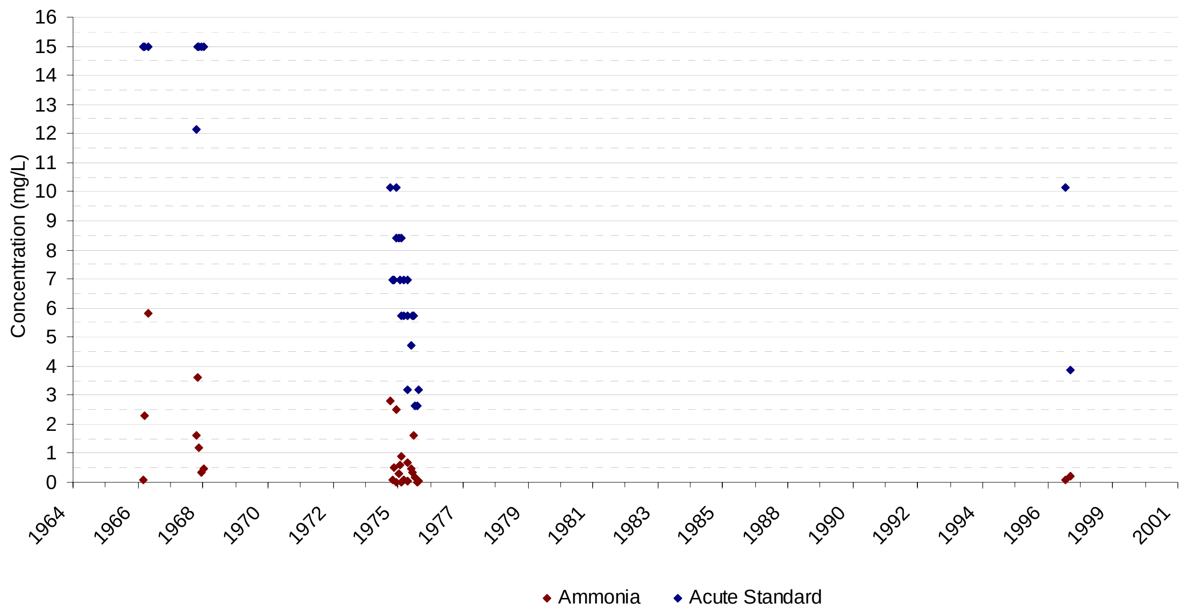

Figure 4-15. Total ammonia observations in Salt Fork Vermilion River (Segment BPJ09).

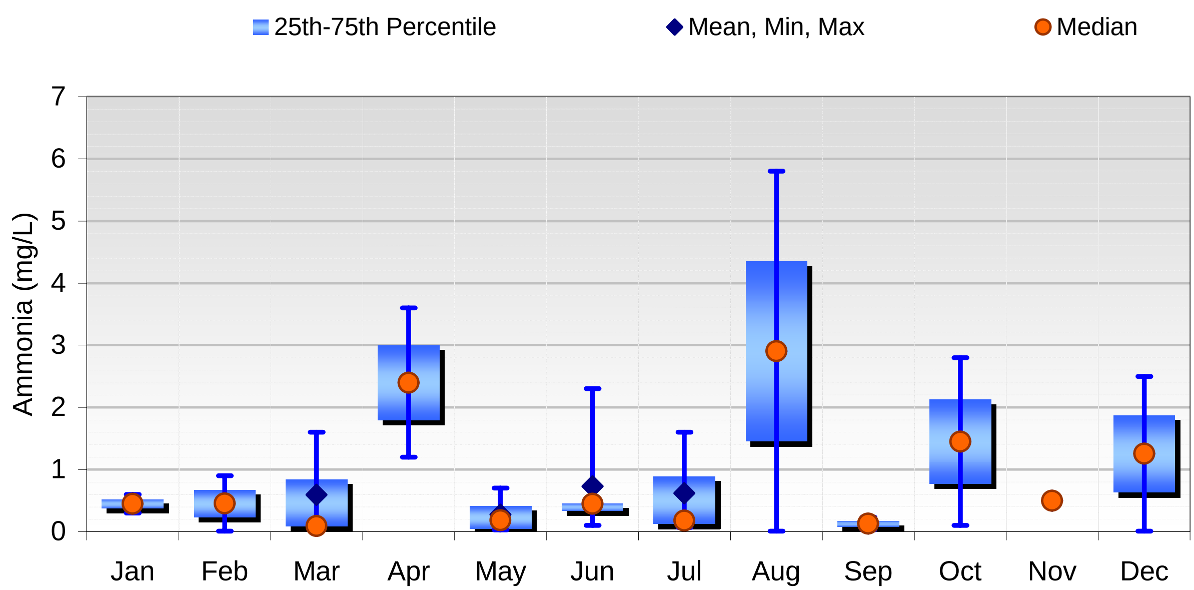

Figure 4-16. Monthly statistics for total ammonia in Salt Fork Vermilion River (Segment BPJ09), 1966–1997.

4.4.6 Salt Fork Vermilion River (BPJ12)

Segment BPJ12 of the Salt fork Vermilion River is listed for total ammonia, total nitrogen, pH, fish kills, TSS, and total phosphorus. A review of the available data for parameters with water quality standards is presented below.

4.4.6.1 Total Ammonia

Only one ambient total ammonia sample is available for this segment of the Salt Fork Vermilion River. A value of 0.1 mg/L was observed on August 6, 1986 and is well below the 15 mg/L acute standard.

The ammonia listing for Salt Fork River segment BJP12 is related to the July 12, 2002 fish kill. Section 4.4.4.1 discusses the details of the spill and Table 4-17 presents the results of ammonia sampling. Table 4-17 shows that three ammonia samples in downstream segment BPJ10 exceeded both the acute and the chronic ammonia standard. These data were extrapolated to segment BPJ12 (where no data were collected). However, because this was a known, one-time event, and because the other data for this segment do not suggest an ammonia impairment, no TMDL will be developed.

Table 4-17. Sample results collected by Champaign Field Operations Section for the Salt Fork Vermilion River (Segment BPJ10).

Station	Waterbody Segment	Date	pH	Water Temp (C)	Total Ammonia N (mg/L)	Chronic Standard (mg/L)	Acute Standard (mg/L)
D-4	BPJ-10	7/16/02	8.9	27.1	4.3*	0.25	1.6
D-5	BPJ-10	7/16/02	8.8	27.3	3.1*	0.29	1.8
D-6	BPJ-10	7/16/02	9.0	28.2	4.3*	0.20	1.3

*Violation of ammonia standard.

4.4.6.2 pH

Only one ambient pH sample is available for this segment of the Salt Fork Vermilion River. A value of 7.5 was observed on August 6, 1986 and is within the range specified by water quality standards.

The pH cause for this segment is listed because of pH sampling following the fish kill on July 12, 2002. Section 4.4.4.1 discusses the details of the spill and Table 4-17 presents the results of pH sampling. Table 4-17 shows one pH sample in downstream segment BPJ10 is equal to the maximum pH standard of 9.0. No pH data were collected in segment BPJ12. Because the spill was a known, one-time event, no TMDL will be developed.

4.4.7 Homer Lake (RBO)

Homer Lake was constructed in 1969, has a surface area of approximately 80.8 acres, and is located in the Salt Fork River Forest Preserve in Champaign County. The lake drains an area of approximately 9,280 acres. The shore length for Homer Lake is approximately 5.3 miles, the average depth is 8 feet, and the maximum depth is 24 feet. Homer Lake's storage capacity is approximately 221 million gallons with a retention time of approximately 36.5 days (INHS, 1992).

Water quality data collected in the Homer Lake at Illinois EPA monitoring stations RBO-1, RBO-2, RBO-3 are available from 1989 to 2001. The locations of these sampling stations are shown in Figure 4-3 and a summary of these data is presented in the sections below. Data are presented for total phosphorus (the only parameter with water quality standards) as well as TSS and excessive algal growth because of the interrelated nature of these parameters.

4.4.7.1 Total Phosphorus

The applicable water quality standard for total phosphorus (TP) in Illinois lakes is 0.05 mg/L. Table 4-18 presents the period of record and a statistical summary for all available TP and related parameters. Additionally, Figure 4-17 presents a graphical representation of the TP sampling activity in Homer Lake. A review of the data reveals that approximately 62 percent of TP samples violated the water quality standard, including 75 percent of recent samples (Table 4-19). TP concentrations at the surface (one foot depth) are typically similar to TP concentrations at deeper samples.

Table 4-18. Summary of total phosphorus and other nutrient-related parameters for Homer Lake (Segment RBO).

Parameter	Samples (Count)	Start	End	Minimum (mg/L)	Average (mg/L)	Maximum (mg/L)	CV*
Total Phosphorus	233	4/24/1989	10/30/2001	0.01	0.09	0.46	0.91
Dissolved Phosphorus	106	4/24/1989	10/30/2001	0.00	0.03	0.25	1.49

*CV = standard deviation/average

Table 4-19. Violations of the total phosphorus standard in Homer Lake (Segment RBO).

Parameter	Samples (Count)	Violations (Count)	Percent Violating	Samples (Count), 1998 to Present	Violations (Count), 1998 to present	Percent Violating, 1998 to Present
Total Phosphorus	233	144	61.80	52	39	75.00
Total Phosphorus (1-foot Depth)	196	118	60.20	41	32	78.05

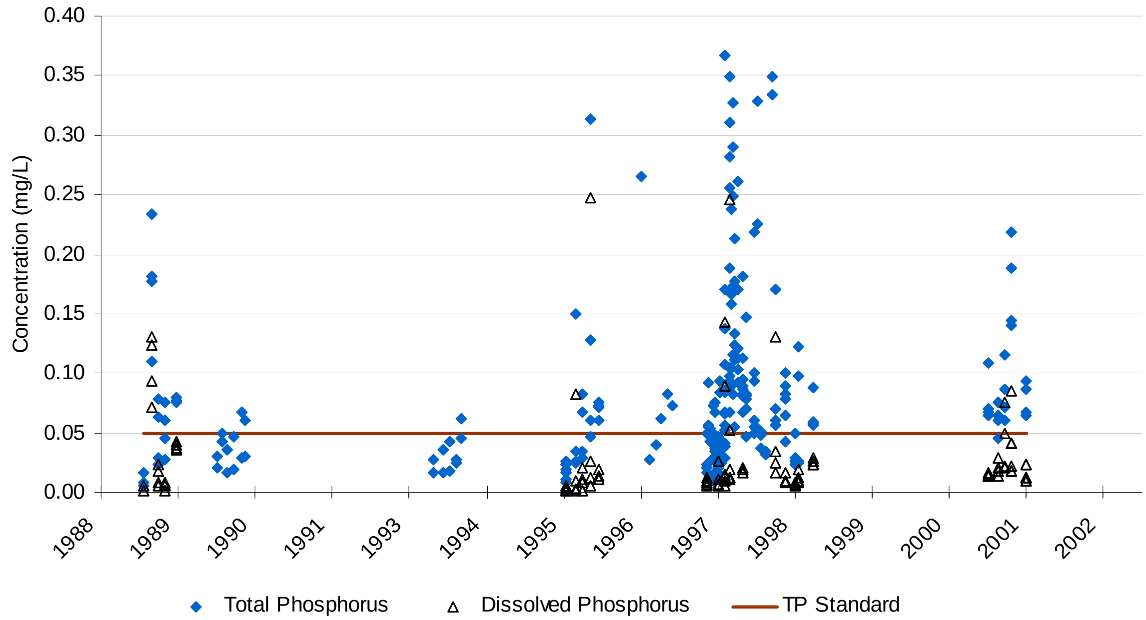

Figure 4-17. Total phosphorus and dissolved phosphorus sampling in Homer Lake (Segment RBO).

Monthly median and mean TP concentrations for the period of record are presented in Figure 4-18. The figure shows that the water quality standard of 0.05 mg/L has been exceeded in all months except February. Additionally, median and mean monthly TP concentrations display seasonal variability. Median and mean monthly TP concentrations are relatively constant during late spring (April) through mid-summer (July). TP concentrations are highest in August, September, January, and March. Note that only two samples were taken in the months of February and March.

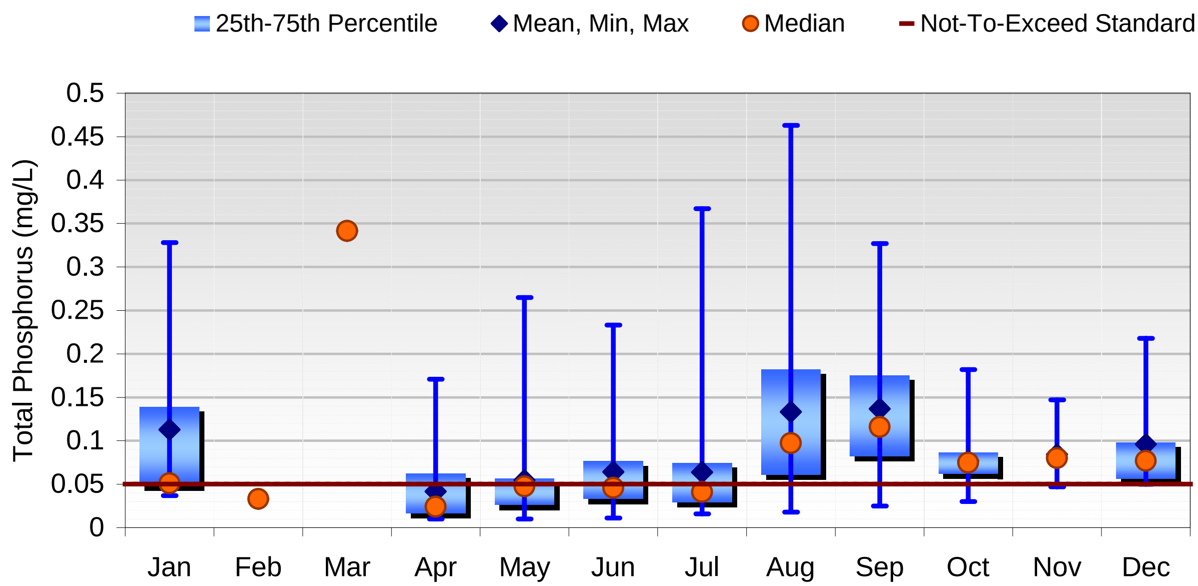

Figure 4-18. Monthly statistics for total phosphorus in the Homer Lake (Segment RBO), 1989–2001

4.4.7.2 Dissolved Phosphorus

As stated in section 4.1.1, dissolved phosphorus (DP) is an important component of the total phosphorus (TP) measure. Mean and median dissolved phosphorus concentrations sampled in the Homer Lake are shown in Figure 4-19. DP data are available from April, June through August, and October. The figure shows that mean and median DP concentrations are similar in each sampled month.

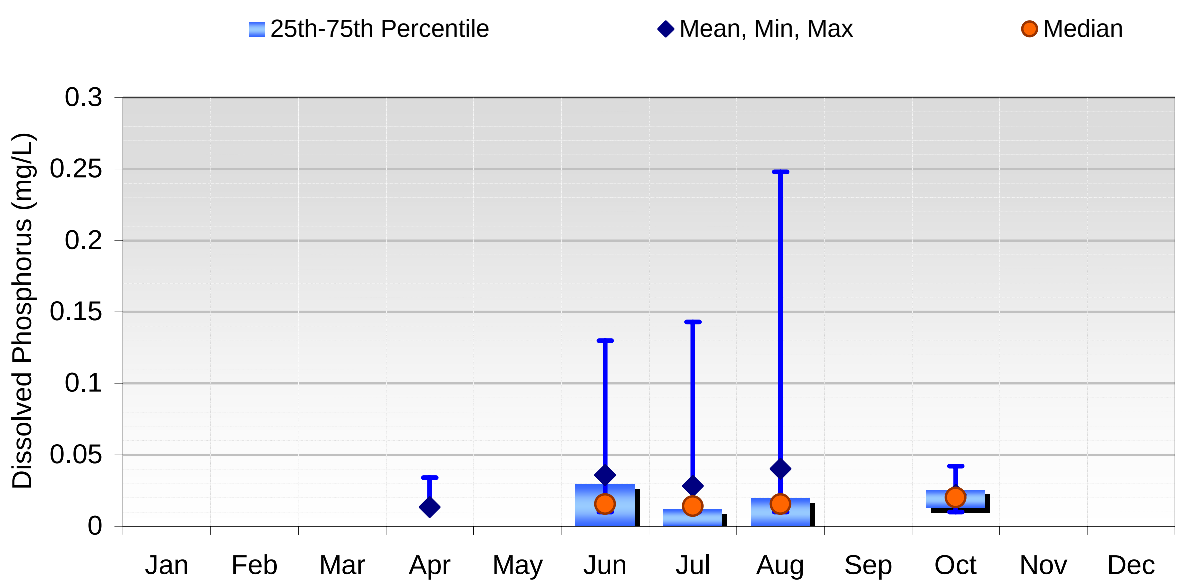

Figure 4-19. Dissolved phosphorus monthly statistics in the Homer Lake (Segment RBO), 1989–2001.

The proportion of DP to TP is quite variable over the period of record as shown in Figure 4-20. The percentage of DP ranges from approximately five percent to nearly 80 percent. However, a significant number of observations record dissolved phosphorus contributions greater than 30 percent of TP in Homer Lake.

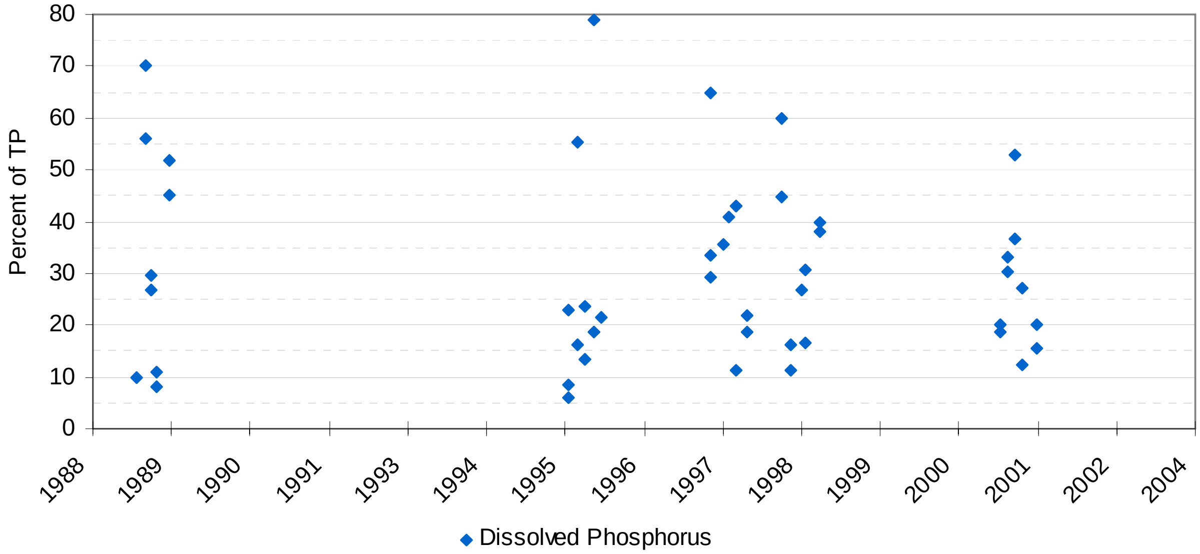

Figure 4-20. Proportion of dissolved phosphorus in total phosphorus for the Homer Lake (Segment RBO).

4.4.7.3 Total Nitrogen (TN)-to-Total Phosphorus (TP) Ratio

Eutrophication in freshwater systems is typically controlled by either nitrogen or phosphorus. The limiting nutrient is defined as the nutrient that limits plant growth when it is not available in sufficient quantities. Controlling this nutrient can often slow the rate of eutrophication and improve conditions in the waterbody. An initial identification of the limiting nutrient can be made by comparing the levels of nutrients in the waterbody with the plant stoichiometry. The ratio of nitrogen to phosphorus in biomass is approximately 7.2:1. Therefore, a nitrogen:phosphorus ration in water that is less than 7.2 suggests that nitrogen is limiting. In contrast, a ratio greater than 7.2 suggests that phosphorus is the limiting nutrient (Chapra, 1997).

The variability of the TN:TP ratios in Homer Lake are presented in Figure 4-21. Figure 4-21 illustrates that TN:TP ratios are quite variable over the period of record, as well as over the course of a year. Almost all TN:TP ratios are greater than 10, however, strongly suggesting that phosphorus is the limiting nutrient in the Homer Lake.

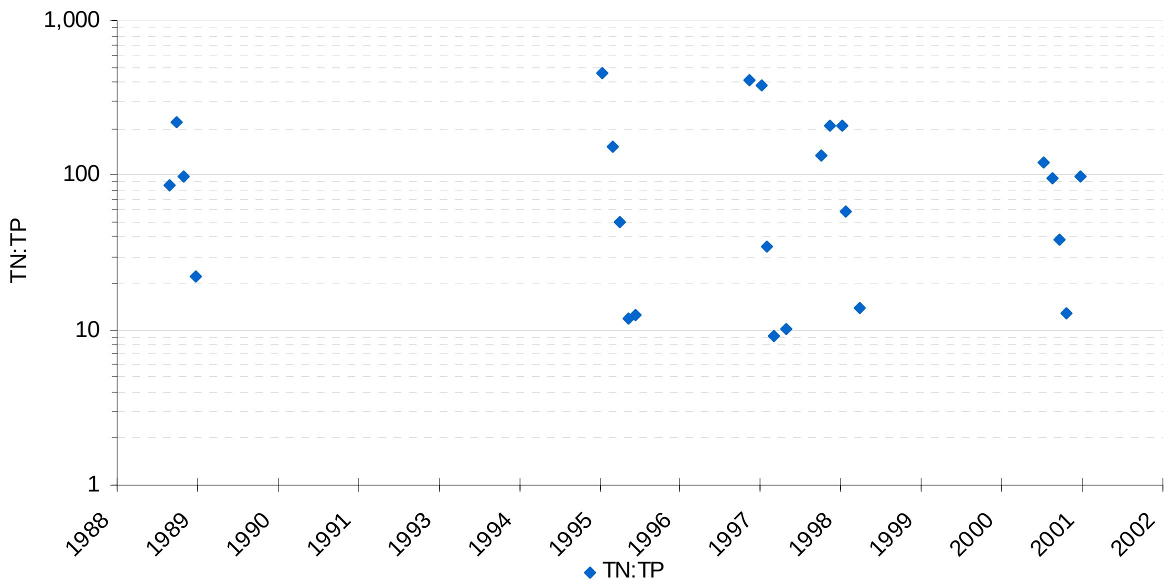

Figure 4-21. TN:TP ratios over the period of record in the Homer Lake (Segment RBO).

4.4.7.4 Excessive Algal Growth

The dominant pigment in algal cells is chlorophyll-*a*, which is easy to measure and is a valuable surrogate measure for algal biomass. Chlorophyll-*a* is desirable as an indicator because algae are either the direct (e.g. nuisance algal blooms) or indirect (e.g. high/low dissolved oxygen, pH, and high turbidity) cause of most problems related to excessive nutrient enrichment. Both seasonal mean and instantaneous maximum concentrations can be used to determine impairments. The Illinois water quality standard for general use states that "waters of the state shall be free from algal growth of other than natural origin" (Section 302.203). Table 4-20 presents a summary of the chlorophyll-*a* collected in Homer Lake. Figure 4-22 displays the sampling frequency for chlorophyll-*a* in Homer. Monthly median and mean chlorophyll-*a* concentrations are presented in Figure 4-23, which shows that median and mean chlorophyll-*a* increase in magnitude and variability during the summer months of June through August, remain relatively high in September through November, and then decrease sharply in December through March. The relationship between chlorophyll-*a* and TP is graphically displayed in Figure 4-24. The figure shows that, in general, as the concentration of TP increases the concentration of chlorophyll-*a* correspondingly increases.

There is no numeric waters quality standard for chlorophyll-*a* to address the excessive algal growth impairment for Homer Lake. A "chlorophyll-a" TMDL will therefore not be developed. However, it is important to note that since there is a direct relationship between TP concentrations and chlorophyll-*a* concentrations, chlorophyll-*a* concentrations are likely to decrease when TP concentrations decrease.

Table 4-20. Summary Statistics for Chlorophyll-*a* in the Homer Lake (Segment RBO).

Parameter	Samples (Count)	Start	End	Minimum (µg/L)	Average (µg/L)	Maximum (µg/L)	CV*
Chlorophyll-a	120	4/24/1989	10/30/2001	0.00	42.96	240.30	0.88

*CV = standard deviation/average

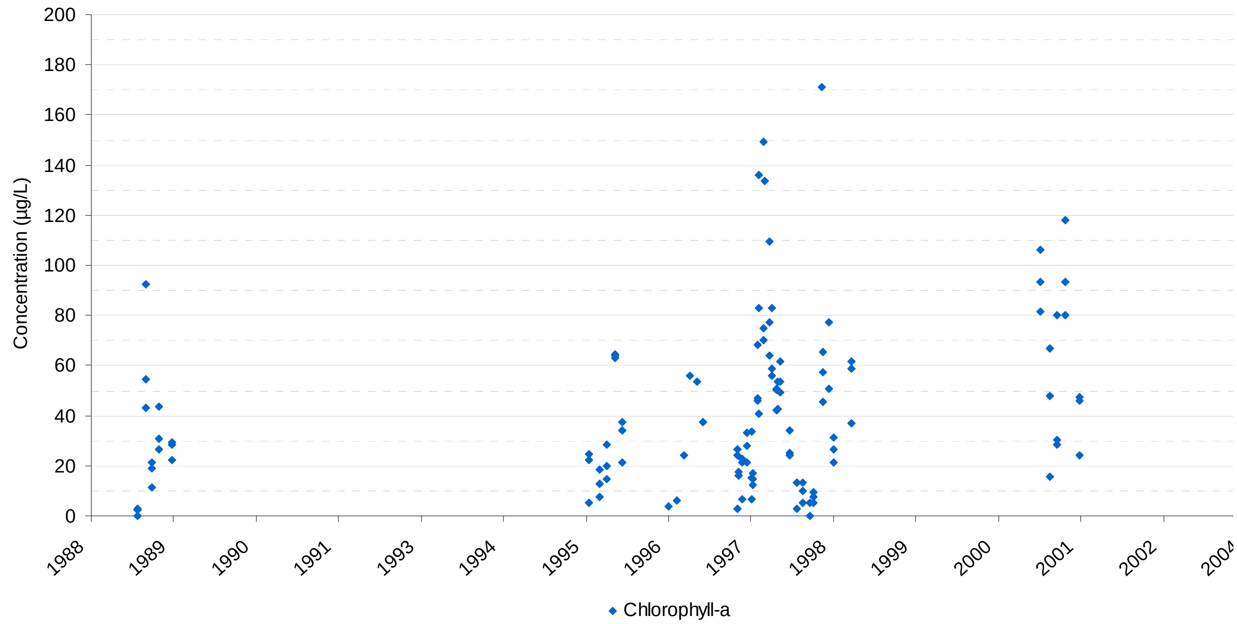

Figure 4-22. Chlorophyll-*a* sampling observations in the Homer Lake (Segment RBO).

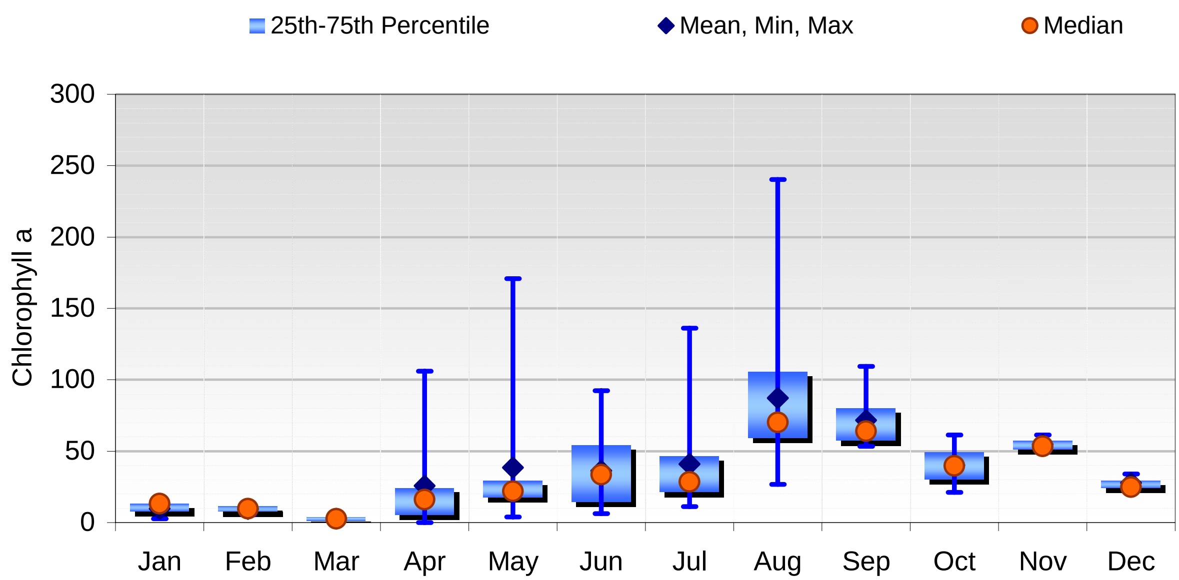

Figure 4-23. Monthly mean and median chlorophyll-*a* concentrations in the Homer Lake (Segment RBO), 1989–2001.

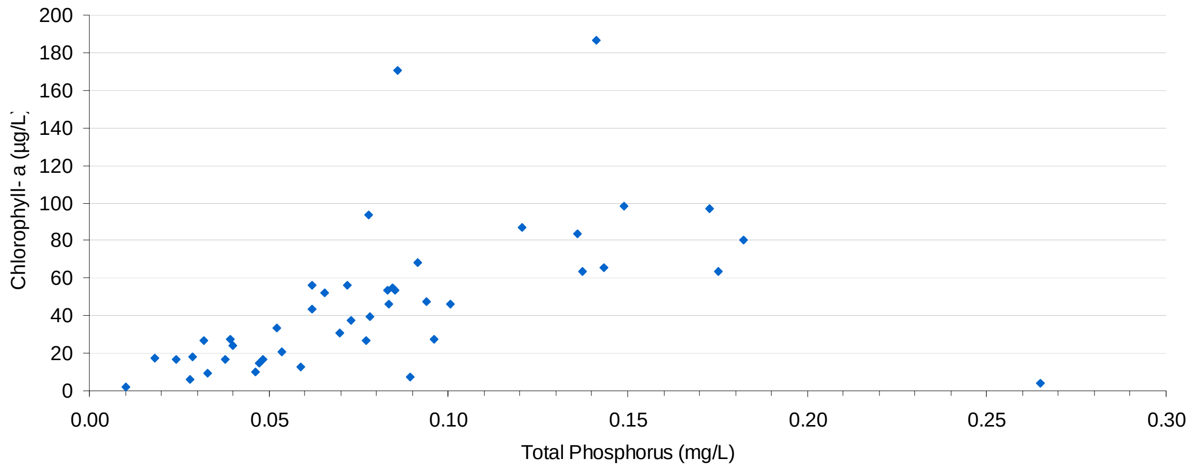

Figure 4-24. Relationship between chlorophyll-a concentration and TP concentration in the Homer Lake (Segment RBO), 1989–2001.

4.4.7.5 Total Suspended Solids

A summary of the total suspended solids (TSS) data collected in Homer Lake is given in Table 4-21. Figure 4-25 displays the sampling frequency for TSS in Homer Lake, and indicates that TSS concentrations are highly variable over the period of record. Monthly median and mean TSS concentrations are presented in Figure 4-26. The figure shows that median TSS concentrations are fairly constant throughout the year with the highest concentrations occurring in March. Average TSS concentrations are greatest in the month of January. It is important to note that two TSS samples collected on January 8, 1998 had concentrations of 278 mg/L and 270 mg/L, which significantly raises the average monthly TSS concentration. The average January TSS concentration is only 9.5 mg/L excluding these two samples. A TMDL will not be developed for TSS since there is no numeric water quality standard but the data are presented here because high TP loadings are often associated with TSS loadings.

Table 4-21. Summary Statistics for Total Suspended Solids in the Homer Lake (Segment RBO).

Parameter	Samples (Count)	Start	End	Minimum (mg/L)	Average (mg/L)	Maximum (mg/L)	CV*
Suspended Solids	234	4/24/1989	10/30/2001	1.00	22.56	278.00	1.35

*CV = standard deviation/average

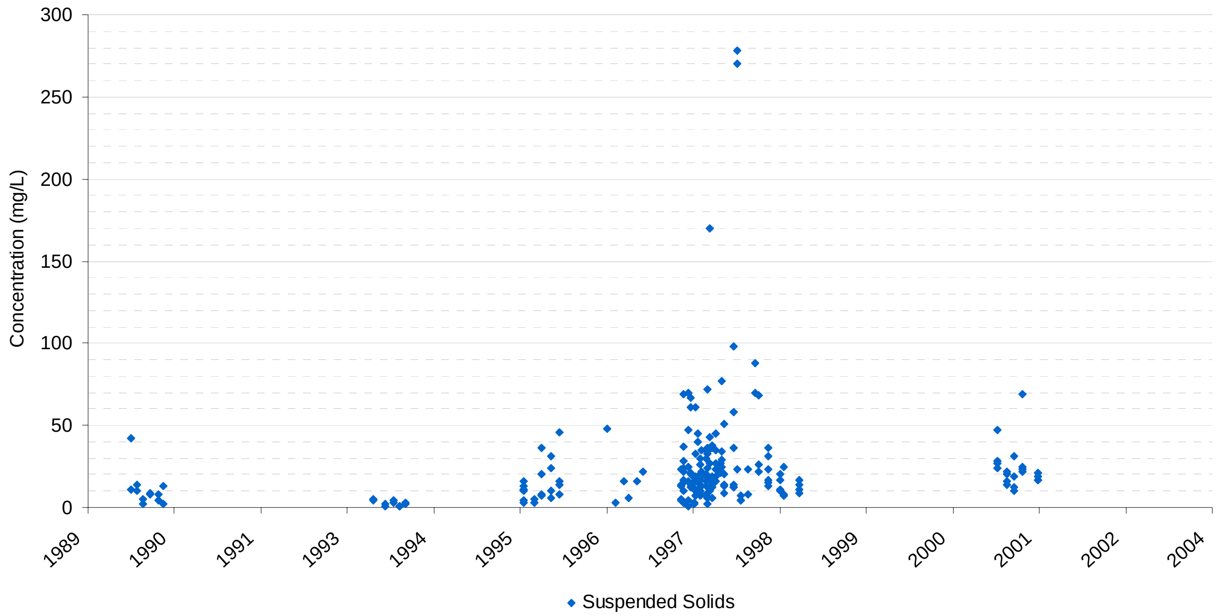

Figure 4-25. Total suspended solids sampling observations in the Homer Lake (Segment RBO).

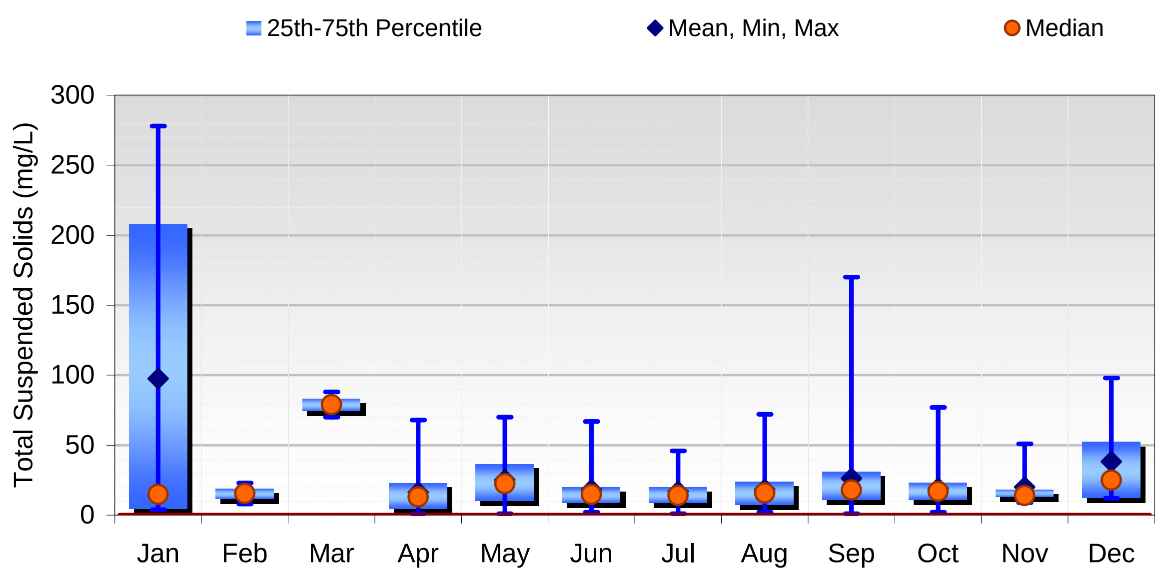

Figure 4-26. Monthly mean and median total suspended solids concentrations in the Homer Lake (Segment RBO), 1989–2001 .

4.4.8 Salt Fork Vermilion River (BPJ10)

Water quality data collected in Salt Fork Vermilion River at Illinois EPA monitoring station BPJ-10, U.S. EPA monitoring station 163026, and USGS monitoring stations 03338000 and 0338022 are available from 1966 to 1997. A summary of these data is presented in the sections below. This segment is listed as impaired by pH, total ammonia, nitrates, total nitrogen, total phosphorus, fish kills, and TSS.

4.4.8.1 pH

Table 4-22 and Table 4-23 summarize the available pH data in the Salt Fork Vermilion River. Relatively few data are available but no pH samples have violated the water quality standard. Monthly median and mean pH concentrations for the period of record are presented in Figure 4-28.

The pH cause for this segment is listed because of pH sampling following the fish kill on July 12, 2002. Section 4.4.4.1 discusses the details of the spill and Table 4-24 presents the sampling results immediately following the spill in segments BPJ10. Table 4-24 shows one pH sample is equal to the maximum pH standard of 9.0. Because the spill was a known, one-time event, and because other pH data do not suggest impaired conditions, no TMDL will be developed.

Table 4-22. Summary Statistics for pH in Salt Fork Vermilion River (Segment BPJ10).

Parameter	Samples (Count)	Start	End	Minimum (mg/L)	Average (mg/L)	Maximum (mg/L)	CV*
pH	16	4/13/1966	9/2/1997	7.20	7.49	8.10	0.03

*CV = standard deviation/average

Table 4-23. pH Violations in the Salt Fork Vermilion River (Segment BPJ10).

Parameter	Samples (Count)	Violations (Count)	Percent Violating	Samples (Count), 1998 to Present	Violations (Count), 1998 to present	Percent Violating, 1998 to Present
pH	16	0	0.00	0	0	0.00

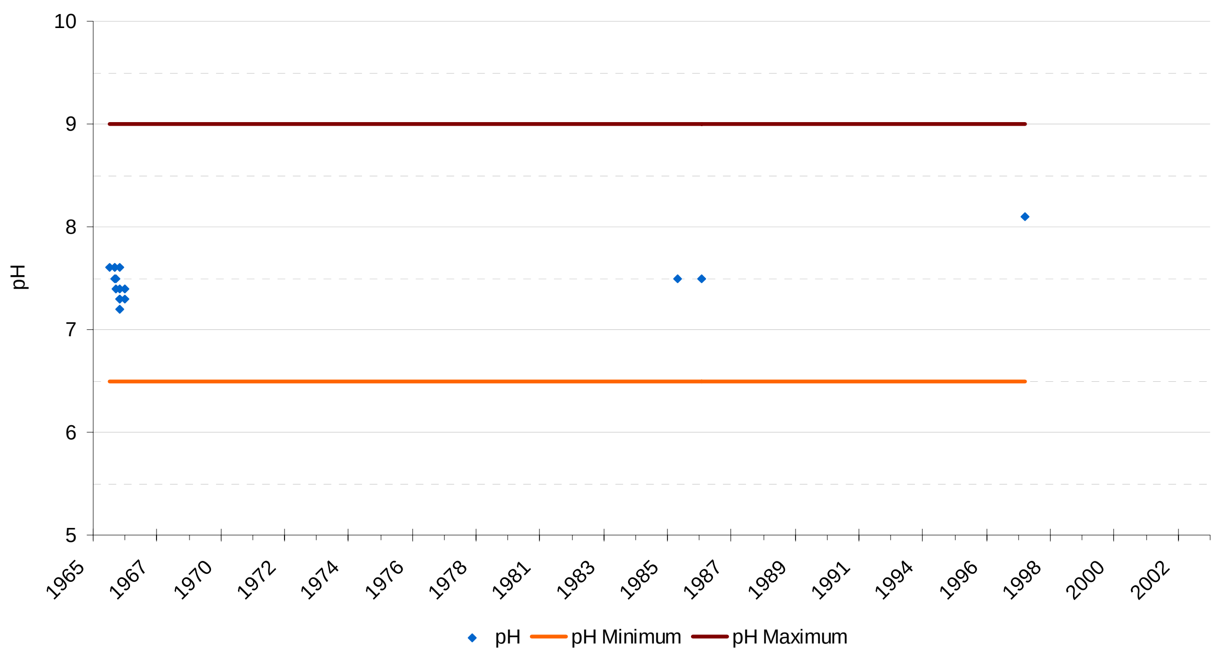

Figure 4-27. pH observations in Salt Fork Vermilion River (Segment BPJ10).

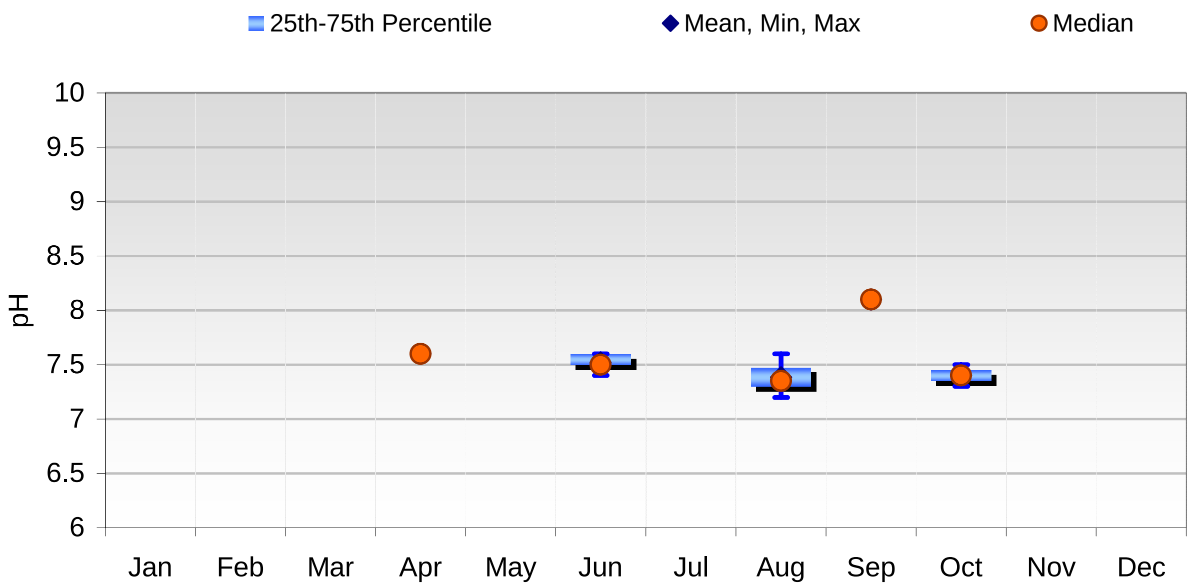

Figure 4-28. Monthly statistics for pH in Salt Fork Vermilion River (Segment BPJ10), 1966–1997.

Table 4-24. Sample results collected by Champaign Field Operations Section for the Salt Fork Vermilion River (Segment BPJ10).

Station	Waterbody Segment	Date	pH	Water Temp (C)	Total Ammonia N (mg/L)	Chronic Standard (mg/L)	Acute Standard (mg/L)
D-4	BPJ-10	7/16/02	8.9	27.1	4.3*	0.25	1.6
D-5	BPJ-10	7/16/02	8.8	27.3	3.1*	0.29	1.8
D-6	BPJ-10	7/16/02	9.0	28.2	4.3*	0.20	1.3

*violation of ammonia standard

4.4.8.2 Total Ammonia

Only four ambient total ammonia samples are available for this segment of the Salt Fork Vermilion River. These samples are presented in Table 4-25 and indicate that no samples have exceeded the water quality standards.

Table 4-25. Ammonia sampling in the Salt Fork Vermilion River (Segment BPJ10).

Date	Ammonia (mg/L)	Temperature (°C)	pH	Acute Standard (mg/L)
10/9/1985	0.1	14.4	7.5	15.00
8/6/1986	0.1	22	7.5	15.00
7/7/1997	0.09	24.1	NA	15.00
9/2/1997	0.12	24	8.1	6.95

The ammonia listing for Salt Fork River segment BJP10 is related to the July 12, 2002 fish kill. Section 4.4.4.1 discusses the details of the spill and Table 4-24 presents the results of ammonia sampling. Table 4-24 shows that three ammonia samples exceeded both the acute and the chronic ammonia standard. However, because this was a known, one-time event, and because the other data for this segment do not suggest an ammonia impairment, no TMDL will be developed.

4.4.8.3 Nitrate

Only four nitrate+nitrite samples are available for this segment of the Salt Fork Vermilion River. These samples are presented in Table 4-26 and indicate that no samples have exceeded the water quality standards. The nitrate listing for this segment is based on an extrapolation of nitrate data collected in downstream segment BPJ03.

Table 4-26. Nitrate sampling in the Salt Fork Vermilion River (Segment BPJ10).

Date	Nitrate + Nitrite (mg/L)	Nitrate Standard (mg/L)
10/9/1985	4.8	10
8/6/1986	2.7	10
7/7/1997	9.4	10
9/2/1997	5.1	10

4.4.9 Salt Fork Vermilion River (BPJ08)

Water quality data collected in Salt Fork Vermilion River at Illinois EPA monitoring station BPJ-8 are available from 1985 to 2001. This segment is listed as impaired by total iron, pH, total ammonia, nitrates, total nitrogen, total phosphorus, fish kills, and TSS. A summary of the available data for parameters with numeric water quality standards is presented below.

4.4.9.1 Iron

The applicable water quality standard for dissolved iron in Illinois is 1,000 μg/L and 300 μg/L for waterbodies designated as general use and public and food processing water supply, respectively. All available dissolved iron data for the Salt Fork Vermilion River segment BPJ08 are presented in Table 4-27 and indicate that all samples have been below the detection limit of 50 μg/L. The iron listing for this segment is based on an extrapolation of iron data collected in downstream segment BPJ03.

Table 4-27. Iron sampling in the Salt Fork Vermilion River (Segment BPJ08).

Date	Dissolved Iron (μg/L)
10/23/1985	50
8/5/1986	50
7/3/2001	50
8/15/2001	50
10/11/2001	50

4.4.9.2 pH

The applicable water quality standard for pH in Illinois is a maximum of 9.0 and a minimum of 6.5. All available pH data for the Salt Fork Vermilion River segment BPJ08 are presented in Table 4-28 and indicate that one sample (on August 15, 2001) exceeded the maximum allowable value of 9.0 mg/L. An additional pH violation occurred during sampling following the July 12, 2002 fish kill. Section 4.4.4.1 discusses the details of the spill and Table 4-29 presents the results of sampling. Additional data are recommended to determine whether a pH TMDL is required for segment BPJ08.

Table 4-28. pH sampling in the Salt Fork Vermilion River (Segment BPJ08).

Date	pH
10/23/1985	7.50
8/5/1986	8.10
9/2/1997	8.30
7/3/2001	8.2
8/15/2001	9.2
10/11/2001	7.68

Table 4-29. Sample results collected by Champaign FOS, from the Salt Fork Vermilion River (Segment BPJ08).

Station	Waterbody Segment	Date	pH	Water Temp (C)	Total Ammonia N (mg/L)	Chronic Standard (mg/L)	Acute Standard (mg/L)
D-7	BPJ-08	7/17/02	9.1	28.3	2.5*	0.17	1.1

*exceedence of General Use Acute Ammonia Standard

4.4.9.3 Total Ammonia

All available total ammonia data for the Salt Fork Vermilion River segment BPJ08 are presented in Table 4-30 and indicate that no samples have exceeded the applicable acute water quality standards. Table 4-29 shows that one ammonia sample exceeded the general use acute ammonia standard and the general use chronic ammonia standard following the July 12, 2002 fish kill. However, because this was a known, one-time event, and because the other data for this segment do not suggest an ammonia impairment, no TMDL will be developed.

Table 4-30. Total ammonia sampling in the Salt Fork Vermilion River (Segment BPJ08).

Date	Ammonia (mg/L)	Temperature (°C)	pH	Acute Standard
10/23/1985	0.1	15.2	7.5	15.00
8/5/1986	0.1	23	8.1	6.95
9/2/1997	0.04	25.5	8.3	4.71
7/3/2001	0.01	22	8.2	5.73
8/15/2001	0.01	24.4	9.2	0.99
10/11/2001	0.26	14	7.68	14.94

4.4.9.4 Nitrate

All available nitrate+nitrite data for the Salt Fork Vermilion River segment BPJ08 are presented in Table 4-31 and indicate that no samples have exceeded the applicable acute water quality standard. The nitrate listing for this segment is based on an extrapolation of nitrate data collected in segment BPJ03.

Table 4-31. Nitrate+nitrite sampling in the Salt Fork Vermilion River (Segment BPJ08).

Date	Nitrate + Nitrite	Nitrate Standard
10/23/1985	6.6	10
8/5/1986	1.7	10
9/2/1997	4.6	10
7/3/2001	4.7	10
8/15/2001	1.16	10
10/11/2001	2	10

4.4.10 Salt Fork Vermilion River (BPJ03)

Water quality data collected in Salt Fork Vermilion River at Illinois EPA monitoring station BPJ-3 and BPJ-99, U.S. EPA station 116024, and USGS station 03338114 are available for the period 1966 to 2004. A summary of these data is presented in the sections below. This segment is listed as impaired by iron, total nitrogen, nitrates, total phosphorus, TSS, and fish kills. The Public and Food Processing Water Supply Standard applies to this segment.

4.4.10.1 Iron

The applicable water quality standard for dissolved iron in Illinois is 1,000 μg/L and 300 μg/L for waterbodies designated as general use and public and food processing water supply, respectively. Table 4-32 and Table 4-33 summarize all of the available iron data in the Salt Fork Vermilion River. Additionally, Figure 4-29 presents a graphical representation of the dissolved iron sampling activity. A review of the data reveals that one dissolved iron sample (from February 27, 2001) violated both the general use and public and food processing water supply water numeric quality standard. This sampling occurred three days after a large rainfall event and its magnitude may be a result of high stream flow. (The Champaign-Urbana climate station (station number 118740) recorded 1.85 inches of precipitation on February 24, 2001). Because this is the only violation of the water quality standard out of 185 samples, no TMDL will be developed at this time.

Table 4-32. Summary Statistics for Dissolved Iron in Salt Fork Vermilion River (Segment BPJ03).

Parameter	Samples (Count)	Start	End	Minimum (mg/L)	Average (mg/L)	Maximum (mg/L)	CV*
Dissolved Iron	185	7/11/1979	1/22/2004	10.00	69.68	3100.00	3.23

*CV = standard deviation/average

Table 4-33. Dissolved Iron Violations (Segment BPJ03).

Parameter	Samples (Count)	Violations (Count)	Percent Violating	Samples (Count), 1998 to Present	Violations (Count), 1998 to present	Percent Violating, 1998 to Present
Dissolved Iron	185	1	0.54	53	1	0.00

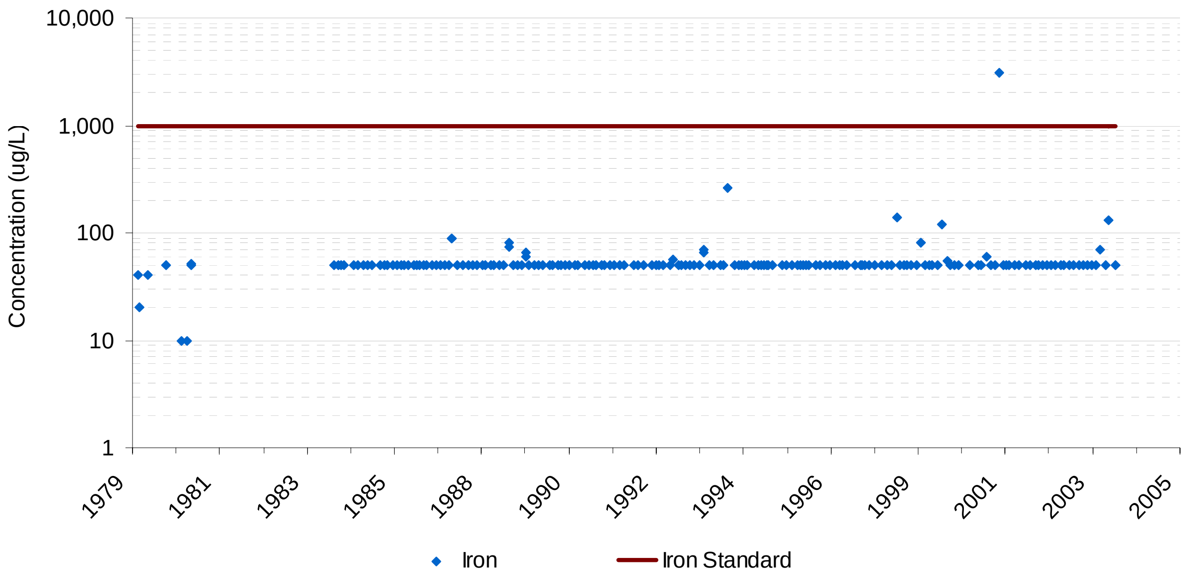

Figure 4-29. Iron observations in Salt Fork Vermilion River (Segment BPJ03).

4.4.10.2 Nitrate

The applicable numeric water quality standard for nitrate in Illinois public and food processing waterbodies is 10 mg/L. Nitrate plus nitrite samples are summarized in Table 4-34 and Table 4-35 and indicate that 57 (18.75 percent) samples violated the water quality standard. No recent samples exceeded the standard.

The historic sampling frequency of nitrate plus nitrite in the Salt Fork Vermilion River (segment BPJ03) is provided in Figure 4-30, and monthly statistics are presented in Figure 4-31. Figure 4-31 shows that mean and median nitrate plus nitrite concentrations rise from their minimum in August through their maximum in April. Concentrations then decrease from May through July.

Table 4-34. Summary Statistics for Nitrate and Total Nitrogen in Salt Fork Vermilion River (Segment BPJ03).

Parameter	Samples (Count)	Start	End	Minimum (mg/L)	Average (mg/L)	Maximum (mg/L)	CV*
Nitrate + Nitrite	304	8/31/1967	1/22/2004	0.01	6.94	18.00	0.51

*CV = standard deviation/average

Table 4-35. Nitrate Violations (Segment BPJ03).

Parameter	Samples (Count)	Violations (Count)	Percent Violating	Samples (Count), 1998 to Present	Violations (Count), 1998 to present	Percent Violating, 1998 to Present
Nitrate + Nitrite	304	57	18.75	34	0	0.00

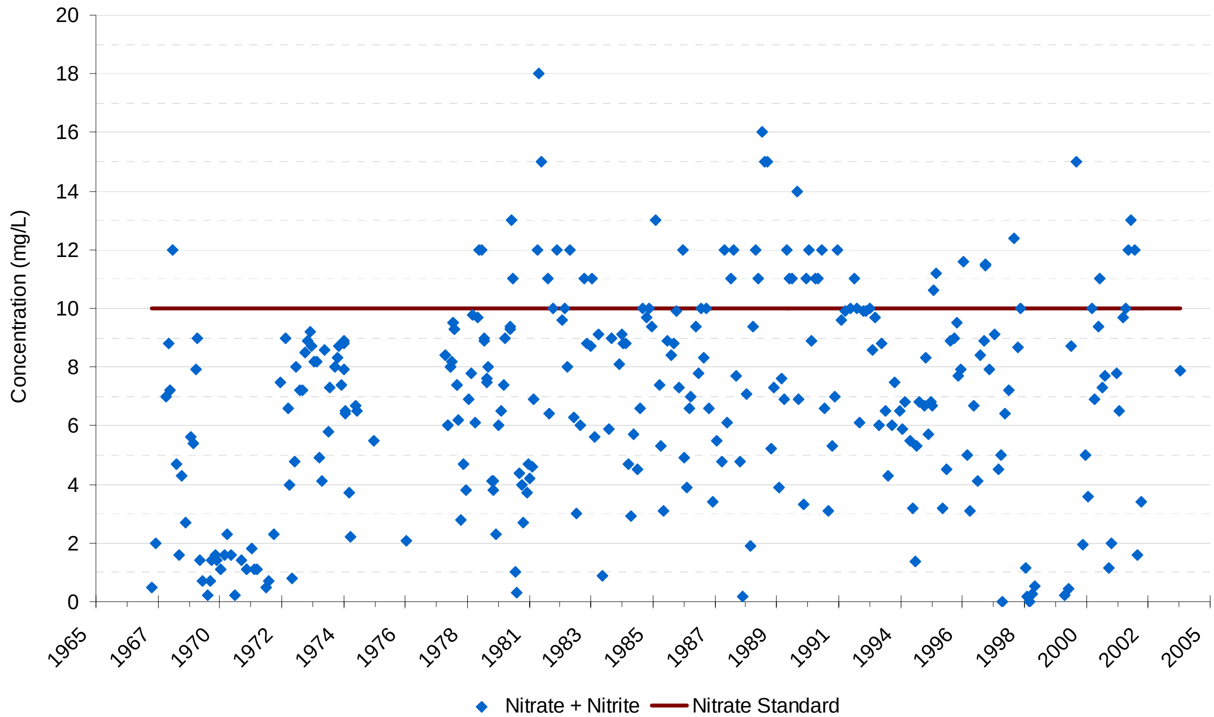

Figure 4-30. Nitrate + nitrite sampling frequency in Salt Fork Vermilion River (Segment BPJ03).

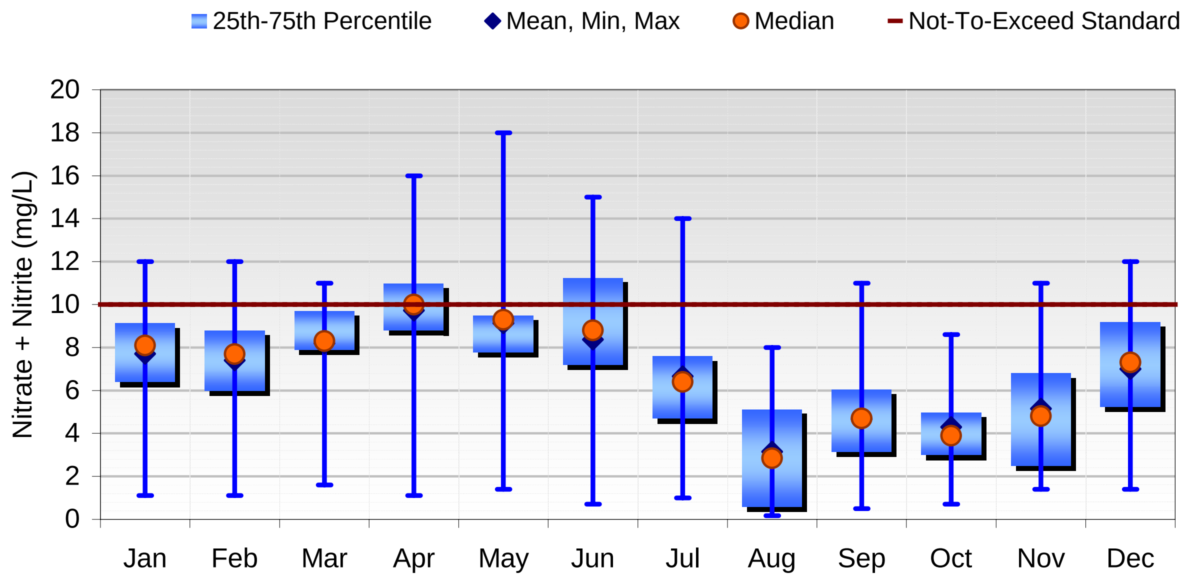

Figure 4-31. Monthly nitrate + nitrite statistics for Salt Fork Vermilion River (Segment BPJ03), 1967–2004.

4.4.10.3 Fish Kills

The listing for fish kills is related to the same spill that is discussed in Section 4.4.4.1. Table 4-36 presents the results of stream sampling in the Saline Branch (Segment BPJ03) following the fish kill event. These results were used to extrapolate impairments to several upstream segments as discuss previously.

Table 4-36. Sample results collected by Champaign Field Operations Section (FOS) from the Salt Fork Vermilion River (Segment BPJ03).

Station	Waterbody Segment	Date	pH	Water Temp (C)	Total Ammonia N (mg/L)	Chronic Standard (mg/L)	Acute Standard (mg/L)
D-8	BPJ-03	7/16/02	9.0	28.6	0.41	0.20	1.3
D-8	BPJ-03	7/17/02	9.1	28.8	2.3*	0.17	1.1
D-9	BPJ-03	7/17/02	8.9	26.8	2.4*	0.26	1.6
D-10	BPJ-03	7/17/02	9.1	27.9	2.2*	0.18	1.1
D-11A	BPJ-03	7/17/02	9.1	28.8	1.2*	0.17	1.1
D-11B	BPJ-03	7/17/02	9.1	29.0	1.5*	0.17	1.1

*exceedence of General Use Acute Ammonia Standard

4.4.11 Potential Pollutant Sources

Both point and nonpoint sources represent potential sources of pollutants in the Salt Fork Vermilion River watershed and are discussed further below.

4.4.11.1 Point Source Discharges

There are 21 National Pollution Discharge Elimination System (NPDES) point source dischargers in the Salt Fork Vermilion River. Figure 4-32 shows the locations of these facilities and a list of facilities and parameters reported to Illinois EPA for each facility are presented in Appendix C.

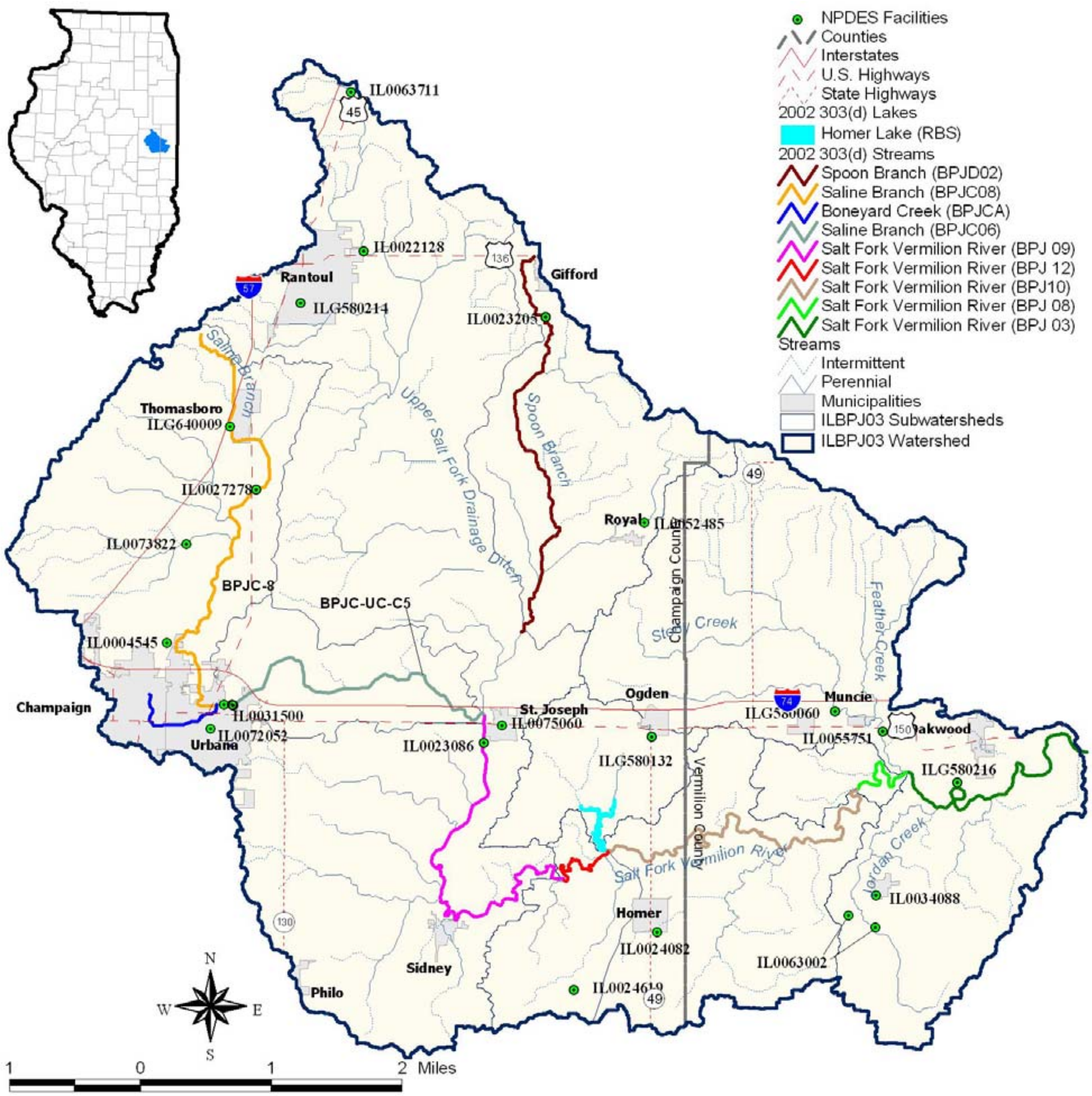

Figure 4-32. NPDES facilities in the Salt Fork Vermilion River watershed.

4.4.11.2 Nonpoint Sources

Potential nonpoint sources of sediments and nutrients in the Salt Fork Vermilion River watershed include sheet and rill erosion, stream channel erosion, fertilizer use, failing septic systems, livestock operations, storm water runoff, urban runoff, atmospheric deposition, internal lake recycling, and natural sources.

Potential anthropogenic sources of boron include sewage sludge and effluents, coal combustion, cleaning compounds and agrochemicals. The relative magnitude of each of these various sources has not yet been estimated and will be the focus of Stage 2 and 3 activities.

5 Identification of Data Gaps and Sampling Plan

Many of the listings in the Salt Fork Vermilion River watershed will not require TMDLs because they are either (1) for parameters without numeric water quality standards, or (2) associated with the July 12, 2002 fish kill. Additional data are required to determine whether TMDLs are required for other segment/cause combinations. A summary of the status for each of the listed segments in the watershed is provided in Table 5-1, including sampling recommendations. Sampling should be conducted by qualified personnel and might include representatives from Illinois EPA, local government agencies, or private consulting companies.

Table 5-1. Recommendations for next steps on BPJ03 303(d) listed segments.

Segment	Name	Causes of Impairment	Status and Recommendations
BPJD02	Spoon Branch	Dissolved Oxygen	Stage 2 – Collect Additional Data
		Habitat Assessment	No TMDL – No Numeric WQS
BPJCA	Boneyard Creek	Habitat Assessment	No TMDL – No Numeric WQS
		DDT	No TMDL – No Numeric WQS
		Hexachlor	No TMDL – No Numeric WQS
		PCB	No TMDL – No Numeric WQS
BPJC08	Saline Branch	Total Nitrogen	No TMDL – No Numeric WQS
		Dissolved Oxygen	Stage 2 – Collect Additional Data
		Habitat Assessment	No TMDL – No Numeric WQS
BPJC06	Saline Branch	Boron	Stage 3 – Develop Boron TMDL
		Total Ammonia	No TMDL – Listed Based on Fish Kill
		Habitat Assessment	No TMDL – No Numeric WQS
		Fish Kills	No TMDL – No Numeric WQS
		TSS	No TMDL – No Numeric WQS
		DDT	No TMDL – No Numeric WQS
		Dieldrin	No TMDL – No Numeric WQS
		Methoxychlor	No TMDL – No Numeric WQS
		Total Phosphorus	No TMDL – No Numeric WQS
BPJ09	Salt Fork Vermilion River	Total Ammonia	No TMDL – Listed Based on Fish Kill
		Total Nitrogen	No TMDL – No Numeric WQS
		pH	No TMDL – Listed Based on Fish Kill
		Fish Kills	No TMDL – No Numeric WQS
		TSS	No TMDL – No Numeric WQS
		Total Phosphorus	No TMDL – No Numeric WQS
BPJ12	Salt Fork Vermilion River	Total Ammonia	No TMDL – Listed Based on Fish Kill
		Total Nitrogen	No TMDL – No Numeric WQS
		pH	No TMDL – Listed Based on Fish Kill
		Fish Kills	No TMDL – No Numeric WQS
		TSS	No TMDL – No Numeric WQS

Segment	Name	Causes of Impairment	Status and Recommendations
		Total Phosphorus	No TMDL – No Numeric WQS
RBO	Homer Lake	TSS	No TMDL – No Numeric WQS
		Excessive Algal Growth	No TMDL – No Numeric WQS
		Total Phosphorus	Stage 3 – Develop TMDL
BPJ10	Salt Fork Vermilion River	Total Ammonia	No TMDL – Listed Based on Fish Kill
		Total Nitrogen	No TMDL – No Numeric WQS
		Nitrate	Stage 3 – Develop TMDL
		pH	No TMDL – Listed Based on Fish Kill
		Fish Kills	No TMDL – No Numeric WQS
		TSS	No TMDL – No Numeric WQS
		Total Phosphorus	No TMDL – No Numeric WQS
BPJ08	Salt Fork Vermilion River	Iron	No TMDL – < 1% Samples Exceed WQS
		Total Ammonia	No TMDL – Listed Based on Fish Kill
		Total Nitrogen	No TMDL – No Numeric WQS
		Nitrate	Stage 3 – Develop TMDL
		pH	Stage 2 – Collect Additional Data
		Fish Kills	No TMDL – No Numeric WQS
		TSS	No TMDL – No Numeric WQS
		Total Phosphorus	No TMDL – No Numeric WQS
BPJ03	Salt Fork Vermilion River	Iron	No TMDL – < 1% Samples Exceed WQS
		Total Nitrogen	No TMDL – No Numeric WQS
		Nitrate	Stage 3 – Develop TMDL
		Fish Kills	No TMDL – No Numeric WQS
		TSS	No TMDL – No Numeric WQS
		Total Phosphorus	No TMDL – No Numeric WQS

5.1 Stage 2 Recommendations

The following specific sampling recommendations are made for segments that require additional data to either confirm the impairment or to develop a TMDL.

5.1.1 Spoon Branch (BPJD02): Dissolved Oxygen

Additional DO data are required in segment BPJD02 at two to three locations to evaluate current conditions and to confirm whether or not the segment is impaired. Potential stations include BPJD-1 and BPJD-2. Samples should be collected two times a month from April through September to capture the expected seasonal variation in water quality parameters related to nutrient loading, eutrophication and oxygen-demanding processes. Water samples should be analyzed to determine concentrations of TP, soluble reactive phosphorus, chlorophyll-a, periphyton, nitrate/nitrite nitrogen, and total Kjeldahl nitrogen. In the field, measurements should be made using a Hydrolab to obtain pH, temperature and dissolved oxygen. Flow should also be sampled. A diel DO survey would also be very useful to determine the extent to which excessive algal growths result in large swings in concentrations. Cross-sections of the stream should also be made once during the summer at approximately 0.5 mile intervals in preparation for potential water quality modeling of the stream.

5.1.2 Saline Branch (BPJC08): Dissolved Oxygen

Additional DO data are required in segment BPJC08 at two to three locations to evaluate current conditions and to confirm whether or not the segment is impaired. Potential stations include BPJC-8, BPJC-UC-A3 and BPJC-UC-A2. Samples should be collected two times a month from April through September to capture the expected seasonal variation in water quality parameters related to nutrient loading, eutrophication and oxygen-demanding processes. Water samples should be analyzed to determine concentrations of TP, soluble reactive phosphorus, chlorophyll-a, periphyton, nitrate/nitrite nitrogen, and total Kjeldahl nitrogen. In the field, measurements should be made using a Hydrolab to obtain pH, temperature and dissolved oxygen. Flow should also be sampled. A diel DO survey would also be very useful to determine the extent to which excessive algal growths result in large swings in concentrations. Cross-sections of the stream should also be made once during the summer at approximately 0.5 mile intervals.

5.1.3 Salt Fork Vermilion River (BPJ08): pH

Additional pH data are required in segment BPJ08 at station BPJ-8 to evaluate current conditions and to confirm whether or not the segment is impaired. Samples should be collected two times a month from April through September to capture the expected seasonal variation in water quality. The source of the high pH is unknown at this time but might be due to excessive algal growth. Therefore water samples should be analyzed to determine concentrations of TP, soluble reactive phosphorus, chlorophyll-a, periphyton, nitrate/nitrite nitrogen, and total Kjeldahl nitrogen. In the field, measurements should be made using a Hydrolab to obtain pH, temperature and dissolved oxygen. Flow should also be sampled. A diel pH and DO survey would also be very useful to determine the extent to which excessive algal growths result in large swings in concentrations. Cross-sections of the stream should also be made once during the summer at approximately 0.5 mile intervals.

6 Technical Approach

Table 5-1 indicates that the following segment/cause combinations require TMDLs:

- Boron TMDL for Saline Branch (segment BPJC06)
- Total Phosphorus TMDL for Homer Lake (segment RBO)
- Nitrate TMDL for Salt Fork Vermilion River (segment BPJ10)
- Nitrate TMDL for Salt Fork Vermilion River (segment BPJ08)
- Nitrate TMDL for Salt Fork Vermilion River (segment BPJ03)

The following segment/cause combinations also potentially require TMDLs depending on the results of Stage 2 sampling:

- Dissolved Oxygen for Spoon Branch (segment BPJD02)
- Dissolved Oxygen for Saline Branch (BPJC08)
- pH for Salt Fork Vermilion River (BPJ08)

Table 6-1 summarizes potential technical approaches for developing TMDLs in the Salt Fork Vermilion River watershed. Both simple and more advanced approach options are identified and a descriptions of the models included in the table are provided below.

Table 6-1. Potential technical approaches for developing TMDLs in the Salt Fork Vermilion River watershed.

Segment	Name	Causes of Impairment	Simple Approach	Advanced Approach
BPJD02	Spoon Branch	Dissolved Oxygen	QUAL2E	LSPC/HSPF
BPJC08	Saline Branch	Dissolved Oxygen	QUAL2E	LSPC/HSPF
BPJC06	Saline Branch	Boron	Mass Balance Approach	LSPC/HSPF
RBO	Homer Lake	Total Phosphorus	Non-Modeling Estimate of Loads and BATHTUB	LSPC/HSPF and Lake2K
BPJ10	Salt Fork Vermilion River	Nitrate	QUAL2E	LSPC/HSPF
BPJ08	Salt Fork Vermilion River	pH	QUAL2E	LSPC/HSPF
		Nitrate	QUAL2E	LSPC/HSPF
BPJ03	Salt Fork Vermilion River	Nitrate	QUAL2E	LSPC/HSPF

QUAL2E: The Enhanced Stream Water Quality Model (QUAL2E) is applicable to well mixed, dendritic streams. It simulates the major reactions of nutrient cycles, algal production, benthic and carbonaceous demand, atmospheric reaeration and their effects on the dissolved oxygen balance. It can predict up to 15 water quality parameters including dissolved oxygen and nitrate as N. It is intended as a water quality planning tool for developing TMDLs and can also be used in conjunction with field sampling for identifying the magnitude and quality characteristics of nonpoint sources. By operating the model dynamically, the user can study diurnal dissolved oxygen variations and algal growth. The major limitation of QUAL2E is that it is a steady-state model and therefore only provides information for one flow condition.

LSPC/HSPF. The Loading Simulation Program in C++ (LSPC) is essentially a re-coded C++ version of the Hydrologic Simulation Program Fortran (HSPF) model. LSPC integrates a geographical information system (GIS), comprehensive data storage and management capabilities, the original HSPF algorithms, and a data analysis/post-processing system into a convenient PC-based windows interface. LSPC's algorithms are identical to a subset of those in the HSPF model. HSPF is a comprehensive watershed and receiving water quality modeling framework that was originally developed in the mid-1970's. During the past several years it has been used to develop hundreds of USEPA-approved TMDLs and it is generally considered one of the most advanced hydrologic and watershed loading model available. LSPC/HSPF is a continuous model and therefore allows for an evaluation of water quality over a range of flow conditions. LSPC/HSPF is preferred for the Salt Fork Vermilion River because it allows for more advanced simulations of dissolved oxygen and nitrate concentrations compared to other continuous models, such as the Soil and Water Assessment Tool (SWAT). LSPC/HSPF has also been successfully applied to develop TMDLs in heavily tiled watersheds, such as the Salt Fork Vermilion River watershed.

BATHTUB is a lake model that performs steady-state water and phosphorus balance calculations in a spatially segmented hydraulic network, which accounts for advective and diffusive transport, and nutrient sedimentation. In addition, the BATHUB model automatically incorporates internal phosphorus loadings into its calculations. Eutrophication-related water quality conditions are predicted using empirical relationships previously developed and tested for reservoir applications (Walker, 1985).

LAKE2K is a model that is designed to compute seasonal trends of water quality in stratified lakes (Chapra and Martin, 2004). A beta version of the model has recently been released and is supported by the U.S. EPA Office of Research and Development. LAKE2K is implemented within the Microsoft Windows environment and uses Microsoft Excel as the graphical user interface. The model requires information on lake elevation, area, volume, inflows, meteorology, and initial water quality conditions. Daily water quality output is provided for three vertical layers (epilminion, metalimnion, and hypolimnion), including daily predictions of TP, dissolved oxygen, and three phytoplankton groups. LAKE2K also includes a sediment diagenesis model for nutrient release during low dissolved oxygen conditions.

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Appendix A: Illinois GAP Land Cover Description

Table A-1. Values and class names in the Illinois Gap Analysis Project Land Cover 1999-2000 Arc/Info GRID coverage.

GRID VALUE	LAND COVER CATEGORY
	AGRICULTURAL LAND
11	Corn
12	Soybeans
13	Winter Wheat
14	Other Small Grains and Hay
15	Winter Wheat/Soybeans
16	Other Agriculture
17	Rural Grassland
	FORESTED LAND
22	Dry Upland
23	Dry-Mesic Upland
24	Mesic Upland
25	Partial Canopy/Savannah Upland
26	Coniferous
	URBAN LAND
31	High Density
32	Low/Medium Density (excluding TM Scene 2331)
33	Medium Density (TM Scene 2331)
34	Low Density (TM Scene 2331)
35	Urban Open Space
	WETLAND
41	Shallow Marsh/Wet Meadow
42	Deep Marsh
43	Seasonally/Temporarily Flooded
45	Mesic Floodplain Forest
46	Wet-Mesic Floodplain Forest
47	Wet Floodplain Forest
48	Swamp
49	Shallow Water
	OTHER
51	Surface Water
52	Barren and Exposed Land
53	Clouds
53	Cloud Shadows

Appendix B: Water Quality Data for the Salt Fork Vermilion River Watershed

Available as a separate document

Appendix C: NPDES Facilities in the Salt Fork Vermilion River Watershed

	IL0004545	IL0022128	IL0023086	IL0023205	IL0024082	IL0024619	IL0027278	IL0031500
Parameter	**Illinois Central Railroad-Cham**	**Rantoul (STP)**	**St. Joseph SD (STP)**	**Paxton (STP)**	**Homer (WTP)**	**Country Club Manor Condos**	**Country Manor MHP-Urbana**	**Urbana-Champaign SD NE (STP)**
3,4 Benzofluoran- Thene	x							
Acenaphthene	x							
Acenaphthylene	x							
Ammonia (Total)		x	x	x		x	x	x
Anthracene	x							
Antimony (Total)								x
Arsenic (Total)		x						x
Barium (Total)		x						x
Benzene	x							
Benzene, Ethylbenzenetoluene, Xylene Combn								
Benzo (A) Anthracene	x							
Benzo (A) Pyrene	x							
Benzo (Ghi) Perylene	x							
Benzo (K) Fluoranthene	x							
Beryllium (Total)								x
Bod, 5-Day (20 Deg. C)	x	x	x	x		x	x	x
Cadmium (Total)		x						x
Chromium (Total)		x						x
Chrysene	x							
Copper (Total)		x						x
Cyanide (Total)		x						x
Cyanide, Weak Acid, Dissociable		x						x
Dibenzo (A,H) Anthracene	x							
DO								x
Ethyl Benzene	x							
Ethylbenzene								
Fecal Coliform		x	x	x		x	x	x
Flow (Conduit)	x	x	x	x	x	x	x	x
Flow (Total)				x				x

	IL0004545	IL0022128	IL0023086	IL0023205	IL0024082	IL0024619	IL0027278	IL0031500
Parameter	**Illinois Central Railroad-Cham**	**Rantoul (STP)**	**St. Joseph SD (STP)**	**Paxton (STP)**	**Homer (WTP)**	**Country Club Manor Condos**	**Country Manor MHP-Urbana**	**Urbana-Champaign SD NE (STP)**
Fluoranthene	x							
Fluorene	x							
Fluoride (Total)		x						x
Hexavalent Chromium		x						x
Indeno (1,2,3-Cd) Pyrene	x							
Iron (Dissolved)		x						
Iron (Total)		x			x			x
Lead (Total)		x						x
Manganese (Total)		x						x
Mercury (Total)		x						x
Naphthalene	x							
Nickel (Total)		x						x
Noel Statre 7Day Chr Ceriodaphnia								x
Noel Statre 7Day Chr Pimephales								x
Oil & Grease		x						
Oil And Grease	x							
pH	x	x	x	x	x	x	x	x
Phenanthrene	x							
Pyrene	x							
Recoverable Phenolics (Total)		x						x
Residual Chlorine (Total)		x	x	x	x	x	x	x
Selenium (Total)		x						x
Silver (Total)		x						x
Soxhlet Extr. Oil And Grease (Total)	x	x						x
Thallium (Total)								x
Toluene	x							
Trivalent Chromium		x						
TSS	x	x	x	x	x	x	x	x
Unionized Ammonia								x

	IL0004545	IL0022128	IL0023086	IL0023205	IL0024082	IL0024619	IL0027278	IL0031500
Parameter	**Illinois Central Railroad-Cham**	**Rantoul (STP)**	**St. Joseph SD (STP)**	**Paxton (STP)**	**Homer (WTP)**	**Country Club Manor Condos**	**Country Manor MHP-Urbana**	**Urbana-Champaign SD NE (STP)**
Water Temperature (Deg. F)								x
Xylene	x							
Zinc (Total)		x						x

	IL0034088	IL0052485	IL0055751	IL0063002	IL0063711	IL0072052	IL0073822	IL0075060
Parameter	**Fairmount (WTP)**	**Royal (W)TP**	**Oakwood Township High School**	**Material Serv Corp Fairmont Q**	**Ludlow (WTP)**	**Safety-Kleen Corporation**	**Prairie View Estates MHP (WTP)**	**J.R. & Sons, Inc.-St. Joseph**
3,4 Benzofluoran- Thene								
Acenaphthene								
Acenaphthylene								
Ammonia (Total)			x					
Anthracene								
Antimony (Total)								
Arsenic (Total)								
Barium (Total)								
Benzene							x	
Benzene, Ethylbenzenetoluene, Xylene Combn							x	
Benzo (A) Anthracene								
Benzo (A) Pyrene								
Benzo (Ghi) Perylene								
Benzo (K) Fluoranthene								
Beryllium (Total)								
Bod, 5-Day (20 Deg. C)			x					x
Cadmium (Total)								
Chromium (Total)								
Chrysene								
Copper (Total)								

	IL0034088	IL0052485	IL0055751	IL0063002	IL0063711	IL0072052	IL0073822	IL0075060
Parameter	**Fairmount (WTP)**	**Royal (W)TP**	**Oakwood Township High School**	**Material Serv Corp Fairmont Q**	**Ludlow (WTP)**	**Safety-Kleen Corporation**	**Prairie View Estates MHP (WTP)**	**J.R. & Sons, Inc.-St. Joseph**
Cyanide (Total)								
Cyanide, Weak Acid, Dissociable								
Dibenzo (A,H) Anthracene								
DO								
Ethyl Benzene								
Ethylbenzene							x	
Fecal Coliform								
Flow (Conduit)	x	x	x	x	x	x	x	x
Flow (Total)								
Fluoranthene								
Fluorene								
Fluoride (Total)								
Hexavalent Chromium								
Indeno (1,2,3-Cd) Pyrene								
Iron (Dissolved)	x							
Iron (Total)	x	x			x	x		
Lead (Total)								
Manganese (Total)								
Mercury (Total)								
Naphthalene								
Nickel (Total)								
Noel Statre 7Day Chr Ceriodaphnia								
Noel Statre 7Day Chr Pimephales								
Oil & Grease								
Oil And Grease							x	
pH	x	x	x	x	x	x	x	x
Phenanthrene								
Pyrene								
Recoverable Phenolics (Total)								

	IL0034088	IL0052485	IL0055751	IL0063002	IL0063711	IL0072052	IL0073822	IL0075060
Parameter	**Fairmount (WTP)**	**Royal (W)TP**	**Oakwood Township High School**	**Material Serv Corp Fairmont Q**	**Ludlow (WTP)**	**Safety-Kleen Corporation**	**Prairie View Estates MHP (WTP)**	**J.R. & Sons, Inc.-St. Joseph**
Residual Chlorine (Total)	x	x	x		x			x
Selenium (Total)								
Silver (Total)								
Soxhlet Extr. Oil And Grease (Total)								
Thallium (Total)								
Toluene							x	
Trivalent Chromium								
TSS	x	x	x	x	x	x		x
Unionized Ammonia								
Water Temperature (Deg. F)								
Xylene							x	
Zinc (Total)								

	ILG580060	ILG580132	ILG580214	ILG580216	ILG640009
Parameter formatted	**Fithian (STP)**	**Ogden (STP)**	**Gifford (STP)**	**Oakwood (STP)**	**Thomasboro (WTP)**
3,4 Benzofluoran- Thene					
Acenaphthene					
Acenaphthylene					
Ammonia (Total)					
Anthracene					
Antimony (Total)					
Arsenic (Total)					
Barium (Total)					
Benzene					
Benzene, Ethylbenzenetoluene, Xylene Combn					
Benzo (A) Anthracene					
Benzo (A) Pyrene					
Benzo (Ghi) Perylene					

	ILG580060	ILG580132	ILG580214	ILG580216	ILG640009
Parameter formatted	**Fithian (STP)**	**Ogden (STP)**	**Gifford (STP)**	**Oakwood (STP)**	**Thomasboro (WTP)**
Benzo (K) Fluoranthene					
Beryllium (Total)					
Bod, 5-Day (20 Deg. C)	x	x	x		
Cadmium (Total)					
Chromium (Total)					
Chrysene					
Copper (Total)					
Cyanide (Total)					
Cyanide, Weak Acid, Dissociable					
Dibenzo (A,H) Anthracene					
DO					
Ethyl Benzene					
Ethylbenzene					
Fecal Coliform					
Flow (Conduit)	x	x	x	x	
Flow (Total)					
Fluoranthene					
Fluorene					
Fluoride (Total)					
Hexavalent Chromium					
Indeno (1,2,3-Cd) Pyrene					
Iron (Dissolved)					
Iron (Total)				x	
Lead (Total)					
Manganese (Total)					
Mercury (Total)					
Naphthalene					
Nickel (Total)					
Noel Statre 7Day Chr Ceriodaphnia					
Noel Statre 7Day Chr Pimephales					
Oil & Grease					
Oil And Grease					

	ILG580060	ILG580132	ILG580214	ILG580216	ILG640009
Parameter formatted	**Fithian (STP)**	**Ogden (STP)**	**Gifford (STP)**	**Oakwood (STP)**	**Thomasboro (WTP)**
pH	x	x	x	x	
Phenanthrene					
Pyrene					
Recoverable Phenolics (Total)					
Residual Chlorine (Total)	x	x	x	x	
Selenium (Total)					
Silver (Total)					
Soxhlet Extr. Oil And Grease (Total)					
Thallium (Total)					
Toluene					
Trivalent Chromium					
TSS	x	x	x	x	
Unionized Ammonia					
Water Temperature (Deg. F)					
Xylene					
Zinc (Total)					

STAGE 2 – WATER QUALITY SAMPLING REPORT

For TMDLs in North Fork Vermilion River, Salt Fork Vermilion River,
Sugar Creek, and Walnut Point Lake

Final Report

Prepared for

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF WATER

Prepared by

TETRA TECH, INC.

February 22, 2007

CONTENTS

1.0 INTRODUCTION

Tetra Tech, Inc (Tetra Tech), has been tasked by the Illinois Environmental Protection Agency (IEPA) to conduct Stage 2 water quality sampling to support the development of total maximum daily loads (TMDL) for the Hoopeston Branch of the North Fork Vermilion River, Salt Fork Vermilion River, Sugar Creek, and Walnut Point Lake watersheds in Champaign, Edgar, Douglas, and Vermilion Counties. This report discusses Stage 2 data collection (Section 2.0), preliminary data analysis of listed impairments (Section 3.0), and recommendations for Stage 3 based on collected water quality data (Section 4.0).

2.0 DATA COLLECTION

This section (1) summarizes data collection activities, including the preparation of the quality assurance project plan (QAPP), identification of sampling sites, field sampling procedures, and laboratory sample analysis; (2) presents a data summary, and (3) discusses problems that occurred.

2.1 QAPP PREPARATION

Tetra Tech prepared a detailed QAPP, including a sampling analysis plan (SAP), for the Stage 2 water quality sampling in September 2005. The QAPP describes sampling objectives, sampling sites, sampling events and frequency, water quality parameters, and field and laboratory procedures and standards. The QAPP, which was approved by IEPA, has been used as a guideline for both field work and laboratory analysis (see Appendix A). After the approval of the initial QAPP, an addendum to the QAPP added four additional sampling locations to the sampling effort in the Salt Fork Vermilion River in March 2006 (see Appendix B).

2.2 SAMPLING SITE IDENTIFICATION

Sampling sites were identified for each watershed based on data needs discussed in the Stage 1 reports and through consultation with IEPA. A total of 15 sites were identified for the Stage 2 sampling effort, four of which were not included in the initial QAPP (see Appendix A). These sites were added in March 2006 as requested by IEPA (see Appendix B). Table 1 summarizes the listed segments, impairment causes, sampling sites, number of events, and field and laboratory parameters. Figures 1 through 4 show the final sampling sites identified in the field. Each site reflects the coordinates and description described in the QAPP or QAPP addendum except BPJ-08, which was relocated to the bridge near the confluence of Salt Fork Vermilion River and Stony Creek (see Figure 2) because of access problems in the field. BPJA-03 was also relocated on Jordan Creek, a tributary to the Salt Fork Vermillion River, because of access problems along the main stream (see Figure 2).

TABLE 1
SUMMARY OF IMPAIRED SEGMENTS, SAMPLING SITES, AND PARAMETERS

Watershed	Water Body	Impairment Cause(s) of Concern	Segment	Sampling Sites	No. of Events	Field Parameters	Laboratory Parameters
North Fork Vermilion River	Hoopeston Branch	DO	BPGD	BPGD-H-A1, BPGD-H-C1	14	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2 + NO_3, TP, TDP, chlorophyll- *a*, BOD5
Salt Fork Vermilion River	Salt Fork Vermillion River	pH, Nitrate	BPJ10	BPJ-10[a], BPJ-16[a]	14	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2 + NO_3, TP, TDP, BOD5, NH_3, TSS
	Salt Fork Vermillion River	pH, Nitrate	BPJ08	BPJ-08	14	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2 + NO_3, TP, TDP, chlorophyll- *a* , BOD5, fecal coliform
	Jordan Creek	Fecal Coliform	Tributary to Salt Fork Vermilion River	BPJA-03[a]	14	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2 + NO_3, TP, TDP, BOD5, NH_3, TSS, fecal coliform
	Salt Fork Vermillion River	Fecal Coliform	BPJ03	BPJ-03[a]	14	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2 + NO_3, TP, TDP, BOD5, NH_3, TSS, fecal coliform
	Saline Branch	DO	BPJC08	BPJC-08, BPJC-UC-A2	14	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2 + NO_3, TP, TDP, chlorophyll-*a* , BOD5
	Spoon Branch	DO	BPJD02	BPJD-01, BPJD-02	14	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2 + NO_3, TP, TDP, chlorophyll- *a* , BOD5
Sugar Creek	Sugar Creek	DO	BMC2	BMC-2	14	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2 + NO_3, TP, TDP, chlorophyll- *a* , BOD5
Walnut Point Lake	Walnut Point Lake	TP, DO, NO_3	RBK	RBK-1, RBK-2, RBK-3	14	pH, conductivity, DO, turbidity, Secchi disk, temperature	TKN, NO_2 + NO_3, TP, TDP, chlorophyll- *a*
	Walnut Point Lake	TP, DO, NO_3	BEX1	BEX-1	14	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TP and TDP

Notes:

BOD5	5-Day biological oxygen demand	TKN	Total Kjehldahl nitrogen
DO	Dissolved oxygen	TDP	Total dissolved phosphorus
NH_3	Ammonia	TP	Total phosphorus
NO_2	Nitrate	TSS	Total suspended solids
NO_3	Nitrite		
a	Sampling site added in March 2006		

FIGURE 1
HOOPESTON BRANCH SAMPLING SITES

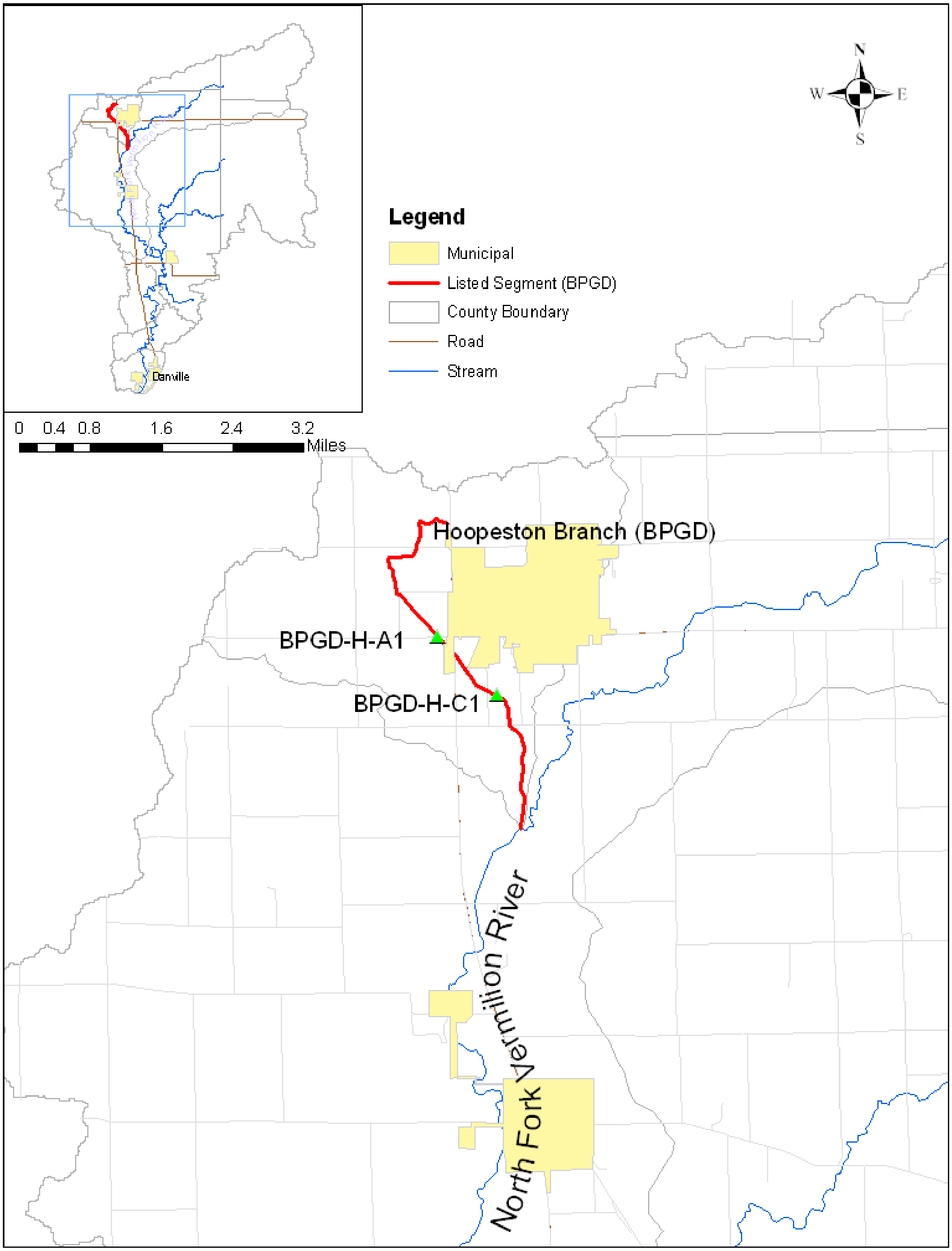


FIGURE 2
SALT FORK VERMILION RIVER AND TRIBUTARY SAMPLING SITES

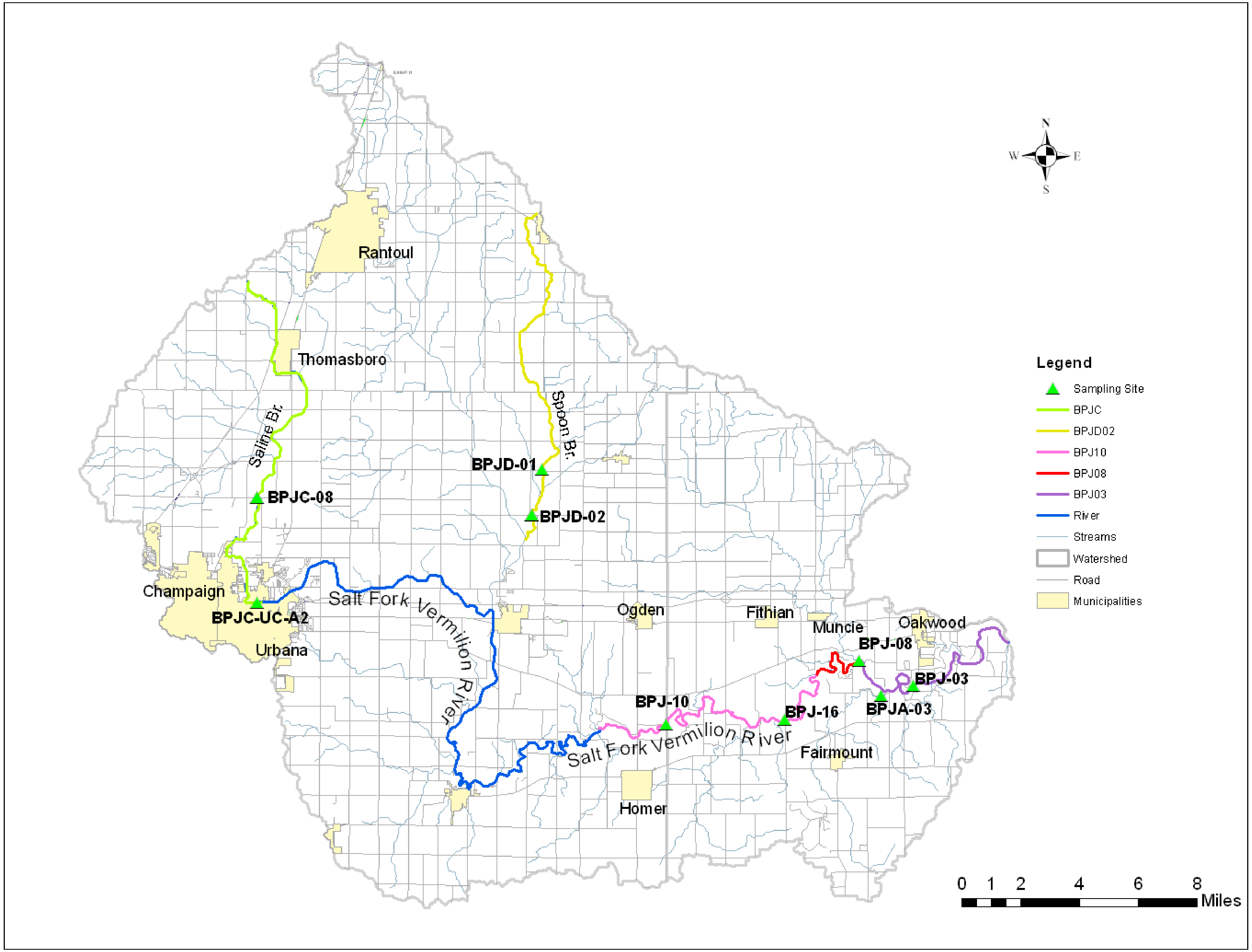


FIGURE 3
SUGAR CREEK SAMPLING SITE

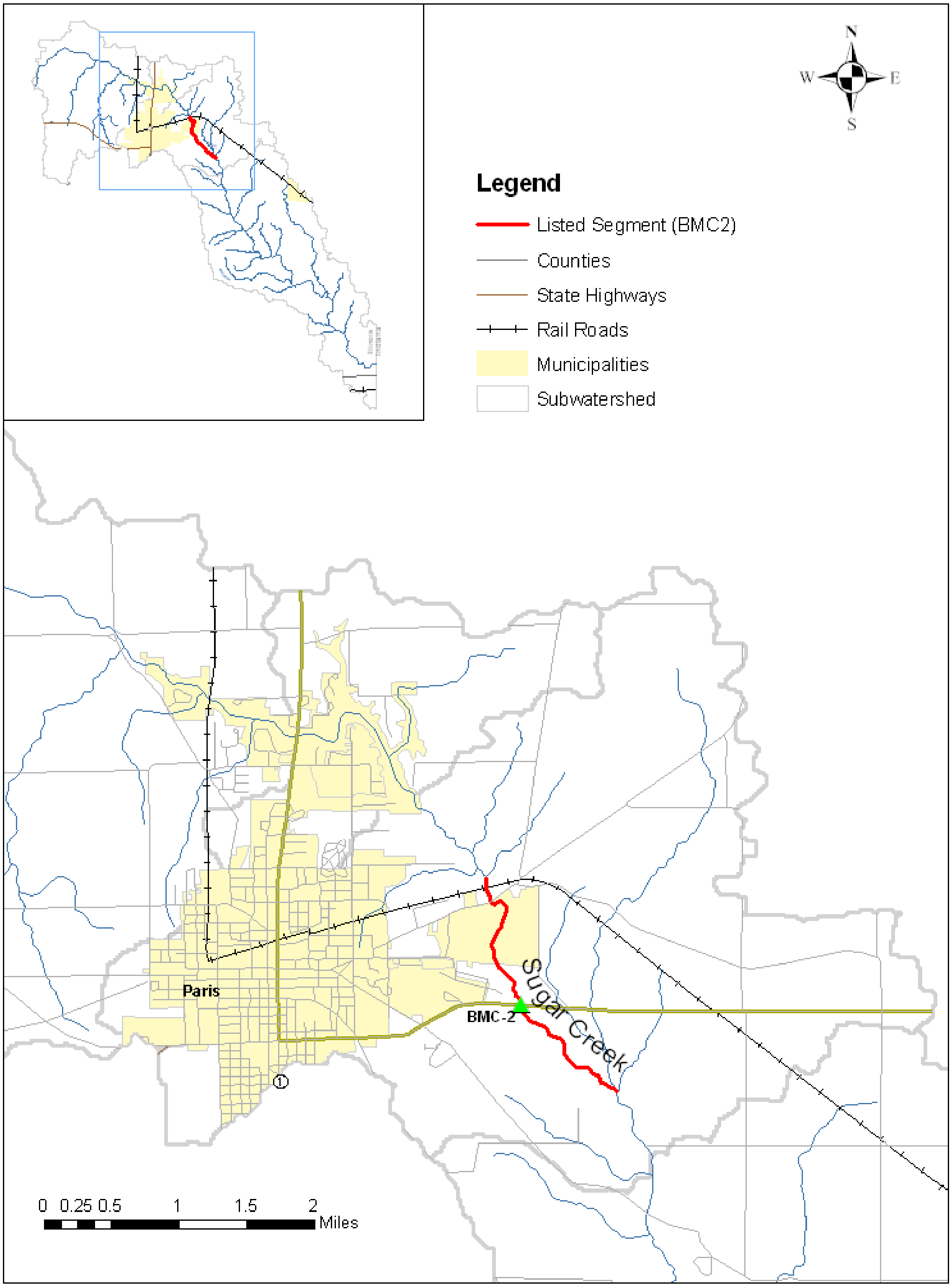
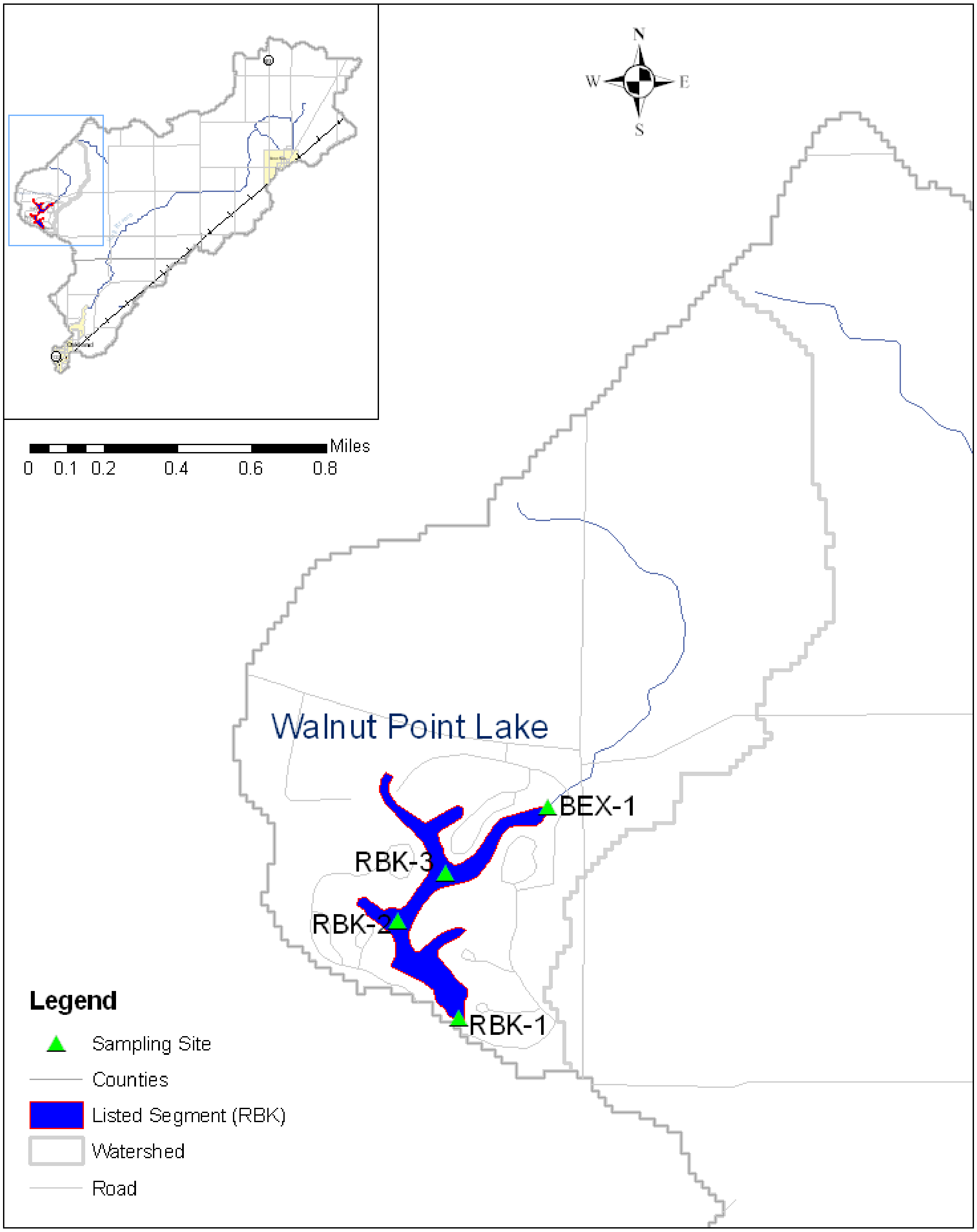


FIGURE 4
WALNUT POINT LAKE SAMPLING SITES



2.3 FIELD SAMPLING PROCEDURES

Water quality sampling was conducted from October 6 through November 1, 2005; resumed on April 11, 2006; and ended on October 27, 2006. Sampling at BPJ-10, BPJ-16, BPJA-03, and BPJ-03 began on April 11, 2006. The samples were collected from each site twice a month, generally 2 weeks apart. The first sampling event approximately occurred during the second week of the month, and the second sampling event occurred during the fourth week of the month.

During each sampling event, two to three field technicians and environmental scientists conducted field measurements and collected grab samples. The staff was required to be familiar with the QAPP and follow the sampling protocol. The sampling usually began in early morning and ended during mid-afternoon to allow enough time to deliver the samples to the laboratory. For each sampling event, field staff implemented standard procedures (as described in QAPP) for field sampling, chain of custody, laboratory analysis, and data reporting to produce well-documented data of known quality. The field staff maintained detailed logbooks and chain-of-custody forms that contain all information pertaining to sample collection. Information recorded for each sample included sample identification number, location (including latitude and longitude), sampling depth, date, time, sampler, and sample matrix.

Duplicate field quality control (QC) samples (one every other sampling event) were collected for laboratory analysis to check sampling and analytical precision, accuracy, and representativeness. Field duplicate samples are independent samples collected as close as possible in space and time to the original investigative sample. Field duplicate samples were collected immediately after collection of the original sample using the same collection method.

At each sampling site within a river or stream, water quality measurements for pH, temperature, dissolved oxygen (DO), conductivity, and turbidity were taken using a Horiba U-10 water quality meter; flow measurements (as field conditions allowed) were recorded using a flow meter; and Secchi depth was recorded using a Secchi disk. Water quality readings were recorded near both banks and in the center of each river or stream.

After water quality readings were taken, composite samples from the three water quality measurement reading locations were collected at the water surface. For samples collected in the streams, laboratory analysis included total Kjehldahl nitrogen (TKN), nitrates + nitrites (NO_2 + NO_3), total phosphorus (TP), total dissolved phosphorus (TDP), chlorophyll-*a*, and 5-day biological oxygen demand (BOD5). In addition, the samples from BPJ-08, BPJA-03, and BPJ-03 were delivered to the IEPA laboratory in Champaign for total fecal coliform analysis.

In Walnut Point Lake, water quality readings and samples for laboratory analysis were collected from three different depths at each of the three sampling locations so that the vertical profile of the water column could be characterized during Stage 3. At each location, the water depth was recorded. One sampling depth was just above the bottom of the lake, one was between the bottom of the lake and the surface, and one was near the surface. One Secchi disk reading was collected at each sampling location, and conductivity, pH, DO, turbidity, and temperature readings were collected at all three depths at each location. Samples for laboratory analysis were also collected at all three depths at each sampling location and analyzed for TKN, NO_2 + NO_3, TP, TDP, and chlorophyll-*a*. In addition, one sediment sample was collected using an Eckman dredge from the deepest sampling location and sent to the laboratory for TP and TDP analysis. One water sample was collected from a tributary to Walnut Point Lake during the first sampling event and analyzed for the same water quality parameters as for the other streams sampled; however, the water sample collected for laboratory analysis was analyzed for TP and TDP only as recommended in the Stage 1 report.

Each sampling event was photologged (see Appendix C). After sampling was completed at each location, the sampling location was recorded using global positioning system (GPS).

All samples were packed in coolers on ice immediately after collection from water and hand-delivered to Severn Trent Laboratory (STL) in University Park, Illinois, at the end of each sampling event. STL provided sample analytical results in the form of a Level II data package within a 2-week turnaround time. The Level II data package is provided in Appendix D in an Excel data file in an Illinois EPA water quality data submittal format.

2.4 LABORATORY SAMPLE ANALYSIS

STL was subcontracted to conduct all the laboratory analysis except the total fecal coliform analysis, which was conducted by the IEPA laboratory. The laboratories followed their internal QA procedures and any additional QA procedures specific to the analytical methods. All laboratory internal QC checks were conducted in accordance with the laboratories' QA manuals and SOPs and in accordance with the requirements of the QAPP.

During the sampling period, 160 samples were submitted for laboratory analysis, plus QC/quality assurance (QA) samples. A total of 168 water samples collected from rivers and streams were submitted for TKN, NO_2 + NO_3, TP, TDP, chlorophyll-*a*, and BOD5 analysis. In addition, 126 samples collected from Walnut Point Lake were submitted for TKN, NO_2 + NO_3, TP, TDP, and chlorophyll-*a* analysis. Seven water samples were collected from the tributary to Walnut Point Lake and submitted for TP and TDP analysis, and fourteen sediment samples collected from Walnut Point Lake were submitted for TP and total organic carbon (TOC) analysis. Seven duplicate samples and seven matrix spike duplicates were submitted for TKN, NO_2 + NO_3, TP, TDP, chlorophyll-*a*, and BOD5 analysis. The following methods were used by the laboratory to conduct these analyses:

- TKN – Method E 351.3; A 4500NorgC
- NO_2 + NO_3 – Method E 353.2; A 4500NO3F
- TP – Method E 365.2; A 4500PE
- TDP (ortho) – Method E 365.2; A 4500PE
- Chlorophyll-*a* – Method 10200H
- BOD5 – Method E 405.1; A 5210B
- TP (sediment) – A 4500PB4E; E 365.2M
- TOC – TOC analysis
- TSS – EPA Method 160.2
- NH_3 –EPA Method 350.2

In addition, fecal coliform was added to the laboratory analysis for samples collected from BPJ-08 so that the results at BPJ-08 and BPJA-03 can be used to characterize the fecal coliform concentration in the upstream of segment BPJ-03.

2.5 DATA SUMMARY

Tetra Tech received the data report from STL in both electronic and hard-copy formats. The data were checked for quality and accuracy and then formatted in an Excel spreadsheet for reporting. Appendix D presents the Excel spreadsheet of water quality data results for the Stage 2 sampling. The spreadsheet includes a total of 3,263 data points for various water quality parameters, including both field measurements and laboratory results.

2.6 PROBLEMS

During the shipment of samples collected on October 31, 2005, for chlorophyll-*a* analysis from STL in University Park, Illinois, to Pensacola, Florida, three water samples (RBK-1-Bottom, RBK-3-Bottom, and BPJC-08) were damaged and could not be analyzed by the laboratory.

In addition, the samples from RBK-1 collected from a 26-foot depth on October 31, 2005, and RBK-2 collected from an 11-foot depth on October 7, 2005, contained higher TDP concentrations than TP concentrations. This situation is attributed to the detection error of the standard analysis approach. During Stage 3, these data points should not be used.

3.0 DATA ANALYSIS

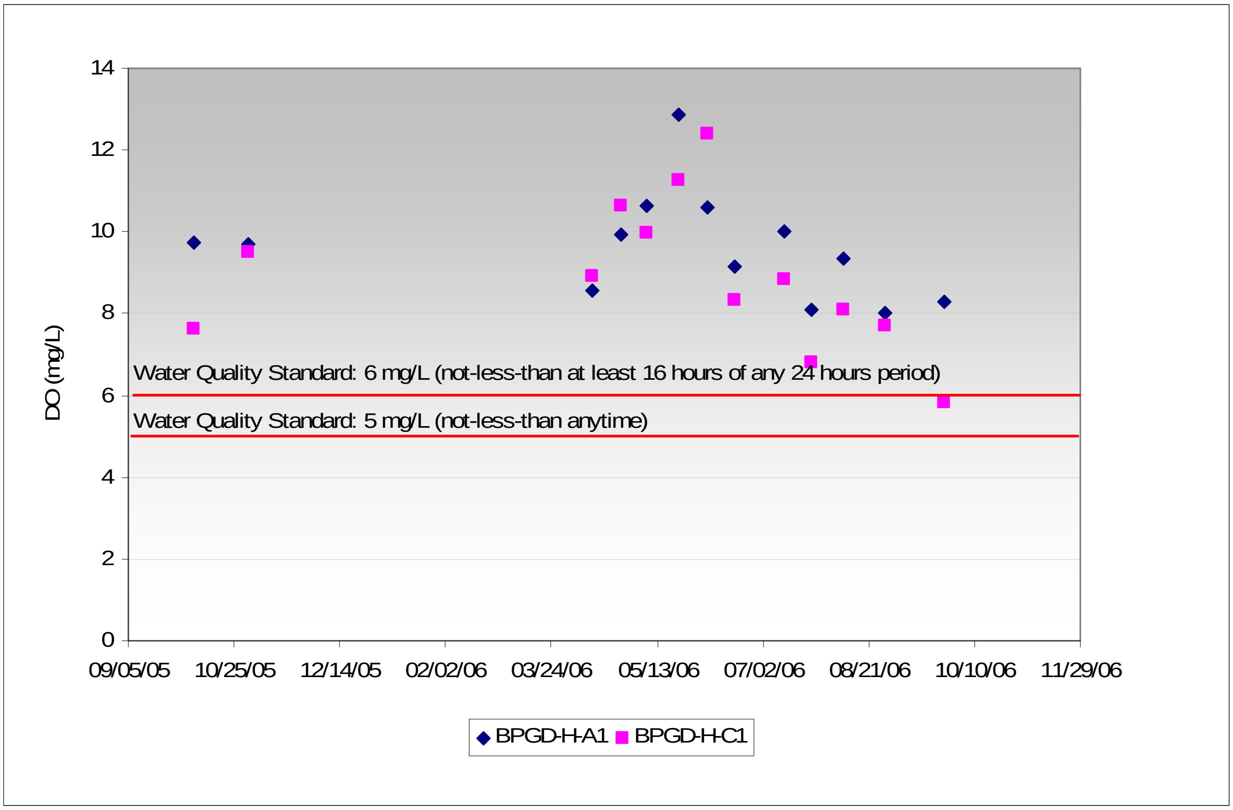
This section discusses the preliminary data analysis for each water body sampled, with a focus on the listed impairments.

3.1 HOOPESTON BRANCH IN NORTH FORK VERMILION RIVER

Sampling sites BPGD-H-A1 and BPGD-H-C1 are located on the Hoopeston Branch of North Fork Vermilion River. BPGD-H-A1 is located upstream of the confluence of the Hoopeston Sewage Treatment Plant (STP) outfall ditch with the stream, and BPGD-H-C1 is located downstream from this confluence. BOD and DO data collected from these two locations were analyzed. A detection limit of 2 milligrams per liter (mg/L) was used for data points when the BOD concentration was below the detect limit.

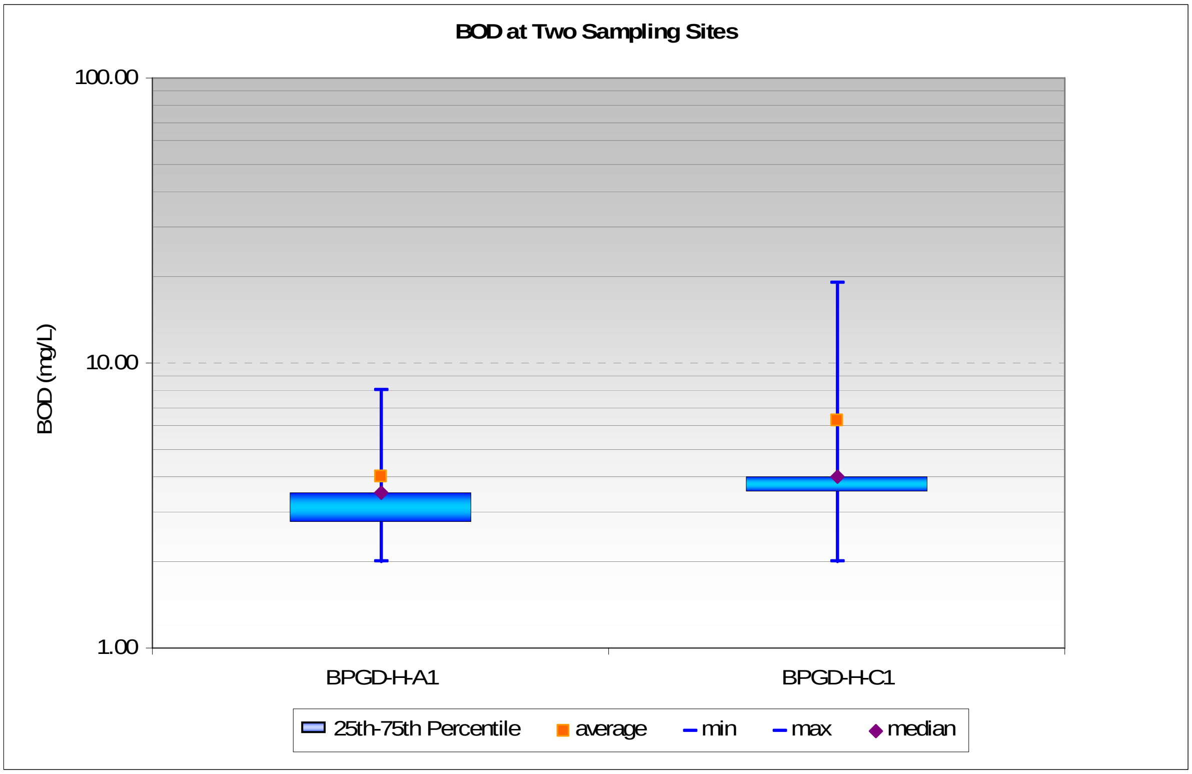
Figure 5 compares the DO measurements at the two sites during the sampling period. All data points met the DO standard of not-less-than 5.0 mg/L at any time. It is evident that BPGD-H-A1 contained higher average DO concentrations than BPGD-H-C1.

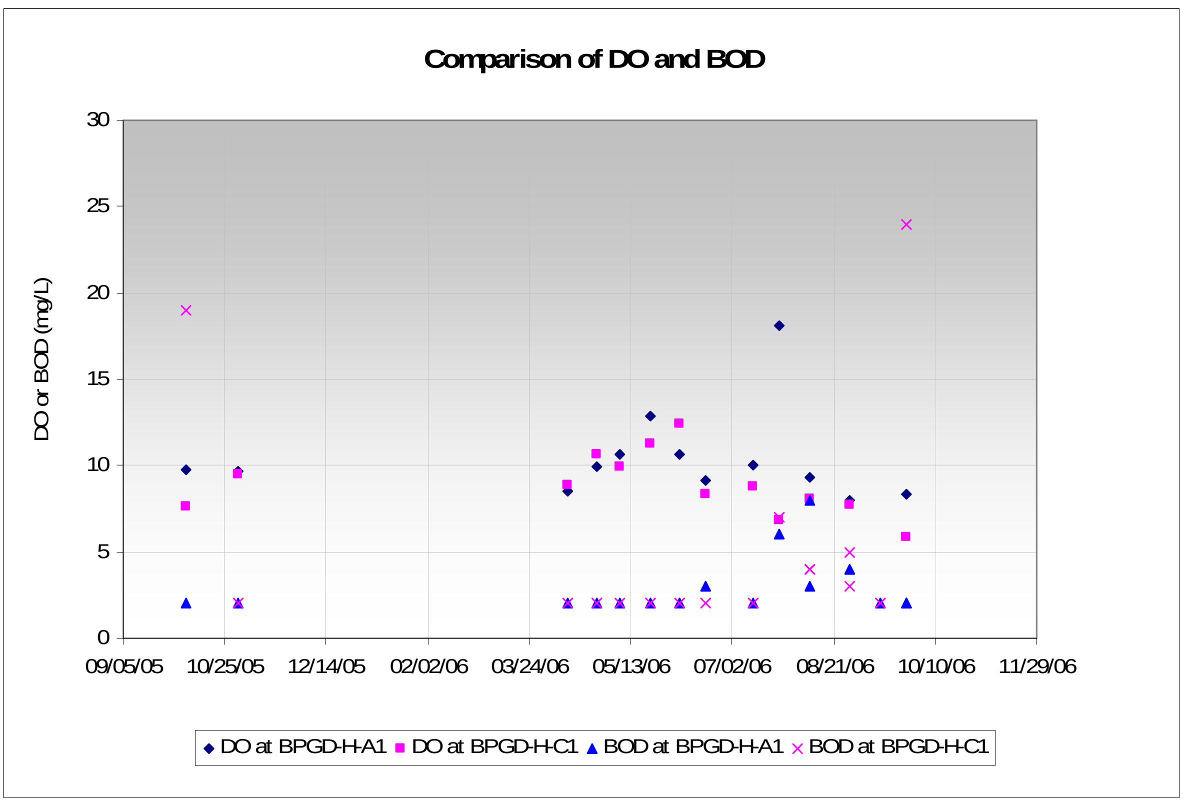
FIGURE 5
DO CONCENTRATIONS IN HOOPESTON BRANCH



A total of 15 BOD data points (data points below the detective limit were removed) were analyzed for the two sites in Hoopeston Branch. The measured BOD values ranged from 2 to 19 mg/L. For most of the sampling period, BOD concentrations were below 8 mg/L, with highest of 19 mg/L observed in October. In general, BOD concentrations in BPGD-H-C1 were relatively higher than those at BPGD-H-A1, a situation potentially attributable to effluent from the Hoopeston STP (see Figure 6). The comparison of BOD and DO data points in Figure 6 indicates a noticeable correlation between BOD and DO data. Increased BOD concentrations decrease DO concentrations in Hoopeston Branch as shown by the data points for August and September in Figure 6.

FIGURE 6
BOD CONCENTRATIONS IN HOOPESTON BRANCH

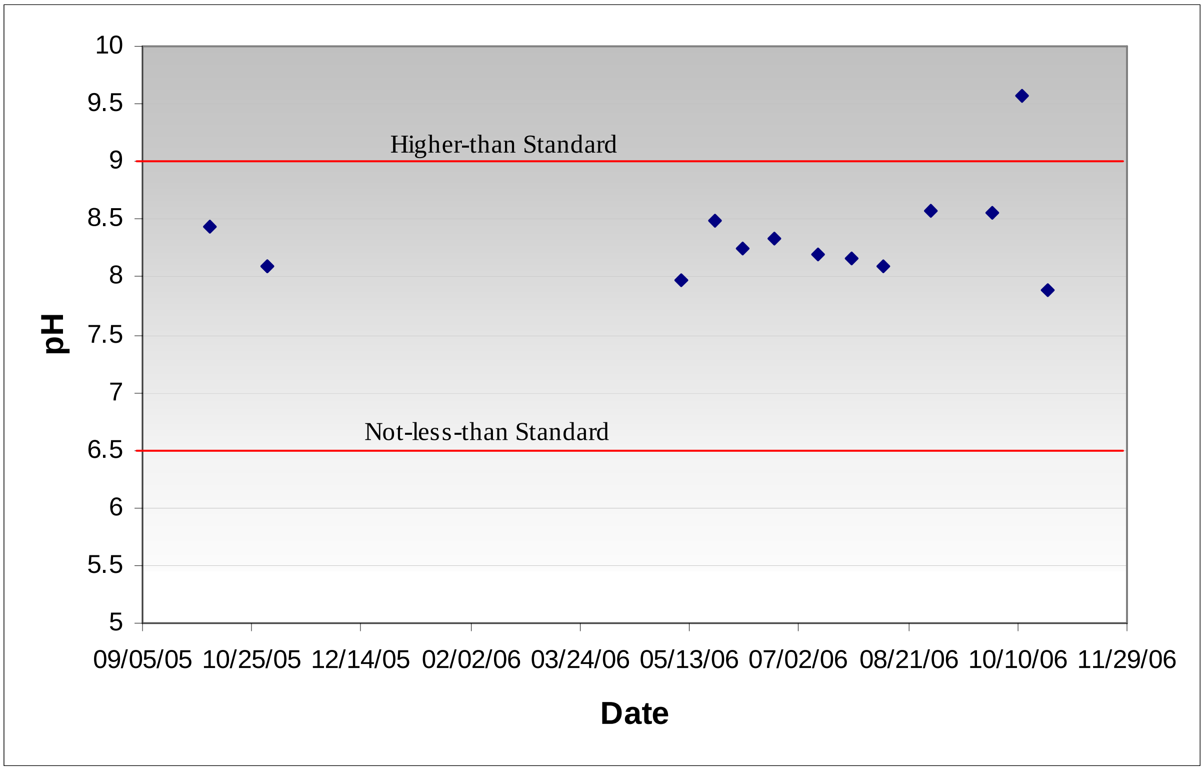




3.2 SALT FORK VERMILION RIVER

pH data were recorded at sampling site BPJ-08 between October 2005 and October 2006. A total of 14 measurements were taken at this sampling station and only 1 exceeded the pH water quality standard of 9 (see Figure 7). At BPJ-08, pH values ranged from 7.88 to 9.57, with an average value of 8.34. A pattern is not apparent over the period of time that measurements were taken.

FIGURE 7
pH AT BPJ-08 IN SALT FORK VERMILLION RIVER



pH data were also recorded at sampling sites BPJ-10 and BPJ-16 between May and October of 2006. A total of 11 measurements were taken at BPJ-10 and one of the measurements exceeded the pH water quality standard of 9 (see Figure 8). At BPJ-10, pH values ranged from 7.85 to 9.90, with an average value of 8.40. A total of 10 measurements were taken at BPJ-16 and one value barely exceeded the pH water quality standard of 9 (see Figure 9). At BPJ-16, pH values ranged from 7.53 to 9.05, with an average value of 8.30.

FIGURE 8
pH AT BPJ-10 IN SALT FORK VERMILLION RIVER

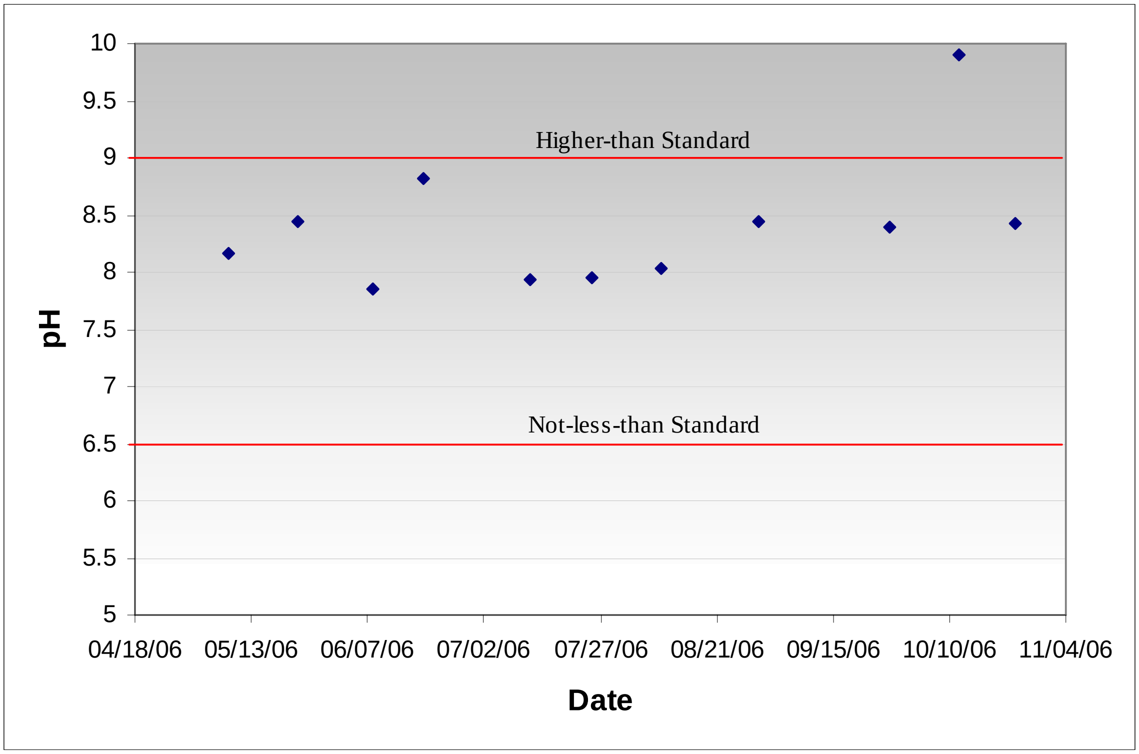
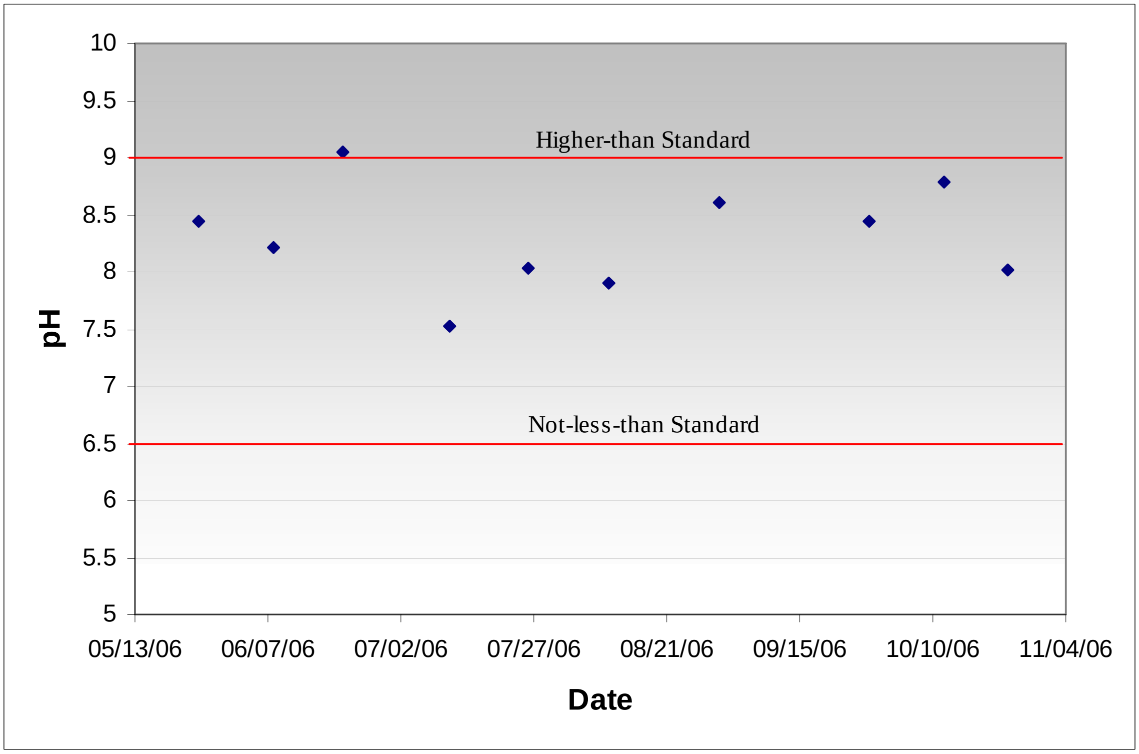
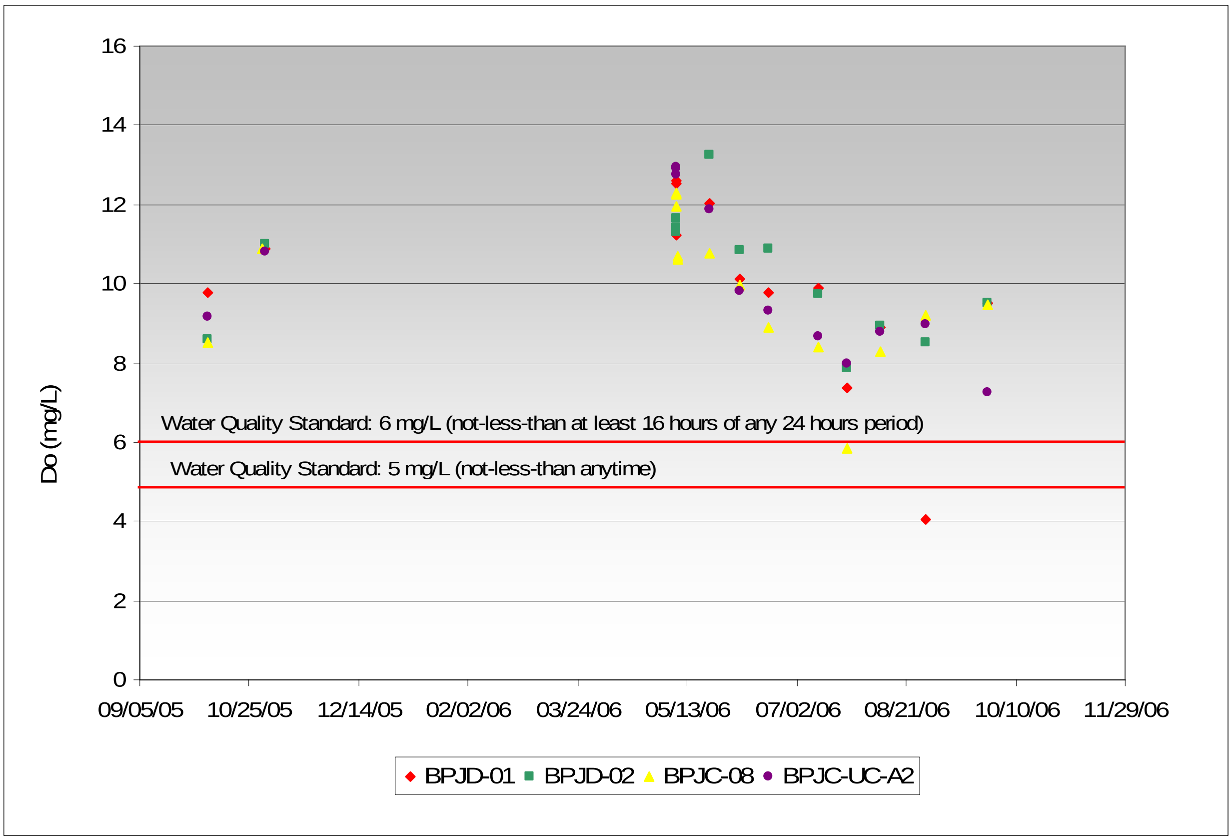


FIGURE 9
pH AT BPJ-16 IN SALT FORK VERMILLION RIVER



DO data from BPJD-01, BPJD-02, BPJC-08, and BPJC-UC-A2 were analyzed. A total of 54 DO measurements were taken, and only one collected from BPJD-01 fell below the water quality standard of 6 mg/L (see Figure 10). DO measurements at all four sites were similar, with averages ranging from 9.87 to 10.27 mg/L. DO levels are higher in the spring and decrease as the year progresses.

FIGURE 10
DO CONCENTRATIONS AT SEGMENTS BPJC-08 AND BPJD-02
IN SALT FORK VERMILLION RIVER



Fecal coliform data were collected between May and October 2006 from BPJ-03, BPJ-08, and BPJA-03. A total of 36 measurements were taken, and 19 exceeded the water quality standard of 200 colony-forming units per 100 milliliters (cfu/100 mL) (see Figure 11). The geometric mean of fecal coliform concentrations exceeded the water quality standard at all three sites. The fecal coliform concentrations at the upstream side of segment BPJ-03 (as shown by combining BPJ-08 and BPJA-03 data) are similar to those at the downstream end (as shown by BPJ-03 data). The elevated fecal coliform concentrations mostly occurred in July and August (see Figure 12).

FIGURE 11
FECAL COLIFORM CONCENTRATIONS AT BPJ-03, BPJ-08, AND BPJA-03
IN SALT FORK VERMILLION RIVER

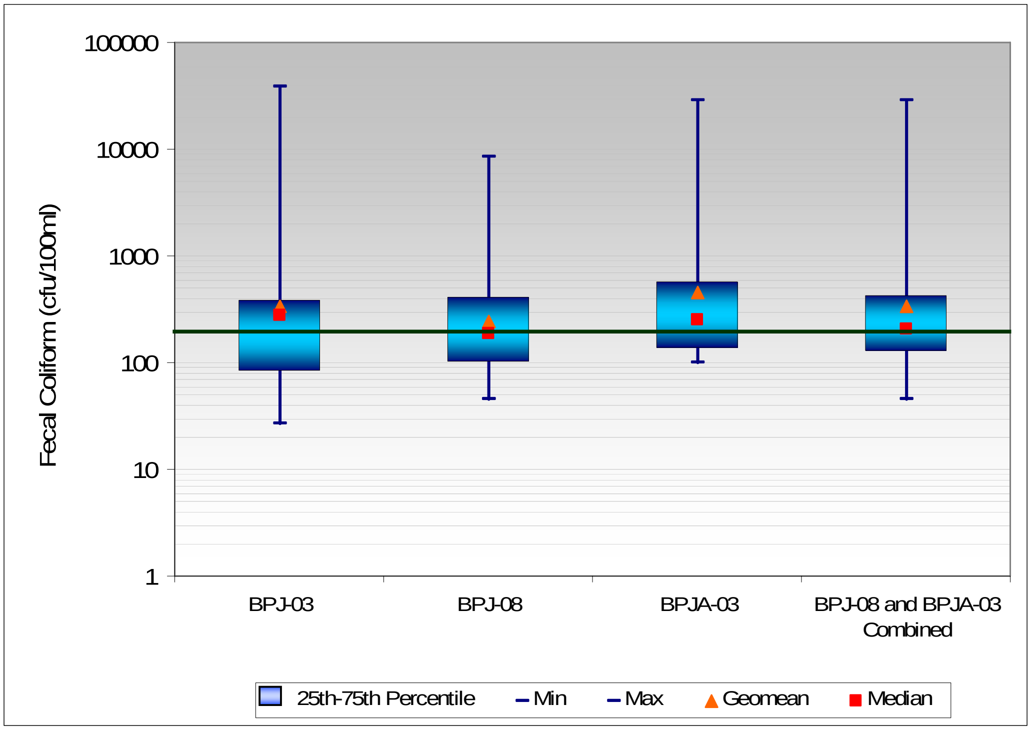
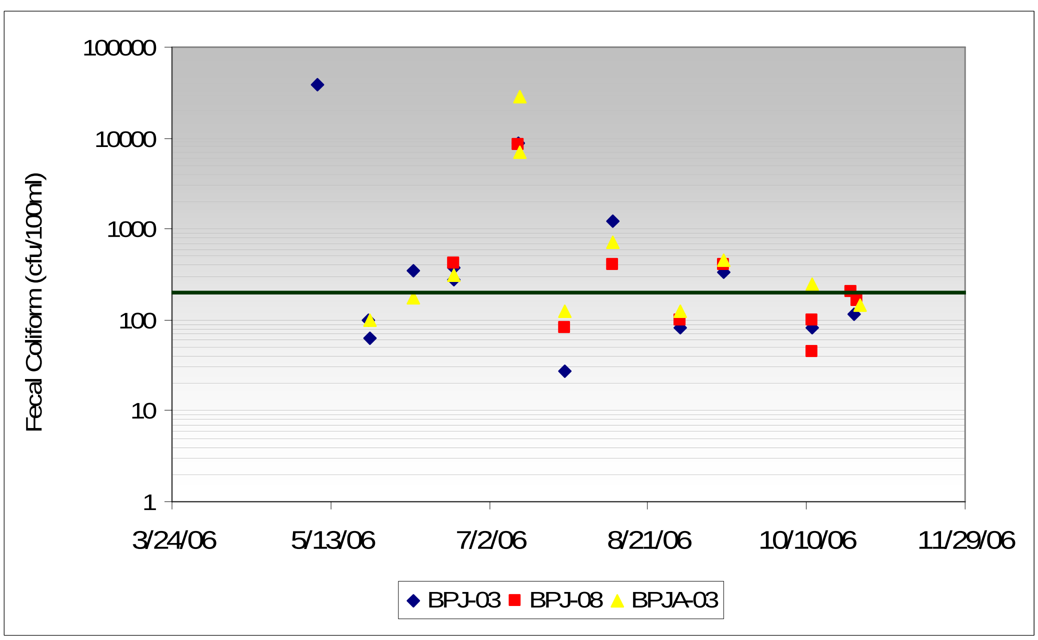


FIGURE 12
MONTHLY VARIATIONS IN FECAL COLIFORM CONCENTRATIONS
AT BPJ-03, BPJ-08, AND BPJA-03
IN SALT FORK VERMILLION RIVER



3.3 SUGAR CREEK

The bi-weekly DO data collected from Sugar Creek during the sampling period never violated the IEPA DO standard of not less than 5 mg/L at any time. A total of 15 measurements were taken that ranged from 7.48 to 12.92 mg/L (see Figure 13). DO concentrations were highest in May and gradually decreased with time after May. The IEPA surface water section independently conducted continuous DO sampling every 30 minutes in July and September 2006, and data indicate that DO concentrations violated the standard of no less than 5 mg/L DO at any time (see Figure 14). In addition, the DO concentrations violated the standard of not less than 6 mg/L for at least 16 hours out of a 24-hour period.

FIGURE 13
DO CONCENTRATIONS IN SUGAR CREEK

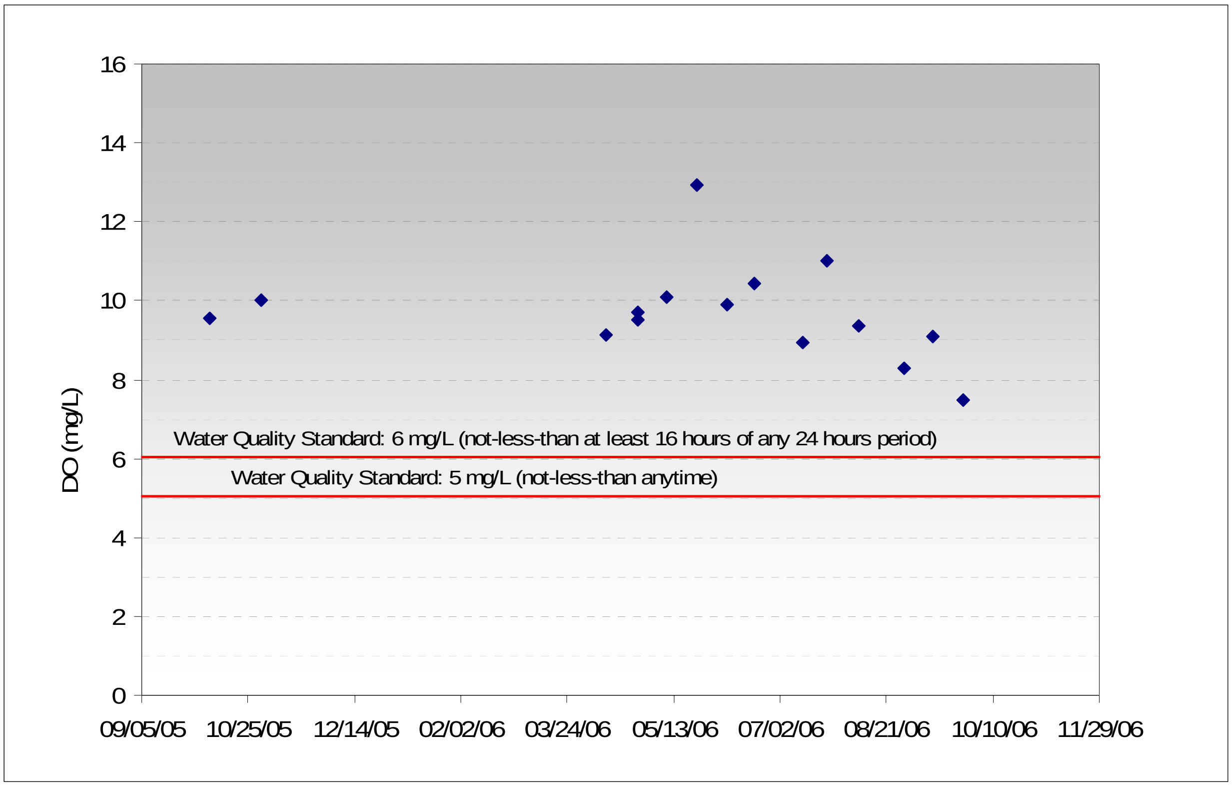
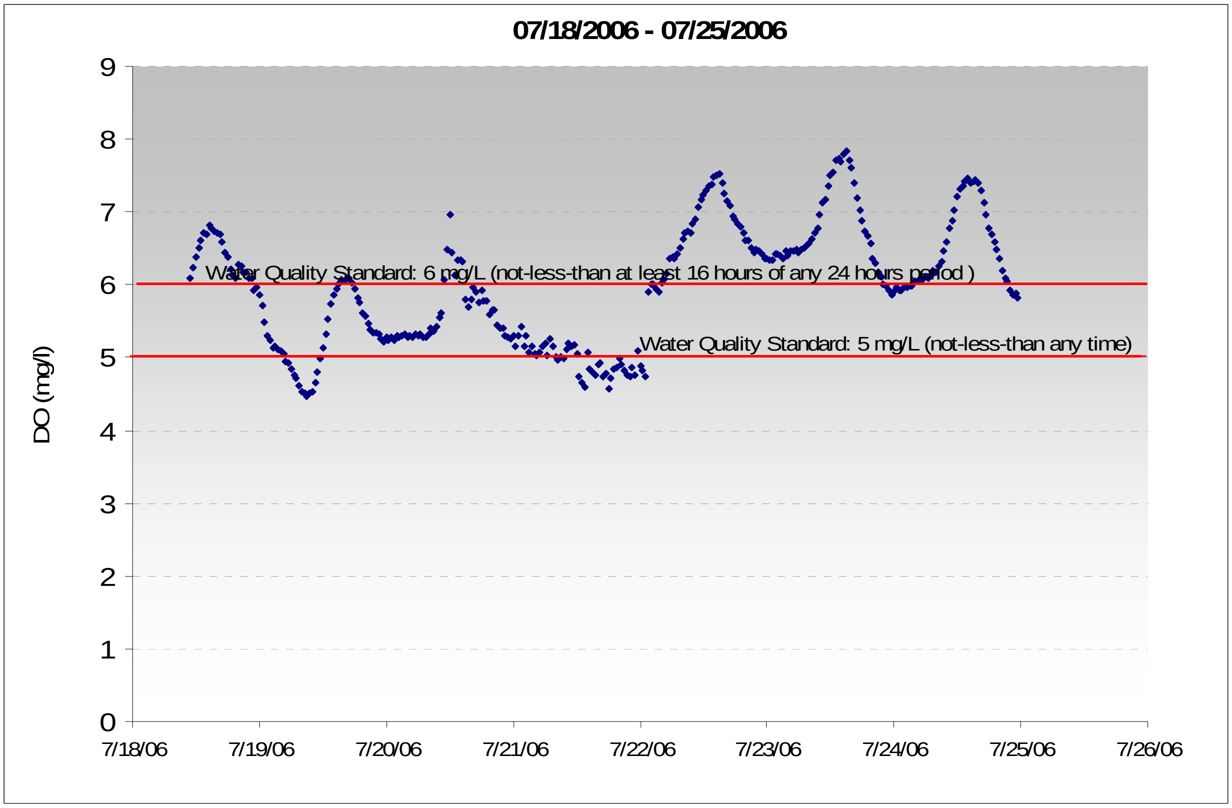
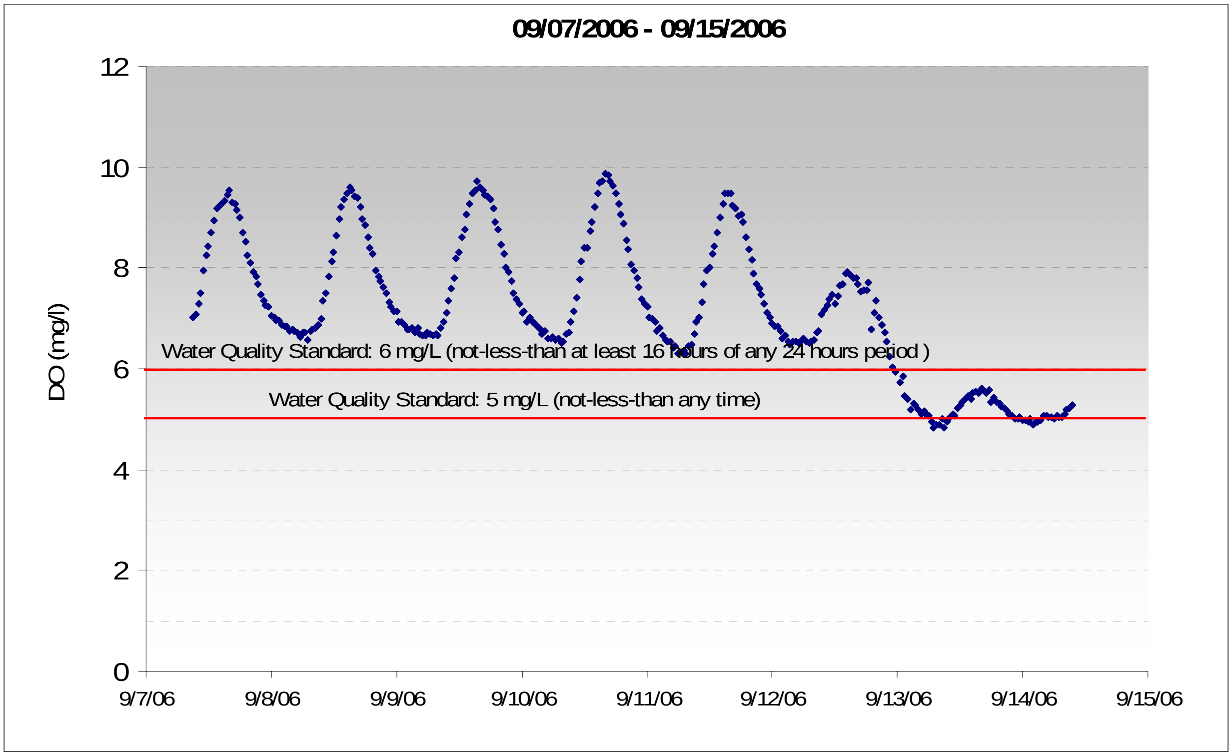


FIGURE 14
CONTINUOUS DO CONCENTRATIONS IN SUGAR CREEK
(Collected by IEPA)





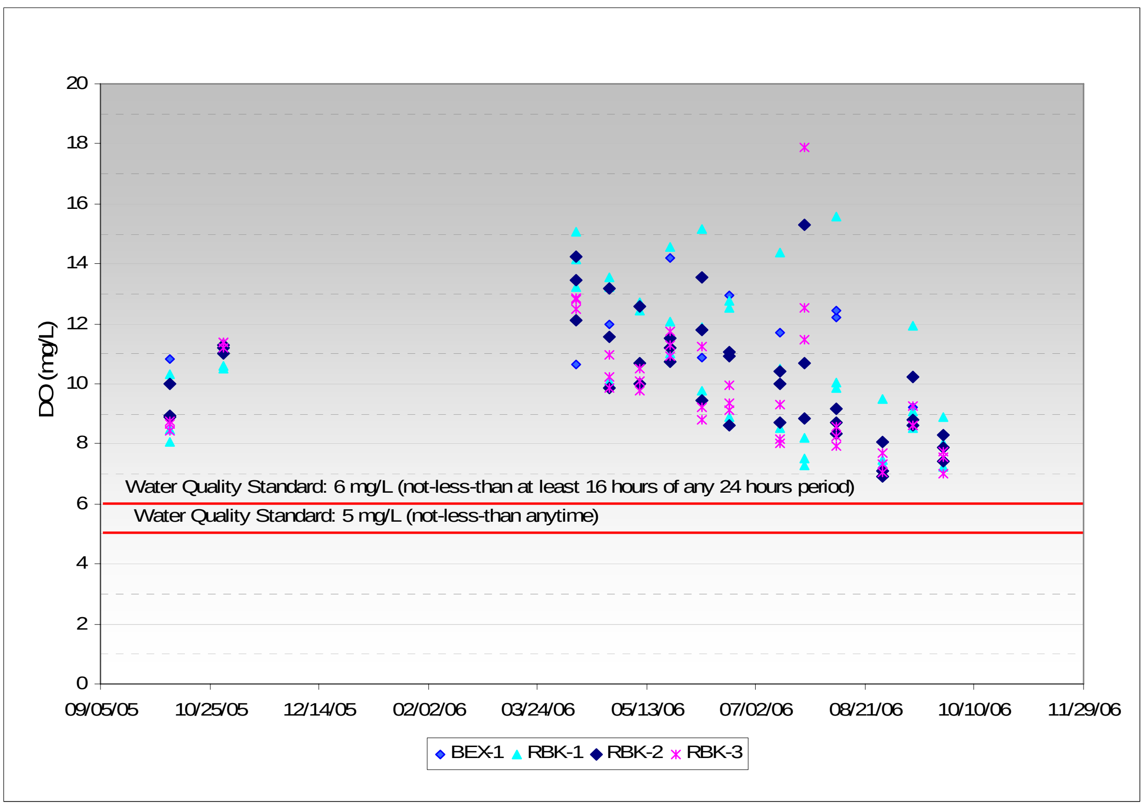
3.4 WALNUT POINT LAKE

Walnut Point Lake has four sampling sites: BEX-1, RBK-1, RBK-2, and RBK-3. BEX-1 is located at the inflow point from a tributary to the north end of the lake. The flow path starts from BEX-1 to RBK-3, RBK-2, and finally RBK-1 which is located near the dam at the southern end of the lake. DO, TP, NO_2 + NO_3, and chlorophyll-*a* measurements were analyzed to characterize the water quality in the lake as discussed below.

DO

A total of 96 DO data points were collected from BEX-1, RBK-1, RBK-2, and RBK-3 during the sampling period. The average and minimum DO concentrations at all four locations exceeded the water quality standard of not less than 6.0 mg/L (see Figure 15). The average DO concentration at the tributary (12 mg/L) appears higher than concentrations in the lake. In general, DO concentrations are stable in the lake and gradually decrease in August and September. DO concentrations are measured 1 foot below the water surface, 2 feet above the lake bottom, and at a middle point. Figure 15 shows data from all three depths.

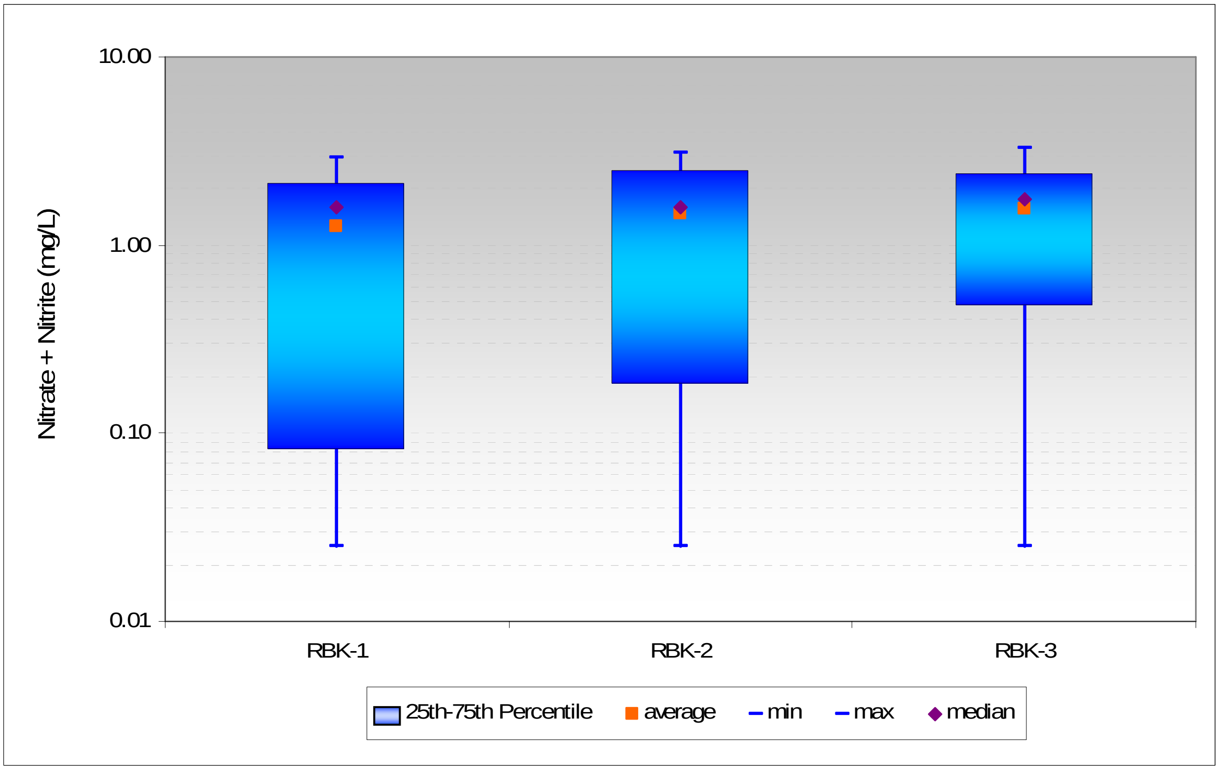
FIGURE 15
DO CONCENTRATIONS IN WALNUT POINT LAKE



NO_2 + NO_3

A total of 70 NO_2 + NO_3 data points were collected from RBK-1, RBK-2, and RBK-3 during the sampling period. Concentrations at all three locations are below the IEPA water quality standard of 10 mg/L (see Figure 16). The data range from a minimum concentration of 0.03 mg/L to a maximum concentration of 3.30 mg/L at RBK-3. The average total nitrogen concentration is highest at RBK-3 and lowest at RBK-1. A high range of the 25th to 75th quartile at RBK-1 indicates a diverse range of total nitrogen values.

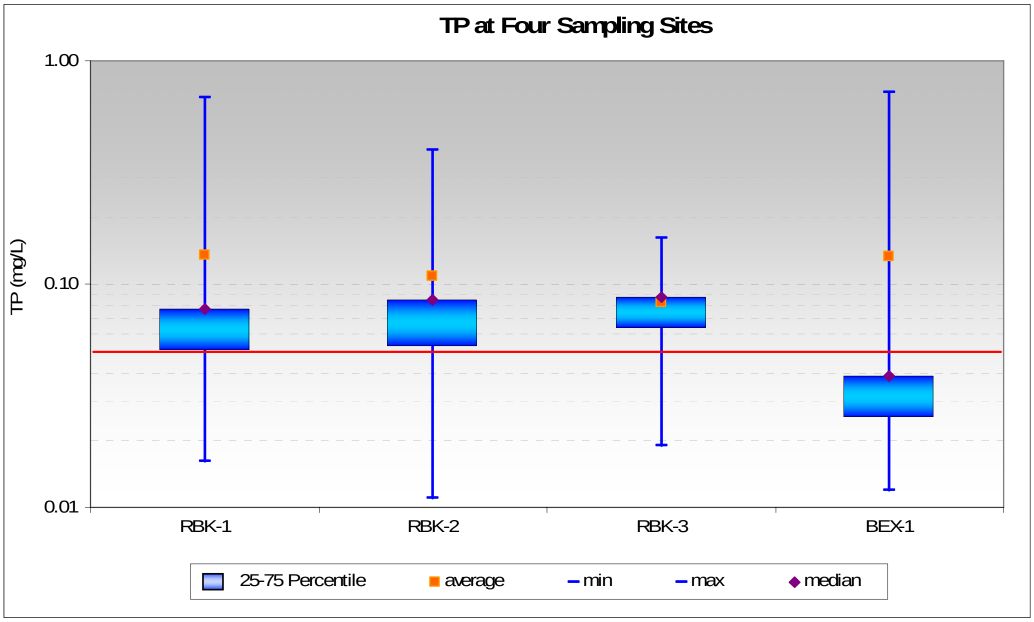
FIGURE 16
NO_2 + NO_3 CONCENTRATIONS IN WALNUT POINT LAKE



TP

A total of 139 TP data points were collected from all four location Walnut Point Lake sites (RBK-1, RBK-2, RBK-3, and BEX-1). TP values ranged from 0.01 to 0.72 mg/L (see Figure 17). The average TP concentrations at all sites exceeded the IEPA water quality standard of 0.05 mg/L. High concentrations were detected at BEX-1 and RBK-1. Out of the 139 total data points, 106 (76 percent) violated the standard. These low values were mostly seen from April through July. The 25th to 75th quartile of TP concentrations at BEX-1 is below the average concentration, indicating that most values are below the water quality standard. TP concentrations are measured at 1 foot below the water surface, 2 feet above the lake bottom, and at a middle point. The second graph in Figure 17 indicates lower average concentrations at the surface and gradually increasing concentrations with an increase in depth. High concentrations at the bottom indicate historic TP accumulation at RBK-1.

FIGURE 17
TP CONCENTRATIONS IN WALNUT POINT LAKE



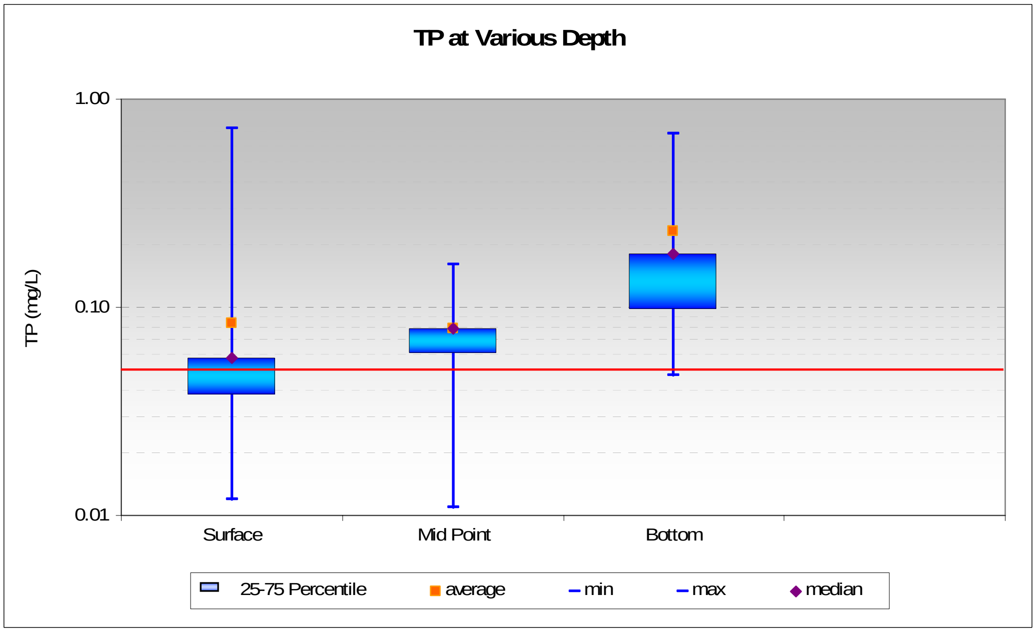
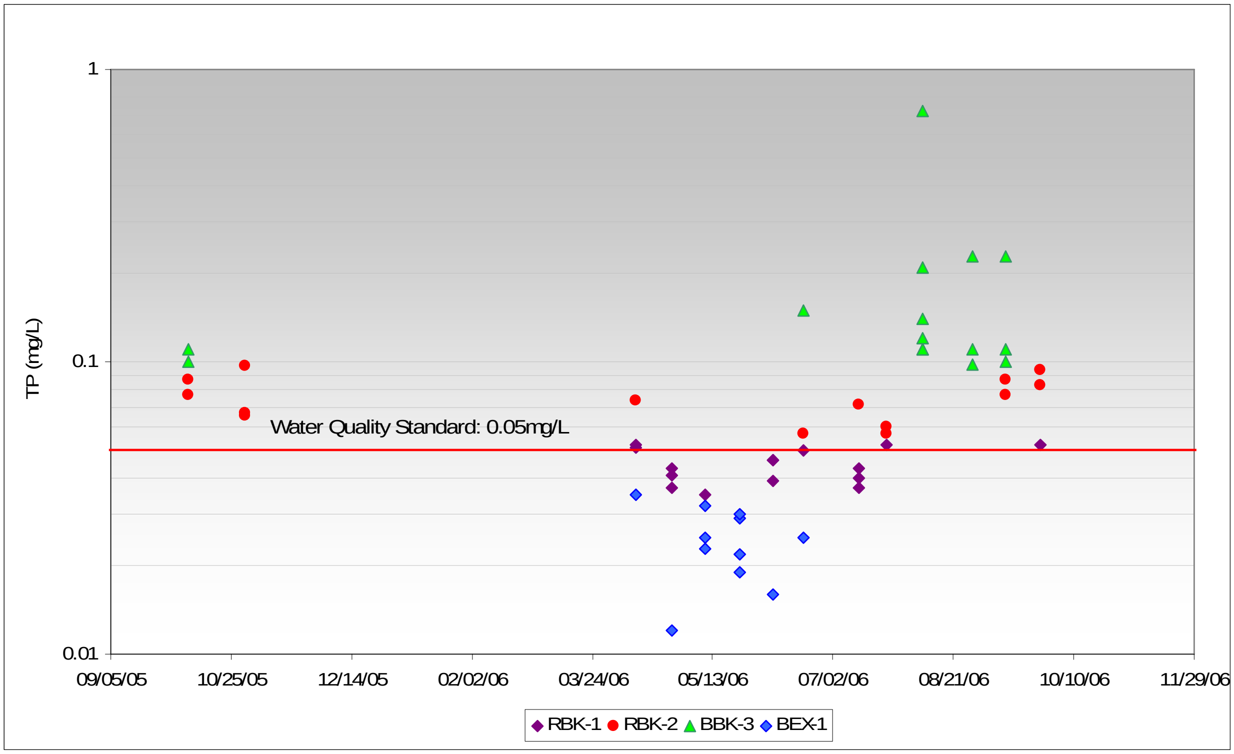


Figure 18 presents the TP data points for 1 foot below the water surface in Walnut Point Lake at all four sampling sites. Out of the 55 data points, 34 violated the 0.05-mg/L standard. The highest TP concentrations occurred in August and September.

FIGURE 18
SCATTER PLOT OF TP CONCENTRATIONS WITHIN 1 FOOT OF WATER SURFACE IN WALNUT POINT LAKE



Chlorophyll-*a*

A total of 111 chlorophyll-*a* measurements were taken at RBK-1, RBK-2, and RBK-3. The minimum concentration of 0.53 milligrams per cubic meter (mg/m^3) was detected at RBK-1, and the maximum concentration of 170 mg/m^3 was detected at RBK-3 (see Figure 19). The average concentration ranges from 21.27 to 29.74 mg/m^3. The chlorophyll-*a* concentration at RBK-3 varied from 0.8 to 170 mg/m^3. Higher chlorophyll-*a* concentrations were detected at the surface and gradually decreased with depth. The elevated chlorophyll-*a* concentrations are apparently closely related to high TP concentrations (see Figure 20).

FIGURE 19
CHLOROPHYLL-*a* CONCENTRATIONS IN WALNUT POINT LAKE

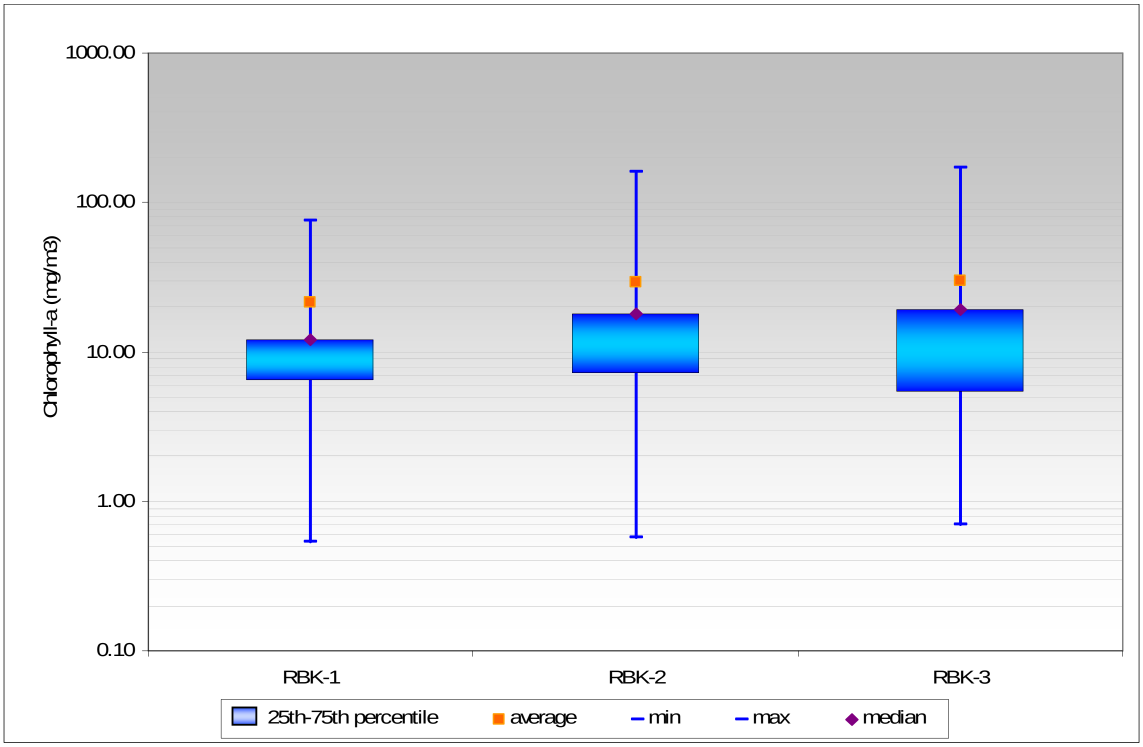
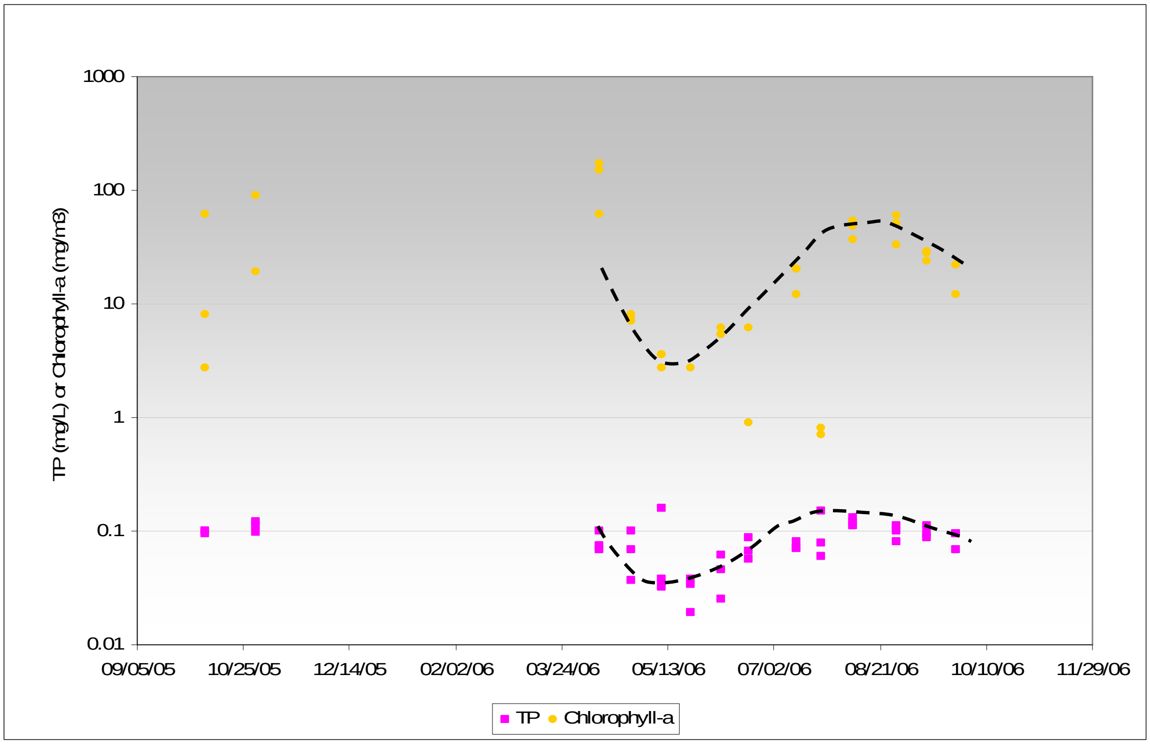


FIGURE 20
TP AND CHLOROPHYLL-*a* CONCENTRATIONS AT RBK-3
IN WALNUT POINT LAKE



4.0 RECOMMENDATIONS

Based on the data analysis, the recommendations below should be considered.

NORTH FORK VERMILLION RIVER WATERSHED

- Segment BPGD (Hoopeston Branch): Previously, the BPGD segment was assessed based on 2002 facility-related stream survey (FRSS) data, when a DO concentration of 4.7 mg/L was recorded, which violated the standard of not less than 5 mg/L at any time. This standard was never violated based on Stage 2 sampling data. It is recommended that DO be delisted from 2006 303(d) list.

SALT FORK VERMILION RIVER WATERSHED

- Segment BPJ10 (Salt Fork Vermilion River): It is recommended that the segment be listed for pH impairment because two violations of the pH water quality standard of no more than 9 were recorded during the sampling period. These violations occurred on October 12, 2006 with a pH value of 9.90 and June 21, 2006 with a pH value of 9.05. In addition, BPJ10 should also be listed for nitrate impairment because eight violations were recorded during the sampling period.

- Segment BPJ08 (Salt Fork Vermilion River): It is recommended that the segment be listed for pH impairment because one violation of the pH water quality standard of no more than 9 was recorded during the sampling period. The violation occurred on October 12, 2006 with a pH value of 9.57. It is also recommended that BPJ08 be listed for nitrates because three violations were recorded during the sampling period. In addition, BPJ08 should also be listed for fecal coliform impairment.

- Segment BPJ03 (Salt Fork Vermilion River and Jordan Creek): It is recommended that the segment be listed for fecal coliform impairment because 6 violations on Jordan Creek and 7 violations on Salt Fork Vermilion River of fecal coliform water quality standard of 200 colony-forming units per 100 milliliters (cfu/100 mL) were recorded during the sampling period.

- Segment BPJC08 (Saline Brach): The DO standard of not less than 5 mg/L at any time was not violated based on Stage 2 sampling data. It is recommended that the segment be delisted for DO impairment.

- Segment BPJD02 (Spoon Branch): One DO data point, 4.04 mg/L on August 30, 2006, was below the IEPA standard of no less than 5 mg/L at any time. It is recommended that a DO TMDL be developed for the segment.

SUGAR CREEK WATERSHED

- Segment BMC2: Based on DO data that violated the IEPA standard of no less than 5 mg/L at any time, it is recommended that a DO TMDL be developed for the segment.

WALNUT POINT LAKE WATERSHED

- Segment RBK: It is recommended that Walnut Point Lake be delisted for low DO impairment because no violation of applicable water quality standard was recorded during the sampling period; however, a TP TMDL should be developed for the segment. The Walnut Point Lake is not designated for the use of public and food processing water supply. The nitrate standard is not applicable to the segment.

Table 2 summarizes the number of water quality violations for each segment based on Stage 2 results compared to Stage 1 findings. The final decision on Stage 3 will be made through consultation with IEPA.

TABLE 2
SUMMARY OF IMPAIRED SEGMENTS, PARAMETERS, AND NUMBER OF VIOLATIONS

Segment ID	Segment Name	Station ID	Parameters	No. of Violations/No. of Data Points Based on Stage 1 Report	Date of Last Violation	No. of Violations/No. of Data Points Based on Stage 2 Data Collection	Recommendation
BPGD	Hoopeston Branch	BPGD-H-A1	DO[a]	1/1 (FRSS data)	9/23/2002	0/13	Delisting
		BPGD-H-C1		1/3 (FRSS data)	No Violation	0/13	
BPJ10	Salt Fork Vermilion River	BPJ-10	pH	0/16	10/12/2006	1/11	TMDL development
			NO_2[b]	0/4	6/19/2006	4/11	TMDL development
		BPJ-16	pH	No Data	6/21/2006	1/10	TMDL development
			NO_2[b]		6/21/2006	4/13	TMDL development
BPJ08	Salt Fork Vermilion River	BPJ-08	pH	2/7	10/12/2006	1/14	TMDL development
			NO_2[b]	0/6	6/21/2006	3/15	TMDL development
BPJ03	Jordan Creek	BPJA-03	Fecal Coliform	No Data	10/12/2006	6/11	TMDL development
	Salt Fork Vermilion River	BPJ-03			9/14/2006	7/13	
BPJC08	Saline Branch	BPJC-08	DO[a]	3/23 (including FRSS data)	8/13/2001	0/12	Delisting
		BPJC-UC-A2				0/11	
BPJD02	Spoon Branch	BPJD-01	DO[a]	1/6	8/30/2006	1/11	TMDL development
		BPJD-02			No Violation	0/11	

TABLE 2 (Continued)
SUMMARY OF IMPAIRED SEGMENTS, PARAMETERS, NUMBER OF VIOLATIONS

Segment ID	Segment Name	Station ID	Parameters	No. of Violations/No. of Data Points Based on Stage 1 Report	Date of Last Violation	No. of Violations/No. of Data Points Based on Stage 2 Data Collection	Recommendation
BMC2	Sugar Creek	BMC-2	DO[a]	1/224 (including FRSS data)	9/14/2006	53/687[c]	TMDL development
RBK	Walnut Point Lake	BEX-1	TP[d]	No data	9/12/2006	4/11	TMDL development
			DO[a]		No Violation	0/11	Delisting
		RBK-1	TP[d]	19/25	9/26/2006	7/14	TMDL development
			NO_2[b, d]	0/20	No Violation	0/14	Delisting
			DO[a]	59/107	10/13/1987	0/14	Delisting
		RBK-2	TP[d]	11/15	9/26/2006	9/14	TMDL development
			NO_2[b, d]	0/15	No Violation	0/14	Delisting
			DO[a]	49/101	10/4/1995	0/14	Delisting
		RBK-3	TP[d]	11/15	9/26/2006	10/14	TMDL development
			NO_2[b, d]	0/15	No Violation	0/14	Delisting
			DO[a]	30/80	No Violation	0/14	Delisting

Notes:

DO Dissolved oxygen
FRSS 2002 Facility-related stream survey
ID Identification
NO_2 Nitrate
NO_3 Nitrite
TMDL Total maximum daily load
TP Total phosphorus

a Based on DO standard of not-less-than 5 mg/L at any time; only data points within 1-foot of water surface considered
b $NO_2 + NO_3$ data used as surrogate
c Continuous samples collected taken at 30-minute intervals
d Data points within 1 foot of water surface

APPENDIX A

QAPP

The QAPP is available from the Illinois EPA upon request.

APPENDIX B

QAPP ADDENDUM

The QAPP Addendum is available from the Illinois EPA upon request.

APPENDIX C

FIELD PHOTOGRAPHS

Photograph No. 1 Location: BPJC-UC-A2
Orientation: West Date: October 6, 2005
Description: Tetra Tech collected composite samples from the south bank, center, and north banks. (Field book Photo # 01)

Photograph No. 2 Location: BPJ-UC-A2
Orientation: North Date: October 6, 2005
Description: Overview of BPJ-UC-A2 (Field book photo # 02)

Photograph No. 3 Location: BPJC-08
Orientation: East Date: October 6, 2005
Description: Tetra Tech measuring width of stream (Field book photo # 3)

Photograph No. 4 Location: BPJD-08
Orientation: East Date: October 6, 2005
Description: Tetra Tech collecting surface samples (Field book photo # 4)

Photograph No. 5 | Location: BPJD-01
Orientation: East | Date: October 6, 2005
Description: Tetra Tech collecting water from center of river for field parameters (Field book photo # 5)

Photograph No. 6 | Location: BPJD-02
Orientation: East | Date: October 6, 2005
Description: Tetra Tech collecting water for Horiba field parameters (Field book photo # 6)

Photograph No. 7 Location: BPJ-08
Orientation: Northeast Date: October 6, 2005
Description: Failed silt fencing along east bank of Salt Fork Creek (Field book photo # 7)

Photograph No. 8 Location: BPJ-08
Orientation: Northeast Date: October 6, 2005
Description: Tetra Tech measuring width of Salt Fork Creek (Field book photo # 8)

Photograph No. 9 Location: BPGD-H-A1
Orientation: North Date: October 6, 2005
Description: Tetra Tech using Secchi disk for field measurements (Field book photo # 9)

Photograph No. 10 Location: BPGD-H-C1
Orientation: Southwest Date: October 6, 2005
Description: Tetra Tech collecting water for Horiba field measurements (Field book photo # 10)

Photograph No. 11 Location: RBK-3
Orientation: Southwest Date: October 7, 2005
Description: Tetra Tech collecting sample from RBK–3 bottom (Field book photo # 9)

Photograph No. 12 Location: RBK-2
Orientation: West Date: October 7, 2005
Description: Tetra Tech collecting surface sample for RBK-2-surface (Field book photo # 10)

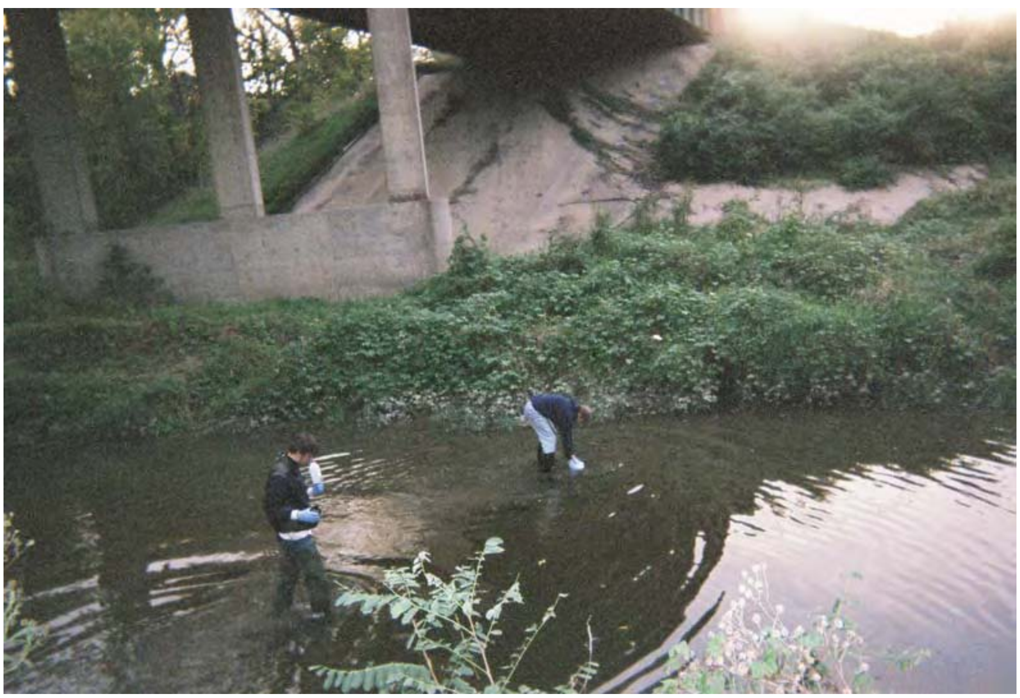
Photograph No. 13 Location: RBK-2
Orientation: West Date: October 7, 2005
Description: Tetra Tech preparing the Kemmerer sampler at RBK-2 for a middle sample (Field book photo #11)

Photograph No. 14 Location: RBK-2
Orientation: West Date: October 7, 2005
Description: Tetra Tech wrapping foil around sample to protect from sunlight (No reference in field book)

Photograph No. 15 Location: BEX-1
Orientation: North Date: October 7,2005
Description: Tetra Tech collecting water for Horiba field measurements (Field book photo # 12)

Photograph No. 16 Location: BEX-1
Orientation: Northwest Date: October 7, 2005
Description: Tetra Tech collecting surface water sample from southeast bank (Field book photo # 13)

Photograph No. 17 Location: BMC-2
Orientation: Southwest Date: October 7, 2005
Description: Tetra Tech checking field measurements using Horiba along east bank (Field book photo # 14)



Photograph No. 18 Location: BMC-2
Orientation: West Date: October 7, 2005
Description: Tetra Tech collecting samples from west bank (Field book photo # 15)

APPENDIX D

WATER QUALITY DATA

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BEX-1	10/07/05	Dissolved Phosphorus (mg/L)		0.037	B	16:45	
BEX-1	04/11/06	Dissolved Phosphorus (mg/L)		0.028	B	14:53	
BEX-1	04/26/06	Dissolved Phosphorus (mg/L)		0.013	B	13:45	
BEX-1	05/10/06	Dissolved Phosphorus (mg/L)		0.011	U	13:20	
BEX-1	05/24/06	Dissolved Phosphorus (mg/L)		0.011	U	13:30	
BEX-1	06/07/06	Dissolved Phosphorus (mg/L)		0.021	B	15:00	
BEX-1	06/20/06	Dissolved Phosphorus (mg/L)		0.023	B	13:30	
BEX-1	07/13/06	Dissolved Phosphorus (mg/L)		0.031	B	13:05	
BEX-1	08/08/06	Dissolved Phosphorus (mg/L)		0.68		13:30	
BEX-1	09/12/06	Dissolved Phosphorus (mg/L)		0.11		13:20	
BEX-1	10/07/05	DO (mg/L)		10.84		16:45	
BEX-1	04/11/06	DO (mg/L)		10.63		14:53	
BEX-1	04/26/06	DO (mg/L)		11.965		13:45	
BEX-1	05/10/06	DO (mg/L)		12.57		13:20	
BEX-1	05/24/06	DO (mg/L)		14.21		13:30	
BEX-1	06/07/06	DO (mg/L)		10.88		15:00	
BEX-1	06/20/06	DO (mg/L)		12.94		13:30	
BEX-1	07/13/06	DO (mg/L)		11.69		13:05	
BEX-1	08/08/06	DO (mg/L)		12.23		13:30	
BEX-1	09/12/06	DO (mg/L)		9.21		13:20	
BEX-1	10/07/05	Flow		< 0.5		16:45	
BEX-1	04/11/06	Flow		0		14:53	
BEX-1	04/26/06	Flow		0		13:45	
BEX-1	05/10/06	Flow		0		13:20	
BEX-1	09/12/06	Flow		0		13:20	
BEX-1	10/07/05	pH		7.86		16:45	
BEX-1	04/11/06	pH		7.8		14:53	
BEX-1	04/26/06	pH		8.57		13:45	
BEX-1	05/10/06	pH		7.85		13:20	
BEX-1	05/24/06	pH		8.06		13:30	
BEX-1	06/07/06	pH		8.08		15:00	
BEX-1	06/20/06	pH		8.31		13:30	
BEX-1	07/13/06	pH		7.84		13:05	
BEX-1	08/08/06	pH		7.58		13:30	
BEX-1	09/12/06	pH		7.45		13:20	
BEX-1	10/07/05	Spec. Cond. (uS/cm)		0.737		16:45	
BEX-1	04/11/06	Spec. Cond. (uS/cm)		0.452		14:53	
BEX-1	04/26/06	Spec. Cond. (uS/cm)		0.435		13:45	
BEX-1	05/10/06	Spec. Cond. (uS/cm)		0.431		13:20	
BEX-1	05/24/06	Spec. Cond. (uS/cm)		0.428		13:30	
BEX-1	06/07/06	Spec. Cond. (uS/cm)		0.284		15:00	
BEX-1	06/20/06	Spec. Cond. (uS/cm)		0.535		13:30	
BEX-1	07/13/06	Spec. Cond. (uS/cm)		0.536		13:05	
BEX-1	08/08/06	Spec. Cond. (uS/cm)		0.491		13:30	
BEX-1	09/12/06	Spec. Cond. (uS/cm)		0.337		13:20	
BEX-1	10/07/05	TP (mg/L)		0.11		16:45	
BEX-1	04/11/06	TP (mg/L)		0.035	B	14:53	
BEX-1	04/26/06	TP (mg/L)		0.012	B	13:45	
BEX-1	05/10/06	TP (mg/L)		0.025	B	13:20	
BEX-1	05/24/06	TP (mg/L)		0.022	B	13:30	
BEX-1	06/07/06	TP (mg/L)		0.039	B	15:00	
BEX-1	06/20/06	TP (mg/L)		0.025	B	13:30	
BEX-1	07/13/06	TP (mg/L)		0.04	B	13:05	
BEX-1	08/08/06	TP (mg/L)		0.72		13:30	
BEX-1	09/12/06	TP (mg/L)		0.23		13:20	
BEX-1	10/07/05	Turbidity (NTU)		0		16:45	
BEX-1	04/11/06	Turbidity (NTU)		2		14:53	
BEX-1	04/26/06	Turbidity (NTU)		2		13:45	
BEX-1	05/10/06	Turbidity (NTU)		76*		13:20	
BEX-1	05/24/06	Turbidity (NTU)		116.5		13:30	
BEX-1	06/07/06	Turbidity (NTU)		73.5		15:00	
BEX-1	06/20/06	Turbidity (NTU)		17		13:30	
BEX-1	07/13/06	Turbidity (NTU)		79.5		13:05	
BEX-1	08/08/06	Turbidity (NTU)		10		13:30	
BEX-1	09/12/06	Turbidity (NTU)		81		13:20	
BEX-1	10/07/05	Water Temp (F)		13.8		16:45	
BEX-1	04/11/06	Water Temp (F)		13.7		14:53	
BEX-1	04/26/06	Water Temp (F)		14.6		13:45	
BEX-1	05/10/06	Water Temp (F)		15.1		13:20	
BEX-1	05/24/06	Water Temp (F)		17.95		13:30	
BEX-1	06/07/06	Water Temp (F)		22.2		15:00	
BEX-1	06/20/06	Water Temp (F)		20.1		13:30	
BEX-1	07/13/06	Water Temp (F)		22.15		13:05	
BEX-1	08/08/06	Water Temp (F)		24.45		13:30	
BEX-1	09/12/06	Water Temp (F)		23.1		13:20	
BEX-1(DUP)	08/08/06	Dissolved Phosphorus (mg/L)		0.44		13:30	
BEX-1(DUP)	08/08/06	DO (mg/L)		12.42		13:30	
BEX-1(DUP)	08/08/06	pH		7.52		13:30	
BEX-1(DUP)	08/08/06	Spec. Cond. (uS/cm)		0.478		13:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BEX-1(DUP)	08/08/06	TP (mg/L)		0.21		13:30	
BEX-1(DUP)	08/08/06	Turbidity (NTU)		10		13:30	
BEX-1(DUP)	08/08/06	Water Temp (F)		24.5		13:30	
BMC-02	09/12/06	BOD (mL/L)		2	U	15:00	
BMC-02	09/12/06	Ch-a (mg/m^3)		0.5	U	15:00	
BMC-02	09/12/06	Dissolved Phosphorus (mg/L)		1.4		15:00	
BMC-02	09/12/06	DO (mg/L)		9.11		15:00	
BMC-02	09/12/06	Flow		< 0.1		15:00	
BMC-02	09/12/06	pH		8.45		15:00	
BMC-02	09/12/06	Spec. Cond. (uS/cm)		0.43		15:00	
BMC-02	09/12/06	TKN (mg/L)		0.97		15:00	
BMC-02	09/12/06	Total Nitrate + Nitrite (mg/L)		7.8		15:00	
BMC-02	09/12/06	TP (mg/L)		1.5		15:00	
BMC-02	09/12/06	Turbidity (NTU)		77.3		15:00	
BMC-02	09/12/06	Water Temp (F)		22.3		15:00	
BMC-02 (DUP)	09/12/06	BOD (mL/L)		2	U	15:00	
BMC-02 (DUP)	09/12/06	Ch-a (mg/m^3)		0.5	U	15:00	
BMC-02 (DUP)	09/12/06	Dissolved Phosphorus (mg/L)		1.5		15:00	
BMC-02 (DUP)	09/12/06	TKN (mg/L)		0.93		15:00	
BMC-02 (DUP)	09/12/06	Total Nitrate + Nitrite (mg/L)		7.7		15:00	
BMC-02 (DUP)	09/12/06	TP (mg/L)		1.6		15:00	
BMC-2	10/07/05	BOD (mL/L)		2		17:55	
BMC-2	10/31/05	BOD (mL/L)		2		13:37	
BMC-2	04/11/06	BOD (mL/L)		3		16:30	
BMC-2	04/26/06	BOD (mL/L)		2	U	15:30	
BMC-2	05/10/06	BOD (mL/L)		2		15:00	
BMC-2	05/24/06	BOD (mL/L)		5		15:00	
BMC-2	06/07/06	BOD (mL/L)		3		16:45	
BMC-2	06/20/06	BOD (mL/L)		6		15:20	
BMC-2	07/13/06	BOD (mL/L)		4		14:15	
BMC-2	07/24/06	BOD (mL/L)		3		14:55	
BMC-2	08/08/06	BOD (mL/L)		2	U	15:25	
BMC-2	08/29/06	BOD (mL/L)		2	U	13:45	
BMC-2	09/26/06	BOD (mL/L)		2	U	13:45	
BMC-2	10/07/05	Ch-a (mg/m^3)		7.1		17:55	
BMC-2	10/31/05	Ch-a (mg/m^3)		2.7		13:37	
BMC-2	04/11/06	Ch-a (mg/m^3)		63		16:30	
BMC-2	04/26/06	Ch-a (mg/m^3)		16		15:30	
BMC-2	05/10/06	Ch-a (mg/m^3)		0.89		15:00	
BMC-2	05/24/06	Ch-a (mg/m^3)		13		15:00	
BMC-2	06/07/06	Ch-a (mg/m^3)		6.2		16:45	
BMC-2	06/20/06	Ch-a (mg/m^3)		0.5	U	15:20	
BMC-2	07/13/06	Ch-a (mg/m^3)		15		14:15	
BMC-2	07/24/06	Ch-a (mg/m^3)		0.5	U	14:55	
BMC-2	08/08/06	Ch-a (mg/m^3)		0.5	U	15:25	
BMC-2	08/29/06	Ch-a (mg/m^3)		0.89		13:45	
BMC-2	09/26/06	Ch-a (mg/m^3)		12		13:45	
BMC-2	10/07/05	Dissolved Phosphorus (mg/L)		3		17:55	
BMC-2	10/31/05	Dissolved Phosphorus (mg/L)		2.8		13:37	
BMC-2	04/11/06	Dissolved Phosphorus (mg/L)		0.14		16:30	
BMC-2	04/26/06	Dissolved Phosphorus (mg/L)		0.49		15:30	
BMC-2	05/10/06	Dissolved Phosphorus (mg/L)		0.45		15:00	
BMC-2	05/24/06	Dissolved Phosphorus (mg/L)		0.24		15:00	
BMC-2	06/07/06	Dissolved Phosphorus (mg/L)		0.5		16:45	
BMC-2	06/20/06	Dissolved Phosphorus (mg/L)		0.1		15:20	
BMC-2	07/13/06	Dissolved Phosphorus (mg/L)		0.16		14:15	
BMC-2	07/24/06	Dissolved Phosphorus (mg/L)		0.23		14:55	
BMC-2	08/08/06	Dissolved Phosphorus (mg/L)		1.1		15:25	
BMC-2	08/29/06	Dissolved Phosphorus (mg/L)		1.7		13:45	
BMC-2	09/26/06	Dissolved Phosphorus (mg/L)		0.8		13:45	
BMC-2	10/07/05	DO (mg/L)		9.57		17:55	
BMC-2	10/31/05	DO (mg/L)		10		13:37	
BMC-2	04/11/06	DO (mg/L)		9.13		16:30	
BMC-2	04/26/06	DO (mg/L)		9.51		15:30	
BMC-2	05/10/06	DO (mg/L)		10.11		15:00	
BMC-2	05/24/06	DO (mg/L)		12.92		15:00	
BMC-2	06/07/06	DO (mg/L)		9.9		16:45	
BMC-2	06/20/06	DO (mg/L)		10.42		15:20	
BMC-2	07/13/06	DO (mg/L)		8.93		14:15	
BMC-2	07/18/06	DO (mg/L)		6.1		11:00	
BMC-2	07/18/06	DO (mg/L)		6.24		11:30	
BMC-2	07/18/06	DO (mg/L)		6.38		12:00	
BMC-2	07/18/06	DO (mg/L)		6.51		12:30	
BMC-2	07/18/06	DO (mg/L)		6.62		13:00	
BMC-2	07/18/06	DO (mg/L)		6.72		13:30	
BMC-2	07/18/06	DO (mg/L)		6.7		14:00	
BMC-2	07/18/06	DO (mg/L)		6.82		14:30	
BMC-2	07/18/06	DO (mg/L)		6.77		15:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/18/06	DO (mg/L)		6.73		15:30	
BMC-2	07/18/06	DO (mg/L)		6.71		16:00	
BMC-2	07/18/06	DO (mg/L)		6.69		16:30	
BMC-2	07/18/06	DO (mg/L)		6.58		17:00	
BMC-2	07/18/06	DO (mg/L)		6.44		17:30	
BMC-2	07/18/06	DO (mg/L)		6.39		18:00	
BMC-2	07/18/06	DO (mg/L)		6.21		18:30	
BMC-2	07/18/06	DO (mg/L)		6.14		19:00	
BMC-2	07/18/06	DO (mg/L)		6.08		19:30	
BMC-2	07/18/06	DO (mg/L)		6.27		20:00	
BMC-2	07/18/06	DO (mg/L)		6.26		20:30	
BMC-2	07/18/06	DO (mg/L)		6.18		21:00	
BMC-2	07/18/06	DO (mg/L)		6.17		21:30	
BMC-2	07/18/06	DO (mg/L)		6.09		22:00	
BMC-2	07/18/06	DO (mg/L)		6.1		22:30	
BMC-2	07/18/06	DO (mg/L)		5.92		23:00	
BMC-2	07/18/06	DO (mg/L)		5.97		23:30	
BMC-2	07/19/06	DO (mg/L)		5.86		0:00	
BMC-2	07/19/06	DO (mg/L)		5.72		0:30	
BMC-2	07/19/06	DO (mg/L)		5.48		1:00	
BMC-2	07/19/06	DO (mg/L)		5.3		1:30	
BMC-2	07/19/06	DO (mg/L)		5.23		2:00	
BMC-2	07/19/06	DO (mg/L)		5.14		2:30	
BMC-2	07/19/06	DO (mg/L)		5.16		3:00	
BMC-2	07/19/06	DO (mg/L)		5.12		3:30	
BMC-2	07/19/06	DO (mg/L)		5.1		4:00	
BMC-2	07/19/06	DO (mg/L)		5.06		4:30	
BMC-2	07/19/06	DO (mg/L)		4.94		5:00	
BMC-2	07/19/06	DO (mg/L)		4.93		5:30	
BMC-2	07/19/06	DO (mg/L)		4.85		6:00	
BMC-2	07/19/06	DO (mg/L)		4.76		6:30	
BMC-2	07/19/06	DO (mg/L)		4.71		7:00	
BMC-2	07/19/06	DO (mg/L)		4.62		7:30	
BMC-2	07/19/06	DO (mg/L)		4.54		8:00	
BMC-2	07/19/06	DO (mg/L)		4.52		8:30	
BMC-2	07/19/06	DO (mg/L)		4.47		9:00	
BMC-2	07/19/06	DO (mg/L)		4.52		9:30	
BMC-2	07/19/06	DO (mg/L)		4.54		10:00	
BMC-2	07/19/06	DO (mg/L)		4.66		10:30	
BMC-2	07/19/06	DO (mg/L)		4.8		11:00	
BMC-2	07/19/06	DO (mg/L)		4.98		11:30	
BMC-2	07/19/06	DO (mg/L)		5.13		12:00	
BMC-2	07/19/06	DO (mg/L)		5.33		12:30	
BMC-2	07/19/06	DO (mg/L)		5.53		13:00	
BMC-2	07/19/06	DO (mg/L)		5.73		13:30	
BMC-2	07/19/06	DO (mg/L)		5.87		14:00	
BMC-2	07/19/06	DO (mg/L)		5.95		14:30	
BMC-2	07/19/06	DO (mg/L)		6.01		15:00	
BMC-2	07/19/06	DO (mg/L)		6.06		15:30	
BMC-2	07/19/06	DO (mg/L)		6.05		16:00	
BMC-2	07/19/06	DO (mg/L)		6.09		16:30	
BMC-2	07/19/06	DO (mg/L)		6.1		17:00	
BMC-2	07/19/06	DO (mg/L)		6.02		17:30	
BMC-2	07/19/06	DO (mg/L)		5.95		18:00	
BMC-2	07/19/06	DO (mg/L)		5.82		18:30	
BMC-2	07/19/06	DO (mg/L)		5.76		19:00	
BMC-2	07/19/06	DO (mg/L)		5.61		19:30	
BMC-2	07/19/06	DO (mg/L)		5.57		20:00	
BMC-2	07/19/06	DO (mg/L)		5.46		20:30	
BMC-2	07/19/06	DO (mg/L)		5.39		21:00	
BMC-2	07/19/06	DO (mg/L)		5.35		21:30	
BMC-2	07/19/06	DO (mg/L)		5.34		22:00	
BMC-2	07/19/06	DO (mg/L)		5.32		22:30	
BMC-2	07/19/06	DO (mg/L)		5.25		23:00	
BMC-2	07/19/06	DO (mg/L)		5.21		23:30	
BMC-2	07/20/06	DO (mg/L)		5.28		0:00	
BMC-2	07/20/06	DO (mg/L)		5.23		0:30	
BMC-2	07/20/06	DO (mg/L)		5.28		1:00	
BMC-2	07/20/06	DO (mg/L)		5.24		1:30	
BMC-2	07/20/06	DO (mg/L)		5.3		2:00	
BMC-2	07/20/06	DO (mg/L)		5.28		2:30	
BMC-2	07/20/06	DO (mg/L)		5.29		3:00	
BMC-2	07/20/06	DO (mg/L)		5.33		3:30	
BMC-2	07/20/06	DO (mg/L)		5.28		4:00	
BMC-2	07/20/06	DO (mg/L)		5.31		4:30	
BMC-2	07/20/06	DO (mg/L)		5.28		5:00	
BMC-2	07/20/06	DO (mg/L)		5.32		5:30	
BMC-2	07/20/06	DO (mg/L)		5.31		6:00	
BMC-2	07/20/06	DO (mg/L)		5.32		6:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/20/06	DO (mg/L)		5.28		7:00	
BMC-2	07/20/06	DO (mg/L)		5.27		7:30	
BMC-2	07/20/06	DO (mg/L)		5.33		8:00	
BMC-2	07/20/06	DO (mg/L)		5.41		8:30	
BMC-2	07/20/06	DO (mg/L)		5.36		9:00	
BMC-2	07/20/06	DO (mg/L)		5.42		9:30	
BMC-2	07/20/06	DO (mg/L)		5.54		10:00	
BMC-2	07/20/06	DO (mg/L)		5.62		10:30	
BMC-2	07/20/06	DO (mg/L)		6.06		11:00	
BMC-2	07/20/06	DO (mg/L)		6.49		11:30	
BMC-2	07/20/06	DO (mg/L)		6.96		12:00	
BMC-2	07/20/06	DO (mg/L)		6.44		12:30	
BMC-2	07/20/06	DO (mg/L)		6.14		13:00	
BMC-2	07/20/06	DO (mg/L)		6.34		13:30	
BMC-2	07/20/06	DO (mg/L)		6.34		14:00	
BMC-2	07/20/06	DO (mg/L)		6.31		14:30	
BMC-2	07/20/06	DO (mg/L)		5.79		15:00	
BMC-2	07/20/06	DO (mg/L)		5.69		15:30	
BMC-2	07/20/06	DO (mg/L)		5.79		16:00	
BMC-2	07/20/06	DO (mg/L)		5.97		16:30	
BMC-2	07/20/06	DO (mg/L)		5.9		17:00	
BMC-2	07/20/06	DO (mg/L)		5.75		17:30	
BMC-2	07/20/06	DO (mg/L)		5.92		18:00	
BMC-2	07/20/06	DO (mg/L)		5.77		18:30	
BMC-2	07/20/06	DO (mg/L)		5.78		19:00	
BMC-2	07/20/06	DO (mg/L)		5.59		19:30	
BMC-2	07/20/06	DO (mg/L)		5.65		20:00	
BMC-2	07/20/06	DO (mg/L)		5.66		20:30	
BMC-2	07/20/06	DO (mg/L)		5.45		21:00	
BMC-2	07/20/06	DO (mg/L)		5.41		21:30	
BMC-2	07/20/06	DO (mg/L)		5.41		22:00	
BMC-2	07/20/06	DO (mg/L)		5.29		22:30	
BMC-2	07/20/06	DO (mg/L)		5.27		23:00	
BMC-2	07/20/06	DO (mg/L)		5.26		23:30	
BMC-2	07/21/06	DO (mg/L)		5.31		0:00	
BMC-2	07/21/06	DO (mg/L)		5.16		0:30	
BMC-2	07/21/06	DO (mg/L)		5.3		1:00	
BMC-2	07/21/06	DO (mg/L)		5.42		1:30	
BMC-2	07/21/06	DO (mg/L)		5.16		2:00	
BMC-2	07/21/06	DO (mg/L)		5.29		2:30	
BMC-2	07/21/06	DO (mg/L)		5.08		3:00	
BMC-2	07/21/06	DO (mg/L)		5.15		3:30	
BMC-2	07/21/06	DO (mg/L)		5.06		4:00	
BMC-2	07/21/06	DO (mg/L)		5.04		4:30	
BMC-2	07/21/06	DO (mg/L)		5.07		5:00	
BMC-2	07/21/06	DO (mg/L)		5.15		5:30	
BMC-2	07/21/06	DO (mg/L)		5.19		6:00	
BMC-2	07/21/06	DO (mg/L)		5.04		6:30	
BMC-2	07/21/06	DO (mg/L)		5.25		7:00	
BMC-2	07/21/06	DO (mg/L)		5.16		7:30	
BMC-2	07/21/06	DO (mg/L)		5.01		8:00	
BMC-2	07/21/06	DO (mg/L)		4.96		8:30	
BMC-2	07/21/06	DO (mg/L)		5.01		9:00	
BMC-2	07/21/06	DO (mg/L)		4.98		9:30	
BMC-2	07/21/06	DO (mg/L)		5.11		10:00	
BMC-2	07/21/06	DO (mg/L)		5.2		10:30	
BMC-2	07/21/06	DO (mg/L)		5.16		11:00	
BMC-2	07/21/06	DO (mg/L)		5.18		11:30	
BMC-2	07/21/06	DO (mg/L)		5.05		12:00	
BMC-2	07/21/06	DO (mg/L)		4.73		12:30	
BMC-2	07/21/06	DO (mg/L)		4.65		13:00	
BMC-2	07/21/06	DO (mg/L)		4.6		13:30	
BMC-2	07/21/06	DO (mg/L)		5.07		14:00	
BMC-2	07/21/06	DO (mg/L)		4.85		14:30	
BMC-2	07/21/06	DO (mg/L)		4.81		15:00	
BMC-2	07/21/06	DO (mg/L)		4.75		15:30	
BMC-2	07/21/06	DO (mg/L)		4.9		16:00	
BMC-2	07/21/06	DO (mg/L)		4.93		16:30	
BMC-2	07/21/06	DO (mg/L)		4.74		17:00	
BMC-2	07/21/06	DO (mg/L)		4.78		17:30	
BMC-2	07/21/06	DO (mg/L)		4.58		18:00	
BMC-2	07/21/06	DO (mg/L)		4.71		18:30	
BMC-2	07/21/06	DO (mg/L)		4.84		19:00	
BMC-2	07/21/06	DO (mg/L)		4.87		19:30	
BMC-2	07/21/06	DO (mg/L)		4.98		20:00	
BMC-2	07/21/06	DO (mg/L)		4.91		20:30	
BMC-2	07/21/06	DO (mg/L)		4.82		21:00	
BMC-2	07/21/06	DO (mg/L)		4.77		21:30	
BMC-2	07/21/06	DO (mg/L)		4.73		22:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/21/06	DO (mg/L)		4.86		22:30	
BMC-2	07/21/06	DO (mg/L)		4.77		23:00	
BMC-2	07/21/06	DO (mg/L)		5.1		23:30	
BMC-2	07/22/06	DO (mg/L)		4.88		0:00	
BMC-2	07/22/06	DO (mg/L)		4.82		0:30	
BMC-2	07/22/06	DO (mg/L)		4.74		1:00	
BMC-2	07/22/06	DO (mg/L)		5.91		1:30	
BMC-2	07/22/06	DO (mg/L)		6.01		2:00	
BMC-2	07/22/06	DO (mg/L)		6		2:30	
BMC-2	07/22/06	DO (mg/L)		5.94		3:00	
BMC-2	07/22/06	DO (mg/L)		5.9		3:30	
BMC-2	07/22/06	DO (mg/L)		6.02		4:00	
BMC-2	07/22/06	DO (mg/L)		6.06		4:30	
BMC-2	07/22/06	DO (mg/L)		6.15		5:00	
BMC-2	07/22/06	DO (mg/L)		6.35		5:30	
BMC-2	07/22/06	DO (mg/L)		6.38		6:00	
BMC-2	07/22/06	DO (mg/L)		6.37		6:30	
BMC-2	07/22/06	DO (mg/L)		6.42		7:00	
BMC-2	07/22/06	DO (mg/L)		6.5		7:30	
BMC-2	07/22/06	DO (mg/L)		6.63		8:00	
BMC-2	07/22/06	DO (mg/L)		6.71		8:30	
BMC-2	07/22/06	DO (mg/L)		6.74		9:00	
BMC-2	07/22/06	DO (mg/L)		6.71		9:30	
BMC-2	07/22/06	DO (mg/L)		6.84		10:00	
BMC-2	07/22/06	DO (mg/L)		6.91		10:30	
BMC-2	07/22/06	DO (mg/L)		7.07		11:00	
BMC-2	07/22/06	DO (mg/L)		7.17		11:30	
BMC-2	07/22/06	DO (mg/L)		7.23		12:00	
BMC-2	07/22/06	DO (mg/L)		7.3		12:30	
BMC-2	07/22/06	DO (mg/L)		7.35		13:00	
BMC-2	07/22/06	DO (mg/L)		7.37		13:30	
BMC-2	07/22/06	DO (mg/L)		7.48		14:00	
BMC-2	07/22/06	DO (mg/L)		7.51		14:30	
BMC-2	07/22/06	DO (mg/L)		7.52		15:00	
BMC-2	07/22/06	DO (mg/L)		7.4		15:30	
BMC-2	07/22/06	DO (mg/L)		7.26		16:00	
BMC-2	07/22/06	DO (mg/L)		7.16		16:30	
BMC-2	07/22/06	DO (mg/L)		7.09		17:00	
BMC-2	07/22/06	DO (mg/L)		6.94		17:30	
BMC-2	07/22/06	DO (mg/L)		6.91		18:00	
BMC-2	07/22/06	DO (mg/L)		6.83		18:30	
BMC-2	07/22/06	DO (mg/L)		6.79		19:00	
BMC-2	07/22/06	DO (mg/L)		6.71		19:30	
BMC-2	07/22/06	DO (mg/L)		6.6		20:00	
BMC-2	07/22/06	DO (mg/L)		6.6		20:30	
BMC-2	07/22/06	DO (mg/L)		6.5		21:00	
BMC-2	07/22/06	DO (mg/L)		6.44		21:30	
BMC-2	07/22/06	DO (mg/L)		6.49		22:00	
BMC-2	07/22/06	DO (mg/L)		6.46		22:30	
BMC-2	07/22/06	DO (mg/L)		6.43		23:00	
BMC-2	07/22/06	DO (mg/L)		6.37		23:30	
BMC-2	07/23/06	DO (mg/L)		6.36		0:00	
BMC-2	07/23/06	DO (mg/L)		6.33		0:30	
BMC-2	07/23/06	DO (mg/L)		6.33		1:00	
BMC-2	07/23/06	DO (mg/L)		6.42		1:30	
BMC-2	07/23/06	DO (mg/L)		6.43		2:00	
BMC-2	07/23/06	DO (mg/L)		6.41		2:30	
BMC-2	07/23/06	DO (mg/L)		6.37		3:00	
BMC-2	07/23/06	DO (mg/L)		6.47		3:30	
BMC-2	07/23/06	DO (mg/L)		6.41		4:00	
BMC-2	07/23/06	DO (mg/L)		6.47		4:30	
BMC-2	07/23/06	DO (mg/L)		6.46		5:00	
BMC-2	07/23/06	DO (mg/L)		6.48		5:30	
BMC-2	07/23/06	DO (mg/L)		6.45		6:00	
BMC-2	07/23/06	DO (mg/L)		6.49		6:30	
BMC-2	07/23/06	DO (mg/L)		6.51		7:00	
BMC-2	07/23/06	DO (mg/L)		6.54		7:30	
BMC-2	07/23/06	DO (mg/L)		6.57		8:00	
BMC-2	07/23/06	DO (mg/L)		6.64		8:30	
BMC-2	07/23/06	DO (mg/L)		6.72		9:00	
BMC-2	07/23/06	DO (mg/L)		6.78		9:30	
BMC-2	07/23/06	DO (mg/L)		6.96		10:00	
BMC-2	07/23/06	DO (mg/L)		7.13		10:30	
BMC-2	07/23/06	DO (mg/L)		7.18		11:00	
BMC-2	07/23/06	DO (mg/L)		7.35		11:30	
BMC-2	07/23/06	DO (mg/L)		7.5		12:00	
BMC-2	07/23/06	DO (mg/L)		7.55		12:30	
BMC-2	07/23/06	DO (mg/L)		7.71		13:00	
BMC-2	07/23/06	DO (mg/L)		7.73		13:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/23/06	DO (mg/L)		7.69		14:00	
BMC-2	07/23/06	DO (mg/L)		7.8		14:30	
BMC-2	07/23/06	DO (mg/L)		7.84		15:00	
BMC-2	07/23/06	DO (mg/L)		7.71		15:30	
BMC-2	07/23/06	DO (mg/L)		7.6		16:00	
BMC-2	07/23/06	DO (mg/L)		7.4		16:30	
BMC-2	07/23/06	DO (mg/L)		7.19		17:00	
BMC-2	07/23/06	DO (mg/L)		7.03		17:30	
BMC-2	07/23/06	DO (mg/L)		6.87		18:00	
BMC-2	07/23/06	DO (mg/L)		6.74		18:30	
BMC-2	07/23/06	DO (mg/L)		6.67		19:00	
BMC-2	07/23/06	DO (mg/L)		6.56		19:30	
BMC-2	07/23/06	DO (mg/L)		6.37		20:00	
BMC-2	07/23/06	DO (mg/L)		6.3		20:30	
BMC-2	07/23/06	DO (mg/L)		6.18		21:00	
BMC-2	07/23/06	DO (mg/L)		6.12		21:30	
BMC-2	07/23/06	DO (mg/L)		6		22:00	
BMC-2	07/23/06	DO (mg/L)		5.98		22:30	
BMC-2	07/23/06	DO (mg/L)		5.92		23:00	
BMC-2	07/23/06	DO (mg/L)		5.87		23:30	
BMC-2	07/24/06	DO (mg/L)		5.91		0:00	
BMC-2	07/24/06	DO (mg/L)		5.97		0:30	
BMC-2	07/24/06	DO (mg/L)		5.92		1:00	
BMC-2	07/24/06	DO (mg/L)		5.93		1:30	
BMC-2	07/24/06	DO (mg/L)		5.96		2:00	
BMC-2	07/24/06	DO (mg/L)		5.96		2:30	
BMC-2	07/24/06	DO (mg/L)		5.98		3:00	
BMC-2	07/24/06	DO (mg/L)		5.99		3:30	
BMC-2	07/24/06	DO (mg/L)		6.05		4:00	
BMC-2	07/24/06	DO (mg/L)		6.04		4:30	
BMC-2	07/24/06	DO (mg/L)		6.08		5:00	
BMC-2	07/24/06	DO (mg/L)		6.07		5:30	
BMC-2	07/24/06	DO (mg/L)		6.11		6:00	
BMC-2	07/24/06	DO (mg/L)		6.1		6:30	
BMC-2	07/24/06	DO (mg/L)		6.13		7:00	
BMC-2	07/24/06	DO (mg/L)		6.2		7:30	
BMC-2	07/24/06	DO (mg/L)		6.18		8:00	
BMC-2	07/24/06	DO (mg/L)		6.26		8:30	
BMC-2	07/24/06	DO (mg/L)		6.32		9:00	
BMC-2	07/24/06	DO (mg/L)		6.47		9:30	
BMC-2	07/24/06	DO (mg/L)		6.58		10:00	
BMC-2	07/24/06	DO (mg/L)		6.77		10:30	
BMC-2	07/24/06	DO (mg/L)		6.88		11:00	
BMC-2	07/24/06	DO (mg/L)		7.02		11:30	
BMC-2	07/24/06	DO (mg/L)		7.21		12:00	
BMC-2	07/24/06	DO (mg/L)		7.32		12:30	
BMC-2	07/24/06	DO (mg/L)		7.36		13:00	
BMC-2	07/24/06	DO (mg/L)		7.41		13:30	
BMC-2	07/24/06	DO (mg/L)		7.47		14:00	
BMC-2	07/24/06	DO (mg/L)		7.39		14:30	
BMC-2	07/24/06	DO (mg/L)		11		14:55	
BMC-2	07/24/06	DO (mg/L)		7.41		15:00	
BMC-2	07/24/06	DO (mg/L)		7.44		15:30	
BMC-2	07/24/06	DO (mg/L)		7.39		16:00	
BMC-2	07/24/06	DO (mg/L)		7.29		16:30	
BMC-2	07/24/06	DO (mg/L)		7.12		17:00	
BMC-2	07/24/06	DO (mg/L)		6.97		17:30	
BMC-2	07/24/06	DO (mg/L)		6.78		18:00	
BMC-2	07/24/06	DO (mg/L)		6.69		18:30	
BMC-2	07/24/06	DO (mg/L)		6.59		19:00	
BMC-2	07/24/06	DO (mg/L)		6.49		19:30	
BMC-2	07/24/06	DO (mg/L)		6.35		20:00	
BMC-2	07/24/06	DO (mg/L)		6.2		20:30	
BMC-2	07/24/06	DO (mg/L)		6.09		21:00	
BMC-2	07/24/06	DO (mg/L)		6.04		21:30	
BMC-2	07/24/06	DO (mg/L)		5.92		22:00	
BMC-2	07/24/06	DO (mg/L)		5.87		22:30	
BMC-2	07/24/06	DO (mg/L)		5.89		23:00	
BMC-2	07/24/06	DO (mg/L)		5.82		23:30	
BMC-2	08/08/06	DO (mg/L)		9.36		15:25	
BMC-2	08/29/06	DO (mg/L)		8.29		13:45	
BMC-2	09/07/06	DO (mg/L)		7.03		9:00	
BMC-2	09/07/06	DO (mg/L)		7.08		9:30	
BMC-2	09/07/06	DO (mg/L)		7.29		10:00	
BMC-2	09/07/06	DO (mg/L)		7.51		10:30	
BMC-2	09/07/06	DO (mg/L)		7.94		11:00	
BMC-2	09/07/06	DO (mg/L)		8.24		11:30	
BMC-2	09/07/06	DO (mg/L)		8.44		12:00	
BMC-2	09/07/06	DO (mg/L)		8.69		12:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/07/06	DO (mg/L)		8.95		13:00	
BMC-2	09/07/06	DO (mg/L)		9.18		13:30	
BMC-2	09/07/06	DO (mg/L)		9.2		14:00	
BMC-2	09/07/06	DO (mg/L)		9.28		14:30	
BMC-2	09/07/06	DO (mg/L)		9.34		15:00	
BMC-2	09/07/06	DO (mg/L)		9.45		15:30	
BMC-2	09/07/06	DO (mg/L)		9.53		16:00	
BMC-2	09/07/06	DO (mg/L)		9.3		16:30	
BMC-2	09/07/06	DO (mg/L)		9.27		17:00	
BMC-2	09/07/06	DO (mg/L)		9.15		17:30	
BMC-2	09/07/06	DO (mg/L)		8.99		18:00	
BMC-2	09/07/06	DO (mg/L)		8.7		18:30	
BMC-2	09/07/06	DO (mg/L)		8.53		19:00	
BMC-2	09/07/06	DO (mg/L)		8.24		19:30	
BMC-2	09/07/06	DO (mg/L)		8.11		20:00	
BMC-2	09/07/06	DO (mg/L)		7.92		20:30	
BMC-2	09/07/06	DO (mg/L)		7.82		21:00	
BMC-2	09/07/06	DO (mg/L)		7.68		21:30	
BMC-2	09/07/06	DO (mg/L)		7.46		22:00	
BMC-2	09/07/06	DO (mg/L)		7.36		22:30	
BMC-2	09/07/06	DO (mg/L)		7.27		23:00	
BMC-2	09/07/06	DO (mg/L)		7.24		23:30	
BMC-2	09/08/06	DO (mg/L)		7.05		0:00	
BMC-2	09/08/06	DO (mg/L)		7.01		0:30	
BMC-2	09/08/06	DO (mg/L)		6.96		1:00	
BMC-2	09/08/06	DO (mg/L)		6.97		1:30	
BMC-2	09/08/06	DO (mg/L)		6.88		2:00	
BMC-2	09/08/06	DO (mg/L)		6.85		2:30	
BMC-2	09/08/06	DO (mg/L)		6.83		3:00	
BMC-2	09/08/06	DO (mg/L)		6.75		3:30	
BMC-2	09/08/06	DO (mg/L)		6.77		4:00	
BMC-2	09/08/06	DO (mg/L)		6.75		4:30	
BMC-2	09/08/06	DO (mg/L)		6.73		5:00	
BMC-2	09/08/06	DO (mg/L)		6.62		5:30	
BMC-2	09/08/06	DO (mg/L)		6.71		6:00	
BMC-2	09/08/06	DO (mg/L)		6.73		6:30	
BMC-2	09/08/06	DO (mg/L)		6.57		7:00	
BMC-2	09/08/06	DO (mg/L)		6.74		7:30	
BMC-2	09/08/06	DO (mg/L)		6.78		8:00	
BMC-2	09/08/06	DO (mg/L)		6.8		8:30	
BMC-2	09/08/06	DO (mg/L)		6.87		9:00	
BMC-2	09/08/06	DO (mg/L)		6.99		9:30	
BMC-2	09/08/06	DO (mg/L)		7.34		10:00	
BMC-2	09/08/06	DO (mg/L)		7.51		10:30	
BMC-2	09/08/06	DO (mg/L)		7.83		11:00	
BMC-2	09/08/06	DO (mg/L)		8.12		11:30	
BMC-2	09/08/06	DO (mg/L)		8.31		12:00	
BMC-2	09/08/06	DO (mg/L)		8.64		12:30	
BMC-2	09/08/06	DO (mg/L)		8.96		13:00	
BMC-2	09/08/06	DO (mg/L)		9.2		13:30	
BMC-2	09/08/06	DO (mg/L)		9.37		14:00	
BMC-2	09/08/06	DO (mg/L)		9.47		14:30	
BMC-2	09/08/06	DO (mg/L)		9.59		15:00	
BMC-2	09/08/06	DO (mg/L)		9.53		15:30	
BMC-2	09/08/06	DO (mg/L)		9.42		16:00	
BMC-2	09/08/06	DO (mg/L)		9.39		16:30	
BMC-2	09/08/06	DO (mg/L)		9.22		17:00	
BMC-2	09/08/06	DO (mg/L)		8.97		17:30	
BMC-2	09/08/06	DO (mg/L)		8.84		18:00	
BMC-2	09/08/06	DO (mg/L)		8.6		18:30	
BMC-2	09/08/06	DO (mg/L)		8.41		19:00	
BMC-2	09/08/06	DO (mg/L)		8.28		19:30	
BMC-2	09/08/06	DO (mg/L)		7.96		20:00	
BMC-2	09/08/06	DO (mg/L)		7.82		20:30	
BMC-2	09/08/06	DO (mg/L)		7.75		21:00	
BMC-2	09/08/06	DO (mg/L)		7.62		21:30	
BMC-2	09/08/06	DO (mg/L)		7.5		22:00	
BMC-2	09/08/06	DO (mg/L)		7.32		22:30	
BMC-2	09/08/06	DO (mg/L)		7.22		23:00	
BMC-2	09/08/06	DO (mg/L)		7.15		23:30	
BMC-2	09/09/06	DO (mg/L)		7.15		0:00	
BMC-2	09/09/06	DO (mg/L)		6.94		0:30	
BMC-2	09/09/06	DO (mg/L)		6.92		1:00	
BMC-2	09/09/06	DO (mg/L)		6.87		1:30	
BMC-2	09/09/06	DO (mg/L)		6.79		2:00	
BMC-2	09/09/06	DO (mg/L)		6.78		2:30	
BMC-2	09/09/06	DO (mg/L)		6.8		3:00	
BMC-2	09/09/06	DO (mg/L)		6.73		3:30	
BMC-2	09/09/06	DO (mg/L)		6.8		4:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/09/06	DO (mg/L)		6.7		4:30	
BMC-2	09/09/06	DO (mg/L)		6.67		5:00	
BMC-2	09/09/06	DO (mg/L)		6.66		5:30	
BMC-2	09/09/06	DO (mg/L)		6.71		6:00	
BMC-2	09/09/06	DO (mg/L)		6.7		6:30	
BMC-2	09/09/06	DO (mg/L)		6.66		7:00	
BMC-2	09/09/06	DO (mg/L)		6.7		7:30	
BMC-2	09/09/06	DO (mg/L)		6.66		8:00	
BMC-2	09/09/06	DO (mg/L)		6.82		8:30	
BMC-2	09/09/06	DO (mg/L)		6.94		9:00	
BMC-2	09/09/06	DO (mg/L)		7.1		9:30	
BMC-2	09/09/06	DO (mg/L)		7.35		10:00	
BMC-2	09/09/06	DO (mg/L)		7.59		10:30	
BMC-2	09/09/06	DO (mg/L)		7.81		11:00	
BMC-2	09/09/06	DO (mg/L)		8.19		11:30	
BMC-2	09/09/06	DO (mg/L)		8.32		12:00	
BMC-2	09/09/06	DO (mg/L)		8.61		12:30	
BMC-2	09/09/06	DO (mg/L)		8.75		13:00	
BMC-2	09/09/06	DO (mg/L)		9.07		13:30	
BMC-2	09/09/06	DO (mg/L)		9.26		14:00	
BMC-2	09/09/06	DO (mg/L)		9.47		14:30	
BMC-2	09/09/06	DO (mg/L)		9.55		15:00	
BMC-2	09/09/06	DO (mg/L)		9.71		15:30	
BMC-2	09/09/06	DO (mg/L)		9.61		16:00	
BMC-2	09/09/06	DO (mg/L)		9.53		16:30	
BMC-2	09/09/06	DO (mg/L)		9.45		17:00	
BMC-2	09/09/06	DO (mg/L)		9.42		17:30	
BMC-2	09/09/06	DO (mg/L)		9.36		18:00	
BMC-2	09/09/06	DO (mg/L)		9.18		18:30	
BMC-2	09/09/06	DO (mg/L)		8.92		19:00	
BMC-2	09/09/06	DO (mg/L)		8.76		19:30	
BMC-2	09/09/06	DO (mg/L)		8.45		20:00	
BMC-2	09/09/06	DO (mg/L)		8.29		20:30	
BMC-2	09/09/06	DO (mg/L)		8.01		21:00	
BMC-2	09/09/06	DO (mg/L)		7.92		21:30	
BMC-2	09/09/06	DO (mg/L)		7.75		22:00	
BMC-2	09/09/06	DO (mg/L)		7.5		22:30	
BMC-2	09/09/06	DO (mg/L)		7.38		23:00	
BMC-2	09/09/06	DO (mg/L)		7.3		23:30	
BMC-2	09/10/06	DO (mg/L)		7.12		0:00	
BMC-2	09/10/06	DO (mg/L)		7.14		0:30	
BMC-2	09/10/06	DO (mg/L)		6.94		1:00	
BMC-2	09/10/06	DO (mg/L)		7.01		1:30	
BMC-2	09/10/06	DO (mg/L)		6.94		2:00	
BMC-2	09/10/06	DO (mg/L)		6.9		2:30	
BMC-2	09/10/06	DO (mg/L)		6.84		3:00	
BMC-2	09/10/06	DO (mg/L)		6.78		3:30	
BMC-2	09/10/06	DO (mg/L)		6.68		4:00	
BMC-2	09/10/06	DO (mg/L)		6.75		4:30	
BMC-2	09/10/06	DO (mg/L)		6.6		5:00	
BMC-2	09/10/06	DO (mg/L)		6.59		5:30	
BMC-2	09/10/06	DO (mg/L)		6.62		6:00	
BMC-2	09/10/06	DO (mg/L)		6.56		6:30	
BMC-2	09/10/06	DO (mg/L)		6.61		7:00	
BMC-2	09/10/06	DO (mg/L)		6.51		7:30	
BMC-2	09/10/06	DO (mg/L)		6.54		8:00	
BMC-2	09/10/06	DO (mg/L)		6.69		8:30	
BMC-2	09/10/06	DO (mg/L)		6.72		9:00	
BMC-2	09/10/06	DO (mg/L)		6.94		9:30	
BMC-2	09/10/06	DO (mg/L)		7.15		10:00	
BMC-2	09/10/06	DO (mg/L)		7.42		10:30	
BMC-2	09/10/06	DO (mg/L)		7.77		11:00	
BMC-2	09/10/06	DO (mg/L)		8.14		11:30	
BMC-2	09/10/06	DO (mg/L)		8.41		12:00	
BMC-2	09/10/06	DO (mg/L)		8.4		12:30	
BMC-2	09/10/06	DO (mg/L)		8.74		13:00	
BMC-2	09/10/06	DO (mg/L)		8.91		13:30	
BMC-2	09/10/06	DO (mg/L)		9.22		14:00	
BMC-2	09/10/06	DO (mg/L)		9.47		14:30	
BMC-2	09/10/06	DO (mg/L)		9.69		15:00	
BMC-2	09/10/06	DO (mg/L)		9.71		15:30	
BMC-2	09/10/06	DO (mg/L)		9.88		16:00	
BMC-2	09/10/06	DO (mg/L)		9.83		16:30	
BMC-2	09/10/06	DO (mg/L)		9.72		17:00	
BMC-2	09/10/06	DO (mg/L)		9.64		17:30	
BMC-2	09/10/06	DO (mg/L)		9.47		18:00	
BMC-2	09/10/06	DO (mg/L)		9.27		18:30	
BMC-2	09/10/06	DO (mg/L)		9.05		19:00	
BMC-2	09/10/06	DO (mg/L)		8.89		19:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/10/06	DO (mg/L)		8.56		20:00	
BMC-2	09/10/06	DO (mg/L)		8.38		20:30	
BMC-2	09/10/06	DO (mg/L)		8.07		21:00	
BMC-2	09/10/06	DO (mg/L)		7.95		21:30	
BMC-2	09/10/06	DO (mg/L)		7.79		22:00	
BMC-2	09/10/06	DO (mg/L)		7.62		22:30	
BMC-2	09/10/06	DO (mg/L)		7.39		23:00	
BMC-2	09/10/06	DO (mg/L)		7.29		23:30	
BMC-2	09/11/06	DO (mg/L)		7.22		0:00	
BMC-2	09/11/06	DO (mg/L)		7.02		0:30	
BMC-2	09/11/06	DO (mg/L)		6.98		1:00	
BMC-2	09/11/06	DO (mg/L)		6.94		1:30	
BMC-2	09/11/06	DO (mg/L)		6.75		2:00	
BMC-2	09/11/06	DO (mg/L)		6.8		2:30	
BMC-2	09/11/06	DO (mg/L)		6.66		3:00	
BMC-2	09/11/06	DO (mg/L)		6.56		3:30	
BMC-2	09/11/06	DO (mg/L)		6.54		4:00	
BMC-2	09/11/06	DO (mg/L)		6.53		4:30	
BMC-2	09/11/06	DO (mg/L)		6.43		5:00	
BMC-2	09/11/06	DO (mg/L)		6.45		5:30	
BMC-2	09/11/06	DO (mg/L)		6.29		6:00	
BMC-2	09/11/06	DO (mg/L)		6.34		6:30	
BMC-2	09/11/06	DO (mg/L)		6.37		7:00	
BMC-2	09/11/06	DO (mg/L)		6.29		7:30	
BMC-2	09/11/06	DO (mg/L)		6.46		8:00	
BMC-2	09/11/06	DO (mg/L)		6.49		8:30	
BMC-2	09/11/06	DO (mg/L)		6.69		9:00	
BMC-2	09/11/06	DO (mg/L)		6.93		9:30	
BMC-2	09/11/06	DO (mg/L)		7.03		10:00	
BMC-2	09/11/06	DO (mg/L)		7.33		10:30	
BMC-2	09/11/06	DO (mg/L)		7.67		11:00	
BMC-2	09/11/06	DO (mg/L)		7.96		11:30	
BMC-2	09/11/06	DO (mg/L)		8.01		12:00	
BMC-2	09/11/06	DO (mg/L)		8.28		12:30	
BMC-2	09/11/06	DO (mg/L)		8.44		13:00	
BMC-2	09/11/06	DO (mg/L)		8.71		13:30	
BMC-2	09/11/06	DO (mg/L)		9		14:00	
BMC-2	09/11/06	DO (mg/L)		9.26		14:30	
BMC-2	09/11/06	DO (mg/L)		9.48		15:00	
BMC-2	09/11/06	DO (mg/L)		9.47		15:30	
BMC-2	09/11/06	DO (mg/L)		9.49		16:00	
BMC-2	09/11/06	DO (mg/L)		9.25		16:30	
BMC-2	09/11/06	DO (mg/L)		9.17		17:00	
BMC-2	09/11/06	DO (mg/L)		9.02		17:30	
BMC-2	09/11/06	DO (mg/L)		9.07		18:00	
BMC-2	09/11/06	DO (mg/L)		8.92		18:30	
BMC-2	09/11/06	DO (mg/L)		8.61		19:00	
BMC-2	09/11/06	DO (mg/L)		8.38		19:30	
BMC-2	09/11/06	DO (mg/L)		8.16		20:00	
BMC-2	09/11/06	DO (mg/L)		7.88		20:30	
BMC-2	09/11/06	DO (mg/L)		7.69		21:00	
BMC-2	09/11/06	DO (mg/L)		7.58		21:30	
BMC-2	09/11/06	DO (mg/L)		7.47		22:00	
BMC-2	09/11/06	DO (mg/L)		7.3		22:30	
BMC-2	09/11/06	DO (mg/L)		7.11		23:00	
BMC-2	09/11/06	DO (mg/L)		7.01		23:30	
BMC-2	09/12/06	DO (mg/L)		6.89		0:00	
BMC-2	09/12/06	DO (mg/L)		6.85		0:30	
BMC-2	09/12/06	DO (mg/L)		6.84		1:00	
BMC-2	09/12/06	DO (mg/L)		6.75		1:30	
BMC-2	09/12/06	DO (mg/L)		6.61		2:00	
BMC-2	09/12/06	DO (mg/L)		6.65		2:30	
BMC-2	09/12/06	DO (mg/L)		6.54		3:00	
BMC-2	09/12/06	DO (mg/L)		6.48		3:30	
BMC-2	09/12/06	DO (mg/L)		6.53		4:00	
BMC-2	09/12/06	DO (mg/L)		6.55		4:30	
BMC-2	09/12/06	DO (mg/L)		6.5		5:00	
BMC-2	09/12/06	DO (mg/L)		6.55		5:30	
BMC-2	09/12/06	DO (mg/L)		6.59		6:00	
BMC-2	09/12/06	DO (mg/L)		6.53		6:30	
BMC-2	09/12/06	DO (mg/L)		6.5		7:00	
BMC-2	09/12/06	DO (mg/L)		6.53		7:30	
BMC-2	09/12/06	DO (mg/L)		6.56		8:00	
BMC-2	09/12/06	DO (mg/L)		6.72		8:30	
BMC-2	09/12/06	DO (mg/L)		6.74		9:00	
BMC-2	09/12/06	DO (mg/L)		7.07		9:30	
BMC-2	09/12/06	DO (mg/L)		7.17		10:00	
BMC-2	09/12/06	DO (mg/L)		7.27		10:30	
BMC-2	09/12/06	DO (mg/L)		7.39		11:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/12/06	DO (mg/L)		7.46		11:30	
BMC-2	09/12/06	DO (mg/L)		7.3		12:00	
BMC-2	09/12/06	DO (mg/L)		7.44		12:30	
BMC-2	09/12/06	DO (mg/L)		7.65		13:00	
BMC-2	09/12/06	DO (mg/L)		7.68		13:30	
BMC-2	09/12/06	DO (mg/L)		7.88		14:00	
BMC-2	09/12/06	DO (mg/L)		7.93		14:30	
BMC-2	09/12/06	DO (mg/L)		7.87		15:00	
BMC-2	09/12/06	DO (mg/L)		7.8		15:30	
BMC-2	09/12/06	DO (mg/L)		7.79		16:00	
BMC-2	09/12/06	DO (mg/L)		7.67		16:30	
BMC-2	09/12/06	DO (mg/L)		7.52		17:00	
BMC-2	09/12/06	DO (mg/L)		7.57		17:30	
BMC-2	09/12/06	DO (mg/L)		7.55		18:00	
BMC-2	09/12/06	DO (mg/L)		7.71		18:30	
BMC-2	09/12/06	DO (mg/L)		6.78		19:00	
BMC-2	09/12/06	DO (mg/L)		7.1		19:30	
BMC-2	09/12/06	DO (mg/L)		7.36		20:00	
BMC-2	09/12/06	DO (mg/L)		7.01		20:30	
BMC-2	09/12/06	DO (mg/L)		6.88		21:00	
BMC-2	09/12/06	DO (mg/L)		6.73		21:30	
BMC-2	09/12/06	DO (mg/L)		6.55		22:00	
BMC-2	09/12/06	DO (mg/L)		6.24		22:30	
BMC-2	09/12/06	DO (mg/L)		6.04		23:00	
BMC-2	09/12/06	DO (mg/L)		5.93		23:30	
BMC-2	09/13/06	DO (mg/L)		5.73		0:00	
BMC-2	09/13/06	DO (mg/L)		5.85		0:30	
BMC-2	09/13/06	DO (mg/L)		5.47		1:00	
BMC-2	09/13/06	DO (mg/L)		5.4		1:30	
BMC-2	09/13/06	DO (mg/L)		5.19		2:00	
BMC-2	09/13/06	DO (mg/L)		5.3		2:30	
BMC-2	09/13/06	DO (mg/L)		5.29		3:00	
BMC-2	09/13/06	DO (mg/L)		5.18		3:30	
BMC-2	09/13/06	DO (mg/L)		5.09		4:00	
BMC-2	09/13/06	DO (mg/L)		5.16		4:30	
BMC-2	09/13/06	DO (mg/L)		5.11		5:00	
BMC-2	09/13/06	DO (mg/L)		5.06		5:30	
BMC-2	09/13/06	DO (mg/L)		4.94		6:00	
BMC-2	09/13/06	DO (mg/L)		4.84		6:30	
BMC-2	09/13/06	DO (mg/L)		4.9		7:00	
BMC-2	09/13/06	DO (mg/L)		4.9		7:30	
BMC-2	09/13/06	DO (mg/L)		5.01		8:00	
BMC-2	09/13/06	DO (mg/L)		4.83		8:30	
BMC-2	09/13/06	DO (mg/L)		4.95		9:00	
BMC-2	09/13/06	DO (mg/L)		5.05		9:30	
BMC-2	09/13/06	DO (mg/L)		5.1		10:00	
BMC-2	09/13/06	DO (mg/L)		5.07		10:30	
BMC-2	09/13/06	DO (mg/L)		5.21		11:00	
BMC-2	09/13/06	DO (mg/L)		5.28		11:30	
BMC-2	09/13/06	DO (mg/L)		5.35		12:00	
BMC-2	09/13/06	DO (mg/L)		5.41		12:30	
BMC-2	09/13/06	DO (mg/L)		5.47		13:00	
BMC-2	09/13/06	DO (mg/L)		5.4		13:30	
BMC-2	09/13/06	DO (mg/L)		5.51		14:00	
BMC-2	09/13/06	DO (mg/L)		5.56		14:30	
BMC-2	09/13/06	DO (mg/L)		5.53		15:00	
BMC-2	09/13/06	DO (mg/L)		5.61		15:30	
BMC-2	09/13/06	DO (mg/L)		5.58		16:00	
BMC-2	09/13/06	DO (mg/L)		5.51		16:30	
BMC-2	09/13/06	DO (mg/L)		5.58		17:00	
BMC-2	09/13/06	DO (mg/L)		5.33		17:30	
BMC-2	09/13/06	DO (mg/L)		5.42		18:00	
BMC-2	09/13/06	DO (mg/L)		5.33		18:30	
BMC-2	09/13/06	DO (mg/L)		5.31		19:00	
BMC-2	09/13/06	DO (mg/L)		5.24		19:30	
BMC-2	09/13/06	DO (mg/L)		5.23		20:00	
BMC-2	09/13/06	DO (mg/L)		5.16		20:30	
BMC-2	09/13/06	DO (mg/L)		5.1		21:00	
BMC-2	09/13/06	DO (mg/L)		5.07		21:30	
BMC-2	09/13/06	DO (mg/L)		5.01		22:00	
BMC-2	09/13/06	DO (mg/L)		5.01		22:30	
BMC-2	09/13/06	DO (mg/L)		5.03		23:00	
BMC-2	09/13/06	DO (mg/L)		4.99		23:30	
BMC-2	09/14/06	DO (mg/L)		4.98		0:00	
BMC-2	09/14/06	DO (mg/L)		4.95		0:30	
BMC-2	09/14/06	DO (mg/L)		5.02		1:00	
BMC-2	09/14/06	DO (mg/L)		4.9		1:30	
BMC-2	09/14/06	DO (mg/L)		4.94		2:00	
BMC-2	09/14/06	DO (mg/L)		4.96		2:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/14/06	DO (mg/L)		4.97		3:00	
BMC-2	09/14/06	DO (mg/L)		5.07		3:30	
BMC-2	09/14/06	DO (mg/L)		5.07		4:00	
BMC-2	09/14/06	DO (mg/L)		5.03		4:30	
BMC-2	09/14/06	DO (mg/L)		5.05		5:00	
BMC-2	09/14/06	DO (mg/L)		5		5:30	
BMC-2	09/14/06	DO (mg/L)		5.07		6:00	
BMC-2	09/14/06	DO (mg/L)		5.04		6:30	
BMC-2	09/14/06	DO (mg/L)		5.04		7:00	
BMC-2	09/14/06	DO (mg/L)		5.09		7:30	
BMC-2	09/14/06	DO (mg/L)		5.19		8:00	
BMC-2	09/14/06	DO (mg/L)		5.22		8:30	
BMC-2	09/14/06	DO (mg/L)		5.29		9:00	
BMC-2	09/26/06	DO (mg/L)		7.48		13:45	
BMC-2	7/25/006	DO (mg/L)		5.83		0:00	
BMC-2	7/25/006	DO (mg/L)		5.8		0:30	
BMC-2	7/25/006	DO (mg/L)		5.76		1:00	
BMC-2	7/25/006	DO (mg/L)		5.82		1:30	
BMC-2	7/25/006	DO (mg/L)		5.77		2:00	
BMC-2	7/25/006	DO (mg/L)		5.77		2:30	
BMC-2	7/25/006	DO (mg/L)		5.84		3:00	
BMC-2	7/25/006	DO (mg/L)		5.76		3:30	
BMC-2	7/25/006	DO (mg/L)		5.82		4:00	
BMC-2	7/25/006	DO (mg/L)		5.84		4:30	
BMC-2	7/25/006	DO (mg/L)		5.87		5:00	
BMC-2	7/25/006	DO (mg/L)		5.87		5:30	
BMC-2	7/25/006	DO (mg/L)		5.9		6:00	
BMC-2	7/25/006	DO (mg/L)		5.86		6:30	
BMC-2	7/25/006	DO (mg/L)		5.91		7:00	
BMC-2	7/25/006	DO (mg/L)		5.96		7:30	
BMC-2	7/25/006	DO (mg/L)		6.03		8:00	
BMC-2	7/25/006	DO (mg/L)		6.11		8:30	
BMC-2	7/25/006	DO (mg/L)		6.26		9:00	
BMC-2	7/25/006	DO (mg/L)		6.3		9:30	
BMC-2	7/25/006	DO (mg/L)		6.47		10:00	
BMC-2	7/25/006	DO (mg/L)		6.54		10:30	
BMC-2	7/25/006	DO (mg/L)		6.83		11:00	
BMC-2	10/07/05	Flow		0		17:55	
BMC-2	10/31/05	Flow		<?		13:37	
BMC-2	04/11/06	Flow		0.1		16:30	
BMC-2	04/26/06	Flow		0		15:30	
BMC-2	05/10/06	Flow		0.1		15:00	
BMC-2	05/24/06	Flow		< 0.1		15:00	
BMC-2	06/07/06	Flow		<0.1		16:45	
BMC-2	06/20/06	Flow		0.5		15:20	
BMC-2	07/13/06	Flow		0.17		14:15	
BMC-2	07/24/06	Flow		0.066		14:55	
BMC-2	08/08/06	Flow		0.033		15:25	
BMC-2	09/26/06	Flow		0		13:45	
BMC-2	10/07/05	pH		8.03		17:55	
BMC-2	10/31/05	pH		7.8		13:37	
BMC-2	04/11/06	pH		8.45		16:30	
BMC-2	04/26/06	pH		8.9		15:30	
BMC-2	05/10/06	pH		7.93		15:00	
BMC-2	05/24/06	pH		8.63		15:00	
BMC-2	06/07/06	pH		7.97		16:45	
BMC-2	06/20/06	pH		9.24		15:20	
BMC-2	07/13/06	pH		8.24		14:15	
BMC-2	07/18/06	pH		7.63		11:00	
BMC-2	07/18/06	pH		7.67		11:30	
BMC-2	07/18/06	pH		7.69		12:00	
BMC-2	07/18/06	pH		7.7		12:30	
BMC-2	07/18/06	pH		7.71		13:00	
BMC-2	07/18/06	pH		7.72		13:30	
BMC-2	07/18/06	pH		7.73		14:00	
BMC-2	07/18/06	pH		7.73		14:30	
BMC-2	07/18/06	pH		7.74		15:00	
BMC-2	07/18/06	pH		7.74		15:30	
BMC-2	07/18/06	pH		7.74		16:00	
BMC-2	07/18/06	pH		7.74		16:30	
BMC-2	07/18/06	pH		7.74		17:00	
BMC-2	07/18/06	pH		7.73		17:30	
BMC-2	07/18/06	pH		7.73		18:00	
BMC-2	07/18/06	pH		7.71		18:30	
BMC-2	07/18/06	pH		7.71		19:00	
BMC-2	07/18/06	pH		7.71		19:30	
BMC-2	07/18/06	pH		7.73		20:00	
BMC-2	07/18/06	pH		7.73		20:30	
BMC-2	07/18/06	pH		7.72		21:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/18/06	pH		7.69		21:30	
BMC-2	07/18/06	pH		7.64		22:00	
BMC-2	07/18/06	pH		7.59		22:30	
BMC-2	07/18/06	pH		7.59		23:00	
BMC-2	07/18/06	pH		7.59		23:30	
BMC-2	07/19/06	pH		7.58		0:00	
BMC-2	07/19/06	pH		7.55		0:30	
BMC-2	07/19/06	pH		7.52		1:00	
BMC-2	07/19/06	pH		7.5		1:30	
BMC-2	07/19/06	pH		7.49		2:00	
BMC-2	07/19/06	pH		7.49		2:30	
BMC-2	07/19/06	pH		7.49		3:00	
BMC-2	07/19/06	pH		7.49		3:30	
BMC-2	07/19/06	pH		7.49		4:00	
BMC-2	07/19/06	pH		7.49		4:30	
BMC-2	07/19/06	pH		7.49		5:00	
BMC-2	07/19/06	pH		7.48		5:30	
BMC-2	07/19/06	pH		7.47		6:00	
BMC-2	07/19/06	pH		7.46		6:30	
BMC-2	07/19/06	pH		7.44		7:00	
BMC-2	07/19/06	pH		7.43		7:30	
BMC-2	07/19/06	pH		7.41		8:00	
BMC-2	07/19/06	pH		7.4		8:30	
BMC-2	07/19/06	pH		7.39		9:00	
BMC-2	07/19/06	pH		7.39		9:30	
BMC-2	07/19/06	pH		7.39		10:00	
BMC-2	07/19/06	pH		7.39		10:30	
BMC-2	07/19/06	pH		7.4		11:00	
BMC-2	07/19/06	pH		7.4		11:30	
BMC-2	07/19/06	pH		7.41		12:00	
BMC-2	07/19/06	pH		7.43		12:30	
BMC-2	07/19/06	pH		7.45		13:00	
BMC-2	07/19/06	pH		7.47		13:30	
BMC-2	07/19/06	pH		7.49		14:00	
BMC-2	07/19/06	pH		7.51		14:30	
BMC-2	07/19/06	pH		7.51		15:00	
BMC-2	07/19/06	pH		7.53		15:30	
BMC-2	07/19/06	pH		7.54		16:00	
BMC-2	07/19/06	pH		7.55		16:30	
BMC-2	07/19/06	pH		7.55		17:00	
BMC-2	07/19/06	pH		7.56		17:30	
BMC-2	07/19/06	pH		7.55		18:00	
BMC-2	07/19/06	pH		7.55		18:30	
BMC-2	07/19/06	pH		7.54		19:00	
BMC-2	07/19/06	pH		7.54		19:30	
BMC-2	07/19/06	pH		7.53		20:00	
BMC-2	07/19/06	pH		7.53		20:30	
BMC-2	07/19/06	pH		7.52		21:00	
BMC-2	07/19/06	pH		7.52		21:30	
BMC-2	07/19/06	pH		7.52		22:00	
BMC-2	07/19/06	pH		7.52		22:30	
BMC-2	07/19/06	pH		7.51		23:00	
BMC-2	07/19/06	pH		7.51		23:30	
BMC-2	07/20/06	pH		7.51		0:00	
BMC-2	07/20/06	pH		7.51		0:30	
BMC-2	07/20/06	pH		7.51		1:00	
BMC-2	07/20/06	pH		7.51		1:30	
BMC-2	07/20/06	pH		7.5		2:00	
BMC-2	07/20/06	pH		7.5		2:30	
BMC-2	07/20/06	pH		7.5		3:00	
BMC-2	07/20/06	pH		7.5		3:30	
BMC-2	07/20/06	pH		7.5		4:00	
BMC-2	07/20/06	pH		7.5		4:30	
BMC-2	07/20/06	pH		7.5		5:00	
BMC-2	07/20/06	pH		7.5		5:30	
BMC-2	07/20/06	pH		7.5		6:00	
BMC-2	07/20/06	pH		7.49		6:30	
BMC-2	07/20/06	pH		7.49		7:00	
BMC-2	07/20/06	pH		7.5		7:30	
BMC-2	07/20/06	pH		7.49		8:00	
BMC-2	07/20/06	pH		7.5		8:30	
BMC-2	07/20/06	pH		7.51		9:00	
BMC-2	07/20/06	pH		7.51		9:30	
BMC-2	07/20/06	pH		7.52		10:00	
BMC-2	07/20/06	pH		7.54		10:30	
BMC-2	07/20/06	pH		7.57		11:00	
BMC-2	07/20/06	pH		7.61		11:30	
BMC-2	07/20/06	pH		7.57		12:00	
BMC-2	07/20/06	pH		7.47		12:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/20/06	pH		7.59		13:00	
BMC-2	07/20/06	pH		7.64		13:30	
BMC-2	07/20/06	pH		7.59		14:00	
BMC-2	07/20/06	pH		7.54		14:30	
BMC-2	07/20/06	pH		7.48		15:00	
BMC-2	07/20/06	pH		7.46		15:30	
BMC-2	07/20/06	pH		7.5		16:00	
BMC-2	07/20/06	pH		7.54		16:30	
BMC-2	07/20/06	pH		7.56		17:00	
BMC-2	07/20/06	pH		7.58		17:30	
BMC-2	07/20/06	pH		7.6		18:00	
BMC-2	07/20/06	pH		7.61		18:30	
BMC-2	07/20/06	pH		7.62		19:00	
BMC-2	07/20/06	pH		7.63		19:30	
BMC-2	07/20/06	pH		7.65		20:00	
BMC-2	07/20/06	pH		7.66		20:30	
BMC-2	07/20/06	pH		7.66		21:00	
BMC-2	07/20/06	pH		7.68		21:30	
BMC-2	07/20/06	pH		7.68		22:00	
BMC-2	07/20/06	pH		7.67		22:30	
BMC-2	07/20/06	pH		7.65		23:00	
BMC-2	07/20/06	pH		7.64		23:30	
BMC-2	07/21/06	pH		7.6		0:00	
BMC-2	07/21/06	pH		7.59		0:30	
BMC-2	07/21/06	pH		7.61		1:00	
BMC-2	07/21/06	pH		7.61		1:30	
BMC-2	07/21/06	pH		7.6		2:00	
BMC-2	07/21/06	pH		7.59		2:30	
BMC-2	07/21/06	pH		7.57		3:00	
BMC-2	07/21/06	pH		7.56		3:30	
BMC-2	07/21/06	pH		7.55		4:00	
BMC-2	07/21/06	pH		7.55		4:30	
BMC-2	07/21/06	pH		7.55		5:00	
BMC-2	07/21/06	pH		7.55		5:30	
BMC-2	07/21/06	pH		7.54		6:00	
BMC-2	07/21/06	pH		7.54		6:30	
BMC-2	07/21/06	pH		7.54		7:00	
BMC-2	07/21/06	pH		7.55		7:30	
BMC-2	07/21/06	pH		7.56		8:00	
BMC-2	07/21/06	pH		7.56		8:30	
BMC-2	07/21/06	pH		7.55		9:00	
BMC-2	07/21/06	pH		7.56		9:30	
BMC-2	07/21/06	pH		7.54		10:00	
BMC-2	07/21/06	pH		7.57		10:30	
BMC-2	07/21/06	pH		7.58		11:00	
BMC-2	07/21/06	pH		7.57		11:30	
BMC-2	07/21/06	pH		7.58		12:00	
BMC-2	07/21/06	pH		7.59		12:30	
BMC-2	07/21/06	pH		7.58		13:00	
BMC-2	07/21/06	pH		7.6		13:30	
BMC-2	07/21/06	pH		7.67		14:00	
BMC-2	07/21/06	pH		7.67		14:30	
BMC-2	07/21/06	pH		7.67		15:00	
BMC-2	07/21/06	pH		7.67		15:30	
BMC-2	07/21/06	pH		7.69		16:00	
BMC-2	07/21/06	pH		7.71		16:30	
BMC-2	07/21/06	pH		7.72		17:00	
BMC-2	07/21/06	pH		7.73		17:30	
BMC-2	07/21/06	pH		7.73		18:00	
BMC-2	07/21/06	pH		7.75		18:30	
BMC-2	07/21/06	pH		7.75		19:00	
BMC-2	07/21/06	pH		7.72		19:30	
BMC-2	07/21/06	pH		7.71		20:00	
BMC-2	07/21/06	pH		7.69		20:30	
BMC-2	07/21/06	pH		7.69		21:00	
BMC-2	07/21/06	pH		7.68		21:30	
BMC-2	07/21/06	pH		7.67		22:00	
BMC-2	07/21/06	pH		7.68		22:30	
BMC-2	07/21/06	pH		7.65		23:00	
BMC-2	07/21/06	pH		7.63		23:30	
BMC-2	07/22/06	pH		7.62		0:00	
BMC-2	07/22/06	pH		7.59		0:30	
BMC-2	07/22/06	pH		7.53		1:00	
BMC-2	07/22/06	pH		7.49		1:30	
BMC-2	07/22/06	pH		7.49		2:00	
BMC-2	07/22/06	pH		7.48		2:30	
BMC-2	07/22/06	pH		7.47		3:00	
BMC-2	07/22/06	pH		7.46		3:30	
BMC-2	07/22/06	pH		7.5		4:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/22/06	pH		7.51		4:30	
BMC-2	07/22/06	pH		7.51		5:00	
BMC-2	07/22/06	pH		7.58		5:30	
BMC-2	07/22/06	pH		7.6		6:00	
BMC-2	07/22/06	pH		7.61		6:30	
BMC-2	07/22/06	pH		7.62		7:00	
BMC-2	07/22/06	pH		7.63		7:30	
BMC-2	07/22/06	pH		7.65		8:00	
BMC-2	07/22/06	pH		7.66		8:30	
BMC-2	07/22/06	pH		7.68		9:00	
BMC-2	07/22/06	pH		7.69		9:30	
BMC-2	07/22/06	pH		7.7		10:00	
BMC-2	07/22/06	pH		7.72		10:30	
BMC-2	07/22/06	pH		7.74		11:00	
BMC-2	07/22/06	pH		7.77		11:30	
BMC-2	07/22/06	pH		7.79		12:00	
BMC-2	07/22/06	pH		7.81		12:30	
BMC-2	07/22/06	pH		7.83		13:00	
BMC-2	07/22/06	pH		7.84		13:30	
BMC-2	07/22/06	pH		7.87		14:00	
BMC-2	07/22/06	pH		7.91		14:30	
BMC-2	07/22/06	pH		7.93		15:00	
BMC-2	07/22/06	pH		7.94		15:30	
BMC-2	07/22/06	pH		7.94		16:00	
BMC-2	07/22/06	pH		7.95		16:30	
BMC-2	07/22/06	pH		7.96		17:00	
BMC-2	07/22/06	pH		7.97		17:30	
BMC-2	07/22/06	pH		7.98		18:00	
BMC-2	07/22/06	pH		7.99		18:30	
BMC-2	07/22/06	pH		8.01		19:00	
BMC-2	07/22/06	pH		8.03		19:30	
BMC-2	07/22/06	pH		8.03		20:00	
BMC-2	07/22/06	pH		8.05		20:30	
BMC-2	07/22/06	pH		8.07		21:00	
BMC-2	07/22/06	pH		8.05		21:30	
BMC-2	07/22/06	pH		8.02		22:00	
BMC-2	07/22/06	pH		7.99		22:30	
BMC-2	07/22/06	pH		7.96		23:00	
BMC-2	07/22/06	pH		7.91		23:30	
BMC-2	07/23/06	pH		7.86		0:00	
BMC-2	07/23/06	pH		7.84		0:30	
BMC-2	07/23/06	pH		7.83		1:00	
BMC-2	07/23/06	pH		7.81		1:30	
BMC-2	07/23/06	pH		7.79		2:00	
BMC-2	07/23/06	pH		7.79		2:30	
BMC-2	07/23/06	pH		7.78		3:00	
BMC-2	07/23/06	pH		7.77		3:30	
BMC-2	07/23/06	pH		7.76		4:00	
BMC-2	07/23/06	pH		7.75		4:30	
BMC-2	07/23/06	pH		7.74		5:00	
BMC-2	07/23/06	pH		7.74		5:30	
BMC-2	07/23/06	pH		7.73		6:00	
BMC-2	07/23/06	pH		7.72		6:30	
BMC-2	07/23/06	pH		7.72		7:00	
BMC-2	07/23/06	pH		7.72		7:30	
BMC-2	07/23/06	pH		7.72		8:00	
BMC-2	07/23/06	pH		7.72		8:30	
BMC-2	07/23/06	pH		7.73		9:00	
BMC-2	07/23/06	pH		7.74		9:30	
BMC-2	07/23/06	pH		7.75		10:00	
BMC-2	07/23/06	pH		7.77		10:30	
BMC-2	07/23/06	pH		7.79		11:00	
BMC-2	07/23/06	pH		7.8		11:30	
BMC-2	07/23/06	pH		7.83		12:00	
BMC-2	07/23/06	pH		7.84		12:30	
BMC-2	07/23/06	pH		7.86		13:00	
BMC-2	07/23/06	pH		7.9		13:30	
BMC-2	07/23/06	pH		7.91		14:00	
BMC-2	07/23/06	pH		7.96		14:30	
BMC-2	07/23/06	pH		8.01		15:00	
BMC-2	07/23/06	pH		8.03		15:30	
BMC-2	07/23/06	pH		8.05		16:00	
BMC-2	07/23/06	pH		8.05		16:30	
BMC-2	07/23/06	pH		8.05		17:00	
BMC-2	07/23/06	pH		8.07		17:30	
BMC-2	07/23/06	pH		8.08		18:00	
BMC-2	07/23/06	pH		8.08		18:30	
BMC-2	07/23/06	pH		8.08		19:00	
BMC-2	07/23/06	pH		8.07		19:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/23/06	pH		8.07		20:00	
BMC-2	07/23/06	pH		8.06		20:30	
BMC-2	07/23/06	pH		8.06		21:00	
BMC-2	07/23/06	pH		8.04		21:30	
BMC-2	07/23/06	pH		8.04		22:00	
BMC-2	07/23/06	pH		8.04		22:30	
BMC-2	07/23/06	pH		8.04		23:00	
BMC-2	07/23/06	pH		8.03		23:30	
BMC-2	07/24/06	pH		7.99		0:00	
BMC-2	07/24/06	pH		7.96		0:30	
BMC-2	07/24/06	pH		7.93		1:00	
BMC-2	07/24/06	pH		7.91		1:30	
BMC-2	07/24/06	pH		7.89		2:00	
BMC-2	07/24/06	pH		7.86		2:30	
BMC-2	07/24/06	pH		7.82		3:00	
BMC-2	07/24/06	pH		7.8		3:30	
BMC-2	07/24/06	pH		7.79		4:00	
BMC-2	07/24/06	pH		7.77		4:30	
BMC-2	07/24/06	pH		7.75		5:00	
BMC-2	07/24/06	pH		7.75		5:30	
BMC-2	07/24/06	pH		7.73		6:00	
BMC-2	07/24/06	pH		7.73		6:30	
BMC-2	07/24/06	pH		7.72		7:00	
BMC-2	07/24/06	pH		7.71		7:30	
BMC-2	07/24/06	pH		7.71		8:00	
BMC-2	07/24/06	pH		7.71		8:30	
BMC-2	07/24/06	pH		7.71		9:00	
BMC-2	07/24/06	pH		7.72		9:30	
BMC-2	07/24/06	pH		7.73		10:00	
BMC-2	07/24/06	pH		7.74		10:30	
BMC-2	07/24/06	pH		7.76		11:00	
BMC-2	07/24/06	pH		7.77		11:30	
BMC-2	07/24/06	pH		7.78		12:00	
BMC-2	07/24/06	pH		7.8		12:30	
BMC-2	07/24/06	pH		7.81		13:00	
BMC-2	07/24/06	pH		7.81		13:30	
BMC-2	07/24/06	pH		7.82		14:00	
BMC-2	07/24/06	pH		7.83		14:30	
BMC-2	07/24/06	pH		9.5 ?		14:55	
BMC-2	07/24/06	pH		7.84		15:00	
BMC-2	07/24/06	pH		7.83		15:30	
BMC-2	07/24/06	pH		7.82		16:00	
BMC-2	07/24/06	pH		7.82		16:30	
BMC-2	07/24/06	pH		7.82		17:00	
BMC-2	07/24/06	pH		7.81		17:30	
BMC-2	07/24/06	pH		7.8		18:00	
BMC-2	07/24/06	pH		7.8		18:30	
BMC-2	07/24/06	pH		7.8		19:00	
BMC-2	07/24/06	pH		7.79		19:30	
BMC-2	07/24/06	pH		7.78		20:00	
BMC-2	07/24/06	pH		7.77		20:30	
BMC-2	07/24/06	pH		7.75		21:00	
BMC-2	07/24/06	pH		7.74		21:30	
BMC-2	07/24/06	pH		7.72		22:00	
BMC-2	07/24/06	pH		7.7		22:30	
BMC-2	07/24/06	pH		7.69		23:00	
BMC-2	07/24/06	pH		7.68		23:30	
BMC-2	08/08/06	pH		7.74		15:25	
BMC-2	08/29/06	pH		8.26		13:45	
BMC-2	09/07/06	pH		7.48		9:00	
BMC-2	09/07/06	pH		7.51		9:30	
BMC-2	09/07/06	pH		7.53		10:00	
BMC-2	09/07/06	pH		7.56		10:30	
BMC-2	09/07/06	pH		7.58		11:00	
BMC-2	09/07/06	pH		7.61		11:30	
BMC-2	09/07/06	pH		7.63		12:00	
BMC-2	09/07/06	pH		7.65		12:30	
BMC-2	09/07/06	pH		7.67		13:00	
BMC-2	09/07/06	pH		7.69		13:30	
BMC-2	09/07/06	pH		7.71		14:00	
BMC-2	09/07/06	pH		7.73		14:30	
BMC-2	09/07/06	pH		7.75		15:00	
BMC-2	09/07/06	pH		7.77		15:30	
BMC-2	09/07/06	pH		7.78		16:00	
BMC-2	09/07/06	pH		7.79		16:30	
BMC-2	09/07/06	pH		7.79		17:00	
BMC-2	09/07/06	pH		7.79		17:30	
BMC-2	09/07/06	pH		7.79		18:00	
BMC-2	09/07/06	pH		7.78		18:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/07/06	pH		7.77		19:00	
BMC-2	09/07/06	pH		7.76		19:30	
BMC-2	09/07/06	pH		7.74		20:00	
BMC-2	09/07/06	pH		7.73		20:30	
BMC-2	09/07/06	pH		7.71		21:00	
BMC-2	09/07/06	pH		7.7		21:30	
BMC-2	09/07/06	pH		7.69		22:00	
BMC-2	09/07/06	pH		7.68		22:30	
BMC-2	09/07/06	pH		7.67		23:00	
BMC-2	09/07/06	pH		7.66		23:30	
BMC-2	09/08/06	pH		7.65		0:00	
BMC-2	09/08/06	pH		7.64		0:30	
BMC-2	09/08/06	pH		7.63		1:00	
BMC-2	09/08/06	pH		7.62		1:30	
BMC-2	09/08/06	pH		7.62		2:00	
BMC-2	09/08/06	pH		7.61		2:30	
BMC-2	09/08/06	pH		7.6		3:00	
BMC-2	09/08/06	pH		7.59		3:30	
BMC-2	09/08/06	pH		7.59		4:00	
BMC-2	09/08/06	pH		7.58		4:30	
BMC-2	09/08/06	pH		7.58		5:00	
BMC-2	09/08/06	pH		7.58		5:30	
BMC-2	09/08/06	pH		7.57		6:00	
BMC-2	09/08/06	pH		7.57		6:30	
BMC-2	09/08/06	pH		7.56		7:00	
BMC-2	09/08/06	pH		7.56		7:30	
BMC-2	09/08/06	pH		7.56		8:00	
BMC-2	09/08/06	pH		7.56		8:30	
BMC-2	09/08/06	pH		7.57		9:00	
BMC-2	09/08/06	pH		7.58		9:30	
BMC-2	09/08/06	pH		7.59		10:00	
BMC-2	09/08/06	pH		7.6		10:30	
BMC-2	09/08/06	pH		7.62		11:00	
BMC-2	09/08/06	pH		7.64		11:30	
BMC-2	09/08/06	pH		7.66		12:00	
BMC-2	09/08/06	pH		7.68		12:30	
BMC-2	09/08/06	pH		7.7		13:00	
BMC-2	09/08/06	pH		7.72		13:30	
BMC-2	09/08/06	pH		7.74		14:00	
BMC-2	09/08/06	pH		7.75		14:30	
BMC-2	09/08/06	pH		7.77		15:00	
BMC-2	09/08/06	pH		7.78		15:30	
BMC-2	09/08/06	pH		7.78		16:00	
BMC-2	09/08/06	pH		7.79		16:30	
BMC-2	09/08/06	pH		7.78		17:00	
BMC-2	09/08/06	pH		7.78		17:30	
BMC-2	09/08/06	pH		7.77		18:00	
BMC-2	09/08/06	pH		7.76		18:30	
BMC-2	09/08/06	pH		7.75		19:00	
BMC-2	09/08/06	pH		7.74		19:30	
BMC-2	09/08/06	pH		7.72		20:00	
BMC-2	09/08/06	pH		7.71		20:30	
BMC-2	09/08/06	pH		7.7		21:00	
BMC-2	09/08/06	pH		7.68		21:30	
BMC-2	09/08/06	pH		7.67		22:00	
BMC-2	09/08/06	pH		7.66		22:30	
BMC-2	09/08/06	pH		7.65		23:00	
BMC-2	09/08/06	pH		7.64		23:30	
BMC-2	09/09/06	pH		7.62		0:00	
BMC-2	09/09/06	pH		7.61		0:30	
BMC-2	09/09/06	pH		7.61		1:00	
BMC-2	09/09/06	pH		7.6		1:30	
BMC-2	09/09/06	pH		7.59		2:00	
BMC-2	09/09/06	pH		7.58		2:30	
BMC-2	09/09/06	pH		7.57		3:00	
BMC-2	09/09/06	pH		7.56		3:30	
BMC-2	09/09/06	pH		7.56		4:00	
BMC-2	09/09/06	pH		7.55		4:30	
BMC-2	09/09/06	pH		7.55		5:00	
BMC-2	09/09/06	pH		7.55		5:30	
BMC-2	09/09/06	pH		7.55		6:00	
BMC-2	09/09/06	pH		7.55		6:30	
BMC-2	09/09/06	pH		7.55		7:00	
BMC-2	09/09/06	pH		7.55		7:30	
BMC-2	09/09/06	pH		7.55		8:00	
BMC-2	09/09/06	pH		7.55		8:30	
BMC-2	09/09/06	pH		7.56		9:00	
BMC-2	09/09/06	pH		7.57		9:30	
BMC-2	09/09/06	pH		7.57		10:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/09/06	pH		7.59		10:30	
BMC-2	09/09/06	pH		7.61		11:00	
BMC-2	09/09/06	pH		7.62		11:30	
BMC-2	09/09/06	pH		7.64		12:00	
BMC-2	09/09/06	pH		7.65		12:30	
BMC-2	09/09/06	pH		7.67		13:00	
BMC-2	09/09/06	pH		7.69		13:30	
BMC-2	09/09/06	pH		7.71		14:00	
BMC-2	09/09/06	pH		7.73		14:30	
BMC-2	09/09/06	pH		7.75		15:00	
BMC-2	09/09/06	pH		7.77		15:30	
BMC-2	09/09/06	pH		7.78		16:00	
BMC-2	09/09/06	pH		7.78		16:30	
BMC-2	09/09/06	pH		7.78		17:00	
BMC-2	09/09/06	pH		7.78		17:30	
BMC-2	09/09/06	pH		7.78		18:00	
BMC-2	09/09/06	pH		7.78		18:30	
BMC-2	09/09/06	pH		7.77		19:00	
BMC-2	09/09/06	pH		7.76		19:30	
BMC-2	09/09/06	pH		7.75		20:00	
BMC-2	09/09/06	pH		7.74		20:30	
BMC-2	09/09/06	pH		7.72		21:00	
BMC-2	09/09/06	pH		7.71		21:30	
BMC-2	09/09/06	pH		7.69		22:00	
BMC-2	09/09/06	pH		7.68		22:30	
BMC-2	09/09/06	pH		7.66		23:00	
BMC-2	09/09/06	pH		7.65		23:30	
BMC-2	09/10/06	pH		7.64		0:00	
BMC-2	09/10/06	pH		7.63		0:30	
BMC-2	09/10/06	pH		7.62		1:00	
BMC-2	09/10/06	pH		7.6		1:30	
BMC-2	09/10/06	pH		7.59		2:00	
BMC-2	09/10/06	pH		7.59		2:30	
BMC-2	09/10/06	pH		7.58		3:00	
BMC-2	09/10/06	pH		7.57		3:30	
BMC-2	09/10/06	pH		7.56		4:00	
BMC-2	09/10/06	pH		7.55		4:30	
BMC-2	09/10/06	pH		7.55		5:00	
BMC-2	09/10/06	pH		7.54		5:30	
BMC-2	09/10/06	pH		7.54		6:00	
BMC-2	09/10/06	pH		7.53		6:30	
BMC-2	09/10/06	pH		7.53		7:00	
BMC-2	09/10/06	pH		7.53		7:30	
BMC-2	09/10/06	pH		7.53		8:00	
BMC-2	09/10/06	pH		7.53		8:30	
BMC-2	09/10/06	pH		7.54		9:00	
BMC-2	09/10/06	pH		7.55		9:30	
BMC-2	09/10/06	pH		7.56		10:00	
BMC-2	09/10/06	pH		7.58		10:30	
BMC-2	09/10/06	pH		7.6		11:00	
BMC-2	09/10/06	pH		7.62		11:30	
BMC-2	09/10/06	pH		7.64		12:00	
BMC-2	09/10/06	pH		7.65		12:30	
BMC-2	09/10/06	pH		7.67		13:00	
BMC-2	09/10/06	pH		7.7		13:30	
BMC-2	09/10/06	pH		7.73		14:00	
BMC-2	09/10/06	pH		7.76		14:30	
BMC-2	09/10/06	pH		7.78		15:00	
BMC-2	09/10/06	pH		7.8		15:30	
BMC-2	09/10/06	pH		7.82		16:00	
BMC-2	09/10/06	pH		7.83		16:30	
BMC-2	09/10/06	pH		7.84		17:00	
BMC-2	09/10/06	pH		7.83		17:30	
BMC-2	09/10/06	pH		7.83		18:00	
BMC-2	09/10/06	pH		7.82		18:30	
BMC-2	09/10/06	pH		7.82		19:00	
BMC-2	09/10/06	pH		7.81		19:30	
BMC-2	09/10/06	pH		7.79		20:00	
BMC-2	09/10/06	pH		7.78		20:30	
BMC-2	09/10/06	pH		7.77		21:00	
BMC-2	09/10/06	pH		7.75		21:30	
BMC-2	09/10/06	pH		7.73		22:00	
BMC-2	09/10/06	pH		7.72		22:30	
BMC-2	09/10/06	pH		7.7		23:00	
BMC-2	09/10/06	pH		7.69		23:30	
BMC-2	09/11/06	pH		7.68		0:00	
BMC-2	09/11/06	pH		7.66		0:30	
BMC-2	09/11/06	pH		7.65		1:00	
BMC-2	09/11/06	pH		7.63		1:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/11/06	pH		7.62		2:00	
BMC-2	09/11/06	pH		7.61		2:30	
BMC-2	09/11/06	pH		7.6		3:00	
BMC-2	09/11/06	pH		7.59		3:30	
BMC-2	09/11/06	pH		7.58		4:00	
BMC-2	09/11/06	pH		7.57		4:30	
BMC-2	09/11/06	pH		7.56		5:00	
BMC-2	09/11/06	pH		7.56		5:30	
BMC-2	09/11/06	pH		7.55		6:00	
BMC-2	09/11/06	pH		7.54		6:30	
BMC-2	09/11/06	pH		7.54		7:00	
BMC-2	09/11/06	pH		7.54		7:30	
BMC-2	09/11/06	pH		7.54		8:00	
BMC-2	09/11/06	pH		7.54		8:30	
BMC-2	09/11/06	pH		7.54		9:00	
BMC-2	09/11/06	pH		7.55		9:30	
BMC-2	09/11/06	pH		7.57		10:00	
BMC-2	09/11/06	pH		7.59		10:30	
BMC-2	09/11/06	pH		7.61		11:00	
BMC-2	09/11/06	pH		7.63		11:30	
BMC-2	09/11/06	pH		7.63		12:00	
BMC-2	09/11/06	pH		7.64		12:30	
BMC-2	09/11/06	pH		7.65		13:00	
BMC-2	09/11/06	pH		7.67		13:30	
BMC-2	09/11/06	pH		7.7		14:00	
BMC-2	09/11/06	pH		7.72		14:30	
BMC-2	09/11/06	pH		7.74		15:00	
BMC-2	09/11/06	pH		7.76		15:30	
BMC-2	09/11/06	pH		7.76		16:00	
BMC-2	09/11/06	pH		7.76		16:30	
BMC-2	09/11/06	pH		7.76		17:00	
BMC-2	09/11/06	pH		7.76		17:30	
BMC-2	09/11/06	pH		7.76		18:00	
BMC-2	09/11/06	pH		7.76		18:30	
BMC-2	09/11/06	pH		7.76		19:00	
BMC-2	09/11/06	pH		7.74		19:30	
BMC-2	09/11/06	pH		7.73		20:00	
BMC-2	09/11/06	pH		7.71		20:30	
BMC-2	09/11/06	pH		7.69		21:00	
BMC-2	09/11/06	pH		7.68		21:30	
BMC-2	09/11/06	pH		7.67		22:00	
BMC-2	09/11/06	pH		7.65		22:30	
BMC-2	09/11/06	pH		7.64		23:00	
BMC-2	09/11/06	pH		7.62		23:30	
BMC-2	09/12/06	pH		7.61		0:00	
BMC-2	09/12/06	pH		7.6		0:30	
BMC-2	09/12/06	pH		7.59		1:00	
BMC-2	09/12/06	pH		7.58		1:30	
BMC-2	09/12/06	pH		7.57		2:00	
BMC-2	09/12/06	pH		7.56		2:30	
BMC-2	09/12/06	pH		7.56		3:00	
BMC-2	09/12/06	pH		7.55		3:30	
BMC-2	09/12/06	pH		7.55		4:00	
BMC-2	09/12/06	pH		7.55		4:30	
BMC-2	09/12/06	pH		7.55		5:00	
BMC-2	09/12/06	pH		7.55		5:30	
BMC-2	09/12/06	pH		7.55		6:00	
BMC-2	09/12/06	pH		7.54		6:30	
BMC-2	09/12/06	pH		7.54		7:00	
BMC-2	09/12/06	pH		7.53		7:30	
BMC-2	09/12/06	pH		7.54		8:00	
BMC-2	09/12/06	pH		7.53		8:30	
BMC-2	09/12/06	pH		7.53		9:00	
BMC-2	09/12/06	pH		7.54		9:30	
BMC-2	09/12/06	pH		7.54		10:00	
BMC-2	09/12/06	pH		7.53		10:30	
BMC-2	09/12/06	pH		7.52		11:00	
BMC-2	09/12/06	pH		7.55		11:30	
BMC-2	09/12/06	pH		7.59		12:00	
BMC-2	09/12/06	pH		7.62		12:30	
BMC-2	09/12/06	pH		7.66		13:00	
BMC-2	09/12/06	pH		7.68		13:30	
BMC-2	09/12/06	pH		7.7		14:00	
BMC-2	09/12/06	pH		7.72		14:30	
BMC-2	09/12/06	pH		7.72		15:00	
BMC-2	09/12/06	pH		7.72		15:30	
BMC-2	09/12/06	pH		7.71		16:00	
BMC-2	09/12/06	pH		7.7		16:30	
BMC-2	09/12/06	pH		7.7		17:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/12/06	pH		7.7		17:30	
BMC-2	09/12/06	pH		7.68		18:00	
BMC-2	09/12/06	pH		7.56		18:30	
BMC-2	09/12/06	pH		7.52		19:00	
BMC-2	09/12/06	pH		7.67		19:30	
BMC-2	09/12/06	pH		7.72		20:00	
BMC-2	09/12/06	pH		7.65		20:30	
BMC-2	09/12/06	pH		7.57		21:00	
BMC-2	09/12/06	pH		7.5		21:30	
BMC-2	09/12/06	pH		7.45		22:00	
BMC-2	09/12/06	pH		7.37		22:30	
BMC-2	09/12/06	pH		7.32		23:00	
BMC-2	09/12/06	pH		7.3		23:30	
BMC-2	09/13/06	pH		7.28		0:00	
BMC-2	09/13/06	pH		7.27		0:30	
BMC-2	09/13/06	pH		7.26		1:00	
BMC-2	09/13/06	pH		7.26		1:30	
BMC-2	09/13/06	pH		7.26		2:00	
BMC-2	09/13/06	pH		7.26		2:30	
BMC-2	09/13/06	pH		7.26		3:00	
BMC-2	09/13/06	pH		7.26		3:30	
BMC-2	09/13/06	pH		7.27		4:00	
BMC-2	09/13/06	pH		7.27		4:30	
BMC-2	09/13/06	pH		7.27		5:00	
BMC-2	09/13/06	pH		7.27		5:30	
BMC-2	09/13/06	pH		7.28		6:00	
BMC-2	09/13/06	pH		7.28		6:30	
BMC-2	09/13/06	pH		7.28		7:00	
BMC-2	09/13/06	pH		7.29		7:30	
BMC-2	09/13/06	pH		7.3		8:00	
BMC-2	09/13/06	pH		7.31		8:30	
BMC-2	09/13/06	pH		7.32		9:00	
BMC-2	09/13/06	pH		7.33		9:30	
BMC-2	09/13/06	pH		7.34		10:00	
BMC-2	09/13/06	pH		7.35		10:30	
BMC-2	09/13/06	pH		7.36		11:00	
BMC-2	09/13/06	pH		7.38		11:30	
BMC-2	09/13/06	pH		7.39		12:00	
BMC-2	09/13/06	pH		7.42		12:30	
BMC-2	09/13/06	pH		7.43		13:00	
BMC-2	09/13/06	pH		7.44		13:30	
BMC-2	09/13/06	pH		7.45		14:00	
BMC-2	09/13/06	pH		7.46		14:30	
BMC-2	09/13/06	pH		7.47		15:00	
BMC-2	09/13/06	pH		7.48		15:30	
BMC-2	09/13/06	pH		7.49		16:00	
BMC-2	09/13/06	pH		7.5		16:30	
BMC-2	09/13/06	pH		7.5		17:00	
BMC-2	09/13/06	pH		7.5		17:30	
BMC-2	09/13/06	pH		7.5		18:00	
BMC-2	09/13/06	pH		7.5		18:30	
BMC-2	09/13/06	pH		7.49		19:00	
BMC-2	09/13/06	pH		7.49		19:30	
BMC-2	09/13/06	pH		7.49		20:00	
BMC-2	09/13/06	pH		7.48		20:30	
BMC-2	09/13/06	pH		7.48		21:00	
BMC-2	09/13/06	pH		7.47		21:30	
BMC-2	09/13/06	pH		7.47		22:00	
BMC-2	09/13/06	pH		7.46		22:30	
BMC-2	09/13/06	pH		7.46		23:00	
BMC-2	09/13/06	pH		7.45		23:30	
BMC-2	09/14/06	pH		7.45		0:00	
BMC-2	09/14/06	pH		7.45		0:30	
BMC-2	09/14/06	pH		7.45		1:00	
BMC-2	09/14/06	pH		7.45		1:30	
BMC-2	09/14/06	pH		7.45		2:00	
BMC-2	09/14/06	pH		7.45		2:30	
BMC-2	09/14/06	pH		7.46		3:00	
BMC-2	09/14/06	pH		7.46		3:30	
BMC-2	09/14/06	pH		7.47		4:00	
BMC-2	09/14/06	pH		7.47		4:30	
BMC-2	09/14/06	pH		7.48		5:00	
BMC-2	09/14/06	pH		7.49		5:30	
BMC-2	09/14/06	pH		7.49		6:00	
BMC-2	09/14/06	pH		7.49		6:30	
BMC-2	09/14/06	pH		7.49		7:00	
BMC-2	09/14/06	pH		7.5		7:30	
BMC-2	09/14/06	pH		7.5		8:00	
BMC-2	09/14/06	pH		7.51		8:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/14/06	pH		7.51		9:00	
BMC-2	09/26/06	pH		6.21		13:45	
BMC-2	7/25/006	pH		7.67		0:00	
BMC-2	7/25/006	pH		7.67		0:30	
BMC-2	7/25/006	pH		7.66		1:00	
BMC-2	7/25/006	pH		7.66		1:30	
BMC-2	7/25/006	pH		7.65		2:00	
BMC-2	7/25/006	pH		7.64		2:30	
BMC-2	7/25/006	pH		7.64		3:00	
BMC-2	7/25/006	pH		7.63		3:30	
BMC-2	7/25/006	pH		7.63		4:00	
BMC-2	7/25/006	pH		7.62		4:30	
BMC-2	7/25/006	pH		7.62		5:00	
BMC-2	7/25/006	pH		7.61		5:30	
BMC-2	7/25/006	pH		7.61		6:00	
BMC-2	7/25/006	pH		7.61		6:30	
BMC-2	7/25/006	pH		7.6		7:00	
BMC-2	7/25/006	pH		7.6		7:30	
BMC-2	7/25/006	pH		7.61		8:00	
BMC-2	7/25/006	pH		7.61		8:30	
BMC-2	7/25/006	pH		7.62		9:00	
BMC-2	7/25/006	pH		7.63		9:30	
BMC-2	7/25/006	pH		7.64		10:00	
BMC-2	7/25/006	pH		7.65		10:30	
BMC-2	7/25/006	pH		7.67		11:00	
BMC-2	07/18/06	Spec. Cond.		622		11:00	
BMC-2	07/18/06	Spec. Cond.		619		11:30	
BMC-2	07/18/06	Spec. Cond.		616		12:00	
BMC-2	07/18/06	Spec. Cond.		611		12:30	
BMC-2	07/18/06	Spec. Cond.		607		13:00	
BMC-2	07/18/06	Spec. Cond.		608		13:30	
BMC-2	07/18/06	Spec. Cond.		615		14:00	
BMC-2	07/18/06	Spec. Cond.		624		14:30	
BMC-2	07/18/06	Spec. Cond.		633		15:00	
BMC-2	07/18/06	Spec. Cond.		640		15:30	
BMC-2	07/18/06	Spec. Cond.		648		16:00	
BMC-2	07/18/06	Spec. Cond.		656		16:30	
BMC-2	07/18/06	Spec. Cond.		662		17:00	
BMC-2	07/18/06	Spec. Cond.		668		17:30	
BMC-2	07/18/06	Spec. Cond.		672		18:00	
BMC-2	07/18/06	Spec. Cond.		676		18:30	
BMC-2	07/18/06	Spec. Cond.		679		19:00	
BMC-2	07/18/06	Spec. Cond.		681		19:30	
BMC-2	07/18/06	Spec. Cond.		672		20:00	
BMC-2	07/18/06	Spec. Cond.		665		20:30	
BMC-2	07/18/06	Spec. Cond.		667		21:00	
BMC-2	07/18/06	Spec. Cond.		572		21:30	
BMC-2	07/18/06	Spec. Cond.		550		22:00	
BMC-2	07/18/06	Spec. Cond.		466		22:30	
BMC-2	07/18/06	Spec. Cond.		486		23:00	
BMC-2	07/18/06	Spec. Cond.		510		23:30	
BMC-2	07/19/06	Spec. Cond.		490		0:00	
BMC-2	07/19/06	Spec. Cond.		449		0:30	
BMC-2	07/19/06	Spec. Cond.		432		1:00	
BMC-2	07/19/06	Spec. Cond.		431		1:30	
BMC-2	07/19/06	Spec. Cond.		436		2:00	
BMC-2	07/19/06	Spec. Cond.		445		2:30	
BMC-2	07/19/06	Spec. Cond.		455		3:00	
BMC-2	07/19/06	Spec. Cond.		468		3:30	
BMC-2	07/19/06	Spec. Cond.		484		4:00	
BMC-2	07/19/06	Spec. Cond.		503		4:30	
BMC-2	07/19/06	Spec. Cond.		520		5:00	
BMC-2	07/19/06	Spec. Cond.		533		5:30	
BMC-2	07/19/06	Spec. Cond.		542		6:00	
BMC-2	07/19/06	Spec. Cond.		548		6:30	
BMC-2	07/19/06	Spec. Cond.		549		7:00	
BMC-2	07/19/06	Spec. Cond.		548		7:30	
BMC-2	07/19/06	Spec. Cond.		544		8:00	
BMC-2	07/19/06	Spec. Cond.		540		8:30	
BMC-2	07/19/06	Spec. Cond.		534		9:00	
BMC-2	07/19/06	Spec. Cond.		527		9:30	
BMC-2	07/19/06	Spec. Cond.		520		10:00	
BMC-2	07/19/06	Spec. Cond.		510		10:30	
BMC-2	07/19/06	Spec. Cond.		501		11:00	
BMC-2	07/19/06	Spec. Cond.		492		11:30	
BMC-2	07/19/06	Spec. Cond.		486		12:00	
BMC-2	07/19/06	Spec. Cond.		486		12:30	
BMC-2	07/19/06	Spec. Cond.		493		13:00	
BMC-2	07/19/06	Spec. Cond.		502		13:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/19/06	Spec. Cond.		510		14:00	
BMC-2	07/19/06	Spec. Cond.		517		14:30	
BMC-2	07/19/06	Spec. Cond.		523		15:00	
BMC-2	07/19/06	Spec. Cond.		527		15:30	
BMC-2	07/19/06	Spec. Cond.		531		16:00	
BMC-2	07/19/06	Spec. Cond.		532		16:30	
BMC-2	07/19/06	Spec. Cond.		532		17:00	
BMC-2	07/19/06	Spec. Cond.		531		17:30	
BMC-2	07/19/06	Spec. Cond.		531		18:00	
BMC-2	07/19/06	Spec. Cond.		533		18:30	
BMC-2	07/19/06	Spec. Cond.		536		19:00	
BMC-2	07/19/06	Spec. Cond.		539		19:30	
BMC-2	07/19/06	Spec. Cond.		543		20:00	
BMC-2	07/19/06	Spec. Cond.		547		20:30	
BMC-2	07/19/06	Spec. Cond.		550		21:00	
BMC-2	07/19/06	Spec. Cond.		552		21:30	
BMC-2	07/19/06	Spec. Cond.		553		22:00	
BMC-2	07/19/06	Spec. Cond.		555		22:30	
BMC-2	07/19/06	Spec. Cond.		557		23:00	
BMC-2	07/19/06	Spec. Cond.		559		23:30	
BMC-2	07/20/06	Spec. Cond.		559		0:00	
BMC-2	07/20/06	Spec. Cond.		559		0:30	
BMC-2	07/20/06	Spec. Cond.		559		1:00	
BMC-2	07/20/06	Spec. Cond.		559		1:30	
BMC-2	07/20/06	Spec. Cond.		561		2:00	
BMC-2	07/20/06	Spec. Cond.		563		2:30	
BMC-2	07/20/06	Spec. Cond.		565		3:00	
BMC-2	07/20/06	Spec. Cond.		566		3:30	
BMC-2	07/20/06	Spec. Cond.		567		4:00	
BMC-2	07/20/06	Spec. Cond.		569		4:30	
BMC-2	07/20/06	Spec. Cond.		571		5:00	
BMC-2	07/20/06	Spec. Cond.		574		5:30	
BMC-2	07/20/06	Spec. Cond.		576		6:00	
BMC-2	07/20/06	Spec. Cond.		576		6:30	
BMC-2	07/20/06	Spec. Cond.		576		7:00	
BMC-2	07/20/06	Spec. Cond.		575		7:30	
BMC-2	07/20/06	Spec. Cond.		575		8:00	
BMC-2	07/20/06	Spec. Cond.		573		8:30	
BMC-2	07/20/06	Spec. Cond.		571		9:00	
BMC-2	07/20/06	Spec. Cond.		571		9:30	
BMC-2	07/20/06	Spec. Cond.		567		10:00	
BMC-2	07/20/06	Spec. Cond.		563		10:30	
BMC-2	07/20/06	Spec. Cond.		543		11:00	
BMC-2	07/20/06	Spec. Cond.		521		11:30	
BMC-2	07/20/06	Spec. Cond.		303		12:00	
BMC-2	07/20/06	Spec. Cond.		222		12:30	
BMC-2	07/20/06	Spec. Cond.		171		13:00	
BMC-2	07/20/06	Spec. Cond.		154		13:30	
BMC-2	07/20/06	Spec. Cond.		165		14:00	
BMC-2	07/20/06	Spec. Cond.		190		14:30	
BMC-2	07/20/06	Spec. Cond.		218		15:00	
BMC-2	07/20/06	Spec. Cond.		242		15:30	
BMC-2	07/20/06	Spec. Cond.		255		16:00	
BMC-2	07/20/06	Spec. Cond.		264		16:30	
BMC-2	07/20/06	Spec. Cond.		272		17:00	
BMC-2	07/20/06	Spec. Cond.		277		17:30	
BMC-2	07/20/06	Spec. Cond.		283		18:00	
BMC-2	07/20/06	Spec. Cond.		287		18:30	
BMC-2	07/20/06	Spec. Cond.		289		19:00	
BMC-2	07/20/06	Spec. Cond.		291		19:30	
BMC-2	07/20/06	Spec. Cond.		293		20:00	
BMC-2	07/20/06	Spec. Cond.		295		20:30	
BMC-2	07/20/06	Spec. Cond.		296		21:00	
BMC-2	07/20/06	Spec. Cond.		297		21:30	
BMC-2	07/20/06	Spec. Cond.		299		22:00	
BMC-2	07/20/06	Spec. Cond.		300		22:30	
BMC-2	07/20/06	Spec. Cond.		300		23:00	
BMC-2	07/20/06	Spec. Cond.		300		23:30	
BMC-2	07/21/06	Spec. Cond.		305		0:00	
BMC-2	07/21/06	Spec. Cond.		306		0:30	
BMC-2	07/21/06	Spec. Cond.		306		1:00	
BMC-2	07/21/06	Spec. Cond.		307		1:30	
BMC-2	07/21/06	Spec. Cond.		322		2:00	
BMC-2	07/21/06	Spec. Cond.		322		2:30	
BMC-2	07/21/06	Spec. Cond.		311		3:00	
BMC-2	07/21/06	Spec. Cond.		303		3:30	
BMC-2	07/21/06	Spec. Cond.		302		4:00	
BMC-2	07/21/06	Spec. Cond.		302		4:30	
BMC-2	07/21/06	Spec. Cond.		302		5:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/21/06	Spec. Cond.		303		5:30	
BMC-2	07/21/06	Spec. Cond.		303		6:00	
BMC-2	07/21/06	Spec. Cond.		304		6:30	
BMC-2	07/21/06	Spec. Cond.		305		7:00	
BMC-2	07/21/06	Spec. Cond.		306		7:30	
BMC-2	07/21/06	Spec. Cond.		305		8:00	
BMC-2	07/21/06	Spec. Cond.		308		8:30	
BMC-2	07/21/06	Spec. Cond.		311		9:00	
BMC-2	07/21/06	Spec. Cond.		313		9:30	
BMC-2	07/21/06	Spec. Cond.		314		10:00	
BMC-2	07/21/06	Spec. Cond.		316		10:30	
BMC-2	07/21/06	Spec. Cond.		316		11:00	
BMC-2	07/21/06	Spec. Cond.		319		11:30	
BMC-2	07/21/06	Spec. Cond.		322		12:00	
BMC-2	07/21/06	Spec. Cond.		322		12:30	
BMC-2	07/21/06	Spec. Cond.		324		13:00	
BMC-2	07/21/06	Spec. Cond.		324		13:30	
BMC-2	07/21/06	Spec. Cond.		325		14:00	
BMC-2	07/21/06	Spec. Cond.		327		14:30	
BMC-2	07/21/06	Spec. Cond.		329		15:00	
BMC-2	07/21/06	Spec. Cond.		329		15:30	
BMC-2	07/21/06	Spec. Cond.		328		16:00	
BMC-2	07/21/06	Spec. Cond.		327		16:30	
BMC-2	07/21/06	Spec. Cond.		328		17:00	
BMC-2	07/21/06	Spec. Cond.		329		17:30	
BMC-2	07/21/06	Spec. Cond.		331		18:00	
BMC-2	07/21/06	Spec. Cond.		330		18:30	
BMC-2	07/21/06	Spec. Cond.		331		19:00	
BMC-2	07/21/06	Spec. Cond.		332		19:30	
BMC-2	07/21/06	Spec. Cond.		333		20:00	
BMC-2	07/21/06	Spec. Cond.		334		20:30	
BMC-2	07/21/06	Spec. Cond.		334		21:00	
BMC-2	07/21/06	Spec. Cond.		334		21:30	
BMC-2	07/21/06	Spec. Cond.		335		22:00	
BMC-2	07/21/06	Spec. Cond.		334		22:30	
BMC-2	07/21/06	Spec. Cond.		337		23:00	
BMC-2	07/21/06	Spec. Cond.		345		23:30	
BMC-2	07/22/06	Spec. Cond.		316		0:00	
BMC-2	07/22/06	Spec. Cond.		320		0:30	
BMC-2	07/22/06	Spec. Cond.		319		1:00	
BMC-2	07/22/06	Spec. Cond.		301		1:30	
BMC-2	07/22/06	Spec. Cond.		295		2:00	
BMC-2	07/22/06	Spec. Cond.		298		2:30	
BMC-2	07/22/06	Spec. Cond.		301		3:00	
BMC-2	07/22/06	Spec. Cond.		303		3:30	
BMC-2	07/22/06	Spec. Cond.		304		4:00	
BMC-2	07/22/06	Spec. Cond.		304		4:30	
BMC-2	07/22/06	Spec. Cond.		304		5:00	
BMC-2	07/22/06	Spec. Cond.		304		5:30	
BMC-2	07/22/06	Spec. Cond.		305		6:00	
BMC-2	07/22/06	Spec. Cond.		306		6:30	
BMC-2	07/22/06	Spec. Cond.		306		7:00	
BMC-2	07/22/06	Spec. Cond.		309		7:30	
BMC-2	07/22/06	Spec. Cond.		308		8:00	
BMC-2	07/22/06	Spec. Cond.		311		8:30	
BMC-2	07/22/06	Spec. Cond.		312		9:00	
BMC-2	07/22/06	Spec. Cond.		314		9:30	
BMC-2	07/22/06	Spec. Cond.		315		10:00	
BMC-2	07/22/06	Spec. Cond.		316		10:30	
BMC-2	07/22/06	Spec. Cond.		317		11:00	
BMC-2	07/22/06	Spec. Cond.		316		11:30	
BMC-2	07/22/06	Spec. Cond.		318		12:00	
BMC-2	07/22/06	Spec. Cond.		320		12:30	
BMC-2	07/22/06	Spec. Cond.		320		13:00	
BMC-2	07/22/06	Spec. Cond.		322		13:30	
BMC-2	07/22/06	Spec. Cond.		321		14:00	
BMC-2	07/22/06	Spec. Cond.		320		14:30	
BMC-2	07/22/06	Spec. Cond.		319		15:00	
BMC-2	07/22/06	Spec. Cond.		319		15:30	
BMC-2	07/22/06	Spec. Cond.		319		16:00	
BMC-2	07/22/06	Spec. Cond.		319		16:30	
BMC-2	07/22/06	Spec. Cond.		318		17:00	
BMC-2	07/22/06	Spec. Cond.		316		17:30	
BMC-2	07/22/06	Spec. Cond.		315		18:00	
BMC-2	07/22/06	Spec. Cond.		314		18:30	
BMC-2	07/22/06	Spec. Cond.		314		19:00	
BMC-2	07/22/06	Spec. Cond.		313		19:30	
BMC-2	07/22/06	Spec. Cond.		314		20:00	
BMC-2	07/22/06	Spec. Cond.		313		20:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/22/06	Spec. Cond.		313		21:00	
BMC-2	07/22/06	Spec. Cond.		314		21:30	
BMC-2	07/22/06	Spec. Cond.		316		22:00	
BMC-2	07/22/06	Spec. Cond.		317		22:30	
BMC-2	07/22/06	Spec. Cond.		318		23:00	
BMC-2	07/22/06	Spec. Cond.		320		23:30	
BMC-2	07/23/06	Spec. Cond.		322		0:00	
BMC-2	07/23/06	Spec. Cond.		321		0:30	
BMC-2	07/23/06	Spec. Cond.		321		1:00	
BMC-2	07/23/06	Spec. Cond.		322		1:30	
BMC-2	07/23/06	Spec. Cond.		323		2:00	
BMC-2	07/23/06	Spec. Cond.		323		2:30	
BMC-2	07/23/06	Spec. Cond.		322		3:00	
BMC-2	07/23/06	Spec. Cond.		322		3:30	
BMC-2	07/23/06	Spec. Cond.		323		4:00	
BMC-2	07/23/06	Spec. Cond.		322		4:30	
BMC-2	07/23/06	Spec. Cond.		322		5:00	
BMC-2	07/23/06	Spec. Cond.		323		5:30	
BMC-2	07/23/06	Spec. Cond.		323		6:00	
BMC-2	07/23/06	Spec. Cond.		323		6:30	
BMC-2	07/23/06	Spec. Cond.		322		7:00	
BMC-2	07/23/06	Spec. Cond.		324		7:30	
BMC-2	07/23/06	Spec. Cond.		325		8:00	
BMC-2	07/23/06	Spec. Cond.		326		8:30	
BMC-2	07/23/06	Spec. Cond.		326		9:00	
BMC-2	07/23/06	Spec. Cond.		328		9:30	
BMC-2	07/23/06	Spec. Cond.		331		10:00	
BMC-2	07/23/06	Spec. Cond.		332		10:30	
BMC-2	07/23/06	Spec. Cond.		334		11:00	
BMC-2	07/23/06	Spec. Cond.		335		11:30	
BMC-2	07/23/06	Spec. Cond.		337		12:00	
BMC-2	07/23/06	Spec. Cond.		338		12:30	
BMC-2	07/23/06	Spec. Cond.		340		13:00	
BMC-2	07/23/06	Spec. Cond.		341		13:30	
BMC-2	07/23/06	Spec. Cond.		342		14:00	
BMC-2	07/23/06	Spec. Cond.		342		14:30	
BMC-2	07/23/06	Spec. Cond.		342		15:00	
BMC-2	07/23/06	Spec. Cond.		342		15:30	
BMC-2	07/23/06	Spec. Cond.		343		16:00	
BMC-2	07/23/06	Spec. Cond.		344		16:30	
BMC-2	07/23/06	Spec. Cond.		345		17:00	
BMC-2	07/23/06	Spec. Cond.		344		17:30	
BMC-2	07/23/06	Spec. Cond.		344		18:00	
BMC-2	07/23/06	Spec. Cond.		344		18:30	
BMC-2	07/23/06	Spec. Cond.		343		19:00	
BMC-2	07/23/06	Spec. Cond.		343		19:30	
BMC-2	07/23/06	Spec. Cond.		343		20:00	
BMC-2	07/23/06	Spec. Cond.		343		20:30	
BMC-2	07/23/06	Spec. Cond.		342		21:00	
BMC-2	07/23/06	Spec. Cond.		344		21:30	
BMC-2	07/23/06	Spec. Cond.		344		22:00	
BMC-2	07/23/06	Spec. Cond.		343		22:30	
BMC-2	07/23/06	Spec. Cond.		343		23:00	
BMC-2	07/23/06	Spec. Cond.		343		23:30	
BMC-2	07/24/06	Spec. Cond.		344		0:00	
BMC-2	07/24/06	Spec. Cond.		347		0:30	
BMC-2	07/24/06	Spec. Cond.		348		1:00	
BMC-2	07/24/06	Spec. Cond.		349		1:30	
BMC-2	07/24/06	Spec. Cond.		348		2:00	
BMC-2	07/24/06	Spec. Cond.		350		2:30	
BMC-2	07/24/06	Spec. Cond.		353		3:00	
BMC-2	07/24/06	Spec. Cond.		353		3:30	
BMC-2	07/24/06	Spec. Cond.		353		4:00	
BMC-2	07/24/06	Spec. Cond.		354		4:30	
BMC-2	07/24/06	Spec. Cond.		355		5:00	
BMC-2	07/24/06	Spec. Cond.		356		5:30	
BMC-2	07/24/06	Spec. Cond.		355		6:00	
BMC-2	07/24/06	Spec. Cond.		356		6:30	
BMC-2	07/24/06	Spec. Cond.		358		7:00	
BMC-2	07/24/06	Spec. Cond.		359		7:30	
BMC-2	07/24/06	Spec. Cond.		359		8:00	
BMC-2	07/24/06	Spec. Cond.		360		8:30	
BMC-2	07/24/06	Spec. Cond.		360		9:00	
BMC-2	07/24/06	Spec. Cond.		361		9:30	
BMC-2	07/24/06	Spec. Cond.		362		10:00	
BMC-2	07/24/06	Spec. Cond.		365		10:30	
BMC-2	07/24/06	Spec. Cond.		369		11:00	
BMC-2	07/24/06	Spec. Cond.		374		11:30	
BMC-2	07/24/06	Spec. Cond.		377		12:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/24/06	Spec. Cond.		379		12:30	
BMC-2	07/24/06	Spec. Cond.		382		13:00	
BMC-2	07/24/06	Spec. Cond.		384		13:30	
BMC-2	07/24/06	Spec. Cond.		387		14:00	
BMC-2	07/24/06	Spec. Cond.		388		14:30	
BMC-2	07/24/06	Spec. Cond.		389		15:00	
BMC-2	07/24/06	Spec. Cond.		391		15:30	
BMC-2	07/24/06	Spec. Cond.		395		16:00	
BMC-2	07/24/06	Spec. Cond.		396		16:30	
BMC-2	07/24/06	Spec. Cond.		395		17:00	
BMC-2	07/24/06	Spec. Cond.		396		17:30	
BMC-2	07/24/06	Spec. Cond.		399		18:00	
BMC-2	07/24/06	Spec. Cond.		400		18:30	
BMC-2	07/24/06	Spec. Cond.		398		19:00	
BMC-2	07/24/06	Spec. Cond.		399		19:30	
BMC-2	07/24/06	Spec. Cond.		401		20:00	
BMC-2	07/24/06	Spec. Cond.		404		20:30	
BMC-2	07/24/06	Spec. Cond.		404		21:00	
BMC-2	07/24/06	Spec. Cond.		406		21:30	
BMC-2	07/24/06	Spec. Cond.		409		22:00	
BMC-2	07/24/06	Spec. Cond.		414		22:30	
BMC-2	07/24/06	Spec. Cond.		417		23:00	
BMC-2	07/24/06	Spec. Cond.		419		23:30	
BMC-2	09/07/06	Spec. Cond.		884		9:00	
BMC-2	09/07/06	Spec. Cond.		885		9:30	
BMC-2	09/07/06	Spec. Cond.		885		10:00	
BMC-2	09/07/06	Spec. Cond.		885		10:30	
BMC-2	09/07/06	Spec. Cond.		885		11:00	
BMC-2	09/07/06	Spec. Cond.		884		11:30	
BMC-2	09/07/06	Spec. Cond.		883		12:00	
BMC-2	09/07/06	Spec. Cond.		881		12:30	
BMC-2	09/07/06	Spec. Cond.		879		13:00	
BMC-2	09/07/06	Spec. Cond.		877		13:30	
BMC-2	09/07/06	Spec. Cond.		874		14:00	
BMC-2	09/07/06	Spec. Cond.		871		14:30	
BMC-2	09/07/06	Spec. Cond.		868		15:00	
BMC-2	09/07/06	Spec. Cond.		866		15:30	
BMC-2	09/07/06	Spec. Cond.		863		16:00	
BMC-2	09/07/06	Spec. Cond.		862		16:30	
BMC-2	09/07/06	Spec. Cond.		860		17:00	
BMC-2	09/07/06	Spec. Cond.		859		17:30	
BMC-2	09/07/06	Spec. Cond.		858		18:00	
BMC-2	09/07/06	Spec. Cond.		859		18:30	
BMC-2	09/07/06	Spec. Cond.		859		19:00	
BMC-2	09/07/06	Spec. Cond.		862		19:30	
BMC-2	09/07/06	Spec. Cond.		865		20:00	
BMC-2	09/07/06	Spec. Cond.		869		20:30	
BMC-2	09/07/06	Spec. Cond.		873		21:00	
BMC-2	09/07/06	Spec. Cond.		878		21:30	
BMC-2	09/07/06	Spec. Cond.		881		22:00	
BMC-2	09/07/06	Spec. Cond.		885		22:30	
BMC-2	09/07/06	Spec. Cond.		887		23:00	
BMC-2	09/07/06	Spec. Cond.		889		23:30	
BMC-2	09/08/06	Spec. Cond.		890		0:00	
BMC-2	09/08/06	Spec. Cond.		891		0:30	
BMC-2	09/08/06	Spec. Cond.		892		1:00	
BMC-2	09/08/06	Spec. Cond.		893		1:30	
BMC-2	09/08/06	Spec. Cond.		893		2:00	
BMC-2	09/08/06	Spec. Cond.		894		2:30	
BMC-2	09/08/06	Spec. Cond.		894		3:00	
BMC-2	09/08/06	Spec. Cond.		895		3:30	
BMC-2	09/08/06	Spec. Cond.		894		4:00	
BMC-2	09/08/06	Spec. Cond.		894		4:30	
BMC-2	09/08/06	Spec. Cond.		895		5:00	
BMC-2	09/08/06	Spec. Cond.		895		5:30	
BMC-2	09/08/06	Spec. Cond.		894		6:00	
BMC-2	09/08/06	Spec. Cond.		895		6:30	
BMC-2	09/08/06	Spec. Cond.		895		7:00	
BMC-2	09/08/06	Spec. Cond.		896		7:30	
BMC-2	09/08/06	Spec. Cond.		896		8:00	
BMC-2	09/08/06	Spec. Cond.		897		8:30	
BMC-2	09/08/06	Spec. Cond.		897		9:00	
BMC-2	09/08/06	Spec. Cond.		897		9:30	
BMC-2	09/08/06	Spec. Cond.		898		10:00	
BMC-2	09/08/06	Spec. Cond.		898		10:30	
BMC-2	09/08/06	Spec. Cond.		899		11:00	
BMC-2	09/08/06	Spec. Cond.		899		11:30	
BMC-2	09/08/06	Spec. Cond.		900		12:00	
BMC-2	09/08/06	Spec. Cond.		899		12:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/08/06	Spec. Cond.		898		13:00	
BMC-2	09/08/06	Spec. Cond.		897		13:30	
BMC-2	09/08/06	Spec. Cond.		897		14:00	
BMC-2	09/08/06	Spec. Cond.		895		14:30	
BMC-2	09/08/06	Spec. Cond.		895		15:00	
BMC-2	09/08/06	Spec. Cond.		893		15:30	
BMC-2	09/08/06	Spec. Cond.		891		16:00	
BMC-2	09/08/06	Spec. Cond.		889		16:30	
BMC-2	09/08/06	Spec. Cond.		888		17:00	
BMC-2	09/08/06	Spec. Cond.		887		17:30	
BMC-2	09/08/06	Spec. Cond.		885		18:00	
BMC-2	09/08/06	Spec. Cond.		885		18:30	
BMC-2	09/08/06	Spec. Cond.		885		19:00	
BMC-2	09/08/06	Spec. Cond.		885		19:30	
BMC-2	09/08/06	Spec. Cond.		887		20:00	
BMC-2	09/08/06	Spec. Cond.		888		20:30	
BMC-2	09/08/06	Spec. Cond.		890		21:00	
BMC-2	09/08/06	Spec. Cond.		894		21:30	
BMC-2	09/08/06	Spec. Cond.		897		22:00	
BMC-2	09/08/06	Spec. Cond.		901		22:30	
BMC-2	09/08/06	Spec. Cond.		904		23:00	
BMC-2	09/08/06	Spec. Cond.		905		23:30	
BMC-2	09/09/06	Spec. Cond.		908		0:00	
BMC-2	09/09/06	Spec. Cond.		910		0:30	
BMC-2	09/09/06	Spec. Cond.		912		1:00	
BMC-2	09/09/06	Spec. Cond.		914		1:30	
BMC-2	09/09/06	Spec. Cond.		915		2:00	
BMC-2	09/09/06	Spec. Cond.		916		2:30	
BMC-2	09/09/06	Spec. Cond.		917		3:00	
BMC-2	09/09/06	Spec. Cond.		919		3:30	
BMC-2	09/09/06	Spec. Cond.		919		4:00	
BMC-2	09/09/06	Spec. Cond.		920		4:30	
BMC-2	09/09/06	Spec. Cond.		919		5:00	
BMC-2	09/09/06	Spec. Cond.		919		5:30	
BMC-2	09/09/06	Spec. Cond.		918		6:00	
BMC-2	09/09/06	Spec. Cond.		918		6:30	
BMC-2	09/09/06	Spec. Cond.		917		7:00	
BMC-2	09/09/06	Spec. Cond.		917		7:30	
BMC-2	09/09/06	Spec. Cond.		917		8:00	
BMC-2	09/09/06	Spec. Cond.		916		8:30	
BMC-2	09/09/06	Spec. Cond.		916		9:00	
BMC-2	09/09/06	Spec. Cond.		916		9:30	
BMC-2	09/09/06	Spec. Cond.		916		10:00	
BMC-2	09/09/06	Spec. Cond.		916		10:30	
BMC-2	09/09/06	Spec. Cond.		916		11:00	
BMC-2	09/09/06	Spec. Cond.		915		11:30	
BMC-2	09/09/06	Spec. Cond.		914		12:00	
BMC-2	09/09/06	Spec. Cond.		913		12:30	
BMC-2	09/09/06	Spec. Cond.		912		13:00	
BMC-2	09/09/06	Spec. Cond.		911		13:30	
BMC-2	09/09/06	Spec. Cond.		909		14:00	
BMC-2	09/09/06	Spec. Cond.		907		14:30	
BMC-2	09/09/06	Spec. Cond.		905		15:00	
BMC-2	09/09/06	Spec. Cond.		905		15:30	
BMC-2	09/09/06	Spec. Cond.		903		16:00	
BMC-2	09/09/06	Spec. Cond.		901		16:30	
BMC-2	09/09/06	Spec. Cond.		900		17:00	
BMC-2	09/09/06	Spec. Cond.		899		17:30	
BMC-2	09/09/06	Spec. Cond.		897		18:00	
BMC-2	09/09/06	Spec. Cond.		897		18:30	
BMC-2	09/09/06	Spec. Cond.		898		19:00	
BMC-2	09/09/06	Spec. Cond.		897		19:30	
BMC-2	09/09/06	Spec. Cond.		897		20:00	
BMC-2	09/09/06	Spec. Cond.		897		20:30	
BMC-2	09/09/06	Spec. Cond.		899		21:00	
BMC-2	09/09/06	Spec. Cond.		900		21:30	
BMC-2	09/09/06	Spec. Cond.		902		22:00	
BMC-2	09/09/06	Spec. Cond.		904		22:30	
BMC-2	09/09/06	Spec. Cond.		907		23:00	
BMC-2	09/09/06	Spec. Cond.		909		23:30	
BMC-2	09/10/06	Spec. Cond.		911		0:00	
BMC-2	09/10/06	Spec. Cond.		914		0:30	
BMC-2	09/10/06	Spec. Cond.		915		1:00	
BMC-2	09/10/06	Spec. Cond.		916		1:30	
BMC-2	09/10/06	Spec. Cond.		918		2:00	
BMC-2	09/10/06	Spec. Cond.		918		2:30	
BMC-2	09/10/06	Spec. Cond.		919		3:00	
BMC-2	09/10/06	Spec. Cond.		920		3:30	
BMC-2	09/10/06	Spec. Cond.		920		4:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/10/06	Spec. Cond.		920		4:30	
BMC-2	09/10/06	Spec. Cond.		921		5:00	
BMC-2	09/10/06	Spec. Cond.		921		5:30	
BMC-2	09/10/06	Spec. Cond.		921		6:00	
BMC-2	09/10/06	Spec. Cond.		919		6:30	
BMC-2	09/10/06	Spec. Cond.		919		7:00	
BMC-2	09/10/06	Spec. Cond.		919		7:30	
BMC-2	09/10/06	Spec. Cond.		918		8:00	
BMC-2	09/10/06	Spec. Cond.		917		8:30	
BMC-2	09/10/06	Spec. Cond.		916		9:00	
BMC-2	09/10/06	Spec. Cond.		916		9:30	
BMC-2	09/10/06	Spec. Cond.		915		10:00	
BMC-2	09/10/06	Spec. Cond.		914		10:30	
BMC-2	09/10/06	Spec. Cond.		914		11:00	
BMC-2	09/10/06	Spec. Cond.		913		11:30	
BMC-2	09/10/06	Spec. Cond.		912		12:00	
BMC-2	09/10/06	Spec. Cond.		912		12:30	
BMC-2	09/10/06	Spec. Cond.		911		13:00	
BMC-2	09/10/06	Spec. Cond.		910		13:30	
BMC-2	09/10/06	Spec. Cond.		909		14:00	
BMC-2	09/10/06	Spec. Cond.		907		14:30	
BMC-2	09/10/06	Spec. Cond.		906		15:00	
BMC-2	09/10/06	Spec. Cond.		905		15:30	
BMC-2	09/10/06	Spec. Cond.		905		16:00	
BMC-2	09/10/06	Spec. Cond.		903		16:30	
BMC-2	09/10/06	Spec. Cond.		902		17:00	
BMC-2	09/10/06	Spec. Cond.		901		17:30	
BMC-2	09/10/06	Spec. Cond.		899		18:00	
BMC-2	09/10/06	Spec. Cond.		898		18:30	
BMC-2	09/10/06	Spec. Cond.		896		19:00	
BMC-2	09/10/06	Spec. Cond.		894		19:30	
BMC-2	09/10/06	Spec. Cond.		893		20:00	
BMC-2	09/10/06	Spec. Cond.		893		20:30	
BMC-2	09/10/06	Spec. Cond.		894		21:00	
BMC-2	09/10/06	Spec. Cond.		896		21:30	
BMC-2	09/10/06	Spec. Cond.		897		22:00	
BMC-2	09/10/06	Spec. Cond.		900		22:30	
BMC-2	09/10/06	Spec. Cond.		903		23:00	
BMC-2	09/10/06	Spec. Cond.		906		23:30	
BMC-2	09/11/06	Spec. Cond.		909		0:00	
BMC-2	09/11/06	Spec. Cond.		913		0:30	
BMC-2	09/11/06	Spec. Cond.		914		1:00	
BMC-2	09/11/06	Spec. Cond.		916		1:30	
BMC-2	09/11/06	Spec. Cond.		917		2:00	
BMC-2	09/11/06	Spec. Cond.		918		2:30	
BMC-2	09/11/06	Spec. Cond.		920		3:00	
BMC-2	09/11/06	Spec. Cond.		919		3:30	
BMC-2	09/11/06	Spec. Cond.		920		4:00	
BMC-2	09/11/06	Spec. Cond.		919		4:30	
BMC-2	09/11/06	Spec. Cond.		918		5:00	
BMC-2	09/11/06	Spec. Cond.		918		5:30	
BMC-2	09/11/06	Spec. Cond.		917		6:00	
BMC-2	09/11/06	Spec. Cond.		917		6:30	
BMC-2	09/11/06	Spec. Cond.		916		7:00	
BMC-2	09/11/06	Spec. Cond.		915		7:30	
BMC-2	09/11/06	Spec. Cond.		914		8:00	
BMC-2	09/11/06	Spec. Cond.		913		8:30	
BMC-2	09/11/06	Spec. Cond.		912		9:00	
BMC-2	09/11/06	Spec. Cond.		910		9:30	
BMC-2	09/11/06	Spec. Cond.		910		10:00	
BMC-2	09/11/06	Spec. Cond.		908		10:30	
BMC-2	09/11/06	Spec. Cond.		906		11:00	
BMC-2	09/11/06	Spec. Cond.		904		11:30	
BMC-2	09/11/06	Spec. Cond.		903		12:00	
BMC-2	09/11/06	Spec. Cond.		901		12:30	
BMC-2	09/11/06	Spec. Cond.		899		13:00	
BMC-2	09/11/06	Spec. Cond.		896		13:30	
BMC-2	09/11/06	Spec. Cond.		894		14:00	
BMC-2	09/11/06	Spec. Cond.		892		14:30	
BMC-2	09/11/06	Spec. Cond.		889		15:00	
BMC-2	09/11/06	Spec. Cond.		886		15:30	
BMC-2	09/11/06	Spec. Cond.		882		16:00	
BMC-2	09/11/06	Spec. Cond.		880		16:30	
BMC-2	09/11/06	Spec. Cond.		877		17:00	
BMC-2	09/11/06	Spec. Cond.		874		17:30	
BMC-2	09/11/06	Spec. Cond.		871		18:00	
BMC-2	09/11/06	Spec. Cond.		868		18:30	
BMC-2	09/11/06	Spec. Cond.		865		19:00	
BMC-2	09/11/06	Spec. Cond.		864		19:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/11/06	Spec. Cond.		862		20:00	
BMC-2	09/11/06	Spec. Cond.		859		20:30	
BMC-2	09/11/06	Spec. Cond.		859		21:00	
BMC-2	09/11/06	Spec. Cond.		859		21:30	
BMC-2	09/11/06	Spec. Cond.		858		22:00	
BMC-2	09/11/06	Spec. Cond.		859		22:30	
BMC-2	09/11/06	Spec. Cond.		860		23:00	
BMC-2	09/11/06	Spec. Cond.		861		23:30	
BMC-2	09/12/06	Spec. Cond.		861		0:00	
BMC-2	09/12/06	Spec. Cond.		863		0:30	
BMC-2	09/12/06	Spec. Cond.		863		1:00	
BMC-2	09/12/06	Spec. Cond.		864		1:30	
BMC-2	09/12/06	Spec. Cond.		864		2:00	
BMC-2	09/12/06	Spec. Cond.		865		2:30	
BMC-2	09/12/06	Spec. Cond.		866		3:00	
BMC-2	09/12/06	Spec. Cond.		866		3:30	
BMC-2	09/12/06	Spec. Cond.		864		4:00	
BMC-2	09/12/06	Spec. Cond.		861		4:30	
BMC-2	09/12/06	Spec. Cond.		859		5:00	
BMC-2	09/12/06	Spec. Cond.		857		5:30	
BMC-2	09/12/06	Spec. Cond.		856		6:00	
BMC-2	09/12/06	Spec. Cond.		858		6:30	
BMC-2	09/12/06	Spec. Cond.		856		7:00	
BMC-2	09/12/06	Spec. Cond.		858		7:30	
BMC-2	09/12/06	Spec. Cond.		856		8:00	
BMC-2	09/12/06	Spec. Cond.		855		8:30	
BMC-2	09/12/06	Spec. Cond.		857		9:00	
BMC-2	09/12/06	Spec. Cond.		858		9:30	
BMC-2	09/12/06	Spec. Cond.		830		10:00	
BMC-2	09/12/06	Spec. Cond.		837		10:30	
BMC-2	09/12/06	Spec. Cond.		851		11:00	
BMC-2	09/12/06	Spec. Cond.		831		11:30	
BMC-2	09/12/06	Spec. Cond.		803		12:00	
BMC-2	09/12/06	Spec. Cond.		787		12:30	
BMC-2	09/12/06	Spec. Cond.		774		13:00	
BMC-2	09/12/06	Spec. Cond.		764		13:30	
BMC-2	09/12/06	Spec. Cond.		757		14:00	
BMC-2	09/12/06	Spec. Cond.		752		14:30	
BMC-2	09/12/06	Spec. Cond.		747		15:00	
BMC-2	09/12/06	Spec. Cond.		745		15:30	
BMC-2	09/12/06	Spec. Cond.		745		16:00	
BMC-2	09/12/06	Spec. Cond.		742		16:30	
BMC-2	09/12/06	Spec. Cond.		727		17:00	
BMC-2	09/12/06	Spec. Cond.		712		17:30	
BMC-2	09/12/06	Spec. Cond.		650		18:00	
BMC-2	09/12/06	Spec. Cond.		374		18:30	
BMC-2	09/12/06	Spec. Cond.		308		19:00	
BMC-2	09/12/06	Spec. Cond.		147		19:30	
BMC-2	09/12/06	Spec. Cond.		130		20:00	
BMC-2	09/12/06	Spec. Cond.		144		20:30	
BMC-2	09/12/06	Spec. Cond.		164		21:00	
BMC-2	09/12/06	Spec. Cond.		184		21:30	
BMC-2	09/12/06	Spec. Cond.		207		22:00	
BMC-2	09/12/06	Spec. Cond.		236		22:30	
BMC-2	09/12/06	Spec. Cond.		264		23:00	
BMC-2	09/12/06	Spec. Cond.		288		23:30	
BMC-2	09/13/06	Spec. Cond.		306		0:00	
BMC-2	09/13/06	Spec. Cond.		323		0:30	
BMC-2	09/13/06	Spec. Cond.		337		1:00	
BMC-2	09/13/06	Spec. Cond.		347		1:30	
BMC-2	09/13/06	Spec. Cond.		355		2:00	
BMC-2	09/13/06	Spec. Cond.		362		2:30	
BMC-2	09/13/06	Spec. Cond.		370		3:00	
BMC-2	09/13/06	Spec. Cond.		376		3:30	
BMC-2	09/13/06	Spec. Cond.		382		4:00	
BMC-2	09/13/06	Spec. Cond.		389		4:30	
BMC-2	09/13/06	Spec. Cond.		396		5:00	
BMC-2	09/13/06	Spec. Cond.		404		5:30	
BMC-2	09/13/06	Spec. Cond.		411		6:00	
BMC-2	09/13/06	Spec. Cond.		417		6:30	
BMC-2	09/13/06	Spec. Cond.		424		7:00	
BMC-2	09/13/06	Spec. Cond.		430		7:30	
BMC-2	09/13/06	Spec. Cond.		435		8:00	
BMC-2	09/13/06	Spec. Cond.		440		8:30	
BMC-2	09/13/06	Spec. Cond.		446		9:00	
BMC-2	09/13/06	Spec. Cond.		453		9:30	
BMC-2	09/13/06	Spec. Cond.		460		10:00	
BMC-2	09/13/06	Spec. Cond.		465		10:30	
BMC-2	09/13/06	Spec. Cond.		472		11:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/13/06	Spec. Cond.		482		11:30	
BMC-2	09/13/06	Spec. Cond.		491		12:00	
BMC-2	09/13/06	Spec. Cond.		502		12:30	
BMC-2	09/13/06	Spec. Cond.		517		13:00	
BMC-2	09/13/06	Spec. Cond.		532		13:30	
BMC-2	09/13/06	Spec. Cond.		549		14:00	
BMC-2	09/13/06	Spec. Cond.		568		14:30	
BMC-2	09/13/06	Spec. Cond.		587		15:00	
BMC-2	09/13/06	Spec. Cond.		603		15:30	
BMC-2	09/13/06	Spec. Cond.		616		16:00	
BMC-2	09/13/06	Spec. Cond.		629		16:30	
BMC-2	09/13/06	Spec. Cond.		641		17:00	
BMC-2	09/13/06	Spec. Cond.		647		17:30	
BMC-2	09/13/06	Spec. Cond.		653		18:00	
BMC-2	09/13/06	Spec. Cond.		656		18:30	
BMC-2	09/13/06	Spec. Cond.		659		19:00	
BMC-2	09/13/06	Spec. Cond.		660		19:30	
BMC-2	09/13/06	Spec. Cond.		659		20:00	
BMC-2	09/13/06	Spec. Cond.		656		20:30	
BMC-2	09/13/06	Spec. Cond.		653		21:00	
BMC-2	09/13/06	Spec. Cond.		648		21:30	
BMC-2	09/13/06	Spec. Cond.		643		22:00	
BMC-2	09/13/06	Spec. Cond.		641		22:30	
BMC-2	09/13/06	Spec. Cond.		637		23:00	
BMC-2	09/13/06	Spec. Cond.		634		23:30	
BMC-2	09/14/06	Spec. Cond.		631		0:00	
BMC-2	09/14/06	Spec. Cond.		628		0:30	
BMC-2	09/14/06	Spec. Cond.		626		1:00	
BMC-2	09/14/06	Spec. Cond.		621		1:30	
BMC-2	09/14/06	Spec. Cond.		619		2:00	
BMC-2	09/14/06	Spec. Cond.		614		2:30	
BMC-2	09/14/06	Spec. Cond.		613		3:00	
BMC-2	09/14/06	Spec. Cond.		611		3:30	
BMC-2	09/14/06	Spec. Cond.		612		4:00	
BMC-2	09/14/06	Spec. Cond.		610		4:30	
BMC-2	09/14/06	Spec. Cond.		608		5:00	
BMC-2	09/14/06	Spec. Cond.		603		5:30	
BMC-2	09/14/06	Spec. Cond.		599		6:00	
BMC-2	09/14/06	Spec. Cond.		597		6:30	
BMC-2	09/14/06	Spec. Cond.		596		7:00	
BMC-2	09/14/06	Spec. Cond.		593		7:30	
BMC-2	09/14/06	Spec. Cond.		592		8:00	
BMC-2	09/14/06	Spec. Cond.		595		8:30	
BMC-2	09/14/06	Spec. Cond.		604		9:00	
BMC-2	7/25/006	Spec. Cond.		421		0:00	
BMC-2	7/25/006	Spec. Cond.		423		0:30	
BMC-2	7/25/006	Spec. Cond.		424		1:00	
BMC-2	7/25/006	Spec. Cond.		425		1:30	
BMC-2	7/25/006	Spec. Cond.		426		2:00	
BMC-2	7/25/006	Spec. Cond.		427		2:30	
BMC-2	7/25/006	Spec. Cond.		428		3:00	
BMC-2	7/25/006	Spec. Cond.		427		3:30	
BMC-2	7/25/006	Spec. Cond.		426		4:00	
BMC-2	7/25/006	Spec. Cond.		425		4:30	
BMC-2	7/25/006	Spec. Cond.		425		5:00	
BMC-2	7/25/006	Spec. Cond.		425		5:30	
BMC-2	7/25/006	Spec. Cond.		424		6:00	
BMC-2	7/25/006	Spec. Cond.		423		6:30	
BMC-2	7/25/006	Spec. Cond.		422		7:00	
BMC-2	7/25/006	Spec. Cond.		422		7:30	
BMC-2	7/25/006	Spec. Cond.		420		8:00	
BMC-2	7/25/006	Spec. Cond.		418		8:30	
BMC-2	7/25/006	Spec. Cond.		416		9:00	
BMC-2	7/25/006	Spec. Cond.		416		9:30	
BMC-2	7/25/006	Spec. Cond.		415		10:00	
BMC-2	7/25/006	Spec. Cond.		413		10:30	
BMC-2	7/25/006	Spec. Cond.		526		11:00	
BMC-2	10/07/05	Spec. Cond. (uS/cm)		0.95		17:55	
BMC-2	10/31/05	Spec. Cond. (uS/cm)		0.75		13:37	
BMC-2	04/11/06	Spec. Cond. (uS/cm)		0.452		16:30	
BMC-2	04/26/06	Spec. Cond. (uS/cm)		0.408		15:30	
BMC-2	05/10/06	Spec. Cond. (uS/cm)		0.408		15:00	
BMC-2	05/24/06	Spec. Cond. (uS/cm)		0.381		15:00	
BMC-2	06/07/06	Spec. Cond. (uS/cm)		0.391		16:45	
BMC-2	06/20/06	Spec. Cond. (uS/cm)		0.345		15:20	
BMC-2	07/13/06	Spec. Cond. (uS/cm)		0.284		14:15	
BMC-2	07/24/06	Spec. Cond. (uS/cm)		0.408		14:55	
BMC-2	08/08/06	Spec. Cond. (uS/cm)		0.601		15:25	
BMC-2	08/29/06	Spec. Cond. (uS/cm)		0.618		13:45	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/26/06	Spec. Cond. (uS/cm)		0.605		13:45	
BMC-2	10/07/05	TKN (mg/L)		1.3		17:55	
BMC-2	10/31/05	TKN (mg/L)		0.86		13:37	
BMC-2	04/11/06	TKN (mg/L)		0.89		16:30	
BMC-2	04/26/06	TKN (mg/L)		0.98		15:30	
BMC-2	05/10/06	TKN (mg/L)		0.98		15:00	
BMC-2	05/24/06	TKN (mg/L)		1.2		15:00	
BMC-2	06/07/06	TKN (mg/L)		0.85		16:45	
BMC-2	06/20/06	TKN (mg/L)		1.4		15:20	
BMC-2	07/13/06	TKN (mg/L)		1.3		14:15	
BMC-2	07/24/06	TKN (mg/L)		0.81		14:55	
BMC-2	08/08/06	TKN (mg/L)		0.58		15:25	
BMC-2	08/29/06	TKN (mg/L)		0.74		13:45	
BMC-2	09/26/06	TKN (mg/L)		0.86		13:45	
BMC-2	10/07/05	Total Nitrate + Nitrite (mg/L)		12		17:55	
BMC-2	10/31/05	Total Nitrate + Nitrite (mg/L)		15		13:37	
BMC-2	04/11/06	Total Nitrate + Nitrite (mg/L)		6.1		16:30	
BMC-2	04/26/06	Total Nitrate + Nitrite (mg/L)		6.7		15:30	
BMC-2	05/10/06	Total Nitrate + Nitrite (mg/L)		5.6		15:00	
BMC-2	05/24/06	Total Nitrate + Nitrite (mg/L)		7.8		15:00	
BMC-2	06/07/06	Total Nitrate + Nitrite (mg/L)		8.5		16:45	
BMC-2	06/20/06	Total Nitrate + Nitrite (mg/L)		5.6		15:20	
BMC-2	07/13/06	Total Nitrate + Nitrite (mg/L)		3.4		14:15	
BMC-2	07/24/06	Total Nitrate + Nitrite (mg/L)		3		14:55	
BMC-2	08/08/06	Total Nitrate + Nitrite (mg/L)		7.2		15:25	
BMC-2	08/29/06	Total Nitrate + Nitrite (mg/L)		10		13:45	
BMC-2	09/26/06	Total Nitrate + Nitrite (mg/L)		8.9		13:45	
BMC-2	10/07/05	TP (mg/L)		3.2		17:55	
BMC-2	10/31/05	TP (mg/L)		3		13:37	
BMC-2	04/11/06	TP (mg/L)		0.26		16:30	
BMC-2	04/26/06	TP (mg/L)		0.64		15:30	
BMC-2	05/10/06	TP (mg/L)		0.57		15:00	
BMC-2	05/24/06	TP (mg/L)		0.37		15:00	
BMC-2	06/07/06	TP (mg/L)		0.6		16:45	
BMC-2	06/20/06	TP (mg/L)		0.24		15:20	
BMC-2	07/13/06	TP (mg/L)		0.18		14:15	
BMC-2	07/24/06	TP (mg/L)		0.32		14:55	
BMC-2	08/08/06	TP (mg/L)		1.2		15:25	
BMC-2	08/29/06	TP (mg/L)		1.5		13:45	
BMC-2	08/29/06	TP (mg/L)		280		13:45	
BMC-2	09/26/06	TP (mg/L)		0.92		13:45	
BMC-2	06/20/06	TSS (mg/L)		33		15:20	
BMC-2	10/07/05	Turbidity (NTU)		15		17:55	
BMC-2	10/31/05	Turbidity (NTU)		1		13:37	
BMC-2	04/11/06	Turbidity (NTU)		11		16:30	
BMC-2	04/26/06	Turbidity (NTU)		4.3		15:30	
BMC-2	05/10/06	Turbidity (NTU)		8.3		15:00	
BMC-2	05/24/06	Turbidity (NTU)		74		15:00	
BMC-2	06/07/06	Turbidity (NTU)		11.3		16:45	
BMC-2	06/20/06	Turbidity (NTU)		66		15:20	
BMC-2	07/13/06	Turbidity (NTU)		41.6		14:15	
BMC-2	07/24/06	Turbidity (NTU)		10		14:55	
BMC-2	08/08/06	Turbidity (NTU)		10		15:25	
BMC-2	08/29/06	Turbidity (NTU)		-10		13:45	
BMC-2	09/26/06	Turbidity (NTU)		10		13:45	
BMC-2	10/07/05	Water Temp (F)		15.8		17:55	
BMC-2	10/31/05	Water Temp (F)		14		13:37	
BMC-2	04/11/06	Water Temp (F)		17		16:30	
BMC-2	04/26/06	Water Temp (F)		16.87		15:30	
BMC-2	05/10/06	Water Temp (F)		18.3		15:00	
BMC-2	05/24/06	Water Temp (F)		20.7		15:00	
BMC-2	06/07/06	Water Temp (F)		24.1		16:45	
BMC-2	06/20/06	Water Temp (F)		26		15:20	
BMC-2	07/13/06	Water Temp (F)		27.5		14:15	
BMC-2	07/18/06	Water Temp (F)		25.1		11:00	
BMC-2	07/18/06	Water Temp (F)		25.65		11:30	
BMC-2	07/18/06	Water Temp (F)		26.15		12:00	
BMC-2	07/18/06	Water Temp (F)		26.64		12:30	
BMC-2	07/18/06	Water Temp (F)		27.1		13:00	
BMC-2	07/18/06	Water Temp (F)		27.54		13:30	
BMC-2	07/18/06	Water Temp (F)		27.9		14:00	
BMC-2	07/18/06	Water Temp (F)		28.22		14:30	
BMC-2	07/18/06	Water Temp (F)		28.46		15:00	
BMC-2	07/18/06	Water Temp (F)		28.58		15:30	
BMC-2	07/18/06	Water Temp (F)		28.63		16:00	
BMC-2	07/18/06	Water Temp (F)		28.64		16:30	
BMC-2	07/18/06	Water Temp (F)		28.56		17:00	
BMC-2	07/18/06	Water Temp (F)		28.25		17:30	
BMC-2	07/18/06	Water Temp (F)		27.95		18:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/18/06	Water Temp (F)		27.62		18:30	
BMC-2	07/18/06	Water Temp (F)		27.34		19:00	
BMC-2	07/18/06	Water Temp (F)		27.16		19:30	
BMC-2	07/18/06	Water Temp (F)		26.91		20:00	
BMC-2	07/18/06	Water Temp (F)		26.58		20:30	
BMC-2	07/18/06	Water Temp (F)		26.31		21:00	
BMC-2	07/18/06	Water Temp (F)		25.51		21:30	
BMC-2	07/18/06	Water Temp (F)		25.15		22:00	
BMC-2	07/18/06	Water Temp (F)		24.99		22:30	
BMC-2	07/18/06	Water Temp (F)		25.07		23:00	
BMC-2	07/18/06	Water Temp (F)		24.64		23:30	
BMC-2	07/19/06	Water Temp (F)		24.27		0:00	
BMC-2	07/19/06	Water Temp (F)		24.36		0:30	
BMC-2	07/19/06	Water Temp (F)		24.57		1:00	
BMC-2	07/19/06	Water Temp (F)		24.75		1:30	
BMC-2	07/19/06	Water Temp (F)		24.85		2:00	
BMC-2	07/19/06	Water Temp (F)		24.86		2:30	
BMC-2	07/19/06	Water Temp (F)		24.8		3:00	
BMC-2	07/19/06	Water Temp (F)		24.69		3:30	
BMC-2	07/19/06	Water Temp (F)		24.53		4:00	
BMC-2	07/19/06	Water Temp (F)		24.34		4:30	
BMC-2	07/19/06	Water Temp (F)		24.15		5:00	
BMC-2	07/19/06	Water Temp (F)		23.95		5:30	
BMC-2	07/19/06	Water Temp (F)		23.77		6:00	
BMC-2	07/19/06	Water Temp (F)		23.6		6:30	
BMC-2	07/19/06	Water Temp (F)		23.46		7:00	
BMC-2	07/19/06	Water Temp (F)		23.36		7:30	
BMC-2	07/19/06	Water Temp (F)		23.3		8:00	
BMC-2	07/19/06	Water Temp (F)		23.27		8:30	
BMC-2	07/19/06	Water Temp (F)		23.27		9:00	
BMC-2	07/19/06	Water Temp (F)		23.34		9:30	
BMC-2	07/19/06	Water Temp (F)		23.56		10:00	
BMC-2	07/19/06	Water Temp (F)		23.88		10:30	
BMC-2	07/19/06	Water Temp (F)		24.28		11:00	
BMC-2	07/19/06	Water Temp (F)		24.71		11:30	
BMC-2	07/19/06	Water Temp (F)		25.15		12:00	
BMC-2	07/19/06	Water Temp (F)		25.59		12:30	
BMC-2	07/19/06	Water Temp (F)		26.01		13:00	
BMC-2	07/19/06	Water Temp (F)		26.39		13:30	
BMC-2	07/19/06	Water Temp (F)		26.75		14:00	
BMC-2	07/19/06	Water Temp (F)		27.03		14:30	
BMC-2	07/19/06	Water Temp (F)		27.19		15:00	
BMC-2	07/19/06	Water Temp (F)		27.27		15:30	
BMC-2	07/19/06	Water Temp (F)		27.28		16:00	
BMC-2	07/19/06	Water Temp (F)		27.25		16:30	
BMC-2	07/19/06	Water Temp (F)		27.15		17:00	
BMC-2	07/19/06	Water Temp (F)		26.96		17:30	
BMC-2	07/19/06	Water Temp (F)		26.76		18:00	
BMC-2	07/19/06	Water Temp (F)		26.54		18:30	
BMC-2	07/19/06	Water Temp (F)		26.38		19:00	
BMC-2	07/19/06	Water Temp (F)		26.26		19:30	
BMC-2	07/19/06	Water Temp (F)		26.18		20:00	
BMC-2	07/19/06	Water Temp (F)		26.11		20:30	
BMC-2	07/19/06	Water Temp (F)		26.04		21:00	
BMC-2	07/19/06	Water Temp (F)		25.97		21:30	
BMC-2	07/19/06	Water Temp (F)		25.89		22:00	
BMC-2	07/19/06	Water Temp (F)		25.79		22:30	
BMC-2	07/19/06	Water Temp (F)		25.67		23:00	
BMC-2	07/19/06	Water Temp (F)		25.55		23:30	
BMC-2	07/20/06	Water Temp (F)		25.42		0:00	
BMC-2	07/20/06	Water Temp (F)		25.31		0:30	
BMC-2	07/20/06	Water Temp (F)		25.21		1:00	
BMC-2	07/20/06	Water Temp (F)		25.12		1:30	
BMC-2	07/20/06	Water Temp (F)		25.04		2:00	
BMC-2	07/20/06	Water Temp (F)		24.95		2:30	
BMC-2	07/20/06	Water Temp (F)		24.87		3:00	
BMC-2	07/20/06	Water Temp (F)		24.79		3:30	
BMC-2	07/20/06	Water Temp (F)		24.72		4:00	
BMC-2	07/20/06	Water Temp (F)		24.65		4:30	
BMC-2	07/20/06	Water Temp (F)		24.58		5:00	
BMC-2	07/20/06	Water Temp (F)		24.51		5:30	
BMC-2	07/20/06	Water Temp (F)		24.45		6:00	
BMC-2	07/20/06	Water Temp (F)		24.4		6:30	
BMC-2	07/20/06	Water Temp (F)		24.39		7:00	
BMC-2	07/20/06	Water Temp (F)		24.39		7:30	
BMC-2	07/20/06	Water Temp (F)		24.38		8:00	
BMC-2	07/20/06	Water Temp (F)		24.38		8:30	
BMC-2	07/20/06	Water Temp (F)		24.37		9:00	
BMC-2	07/20/06	Water Temp (F)		24.36		9:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/20/06	Water Temp (F)		24.33		10:00	
BMC-2	07/20/06	Water Temp (F)		24.27		10:30	
BMC-2	07/20/06	Water Temp (F)		24.1		11:00	
BMC-2	07/20/06	Water Temp (F)		23.86		11:30	
BMC-2	07/20/06	Water Temp (F)		23.21		12:00	
BMC-2	07/20/06	Water Temp (F)		23.39		12:30	
BMC-2	07/20/06	Water Temp (F)		23.37		13:00	
BMC-2	07/20/06	Water Temp (F)		23.47		13:30	
BMC-2	07/20/06	Water Temp (F)		23.61		14:00	
BMC-2	07/20/06	Water Temp (F)		23.95		14:30	
BMC-2	07/20/06	Water Temp (F)		24.39		15:00	
BMC-2	07/20/06	Water Temp (F)		24.8		15:30	
BMC-2	07/20/06	Water Temp (F)		25.26		16:00	
BMC-2	07/20/06	Water Temp (F)		25.63		16:30	
BMC-2	07/20/06	Water Temp (F)		25.87		17:00	
BMC-2	07/20/06	Water Temp (F)		26.06		17:30	
BMC-2	07/20/06	Water Temp (F)		26.21		18:00	
BMC-2	07/20/06	Water Temp (F)		26.35		18:30	
BMC-2	07/20/06	Water Temp (F)		26.46		19:00	
BMC-2	07/20/06	Water Temp (F)		26.52		19:30	
BMC-2	07/20/06	Water Temp (F)		26.51		20:00	
BMC-2	07/20/06	Water Temp (F)		26.52		20:30	
BMC-2	07/20/06	Water Temp (F)		26.52		21:00	
BMC-2	07/20/06	Water Temp (F)		26.54		21:30	
BMC-2	07/20/06	Water Temp (F)		26.48		22:00	
BMC-2	07/20/06	Water Temp (F)		26.42		22:30	
BMC-2	07/20/06	Water Temp (F)		26.39		23:00	
BMC-2	07/20/06	Water Temp (F)		26.36		23:30	
BMC-2	07/21/06	Water Temp (F)		26.17		0:00	
BMC-2	07/21/06	Water Temp (F)		26.14		0:30	
BMC-2	07/21/06	Water Temp (F)		26.17		1:00	
BMC-2	07/21/06	Water Temp (F)		26.15		1:30	
BMC-2	07/21/06	Water Temp (F)		25.7		2:00	
BMC-2	07/21/06	Water Temp (F)		25.55		2:30	
BMC-2	07/21/06	Water Temp (F)		25.74		3:00	
BMC-2	07/21/06	Water Temp (F)		25.9		3:30	
BMC-2	07/21/06	Water Temp (F)		25.94		4:00	
BMC-2	07/21/06	Water Temp (F)		25.95		4:30	
BMC-2	07/21/06	Water Temp (F)		26		5:00	
BMC-2	07/21/06	Water Temp (F)		25.97		5:30	
BMC-2	07/21/06	Water Temp (F)		25.96		6:00	
BMC-2	07/21/06	Water Temp (F)		25.93		6:30	
BMC-2	07/21/06	Water Temp (F)		25.89		7:00	
BMC-2	07/21/06	Water Temp (F)		25.88		7:30	
BMC-2	07/21/06	Water Temp (F)		25.91		8:00	
BMC-2	07/21/06	Water Temp (F)		25.87		8:30	
BMC-2	07/21/06	Water Temp (F)		25.83		9:00	
BMC-2	07/21/06	Water Temp (F)		25.82		9:30	
BMC-2	07/21/06	Water Temp (F)		25.82		10:00	
BMC-2	07/21/06	Water Temp (F)		25.84		10:30	
BMC-2	07/21/06	Water Temp (F)		25.87		11:00	
BMC-2	07/21/06	Water Temp (F)		25.87		11:30	
BMC-2	07/21/06	Water Temp (F)		25.91		12:00	
BMC-2	07/21/06	Water Temp (F)		25.95		12:30	
BMC-2	07/21/06	Water Temp (F)		26.03		13:00	
BMC-2	07/21/06	Water Temp (F)		26.14		13:30	
BMC-2	07/21/06	Water Temp (F)		26.21		14:00	
BMC-2	07/21/06	Water Temp (F)		26.17		14:30	
BMC-2	07/21/06	Water Temp (F)		26.17		15:00	
BMC-2	07/21/06	Water Temp (F)		26.18		15:30	
BMC-2	07/21/06	Water Temp (F)		26.28		16:00	
BMC-2	07/21/06	Water Temp (F)		26.36		16:30	
BMC-2	07/21/06	Water Temp (F)		26.39		17:00	
BMC-2	07/21/06	Water Temp (F)		26.41		17:30	
BMC-2	07/21/06	Water Temp (F)		26.4		18:00	
BMC-2	07/21/06	Water Temp (F)		26.4		18:30	
BMC-2	07/21/06	Water Temp (F)		26.34		19:00	
BMC-2	07/21/06	Water Temp (F)		26.24		19:30	
BMC-2	07/21/06	Water Temp (F)		26.14		20:00	
BMC-2	07/21/06	Water Temp (F)		26.08		20:30	
BMC-2	07/21/06	Water Temp (F)		25.88		21:00	
BMC-2	07/21/06	Water Temp (F)		25.69		21:30	
BMC-2	07/21/06	Water Temp (F)		25.53		22:00	
BMC-2	07/21/06	Water Temp (F)		25.4		22:30	
BMC-2	07/21/06	Water Temp (F)		25.11		23:00	
BMC-2	07/21/06	Water Temp (F)		24.46		23:30	
BMC-2	07/22/06	Water Temp (F)		24.68		0:00	
BMC-2	07/22/06	Water Temp (F)		24.23		0:30	
BMC-2	07/22/06	Water Temp (F)		23.39		1:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/22/06	Water Temp (F)		23.42		1:30	
BMC-2	07/22/06	Water Temp (F)		23.68		2:00	
BMC-2	07/22/06	Water Temp (F)		23.72		2:30	
BMC-2	07/22/06	Water Temp (F)		23.53		3:00	
BMC-2	07/22/06	Water Temp (F)		23.48		3:30	
BMC-2	07/22/06	Water Temp (F)		23.55		4:00	
BMC-2	07/22/06	Water Temp (F)		23.64		4:30	
BMC-2	07/22/06	Water Temp (F)		23.72		5:00	
BMC-2	07/22/06	Water Temp (F)		23.76		5:30	
BMC-2	07/22/06	Water Temp (F)		23.8		6:00	
BMC-2	07/22/06	Water Temp (F)		23.81		6:30	
BMC-2	07/22/06	Water Temp (F)		23.8		7:00	
BMC-2	07/22/06	Water Temp (F)		23.8		7:30	
BMC-2	07/22/06	Water Temp (F)		23.81		8:00	
BMC-2	07/22/06	Water Temp (F)		23.83		8:30	
BMC-2	07/22/06	Water Temp (F)		23.84		9:00	
BMC-2	07/22/06	Water Temp (F)		23.89		9:30	
BMC-2	07/22/06	Water Temp (F)		23.96		10:00	
BMC-2	07/22/06	Water Temp (F)		24.06		10:30	
BMC-2	07/22/06	Water Temp (F)		24.25		11:00	
BMC-2	07/22/06	Water Temp (F)		24.49		11:30	
BMC-2	07/22/06	Water Temp (F)		24.71		12:00	
BMC-2	07/22/06	Water Temp (F)		24.93		12:30	
BMC-2	07/22/06	Water Temp (F)		25.22		13:00	
BMC-2	07/22/06	Water Temp (F)		25.45		13:30	
BMC-2	07/22/06	Water Temp (F)		25.69		14:00	
BMC-2	07/22/06	Water Temp (F)		25.95		14:30	
BMC-2	07/22/06	Water Temp (F)		26.2		15:00	
BMC-2	07/22/06	Water Temp (F)		26.4		15:30	
BMC-2	07/22/06	Water Temp (F)		26.5		16:00	
BMC-2	07/22/06	Water Temp (F)		26.59		16:30	
BMC-2	07/22/06	Water Temp (F)		26.64		17:00	
BMC-2	07/22/06	Water Temp (F)		26.67		17:30	
BMC-2	07/22/06	Water Temp (F)		26.65		18:00	
BMC-2	07/22/06	Water Temp (F)		26.57		18:30	
BMC-2	07/22/06	Water Temp (F)		26.51		19:00	
BMC-2	07/22/06	Water Temp (F)		26.43		19:30	
BMC-2	07/22/06	Water Temp (F)		26.27		20:00	
BMC-2	07/22/06	Water Temp (F)		26.16		20:30	
BMC-2	07/22/06	Water Temp (F)		26.02		21:00	
BMC-2	07/22/06	Water Temp (F)		25.82		21:30	
BMC-2	07/22/06	Water Temp (F)		25.58		22:00	
BMC-2	07/22/06	Water Temp (F)		25.4		22:30	
BMC-2	07/22/06	Water Temp (F)		25.24		23:00	
BMC-2	07/22/06	Water Temp (F)		25.06		23:30	
BMC-2	07/23/06	Water Temp (F)		24.88		0:00	
BMC-2	07/23/06	Water Temp (F)		24.78		0:30	
BMC-2	07/23/06	Water Temp (F)		24.68		1:00	
BMC-2	07/23/06	Water Temp (F)		24.56		1:30	
BMC-2	07/23/06	Water Temp (F)		24.43		2:00	
BMC-2	07/23/06	Water Temp (F)		24.36		2:30	
BMC-2	07/23/06	Water Temp (F)		24.29		3:00	
BMC-2	07/23/06	Water Temp (F)		24.18		3:30	
BMC-2	07/23/06	Water Temp (F)		24.08		4:00	
BMC-2	07/23/06	Water Temp (F)		24.01		4:30	
BMC-2	07/23/06	Water Temp (F)		23.96		5:00	
BMC-2	07/23/06	Water Temp (F)		23.86		5:30	
BMC-2	07/23/06	Water Temp (F)		23.77		6:00	
BMC-2	07/23/06	Water Temp (F)		23.74		6:30	
BMC-2	07/23/06	Water Temp (F)		23.7		7:00	
BMC-2	07/23/06	Water Temp (F)		23.64		7:30	
BMC-2	07/23/06	Water Temp (F)		23.62		8:00	
BMC-2	07/23/06	Water Temp (F)		23.63		8:30	
BMC-2	07/23/06	Water Temp (F)		23.71		9:00	
BMC-2	07/23/06	Water Temp (F)		23.78		9:30	
BMC-2	07/23/06	Water Temp (F)		23.91		10:00	
BMC-2	07/23/06	Water Temp (F)		24.11		10:30	
BMC-2	07/23/06	Water Temp (F)		24.32		11:00	
BMC-2	07/23/06	Water Temp (F)		24.56		11:30	
BMC-2	07/23/06	Water Temp (F)		24.83		12:00	
BMC-2	07/23/06	Water Temp (F)		25.1		12:30	
BMC-2	07/23/06	Water Temp (F)		25.3		13:00	
BMC-2	07/23/06	Water Temp (F)		25.56		13:30	
BMC-2	07/23/06	Water Temp (F)		25.66		14:00	
BMC-2	07/23/06	Water Temp (F)		26.02		14:30	
BMC-2	07/23/06	Water Temp (F)		26.37		15:00	
BMC-2	07/23/06	Water Temp (F)		26.52		15:30	
BMC-2	07/23/06	Water Temp (F)		26.73		16:00	
BMC-2	07/23/06	Water Temp (F)		26.76		16:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	07/23/06	Water Temp (F)		26.82		17:00	
BMC-2	07/23/06	Water Temp (F)		26.89		17:30	
BMC-2	07/23/06	Water Temp (F)		26.97		18:00	
BMC-2	07/23/06	Water Temp (F)		27.02		18:30	
BMC-2	07/23/06	Water Temp (F)		27.01		19:00	
BMC-2	07/23/06	Water Temp (F)		26.98		19:30	
BMC-2	07/23/06	Water Temp (F)		26.92		20:00	
BMC-2	07/23/06	Water Temp (F)		26.87		20:30	
BMC-2	07/23/06	Water Temp (F)		26.77		21:00	
BMC-2	07/23/06	Water Temp (F)		26.6		21:30	
BMC-2	07/23/06	Water Temp (F)		26.44		22:00	
BMC-2	07/23/06	Water Temp (F)		26.29		22:30	
BMC-2	07/23/06	Water Temp (F)		26.15		23:00	
BMC-2	07/23/06	Water Temp (F)		25.96		23:30	
BMC-2	07/24/06	Water Temp (F)		25.72		0:00	
BMC-2	07/24/06	Water Temp (F)		25.47		0:30	
BMC-2	07/24/06	Water Temp (F)		25.26		1:00	
BMC-2	07/24/06	Water Temp (F)		25.1		1:30	
BMC-2	07/24/06	Water Temp (F)		24.93		2:00	
BMC-2	07/24/06	Water Temp (F)		24.72		2:30	
BMC-2	07/24/06	Water Temp (F)		24.51		3:00	
BMC-2	07/24/06	Water Temp (F)		24.36		3:30	
BMC-2	07/24/06	Water Temp (F)		24.25		4:00	
BMC-2	07/24/06	Water Temp (F)		24.11		4:30	
BMC-2	07/24/06	Water Temp (F)		23.96		5:00	
BMC-2	07/24/06	Water Temp (F)		23.84		5:30	
BMC-2	07/24/06	Water Temp (F)		23.75		6:00	
BMC-2	07/24/06	Water Temp (F)		23.65		6:30	
BMC-2	07/24/06	Water Temp (F)		23.53		7:00	
BMC-2	07/24/06	Water Temp (F)		23.45		7:30	
BMC-2	07/24/06	Water Temp (F)		23.43		8:00	
BMC-2	07/24/06	Water Temp (F)		23.44		8:30	
BMC-2	07/24/06	Water Temp (F)		23.46		9:00	
BMC-2	07/24/06	Water Temp (F)		23.55		9:30	
BMC-2	07/24/06	Water Temp (F)		23.74		10:00	
BMC-2	07/24/06	Water Temp (F)		23.97		10:30	
BMC-2	07/24/06	Water Temp (F)		24.17		11:00	
BMC-2	07/24/06	Water Temp (F)		24.37		11:30	
BMC-2	07/24/06	Water Temp (F)		24.67		12:00	
BMC-2	07/24/06	Water Temp (F)		24.99		12:30	
BMC-2	07/24/06	Water Temp (F)		25.24		13:00	
BMC-2	07/24/06	Water Temp (F)		25.38		13:30	
BMC-2	07/24/06	Water Temp (F)		25.48		14:00	
BMC-2	07/24/06	Water Temp (F)		25.61		14:30	
BMC-2	07/24/06	Water Temp (F)		26.6		14:55	
BMC-2	07/24/06	Water Temp (F)		25.74		15:00	
BMC-2	07/24/06	Water Temp (F)		25.78		15:30	
BMC-2	07/24/06	Water Temp (F)		25.73		16:00	
BMC-2	07/24/06	Water Temp (F)		25.77		16:30	
BMC-2	07/24/06	Water Temp (F)		25.8		17:00	
BMC-2	07/24/06	Water Temp (F)		25.79		17:30	
BMC-2	07/24/06	Water Temp (F)		25.77		18:00	
BMC-2	07/24/06	Water Temp (F)		25.79		18:30	
BMC-2	07/24/06	Water Temp (F)		25.84		19:00	
BMC-2	07/24/06	Water Temp (F)		25.85		19:30	
BMC-2	07/24/06	Water Temp (F)		25.79		20:00	
BMC-2	07/24/06	Water Temp (F)		25.7		20:30	
BMC-2	07/24/06	Water Temp (F)		25.64		21:00	
BMC-2	07/24/06	Water Temp (F)		25.58		21:30	
BMC-2	07/24/06	Water Temp (F)		25.46		22:00	
BMC-2	07/24/06	Water Temp (F)		25.31		22:30	
BMC-2	07/24/06	Water Temp (F)		25.18		23:00	
BMC-2	07/24/06	Water Temp (F)		25.06		23:30	
BMC-2	08/08/06	Water Temp (F)		24.3		15:25	
BMC-2	08/29/06	Water Temp (F)		22.6		13:45	
BMC-2	09/07/06	Water Temp (F)		18.78		9:00	
BMC-2	09/07/06	Water Temp (F)		18.86		9:30	
BMC-2	09/07/06	Water Temp (F)		19.01		10:00	
BMC-2	09/07/06	Water Temp (F)		19.33		10:30	
BMC-2	09/07/06	Water Temp (F)		19.68		11:00	
BMC-2	09/07/06	Water Temp (F)		20.16		11:30	
BMC-2	09/07/06	Water Temp (F)		20.52		12:00	
BMC-2	09/07/06	Water Temp (F)		20.91		12:30	
BMC-2	09/07/06	Water Temp (F)		21.21		13:00	
BMC-2	09/07/06	Water Temp (F)		21.49		13:30	
BMC-2	09/07/06	Water Temp (F)		21.79		14:00	
BMC-2	09/07/06	Water Temp (F)		22.08		14:30	
BMC-2	09/07/06	Water Temp (F)		22.36		15:00	
BMC-2	09/07/06	Water Temp (F)		22.62		15:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/07/06	Water Temp (F)		22.73		16:00	
BMC-2	09/07/06	Water Temp (F)		22.78		16:30	
BMC-2	09/07/06	Water Temp (F)		22.75		17:00	
BMC-2	09/07/06	Water Temp (F)		22.64		17:30	
BMC-2	09/07/06	Water Temp (F)		22.44		18:00	
BMC-2	09/07/06	Water Temp (F)		22.26		18:30	
BMC-2	09/07/06	Water Temp (F)		22.15		19:00	
BMC-2	09/07/06	Water Temp (F)		22.02		19:30	
BMC-2	09/07/06	Water Temp (F)		21.9		20:00	
BMC-2	09/07/06	Water Temp (F)		21.79		20:30	
BMC-2	09/07/06	Water Temp (F)		21.68		21:00	
BMC-2	09/07/06	Water Temp (F)		21.57		21:30	
BMC-2	09/07/06	Water Temp (F)		21.46		22:00	
BMC-2	09/07/06	Water Temp (F)		21.4		22:30	
BMC-2	09/07/06	Water Temp (F)		21.32		23:00	
BMC-2	09/07/06	Water Temp (F)		21.21		23:30	
BMC-2	09/08/06	Water Temp (F)		21.12		0:00	
BMC-2	09/08/06	Water Temp (F)		21.01		0:30	
BMC-2	09/08/06	Water Temp (F)		20.9		1:00	
BMC-2	09/08/06	Water Temp (F)		20.77		1:30	
BMC-2	09/08/06	Water Temp (F)		20.66		2:00	
BMC-2	09/08/06	Water Temp (F)		20.52		2:30	
BMC-2	09/08/06	Water Temp (F)		20.39		3:00	
BMC-2	09/08/06	Water Temp (F)		20.26		3:30	
BMC-2	09/08/06	Water Temp (F)		20.14		4:00	
BMC-2	09/08/06	Water Temp (F)		20.02		4:30	
BMC-2	09/08/06	Water Temp (F)		19.91		5:00	
BMC-2	09/08/06	Water Temp (F)		19.81		5:30	
BMC-2	09/08/06	Water Temp (F)		19.71		6:00	
BMC-2	09/08/06	Water Temp (F)		19.63		6:30	
BMC-2	09/08/06	Water Temp (F)		19.54		7:00	
BMC-2	09/08/06	Water Temp (F)		19.46		7:30	
BMC-2	09/08/06	Water Temp (F)		19.41		8:00	
BMC-2	09/08/06	Water Temp (F)		19.4		8:30	
BMC-2	09/08/06	Water Temp (F)		19.44		9:00	
BMC-2	09/08/06	Water Temp (F)		19.55		9:30	
BMC-2	09/08/06	Water Temp (F)		19.68		10:00	
BMC-2	09/08/06	Water Temp (F)		19.91		10:30	
BMC-2	09/08/06	Water Temp (F)		20.14		11:00	
BMC-2	09/08/06	Water Temp (F)		20.56		11:30	
BMC-2	09/08/06	Water Temp (F)		21.03		12:00	
BMC-2	09/08/06	Water Temp (F)		21.38		12:30	
BMC-2	09/08/06	Water Temp (F)		21.59		13:00	
BMC-2	09/08/06	Water Temp (F)		21.7		13:30	
BMC-2	09/08/06	Water Temp (F)		21.79		14:00	
BMC-2	09/08/06	Water Temp (F)		21.88		14:30	
BMC-2	09/08/06	Water Temp (F)		22.02		15:00	
BMC-2	09/08/06	Water Temp (F)		22.17		15:30	
BMC-2	09/08/06	Water Temp (F)		22.18		16:00	
BMC-2	09/08/06	Water Temp (F)		22.2		16:30	
BMC-2	09/08/06	Water Temp (F)		22.14		17:00	
BMC-2	09/08/06	Water Temp (F)		22.09		17:30	
BMC-2	09/08/06	Water Temp (F)		22.04		18:00	
BMC-2	09/08/06	Water Temp (F)		21.98		18:30	
BMC-2	09/08/06	Water Temp (F)		21.91		19:00	
BMC-2	09/08/06	Water Temp (F)		21.82		19:30	
BMC-2	09/08/06	Water Temp (F)		21.72		20:00	
BMC-2	09/08/06	Water Temp (F)		21.62		20:30	
BMC-2	09/08/06	Water Temp (F)		21.53		21:00	
BMC-2	09/08/06	Water Temp (F)		21.44		21:30	
BMC-2	09/08/06	Water Temp (F)		21.35		22:00	
BMC-2	09/08/06	Water Temp (F)		21.26		22:30	
BMC-2	09/08/06	Water Temp (F)		21.16		23:00	
BMC-2	09/08/06	Water Temp (F)		21.07		23:30	
BMC-2	09/09/06	Water Temp (F)		20.97		0:00	
BMC-2	09/09/06	Water Temp (F)		20.84		0:30	
BMC-2	09/09/06	Water Temp (F)		20.73		1:00	
BMC-2	09/09/06	Water Temp (F)		20.63		1:30	
BMC-2	09/09/06	Water Temp (F)		20.5		2:00	
BMC-2	09/09/06	Water Temp (F)		20.38		2:30	
BMC-2	09/09/06	Water Temp (F)		20.28		3:00	
BMC-2	09/09/06	Water Temp (F)		20.17		3:30	
BMC-2	09/09/06	Water Temp (F)		20.05		4:00	
BMC-2	09/09/06	Water Temp (F)		19.95		4:30	
BMC-2	09/09/06	Water Temp (F)		19.83		5:00	
BMC-2	09/09/06	Water Temp (F)		19.71		5:30	
BMC-2	09/09/06	Water Temp (F)		19.62		6:00	
BMC-2	09/09/06	Water Temp (F)		19.52		6:30	
BMC-2	09/09/06	Water Temp (F)		19.43		7:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/09/06	Water Temp (F)		19.36		7:30	
BMC-2	09/09/06	Water Temp (F)		19.32		8:00	
BMC-2	09/09/06	Water Temp (F)		19.28		8:30	
BMC-2	09/09/06	Water Temp (F)		19.3		9:00	
BMC-2	09/09/06	Water Temp (F)		19.38		9:30	
BMC-2	09/09/06	Water Temp (F)		19.53		10:00	
BMC-2	09/09/06	Water Temp (F)		19.83		10:30	
BMC-2	09/09/06	Water Temp (F)		20.22		11:00	
BMC-2	09/09/06	Water Temp (F)		20.63		11:30	
BMC-2	09/09/06	Water Temp (F)		21.04		12:00	
BMC-2	09/09/06	Water Temp (F)		21.39		12:30	
BMC-2	09/09/06	Water Temp (F)		21.63		13:00	
BMC-2	09/09/06	Water Temp (F)		21.93		13:30	
BMC-2	09/09/06	Water Temp (F)		21.99		14:00	
BMC-2	09/09/06	Water Temp (F)		22.18		14:30	
BMC-2	09/09/06	Water Temp (F)		22.42		15:00	
BMC-2	09/09/06	Water Temp (F)		22.65		15:30	
BMC-2	09/09/06	Water Temp (F)		22.78		16:00	
BMC-2	09/09/06	Water Temp (F)		22.84		16:30	
BMC-2	09/09/06	Water Temp (F)		22.87		17:00	
BMC-2	09/09/06	Water Temp (F)		22.89		17:30	
BMC-2	09/09/06	Water Temp (F)		22.85		18:00	
BMC-2	09/09/06	Water Temp (F)		22.76		18:30	
BMC-2	09/09/06	Water Temp (F)		22.58		19:00	
BMC-2	09/09/06	Water Temp (F)		22.44		19:30	
BMC-2	09/09/06	Water Temp (F)		22.34		20:00	
BMC-2	09/09/06	Water Temp (F)		22.22		20:30	
BMC-2	09/09/06	Water Temp (F)		22.14		21:00	
BMC-2	09/09/06	Water Temp (F)		22.04		21:30	
BMC-2	09/09/06	Water Temp (F)		21.95		22:00	
BMC-2	09/09/06	Water Temp (F)		21.85		22:30	
BMC-2	09/09/06	Water Temp (F)		21.76		23:00	
BMC-2	09/09/06	Water Temp (F)		21.66		23:30	
BMC-2	09/10/06	Water Temp (F)		21.58		0:00	
BMC-2	09/10/06	Water Temp (F)		21.49		0:30	
BMC-2	09/10/06	Water Temp (F)		21.41		1:00	
BMC-2	09/10/06	Water Temp (F)		21.34		1:30	
BMC-2	09/10/06	Water Temp (F)		21.24		2:00	
BMC-2	09/10/06	Water Temp (F)		21.16		2:30	
BMC-2	09/10/06	Water Temp (F)		21.08		3:00	
BMC-2	09/10/06	Water Temp (F)		20.99		3:30	
BMC-2	09/10/06	Water Temp (F)		20.9		4:00	
BMC-2	09/10/06	Water Temp (F)		20.79		4:30	
BMC-2	09/10/06	Water Temp (F)		20.69		5:00	
BMC-2	09/10/06	Water Temp (F)		20.57		5:30	
BMC-2	09/10/06	Water Temp (F)		20.47		6:00	
BMC-2	09/10/06	Water Temp (F)		20.35		6:30	
BMC-2	09/10/06	Water Temp (F)		20.25		7:00	
BMC-2	09/10/06	Water Temp (F)		20.17		7:30	
BMC-2	09/10/06	Water Temp (F)		20.08		8:00	
BMC-2	09/10/06	Water Temp (F)		20.03		8:30	
BMC-2	09/10/06	Water Temp (F)		20.01		9:00	
BMC-2	09/10/06	Water Temp (F)		20.07		9:30	
BMC-2	09/10/06	Water Temp (F)		20.16		10:00	
BMC-2	09/10/06	Water Temp (F)		20.39		10:30	
BMC-2	09/10/06	Water Temp (F)		20.7		11:00	
BMC-2	09/10/06	Water Temp (F)		21.14		11:30	
BMC-2	09/10/06	Water Temp (F)		21.59		12:00	
BMC-2	09/10/06	Water Temp (F)		21.81		12:30	
BMC-2	09/10/06	Water Temp (F)		21.93		13:00	
BMC-2	09/10/06	Water Temp (F)		22.12		13:30	
BMC-2	09/10/06	Water Temp (F)		22.33		14:00	
BMC-2	09/10/06	Water Temp (F)		22.57		14:30	
BMC-2	09/10/06	Water Temp (F)		22.82		15:00	
BMC-2	09/10/06	Water Temp (F)		23.07		15:30	
BMC-2	09/10/06	Water Temp (F)		23.24		16:00	
BMC-2	09/10/06	Water Temp (F)		23.35		16:30	
BMC-2	09/10/06	Water Temp (F)		23.35		17:00	
BMC-2	09/10/06	Water Temp (F)		23.28		17:30	
BMC-2	09/10/06	Water Temp (F)		23.19		18:00	
BMC-2	09/10/06	Water Temp (F)		23.07		18:30	
BMC-2	09/10/06	Water Temp (F)		22.94		19:00	
BMC-2	09/10/06	Water Temp (F)		22.81		19:30	
BMC-2	09/10/06	Water Temp (F)		22.68		20:00	
BMC-2	09/10/06	Water Temp (F)		22.57		20:30	
BMC-2	09/10/06	Water Temp (F)		22.46		21:00	
BMC-2	09/10/06	Water Temp (F)		22.39		21:30	
BMC-2	09/10/06	Water Temp (F)		22.31		22:00	
BMC-2	09/10/06	Water Temp (F)		22.24		22:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/10/06	Water Temp (F)		22.18		23:00	
BMC-2	09/10/06	Water Temp (F)		22.12		23:30	
BMC-2	09/11/06	Water Temp (F)		22.05		0:00	
BMC-2	09/11/06	Water Temp (F)		21.99		0:30	
BMC-2	09/11/06	Water Temp (F)		21.93		1:00	
BMC-2	09/11/06	Water Temp (F)		21.87		1:30	
BMC-2	09/11/06	Water Temp (F)		21.78		2:00	
BMC-2	09/11/06	Water Temp (F)		21.71		2:30	
BMC-2	09/11/06	Water Temp (F)		21.62		3:00	
BMC-2	09/11/06	Water Temp (F)		21.53		3:30	
BMC-2	09/11/06	Water Temp (F)		21.44		4:00	
BMC-2	09/11/06	Water Temp (F)		21.33		4:30	
BMC-2	09/11/06	Water Temp (F)		21.25		5:00	
BMC-2	09/11/06	Water Temp (F)		21.16		5:30	
BMC-2	09/11/06	Water Temp (F)		21.08		6:00	
BMC-2	09/11/06	Water Temp (F)		21		6:30	
BMC-2	09/11/06	Water Temp (F)		20.91		7:00	
BMC-2	09/11/06	Water Temp (F)		20.84		7:30	
BMC-2	09/11/06	Water Temp (F)		20.81		8:00	
BMC-2	09/11/06	Water Temp (F)		20.76		8:30	
BMC-2	09/11/06	Water Temp (F)		20.75		9:00	
BMC-2	09/11/06	Water Temp (F)		20.84		9:30	
BMC-2	09/11/06	Water Temp (F)		20.95		10:00	
BMC-2	09/11/06	Water Temp (F)		21.19		10:30	
BMC-2	09/11/06	Water Temp (F)		21.35		11:00	
BMC-2	09/11/06	Water Temp (F)		21.6		11:30	
BMC-2	09/11/06	Water Temp (F)		21.56		12:00	
BMC-2	09/11/06	Water Temp (F)		21.54		12:30	
BMC-2	09/11/06	Water Temp (F)		21.58		13:00	
BMC-2	09/11/06	Water Temp (F)		21.65		13:30	
BMC-2	09/11/06	Water Temp (F)		21.83		14:00	
BMC-2	09/11/06	Water Temp (F)		22		14:30	
BMC-2	09/11/06	Water Temp (F)		22.18		15:00	
BMC-2	09/11/06	Water Temp (F)		22.3		15:30	
BMC-2	09/11/06	Water Temp (F)		22.31		16:00	
BMC-2	09/11/06	Water Temp (F)		22.27		16:30	
BMC-2	09/11/06	Water Temp (F)		22.24		17:00	
BMC-2	09/11/06	Water Temp (F)		22.19		17:30	
BMC-2	09/11/06	Water Temp (F)		22.14		18:00	
BMC-2	09/11/06	Water Temp (F)		22.08		18:30	
BMC-2	09/11/06	Water Temp (F)		22.02		19:00	
BMC-2	09/11/06	Water Temp (F)		21.94		19:30	
BMC-2	09/11/06	Water Temp (F)		21.87		20:00	
BMC-2	09/11/06	Water Temp (F)		21.8		20:30	
BMC-2	09/11/06	Water Temp (F)		21.74		21:00	
BMC-2	09/11/06	Water Temp (F)		21.69		21:30	
BMC-2	09/11/06	Water Temp (F)		21.63		22:00	
BMC-2	09/11/06	Water Temp (F)		21.57		22:30	
BMC-2	09/11/06	Water Temp (F)		21.52		23:00	
BMC-2	09/11/06	Water Temp (F)		21.47		23:30	
BMC-2	09/12/06	Water Temp (F)		21.42		0:00	
BMC-2	09/12/06	Water Temp (F)		21.39		0:30	
BMC-2	09/12/06	Water Temp (F)		21.34		1:00	
BMC-2	09/12/06	Water Temp (F)		21.29		1:30	
BMC-2	09/12/06	Water Temp (F)		21.24		2:00	
BMC-2	09/12/06	Water Temp (F)		21.19		2:30	
BMC-2	09/12/06	Water Temp (F)		21.14		3:00	
BMC-2	09/12/06	Water Temp (F)		21.09		3:30	
BMC-2	09/12/06	Water Temp (F)		21.03		4:00	
BMC-2	09/12/06	Water Temp (F)		20.98		4:30	
BMC-2	09/12/06	Water Temp (F)		20.93		5:00	
BMC-2	09/12/06	Water Temp (F)		20.88		5:30	
BMC-2	09/12/06	Water Temp (F)		20.82		6:00	
BMC-2	09/12/06	Water Temp (F)		20.78		6:30	
BMC-2	09/12/06	Water Temp (F)		20.72		7:00	
BMC-2	09/12/06	Water Temp (F)		20.67		7:30	
BMC-2	09/12/06	Water Temp (F)		20.61		8:00	
BMC-2	09/12/06	Water Temp (F)		20.56		8:30	
BMC-2	09/12/06	Water Temp (F)		20.55		9:00	
BMC-2	09/12/06	Water Temp (F)		20.64		9:30	
BMC-2	09/12/06	Water Temp (F)		20.73		10:00	
BMC-2	09/12/06	Water Temp (F)		20.96		10:30	
BMC-2	09/12/06	Water Temp (F)		21.15		11:00	
BMC-2	09/12/06	Water Temp (F)		21.19		11:30	
BMC-2	09/12/06	Water Temp (F)		21.13		12:00	
BMC-2	09/12/06	Water Temp (F)		21.13		12:30	
BMC-2	09/12/06	Water Temp (F)		21.21		13:00	
BMC-2	09/12/06	Water Temp (F)		21.3		13:30	
BMC-2	09/12/06	Water Temp (F)		21.47		14:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/12/06	Water Temp (F)		21.6		14:30	
BMC-2	09/12/06	Water Temp (F)		21.62		15:00	
BMC-2	09/12/06	Water Temp (F)		21.62		15:30	
BMC-2	09/12/06	Water Temp (F)		21.59		16:00	
BMC-2	09/12/06	Water Temp (F)		21.47		16:30	
BMC-2	09/12/06	Water Temp (F)		21.3		17:00	
BMC-2	09/12/06	Water Temp (F)		21.18		17:30	
BMC-2	09/12/06	Water Temp (F)		20.94		18:00	
BMC-2	09/12/06	Water Temp (F)		20.67		18:30	
BMC-2	09/12/06	Water Temp (F)		20.57		19:00	
BMC-2	09/12/06	Water Temp (F)		20.62		19:30	
BMC-2	09/12/06	Water Temp (F)		20.45		20:00	
BMC-2	09/12/06	Water Temp (F)		20.45		20:30	
BMC-2	09/12/06	Water Temp (F)		20.47		21:00	
BMC-2	09/12/06	Water Temp (F)		20.47		21:30	
BMC-2	09/12/06	Water Temp (F)		20.45		22:00	
BMC-2	09/12/06	Water Temp (F)		20.44		22:30	
BMC-2	09/12/06	Water Temp (F)		20.41		23:00	
BMC-2	09/12/06	Water Temp (F)		20.37		23:30	
BMC-2	09/13/06	Water Temp (F)		20.31		0:00	
BMC-2	09/13/06	Water Temp (F)		20.25		0:30	
BMC-2	09/13/06	Water Temp (F)		20.18		1:00	
BMC-2	09/13/06	Water Temp (F)		20.11		1:30	
BMC-2	09/13/06	Water Temp (F)		20.03		2:00	
BMC-2	09/13/06	Water Temp (F)		19.96		2:30	
BMC-2	09/13/06	Water Temp (F)		19.89		3:00	
BMC-2	09/13/06	Water Temp (F)		19.82		3:30	
BMC-2	09/13/06	Water Temp (F)		19.74		4:00	
BMC-2	09/13/06	Water Temp (F)		19.65		4:30	
BMC-2	09/13/06	Water Temp (F)		19.59		5:00	
BMC-2	09/13/06	Water Temp (F)		19.54		5:30	
BMC-2	09/13/06	Water Temp (F)		19.48		6:00	
BMC-2	09/13/06	Water Temp (F)		19.42		6:30	
BMC-2	09/13/06	Water Temp (F)		19.37		7:00	
BMC-2	09/13/06	Water Temp (F)		19.33		7:30	
BMC-2	09/13/06	Water Temp (F)		19.29		8:00	
BMC-2	09/13/06	Water Temp (F)		19.26		8:30	
BMC-2	09/13/06	Water Temp (F)		19.25		9:00	
BMC-2	09/13/06	Water Temp (F)		19.24		9:30	
BMC-2	09/13/06	Water Temp (F)		19.24		10:00	
BMC-2	09/13/06	Water Temp (F)		19.27		10:30	
BMC-2	09/13/06	Water Temp (F)		19.38		11:00	
BMC-2	09/13/06	Water Temp (F)		19.55		11:30	
BMC-2	09/13/06	Water Temp (F)		19.63		12:00	
BMC-2	09/13/06	Water Temp (F)		19.82		12:30	
BMC-2	09/13/06	Water Temp (F)		20		13:00	
BMC-2	09/13/06	Water Temp (F)		20.05		13:30	
BMC-2	09/13/06	Water Temp (F)		20.09		14:00	
BMC-2	09/13/06	Water Temp (F)		20.23		14:30	
BMC-2	09/13/06	Water Temp (F)		20.36		15:00	
BMC-2	09/13/06	Water Temp (F)		20.45		15:30	
BMC-2	09/13/06	Water Temp (F)		20.52		16:00	
BMC-2	09/13/06	Water Temp (F)		20.56		16:30	
BMC-2	09/13/06	Water Temp (F)		20.45		17:00	
BMC-2	09/13/06	Water Temp (F)		20.36		17:30	
BMC-2	09/13/06	Water Temp (F)		20.27		18:00	
BMC-2	09/13/06	Water Temp (F)		20.2		18:30	
BMC-2	09/13/06	Water Temp (F)		20.16		19:00	
BMC-2	09/13/06	Water Temp (F)		20.13		19:30	
BMC-2	09/13/06	Water Temp (F)		20.1		20:00	
BMC-2	09/13/06	Water Temp (F)		20.05		20:30	
BMC-2	09/13/06	Water Temp (F)		20		21:00	
BMC-2	09/13/06	Water Temp (F)		19.93		21:30	
BMC-2	09/13/06	Water Temp (F)		19.88		22:00	
BMC-2	09/13/06	Water Temp (F)		19.83		22:30	
BMC-2	09/13/06	Water Temp (F)		19.79		23:00	
BMC-2	09/13/06	Water Temp (F)		19.75		23:30	
BMC-2	09/14/06	Water Temp (F)		19.73		0:00	
BMC-2	09/14/06	Water Temp (F)		19.7		0:30	
BMC-2	09/14/06	Water Temp (F)		19.67		1:00	
BMC-2	09/14/06	Water Temp (F)		19.66		1:30	
BMC-2	09/14/06	Water Temp (F)		19.62		2:00	
BMC-2	09/14/06	Water Temp (F)		19.59		2:30	
BMC-2	09/14/06	Water Temp (F)		19.56		3:00	
BMC-2	09/14/06	Water Temp (F)		19.53		3:30	
BMC-2	09/14/06	Water Temp (F)		19.48		4:00	
BMC-2	09/14/06	Water Temp (F)		19.45		4:30	
BMC-2	09/14/06	Water Temp (F)		19.41		5:00	
BMC-2	09/14/06	Water Temp (F)		19.35		5:30	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BMC-2	09/14/06	Water Temp (F)		19.29		6:00	
BMC-2	09/14/06	Water Temp (F)		19.24		6:30	
BMC-2	09/14/06	Water Temp (F)		19.19		7:00	
BMC-2	09/14/06	Water Temp (F)		19.14		7:30	
BMC-2	09/14/06	Water Temp (F)		19.1		8:00	
BMC-2	09/14/06	Water Temp (F)		19.09		8:30	
BMC-2	09/14/06	Water Temp (F)		19.04		9:00	
BMC-2	09/26/06	Water Temp (F)		19.6		13:45	
BMC-2	7/25/006	Water Temp (F)		24.94		0:00	
BMC-2	7/25/006	Water Temp (F)		24.81		0:30	
BMC-2	7/25/006	Water Temp (F)		24.68		1:00	
BMC-2	7/25/006	Water Temp (F)		24.55		1:30	
BMC-2	7/25/006	Water Temp (F)		24.42		2:00	
BMC-2	7/25/006	Water Temp (F)		24.29		2:30	
BMC-2	7/25/006	Water Temp (F)		24.14		3:00	
BMC-2	7/25/006	Water Temp (F)		23.99		3:30	
BMC-2	7/25/006	Water Temp (F)		23.86		4:00	
BMC-2	7/25/006	Water Temp (F)		23.71		4:30	
BMC-2	7/25/006	Water Temp (F)		23.55		5:00	
BMC-2	7/25/006	Water Temp (F)		23.4		5:30	
BMC-2	7/25/006	Water Temp (F)		23.27		6:00	
BMC-2	7/25/006	Water Temp (F)		23.14		6:30	
BMC-2	7/25/006	Water Temp (F)		23.03		7:00	
BMC-2	7/25/006	Water Temp (F)		22.95		7:30	
BMC-2	7/25/006	Water Temp (F)		22.93		8:00	
BMC-2	7/25/006	Water Temp (F)		22.94		8:30	
BMC-2	7/25/006	Water Temp (F)		22.98		9:00	
BMC-2	7/25/006	Water Temp (F)		23.02		9:30	
BMC-2	7/25/006	Water Temp (F)		23.18		10:00	
BMC-2	7/25/006	Water Temp (F)		23.44		10:30	
BMC-2	7/25/006	Water Temp (F)		23.77		11:00	
BMC-2 (DUP)	04/26/06	BOD (mL/L)		2		15:30	
BMC-2 (DUP)	09/26/06	BOD (mL/L)		2	U	13:45	
BMC-2 (DUP)	04/26/06	Ch-a (mg/m^3)		15		15:30	
BMC-2 (DUP)	09/26/06	Ch-a (mg/m^3)		16		13:45	
BMC-2 (DUP)	04/26/06	Dissolved Phosphorus (mg/L)		0.5		15:30	
BMC-2 (DUP)	09/26/06	Dissolved Phosphorus (mg/L)		0.77		13:45	
BMC-2 (DUP)	04/26/06	DO (mg/L)		9.69		15:30	
BMC-2 (DUP)	04/26/06	Flow		NA		15:30	
BMC-2 (DUP)	04/26/06	pH		8.91		15:30	
BMC-2 (DUP)	04/26/06	Spec. Cond. (uS/cm)		0.409		15:30	
BMC-2 (DUP)	04/26/06	TKN (mg/L)		0.96		15:30	
BMC-2 (DUP)	09/26/06	TKN (mg/L)		0.84		13:45	
BMC-2 (DUP)	04/26/06	Total Nitrate + Nitrite (mg/L)		6.7		15:30	
BMC-2 (DUP)	09/26/06	Total Nitrate + Nitrite (mg/L)		8.4		13:45	
BMC-2 (DUP)	04/26/06	TP (mg/L)		0.61		15:30	
BMC-2 (DUP)	09/26/06	TP (mg/L)		0.93		13:45	
BMC-2 (DUP)	04/26/06	Turbidity (NTU)		5		15:30	
BMC-2 (DUP)	04/26/06	Water Temp (F)		16.7		15:30	
BMC-2 (SED)	07/24/06	TP (mg/L)		220		14:55	
BPGD-H-A1	10/06/05	BOD (mL/L)		2		17:10	
BPGD-H-A1	11/01/05	BOD (mL/L)		2		8:55	
BPGD-H-A1	04/12/06	BOD (mL/L)		2	U	11:45	
BPGD-H-A1	04/26/06	BOD (mL/L)		2	U	17:40	
BPGD-H-A1	05/08/06	BOD (mL/L)		2	U	15:50	
BPGD-H-A1	05/23/06	BOD (mL/L)		2	U	16:25	
BPGD-H-A1	06/06/06	BOD (mL/L)		2	U	16:20	
BPGD-H-A1	06/19/06	BOD (mL/L)		3		16:50	
BPGD-H-A1	07/12/06	BOD (mL/L)		2	U	14:55	
BPGD-H-A1	07/25/06	BOD (mL/L)		6		14:45	
BPGD-H-A1	08/09/06	BOD (mL/L)		8		15:45	
BPGD-H-A1	08/29/06	BOD (mL/L)		4		16:15	
BPGD-H-A1	09/13/06	BOD (mL/L)		2	U	14:50	
BPGD-H-A1	09/26/06	BOD (mL/L)		2	U	16:30	
BPGD-H-A1	10/06/05	Ch-a (mg/m^3)		5.3		17:10	
BPGD-H-A1	11/01/05	Ch-a (mg/m^3)		8.9		8:55	
BPGD-H-A1	04/12/06	Ch-a (mg/m^3)		0.89		11:45	
BPGD-H-A1	04/26/06	Ch-a (mg/m^3)		6.2		17:40	
BPGD-H-A1	05/08/06	Ch-a (mg/m^3)		0.5	U	15:50	
BPGD-H-A1	05/23/06	Ch-a (mg/m^3)		0.89		16:25	
BPGD-H-A1	06/06/06	Ch-a (mg/m^3)		0.5	U	16:20	
BPGD-H-A1	06/19/06	Ch-a (mg/m^3)		0.5	U	16:50	
BPGD-H-A1	07/25/06	Ch-a (mg/m^3)		84		14:45	
BPGD-H-A1	08/09/06	Ch-a (mg/m^3)		44		15:45	
BPGD-H-A1	08/29/06	Ch-a (mg/m^3)		13		16:15	
BPGD-H-A1	09/13/06	Ch-a (mg/m^3)		0.5	U	14:50	
BPGD-H-A1	09/26/06	Ch-a (mg/m^3)		11		16:30	
BPGD-H-A1	10/06/05	Dissolved Phosphorus (mg/L)		0.046	B	17:10	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPGD-H-A1	11/01/05	Dissolved Phosphorus (mg/L)		0.21		8:55	
BPGD-H-A1	04/12/06	Dissolved Phosphorus (mg/L)		0.012	B	11:45	
BPGD-H-A1	04/26/06	Dissolved Phosphorus (mg/L)		0.002	B	17:40	
BPGD-H-A1	05/08/06	Dissolved Phosphorus (mg/L)		0.1		15:50	
BPGD-H-A1	05/23/06	Dissolved Phosphorus (mg/L)		0.011	U	16:25	
BPGD-H-A1	06/06/06	Dissolved Phosphorus (mg/L)		0.12		16:20	
BPGD-H-A1	06/19/06	Dissolved Phosphorus (mg/L)		0.02	B	16:50	
BPGD-H-A1	07/12/06	Dissolved Phosphorus (mg/L)		0.13		14:55	
BPGD-H-A1	07/25/06	Dissolved Phosphorus (mg/L)		0.04	B	14:45	
BPGD-H-A1	08/09/06	Dissolved Phosphorus (mg/L)		0.065		15:45	
BPGD-H-A1	08/29/06	Dissolved Phosphorus (mg/L)		0.45		16:15	
BPGD-H-A1	09/13/06	Dissolved Phosphorus (mg/L)		0.077		14:50	
BPGD-H-A1	09/26/06	Dissolved Phosphorus (mg/L)		0.055		16:30	
BPGD-H-A1	10/06/05	DO (mg/L)		9.72		17:10	
BPGD-H-A1	11/01/05	DO (mg/L)		9.7		8:55	
BPGD-H-A1	04/12/06	DO (mg/L)		8.55		11:45	
BPGD-H-A1	04/26/06	DO (mg/L)		9.92		17:40	
BPGD-H-A1	05/08/06	DO (mg/L)		10.65		15:50	
BPGD-H-A1	05/23/06	DO (mg/L)		12.87		16:25	
BPGD-H-A1	06/06/06	DO (mg/L)		10.61		16:20	
BPGD-H-A1	06/19/06	DO (mg/L)		9.15		16:50	
BPGD-H-A1	07/12/06	DO (mg/L)		10.01		14:55	
BPGD-H-A1	07/25/06	DO (mg/L)		18.1		14:45	
BPGD-H-A1	08/09/06	DO (mg/L)		9.33		15:45	
BPGD-H-A1	08/29/06	DO (mg/L)		8.02		16:15	
BPGD-H-A1	09/26/06	DO (mg/L)		8.3		16:30	
BPGD-H-A1	10/06/05	Flow		< 0.5		17:10	
BPGD-H-A1	11/01/05	Flow		0		8:55	
BPGD-H-A1	04/12/06	Flow		< 0.1		11:45	
BPGD-H-A1	04/26/06	Flow		0		17:40	
BPGD-H-A1	05/08/06	Flow		0		15:50	
BPGD-H-A1	05/23/06	Flow		< 0.1		16:25	
BPGD-H-A1	06/06/06	Flow		0.1		16:20	
BPGD-H-A1	06/19/06	Flow		0		16:50	
BPGD-H-A1	07/12/06	Flow		0		14:55	
BPGD-H-A1	07/25/06	Flow		0		14:45	
BPGD-H-A1	08/09/06	Flow		0		15:45	
BPGD-H-A1	08/29/06	Flow		0.17		16:15	
BPGD-H-A1	09/13/06	Flow		< 0.1		14:50	
BPGD-H-A1	09/26/06	Flow		0		16:30	
BPGD-H-A1	10/06/05	pH		7.7		17:10	
BPGD-H-A1	11/01/05	pH		7.7		8:55	
BPGD-H-A1	04/12/06	pH		8.32		11:45	
BPGD-H-A1	04/26/06	pH		8.35		17:40	
BPGD-H-A1	05/08/06	pH		7.99		15:50	
BPGD-H-A1	05/23/06	pH		8.15		16:25	
BPGD-H-A1	06/06/06	pH		7.71		16:20	
BPGD-H-A1	06/19/06	pH		5.22		16:50	
BPGD-H-A1	07/12/06	pH		7.56		14:55	
BPGD-H-A1	07/25/06	pH		7.59		14:45	
BPGD-H-A1	08/09/06	pH		7.27		15:45	
BPGD-H-A1	08/29/06	pH		8.04		16:15	
BPGD-H-A1	09/26/06	pH		5.77		16:30	
BPGD-H-A1	10/06/05	Spec. Cond. (uS/cm)		0.778		17:10	
BPGD-H-A1	11/01/05	Spec. Cond. (uS/cm)		0.5		8:55	
BPGD-H-A1	04/12/06	Spec. Cond. (uS/cm)		0.453		11:45	
BPGD-H-A1	04/26/06	Spec. Cond. (uS/cm)		0.429		17:40	
BPGD-H-A1	05/08/06	Spec. Cond. (uS/cm)		0.403		15:50	
BPGD-H-A1	05/23/06	Spec. Cond. (uS/cm)		0.42		16:25	
BPGD-H-A1	06/06/06	Spec. Cond. (uS/cm)		0.408		16:20	
BPGD-H-A1	06/19/06	Spec. Cond. (uS/cm)		0.529		16:50	
BPGD-H-A1	07/12/06	Spec. Cond. (uS/cm)		0.508		14:55	
BPGD-H-A1	07/25/06	Spec. Cond. (uS/cm)		0.567		14:45	
BPGD-H-A1	08/09/06	Spec. Cond. (uS/cm)		5.74		15:45	
BPGD-H-A1	08/29/06	Spec. Cond. (uS/cm)		1.49		16:15	
BPGD-H-A1	09/26/06	Spec. Cond. (uS/cm)		0.794		16:30	
BPGD-H-A1	10/06/05	TKN (mg/L)		0.55		17:10	
BPGD-H-A1	11/01/05	TKN (mg/L)		1.4		8:55	
BPGD-H-A1	04/12/06	TKN (mg/L)		0.81		11:45	
BPGD-H-A1	04/26/06	TKN (mg/L)		0.64		17:40	
BPGD-H-A1	05/08/06	TKN (mg/L)		1.1		15:50	
BPGD-H-A1	05/23/06	TKN (mg/L)		0.57		16:25	
BPGD-H-A1	06/06/06	TKN (mg/L)		1.2		16:20	
BPGD-H-A1	06/19/06	TKN (mg/L)		1.2		16:50	
BPGD-H-A1	07/12/06	TKN (mg/L)		1.2		14:55	
BPGD-H-A1	07/25/06	TKN (mg/L)		1.6		14:45	
BPGD-H-A1	08/09/06	TKN (mg/L)		0.71		15:45	
BPGD-H-A1	08/29/06	TKN (mg/L)		1.2		16:15	
BPGD-H-A1	09/13/06	TKN (mg/L)		0.93		14:50	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPGD-H-A1	09/26/06	TKN (mg/L)		1.3		16:30	
BPGD-H-A1	10/06/05	Total Nitrate + Nitrite (mg/L)		0.034	B	17:10	
BPGD-H-A1	11/01/05	Total Nitrate + Nitrite (mg/L)		11		8:55	
BPGD-H-A1	04/12/06	Total Nitrate + Nitrite (mg/L)		12		11:45	
BPGD-H-A1	04/26/06	Total Nitrate + Nitrite (mg/L)		16		17:40	
BPGD-H-A1	05/08/06	Total Nitrate + Nitrite (mg/L)		11		15:50	
BPGD-H-A1	05/23/06	Total Nitrate + Nitrite (mg/L)		17		16:25	
BPGD-H-A1	06/06/06	Total Nitrate + Nitrite (mg/L)		14		16:20	
BPGD-H-A1	06/19/06	Total Nitrate + Nitrite (mg/L)		15		16:50	
BPGD-H-A1	07/12/06	Total Nitrate + Nitrite (mg/L)		7.2		14:55	
BPGD-H-A1	07/25/06	Total Nitrate + Nitrite (mg/L)		1.6		14:45	
BPGD-H-A1	08/09/06	Total Nitrate + Nitrite (mg/L)		0.14		15:45	
BPGD-H-A1	08/29/06	Total Nitrate + Nitrite (mg/L)		0.16		16:15	
BPGD-H-A1	09/13/06	Total Nitrate + Nitrite (mg/L)		0.47		14:50	
BPGD-H-A1	09/26/06	Total Nitrate + Nitrite (mg/L)		0.21		16:30	
BPGD-H-A1	10/06/05	TP (mg/L)		0.2		17:10	
BPGD-H-A1	11/01/05	TP (mg/L)		0.27		8:55	
BPGD-H-A1	04/12/06	TP (mg/L)		0.018	B	11:45	
BPGD-H-A1	04/26/06	TP (mg/L)		0.029	B	17:40	
BPGD-H-A1	05/08/06	TP (mg/L)		0.061		15:50	
BPGD-H-A1	05/23/06	TP (mg/L)		0.018	B	16:25	
BPGD-H-A1	06/06/06	TP (mg/L)		0.17		16:20	
BPGD-H-A1	06/19/06	TP (mg/L)		0.062		16:50	
BPGD-H-A1	07/12/06	TP (mg/L)		0.16		14:55	
BPGD-H-A1	07/25/06	TP (mg/L)		0.31		14:45	
BPGD-H-A1	08/09/06	TP (mg/L)		0.28		15:45	
BPGD-H-A1	08/29/06	TP (mg/L)		0.78		16:15	
BPGD-H-A1	08/29/06	TP (mg/L)		1700		16:15	
BPGD-H-A1	09/13/06	TP (mg/L)		0.13		14:50	
BPGD-H-A1	09/26/06	TP (mg/L)		0.087		16:30	
BPGD-H-A1	10/06/05	Turbidity (NTU)		2.3		17:10	
BPGD-H-A1	11/01/05	Turbidity (NTU)		1.3		8:55	
BPGD-H-A1	04/12/06	Turbidity (NTU)		0		11:45	
BPGD-H-A1	04/26/06	Turbidity (NTU)		5		17:40	
BPGD-H-A1	05/08/06	Turbidity (NTU)		10		15:50	
BPGD-H-A1	05/23/06	Turbidity (NTU)		5.5		16:25	
BPGD-H-A1	06/06/06	Turbidity (NTU)		17.3		16:20	
BPGD-H-A1	06/19/06	Turbidity (NTU)		4		16:50	
BPGD-H-A1	07/12/06	Turbidity (NTU)		38		14:55	
BPGD-H-A1	07/25/06	Turbidity (NTU)		10		14:45	
BPGD-H-A1	08/09/06	Turbidity (NTU)		-10		15:45	
BPGD-H-A1	08/29/06	Turbidity (NTU)		-10		16:15	
BPGD-H-A1	09/26/06	Turbidity (NTU)		1		16:30	
BPGD-H-A1	10/06/05	Water Temp (F)		16.5		17:10	
BPGD-H-A1	11/01/05	Water Temp (F)		12		8:55	
BPGD-H-A1	04/12/06	Water Temp (F)		15.5		11:45	
BPGD-H-A1	04/26/06	Water Temp (F)		14.4		17:40	
BPGD-H-A1	05/08/06	Water Temp (F)		18.1		15:50	
BPGD-H-A1	05/23/06	Water Temp (F)		17.7		16:25	
BPGD-H-A1	06/06/06	Water Temp (F)		20.4		16:20	
BPGD-H-A1	06/19/06	Water Temp (F)		21.5		16:50	
BPGD-H-A1	07/12/06	Water Temp (F)		23.1		14:55	
BPGD-H-A1	07/25/06	Water Temp (F)		26.5		14:45	
BPGD-H-A1	08/09/06	Water Temp (F)		23.2		15:45	
BPGD-H-A1	08/29/06	Water Temp (F)		22.9		16:15	
BPGD-H-A1	09/26/06	Water Temp (F)		16		16:30	
BPGD-H-A1 (DUP)	08/09/06	BOD (mL/L)		3		15:45	
BPGD-H-A1 (DUP)	08/29/06	BOD (mL/L)		4		16:15	
BPGD-H-A1 (DUP)	09/26/06	BOD (mL/L)		2	U	16:30	
BPGD-H-A1 (DUP)	08/09/06	Ch-a (mg/m^3)		84		15:45	
BPGD-H-A1 (DUP)	08/29/06	Ch-a (mg/m^3)		6.2		16:15	
BPGD-H-A1 (DUP)	09/26/06	Ch-a (mg/m^3)		11		16:30	
BPGD-H-A1 (DUP)	08/09/06	Dissolved Phosphorus (mg/L)		0.058		15:45	
BPGD-H-A1 (DUP)	08/29/06	Dissolved Phosphorus (mg/L)		0.42		16:15	
BPGD-H-A1 (DUP)	09/26/06	Dissolved Phosphorus (mg/L)		0.065		16:30	
BPGD-H-A1 (DUP)	08/09/06	TKN (mg/L)		1.5		15:45	
BPGD-H-A1 (DUP)	08/29/06	TKN (mg/L)		1.5		16:15	
BPGD-H-A1 (DUP)	09/26/06	TKN (mg/L)		1.2		16:30	
BPGD-H-A1 (DUP)	08/09/06	Total Nitrate + Nitrite (mg/L)		0.19		15:45	
BPGD-H-A1 (DUP)	08/29/06	Total Nitrate + Nitrite (mg/L)		0.12		16:15	
BPGD-H-A1 (DUP)	09/26/06	Total Nitrate + Nitrite (mg/L)		0.24		16:30	
BPGD-H-A1 (DUP)	08/09/06	TP (mg/L)		0.37		15:45	
BPGD-H-A1 (DUP)	08/29/06	TP (mg/L)		0.81		16:15	
BPGD-H-A1 (DUP)	09/26/06	TP (mg/L)		0.08		16:30	
BPGD-H-C1	10/06/05	BOD (mL/L)		19		17:50	
BPGD-H-C1	11/01/05	BOD (mL/L)		2		9:53	
BPGD-H-C1	04/12/06	BOD (mL/L)		2	U	11:03	
BPGD-H-C1	04/26/06	BOD (mL/L)		2	U	17:20	
BPGD-H-C1	05/08/06	BOD (mL/L)		2	U	16:20	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPGD-H-C1	05/23/06	BOD (mL/L)		2	U	15:55	
BPGD-H-C1	06/06/06	BOD (mL/L)		2	U	15:45	
BPGD-H-C1	06/19/06	BOD (mL/L)		2	U	16:25	
BPGD-H-C1	07/12/06	BOD (mL/L)		2	U	15:40	
BPGD-H-C1	07/25/06	BOD (mL/L)		7		14:15	
BPGD-H-C1	08/09/06	BOD (mL/L)		4		15:05	
BPGD-H-C1	08/29/06	BOD (mL/L)		3		16:55	
BPGD-H-C1	09/13/06	BOD (mL/L)		2	U	14:30	
BPGD-H-C1	09/26/06	BOD (mL/L)		>24		16:00	
BPGD-H-C1	10/06/05	Ch-a (mg/m^3)		5.3		17:50	
BPGD-H-C1	11/01/05	Ch-a (mg/m^3)		9.8		9:53	
BPGD-H-C1	04/12/06	Ch-a (mg/m^3)		0.5	U	11:03	
BPGD-H-C1	04/26/06	Ch-a (mg/m^3)		9.8		17:20	
BPGD-H-C1	05/08/06	Ch-a (mg/m^3)		0.89		16:20	
BPGD-H-C1	05/23/06	Ch-a (mg/m^3)		4.5		15:55	
BPGD-H-C1	06/06/06	Ch-a (mg/m^3)		0.89		15:45	
BPGD-H-C1	06/19/06	Ch-a (mg/m^3)		0.5	U	16:25	
BPGD-H-C1	07/25/06	Ch-a (mg/m^3)		96		14:15	
BPGD-H-C1	08/09/06	Ch-a (mg/m^3)		9.8		15:05	
BPGD-H-C1	08/29/06	Ch-a (mg/m^3)		28		16:55	
BPGD-H-C1	09/13/06	Ch-a (mg/m^3)		0.5	U	14:30	
BPGD-H-C1	09/26/06	Ch-a (mg/m^3)		20		16:00	
BPGD-H-C1	10/06/05	Dissolved Phosphorus (mg/L)		0.23		17:50	
BPGD-H-C1	11/01/05	Dissolved Phosphorus (mg/L)		0.11		9:53	
BPGD-H-C1	04/12/06	Dissolved Phosphorus (mg/L)		0.067		11:03	
BPGD-H-C1	04/26/06	Dissolved Phosphorus (mg/L)		0.062		17:20	
BPGD-H-C1	05/08/06	Dissolved Phosphorus (mg/L)		0.029	B	16:20	
BPGD-H-C1	05/23/06	Dissolved Phosphorus (mg/L)		0.068		15:55	
BPGD-H-C1	06/06/06	Dissolved Phosphorus (mg/L)		0.029	B	15:45	
BPGD-H-C1	06/19/06	Dissolved Phosphorus (mg/L)		0.11		16:25	
BPGD-H-C1	07/12/06	Dissolved Phosphorus (mg/L)		0.14		15:40	
BPGD-H-C1	07/25/06	Dissolved Phosphorus (mg/L)		0.2		14:15	
BPGD-H-C1	08/09/06	Dissolved Phosphorus (mg/L)		0.23		15:05	
BPGD-H-C1	08/29/06	Dissolved Phosphorus (mg/L)		0.099		16:55	
BPGD-H-C1	09/13/06	Dissolved Phosphorus (mg/L)		0.18		14:30	
BPGD-H-C1	09/26/06	Dissolved Phosphorus (mg/L)		0.57		16:00	
BPGD-H-C1	10/06/05	DO (mg/L)		7.64		17:50	
BPGD-H-C1	11/01/05	DO (mg/L)		9.5		9:53	
BPGD-H-C1	04/12/06	DO (mg/L)		8.92		11:03	
BPGD-H-C1	04/26/06	DO (mg/L)		10.65		17:20	
BPGD-H-C1	05/08/06	DO (mg/L)		9.97		16:20	
BPGD-H-C1	05/23/06	DO (mg/L)		11.28		15:55	
BPGD-H-C1	06/06/06	DO (mg/L)		12.39		15:45	
BPGD-H-C1	06/19/06	DO (mg/L)		8.33		16:25	
BPGD-H-C1	07/12/06	DO (mg/L)		8.82		15:40	
BPGD-H-C1	07/25/06	DO (mg/L)		6.82		14:15	
BPGD-H-C1	08/09/06	DO (mg/L)		8.1		15:05	
BPGD-H-C1	08/29/06	DO (mg/L)		7.72		16:55	
BPGD-H-C1	09/26/06	DO (mg/L)		5.82		16:00	
BPGD-H-C1	10/06/05	Flow		< 0.5		17:50	
BPGD-H-C1	11/01/05	Flow		1.6		9:53	
BPGD-H-C1	04/12/06	Flow		<0.1		11:03	
BPGD-H-C1	04/26/06	Flow		0.17		17:20	
BPGD-H-C1	05/08/06	Flow		0.07		16:20	
BPGD-H-C1	05/23/06	Flow		0.1		15:55	
BPGD-H-C1	06/06/06	Flow		0.1		15:45	
BPGD-H-C1	06/19/06	Flow		0.1		16:25	
BPGD-H-C1	07/12/06	Flow		0.1		15:40	
BPGD-H-C1	07/25/06	Flow		0		14:15	
BPGD-H-C1	08/09/06	Flow		< 0.1		15:05	
BPGD-H-C1	08/29/06	Flow		0		16:55	
BPGD-H-C1	09/26/06	Flow		< 0.1		16:00	
BPGD-H-C1	10/06/05	pH		7.78		17:50	
BPGD-H-C1	11/01/05	pH		7.6		9:53	
BPGD-H-C1	04/12/06	pH		8.2		11:03	
BPGD-H-C1	04/26/06	pH		8.37		17:20	
BPGD-H-C1	05/08/06	pH		8.06		16:20	
BPGD-H-C1	05/23/06	pH		8.49		15:55	
BPGD-H-C1	06/06/06	pH		7.55		15:45	
BPGD-H-C1	06/19/06	pH		7.96		16:25	
BPGD-H-C1	07/12/06	pH		7.92		15:40	
BPGD-H-C1	07/25/06	pH		8.6		14:15	
BPGD-H-C1	08/09/06	pH		7.86		15:05	
BPGD-H-C1	08/29/06	pH		8.56		16:55	
BPGD-H-C1	09/26/06	pH		5.93		16:00	
BPGD-H-C1	10/06/05	Spec. Cond. (uS/cm)		0.93		17:50	
BPGD-H-C1	11/01/05	Spec. Cond. (uS/cm)		0.47		9:53	
BPGD-H-C1	04/12/06	Spec. Cond. (uS/cm)		0.505		11:03	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPGD-H-C1	04/26/06	Spec. Cond. (uS/cm)		0.461		17:20	
BPGD-H-C1	05/08/06	Spec. Cond. (uS/cm)		0.449		16:20	
BPGD-H-C1	05/23/06	Spec. Cond. (uS/cm)		0.428		15:55	
BPGD-H-C1	06/06/06	Spec. Cond. (uS/cm)		0.401		15:45	
BPGD-H-C1	06/19/06	Spec. Cond. (uS/cm)		0.568		16:25	
BPGD-H-C1	07/12/06	Spec. Cond. (uS/cm)		0.543		15:40	
BPGD-H-C1	07/25/06	Spec. Cond. (uS/cm)		0.645		14:15	
BPGD-H-C1	08/09/06	Spec. Cond. (uS/cm)		0.674		15:05	
BPGD-H-C1	08/29/06	Spec. Cond. (uS/cm)		0.46		16:55	
BPGD-H-C1	09/26/06	Spec. Cond. (uS/cm)		1.26		16:00	
BPGD-H-C1	10/06/05	TKN (mg/L)		1.5		17:50	
BPGD-H-C1	11/01/05	TKN (mg/L)		1.2		9:53	
BPGD-H-C1	04/12/06	TKN (mg/L)		0.87		11:03	
BPGD-H-C1	04/26/06	TKN (mg/L)		0.88		17:20	
BPGD-H-C1	05/08/06	TKN (mg/L)		0.97		16:20	
BPGD-H-C1	05/23/06	TKN (mg/L)		0.85		15:55	
BPGD-H-C1	06/06/06	TKN (mg/L)		0.74		15:45	
BPGD-H-C1	06/19/06	TKN (mg/L)		0.89		16:25	
BPGD-H-C1	07/12/06	TKN (mg/L)		1.2		15:40	
BPGD-H-C1	07/25/06	TKN (mg/L)		1.6		14:15	
BPGD-H-C1	08/09/06	TKN (mg/L)		1.9		15:05	
BPGD-H-C1	08/29/06	TKN (mg/L)		1.8		16:55	
BPGD-H-C1	09/13/06	TKN (mg/L)		1		14:30	
BPGD-H-C1	09/26/06	TKN (mg/L)		2.4		16:00	
BPGD-H-C1	10/06/05	Total Nitrate + Nitrite (mg/L)		0.025	K	17:50	
BPGD-H-C1	11/01/05	Total Nitrate + Nitrite (mg/L)		5.8		9:53	
BPGD-H-C1	04/12/06	Total Nitrate + Nitrite (mg/L)		10		11:03	
BPGD-H-C1	04/26/06	Total Nitrate + Nitrite (mg/L)		14		17:20	
BPGD-H-C1	05/08/06	Total Nitrate + Nitrite (mg/L)		14		16:20	
BPGD-H-C1	05/23/06	Total Nitrate + Nitrite (mg/L)		14		15:55	
BPGD-H-C1	06/06/06	Total Nitrate + Nitrite (mg/L)		19		15:45	
BPGD-H-C1	06/19/06	Total Nitrate + Nitrite (mg/L)		12		16:25	
BPGD-H-C1	07/12/06	Total Nitrate + Nitrite (mg/L)		8.6		15:40	
BPGD-H-C1	07/25/06	Total Nitrate + Nitrite (mg/L)		1.6		14:15	
BPGD-H-C1	08/09/06	Total Nitrate + Nitrite (mg/L)		0.061	B	15:05	
BPGD-H-C1	08/29/06	Total Nitrate + Nitrite (mg/L)		0.063	B	16:55	
BPGD-H-C1	09/13/06	Total Nitrate + Nitrite (mg/L)		0.69		14:30	
BPGD-H-C1	09/26/06	Total Nitrate + Nitrite (mg/L)		0.025	U	16:00	
BPGD-H-C1	10/06/05	TP (mg/L)		0.4		17:50	
BPGD-H-C1	11/01/05	TP (mg/L)		0.17		9:53	
BPGD-H-C1	04/12/06	TP (mg/L)		0.077		11:03	
BPGD-H-C1	04/26/06	TP (mg/L)		0.089		17:20	
BPGD-H-C1	05/08/06	TP (mg/L)		0.064		16:20	
BPGD-H-C1	05/23/06	TP (mg/L)		0.099		15:55	
BPGD-H-C1	06/06/06	TP (mg/L)		0.056		15:45	
BPGD-H-C1	06/19/06	TP (mg/L)		0.14		16:25	
BPGD-H-C1	07/12/06	TP (mg/L)		0.16		15:40	
BPGD-H-C1	07/25/06	TP (mg/L)		0.46		14:15	
BPGD-H-C1	08/09/06	TP (mg/L)		0.76		15:05	
BPGD-H-C1	08/29/06	TP (mg/L)		0.36		16:55	
BPGD-H-C1	08/29/06	TP (mg/L)		300		16:55	
BPGD-H-C1	09/13/06	TP (mg/L)		0.33		14:30	
BPGD-H-C1	09/26/06	TP (mg/L)		0.8		16:00	
BPGD-H-C1	10/06/05	Turbidity (NTU)		2.3		17:50	
BPGD-H-C1	11/01/05	Turbidity (NTU)		7.7		9:53	
BPGD-H-C1	04/12/06	Turbidity (NTU)		5		11:03	
BPGD-H-C1	04/26/06	Turbidity (NTU)		7.3		17:20	
BPGD-H-C1	05/08/06	Turbidity (NTU)		12.3		16:20	
BPGD-H-C1	05/23/06	Turbidity (NTU)		58.6		15:55	
BPGD-H-C1	06/06/06	Turbidity (NTU)		4.7		15:45	
BPGD-H-C1	06/19/06	Turbidity (NTU)		0.3		16:25	
BPGD-H-C1	07/12/06	Turbidity (NTU)		10		15:40	
BPGD-H-C1	07/25/06	Turbidity (NTU)		10		14:15	
BPGD-H-C1	08/09/06	Turbidity (NTU)		-10		15:05	
BPGD-H-C1	08/29/06	Turbidity (NTU)		-10		16:55	
BPGD-H-C1	09/26/06	Turbidity (NTU)		10.7		16:00	
BPGD-H-C1	10/06/05	Water Temp (F)		19.4		17:50	
BPGD-H-C1	11/01/05	Water Temp (F)		12		9:53	
BPGD-H-C1	04/12/06	Water Temp (F)		16.6		11:03	
BPGD-H-C1	04/26/06	Water Temp (F)		16.4		17:20	
BPGD-H-C1	05/08/06	Water Temp (F)		20		16:20	
BPGD-H-C1	05/23/06	Water Temp (F)		22.4		15:55	
BPGD-H-C1	06/06/06	Water Temp (F)		18.5		15:45	
BPGD-H-C1	06/19/06	Water Temp (F)		25.6		16:25	
BPGD-H-C1	07/12/06	Water Temp (F)		25.3		15:40	
BPGD-H-C1	07/25/06	Water Temp (F)		30.5		14:15	
BPGD-H-C1	08/09/06	Water Temp (F)		27.2		15:05	
BPGD-H-C1	08/29/06	Water Temp (F)		20.3		16:55	
BPGD-H-C1	09/26/06	Water Temp (F)		24		16:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPGD-H-C1 (DUP)	08/09/06	BOD (mL/L)		4		15:05	
BPGD-H-C1 (DUP)	08/29/06	BOD (mL/L)		5		16:55	
BPGD-H-C1 (DUP)	08/09/06	Ch-a (mg/m^3)		21		15:05	
BPGD-H-C1 (DUP)	08/29/06	Ch-a (mg/m^3)		23		16:55	
BPGD-H-C1 (DUP)	08/09/06	Dissolved Phosphorus (mg/L)		0.24		15:05	
BPGD-H-C1 (DUP)	08/29/06	Dissolved Phosphorus (mg/L)		0.12		16:55	
BPGD-H-C1 (DUP)	08/09/06	TKN (mg/L)		2.5		15:05	
BPGD-H-C1 (DUP)	08/29/06	TKN (mg/L)		1.3		16:55	
BPGD-H-C1 (DUP)	08/09/06	Total Nitrate + Nitrite (mg/L)		0.035	B	15:05	
BPGD-H-C1 (DUP)	08/29/06	Total Nitrate + Nitrite (mg/L)		0.061	B	16:55	
BPGD-H-C1 (DUP)	08/09/06	TP (mg/L)		1		15:05	
BPGD-H-C1 (DUP)	08/29/06	TP (mg/L)		0.25		16:55	
BPGD-H-C1 (SED)	07/25/06	TP (mg/L)		270		14:15	
BPJ-03	05/09/06	Ammonia (mg/L)		0.13	U	12:55	
BPJ-03	05/25/06	Ammonia (mg/L)		0.13	U	12:20	
BPJ-03	06/08/06	Ammonia (mg/L)		0.13	U	13:05	
BPJ-03	06/21/06	Ammonia (mg/L)		0.13	U	12:30	
BPJ-03	07/11/06	Ammonia (mg/L)		0.22		13:30	
BPJ-03	07/26/06	Ammonia (mg/L)		0.13	U	12:15	
BPJ-03	08/10/06	Ammonia (mg/L)		0.13	U	12:15	
BPJ-03	08/31/06	Ammonia (mg/L)		0.13	U	12:45	
BPJ-03	09/14/06	Ammonia (mg/L)		0.13	U	12:30	
BPJ-03	09/28/06	Ammonia (mg/L)		0.13	U	11:50	
BPJ-03	10/12/06	Ammonia (mg/L)		0.13	U	12:00	
BPJ-03	05/09/06	BOD (mL/L)		2	U	12:55	
BPJ-03	05/25/06	BOD (mL/L)		2	U	12:20	
BPJ-03	06/08/06	BOD (mL/L)		2	U	13:05	
BPJ-03	06/21/06	BOD (mL/L)		2	U	12:30	
BPJ-03	07/11/06	BOD (mL/L)		3		13:30	
BPJ-03	07/26/06	BOD (mL/L)		2	U	12:15	
BPJ-03	08/10/06	BOD (mL/L)		2	U	12:15	
BPJ-03	08/31/06	BOD (mL/L)		2	U	12:45	
BPJ-03	09/14/06	BOD (mL/L)		2	U	12:30	
BPJ-03	09/28/06	BOD (mL/L)		6		11:50	
BPJ-03	10/12/06	BOD (mL/L)		2	U	12:00	
BPJ-03	08/31/06	Ch-a (mg/m^3)		0.5	U	12:45	
BPJ-03	05/09/06	Dissolved Phosphorus (mg/L)		0.16		12:55	
BPJ-03	05/25/06	Dissolved Phosphorus (mg/L)		0.19		12:20	
BPJ-03	06/08/06	Dissolved Phosphorus (mg/L)		0.17		13:05	
BPJ-03	06/21/06	Dissolved Phosphorus (mg/L)		0.24		12:30	
BPJ-03	07/11/06	Dissolved Phosphorus (mg/L)		0.24		13:30	
BPJ-03	07/26/06	Dissolved Phosphorus (mg/L)		0.34		12:15	
BPJ-03	08/10/06	Dissolved Phosphorus (mg/L)		0.49		12:15	
BPJ-03	08/31/06	Dissolved Phosphorus (mg/L)		0.54		12:45	
BPJ-03	09/14/06	Dissolved Phosphorus (mg/L)		0.66		12:30	
BPJ-03	09/28/06	Dissolved Phosphorus (mg/L)		1		11:50	
BPJ-03	10/12/06	Dissolved Phosphorus (mg/L)		0.5		12:00	
BPJ-03	05/09/06	DO (mg/L)		10.91		12:55	
BPJ-03	05/25/06	DO (mg/L)		12.48		12:20	
BPJ-03	06/08/06	DO (mg/L)		9.75		13:05	
BPJ-03	06/21/06	DO (mg/L)		9.13		12:30	
BPJ-03	07/11/06	DO (mg/L)		4.56		13:30	
BPJ-03	07/26/06	DO (mg/L)		8.26		12:15	
BPJ-03	08/10/06	DO (mg/L)		8.75		12:15	
BPJ-03	08/31/06	DO (mg/L)		9.62		12:45	
BPJ-03	09/28/06	DO (mg/L)		8.53		11:50	
BPJ-03	10/12/06	DO (mg/L)		8.15		12:00	
BPJ-03	10/24/06	DO (mg/L)		11.18		11:45	
BPJ-03	05/18/99	Fecal Coliform (#/100 mL)		900		10:30	IEPA Data, to be included in Stage 3
BPJ-03	06/21/99	Fecal Coliform (#/100 mL)		70		10:45	IEPA Data, to be included in Stage 3
BPJ-03	08/12/99	Fecal Coliform (#/100 mL)		50		9:15	IEPA Data, to be included in Stage 3
BPJ-03	06/01/00	Fecal Coliform (#/100 mL)		290		8:30	IEPA Data, to be included in Stage 3
BPJ-03	07/17/00	Fecal Coliform (#/100 mL)		100		11:00	IEPA Data, to be included in Stage 3
BPJ-03	08/15/00	Fecal Coliform (#/100 mL)		700		10:15	IEPA Data, to be included in Stage 3
BPJ-03	10/30/00	Fecal Coliform (#/100 mL)		10		10:15	IEPA Data, to be included in Stage 3
BPJ-03	05/02/01	Fecal Coliform (#/100 mL)		20		10:30	IEPA Data, to be included in Stage 3
BPJ-03	05/29/01	Fecal Coliform (#/100 mL)		60		10:00	IEPA Data, to be included in Stage 3
BPJ-03	07/19/01	Fecal Coliform (#/100 mL)		30		9:30	IEPA Data, to be included in Stage 3
BPJ-03	08/20/01	Fecal Coliform (#/100 mL)		150		10:00	IEPA Data, to be included in Stage 3
BPJ-03	10/24/01	Fecal Coliform (#/100 mL)		690		10:00	IEPA Data, to be included in Stage 3
BPJ-03	05/08/02	Fecal Coliform (#/100 mL)		1200		10:30	IEPA Data, to be included in Stage 3
BPJ-03	06/13/02	Fecal Coliform (#/100 mL)		3400		10:30	IEPA Data, to be included in Stage 3
BPJ-03	07/22/02	Fecal Coliform (#/100 mL)		50		10:00	IEPA Data, to be included in Stage 3
BPJ-03	09/04/02	Fecal Coliform (#/100 mL)		160		10:30	IEPA Data, to be included in Stage 3
BPJ-03	10/08/02	Fecal Coliform (#/100 mL)		39		10:00	IEPA Data, to be included in Stage 3
BPJ-03	04/01/03	Fecal Coliform (#/100 mL)		10		10:00	IEPA Data, to be included in Stage 3
BPJ-03	05/06/03	Fecal Coliform (#/100 mL)		2000		10:00	IEPA Data, to be included in Stage 3
BPJ-03	06/18/03	Fecal Coliform (#/100 mL)		230		10:30	IEPA Data, to be included in Stage 3
BPJ-03	07/30/03	Fecal Coliform (#/100 mL)		170		10:30	IEPA Data, to be included in Stage 3

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJ-03	09/04/03	Fecal Coliform (#/100 mL)		500		10:00	IEPA Data, to be included in Stage 3
BPJ-03	10/23/03	Fecal Coliform (#/100 mL)		60		10:00	IEPA Data, to be included in Stage 3
BPJ-03	05/18/04	Fecal Coliform (#/100 mL)		330			IEPA Data, to be included in Stage 3
BPJ-03	06/28/04	Fecal Coliform (#/100 mL)		3400			IEPA Data, to be included in Stage 3
BPJ-03	08/10/04	Fecal Coliform (#/100 mL)		220			IEPA Data, to be included in Stage 3
BPJ-03	09/14/04	Fecal Coliform (#/100 mL)		280			IEPA Data, to be included in Stage 3
BPJ-03	10/19/04	Fecal Coliform (#/100 mL)		210			IEPA Data, to be included in Stage 3
BPJ-03	06/29/05	Fecal Coliform (#/100 mL)		210		10:30	IEPA Data, to be included in Stage 3
BPJ-03	08/24/05	Fecal Coliform (#/100 mL)		340		9:15	IEPA Data, to be included in Stage 3
BPJ-03	09/13/05	Fecal Coliform (#/100 mL)		145		10:30	IEPA Data, to be included in Stage 3
BPJ-03	05/09/06	Fecal Coliform (#/100 mL)		38000		12:55	
BPJ-03	05/16/06	Fecal Coliform (#/100 mL)		280			IEPA Data, to be included in Stage 3
BPJ-03	05/25/06	Fecal Coliform (#/100 mL)		99		12:20	
BPJ-03	5/25/2006	Fecal Coliform (#/100 mL)		63		12:20	
BPJ-03	06/08/06	Fecal Coliform (#/100 mL)		350		13:05	
BPJ-03	06/21/06	Fecal Coliform (#/100 mL)		380		12:30	
BPJ-03	06/21/06	Fecal Coliform (#/100 mL)		280		12:30	
BPJ-03	07/10/06	Fecal Coliform (#/100 mL)		300		13:30	IEPA Data, to be included in Stage 3
BPJ-03	07/11/06	Fecal Coliform (#/100 mL)		8700		13:30	
BPJ-03	07/26/06	Fecal Coliform (#/100 mL)		27		12:15	
BPJ-03	08/10/06	Fecal Coliform (#/100 mL)		1200		12:15	
BPJ-03	08/29/06	Fecal Coliform (#/100 mL)		520			IEPA Data, to be included in Stage 3
BPJ-03	08/31/06	Fecal Coliform (#/100 mL)		81		12:45	
BPJ-03	09/14/06	Fecal Coliform (#/100 mL)		340		12:30	
BPJ-03	09/21/06	Fecal Coliform (#/100 mL)		135			IEPA Data, to be included in Stage 3
BPJ-03	10/12/06	Fecal Coliform (#/100 mL)		81		12:00	
BPJ-03	10/24/06	Fecal Coliform (#/100 mL)		86		11:45	IEPA Data, to be included in Stage 3
BPJ-03	10/25/06	Fecal Coliform (#/100 mL)		117		11:45	
BPJ-03	05/09/06	Flow		0.1		12:55	
BPJ-03	05/25/06	Flow		22.57		12:20	
BPJ-03	06/08/06	Flow		18.85		13:05	
BPJ-03	06/21/06	Flow		19		12:30	
BPJ-03	07/11/06	Flow		16.24		13:30	
BPJ-03	07/26/06	Flow		29.1		12:15	
BPJ-03	08/10/06	Flow		17		12:15	
BPJ-03	08/31/06	Flow		0.17		12:45	
BPJ-03	09/28/06	Flow		0		11:50	
BPJ-03	10/12/06	Flow		< 0.1		12:00	
BPJ-03	05/09/06	pH		8.4		12:55	
BPJ-03	05/25/06	pH		8.63		12:20	
BPJ-03	06/08/06	pH		8.27		13:05	
BPJ-03	06/21/06	pH		8.13		12:30	
BPJ-03	07/11/06	pH		8.38		13:30	
BPJ-03	07/26/06	pH		8.21		12:15	
BPJ-03	08/10/06	pH		8.16		12:15	
BPJ-03	08/31/06	pH		8.7		12:45	
BPJ-03	09/28/06	pH		8.71		11:50	
BPJ-03	10/12/06	pH		10.05		12:00	
BPJ-03	10/24/06	pH		8.44		11:45	
BPJ-03	05/09/06	Spec. Cond. (uS/cm)		0.443		12:55	
BPJ-03	05/25/06	Spec. Cond. (uS/cm)		0.448		12:20	
BPJ-03	06/08/06	Spec. Cond. (uS/cm)		0.419		13:05	
BPJ-03	06/21/06	Spec. Cond. (uS/cm)		0.499		12:30	
BPJ-03	07/11/06	Spec. Cond. (uS/cm)		0.374		13:30	
BPJ-03	07/26/06	Spec. Cond. (uS/cm)		0.519		12:15	
BPJ-03	08/10/06	Spec. Cond. (uS/cm)		.505-10		12:15	
BPJ-03	08/31/06	Spec. Cond. (uS/cm)		0.369		12:45	
BPJ-03	09/28/06	Spec. Cond. (uS/cm)		0.592		11:50	
BPJ-03	10/12/06	Spec. Cond. (uS/cm)		0.578		12:00	
BPJ-03	10/24/06	Spec. Cond. (uS/cm)		0.546		11:45	
BPJ-03	05/09/06	TKN (mg/L)		0.66		12:55	
BPJ-03	05/25/06	TKN (mg/L)		1.1		12:20	
BPJ-03	06/08/06	TKN (mg/L)		0.65		13:05	
BPJ-03	06/21/06	TKN (mg/L)		0.98		12:30	
BPJ-03	07/11/06	TKN (mg/L)		1.5		13:30	
BPJ-03	07/26/06	TKN (mg/L)		0.7		12:15	
BPJ-03	08/10/06	TKN (mg/L)		0.72		12:15	
BPJ-03	08/31/06	TKN (mg/L)		0.69		12:45	
BPJ-03	09/14/06	TKN (mg/L)		1.1		12:30	
BPJ-03	09/28/06	TKN (mg/L)		0.72		11:50	
BPJ-03	10/12/06	TKN (mg/L)		0.88		12:00	
BPJ-03	05/09/06	Total Nitrate + Nitrite (mg/L)		11		12:55	
BPJ-03	05/25/06	Total Nitrate + Nitrite (mg/L)		11		12:20	
BPJ-03	06/08/06	Total Nitrate + Nitrite (mg/L)		14		13:05	
BPJ-03	06/21/06	Total Nitrate + Nitrite (mg/L)		12		12:30	
BPJ-03	07/11/06	Total Nitrate + Nitrite (mg/L)		4.9		13:30	
BPJ-03	07/26/06	Total Nitrate + Nitrite (mg/L)		6.5		12:15	
BPJ-03	08/10/06	Total Nitrate + Nitrite (mg/L)		5.2		12:15	
BPJ-03	08/31/06	Total Nitrate + Nitrite (mg/L)		2.2		12:45	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJ-03	09/14/06	Total Nitrate + Nitrite (mg/L)		5.9		12:30	
BPJ-03	09/28/06	Total Nitrate + Nitrite (mg/L)		5.6		11:50	
BPJ-03	10/12/06	Total Nitrate + Nitrite (mg/L)		4.5		12:00	
BPJ-03	05/09/06	TP (mg/L)		0.18		12:55	
BPJ-03	05/25/06	TP (mg/L)		0.18		12:20	
BPJ-03	06/08/06	TP (mg/L)		0.22		13:05	
BPJ-03	06/21/06	TP (mg/L)		0.3		12:30	
BPJ-03	07/11/06	TP (mg/L)		0.3		13:30	
BPJ-03	07/26/06	TP (mg/L)		0.33		12:15	
BPJ-03	08/10/06	TP (mg/L)		0.42		12:15	
BPJ-03	08/31/06	TP (mg/L)		0.55		12:45	
BPJ-03	09/14/06	TP (mg/L)		0.76		12:30	
BPJ-03	09/28/06	TP (mg/L)		0.93		11:50	
BPJ-03	10/12/06	TP (mg/L)		0.55		12:00	
BPJ-03	05/09/06	TSS (mg/L)		8.5		12:55	
BPJ-03	05/25/06	TSS (mg/L)		18		12:20	
BPJ-03	06/08/06	TSS (mg/L)		34		13:05	
BPJ-03	06/21/06	TSS (mg/L)		41		12:30	
BPJ-03	07/11/06	TSS (mg/L)		320		13:30	
BPJ-03	07/26/06	TSS (mg/L)		9		12:15	
BPJ-03	08/10/06	TSS (mg/L)		18		12:15	
BPJ-03	08/31/06	TSS (mg/L)		16		12:45	
BPJ-03	09/14/06	TSS (mg/L)		14		12:30	
BPJ-03	09/28/06	TSS (mg/L)		5		11:50	
BPJ-03	10/12/06	TSS (mg/L)		2.5	B	12:00	
BPJ-03	05/09/06	Turbidity (NTU)		7		12:55	
BPJ-03	05/25/06	Turbidity (NTU)		15		12:20	
BPJ-03	06/08/06	Turbidity (NTU)		52		13:05	
BPJ-03	06/21/06	Turbidity (NTU)		83.7		12:30	
BPJ-03	07/11/06	Turbidity (NTU)		459		13:30	
BPJ-03	07/26/06	Turbidity (NTU)		10		12:15	
BPJ-03	08/10/06	Turbidity (NTU)		-10		12:15	
BPJ-03	08/31/06	Turbidity (NTU)		-10		12:45	
BPJ-03	09/28/06	Turbidity (NTU)		9		11:50	
BPJ-03	10/12/06	Turbidity (NTU)		5		12:00	
BPJ-03	10/24/06	Turbidity (NTU)		3		11:45	
BPJ-03	05/09/06	Water Temp (F)		18.5		12:55	
BPJ-03	05/25/06	Water Temp (F)		21.5		12:20	
BPJ-03	06/08/06	Water Temp (F)		23.7		13:05	
BPJ-03	06/21/06	Water Temp (F)		26		12:30	
BPJ-03	07/11/06	Water Temp (F)		24.1		13:30	
BPJ-03	07/26/06	Water Temp (F)		25.6		12:15	
BPJ-03	08/10/06	Water Temp (F)		24.5		12:15	
BPJ-03	08/31/06	Water Temp (F)		22.77		12:45	
BPJ-03	09/28/06	Water Temp (F)		15.7		11:50	
BPJ-03	10/12/06	Water Temp (F)		10.4		12:00	
BPJ-03	10/24/06	Water Temp (F)		8.5		11:45	
BPJ-08	09/14/06	Ammonia (mg/L)		0.13	U	11:10	
BPJ-08	11/01/05	BOD (mL/L)		2		11:15	
BPJ-08	05/25/06	BOD (mL/L)		2	U	11:40	
BPJ-08	06/06/06	BOD (mL/L)		2	U	14:25	
BPJ-08	06/21/06	BOD (mL/L)		2	U	11:10	
BPJ-08	07/11/06	BOD (mL/L)		2	U	12:10	
BPJ-08	07/26/06	BOD (mL/L)		2	U	11:10	
BPJ-08	08/10/06	BOD (mL/L)		2	U	11:30	
BPJ-08	08/31/06	BOD (mL/L)		2	U	11:20	
BPJ-08	09/14/06	BOD (mL/L)		2	U	11:10	
BPJ-08	09/28/06	BOD (mL/L)		2	U	11:15	
BPJ-08	10/06/05	Ch-a (mg/m^3)		2.7		15:05	
BPJ-08	11/01/05	Ch-a (mg/m^3)		0.5		11:15	
BPJ-08	06/06/06	Ch-a (mg/m^3)		0.5	U	14:25	
BPJ-08	06/21/06	Ch-a (mg/m^3)		0.5	U	11:10	
BPJ-08	07/11/06	Ch-a (mg/m^3)		0.5	U	12:10	
BPJ-08	07/26/06	Ch-a (mg/m^3)		0.5	U	11:10	
BPJ-08	08/10/06	Ch-a (mg/m^3)		0.5	U	11:30	
BPJ-08	08/31/06	Ch-a (mg/m^3)		0.5	U	11:20	
BPJ-08	09/14/06	Ch-a (mg/m^3)		0.5	U	11:10	
BPJ-08	09/28/06	Ch-a (mg/m^3)		5.3		11:15	
BPJ-08	10/06/05	Dissolved Phosphorus (mg/L)		0.7		15:05	
BPJ-08	11/01/05	Dissolved Phosphorus (mg/L)		0.9		11:15	
BPJ-08	05/25/06	Dissolved Phosphorus (mg/L)		0.25		11:40	
BPJ-08	06/06/06	Dissolved Phosphorus (mg/L)		0.17		14:25	
BPJ-08	06/21/06	Dissolved Phosphorus (mg/L)		0.59		11:10	
BPJ-08	07/11/06	Dissolved Phosphorus (mg/L)		0.32		12:10	
BPJ-08	07/26/06	Dissolved Phosphorus (mg/L)		0.38		11:10	
BPJ-08	08/10/06	Dissolved Phosphorus (mg/L)		0.51		11:30	
BPJ-08	08/31/06	Dissolved Phosphorus (mg/L)		0.62		11:20	
BPJ-08	09/14/06	Dissolved Phosphorus (mg/L)		1.1		11:10	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJ-08	09/28/06	Dissolved Phosphorus (mg/L)		1.2		11:15	
BPJ-08	10/06/05	DO (mg/L)		9.28		15:05	
BPJ-08	11/01/05	DO (mg/L)		11		11:15	
BPJ-08	05/25/06	DO (mg/L)		12.66		11:40	
BPJ-08	06/06/06	DO (mg/L)		10.95		14:25	
BPJ-08	06/21/06	DO (mg/L)		9.68		11:10	
BPJ-08	07/11/06	DO (mg/L)		9.98		12:10	
BPJ-08	07/26/06	DO (mg/L)		8.01		11:10	
BPJ-08	08/10/06	DO (mg/L)		7.81		11:30	
BPJ-08	08/31/06	DO (mg/L)		9.4		11:20	
BPJ-08	09/28/06	DO (mg/L)		8.59		11:15	
BPJ-08	10/24/06	DO (mg/L)		11.82		10:45	
BPJ-08	06/21/06	Fecal Coliform (#/100 mL)		420		11:10	
BPJ-08	07/11/06	Fecal Coliform (#/100 mL)		8400		12:10	
BPJ-08	07/26/06	Fecal Coliform (#/100 mL)		81		11:10	
BPJ-08	08/10/06	Fecal Coliform (#/100 mL)		410		11:30	
BPJ-08	08/31/06	Fecal Coliform (#/100 mL)		99		11:20	
BPJ-08	09/14/06	Fecal Coliform (#/100 mL)		410		11:10	
BPJ-08	10/12/06	Fecal Coliform (#/100 mL)		45		11:13	
BPJ-08	10/12/06	Fecal Coliform (#/100 mL)		99		11:13	
BPJ-08	10/26/06	Fecal Coliform (#/100 mL)		162			
BPJ-08	10/06/05	Flow		2.87		15:05	
BPJ-08	11/01/05	Flow		0.33		11:15	
BPJ-08	05/25/06	Flow		10		11:40	
BPJ-08	06/06/06	Flow		0.83		14:25	
BPJ-08	06/21/06	Flow		0.83		11:10	
BPJ-08	07/11/06	Flow		0.9		12:10	
BPJ-08	07/26/06	Flow		0.43		11:10	
BPJ-08	08/10/06	Flow		8.3		11:30	
BPJ-08	08/31/06	Flow		0.36		11:20	
BPJ-08	09/14/06	Flow		0.23		11:10	
BPJ-08	09/28/06	Flow		0.17		11:15	
BPJ-08	10/06/05	pH		8.44		15:05	
BPJ-08	11/01/05	pH		8.1		11:15	
BPJ-08	05/09/06	pH		8.13		11:30	
BPJ-08	05/25/06	pH		8.49		11:40	
BPJ-08	06/06/06	pH		8.25		14:25	
BPJ-08	06/21/06	pH		8.34		11:10	
BPJ-08	07/11/06	pH		8.2		12:10	
BPJ-08	07/26/06	pH		8.16		11:10	
BPJ-08	08/10/06	pH		8.1		11:30	
BPJ-08	08/31/06	pH		8.58		11:20	
BPJ-08	09/28/06	pH		8.56		11:15	
BPJ-08	10/12/06	pH		9.57		11:13	
BPJ-08	10/24/06	pH		7.88		10:45	
BPJ-08	10/06/05	Spec. Cond. (uS/cm)		0.723		15:05	
BPJ-08	11/01/05	Spec. Cond. (uS/cm)		0.55		11:15	
BPJ-08	05/25/06	Spec. Cond. (uS/cm)		0.443		11:40	
BPJ-08	06/06/06	Spec. Cond. (uS/cm)		0.407		14:25	
BPJ-08	06/21/06	Spec. Cond. (uS/cm)		0.511		11:10	
BPJ-08	07/11/06	Spec. Cond. (uS/cm)		0.47		12:10	
BPJ-08	07/26/06	Spec. Cond. (uS/cm)		0.531		11:10	
BPJ-08	08/10/06	Spec. Cond. (uS/cm)		0.516		11:30	
BPJ-08	08/31/06	Spec. Cond. (uS/cm)		0.38		11:20	
BPJ-08	09/28/06	Spec. Cond. (uS/cm)		0.572		11:15	
BPJ-08	10/24/06	Spec. Cond. (uS/cm)		0.587		10:45	
BPJ-08	10/06/05	TKN (mg/L)		0.74		15:05	
BPJ-08	11/01/05	TKN (mg/L)		0.8		11:15	
BPJ-08	05/25/06	TKN (mg/L)		0.85		11:40	
BPJ-08	06/06/06	TKN (mg/L)		0.9		14:25	
BPJ-08	06/21/06	TKN (mg/L)		1.1		11:10	
BPJ-08	07/11/06	TKN (mg/L)		1		12:10	
BPJ-08	07/26/06	TKN (mg/L)		0.63		11:10	
BPJ-08	08/10/06	TKN (mg/L)		0.86		11:30	
BPJ-08	08/31/06	TKN (mg/L)		0.65		11:20	
BPJ-08	09/14/06	TKN (mg/L)		0.96		11:10	
BPJ-08	09/28/06	TKN (mg/L)		0.76		11:15	
BPJ-08	10/06/05	Total Nitrate + Nitrite (mg/L)		5.2		15:05	
BPJ-08	11/01/05	Total Nitrate + Nitrite (mg/L)		5.2		11:15	
BPJ-08	05/25/06	Total Nitrate + Nitrite (mg/L)		11		11:40	
BPJ-08	06/06/06	Total Nitrate + Nitrite (mg/L)		16		14:25	
BPJ-08	06/21/06	Total Nitrate + Nitrite (mg/L)		13		11:10	
BPJ-08	07/11/06	Total Nitrate + Nitrite (mg/L)		6.4		12:10	
BPJ-08	07/26/06	Total Nitrate + Nitrite (mg/L)		6.7		11:10	
BPJ-08	08/10/06	Total Nitrate + Nitrite (mg/L)		5.5		11:30	
BPJ-08	08/31/06	Total Nitrate + Nitrite (mg/L)		2.9		11:20	
BPJ-08	09/14/06	Total Nitrate + Nitrite (mg/L)		6.4		11:10	
BPJ-08	09/28/06	Total Nitrate + Nitrite (mg/L)		5.7		11:15	
BPJ-08	10/06/05	TP (mg/L)		0.82		15:05	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJ-08	11/01/05	TP (mg/L)		1		11:15	
BPJ-08	05/25/06	TP (mg/L)		0.32		11:40	
BPJ-08	06/06/06	TP (mg/L)		0.23		14:25	
BPJ-08	06/21/06	TP (mg/L)		0.3		11:10	
BPJ-08	07/11/06	TP (mg/L)		0.45		12:10	
BPJ-08	07/26/06	TP (mg/L)		0.4		11:10	
BPJ-08	08/10/06	TP (mg/L)		0.6		11:30	
BPJ-08	08/31/06	TP (mg/L)		0.65		11:20	
BPJ-08	09/14/06	TP (mg/L)		1		11:10	
BPJ-08	09/28/06	TP (mg/L)		1		11:15	
BPJ-08	10/06/05	TSS (mg/L)		value		15:05	
BPJ-08	09/14/06	TSS (mg/L)		10		11:10	
BPJ-08	10/06/05	Turbidity (NTU)		2		15:05	
BPJ-08	11/01/05	Turbidity (NTU)		1		11:15	
BPJ-08	05/25/06	Turbidity (NTU)		19.3		11:40	
BPJ-08	06/06/06	Turbidity (NTU)		63		14:25	
BPJ-08	06/21/06	Turbidity (NTU)		31.6		11:10	
BPJ-08	07/11/06	Turbidity (NTU)		95		12:10	
BPJ-08	07/26/06	Turbidity (NTU)		0		11:10	
BPJ-08	08/31/06	Turbidity (NTU)		-10		11:20	
BPJ-08	09/28/06	Turbidity (NTU)		8.3		11:15	
BPJ-08	10/24/06	Turbidity (NTU)		6		10:45	
BPJ-08	10/06/05	Water Temp (F)		20.57		15:05	
BPJ-08	11/01/05	Water Temp (F)		11		11:15	
BPJ-08	05/25/06	Water Temp (F)		21.3		11:40	
BPJ-08	06/06/06	Water Temp (F)		22.1		14:25	
BPJ-08	06/21/06	Water Temp (F)		24.2		11:10	
BPJ-08	07/11/06	Water Temp (F)		24.7		12:10	
BPJ-08	07/26/06	Water Temp (F)		25.4		11:10	
BPJ-08	08/10/06	Water Temp (F)		24.2		11:30	
BPJ-08	08/31/06	Water Temp (F)		22.3		11:20	
BPJ-08	09/28/06	Water Temp (F)		15.8		11:15	
BPJ-08	10/24/06	Water Temp (F)		7.63		10:45	
BPJ-08 (DUP)	09/14/06	Ammonia (mg/L)		0.13	U	11:20	
BPJ-08 (DUP)	11/1/2005	BOD (mL/L)		2		11:15	
BPJ-08 (DUP)	08/31/06	BOD (mL/L)		2	U	11:20	
BPJ-08 (DUP)	09/14/06	BOD (mL/L)		2	U	11:20	
BPJ-08 (DUP)	09/28/06	BOD (mL/L)		2	U	11:15	
BPJ-08 (DUP)	11/1/2005	Ch-a (mg/m^3)		4.5		11:15	
BPJ-08 (DUP)	08/31/06	Ch-a (mg/m^3)		0.5	U	11:20	
BPJ-08 (DUP)	09/14/06	Ch-a (mg/m^3)		0.5	U	11:20	
BPJ-08 (DUP)	09/28/06	Ch-a (mg/m^3)		2.7		11:15	
BPJ-08 (DUP)	11/1/2005	Dissolved Phosphorus (mg/L)		0.92		11:15	
BPJ-08 (DUP)	08/31/06	Dissolved Phosphorus (mg/L)		0.6		11:20	
BPJ-08 (DUP)	09/14/06	Dissolved Phosphorus (mg/L)		0.99		11:20	
BPJ-08 (DUP)	09/28/06	Dissolved Phosphorus (mg/L)		0.91		11:15	
BPJ-08 (DUP)	11/1/2005	DO (mg/L)		11		11:15	
BPJ-08 (DUP)	10/24/06	Fecal Coliform (#/100 mL)		207		10:45	
BPJ-08 (DUP)	11/1/2005	pH		8.1		11:15	
BPJ-08 (DUP)	11/1/2005	Spec. Cond. (uS/cm)		0.55		11:15	
BPJ-08 (DUP)	11/1/2005	TKN (mg/L)		0.81		11:15	
BPJ-08 (DUP)	08/31/06	TKN (mg/L)		0.59		11:20	
BPJ-08 (DUP)	09/14/06	TKN (mg/L)		0.92		11:20	
BPJ-08 (DUP)	09/28/06	TKN (mg/L)		0.51		11:15	
BPJ-08 (DUP)	11/1/2005	Total Nitrate + Nitrite (mg/L)		5.2		11:15	
BPJ-08 (DUP)	08/31/06	Total Nitrate + Nitrite (mg/L)		2.8		11:20	
BPJ-08 (DUP)	09/14/06	Total Nitrate + Nitrite (mg/L)		6.2		11:20	
BPJ-08 (DUP)	09/28/06	Total Nitrate + Nitrite (mg/L)		5.5		11:15	
BPJ-08 (DUP)	11/1/2005	TP (mg/L)		0.92		11:15	
BPJ-08 (DUP)	08/31/06	TP (mg/L)		0.63		11:20	
BPJ-08 (DUP)	09/14/06	TP (mg/L)		0.98		11:20	
BPJ-08 (DUP)	09/28/06	TP (mg/L)		1.1		11:15	
BPJ-08 (DUP)	09/14/06	TSS (mg/L)		11		11:20	
BPJ-08 (DUP)	11/1/2005	Water Temp (F)		11		11:15	
BPJ-10	05/08/06	Ammonia (mg/L)		0.13	U	13:50	
BPJ-10	05/23/06	Ammonia (mg/L)		0.13	U	14:17	
BPJ-10	06/08/06	Ammonia (mg/L)		0.16	B	11:15	
BPJ-10	06/19/06	Ammonia (mg/L)		0.21		14:05	
BPJ-10	07/12/06	Ammonia (mg/L)		0.15	B	13:10	
BPJ-10	07/25/06	Ammonia (mg/L)		0.22		13:00	
BPJ-10	08/09/06	Ammonia (mg/L)		0.13	U	13:30	
BPJ-10	08/30/06	Ammonia (mg/L)		0.14	B	13:30	
BPJ-10	09/13/06	Ammonia (mg/L)		0.13	U	13:15	
BPJ-10	09/27/06	Ammonia (mg/L)		0.13	U	12:30	
BPJ-10	10/12/06	Ammonia (mg/L)		0.15	B	12:30	
BPJ-10	05/08/06	BOD (mL/L)		2	U	13:50	
BPJ-10	05/23/06	BOD (mL/L)		2	U	14:17	
BPJ-10	06/08/06	BOD (mL/L)		2	U	11:15	
BPJ-10	06/19/06	BOD (mL/L)		2		14:05	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJ-10	07/12/06	BOD (mL/L)		2	U	13:10	
BPJ-10	07/25/06	BOD (mL/L)		2	U	13:00	
BPJ-10	08/09/06	BOD (mL/L)		2	U	13:30	
BPJ-10	08/30/06	BOD (mL/L)		2	U	13:30	
BPJ-10	09/13/06	BOD (mL/L)		2	U	13:15	
BPJ-10	09/27/06	BOD (mL/L)		2	U	12:30	
BPJ-10	10/12/06	BOD (mL/L)		2	U	12:30	
BPJ-10	05/08/06	Ch-a (mg/m^3)		0.89		13:50	
BPJ-10	05/23/06	Ch-a (mg/m^3)		0.5	U	14:17	
BPJ-10	08/30/06	Ch-a (mg/m^3)		0.5	U	13:30	
BPJ-10	05/08/06	Dissolved Phosphorus (mg/L)		0.22		13:50	
BPJ-10	05/23/06	Dissolved Phosphorus (mg/L)		0.33		14:17	
BPJ-10	06/08/06	Dissolved Phosphorus (mg/L)		0.26		11:15	
BPJ-10	06/19/06	Dissolved Phosphorus (mg/L)		0.38		14:05	
BPJ-10	07/12/06	Dissolved Phosphorus (mg/L)		0.45		13:10	
BPJ-10	07/25/06	Dissolved Phosphorus (mg/L)		0.45		13:00	
BPJ-10	08/09/06	Dissolved Phosphorus (mg/L)		0.56		13:30	
BPJ-10	08/30/06	Dissolved Phosphorus (mg/L)		0.48		13:30	
BPJ-10	09/13/06	Dissolved Phosphorus (mg/L)		1.4		13:15	
BPJ-10	09/27/06	Dissolved Phosphorus (mg/L)		1.3		12:30	
BPJ-10	10/12/06	Dissolved Phosphorus (mg/L)		1.2		12:30	
BPJ-10	05/08/06	DO (mg/L)		10.81		13:50	
BPJ-10	05/23/06	DO (mg/L)		12.28		14:17	
BPJ-10	06/08/06	DO (mg/L)		10.22		11:15	
BPJ-10	06/19/06	DO (mg/L)		10.28		14:05	
BPJ-10	07/12/06	DO (mg/L)		9.36		13:10	
BPJ-10	07/25/06	DO (mg/L)		7.31		13:00	
BPJ-10	08/09/06	DO (mg/L)		8.7		13:30	
BPJ-10	08/30/06	DO (mg/L)		9.12		13:30	
BPJ-10	09/27/06	DO (mg/L)		9.58		12:30	
BPJ-10	10/12/06	DO (mg/L)		8.46		12:30	
BPJ-10	10/24/06	DO (mg/L)		10.95		12:20	
BPJ-10	05/08/06	Flow		0.43		13:50	
BPJ-10	05/23/06	Flow		0.37		14:17	
BPJ-10	06/08/06	Flow		0.267		11:15	
BPJ-10	06/19/06	Flow		0.4		14:05	
BPJ-10	07/12/06	Flow		23.7		13:10	
BPJ-10	08/09/06	Flow		29.7		13:30	
BPJ-10	08/30/06	Flow		14.3		13:30	
BPJ-10	09/13/06	Flow		< 0.1		13:15	
BPJ-10	09/27/06	Flow		30.5		12:30	
BPJ-10	10/12/06	Flow		< 0.1		12:30	
BPJ-10	05/08/06	pH		8.17		13:50	
BPJ-10	05/23/06	pH		8.44		14:17	
BPJ-10	06/08/06	pH		7.85		11:15	
BPJ-10	06/19/06	pH		8.82		14:05	
BPJ-10	07/12/06	pH		7.94		13:10	
BPJ-10	07/25/06	pH		7.95		13:00	
BPJ-10	08/09/06	pH		8.04		13:30	
BPJ-10	08/30/06	pH		8.44		13:30	
BPJ-10	09/27/06	pH		8.4		12:30	
BPJ-10	10/12/06	pH		9.9		12:30	
BPJ-10	10/24/06	pH		8.43		12:20	
BPJ-10	05/08/06	Spec. Cond. (uS/cm)		0.43		13:50	
BPJ-10	05/23/06	Spec. Cond. (uS/cm)		0.47		14:17	
BPJ-10	06/08/06	Spec. Cond. (uS/cm)		0.443		11:15	
BPJ-10	06/19/06	Spec. Cond. (uS/cm)		0.429		14:05	
BPJ-10	07/12/06	Spec. Cond. (uS/cm)		0.41		13:10	
BPJ-10	07/25/06	Spec. Cond. (uS/cm)		0.551		13:00	
BPJ-10	08/09/06	Spec. Cond. (uS/cm)		0.517		13:30	
BPJ-10	08/30/06	Spec. Cond. (uS/cm)		0.434		13:30	
BPJ-10	09/27/06	Spec. Cond. (uS/cm)		0.636		12:30	
BPJ-10	10/12/06	Spec. Cond. (uS/cm)		0.61		12:30	
BPJ-10	10/24/06	Spec. Cond. (uS/cm)		0.512		12:20	
BPJ-10	05/08/06	TKN (mg/L)		0.72		13:50	
BPJ-10	05/23/06	TKN (mg/L)		0.88		14:17	
BPJ-10	06/08/06	TKN (mg/L)		0.68		11:15	
BPJ-10	06/19/06	TKN (mg/L)		1.1		14:05	
BPJ-10	07/12/06	TKN (mg/L)		1.1		13:10	
BPJ-10	07/25/06	TKN (mg/L)		0.9		13:00	
BPJ-10	08/09/06	TKN (mg/L)		0.85		13:30	
BPJ-10	08/30/06	TKN (mg/L)		0.68		13:30	
BPJ-10	09/13/06	TKN (mg/L)		0.72		13:15	
BPJ-10	09/27/06	TKN (mg/L)		0.86		12:30	
BPJ-10	10/12/06	TKN (mg/L)		0.86		12:30	
BPJ-10	05/08/06	Total Nitrate + Nitrite (mg/L)		12		13:50	
BPJ-10	05/23/06	Total Nitrate + Nitrite (mg/L)		11		14:17	
BPJ-10	06/08/06	Total Nitrate + Nitrite (mg/L)		12		11:15	
BPJ-10	06/19/06	Total Nitrate + Nitrite (mg/L)		13		14:05	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJ-10	07/12/06	Total Nitrate + Nitrite (mg/L)		5.6		13:10	
BPJ-10	07/25/06	Total Nitrate + Nitrite (mg/L)		6.1		13:00	
BPJ-10	08/09/06	Total Nitrate + Nitrite (mg/L)		5.5		13:30	
BPJ-10	08/30/06	Total Nitrate + Nitrite (mg/L)		3.1		13:30	
BPJ-10	09/13/06	Total Nitrate + Nitrite (mg/L)		7.8		13:15	
BPJ-10	09/27/06	Total Nitrate + Nitrite (mg/L)		5.9		12:30	
BPJ-10	10/12/06	Total Nitrate + Nitrite (mg/L)		6.5		12:30	
BPJ-10	05/08/06	TP (mg/L)		0.08		13:50	
BPJ-10	05/23/06	TP (mg/L)		0.39		14:17	
BPJ-10	06/08/06	TP (mg/L)		0.36		11:15	
BPJ-10	06/19/06	TP (mg/L)		0.48		14:05	
BPJ-10	07/12/06	TP (mg/L)		0.52		13:10	
BPJ-10	07/25/06	TP (mg/L)		0.52		13:00	
BPJ-10	08/09/06	TP (mg/L)		0.66		13:30	
BPJ-10	08/30/06	TP (mg/L)		0.64		13:30	
BPJ-10	09/13/06	TP (mg/L)		1.1		13:15	
BPJ-10	09/27/06	TP (mg/L)		1.5		12:30	
BPJ-10	10/12/06	TP (mg/L)		1.1		12:30	
BPJ-10	05/23/06	TSS (mg/L)		18		14:17	
BPJ-10	06/08/06	TSS (mg/L)		40		11:15	
BPJ-10	06/19/06	TSS (mg/L)		120		14:05	
BPJ-10	07/12/06	TSS (mg/L)		66		13:10	
BPJ-10	07/25/06	TSS (mg/L)		17		13:00	
BPJ-10	08/09/06	TSS (mg/L)		25		13:30	
BPJ-10	08/30/06	TSS (mg/L)		24		13:30	
BPJ-10	09/13/06	TSS (mg/L)		16		13:15	
BPJ-10	09/27/06	TSS (mg/L)		8		12:30	
BPJ-10	10/12/06	TSS (mg/L)		2.5	B	12:30	
BPJ-10	05/08/06	Turbidity (NTU)		58.3*		13:50	
BPJ-10	05/23/06	Turbidity (NTU)		13.7		14:17	
BPJ-10	06/08/06	Turbidity (NTU)		67.7*		11:15	
BPJ-10	06/19/06	Turbidity (NTU)		93.3		14:05	
BPJ-10	07/12/06	Turbidity (NTU)		31.7		13:10	
BPJ-10	07/25/06	Turbidity (NTU)		71.3*		13:00	
BPJ-10	08/09/06	Turbidity (NTU)		-10		13:30	
BPJ-10	08/30/06	Turbidity (NTU)		-10		13:30	
BPJ-10	09/27/06	Turbidity (NTU)		15		12:30	
BPJ-10	10/12/06	Turbidity (NTU)		6.3		12:30	
BPJ-10	10/24/06	Turbidity (NTU)		7.33		12:20	
BPJ-10	05/08/06	Water Temp (F)		18.2		13:50	
BPJ-10	05/23/06	Water Temp (F)		18.83		14:17	
BPJ-10	06/08/06	Water Temp (F)		21.4		11:15	
BPJ-10	06/19/06	Water Temp (F)		23.8		14:05	
BPJ-10	07/12/06	Water Temp (F)		24.6		13:10	
BPJ-10	07/25/06	Water Temp (F)		26.7		13:00	
BPJ-10	08/09/06	Water Temp (F)		24.8		13:30	
BPJ-10	08/30/06	Water Temp (F)		22.2		13:30	
BPJ-10	09/27/06	Water Temp (F)		17.3		12:30	
BPJ-10	10/12/06	Water Temp (F)		10.09		12:30	
BPJ-10	10/24/06	Water Temp (F)		7.6		12:20	
BPJ-16	05/25/06	Ammonia (mg/L)		0.13	U	10:45	
BPJ-16	06/08/06	Ammonia (mg/L)		0.13	U	12:15	
BPJ-16	06/21/06	Ammonia (mg/L)		0.13	U	10:00	
BPJ-16	07/11/06	Ammonia (mg/L)		0.19	B	10:55	
BPJ-16	07/26/06	Ammonia (mg/L)		0.19	B	11:10	
BPJ-16	08/10/06	Ammonia (mg/L)		0.13	U	10:15	
BPJ-16	08/31/06	Ammonia (mg/L)		0.13	U	10:30	
BPJ-16	09/14/06	Ammonia (mg/L)		0.13	U	10:35	
BPJ-16	09/28/06	Ammonia (mg/L)		0.13	U	10:10	
BPJ-16	10/12/06	Ammonia (mg/L)		0.13	U	10:25	
BPJ-16	05/25/06	BOD (mL/L)		2	U	10:45	
BPJ-16	06/08/06	BOD (mL/L)		2	U	12:15	
BPJ-16	06/21/06	BOD (mL/L)		2	U	10:00	
BPJ-16	07/11/06	BOD (mL/L)		2	U	10:55	
BPJ-16	07/26/06	BOD (mL/L)		2	U	11:10	
BPJ-16	08/10/06	BOD (mL/L)		2	U	10:15	
BPJ-16	08/31/06	BOD (mL/L)		2	U	10:30	
BPJ-16	09/14/06	BOD (mL/L)		2	U	10:35	
BPJ-16	09/28/06	BOD (mL/L)		2	U	10:10	
BPJ-16	10/12/06	BOD (mL/L)		2	U	10:25	
BPJ-16	08/31/06	Ch-a (mg/m^3)		0.5	U	10:30	
BPJ-16	05/25/06	Dissolved Phosphorus (mg/L)		0.22		10:45	
BPJ-16	06/08/06	Dissolved Phosphorus (mg/L)		0.2		12:15	
BPJ-16	06/21/06	Dissolved Phosphorus (mg/L)		0.26		10:00	
BPJ-16	07/11/06	Dissolved Phosphorus (mg/L)		0.3		10:55	
BPJ-16	07/26/06	Dissolved Phosphorus (mg/L)		0.42		11:10	
BPJ-16	08/10/06	Dissolved Phosphorus (mg/L)		0.62		10:15	
BPJ-16	08/31/06	Dissolved Phosphorus (mg/L)		0.54		10:30	
BPJ-16	09/14/06	Dissolved Phosphorus (mg/L)		1.1		10:35	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJ-16	09/28/06	Dissolved Phosphorus (mg/L)		0.9		10:10	
BPJ-16	10/12/06	Dissolved Phosphorus (mg/L)		1.5		10:25	
BPJ-16	05/25/06	DO (mg/L)		13.01		10:45	
BPJ-16	06/08/06	DO (mg/L)		9.58		12:15	
BPJ-16	06/21/06	DO (mg/L)		10.37		10:00	
BPJ-16	07/11/06	DO (mg/L)		9.13		10:55	
BPJ-16	07/26/06	DO (mg/L)		7.96		11:10	
BPJ-16	08/10/06	DO (mg/L)		8.64		10:15	
BPJ-16	08/31/06	DO (mg/L)		8.69		10:30	
BPJ-16	09/28/06	DO (mg/L)		8.68		10:10	
BPJ-16	10/12/06	DO (mg/L)		8.97		10:25	
BPJ-16	10/24/06	DO (mg/L)		12.36			
BPJ-16	05/25/06	Fecal Coliform (#/100 mL)		72		10:45	
BPJ-16	06/08/06	Fecal Coliform (#/100 mL)		280		12:15	
BPJ-16	05/25/06	Flow		37.98		10:45	
BPJ-16	06/08/06	Flow		20.77		12:15	
BPJ-16	06/21/06	Flow		34.7		10:00	
BPJ-16	07/11/06	Flow		32.8		10:55	
BPJ-16	07/26/06	Flow		64.4		11:10	
BPJ-16	08/10/06	Flow		23		10:15	
BPJ-16	08/31/06	Flow		33.6		10:30	
BPJ-16	09/14/06	Flow		58.3		10:35	
BPJ-16	09/28/06	Flow		39.5		10:10	
BPJ-16	10/12/06	Flow		72		10:25	
BPJ-16	05/25/06	pH		8.45		10:45	
BPJ-16	06/08/06	pH		8.22		12:15	
BPJ-16	06/21/06	pH		9.05		10:00	
BPJ-16	07/11/06	pH		7.53		10:55	
BPJ-16	07/26/06	pH		8.03		11:10	
BPJ-16	08/10/06	pH		7.9		10:15	
BPJ-16	08/31/06	pH		8.61		10:30	
BPJ-16	09/28/06	pH		8.44		10:10	
BPJ-16	10/12/06	pH		8.79		10:25	
BPJ-16	10/24/06	pH		8.01			
BPJ-16	05/25/06	Spec. Cond. (uS/cm)		0.445		10:45	
BPJ-16	06/08/06	Spec. Cond. (uS/cm)		0.424		12:15	
BPJ-16	06/21/06	Spec. Cond. (uS/cm)		0.5		10:00	
BPJ-16	07/11/06	Spec. Cond. (uS/cm)		0.406		10:55	
BPJ-16	07/26/06	Spec. Cond. (uS/cm)		0.553		11:10	
BPJ-16	08/10/06	Spec. Cond. (uS/cm)		0.541		10:15	
BPJ-16	08/31/06	Spec. Cond. (uS/cm)		0.419		10:30	
BPJ-16	09/28/06	Spec. Cond. (uS/cm)		0.624		10:10	
BPJ-16	10/12/06	Spec. Cond. (uS/cm)		0.639		10:25	
BPJ-16	10/24/06	Spec. Cond. (uS/cm)		0.584			
BPJ-16	05/25/06	TKN (mg/L)		0.68		10:45	
BPJ-16	06/08/06	TKN (mg/L)		0.7		12:15	
BPJ-16	06/21/06	TKN (mg/L)		1		10:00	
BPJ-16	07/11/06	TKN (mg/L)		1.2		10:55	
BPJ-16	07/26/06	TKN (mg/L)		0.5		11:10	
BPJ-16	08/10/06	TKN (mg/L)		0.65		10:15	
BPJ-16	08/31/06	TKN (mg/L)		0.69		10:30	
BPJ-16	09/14/06	TKN (mg/L)		1		10:35	
BPJ-16	09/28/06	TKN (mg/L)		0.77		10:10	
BPJ-16	10/12/06	TKN (mg/L)		0.93		10:25	
BPJ-16	05/25/06	Total Nitrate + Nitrite (mg/L)		12		10:45	
BPJ-16	06/08/06	Total Nitrate + Nitrite (mg/L)		14		12:15	
BPJ-16	06/21/06	Total Nitrate + Nitrite (mg/L)		13		10:00	
BPJ-16	07/11/06	Total Nitrate + Nitrite (mg/L)		5		10:55	
BPJ-16	07/26/06	Total Nitrate + Nitrite (mg/L)		6.2		11:10	
BPJ-16	08/10/06	Total Nitrate + Nitrite (mg/L)		5.7		10:15	
BPJ-16	08/31/06	Total Nitrate + Nitrite (mg/L)		3.3		10:30	
BPJ-16	09/14/06	Total Nitrate + Nitrite (mg/L)		7.6		10:35	
BPJ-16	09/28/06	Total Nitrate + Nitrite (mg/L)		6.1		10:10	
BPJ-16	10/12/06	Total Nitrate + Nitrite (mg/L)		5.7		10:25	
BPJ-16	05/25/06	TP (mg/L)		0.29		10:45	
BPJ-16	06/08/06	TP (mg/L)		0.28		12:15	
BPJ-16	06/21/06	TP (mg/L)		0.38		10:00	
BPJ-16	07/11/06	TP (mg/L)		0.32		10:55	
BPJ-16	07/26/06	TP (mg/L)		0.45		11:10	
BPJ-16	08/10/06	TP (mg/L)		0.63		10:15	
BPJ-16	08/31/06	TP (mg/L)		0.6		10:30	
BPJ-16	09/14/06	TP (mg/L)		1.3		10:35	
BPJ-16	09/28/06	TP (mg/L)		0.86		10:10	
BPJ-16	10/12/06	TP (mg/L)		1.8		10:25	
BPJ-16	05/25/06	TSS (mg/L)		26		10:45	
BPJ-16	06/08/06	TSS (mg/L)		41		12:15	
BPJ-16	06/21/06	TSS (mg/L)		38		10:00	
BPJ-16	07/11/06	TSS (mg/L)		220		10:55	
BPJ-16	07/26/06	TSS (mg/L)		7.5		11:10	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJ-16	08/10/06	TSS (mg/L)		36		10:15	
BPJ-16	08/31/06	TSS (mg/L)		16		10:30	
BPJ-16	09/14/06	TSS (mg/L)		12		10:35	
BPJ-16	09/28/06	TSS (mg/L)		5		10:10	
BPJ-16	10/12/06	TSS (mg/L)		2.5	B	10:25	
BPJ-16	05/25/06	Turbidity (NTU)		70?		10:45	
BPJ-16	06/08/06	Turbidity (NTU)		363?		12:15	
BPJ-16	06/21/06	Turbidity (NTU)		34.6		10:00	
BPJ-16	07/11/06	Turbidity (NTU)		261.7		10:55	
BPJ-16	07/26/06	Turbidity (NTU)		10		11:10	
BPJ-16	08/10/06	Turbidity (NTU)		-10		10:15	
BPJ-16	08/31/06	Turbidity (NTU)		-10		10:30	
BPJ-16	09/28/06	Turbidity (NTU)		90.7		10:10	
BPJ-16	10/12/06	Turbidity (NTU)		4.67		10:25	
BPJ-16	10/24/06	Turbidity (NTU)		10			
BPJ-16	05/25/06	Water Temp (F)		20.7		10:45	
BPJ-16	06/08/06	Water Temp (F)		22.9		12:15	
BPJ-16	06/21/06	Water Temp (F)		23.8		10:00	
BPJ-16	07/11/06	Water Temp (F)		24		10:55	
BPJ-16	07/26/06	Water Temp (F)		25		11:10	
BPJ-16	08/10/06	Water Temp (F)		24.6		10:15	
BPJ-16	08/31/06	Water Temp (F)		21.5		10:30	
BPJ-16	09/28/06	Water Temp (F)		14.9		10:10	
BPJ-16	10/12/06	Water Temp (F)		9.53		10:25	
BPJ-16	10/24/06	Water Temp (F)		7.47			
BPJ-16 (DUP)	06/21/06	Ammonia (mg/L)		0.13	U	10:00	
BPJ-16 (DUP)	08/10/06	Ammonia (mg/L)		0.13	U	10:15	
BPJ-16 (DUP)	09/14/06	Ammonia (mg/L)		0.13	U	10:35	
BPJ-16 (DUP)	10/12/06	Ammonia (mg/L)		0.13	U	10:25	
BPJ-16 (DUP)	06/21/06	BOD (mL/L)		2	U	10:00	
BPJ-16 (DUP)	08/10/06	BOD (mL/L)		2	U	10:15	
BPJ-16 (DUP)	09/14/06	BOD (mL/L)		2	U	10:35	
BPJ-16 (DUP)	10/12/06	BOD (mL/L)		2	U	10:25	
BPJ-16 (DUP)	06/21/06	Dissolved Phosphorus (mg/L)		0.27		10:00	
BPJ-16 (DUP)	08/10/06	Dissolved Phosphorus (mg/L)		0.61		10:15	
BPJ-16 (DUP)	09/14/06	Dissolved Phosphorus (mg/L)		1.2		10:35	
BPJ-16 (DUP)	10/12/06	Dissolved Phosphorus (mg/L)		0.6		10:25	
BPJ-16 (DUP)	06/21/06	TKN (mg/L)		1		10:00	
BPJ-16 (DUP)	08/10/06	TKN (mg/L)		0.67		10:15	
BPJ-16 (DUP)	09/14/06	TKN (mg/L)		1.8		10:35	
BPJ-16 (DUP)	10/12/06	TKN (mg/L)		0.8		10:25	
BPJ-16 (DUP)	06/21/06	Total Nitrate + Nitrite (mg/L)		13		10:00	
BPJ-16 (DUP)	08/10/06	Total Nitrate + Nitrite (mg/L)		5.5		10:15	
BPJ-16 (DUP)	09/14/06	Total Nitrate + Nitrite (mg/L)		7.7		10:35	
BPJ-16 (DUP)	10/12/06	Total Nitrate + Nitrite (mg/L)		5.8		10:25	
BPJ-16 (DUP)	06/21/06	TP (mg/L)		0.34		10:00	
BPJ-16 (DUP)	08/10/06	TP (mg/L)		0.6		10:15	
BPJ-16 (DUP)	09/14/06	TP (mg/L)		1.4		10:35	
BPJ-16 (DUP)	10/12/06	TP (mg/L)		0.62		10:25	
BPJ-16 (DUP)	06/21/06	TSS (mg/L)		40		10:00	
BPJ-16 (DUP)	08/10/06	TSS (mg/L)		37		10:15	
BPJ-16 (DUP)	09/14/06	TSS (mg/L)		10		10:35	
BPJ-16 (DUP)	10/12/06	TSS (mg/L)		2.5	B	10:25	
BPJA-03	05/25/06	Ammonia (mg/L)		0.13	U	13:00	
BPJA-03	06/08/06	Ammonia (mg/L)		0.13	U	13:50	
BPJA-03	06/21/06	Ammonia (mg/L)		0.13	U	11:55	
BPJA-03	07/11/06	Ammonia (mg/L)		0.62		13:00	
BPJA-03	07/26/06	Ammonia (mg/L)		0.13	U	11:45	
BPJA-03	08/10/06	Ammonia (mg/L)		0.13	U	10:56	
BPJA-03	08/31/06	Ammonia (mg/L)		0.13	U	12:15	
BPJA-03	09/14/06	Ammonia (mg/L)		0.13	U	11:45	
BPJA-03	09/28/06	Ammonia (mg/L)		0.34		11:50	
BPJA-03	10/12/06	Ammonia (mg/L)		0.13	U	10:25	
BPJA-03	05/25/06	BOD (mL/L)		2	U	13:00	
BPJA-03	06/08/06	BOD (mL/L)		2	U	13:50	
BPJA-03	06/21/06	BOD (mL/L)		2	U	11:55	
BPJA-03	07/11/06	BOD (mL/L)		4		13:00	
BPJA-03	07/26/06	BOD (mL/L)		2	U	11:45	
BPJA-03	08/10/06	BOD (mL/L)		2	U	10:56	
BPJA-03	08/31/06	BOD (mL/L)		2	U	12:15	
BPJA-03	09/14/06	BOD (mL/L)		2	U	11:45	
BPJA-03	09/28/06	BOD (mL/L)		2	U	11:50	
BPJA-03	10/12/06	BOD (mL/L)		2	U	10:25	
BPJA-03	08/31/06	Ch-a (mg/m^3)		0.5	U	12:15	
BPJA-03	09/14/06	Ch-a (mg/m^3)		0.5	U	11:45	
BPJA-03	05/25/06	Dissolved Phosphorus (mg/L)		0.013	B	13:00	
BPJA-03	06/08/06	Dissolved Phosphorus (mg/L)		0.011	U	13:50	
BPJA-03	06/21/06	Dissolved Phosphorus (mg/L)		0.042	B	11:55	
BPJA-03	07/11/06	Dissolved Phosphorus (mg/L)		0.2		13:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJA-03	07/26/06	Dissolved Phosphorus (mg/L)		0.053		11:45	
BPJA-03	08/10/06	Dissolved Phosphorus (mg/L)		0.047	B	10:56	
BPJA-03	08/31/06	Dissolved Phosphorus (mg/L)		0.052		12:15	
BPJA-03	09/14/06	Dissolved Phosphorus (mg/L)		0.057		11:45	
BPJA-03	09/28/06	Dissolved Phosphorus (mg/L)		0.02	B	11:50	
BPJA-03	10/12/06	Dissolved Phosphorus (mg/L)		0.041	B	10:25	
BPJA-03	05/25/06	DO (mg/L)		13.6		13:00	
BPJA-03	06/08/06	DO (mg/L)		10.85		13:50	
BPJA-03	06/21/06	DO (mg/L)		9.67		11:55	
BPJA-03	07/11/06	DO (mg/L)		10.8		13:00	
BPJA-03	07/26/06	DO (mg/L)		8.68		11:45	
BPJA-03	08/10/06	DO (mg/L)		8.77		10:56	
BPJA-03	08/31/06	DO (mg/L)		10.35		12:15	
BPJA-03	09/28/06	DO (mg/L)		9.19		11:50	
BPJA-03	10/12/06	DO (mg/L)		9.21		10:25	
BPJA-03	10/24/06	DO (mg/L)		11.71		11:10	
BPJA-03	5/25/2006	Fecal Coliform (#/100 mL)		99		13:00	
BPJA-03	06/08/06	Fecal Coliform (#/100 mL)		176		13:50	
BPJA-03	06/21/06	Fecal Coliform (#/100 mL)		310		11:55	
BPJA-03	7/11/2006	Fecal Coliform (#/100 mL)		7000		13:00	
BPJA-03	7/11/2006	Fecal Coliform (#/100 mL)		29000		13:00	
BPJA-03	07/26/06	Fecal Coliform (#/100 mL)		126		11:45	
BPJA-03	08/10/06	Fecal Coliform (#/100 mL)		710		10:56	
BPJA-03	08/31/06	Fecal Coliform (#/100 mL)		126		12:15	
BPJA-03	09/14/06	Fecal Coliform (#/100 mL)		450		11:45	
BPJA-03	10/12/06	Fecal Coliform (#/100 mL)		250		10:25	
BPJA-03	10/27/06	Fecal Coliform (#/100 mL)		144			
BPJA-03	05/25/06	Flow		0.6		13:00	
BPJA-03	06/08/06	Flow		0.63		13:50	
BPJA-03	06/21/06	Flow		0.57		11:55	
BPJA-03	07/11/06	Flow		0.83		13:00	
BPJA-03	07/26/06	Flow		0.5		11:45	
BPJA-03	08/10/06	Flow		0.57		10:56	
BPJA-03	08/31/06	Flow		0.23		12:15	
BPJA-03	09/14/06	Flow		0.43		11:45	
BPJA-03	09/28/06	Flow		0.17		11:50	
BPJA-03	05/25/06	pH		8.57		13:00	
BPJA-03	06/08/06	pH		8.36		13:50	
BPJA-03	06/21/06	pH		8.2		11:55	
BPJA-03	07/11/06	pH		7.98		13:00	
BPJA-03	07/26/06	pH		8.22		11:45	
BPJA-03	08/10/06	pH		8.16		10:56	
BPJA-03	08/31/06	pH		8.81		12:15	
BPJA-03	09/28/06	pH		8.59		11:50	
BPJA-03	10/12/06	pH		10.09		10:25	
BPJA-03	10/24/06	pH		8.44		11:10	
BPJA-03	05/25/06	Spec. Cond. (uS/cm)		0.44		13:00	
BPJA-03	06/08/06	Spec. Cond. (uS/cm)		0.42		13:50	
BPJA-03	06/21/06	Spec. Cond. (uS/cm)		0.551		11:55	
BPJA-03	07/11/06	Spec. Cond. (uS/cm)		0.198		13:00	
BPJA-03	07/26/06	Spec. Cond. (uS/cm)		0.587		11:45	
BPJA-03	08/10/06	Spec. Cond. (uS/cm)		0.533		10:56	
BPJA-03	08/31/06	Spec. Cond. (uS/cm)		0.578		12:15	
BPJA-03	09/28/06	Spec. Cond. (uS/cm)		0.615		11:50	
BPJA-03	10/12/06	Spec. Cond. (uS/cm)		0.606		10:25	
BPJA-03	10/24/06	Spec. Cond. (uS/cm)		0.566		11:10	
BPJA-03	05/25/06	TKN (mg/L)		1		13:00	
BPJA-03	06/08/06	TKN (mg/L)		0.72		13:50	
BPJA-03	06/21/06	TKN (mg/L)		0.6		11:55	
BPJA-03	07/11/06	TKN (mg/L)		2.9		13:00	
BPJA-03	07/26/06	TKN (mg/L)		0.69		11:45	
BPJA-03	08/10/06	TKN (mg/L)		0.48		10:56	
BPJA-03	08/31/06	TKN (mg/L)		0.53		12:15	
BPJA-03	09/14/06	TKN (mg/L)		1		11:45	
BPJA-03	09/28/06	TKN (mg/L)		0.53		11:50	
BPJA-03	10/12/06	TKN (mg/L)		0.67		10:25	
BPJA-03	05/25/06	Total Nitrate + Nitrite (mg/L)		12		13:00	
BPJA-03	06/08/06	Total Nitrate + Nitrite (mg/L)		12		13:50	
BPJA-03	06/21/06	Total Nitrate + Nitrite (mg/L)		9.4		11:55	
BPJA-03	07/11/06	Total Nitrate + Nitrite (mg/L)		2.1		13:00	
BPJA-03	07/26/06	Total Nitrate + Nitrite (mg/L)		4.2		11:45	
BPJA-03	08/10/06	Total Nitrate + Nitrite (mg/L)		6.1		10:56	
BPJA-03	08/31/06	Total Nitrate + Nitrite (mg/L)		2.9		12:15	
BPJA-03	09/14/06	Total Nitrate + Nitrite (mg/L)		7.9		11:45	
BPJA-03	09/28/06	Total Nitrate + Nitrite (mg/L)		3.4		11:50	
BPJA-03	10/12/06	Total Nitrate + Nitrite (mg/L)		3.8		10:25	
BPJA-03	05/25/06	TP (mg/L)		0.016	B	13:00	
BPJA-03	06/08/06	TP (mg/L)		0.04	B	13:50	
BPJA-03	06/21/06	TP (mg/L)		0.047	B	11:55	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJA-03	07/11/06	TP (mg/L)		0.57		13:00	
BPJA-03	07/26/06	TP (mg/L)		0.074		11:45	
BPJA-03	08/10/06	TP (mg/L)		0.05		10:56	
BPJA-03	08/31/06	TP (mg/L)		0.077		12:15	
BPJA-03	09/14/06	TP (mg/L)		0.086		11:45	
BPJA-03	09/28/06	TP (mg/L)		0.024	B	11:50	
BPJA-03	10/12/06	TP (mg/L)		0.07		10:25	
BPJA-03	05/25/06	TSS (mg/L)		4.5	B	13:00	
BPJA-03	06/08/06	TSS (mg/L)		5.5		13:50	
BPJA-03	06/21/06	TSS (mg/L)		2.5	B	11:55	
BPJA-03	07/11/06	TSS (mg/L)		770		13:00	
BPJA-03	07/26/06	TSS (mg/L)		35		11:45	
BPJA-03	08/10/06	TSS (mg/L)		2	B	10:56	
BPJA-03	08/31/06	TSS (mg/L)		46		12:15	
BPJA-03	09/14/06	TSS (mg/L)		5		11:45	
BPJA-03	09/28/06	TSS (mg/L)		2.5	B	11:50	
BPJA-03	10/12/06	TSS (mg/L)		7.5		10:25	
BPJA-03	05/25/06	Turbidity (NTU)		1		13:00	
BPJA-03	06/08/06	Turbidity (NTU)		1.3		13:50	
BPJA-03	06/21/06	Turbidity (NTU)		0		11:55	
BPJA-03	07/11/06	Turbidity (NTU)		999		13:00	
BPJA-03	07/26/06	Turbidity (NTU)		10		11:45	
BPJA-03	08/10/06	Turbidity (NTU)		10		10:56	
BPJA-03	08/31/06	Turbidity (NTU)		-10		12:15	
BPJA-03	09/28/06	Turbidity (NTU)		1.7		11:50	
BPJA-03	10/12/06	Turbidity (NTU)		7		10:25	
BPJA-03	10/24/06	Turbidity (NTU)		10		11:10	
BPJA-03	05/25/06	Water Temp (F)		20.5		13:00	
BPJA-03	06/08/06	Water Temp (F)		22.1		13:50	
BPJA-03	06/21/06	Water Temp (F)		23.5		11:55	
BPJA-03	07/11/06	Water Temp (F)		23.2		13:00	
BPJA-03	07/26/06	Water Temp (F)		23.3		11:45	
BPJA-03	08/10/06	Water Temp (F)		23.2		10:56	
BPJA-03	08/31/06	Water Temp (F)		21		12:15	
BPJA-03	09/28/06	Water Temp (F)		14.5		11:50	
BPJA-03	10/12/06	Water Temp (F)		9.2		10:25	
BPJA-03	10/24/06	Water Temp (F)		7.9		11:10	
BPJA-03 (DUP)	07/26/06	Ammonia (mg/L)		0.38		11:45	
BPJA-03 (DUP)	08/10/06	Ammonia (mg/L)		0.13	U	10:56	
BPJA-03 (DUP)	08/31/06	Ammonia (mg/L)		0.13	U	12:15	
BPJA-03 (DUP)	09/28/06	Ammonia (mg/L)		0.13	U	11:50	
BPJA-03 (DUP)	07/26/06	BOD (mL/L)		2	U	11:45	
BPJA-03 (DUP)	08/10/06	BOD (mL/L)		2	U	10:56	
BPJA-03 (DUP)	08/31/06	BOD (mL/L)		2	U	12:15	
BPJA-03 (DUP)	09/28/06	BOD (mL/L)		2	U	11:50	
BPJA-03 (DUP)	08/31/06	Ch-a (mg/m^3)		0.5	U	12:15	
BPJA-03 (DUP)	07/26/06	Dissolved Phosphorus (mg/L)		0.061		11:45	
BPJA-03 (DUP)	08/10/06	Dissolved Phosphorus (mg/L)		0.044	B	10:56	
BPJA-03 (DUP)	08/31/06	Dissolved Phosphorus (mg/L)		0.051		12:15	
BPJA-03 (DUP)	09/28/06	Dissolved Phosphorus (mg/L)		0.018	B	11:50	
BPJA-03 (DUP)	07/26/06	TKN (mg/L)		0.15	B	11:45	
BPJA-03 (DUP)	08/10/06	TKN (mg/L)		1.7		10:56	
BPJA-03 (DUP)	08/31/06	TKN (mg/L)		0.74		12:15	
BPJA-03 (DUP)	09/28/06	TKN (mg/L)		0.56		11:50	
BPJA-03 (DUP)	07/26/06	Total Nitrate + Nitrite (mg/L)		4.2		11:45	
BPJA-03 (DUP)	08/10/06	Total Nitrate + Nitrite (mg/L)		6.2		10:56	
BPJA-03 (DUP)	08/31/06	Total Nitrate + Nitrite (mg/L)		3.1		12:15	
BPJA-03 (DUP)	09/28/06	Total Nitrate + Nitrite (mg/L)		3.3		11:50	
BPJA-03 (DUP)	07/26/06	TP (mg/L)		0.094		11:45	
BPJA-03 (DUP)	08/10/06	TP (mg/L)		0.05		10:56	
BPJA-03 (DUP)	08/31/06	TP (mg/L)		0.088		12:15	
BPJA-03 (DUP)	09/28/06	TP (mg/L)		0.029	B	11:50	
BPJA-03 (DUP)	07/26/06	TSS (mg/L)		15		11:45	
BPJA-03 (DUP)	08/10/06	TSS (mg/L)		6.5		10:56	
BPJA-03 (DUP)	08/31/06	TSS (mg/L)		1.1	U	12:15	
BPJA-03 (DUP)	09/28/06	TSS (mg/L)		1.5	B	11:50	
BPJC-08	10/06/05	BOD (mL/L)		2		11:54	
BPJC-08	05/08/06	BOD (mL/L)		2	U	10:35	
BPJC-08	05/09/06	BOD (mL/L)		2	U	11:30	
BPJC-08	05/23/06	BOD (mL/L)		2	U	11:12	
BPJC-08	06/06/06	BOD (mL/L)		2	U	14:25	
BPJC-08	06/19/06	BOD (mL/L)		2	U	11:45	
BPJC-08	07/12/06	BOD (mL/L)		2	U	10:15	
BPJC-08	07/25/06	BOD (mL/L)		2	U	10:00	
BPJC-08	08/09/06	BOD (mL/L)		2	U	10:50	
BPJC-08	08/30/06	BOD (mL/L)		2	U	11:05	
BPJC-08	09/13/06	BOD (mL/L)		2	U	11:10	
BPJC-08	09/27/06	BOD (mL/L)		2	U	10:33	
BPJC-08	10/06/05	Ch-a (mg/m^3)		6.2		11:54	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJC-08	10/31/05	Ch-a (mg/m^3)		NA		15:54	
BPJC-08	05/08/06	Ch-a (mg/m^3)		0.5	U	10:35	
BPJC-08	05/09/06	Ch-a (mg/m^3)		0.5	U	11:30	
BPJC-08	05/23/06	Ch-a (mg/m^3)		0.5	U	11:12	
BPJC-08	06/06/06	Ch-a (mg/m^3)		0.5	U	14:25	
BPJC-08	06/19/06	Ch-a (mg/m^3)		0.5	U	11:45	
BPJC-08	07/25/06	Ch-a (mg/m^3)		3.6		10:00	
BPJC-08	08/09/06	Ch-a (mg/m^3)		8.9		10:50	
BPJC-08	08/30/06	Ch-a (mg/m^3)		0.5	U	11:05	
BPJC-08	09/13/06	Ch-a (mg/m^3)		0.5	U	11:10	
BPJC-08	09/27/06	Ch-a (mg/m^3)		2.7		10:33	
BPJC-08	10/06/05	Dissolved Phosphorus (mg/L)		0.02	B	11:54	
BPJC-08	10/31/05	Dissolved Phosphorus (mg/L)		0.017	B	15:54	
BPJC-08	05/08/06	Dissolved Phosphorus (mg/L)		0.011	U	10:35	
BPJC-08	05/09/06	Dissolved Phosphorus (mg/L)		0.17		11:30	
BPJC-08	05/23/06	Dissolved Phosphorus (mg/L)		0.014	B	11:12	
BPJC-08	06/06/06	Dissolved Phosphorus (mg/L)		0.025	B	14:25	
BPJC-08	06/19/06	Dissolved Phosphorus (mg/L)		0.026	B	11:45	
BPJC-08	07/12/06	Dissolved Phosphorus (mg/L)		0.027	B	10:15	
BPJC-08	07/25/06	Dissolved Phosphorus (mg/L)		0.12		10:00	
BPJC-08	08/09/06	Dissolved Phosphorus (mg/L)		0.039	B	10:50	
BPJC-08	08/30/06	Dissolved Phosphorus (mg/L)		0.075		11:05	
BPJC-08	09/13/06	Dissolved Phosphorus (mg/L)		0.04	B	11:10	
BPJC-08	09/27/06	Dissolved Phosphorus (mg/L)		0.014	B	10:33	
BPJC-08	10/06/05	DO (mg/L)		8.53		11:54	
BPJC-08	10/31/05	DO (mg/L)		10.9		15:54	
BPJC-08	05/08/06	DO (mg/L)		12.16		10:35	
BPJC-08	05/09/06	DO (mg/L)		10.72		11:30	
BPJC-08	05/23/06	DO (mg/L)		10.75		11:12	
BPJC-08	06/06/06	DO (mg/L)		9.96		14:25	
BPJC-08	06/19/06	DO (mg/L)		8.9		11:45	
BPJC-08	07/12/06	DO (mg/L)		8.39		10:15	
BPJC-08	07/25/06	DO (mg/L)		5.83		10:00	
BPJC-08	08/09/06	DO (mg/L)		8.28		10:50	
BPJC-08	08/30/06	DO (mg/L)		9.19		11:05	
BPJC-08	09/27/06	DO (mg/L)		9.47		10:33	
BPJC-08	10/06/05	Flow		0.73		11:54	
BPJC-08	10/31/05	Flow		0.1		15:54	
BPJC-08	05/08/06	Flow		0.43		10:35	
BPJC-08	05/09/06	Flow		1.03		11:30	
BPJC-08	05/23/06	Flow		0.37		11:12	
BPJC-08	06/06/06	Flow		0.13		14:25	
BPJC-08	06/19/06	Flow		0.1		11:45	
BPJC-08	07/12/06	Flow		0		10:15	
BPJC-08	07/25/06	Flow		0		10:00	
BPJC-08	08/09/06	Flow		< 0.1		10:50	
BPJC-08	08/30/06	Flow		0.17		11:05	
BPJC-08	09/13/06	Flow		0.13		11:10	
BPJC-08	10/06/05	pH		8.32		11:54	
BPJC-08	10/31/05	pH		8.3		15:54	
BPJC-08	05/08/06	pH		7.92		10:35	
BPJC-08	05/09/06	pH		8.13		11:30	
BPJC-08	05/23/06	pH		8.15		11:12	
BPJC-08	06/06/06	pH		8.21		14:25	
BPJC-08	06/19/06	pH		8.11		11:45	
BPJC-08	07/12/06	pH		7.88		10:15	
BPJC-08	07/25/06	pH		7.58		10:00	
BPJC-08	08/09/06	pH		8.29		10:50	
BPJC-08	08/30/06	pH		8.5		11:05	
BPJC-08	09/27/06	pH		8.23		10:33	
BPJC-08	10/06/05	Spec. Cond. (uS/cm)		0.666		11:54	
BPJC-08	10/31/05	Spec. Cond. (uS/cm)		0.52		15:54	
BPJC-08	05/08/06	Spec. Cond. (uS/cm)		0.438		10:35	
BPJC-08	05/09/06	Spec. Cond. (uS/cm)		0.455		11:30	
BPJC-08	05/23/06	Spec. Cond. (uS/cm)		0.449		11:12	
BPJC-08	06/06/06	Spec. Cond. (uS/cm)		0.418		14:25	
BPJC-08	06/19/06	Spec. Cond. (uS/cm)		0.524		11:45	
BPJC-08	07/12/06	Spec. Cond. (uS/cm)		0.458		10:15	
BPJC-08	07/25/06	Spec. Cond. (uS/cm)		0.515		10:00	
BPJC-08	08/09/06	Spec. Cond. (uS/cm)		0.44		10:50	
BPJC-08	08/30/06	Spec. Cond. (uS/cm)		0.554		11:05	
BPJC-08	09/27/06	Spec. Cond. (uS/cm)		0.649		10:33	
BPJC-08	10/06/05	TKN (mg/L)		0.44		11:54	
BPJC-08	10/31/05	TKN (mg/L)		0.41		15:54	
BPJC-08	05/08/06	TKN (mg/L)		0.54		10:35	
BPJC-08	05/09/06	TKN (mg/L)		0.59		11:30	
BPJC-08	05/23/06	TKN (mg/L)		0.45		11:12	
BPJC-08	06/06/06	TKN (mg/L)		0.72		14:25	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJC-08	06/19/06	TKN (mg/L)		0.78		11:45	
BPJC-08	07/12/06	TKN (mg/L)		0.51		10:15	
BPJC-08	07/25/06	TKN (mg/L)		0.53		10:00	
BPJC-08	08/09/06	TKN (mg/L)		0.52		10:50	
BPJC-08	08/30/06	TKN (mg/L)		0.68		11:05	
BPJC-08	09/13/06	TKN (mg/L)		0.58		11:10	
BPJC-08	09/27/06	TKN (mg/L)		0.55		10:33	
BPJC-08	10/06/05	Total Nitrate + Nitrite (mg/L)		0.28		11:54	
BPJC-08	10/31/05	Total Nitrate + Nitrite (mg/L)		1.8		15:54	
BPJC-08	05/08/06	Total Nitrate + Nitrite (mg/L)		14		10:35	
BPJC-08	05/09/06	Total Nitrate + Nitrite (mg/L)		11		11:30	
BPJC-08	05/23/06	Total Nitrate + Nitrite (mg/L)		13		11:12	
BPJC-08	06/06/06	Total Nitrate + Nitrite (mg/L)		13		14:25	
BPJC-08	06/19/06	Total Nitrate + Nitrite (mg/L)		9		11:45	
BPJC-08	07/12/06	Total Nitrate + Nitrite (mg/L)		1.3		10:15	
BPJC-08	07/25/06	Total Nitrate + Nitrite (mg/L)		0.025	U	10:00	
BPJC-08	08/09/06	Total Nitrate + Nitrite (mg/L)		2		10:50	
BPJC-08	08/30/06	Total Nitrate + Nitrite (mg/L)		3.9		11:05	
BPJC-08	09/13/06	Total Nitrate + Nitrite (mg/L)		4.3		11:10	
BPJC-08	09/27/06	Total Nitrate + Nitrite (mg/L)		4.8		10:33	
BPJC-08	10/06/05	TP (mg/L)		0.027	B	11:54	
BPJC-08	10/31/05	TP (mg/L)		0.011	K	15:54	
BPJC-08	05/08/06	TP (mg/L)		0.012	B	10:35	
BPJC-08	05/09/06	TP (mg/L)		0.19		11:30	
BPJC-08	05/23/06	TP (mg/L)		0.011	U	11:12	
BPJC-08	06/06/06	TP (mg/L)		0.011	U	14:25	
BPJC-08	06/19/06	TP (mg/L)		0.017	B	11:45	
BPJC-08	07/12/06	TP (mg/L)		0.059		10:15	
BPJC-08	07/25/06	TP (mg/L)		0.12		10:00	
BPJC-08	08/09/06	TP (mg/L)		0.041	B	10:50	
BPJC-08	08/30/06	TP (mg/L)		0.075		11:05	
BPJC-08	09/13/06	TP (mg/L)		0.029	B	11:10	
BPJC-08	09/27/06	TP (mg/L)		0.011	B	10:33	
BPJC-08	10/06/05	Turbidity (NTU)		2.3		11:54	
BPJC-08	10/31/05	Turbidity (NTU)		0		15:54	
BPJC-08	05/08/06	Turbidity (NTU)		55.6*		10:35	
BPJC-08	05/09/06	Turbidity (NTU)		8.7		11:30	
BPJC-08	05/23/06	Turbidity (NTU)		117.7		11:12	
BPJC-08	06/06/06	Turbidity (NTU)		67.3		14:25	
BPJC-08	06/19/06	Turbidity (NTU)		0		11:45	
BPJC-08	07/12/06	Turbidity (NTU)		37.3		10:15	
BPJC-08	07/25/06	Turbidity (NTU)		131*		10:00	
BPJC-08	08/09/06	Turbidity (NTU)		-10		10:50	
BPJC-08	08/30/06	Turbidity (NTU)		-10		11:05	
BPJC-08	09/27/06	Turbidity (NTU)		1		10:33	
BPJC-08	10/06/05	Water Temp (F)		17.7		11:54	
BPJC-08	10/31/05	Water Temp (F)		12		15:54	
BPJC-08	05/08/06	Water Temp (F)		14.8		10:35	
BPJC-08	05/09/06	Water Temp (F)		18		11:30	
BPJC-08	05/23/06	Water Temp (F)		15.5		11:12	
BPJC-08	06/06/06	Water Temp (F)		20.8		14:25	
BPJC-08	06/19/06	Water Temp (F)		24.3		11:45	
BPJC-08	07/12/06	Water Temp (F)		25.1		10:15	
BPJC-08	07/25/06	Water Temp (F)		26.1		10:00	
BPJC-08	08/09/06	Water Temp (F)		25.5		10:50	
BPJC-08	08/30/06	Water Temp (F)		20.2		11:05	
BPJC-08	09/27/06	Water Temp (F)		16.8		10:33	
BPJC-08 (DUP)	08/30/06	BOD (mL/L)		2	U	11:05	
BPJC-08 (DUP)	09/13/06	BOD (mL/L)		2	U	11:10	
BPJC-08 (DUP)	09/27/06	BOD (mL/L)		2	U	10:33	
BPJC-08 (DUP)	08/30/06	Ch-a (mg/m^3)		0.5	U	11:05	
BPJC-08 (DUP)	09/13/06	Ch-a (mg/m^3)		0.5	U	11:10	
BPJC-08 (DUP)	09/27/06	Ch-a (mg/m^3)		2.7		10:33	
BPJC-08 (DUP)	08/30/06	Dissolved Phosphorus (mg/L)		0.074		11:05	
BPJC-08 (DUP)	09/13/06	Dissolved Phosphorus (mg/L)		0.039	B	11:10	
BPJC-08 (DUP)	09/27/06	Dissolved Phosphorus (mg/L)		0.0096	U	10:33	
BPJC-08 (DUP)	08/30/06	TKN (mg/L)		0.64		11:05	
BPJC-08 (DUP)	09/13/06	TKN (mg/L)		0.74		11:10	
BPJC-08 (DUP)	09/27/06	TKN (mg/L)		0.67		10:33	
BPJC-08 (DUP)	08/30/06	Total Nitrate + Nitrite (mg/L)		3.8		11:05	
BPJC-08 (DUP)	09/13/06	Total Nitrate + Nitrite (mg/L)		4.3		11:10	
BPJC-08 (DUP)	09/27/06	Total Nitrate + Nitrite (mg/L)		4.7		10:33	
BPJC-08 (DUP)	08/30/06	TP (mg/L)		0.066		11:05	
BPJC-08 (DUP)	09/13/06	TP (mg/L)		0.036	B	11:10	
BPJC-08 (DUP)	09/27/06	TP (mg/L)		0.0096	U	10:33	
BPJC-08 (SED)	07/25/06	TP (mg/L)		150		10:00	
BPJC-08 (SED)	08/30/06	TP (mg/L)		73		11:05	
BPJC-UC-A2	11/01/05	BOD (mL/L)		7		14:20	
BPJC-UC-A2	05/08/06	BOD (mL/L)		2	U	9:35	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJC-UC-A2	05/23/06	BOD (mL/L)		2	U	10:35	
BPJC-UC-A2	06/06/06	BOD (mL/L)		2	U	10:40	
BPJC-UC-A2	06/19/06	BOD (mL/L)		2	U	10:45	
BPJC-UC-A2	07/12/06	BOD (mL/L)		2	U	9:40	
BPJC-UC-A2	07/25/06	BOD (mL/L)		2	U	9:45	
BPJC-UC-A2	08/09/06	BOD (mL/L)		3		10:00	
BPJC-UC-A2	08/30/06	BOD (mL/L)		2	U	10:10	
BPJC-UC-A2	09/13/06	BOD (mL/L)		2	U	10:23	
BPJC-UC-A2	09/27/06	BOD (mL/L)		2	U	10:00	
BPJC-UC-A2	10/06/05	Ch-a (mg/m^3)		0.89		10:35	
BPJC-UC-A2	11/01/05	Ch-a (mg/m^3)		19		14:20	
BPJC-UC-A2	05/08/06	Ch-a (mg/m^3)		0.5	U	9:35	
BPJC-UC-A2	05/23/06	Ch-a (mg/m^3)		0.89		10:35	
BPJC-UC-A2	06/06/06	Ch-a (mg/m^3)		0.5	U	10:40	
BPJC-UC-A2	06/19/06	Ch-a (mg/m^3)		0.5	U	10:45	
BPJC-UC-A2	07/25/06	Ch-a (mg/m^3)		0.5	U	9:45	
BPJC-UC-A2	08/09/06	Ch-a (mg/m^3)		0.5	U	10:00	
BPJC-UC-A2	08/30/06	Ch-a (mg/m^3)		5.3		10:10	
BPJC-UC-A2	09/13/06	Ch-a (mg/m^3)		0.5	U	10:23	
BPJC-UC-A2	09/27/06	Ch-a (mg/m^3)		1.8		10:00	
BPJC-UC-A2	10/06/05	Dissolved Phosphorus (mg/L)		0.044	B	10:35	
BPJC-UC-A2	11/01/05	Dissolved Phosphorus (mg/L)		0.29		14:20	
BPJC-UC-A2	05/08/06	Dissolved Phosphorus (mg/L)		0.011	U	9:35	
BPJC-UC-A2	05/23/06	Dissolved Phosphorus (mg/L)		0.011	U	10:35	
BPJC-UC-A2	06/06/06	Dissolved Phosphorus (mg/L)		0.029	B	10:40	
BPJC-UC-A2	06/19/06	Dissolved Phosphorus (mg/L)		0.026	B	10:45	
BPJC-UC-A2	07/12/06	Dissolved Phosphorus (mg/L)		0.038	B	9:40	
BPJC-UC-A2	07/25/06	Dissolved Phosphorus (mg/L)		0.026	B	9:45	
BPJC-UC-A2	08/09/06	Dissolved Phosphorus (mg/L)		0.081		10:00	
BPJC-UC-A2	08/30/06	Dissolved Phosphorus (mg/L)		0.05		10:10	
BPJC-UC-A2	09/13/06	Dissolved Phosphorus (mg/L)		0.032	B	10:23	
BPJC-UC-A2	09/27/06	Dissolved Phosphorus (mg/L)		0.014	B	10:00	
BPJC-UC-A2	10/06/05	DO (mg/L)		9.15		10:35	
BPJC-UC-A2	11/01/05	DO (mg/L)		10.8		14:20	
BPJC-UC-A2	05/08/06	DO (mg/L)		12.86		9:35	
BPJC-UC-A2	05/23/06	DO (mg/L)		11.86		10:35	
BPJC-UC-A2	06/06/06	DO (mg/L)		9.83		10:40	
BPJC-UC-A2	06/19/06	DO (mg/L)		9.31		10:45	
BPJC-UC-A2	07/12/06	DO (mg/L)		8.68		9:40	
BPJC-UC-A2	07/25/06	DO (mg/L)		7.98		9:45	
BPJC-UC-A2	08/09/06	DO (mg/L)		8.8		10:00	
BPJC-UC-A2	08/30/06	DO (mg/L)		8.98		10:10	
BPJC-UC-A2	09/27/06	DO (mg/L)		7.26		10:00	
BPJC-UC-A2	10/06/05	Flow		< 0.5		10:35	
BPJC-UC-A2	11/01/05	Flow		0.13		14:20	
BPJC-UC-A2	05/08/06	Flow		0.17		9:35	
BPJC-UC-A2	05/23/06	Flow		0.1		10:35	
BPJC-UC-A2	06/06/06	Flow		0		10:40	
BPJC-UC-A2	06/19/06	Flow		0.1		10:45	
BPJC-UC-A2	07/12/06	Flow		0		9:40	
BPJC-UC-A2	07/25/06	Flow		0		9:45	
BPJC-UC-A2	08/09/06	Flow		<0.1		10:00	
BPJC-UC-A2	08/30/06	Flow		0.17		10:10	
BPJC-UC-A2	09/13/06	Flow		< 0.1		10:23	
BPJC-UC-A2	10/06/05	pH		7.39		10:35	
BPJC-UC-A2	11/01/05	pH		7.8		14:20	
BPJC-UC-A2	05/08/06	pH		7.66		9:35	
BPJC-UC-A2	05/23/06	pH		7.22		10:35	
BPJC-UC-A2	06/06/06	pH		7.65		10:40	
BPJC-UC-A2	06/19/06	pH		7.59		10:45	
BPJC-UC-A2	07/12/06	pH		7.16		9:40	
BPJC-UC-A2	07/25/06	pH		7.33		9:45	
BPJC-UC-A2	08/09/06	pH		7.52		10:00	
BPJC-UC-A2	08/30/06	pH		8.39		10:10	
BPJC-UC-A2	09/27/06	pH		6.41		10:00	
BPJC-UC-A2	10/06/05	Spec. Cond. (uS/cm)		0.679		10:35	
BPJC-UC-A2	11/01/05	Spec. Cond. (uS/cm)		0.46		14:20	
BPJC-UC-A2	05/08/06	Spec. Cond. (uS/cm)		0.448		9:35	
BPJC-UC-A2	05/23/06	Spec. Cond. (uS/cm)		0.462		10:35	
BPJC-UC-A2	06/06/06	Spec. Cond. (uS/cm)		0.406		10:40	
BPJC-UC-A2	06/19/06	Spec. Cond. (uS/cm)		0.526		10:45	
BPJC-UC-A2	07/12/06	Spec. Cond. (uS/cm)		0.461		9:40	
BPJC-UC-A2	07/25/06	Spec. Cond. (uS/cm)		0.514		9:45	
BPJC-UC-A2	08/09/06	Spec. Cond. (uS/cm)		0.173		10:00	
BPJC-UC-A2	08/30/06	Spec. Cond. (uS/cm)		0.458		10:10	
BPJC-UC-A2	09/27/06	Spec. Cond. (uS/cm)		0.593		10:00	
BPJC-UC-A2	10/06/05	TKN (mg/L)		0.51		10:35	
BPJC-UC-A2	11/01/05	TKN (mg/L)		1.3		14:20	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJC-UC-A2	05/08/06	TKN (mg/L)		0.67		9:35	
BPJC-UC-A2	05/23/06	TKN (mg/L)		0.5		10:35	
BPJC-UC-A2	06/06/06	TKN (mg/L)		0.78		10:40	
BPJC-UC-A2	06/19/06	TKN (mg/L)		0.61		10:45	
BPJC-UC-A2	07/12/06	TKN (mg/L)		0.61		9:40	
BPJC-UC-A2	07/25/06	TKN (mg/L)		0.52		9:45	
BPJC-UC-A2	08/09/06	TKN (mg/L)		0.51		10:00	
BPJC-UC-A2	08/30/06	TKN (mg/L)		0.76		10:10	
BPJC-UC-A2	09/13/06	TKN (mg/L)		0.62		10:23	
BPJC-UC-A2	09/27/06	TKN (mg/L)		0.6		10:00	
BPJC-UC-A2	10/06/05	Total Nitrate + Nitrite (mg/L)		0.43		10:35	
BPJC-UC-A2	11/01/05	Total Nitrate + Nitrite (mg/L)		1		14:20	
BPJC-UC-A2	05/08/06	Total Nitrate + Nitrite (mg/L)		13		9:35	
BPJC-UC-A2	05/23/06	Total Nitrate + Nitrite (mg/L)		13		10:35	
BPJC-UC-A2	06/06/06	Total Nitrate + Nitrite (mg/L)		11		10:40	
BPJC-UC-A2	06/19/06	Total Nitrate + Nitrite (mg/L)		8.2		10:45	
BPJC-UC-A2	07/12/06	Total Nitrate + Nitrite (mg/L)		0.58		9:40	
BPJC-UC-A2	07/25/06	Total Nitrate + Nitrite (mg/L)		1.2		9:45	
BPJC-UC-A2	08/09/06	Total Nitrate + Nitrite (mg/L)		0.52		10:00	
BPJC-UC-A2	08/30/06	Total Nitrate + Nitrite (mg/L)		2.2		10:10	
BPJC-UC-A2	09/13/06	Total Nitrate + Nitrite (mg/L)		2.9		10:23	
BPJC-UC-A2	09/27/06	Total Nitrate + Nitrite (mg/L)		3.1		10:00	
BPJC-UC-A2	10/06/05	TP (mg/L)		0.087		10:35	
BPJC-UC-A2	11/01/05	TP (mg/L)		0.42		14:20	
BPJC-UC-A2	05/08/06	TP (mg/L)		0.022	B	9:35	
BPJC-UC-A2	05/23/06	TP (mg/L)		0.011	U	10:35	
BPJC-UC-A2	06/06/06	TP (mg/L)		0.031	B	10:40	
BPJC-UC-A2	06/19/06	TP (mg/L)		0.027	B	10:45	
BPJC-UC-A2	07/12/06	TP (mg/L)		0.051		9:40	
BPJC-UC-A2	07/25/06	TP (mg/L)		0.042	B	9:45	
BPJC-UC-A2	08/09/06	TP (mg/L)		0.13		10:00	
BPJC-UC-A2	08/30/06	TP (mg/L)		0.092		10:10	
BPJC-UC-A2	09/13/06	TP (mg/L)		0.037	B	10:23	
BPJC-UC-A2	09/27/06	TP (mg/L)		0.029	B	10:00	
BPJC-UC-A2	10/06/05	Turbidity (NTU)		0		10:35	
BPJC-UC-A2	11/01/05	Turbidity (NTU)		9		14:20	
BPJC-UC-A2	05/23/06	Turbidity (NTU)		2		10:35	
BPJC-UC-A2	06/06/06	Turbidity (NTU)		4		10:40	
BPJC-UC-A2	06/19/06	Turbidity (NTU)		0		10:45	
BPJC-UC-A2	07/12/06	Turbidity (NTU)		10		9:40	
BPJC-UC-A2	07/25/06	Turbidity (NTU)		10		9:45	
BPJC-UC-A2	08/09/06	Turbidity (NTU)		-10		10:00	
BPJC-UC-A2	08/30/06	Turbidity (NTU)		-10		10:10	
BPJC-UC-A2	09/27/06	Turbidity (NTU)		10.3		10:00	
BPJC-UC-A2	10/06/05	Water Temp (F)		17.4		10:35	
BPJC-UC-A2	11/01/05	Water Temp (F)		13		14:20	
BPJC-UC-A2	05/08/06	Water Temp (F)		15.8		9:35	
BPJC-UC-A2	05/23/06	Water Temp (F)		15.9		10:35	
BPJC-UC-A2	06/06/06	Water Temp (F)		20.86		10:40	
BPJC-UC-A2	06/19/06	Water Temp (F)		23.07		10:45	
BPJC-UC-A2	07/12/06	Water Temp (F)		23.9		9:40	
BPJC-UC-A2	07/25/06	Water Temp (F)		24		9:45	
BPJC-UC-A2	08/09/06	Water Temp (F)		23.2		10:00	
BPJC-UC-A2	08/30/06	Water Temp (F)		20.5		10:10	
BPJC-UC-A2	09/27/06	Water Temp (F)		16.7		10:00	
BPJD-01	11/01/05	BOD (mL/L)		3		13:20	
BPJD-01	05/08/06	BOD (mL/L)		2	U	11:25	
BPJD-01	05/23/06	BOD (mL/L)		2	U	11:50	
BPJD-01	06/06/06	BOD (mL/L)		2	U	11:50	
BPJD-01	06/19/06	BOD (mL/L)		2	U	12:25	
BPJD-01	07/12/06	BOD (mL/L)		2	U	11:10	
BPJD-01	07/25/06	BOD (mL/L)		2	U	11:45	
BPJD-01	08/09/06	BOD (mL/L)		2	U	11:35	
BPJD-01	08/30/06	BOD (mL/L)		2	U	11:45	
BPJD-01	09/13/06	BOD (mL/L)		2	U	11:40	
BPJD-01	09/27/06	BOD (mL/L)		2	U	11:15	
BPJD-01	10/06/05	Ch-a (mg/m^3)		2.7		12:40	
BPJD-01	11/01/05	Ch-a (mg/m^3)		14		13:20	
BPJD-01	05/08/06	Ch-a (mg/m^3)		0.5	U	11:25	
BPJD-01	05/23/06	Ch-a (mg/m^3)		0.5	U	11:50	
BPJD-01	06/06/06	Ch-a (mg/m^3)		0.5	U	11:50	
BPJD-01	06/19/06	Ch-a (mg/m^3)		0.5	U	12:25	
BPJD-01	07/25/06	Ch-a (mg/m^3)		0.5	U	11:45	
BPJD-01	08/09/06	Ch-a (mg/m^3)		0.5	U	11:35	
BPJD-01	08/30/06	Ch-a (mg/m^3)		0.5	U	11:45	
BPJD-01	09/13/06	Ch-a (mg/m^3)		0.5	U	11:40	
BPJD-01	09/27/06	Ch-a (mg/m^3)		1.8		11:15	
BPJD-01	10/06/05	Dissolved Phosphorus (mg/L)		0.013	B	12:40	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJD-01	11/01/05	Dissolved Phosphorus (mg/L)		0.19		13:20	
BPJD-01	05/08/06	Dissolved Phosphorus (mg/L)		0.016	B	11:25	
BPJD-01	05/23/06	Dissolved Phosphorus (mg/L)		0.013	B	11:50	
BPJD-01	06/06/06	Dissolved Phosphorus (mg/L)		0.033	B	11:50	
BPJD-01	06/19/06	Dissolved Phosphorus (mg/L)		0.061		12:25	
BPJD-01	07/12/06	Dissolved Phosphorus (mg/L)		0.035	B	11:10	
BPJD-01	07/25/06	Dissolved Phosphorus (mg/L)		0.015	B	11:45	
BPJD-01	08/09/06	Dissolved Phosphorus (mg/L)		0.06		11:35	
BPJD-01	08/30/06	Dissolved Phosphorus (mg/L)		0.022	B	11:45	
BPJD-01	09/13/06	Dissolved Phosphorus (mg/L)		0.033	B	11:40	
BPJD-01	09/27/06	Dissolved Phosphorus (mg/L)		0.028	B	11:15	
BPJD-01	10/06/05	DO (mg/L)		9.76		12:40	
BPJD-01	11/01/05	DO (mg/L)		10.9		13:20	
BPJD-01	05/08/06	DO (mg/L)		12.12		11:25	
BPJD-01	05/23/06	DO (mg/L)		12.04		11:50	
BPJD-01	06/06/06	DO (mg/L)		10.11		11:50	
BPJD-01	06/19/06	DO (mg/L)		9.79		12:25	
BPJD-01	07/12/06	DO (mg/L)		9.88		11:10	
BPJD-01	07/25/06	DO (mg/L)		7.37		11:45	
BPJD-01	08/09/06	DO (mg/L)		8.88		11:35	
BPJD-01	08/30/06	DO (mg/L)		4.04		11:45	
BPJD-01	09/27/06	DO (mg/L)		9.5		11:15	
BPJD-01	10/06/05	Flow		< 0.5		12:40	
BPJD-01	11/01/05	Flow		0.3		13:20	
BPJD-01	05/08/06	Flow		0.13		11:25	
BPJD-01	05/23/06	Flow		0.2		11:50	
BPJD-01	06/06/06	Flow		0.13		11:50	
BPJD-01	06/19/06	Flow		0.23		12:25	
BPJD-01	07/12/06	Flow		0.16		11:10	
BPJD-01	07/25/06	Flow		0.1		11:45	
BPJD-01	08/09/06	Flow		0.1		11:35	
BPJD-01	08/30/06	Flow		0.03		11:45	
BPJD-01	09/13/06	Flow		< 0.1		11:40	
BPJD-01	09/27/06	Flow		0.1		11:15	
BPJD-01	10/06/05	pH		8.16		12:40	
BPJD-01	11/01/05	pH		7.5		13:20	
BPJD-01	05/08/06	pH		7.94		11:25	
BPJD-01	05/23/06	pH		8.13		11:50	
BPJD-01	06/06/06	pH		7.92		11:50	
BPJD-01	06/19/06	pH		7.55		12:25	
BPJD-01	07/12/06	pH		8		11:10	
BPJD-01	07/25/06	pH		7.28		11:45	
BPJD-01	08/09/06	pH		7.97		11:35	
BPJD-01	08/30/06	pH		8.46		11:45	
BPJD-01	09/27/06	pH		8.24		11:15	
BPJD-01	10/06/05	Spec. Cond. (uS/cm)		0.796		12:40	
BPJD-01	11/01/05	Spec. Cond. (uS/cm)		0.4		13:20	
BPJD-01	05/08/06	Spec. Cond. (uS/cm)		0.494		11:25	
BPJD-01	05/23/06	Spec. Cond. (uS/cm)		5.32		11:50	
BPJD-01	06/06/06	Spec. Cond. (uS/cm)		0.477		11:50	
BPJD-01	06/19/06	Spec. Cond. (uS/cm)		0.483		12:25	
BPJD-01	07/12/06	Spec. Cond. (uS/cm)		0.65		11:10	
BPJD-01	07/25/06	Spec. Cond. (uS/cm)		0.96		11:45	
BPJD-01	08/09/06	Spec. Cond. (uS/cm)		0.784		11:35	
BPJD-01	08/30/06	Spec. Cond. (uS/cm)		0.755		11:45	
BPJD-01	09/27/06	Spec. Cond. (uS/cm)		0.93		11:15	
BPJD-01	10/06/05	TKN (mg/L)		0.26	B	12:40	
BPJD-01	11/01/05	TKN (mg/L)		1.2		13:20	
BPJD-01	05/08/06	TKN (mg/L)		0.68		11:25	
BPJD-01	05/23/06	TKN (mg/L)		0.49		11:50	
BPJD-01	06/06/06	TKN (mg/L)		0.63		11:50	
BPJD-01	06/19/06	TKN (mg/L)		0.89		12:25	
BPJD-01	07/12/06	TKN (mg/L)		0.6		11:10	
BPJD-01	07/25/06	TKN (mg/L)		0.3	B	11:45	
BPJD-01	08/09/06	TKN (mg/L)		0.4	B	11:35	
BPJD-01	08/30/06	TKN (mg/L)		0.29	B	11:45	
BPJD-01	09/13/06	TKN (mg/L)		0.22	B	11:40	
BPJD-01	09/27/06	TKN (mg/L)		0.23	B	11:15	
BPJD-01	10/06/05	Total Nitrate + Nitrite (mg/L)		0.025	K	12:40	
BPJD-01	11/01/05	Total Nitrate + Nitrite (mg/L)		6.7		13:20	
BPJD-01	05/08/06	Total Nitrate + Nitrite (mg/L)		8.2		11:25	
BPJD-01	05/23/06	Total Nitrate + Nitrite (mg/L)		7.3		11:50	
BPJD-01	06/06/06	Total Nitrate + Nitrite (mg/L)		10		11:50	
BPJD-01	06/19/06	Total Nitrate + Nitrite (mg/L)		12		12:25	
BPJD-01	07/12/06	Total Nitrate + Nitrite (mg/L)		4.3		11:10	
BPJD-01	07/25/06	Total Nitrate + Nitrite (mg/L)		1.4		11:45	
BPJD-01	08/09/06	Total Nitrate + Nitrite (mg/L)		0.82		11:35	
BPJD-01	08/30/06	Total Nitrate + Nitrite (mg/L)		0.038	B	11:45	
BPJD-01	09/13/06	Total Nitrate + Nitrite (mg/L)		0.025	U	11:40	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJD-01	09/27/06	Total Nitrate + Nitrite (mg/L)		0.025	U	11:15	
BPJD-01	10/06/05	TP (mg/L)		0.017	B	12:40	
BPJD-01	11/01/05	TP (mg/L)		0.29		13:20	
BPJD-01	05/08/06	TP (mg/L)		0.019	B	11:25	
BPJD-01	05/23/06	TP (mg/L)		0.017	B	11:50	
BPJD-01	06/06/06	TP (mg/L)		0.063		11:50	
BPJD-01	06/19/06	TP (mg/L)		0.079		12:25	
BPJD-01	07/12/06	TP (mg/L)		0.027	B	11:10	
BPJD-01	07/25/06	TP (mg/L)		0.029	B	11:45	
BPJD-01	08/09/06	TP (mg/L)		0.057		11:35	
BPJD-01	08/30/06	TP (mg/L)		0.026	B	11:45	
BPJD-01	09/13/06	TP (mg/L)		0.037	B	11:40	
BPJD-01	09/27/06	TP (mg/L)		0.022	B	11:15	
BPJD-01	10/06/05	Turbidity (NTU)		0		12:40	
BPJD-01	11/01/05	Turbidity (NTU)		13.6		13:20	
BPJD-01	05/08/06	Turbidity (NTU)		109.3*		11:25	
BPJD-01	05/23/06	Turbidity (NTU)		10.3		11:50	
BPJD-01	06/06/06	Turbidity (NTU)		162.7		11:50	
BPJD-01	06/19/06	Turbidity (NTU)		54.6		12:25	
BPJD-01	07/12/06	Turbidity (NTU)		87.6		11:10	
BPJD-01	07/25/06	Turbidity (NTU)		10		11:45	
BPJD-01	08/09/06	Turbidity (NTU)		10		11:35	
BPJD-01	08/30/06	Turbidity (NTU)		-10		11:45	
BPJD-01	09/27/06	Turbidity (NTU)		6.3		11:15	
BPJD-01	10/06/05	Water Temp (F)		17.2		12:40	
BPJD-01	11/01/05	Water Temp (F)		13		13:20	
BPJD-01	05/08/06	Water Temp (F)		17.1		11:25	
BPJD-01	05/23/06	Water Temp (F)		16.8		11:50	
BPJD-01	06/06/06	Water Temp (F)		19.8		11:50	
BPJD-01	06/19/06	Water Temp (F)		21.3		12:25	
BPJD-01	07/12/06	Water Temp (F)		23.1		11:10	
BPJD-01	07/25/06	Water Temp (F)		25.7		11:45	
BPJD-01	08/09/06	Water Temp (F)		25.2		11:35	
BPJD-01	08/30/06	Water Temp (F)		20.6		11:45	
BPJD-01	09/27/06	Water Temp (F)		16.9		11:15	
BPJD-01 (DUP)	08/30/06	BOD (mL/L)		2	U	11:45	
BPJD-01 (DUP)	09/13/06	BOD (mL/L)		2	U	11:40	
BPJD-01 (DUP)	09/27/06	BOD (mL/L)		2	U	11:15	
BPJD-01 (DUP)	08/30/06	Ch-a (mg/m^3)		0.5	U	11:45	
BPJD-01 (DUP)	09/13/06	Ch-a (mg/m^3)		0.5	U	11:40	
BPJD-01 (DUP)	09/27/06	Ch-a (mg/m^3)		4.5		11:15	
BPJD-01 (DUP)	08/30/06	Dissolved Phosphorus (mg/L)		0.018	B	11:45	
BPJD-01 (DUP)	09/13/06	Dissolved Phosphorus (mg/L)		0.032	B	11:40	
BPJD-01 (DUP)	09/27/06	Dissolved Phosphorus (mg/L)		0.02	B	11:15	
BPJD-01 (DUP)	08/30/06	TKN (mg/L)		0.3	B	11:45	
BPJD-01 (DUP)	09/13/06	TKN (mg/L)		0.2	B	11:40	
BPJD-01 (DUP)	09/27/06	TKN (mg/L)		0.16	B	11:15	
BPJD-01 (DUP)	08/30/06	Total Nitrate + Nitrite (mg/L)		0.17		11:45	
BPJD-01 (DUP)	09/13/06	Total Nitrate + Nitrite (mg/L)		0.025	U	11:40	
BPJD-01 (DUP)	09/27/06	Total Nitrate + Nitrite (mg/L)		0.025	U	11:15	
BPJD-01 (DUP)	08/30/06	TP (mg/L)		0.12		11:45	
BPJD-01 (DUP)	09/13/06	TP (mg/L)		0.035	B	11:40	
BPJD-01 (DUP)	09/27/06	TP (mg/L)		0.03	B	11:15	
BPJD-01 (SED)	07/25/06	TP (mg/L)		170		11:45	
BPJD-01 (SED)	08/30/06	TP (mg/L)		130		11:45	
BPJD-02	11/01/05	BOD (mL/L)		2		12:30	
BPJD-02	05/08/06	BOD (mL/L)		2	U	12:00	
BPJD-02	05/23/06	BOD (mL/L)		2	U	12:25	
BPJD-02	06/06/06	BOD (mL/L)		2	U	12:20	
BPJD-02	06/19/06	BOD (mL/L)		2	U	13:05	
BPJD-02	07/12/06	BOD (mL/L)		2	U	11:45	
BPJD-02	07/25/06	BOD (mL/L)		2	U	12:00	
BPJD-02	08/09/06	BOD (mL/L)		2	U	12:15	
BPJD-02	08/30/06	BOD (mL/L)		2	U	12:25	
BPJD-02	09/13/06	BOD (mL/L)		2	U	12:00	
BPJD-02	09/27/06	BOD (mL/L)		2	U	12:00	
BPJD-02	10/06/05	Ch-a (mg/m^3)		0.89		13:50	
BPJD-02	11/01/05	Ch-a (mg/m^3)		8.9		12:30	
BPJD-02	05/08/06	Ch-a (mg/m^3)		0.5	U	12:00	
BPJD-02	05/23/06	Ch-a (mg/m^3)		0.5	U	12:25	
BPJD-02	06/06/06	Ch-a (mg/m^3)		0.5	U	12:20	
BPJD-02	06/19/06	Ch-a (mg/m^3)		0.5	U	13:05	
BPJD-02	07/25/06	Ch-a (mg/m^3)		0.5	U	12:00	
BPJD-02	08/09/06	Ch-a (mg/m^3)		7.1		12:15	
BPJD-02	08/30/06	Ch-a (mg/m^3)		0.5	U	12:25	
BPJD-02	09/13/06	Ch-a (mg/m^3)		0.5	U	12:00	
BPJD-02	09/27/06	Ch-a (mg/m^3)		0.89		12:00	
BPJD-02	10/06/05	Dissolved Phosphorus (mg/L)		0.023	B	13:50	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJD-02	11/01/05	Dissolved Phosphorus (mg/L)		0.1		12:30	
BPJD-02	05/08/06	Dissolved Phosphorus (mg/L)		0.026	B	12:00	
BPJD-02	05/23/06	Dissolved Phosphorus (mg/L)		0.015	B	12:25	
BPJD-02	06/06/06	Dissolved Phosphorus (mg/L)		0.034	B	12:20	
BPJD-02	06/19/06	Dissolved Phosphorus (mg/L)		0.046	B	13:05	
BPJD-02	07/12/06	Dissolved Phosphorus (mg/L)		0.059		11:45	
BPJD-02	07/25/06	Dissolved Phosphorus (mg/L)		0.0096	U	12:00	
BPJD-02	08/09/06	Dissolved Phosphorus (mg/L)		0.02	B	12:15	
BPJD-02	08/30/06	Dissolved Phosphorus (mg/L)		0.041	B	12:25	
BPJD-02	09/13/06	Dissolved Phosphorus (mg/L)		0.044	B	12:00	
BPJD-02	09/27/06	Dissolved Phosphorus (mg/L)		0.023	B	12:00	
BPJD-02	10/06/05	DO (mg/L)		8.61		13:50	
BPJD-02	11/01/05	DO (mg/L)		11		12:30	
BPJD-02	05/08/06	DO (mg/L)		11.46		12:00	
BPJD-02	05/23/06	DO (mg/L)		13.24		12:25	
BPJD-02	06/06/06	DO (mg/L)		10.86		12:20	
BPJD-02	06/19/06	DO (mg/L)		10.89		13:05	
BPJD-02	07/12/06	DO (mg/L)		9.72		11:45	
BPJD-02	07/25/06	DO (mg/L)		7.88		12:00	
BPJD-02	08/09/06	DO (mg/L)		8.94		12:15	
BPJD-02	08/30/06	DO (mg/L)		8.5		12:25	
BPJD-02	09/27/06	DO (mg/L)		9.51		12:00	
BPJD-02	10/06/05	Flow		0.9		13:50	
BPJD-02	11/01/05	Flow		0.83		12:30	
BPJD-02	05/08/06	Flow		0.43		12:00	
BPJD-02	05/23/06	Flow		0.47		12:25	
BPJD-02	06/06/06	Flow		0.53		12:20	
BPJD-02	06/19/06	Flow		0.97		13:05	
BPJD-02	07/12/06	Flow		0.6		11:45	
BPJD-02	07/25/06	Flow		0.3		12:00	
BPJD-02	08/09/06	Flow		0.3		12:15	
BPJD-02	08/30/06	Flow		< 0.1		12:25	
BPJD-02	09/27/06	Flow		< 0.1		12:00	
BPJD-02	10/06/05	pH		8.32		13:50	
BPJD-02	11/01/05	pH		7.7		12:30	
BPJD-02	05/08/06	pH		8.03		12:00	
BPJD-02	05/23/06	pH		8.17		12:25	
BPJD-02	06/06/06	pH		7.92		12:20	
BPJD-02	06/19/06	pH		7.56		13:05	
BPJD-02	07/12/06	pH		7.94		11:45	
BPJD-02	07/25/06	pH		8.09		12:00	
BPJD-02	08/09/06	pH		8.05		12:15	
BPJD-02	08/30/06	pH		4.38		12:25	
BPJD-02	09/27/06	pH		8.26		12:00	
BPJD-02	10/06/05	Spec. Cond. (uS/cm)		0.77		13:50	
BPJD-02	11/01/05	Spec. Cond. (uS/cm)		0.51		12:30	
BPJD-02	05/08/06	Spec. Cond. (uS/cm)		0.46		12:00	
BPJD-02	05/23/06	Spec. Cond. (uS/cm)		0.496		12:25	
BPJD-02	06/06/06	Spec. Cond. (uS/cm)		0.449		12:20	
BPJD-02	06/19/06	Spec. Cond. (uS/cm)		0.447		13:05	
BPJD-02	07/12/06	Spec. Cond. (uS/cm)		0.59		11:45	
BPJD-02	07/25/06	Spec. Cond. (uS/cm)		0.668		12:00	
BPJD-02	08/09/06	Spec. Cond. (uS/cm)		0.632		12:15	
BPJD-02	08/30/06	Spec. Cond. (uS/cm)		0.678		12:25	
BPJD-02	09/27/06	Spec. Cond. (uS/cm)		0.872		12:00	
BPJD-02	10/06/05	TKN (mg/L)		0.24	B	13:50	
BPJD-02	11/01/05	TKN (mg/L)		1.1		12:30	
BPJD-02	05/08/06	TKN (mg/L)		0.68		12:00	
BPJD-02	05/23/06	TKN (mg/L)		0.64		12:25	
BPJD-02	06/06/06	TKN (mg/L)		0.82		12:20	
BPJD-02	06/19/06	TKN (mg/L)		1.4		13:05	
BPJD-02	07/12/06	TKN (mg/L)		0.87		11:45	
BPJD-02	07/25/06	TKN (mg/L)		0.51		12:00	
BPJD-02	08/09/06	TKN (mg/L)		0.42		12:15	
BPJD-02	08/30/06	TKN (mg/L)		0.38	B	12:25	
BPJD-02	09/13/06	TKN (mg/L)		0.3	B	12:00	
BPJD-02	09/27/06	TKN (mg/L)		0.41		12:00	
BPJD-02	10/06/05	Total Nitrate + Nitrite (mg/L)		0.045	B	13:50	
BPJD-02	11/01/05	Total Nitrate + Nitrite (mg/L)		5.2		12:30	
BPJD-02	05/08/06	Total Nitrate + Nitrite (mg/L)		9.7		12:00	
BPJD-02	05/23/06	Total Nitrate + Nitrite (mg/L)		8.7		12:25	
BPJD-02	06/06/06	Total Nitrate + Nitrite (mg/L)		12		12:20	
BPJD-02	06/19/06	Total Nitrate + Nitrite (mg/L)		12		13:05	
BPJD-02	07/12/06	Total Nitrate + Nitrite (mg/L)		6		11:45	
BPJD-02	07/25/06	Total Nitrate + Nitrite (mg/L)		2.6		12:00	
BPJD-02	08/09/06	Total Nitrate + Nitrite (mg/L)		1.7		12:15	
BPJD-02	08/30/06	Total Nitrate + Nitrite (mg/L)		0.1		12:25	
BPJD-02	09/13/06	Total Nitrate + Nitrite (mg/L)		0.062	B	12:00	
BPJD-02	09/27/06	Total Nitrate + Nitrite (mg/L)		0.028	B	12:00	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
BPJD-02	10/06/05	TP (mg/L)		0.037	B	13:50	
BPJD-02	11/01/05	TP (mg/L)		0.19		12:30	
BPJD-02	05/08/06	TP (mg/L)		0.019	B	12:00	
BPJD-02	05/23/06	TP (mg/L)		0.038	B	12:25	
BPJD-02	06/06/06	TP (mg/L)		0.079		12:20	
BPJD-02	06/19/06	TP (mg/L)		0.074		13:05	
BPJD-02	07/12/06	TP (mg/L)		0.067		11:45	
BPJD-02	07/25/06	TP (mg/L)		0.023	B	12:00	
BPJD-02	08/09/06	TP (mg/L)		0.057		12:15	
BPJD-02	08/30/06	TP (mg/L)		0.05		12:25	
BPJD-02	09/13/06	TP (mg/L)		0.041	B	12:00	
BPJD-02	09/27/06	TP (mg/L)		0.023	B	12:00	
BPJD-02	10/06/05	Turbidity (NTU)		1.6		13:50	
BPJD-02	11/01/05	Turbidity (NTU)		7.3		12:30	
BPJD-02	05/08/06	Turbidity (NTU)		11.6		12:00	
BPJD-02	05/23/06	Turbidity (NTU)		14.3		12:25	
BPJD-02	06/06/06	Turbidity (NTU)		46		12:20	
BPJD-02	06/19/06	Turbidity (NTU)		87.7		13:05	
BPJD-02	07/12/06	Turbidity (NTU)		65		11:45	
BPJD-02	07/25/06	Turbidity (NTU)		10		12:00	
BPJD-02	08/09/06	Turbidity (NTU)		-10		12:15	
BPJD-02	08/30/06	Turbidity (NTU)		-10		12:25	
BPJD-02	09/27/06	Turbidity (NTU)		3.4		12:00	
BPJD-02	10/06/05	Water Temp (F)		19.57		13:50	
BPJD-02	11/01/05	Water Temp (F)		13		12:30	
BPJD-02	05/08/06	Water Temp (F)		16.7		12:00	
BPJD-02	05/23/06	Water Temp (F)		17.6		12:25	
BPJD-02	06/06/06	Water Temp (F)		20.6		12:20	
BPJD-02	06/19/06	Water Temp (F)		22.3		13:05	
BPJD-02	07/12/06	Water Temp (F)		23.5		11:45	
BPJD-02	07/25/06	Water Temp (F)		26.66		12:00	
BPJD-02	08/09/06	Water Temp (F)		25.2		12:15	
BPJD-02	08/30/06	Water Temp (F)		21.2		12:25	
BPJD-02	09/27/06	Water Temp (F)		16.8		12:00	
RBK-1	10/07/05	Ch-a (mg/m^3)	0	3.6		14:58	
RBK-1	10/07/05	Ch-a (mg/m^3)	14	7.1		15:05	
RBK-1	10/07/05	Ch-a (mg/m^3)	26	27		15:15	
RBK-1	10/31/05	Ch-a (mg/m^3)	0	44		11:15	
RBK-1	10/31/05	Ch-a (mg/m^3)	14	76		11:15	
RBK-1	10/31/05	Ch-a (mg/m^3)	26	NA		11:15	
RBK-1	04/11/06	Ch-a (mg/m^3)	0	74		13:41	
RBK-1	04/11/06	Ch-a (mg/m^3)	13	45		13:29	
RBK-1	04/11/06	Ch-a (mg/m^3)	26	0.5	U	13:41	
RBK-1	04/26/06	Ch-a (mg/m^3)	0	12		12:15	
RBK-1	04/26/06	Ch-a (mg/m^3)	15	16		12:25	
RBK-1	04/26/06	Ch-a (mg/m^3)	23	8.9		12:35	
RBK-1	05/10/06	Ch-a (mg/m^3)	0	9.8		12:20	
RBK-1	05/10/06	Ch-a (mg/m^3)	12	8		12:25	
RBK-1	05/10/06	Ch-a (mg/m^3)	22	3.6		12:30	
RBK-1	05/24/06	Ch-a (mg/m^3)	0	0.5	U	12:10	
RBK-1	05/24/06	Ch-a (mg/m^3)	14	1.8		10:56	
RBK-1	05/24/06	Ch-a (mg/m^3)	27	0.5	U	10:56	
RBK-1	06/07/06	Ch-a (mg/m^3)	0	5.3		13:16	
RBK-1	06/07/06	Ch-a (mg/m^3)	12	12		13:16	
RBK-1	06/07/06	Ch-a (mg/m^3)	25	2.7		13:16	
RBK-1	06/20/06	Ch-a (mg/m^3)	0	8		12:30	
RBK-1	06/20/06	Ch-a (mg/m^3)	14	9.8		12:30	
RBK-1	06/20/06	Ch-a (mg/m^3)	28	0.5	U	12:30	
RBK-1	07/13/06	Ch-a (mg/m^3)	0	6.2		12:15	
RBK-1	07/13/06	Ch-a (mg/m^3)	13	7.1		12:15	
RBK-1	07/13/06	Ch-a (mg/m^3)	25	6.2		12:15	
RBK-1	07/24/06	Ch-a (mg/m^3)	0	1.2		11:31	
RBK-1	07/24/06	Ch-a (mg/m^3)	13	0.53		11:31	
RBK-1	07/24/06	Ch-a (mg/m^3)	25	0.53		11:31	
RBK-1	08/08/06	Ch-a (mg/m^3)	0	45		12:30	
RBK-1	08/08/06	Ch-a (mg/m^3)	11	42		12:30	
RBK-1	08/08/06	Ch-a (mg/m^3)	23	12		12:30	
RBK-1	08/29/06	Ch-a (mg/m^3)	0	75		12:14	
RBK-1	08/29/06	Ch-a (mg/m^3)	13	51		12:18	
RBK-1	08/29/06	Ch-a (mg/m^3)	25	25		12:30	
RBK-1	09/12/06	Ch-a (mg/m^3)	0	36		12:15	
RBK-1	09/12/06	Ch-a (mg/m^3)	12.5	23		12:25	
RBK-1	09/12/06	Ch-a (mg/m^3)	25	21		12:35	
RBK-1	09/26/06	Ch-a (mg/m^3)	0	19		11:45	
RBK-1	09/26/06	Ch-a (mg/m^3)	13	15		11:45	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-1	09/26/06	Ch-a (mg/m^3)	26	12		11:45	
RBK-1	10/07/05	Dissolved Phosphorus (mg/L)	0	0.02	B	14:58	
RBK-1	10/07/05	Dissolved Phosphorus (mg/L)	14	0.021	B	15:05	
RBK-1	10/07/05	Dissolved Phosphorus (mg/L)	26	0.53		15:15	
RBK-1	10/31/05	Dissolved Phosphorus (mg/L)	0	0.06		11:15	
RBK-1	10/31/05	Dissolved Phosphorus (mg/L)	14	0.061		11:15	
RBK-1	10/31/05	Dissolved Phosphorus (mg/L)	26	0.69		11:15	
RBK-1	04/11/06	Dissolved Phosphorus (mg/L)	0	0.028	B	13:41	
RBK-1	04/11/06	Dissolved Phosphorus (mg/L)	13	0.031	B	13:29	
RBK-1	04/11/06	Dissolved Phosphorus (mg/L)	26	0.026	B	13:17	
RBK-1	04/26/06	Dissolved Phosphorus (mg/L)	0	0.025	B	12:15	
RBK-1	04/26/06	Dissolved Phosphorus (mg/L)	15	0.03	B	12:25	
RBK-1	04/26/06	Dissolved Phosphorus (mg/L)	23	0.025	B	12:35	
RBK-1	05/10/06	Dissolved Phosphorus (mg/L)	0	0.022	B	12:20	
RBK-1	05/10/06	Dissolved Phosphorus (mg/L)	12	0.029	B	12:25	
RBK-1	05/10/06	Dissolved Phosphorus (mg/L)	22	0.046	B	12:30	
RBK-1	05/24/06	Dissolved Phosphorus (mg/L)	0	0.026	B	10:56	
RBK-1	05/24/06	Dissolved Phosphorus (mg/L)	14	0.054		10:56	
RBK-1	05/24/06	Dissolved Phosphorus (mg/L)	27	0.17		10:56	
RBK-1	06/07/06	Dissolved Phosphorus (mg/L)	0	0.038	B	13:16	
RBK-1	06/07/06	Dissolved Phosphorus (mg/L)	12	0.031	B	13:16	
RBK-1	06/07/06	Dissolved Phosphorus (mg/L)	25	0.21		13:16	
RBK-1	06/20/06	Dissolved Phosphorus (mg/L)	0	0.011	U	12:30	
RBK-1	06/20/06	Dissolved Phosphorus (mg/L)	14	0.011	U	12:30	
RBK-1	06/20/06	Dissolved Phosphorus (mg/L)	28	0.016	B	12:30	
RBK-1	07/13/06	Dissolved Phosphorus (mg/L)	0	0.0096	U	12:15	
RBK-1	07/13/06	Dissolved Phosphorus (mg/L)	13	0.0096	U	12:15	
RBK-1	07/13/06	Dissolved Phosphorus (mg/L)	25	0.098		12:15	
RBK-1	07/24/06	Dissolved Phosphorus (mg/L)	0	0.041	B	11:31	
RBK-1	07/24/06	Dissolved Phosphorus (mg/L)	13	0.019	B	11:31	
RBK-1	07/24/06	Dissolved Phosphorus (mg/L)	25	0.17		11:31	
RBK-1	08/08/06	Dissolved Phosphorus (mg/L)	0	0.06		12:30	
RBK-1	08/08/06	Dissolved Phosphorus (mg/L)	11	0.065		12:30	
RBK-1	08/08/06	Dissolved Phosphorus (mg/L)	23	0.3		12:30	
RBK-1	08/29/06	Dissolved Phosphorus (mg/L)	0	0.022	B	12:14	
RBK-1	08/29/06	Dissolved Phosphorus (mg/L)	13	0.026	B	12:18	
RBK-1	08/29/06	Dissolved Phosphorus (mg/L)	25	0.36		12:30	
RBK-1	09/12/06	Dissolved Phosphorus (mg/L)	0	0.032	B	12:15	
RBK-1	09/12/06	Dissolved Phosphorus (mg/L)	12.5	0.025	B	12:25	
RBK-1	09/12/06	Dissolved Phosphorus (mg/L)	25	0.15		12:35	
RBK-1	09/26/06	Dissolved Phosphorus (mg/L)	0	0.01	B	11:45	
RBK-1	09/26/06	Dissolved Phosphorus (mg/L)	13	0.03	B	11:45	
RBK-1	09/26/06	Dissolved Phosphorus (mg/L)	26	0.034	B	11:45	
RBK-1	10/07/05	DO (mg/L)	0	8.08		14:58	
RBK-1	10/07/05	DO (mg/L)	14	8.49		15:05	
RBK-1	10/07/05	DO (mg/L)	26	10.32		15:15	
RBK-1	10/31/05	DO (mg/L)	0			11:15	
RBK-1	10/31/05	DO (mg/L)	0	10.6		11:15	
RBK-1	10/31/05	DO (mg/L)	14	11.2		11:15	
RBK-1	10/31/05	DO (mg/L)	26	10.5		11:15	
RBK-1	04/11/06	DO (mg/L)	0	13.23		13:41	
RBK-1	04/11/06	DO (mg/L)	13	14.17		13:29	
RBK-1	04/11/06	DO (mg/L)	26	15.06		13:17	
RBK-1	04/26/06	DO (mg/L)	0	10.11		12:15	
RBK-1	04/26/06	DO (mg/L)	15	13.55		12:25	
RBK-1	04/26/06	DO (mg/L)	23	13.24		12:35	
RBK-1	05/10/06	DO (mg/L)	0	12.71		12:20	
RBK-1	05/10/06	DO (mg/L)	12			12:25	
RBK-1	05/10/06	DO (mg/L)	22	12.43		12:30	
RBK-1	05/24/06	DO (mg/L)	0	11.02		12:10	
RBK-1	05/24/06	DO (mg/L)	14	12.07		12:10	
RBK-1	05/24/06	DO (mg/L)	27	14.56		12:10	
RBK-1	06/07/06	DO (mg/L)	0	9.78		13:16	
RBK-1	06/07/06	DO (mg/L)	12	11.91		13:16	
RBK-1	06/07/06	DO (mg/L)	25	15.18		13:16	
RBK-1	06/20/06	DO (mg/L)	0	8.91		12:30	
RBK-1	06/20/06	DO (mg/L)	14	12.53		12:30	
RBK-1	06/20/06	DO (mg/L)	28	12.78		12:30	
RBK-1	07/13/06	DO (mg/L)	0	8.54		12:15	
RBK-1	07/13/06	DO (mg/L)	13	10.52		12:15	
RBK-1	07/13/06	DO (mg/L)	25	14.39		12:15	
RBK-1	07/24/06	DO (mg/L)	0	7.52		12:45	
RBK-1	07/24/06	DO (mg/L)	7	7.29		12:45	
RBK-1	07/24/06	DO (mg/L)	14	8.22		12:45	
RBK-1	08/08/06	DO (mg/L)	0	9.88		12:30	
RBK-1	08/08/06	DO (mg/L)	11	10.05		12:30	
RBK-1	08/08/06	DO (mg/L)	23	15.58		12:30	
RBK-1	08/29/06	DO (mg/L)	0	7.31		12:14	
RBK-1	08/29/06	DO (mg/L)	13	7.48		12:18	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-1	08/29/06	DO (mg/L)	25	9.5		12:30	
RBK-1	09/12/06	DO (mg/L)	0	8.53		12:15	
RBK-1	09/12/06	DO (mg/L)	12.5	9.1		12:25	
RBK-1	09/12/06	DO (mg/L)	25	11.92		12:35	
RBK-1	09/26/06	DO (mg/L)	0	7.22		11:45	
RBK-1	09/26/06	DO (mg/L)	13	8.04		11:45	
RBK-1	09/26/06	DO (mg/L)	26	8.91		11:45	
RBK-1	10/07/05	pH	0	8.84		14:58	
RBK-1	10/07/05	pH	14	8.91		15:05	
RBK-1	10/07/05	pH	26	7.2		15:15	
RBK-1	10/31/05	pH	0	7.8		11:15	
RBK-1	10/31/05	pH	14	7.7		11:15	
RBK-1	10/31/05	pH	26	7.1		11:15	
RBK-1	04/11/06	pH	0	8.88		13:41	
RBK-1	04/11/06	pH	13	8.29		13:29	
RBK-1	04/11/06	pH	26	8.05		13:17	
RBK-1	04/26/06	pH	0	8.99		12:15	
RBK-1	04/26/06	pH	15	8.07		12:25	
RBK-1	04/26/06	pH	23	8.14		12:35	
RBK-1	05/10/06	pH	0	8.18		12:20	
RBK-1	05/10/06	pH	12	8.03		12:25	
RBK-1	05/10/06	pH	22	7.58		12:30	
RBK-1	05/24/06	pH	0	8.75		12:10	
RBK-1	05/24/06	pH	14	8.23		12:10	
RBK-1	05/24/06	pH	27	7.65		12:10	
RBK-1	06/07/06	pH	0	8.67		13:16	
RBK-1	06/07/06	pH	12	7.77		13:16	
RBK-1	06/07/06	pH	25	7.34		13:16	
RBK-1	06/20/06	pH	0	9.71		12:30	
RBK-1	06/20/06	pH	14	9.3		12:30	
RBK-1	06/20/06	pH	28	7.82		12:30	
RBK-1	07/13/06	pH	0	8.75		12:15	
RBK-1	07/13/06	pH	13	7.46		12:15	
RBK-1	07/13/06	pH	25	7.19		12:15	
RBK-1	07/24/06	pH	0	8.83		12:45	
RBK-1	07/24/06	pH	13	9.02		12:45	
RBK-1	07/24/06	pH	25	8.4		12:45	
RBK-1	08/08/06	pH	0	9.56		12:30	
RBK-1	08/08/06	pH	11	9.3		12:30	
RBK-1	08/08/06	pH	23	7.34		12:30	
RBK-1	08/29/06	pH	0	9.63		12:14	
RBK-1	08/29/06	pH	13	8.16		12:18	
RBK-1	08/29/06	pH	25	7.34		12:30	
RBK-1	09/12/06	pH	0	9.11		12:15	
RBK-1	09/12/06	pH	12.5	8.21		12:25	
RBK-1	09/12/06	pH	25	6.99		12:35	
RBK-1	09/26/06	pH	0	5.12		11:45	
RBK-1	09/26/06	pH	13	5.19		11:45	
RBK-1	09/26/06	pH	26	5.26		11:45	
RBK-1	10/07/05	Spec. Cond. (uS/cm)	0	0.613		14:58	
RBK-1	10/07/05	Spec. Cond. (uS/cm)	14	0.606		15:05	
RBK-1	10/07/05	Spec. Cond. (uS/cm)	26	0.919		15:15	
RBK-1	10/31/05	Spec. Cond. (uS/cm)	0	0.31		11:15	
RBK-1	10/31/05	Spec. Cond. (uS/cm)	14	0.32		11:15	
RBK-1	10/31/05	Spec. Cond. (uS/cm)	26	0.44		11:15	
RBK-1	04/11/06	Spec. Cond. (uS/cm)	0	304		13:41	
RBK-1	04/11/06	Spec. Cond. (uS/cm)	13	322		13:29	
RBK-1	04/11/06	Spec. Cond. (uS/cm)	26	0.33		13:17	
RBK-1	04/26/06	Spec. Cond. (uS/cm)	0	0.28		12:15	
RBK-1	04/26/06	Spec. Cond. (uS/cm)	15	0.307		12:25	
RBK-1	04/26/06	Spec. Cond. (uS/cm)	23	0.306		12:35	
RBK-1	05/10/06	Spec. Cond. (uS/cm)	0	0.295		12:20	
RBK-1	05/10/06	Spec. Cond. (uS/cm)	12	0.294		12:25	
RBK-1	05/10/06	Spec. Cond. (uS/cm)	22	0.298		12:30	
RBK-1	05/24/06	Spec. Cond. (uS/cm)	0	0.295		12:10	
RBK-1	05/24/06	Spec. Cond. (uS/cm)	14	0.304		12:10	
RBK-1	05/24/06	Spec. Cond. (uS/cm)	27	0.306		12:10	
RBK-1	06/07/06	Spec. Cond. (uS/cm)	0	0.262		13:16	
RBK-1	06/07/06	Spec. Cond. (uS/cm)	12	0.29		13:16	
RBK-1	06/07/06	Spec. Cond. (uS/cm)	25	0.285		13:16	
RBK-1	06/20/06	Spec. Cond. (uS/cm)	0	0.305		12:30	
RBK-1	06/20/06	Spec. Cond. (uS/cm)	14	0.366		12:30	
RBK-1	06/20/06	Spec. Cond. (uS/cm)	28	0.376		12:30	
RBK-1	07/13/06	Spec. Cond. (uS/cm)	0	0.291		12:15	
RBK-1	07/13/06	Spec. Cond. (uS/cm)	13	0.356		12:15	
RBK-1	07/13/06	Spec. Cond. (uS/cm)	25	0.392		12:15	
RBK-1	07/24/06	Spec. Cond. (uS/cm)	0	0.284		12:45	
RBK-1	07/24/06	Spec. Cond. (uS/cm)	13	0.288		12:45	
RBK-1	07/24/06	Spec. Cond. (uS/cm)	25	0.344		12:45	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-1	08/08/06	Spec. Cond. (uS/cm)	0	0.251		12:30	
RBK-1	08/08/06	Spec. Cond. (uS/cm)	11	0.261		12:30	
RBK-1	08/08/06	Spec. Cond. (uS/cm)	23	0.387		12:30	
RBK-1	08/29/06	Spec. Cond. (uS/cm)	0	0.235		12:14	
RBK-1	08/29/06	Spec. Cond. (uS/cm)	13	0.252		12:18	
RBK-1	08/29/06	Spec. Cond. (uS/cm)	25	0.38		12:30	
RBK-1	09/12/06	Spec. Cond. (uS/cm)	0	0.195		12:15	
RBK-1	09/12/06	Spec. Cond. (uS/cm)	12.5	0.278		12:25	
RBK-1	09/12/06	Spec. Cond. (uS/cm)	25	0.314		12:35	
RBK-1	09/26/06	Spec. Cond. (uS/cm)	0	0.824		11:45	
RBK-1	09/26/06	Spec. Cond. (uS/cm)	13	0.818		11:45	
RBK-1	09/26/06	Spec. Cond. (uS/cm)	26	.404-1.05		11:45	
RBK-1	10/07/05	TKN (mg/L)	0	1.2		14:58	
RBK-1	10/07/05	TKN (mg/L)	14	1.1		15:05	
RBK-1	10/07/05	TKN (mg/L)	26	7.2		15:15	
RBK-1	10/31/05	TKN (mg/L)	0	1.8		11:15	
RBK-1	10/31/05	TKN (mg/L)	14	1.8		11:15	
RBK-1	10/31/05	TKN (mg/L)	26	6.1		11:15	
RBK-1	04/11/06	TKN (mg/L)	0	0.96		13:41	
RBK-1	04/11/06	TKN (mg/L)	13	1		13:29	
RBK-1	04/11/06	TKN (mg/L)	26	1		13:17	
RBK-1	04/26/06	TKN (mg/L)	0	0.83		12:15	
RBK-1	04/26/06	TKN (mg/L)	15	1.4		12:25	
RBK-1	04/26/06	TKN (mg/L)	23	1.3		12:35	
RBK-1	05/10/06	TKN (mg/L)	0	1.4		12:20	
RBK-1	05/10/06	TKN (mg/L)	12	1.2		12:25	
RBK-1	05/10/06	TKN (mg/L)	22	1.2		12:30	
RBK-1	05/24/06	TKN (mg/L)	0	0.8		12:10	
RBK-1	05/24/06	TKN (mg/L)	14	1.2		12:10	
RBK-1	05/24/06	TKN (mg/L)	27	2.5		12:10	
RBK-1	06/07/06	TKN (mg/L)	0	0.79		13:16	
RBK-1	06/07/06	TKN (mg/L)	12	0.99		13:16	
RBK-1	06/07/06	TKN (mg/L)	25	1.8		13:16	
RBK-1	06/20/06	TKN (mg/L)	0	0.8		12:30	
RBK-1	06/20/06	TKN (mg/L)	14	1.4		12:30	
RBK-1	06/20/06	TKN (mg/L)	28	1.8		12:30	
RBK-1	07/13/06	TKN (mg/L)	0	0.73		12:15	
RBK-1	07/13/06	TKN (mg/L)	13	1.1		12:15	
RBK-1	07/13/06	TKN (mg/L)	25	3.3		12:15	
RBK-1	07/24/06	TKN (mg/L)	0	0.68		12:45	
RBK-1	07/24/06	TKN (mg/L)	13	0.74		12:45	
RBK-1	07/24/06	TKN (mg/L)	25	3.3		12:45	
RBK-1	08/08/06	TKN (mg/L)	0	1.6		12:30	
RBK-1	08/08/06	TKN (mg/L)	11	1.7		12:30	
RBK-1	08/08/06	TKN (mg/L)	23	3.4		12:30	
RBK-1	08/29/06	TKN (mg/L)	0	0.47		12:14	
RBK-1	08/29/06	TKN (mg/L)	13	1.2		12:18	
RBK-1	08/29/06	TKN (mg/L)	25	5.8		12:30	
RBK-1	09/12/06	TKN (mg/L)	0	1.6		12:15	
RBK-1	09/12/06	TKN (mg/L)	12.5	1.3		12:25	
RBK-1	09/12/06	TKN (mg/L)	25	4		12:35	
RBK-1	09/26/06	TKN (mg/L)	0	1.1		11:45	
RBK-1	09/26/06	TKN (mg/L)	13	1.2		11:45	
RBK-1	09/26/06	TKN (mg/L)	26	6		11:45	
RBK-1	10/07/05	Total Nitrate + Nitrite (mg/L)	0	0.025	K	14:58	
RBK-1	10/07/05	Total Nitrate + Nitrite (mg/L)	14	0.025	K	15:05	
RBK-1	10/07/05	Total Nitrate + Nitrite (mg/L)	26	0.025	K	15:15	
RBK-1	10/31/05	Total Nitrate + Nitrite (mg/L)	0	0.025	K	11:15	
RBK-1	10/31/05	Total Nitrate + Nitrite (mg/L)	14	0.1		11:15	
RBK-1	10/31/05	Total Nitrate + Nitrite (mg/L)	26	0.03	B	11:15	
RBK-1	04/11/06	Total Nitrate + Nitrite (mg/L)	0	1.7		13:41	
RBK-1	04/11/06	Total Nitrate + Nitrite (mg/L)	13	2.9		13:29	
RBK-1	04/11/06	Total Nitrate + Nitrite (mg/L)	26	2.6		13:17	
RBK-1	04/26/06	Total Nitrate + Nitrite (mg/L)	0	2.4		12:15	
RBK-1	04/26/06	Total Nitrate + Nitrite (mg/L)	15	2.4		12:25	
RBK-1	04/26/06	Total Nitrate + Nitrite (mg/L)	23	1.9		12:35	
RBK-1	05/10/06	Total Nitrate + Nitrite (mg/L)	0	2.4		12:20	
RBK-1	05/10/06	Total Nitrate + Nitrite (mg/L)	12	2.2		12:25	
RBK-1	05/10/06	Total Nitrate + Nitrite (mg/L)	22	1.6		12:30	
RBK-1	05/24/06	Total Nitrate + Nitrite (mg/L)	0	1.9		12:10	
RBK-1	05/24/06	Total Nitrate + Nitrite (mg/L)	14	2.1		12:10	
RBK-1	05/24/06	Total Nitrate + Nitrite (mg/L)	27	0.23		12:10	
RBK-1	06/07/06	Total Nitrate + Nitrite (mg/L)	0	1.7		13:16	
RBK-1	06/07/06	Total Nitrate + Nitrite (mg/L)	12	1.6		13:16	
RBK-1	06/07/06	Total Nitrate + Nitrite (mg/L)	25	0.025	U	13:16	
RBK-1	06/20/06	Total Nitrate + Nitrite (mg/L)	0	0.8		12:30	
RBK-1	06/20/06	Total Nitrate + Nitrite (mg/L)	14	0.45		12:30	
RBK-1	06/20/06	Total Nitrate + Nitrite (mg/L)	28	0.063	B	12:30	
RBK-1	07/13/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	12:15	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-1	07/13/06	Total Nitrate + Nitrite (mg/L)	13	0.025	U	12:15	
RBK-1	07/13/06	Total Nitrate + Nitrite (mg/L)	25	0.025	U	12:15	
RBK-1	07/24/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	12:45	
RBK-1	07/24/06	Total Nitrate + Nitrite (mg/L)	13	0.025	U	12:45	
RBK-1	07/24/06	Total Nitrate + Nitrite (mg/L)	25	0.025	U	12:45	
RBK-1	08/08/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	12:30	
RBK-1	08/08/06	Total Nitrate + Nitrite (mg/L)	11	0.025	U	12:30	
RBK-1	08/08/06	Total Nitrate + Nitrite (mg/L)	23	0.025	U	12:30	
RBK-1	08/29/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	12:14	
RBK-1	08/29/06	Total Nitrate + Nitrite (mg/L)	13	0.025	U	12:18	
RBK-1	08/29/06	Total Nitrate + Nitrite (mg/L)	25	0.025	U	12:30	
RBK-1	09/12/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	12:15	
RBK-1	09/12/06	Total Nitrate + Nitrite (mg/L)	12.5	0.025	U	12:25	
RBK-1	09/12/06	Total Nitrate + Nitrite (mg/L)	25	0.025	U	12:35	
RBK-1	09/26/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	11:45	
RBK-1	09/26/06	Total Nitrate + Nitrite (mg/L)	13	0.025	U	11:45	
RBK-1	09/26/06	Total Nitrate + Nitrite (mg/L)	26	0.025	U	11:45	
RBK-1	10/07/05	TP (mg/L)	0	0.077		14:58	
RBK-1	10/07/05	TP (mg/L)	14	0.08		15:05	
RBK-1	10/07/05	TP (mg/L)	26	0.68		15:15	
RBK-1	10/31/05	TP (mg/L)	0	0.067		11:15	
RBK-1	10/31/05	TP (mg/L)	14	0.11		11:15	
RBK-1	10/31/05	TP (mg/L)	26	0.61		11:15	
RBK-1	04/11/06	TP (mg/L)	0	0.051		13:41	
RBK-1	04/11/06	TP (mg/L)	13	0.036	B	13:29	
RBK-1	04/11/06	TP (mg/L)	26	0.047	B	13:17	
RBK-1	04/26/06	TP (mg/L)	0	0.043	B	12:15	
RBK-1	04/26/06	TP (mg/L)	15	0.047	B	12:25	
RBK-1	04/26/06	TP (mg/L)	23	0.05		12:35	
RBK-1	05/10/06	TP (mg/L)	0	0.035	B	12:20	
RBK-1	05/10/06	TP (mg/L)	12	0.04	B	12:25	
RBK-1	05/10/06	TP (mg/L)	22	0.067		12:30	
RBK-1	05/24/06	TP (mg/L)	0	0.03	B	12:10	
RBK-1	05/24/06	TP (mg/L)	14	0.061		12:10	
RBK-1	05/24/06	TP (mg/L)	27	0.23		12:10	
RBK-1	06/07/06	TP (mg/L)	0	0.016	B	13:16	
RBK-1	06/07/06	TP (mg/L)	12	0.05		13:16	
RBK-1	06/07/06	TP (mg/L)	25	0.13		13:16	
RBK-1	06/20/06	TP (mg/L)	0	0.05		12:30	
RBK-1	06/20/06	TP (mg/L)	14	0.081		12:30	
RBK-1	06/20/06	TP (mg/L)	28	0.061		12:30	
RBK-1	07/13/06	TP (mg/L)	0	0.037	B	12:15	
RBK-1	07/13/06	TP (mg/L)	13	0.068		12:15	
RBK-1	07/13/06	TP (mg/L)	25	0.19		12:15	
RBK-1	07/24/06	TP (mg/L)	0	0.057		12:45	
RBK-1	07/24/06	TP (mg/L)	13	0.079		12:45	
RBK-1	07/24/06	TP (mg/L)	25	0.27		12:45	
RBK-1	08/08/06	TP (mg/L)	0	0.11		12:30	
RBK-1	08/08/06	TP (mg/L)	11	0.12		12:30	
RBK-1	08/08/06	TP (mg/L)	23	0.15		12:30	
RBK-1	08/29/06	TP (mg/L)	0	0.23		12:14	
RBK-1	08/29/06	TP (mg/L)	13	0.067		12:18	
RBK-1	08/29/06	TP (mg/L)	25	0.58		12:30	
RBK-1	09/12/06	TP (mg/L)	0	0.1		12:15	
RBK-1	09/12/06	TP (mg/L)	12.5	0.08		12:25	
RBK-1	09/12/06	TP (mg/L)	25	0.13		12:35	
RBK-1	09/26/06	TP (mg/L)	0	0.052		11:45	
RBK-1	09/26/06	TP (mg/L)	13	0.077		11:45	
RBK-1	09/26/06	TP (mg/L)	26	0.53		11:45	
RBK-1	10/07/05	Turbidity (NTU)	0	0		14:58	
RBK-1	10/07/05	Turbidity (NTU)	14	3		15:05	
RBK-1	10/07/05	Turbidity (NTU)	26	0		15:15	
RBK-1	10/31/05	Turbidity (NTU)	0	1		11:15	
RBK-1	10/31/05	Turbidity (NTU)	14	17		11:15	
RBK-1	10/31/05	Turbidity (NTU)	26	17		11:15	
RBK-1	04/11/06	Turbidity (NTU)	0	8		13:41	
RBK-1	04/11/06	Turbidity (NTU)	13	6		13:29	
RBK-1	04/11/06	Turbidity (NTU)	26	100		13:17	
RBK-1	04/26/06	Turbidity (NTU)	0	1		12:15	
RBK-1	04/26/06	Turbidity (NTU)	15	8		12:25	
RBK-1	04/26/06	Turbidity (NTU)	23	5		12:35	
RBK-1	05/10/06	Turbidity (NTU)	0	3		12:20	
RBK-1	05/10/06	Turbidity (NTU)	12	5		12:25	
RBK-1	05/10/06	Turbidity (NTU)	22	5		12:30	
RBK-1	05/24/06	Turbidity (NTU)	0	4		12:10	
RBK-1	05/24/06	Turbidity (NTU)	14	8		12:10	
RBK-1	05/24/06	Turbidity (NTU)	27	187		12:10	
RBK-1	06/07/06	Turbidity (NTU)	0	10		13:16	
RBK-1	06/07/06	Turbidity (NTU)	12	22		13:16	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-1	06/07/06	Turbidity (NTU)	25	27		13:16	
RBK-1	06/20/06	Turbidity (NTU)	0	200		12:30	
RBK-1	06/20/06	Turbidity (NTU)	14	69		12:30	
RBK-1	06/20/06	Turbidity (NTU)	28	27		12:30	
RBK-1	07/13/06	Turbidity (NTU)	0	15		12:15	
RBK-1	07/13/06	Turbidity (NTU)	13	20		12:15	
RBK-1	07/13/06	Turbidity (NTU)	25	58		12:15	
RBK-1	07/24/06	Turbidity (NTU)	0	0		12:45	
RBK-1	07/24/06	Turbidity (NTU)	13	0		12:45	
RBK-1	07/24/06	Turbidity (NTU)	25	0		12:45	
RBK-1	08/08/06	Turbidity (NTU)	0	658		12:30	
RBK-1	08/08/06	Turbidity (NTU)	11	117		12:30	
RBK-1	08/08/06	Turbidity (NTU)	23	10		12:30	
RBK-1	08/29/06	Turbidity (NTU)	0	-10		12:14	
RBK-1	08/29/06	Turbidity (NTU)	13	-10		12:18	
RBK-1	08/29/06	Turbidity (NTU)	25	-10		12:30	
RBK-1	09/12/06	Turbidity (NTU)	0	20		12:15	
RBK-1	09/12/06	Turbidity (NTU)	12.5	23		12:25	
RBK-1	09/12/06	Turbidity (NTU)	25	33		12:35	
RBK-1	09/26/06	Turbidity (NTU)	0	43		11:45	
RBK-1	09/26/06	Turbidity (NTU)	13	140		11:45	
RBK-1	09/26/06	Turbidity (NTU)	26	136		11:45	
RBK-1	10/07/05	Water Temp (F)	0	19.3		14:58	
RBK-1	10/07/05	Water Temp (F)	14	18.8		15:05	
RBK-1	10/07/05	Water Temp (F)	26	13.9		15:15	
RBK-1	10/31/05	Water Temp (F)	0	12		11:15	
RBK-1	10/31/05	Water Temp (F)	14	12		11:15	
RBK-1	10/31/05	Water Temp (F)	26	12		11:15	
RBK-1	04/11/06	Water Temp (F)	0	13.5		13:41	
RBK-1	04/11/06	Water Temp (F)	13	12.2		13:29	
RBK-1	04/11/06	Water Temp (F)	26	11		13:17	
RBK-1	04/26/06	Water Temp (F)	0	18.5		12:15	
RBK-1	04/26/06	Water Temp (F)	15	12.6		12:25	
RBK-1	04/26/06	Water Temp (F)	23	12.7		12:35	
RBK-1	05/10/06	Water Temp (F)	0	19.8		12:20	
RBK-1	05/10/06	Water Temp (F)	12	18.6		12:20	
RBK-1	05/10/06	Water Temp (F)	22	15.1		12:30	
RBK-1	05/24/06	Water Temp (F)	0	20.3		12:10	
RBK-1	05/24/06	Water Temp (F)	14	18.9		12:10	
RBK-1	05/24/06	Water Temp (F)	27	15.6		12:10	
RBK-1	06/07/06	Water Temp (F)	0	25.2		13:16	
RBK-1	06/07/06	Water Temp (F)	12	20.6		13:16	
RBK-1	06/07/06	Water Temp (F)	25	14.9		13:16	
RBK-1	06/20/06	Water Temp (F)	0	28		12:30	
RBK-1	06/20/06	Water Temp (F)	14	20.2		12:30	
RBK-1	06/20/06	Water Temp (F)	28	18.3		12:30	
RBK-1	07/13/06	Water Temp (F)	0	26.7		12:15	
RBK-1	07/13/06	Water Temp (F)	13	23.5		12:15	
RBK-1	07/13/06	Water Temp (F)	25	17.1		12:15	
RBK-1	07/24/06	Water Temp (F)	0	27.9		12:45	
RBK-1	07/24/06	Water Temp (F)	13	27.4		12:45	
RBK-1	07/24/06	Water Temp (F)	25	23.4		12:45	
RBK-1	08/08/06	Water Temp (F)	0	29.1		12:30	
RBK-1	08/08/06	Water Temp (F)	11	28.5		12:30	
RBK-1	08/08/06	Water Temp (F)	23	20.7		12:30	
RBK-1	08/29/06	Water Temp (F)	0	25.6		12:14	
RBK-1	08/29/06	Water Temp (F)	13	24.1		12:18	
RBK-1	08/29/06	Water Temp (F)	25	18.4		12:30	
RBK-1	09/12/06	Water Temp (F)	0	23.2		12:15	
RBK-1	09/12/06	Water Temp (F)	12.5	22.2		12:25	
RBK-1	09/12/06	Water Temp (F)	25	16.2		12:35	
RBK-1	09/26/06	Water Temp (F)	0	21.5		11:45	
RBK-1	09/26/06	Water Temp (F)	13	19.8		11:45	
RBK-1	09/26/06	Water Temp (F)	26	17		11:45	
RBK-1 (DUP)	09/12/06	Ch-a (mg/m^3)		36		12:25	
RBK-1 (DUP)	09/12/06	Dissolved Phosphorus (mg/L)		0.029	B	12:35	
RBK-1 (DUP)	09/12/06	TKN (mg/L)		1.6		12:35	
RBK-1 (DUP)	09/12/06	Total Nitrate + Nitrite (mg/L)		0.025	U	12:25	
RBK-1 (DUP)	09/12/06	TP (mg/L)		0.11		12:15	
RBK-2	10/07/05	Ch-a (mg/m^3)	0	3.6		14:10	
RBK-2	10/07/05	Ch-a (mg/m^3)	11	27		14:15	
RBK-2	10/07/05	Ch-a (mg/m^3)	20	20		14:10	
RBK-2	10/31/05	Ch-a (mg/m^3)	0	120		10:30	
RBK-2	10/31/05	Ch-a (mg/m^3)	11	140		10:30	
RBK-2	10/31/05	Ch-a (mg/m^3)	20	25		10:30	
RBK-2	04/11/06	Ch-a (mg/m^3)	0	160		12:49	
RBK-2	04/11/06	Ch-a (mg/m^3)	10	88		12:33	
RBK-2	04/11/06	Ch-a (mg/m^3)	21	28		11:50	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-2	04/26/06	Ch-a (mg/m^3)	0	6.2		11:45	
RBK-2	04/26/06	Ch-a (mg/m^3)	11	14		11:45	
RBK-2	04/26/06	Ch-a (mg/m^3)	21	5.3		12:00	
RBK-2	05/10/06	Ch-a (mg/m^3)	0	7.1		11:55	
RBK-2	05/10/06	Ch-a (mg/m^3)	11	4.5		12:00	
RBK-2	05/10/06	Ch-a (mg/m^3)	20	1.8		12:05	
RBK-2	05/24/06	Ch-a (mg/m^3)	0	0.5	U	11:36	
RBK-2	05/24/06	Ch-a (mg/m^3)	9	0.89		11:36	
RBK-2	05/24/06	Ch-a (mg/m^3)	18	0.5	U	11:36	
RBK-2	06/07/06	Ch-a (mg/m^3)	0	12		12:45	
RBK-2	06/07/06	Ch-a (mg/m^3)	14	8		12:45	
RBK-2	06/07/06	Ch-a (mg/m^3)	28	8		12:45	
RBK-2	06/20/06	Ch-a (mg/m^3)	0	12		11:50	
RBK-2	06/20/06	Ch-a (mg/m^3)	10.5	0.5	U	11:50	
RBK-2	06/20/06	Ch-a (mg/m^3)	20.5	0.5	U	11:50	
RBK-2	07/13/06	Ch-a (mg/m^3)	0	3.6		11:32	
RBK-2	07/13/06	Ch-a (mg/m^3)	11	9.8		11:32	
RBK-2	07/13/06	Ch-a (mg/m^3)	21	9.8		11:32	
RBK-2	07/24/06	Ch-a (mg/m^3)	0	0.5	U	12:10	
RBK-2	07/24/06	Ch-a (mg/m^3)	11	0.63		12:10	
RBK-2	07/24/06	Ch-a (mg/m^3)	21	0.57		12:10	
RBK-2	08/08/06	Ch-a (mg/m^3)	0	52		11:55	
RBK-2	08/08/06	Ch-a (mg/m^3)	10	41		11:55	
RBK-2	08/08/06	Ch-a (mg/m^3)	20	28		11:55	
RBK-2	08/29/06	Ch-a (mg/m^3)	0	69		11:28	
RBK-2	08/29/06	Ch-a (mg/m^3)	10	31		11:44	
RBK-2	08/29/06	Ch-a (mg/m^3)	20	19		11:55	
RBK-2	09/12/06	Ch-a (mg/m^3)	0	31		11:35	
RBK-2	09/12/06	Ch-a (mg/m^3)	10.5	20		11:45	
RBK-2	09/12/06	Ch-a (mg/m^3)	21	13		11:54	
RBK-2	09/26/06	Ch-a (mg/m^3)	0	25		11:25	
RBK-2	09/26/06	Ch-a (mg/m^3)	11	20		11:25	
RBK-2	09/26/06	Ch-a (mg/m^3)	21	18		11:25	
RBK-2	10/07/05	Dissolved Phosphorus (mg/L)	0	0.023	B	14:10	
RBK-2	10/07/05	Dissolved Phosphorus (mg/L)	11	0.021	B	14:15	
RBK-2	10/07/05	Dissolved Phosphorus (mg/L)	20	0.33		14:40	
RBK-2	10/31/05	Dissolved Phosphorus (mg/L)	0	0.052		10:30	
RBK-2	10/31/05	Dissolved Phosphorus (mg/L)	11	0.051		10:30	
RBK-2	10/31/05	Dissolved Phosphorus (mg/L)	20	0.057		10:30	
RBK-2	04/11/06	Dissolved Phosphorus (mg/L)	0	0.022	B	12:49	
RBK-2	04/11/06	Dissolved Phosphorus (mg/L)	10	0.026	B	12:33	
RBK-2	04/11/06	Dissolved Phosphorus (mg/L)	21	0.033	B	11:50	
RBK-2	04/26/06	Dissolved Phosphorus (mg/L)	0	0.028	B	11:45	
RBK-2	04/26/06	Dissolved Phosphorus (mg/L)	11	0.047	B	11:45	
RBK-2	04/26/06	Dissolved Phosphorus (mg/L)	21	0.025	B	12:00	
RBK-2	05/10/06	Dissolved Phosphorus (mg/L)	0	0.032	B	11:55	
RBK-2	05/10/06	Dissolved Phosphorus (mg/L)	11	0.043	B	12:00	
RBK-2	05/10/06	Dissolved Phosphorus (mg/L)	20	0.054		12:05	
RBK-2	05/24/06	Dissolved Phosphorus (mg/L)	0	0.026	B	11:36	
RBK-2	05/24/06	Dissolved Phosphorus (mg/L)	9	0.028	B	11:36	
RBK-2	05/24/06	Dissolved Phosphorus (mg/L)	18	0.1		11:36	
RBK-2	06/07/06	Dissolved Phosphorus (mg/L)	0	0.019	B	12:45	
RBK-2	06/07/06	Dissolved Phosphorus (mg/L)	14	0.02	B	12:45	
RBK-2	06/07/06	Dissolved Phosphorus (mg/L)	28	0.13		12:45	
RBK-2	06/20/06	Dissolved Phosphorus (mg/L)	0	0.083		11:50	
RBK-2	06/20/06	Dissolved Phosphorus (mg/L)	10.5	0.011	U	11:50	
RBK-2	06/20/06	Dissolved Phosphorus (mg/L)	20.5	0.035	B	11:50	
RBK-2	07/13/06	Dissolved Phosphorus (mg/L)	0	0.026	B	11:32	
RBK-2	07/13/06	Dissolved Phosphorus (mg/L)	11	0.02	B	11:32	
RBK-2	07/13/06	Dissolved Phosphorus (mg/L)	21	0.059		11:32	
RBK-2	07/24/06	Dissolved Phosphorus (mg/L)	0	0.03	B	12:10	
RBK-2	07/24/06	Dissolved Phosphorus (mg/L)	11	0.055		12:10	
RBK-2	07/24/06	Dissolved Phosphorus (mg/L)	21	0.071		12:10	
RBK-2	08/08/06	Dissolved Phosphorus (mg/L)	0	0.1		11:55	
RBK-2	08/08/06	Dissolved Phosphorus (mg/L)	10	0.084		11:55	
RBK-2	08/08/06	Dissolved Phosphorus (mg/L)	20	0.24		11:55	
RBK-2	08/29/06	Dissolved Phosphorus (mg/L)	0	0.023	B	11:28	
RBK-2	08/29/06	Dissolved Phosphorus (mg/L)	10	0.018	B	11:44	
RBK-2	08/29/06	Dissolved Phosphorus (mg/L)	20	0.18		11:55	
RBK-2	09/12/06	Dissolved Phosphorus (mg/L)	0	0.027	B	11:35	
RBK-2	09/12/06	Dissolved Phosphorus (mg/L)	10.5	0.033	B	11:45	
RBK-2	09/12/06	Dissolved Phosphorus (mg/L)	21	0.16		11:54	
RBK-2	09/26/06	Dissolved Phosphorus (mg/L)	0	0.017	B	11:25	
RBK-2	09/26/06	Dissolved Phosphorus (mg/L)	11	0.0096	U	11:25	
RBK-2	09/26/06	Dissolved Phosphorus (mg/L)	21	0.28		11:25	
RBK-2	10/07/05	DO (mg/L)	0	8.91		14:10	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-2	10/07/05	DO (mg/L)	11	8.96		14:15	
RBK-2	10/07/05	DO (mg/L)	20	10.02		14:40	
RBK-2	10/31/05	DO (mg/L)	0	11		10:30	
RBK-2	10/31/05	DO (mg/L)	11	11.2		10:30	
RBK-2	10/31/05	DO (mg/L)	20	11.3		10:30	
RBK-2	04/11/06	DO (mg/L)	0	12.1		12:49	
RBK-2	04/11/06	DO (mg/L)	10	13.47		12:33	
RBK-2	04/11/06	DO (mg/L)	21	14.25		11:50	
RBK-2	04/26/06	DO (mg/L)	0	9.85		11:45	
RBK-2	04/26/06	DO (mg/L)	11	11.55		11:45	
RBK-2	04/26/06	DO (mg/L)	21	13.2		12:00	
RBK-2	05/10/06	DO (mg/L)	0	10.01		11:55	
RBK-2	05/10/06	DO (mg/L)	11	10.69		12:00	
RBK-2	05/10/06	DO (mg/L)	20	12.58		12:05	
RBK-2	05/24/06	DO (mg/L)	0	10.74		11:36	
RBK-2	05/24/06	DO (mg/L)	9	11.5		11:36	
RBK-2	05/24/06	DO (mg/L)	18	11.22		11:36	
RBK-2	06/07/06	DO (mg/L)	0	9.45		12:45	
RBK-2	06/07/06	DO (mg/L)	14	11.78		12:45	
RBK-2	06/07/06	DO (mg/L)	28	13.53		12:45	
RBK-2	06/20/06	DO (mg/L)	0	8.64		11:50	
RBK-2	06/20/06	DO (mg/L)	10.5	10.93		11:50	
RBK-2	06/20/06	DO (mg/L)	20.5	11.06		11:50	
RBK-2	07/13/06	DO (mg/L)	0	8.72		11:32	
RBK-2	07/13/06	DO (mg/L)	11	9.98		11:32	
RBK-2	07/13/06	DO (mg/L)	21	10.42		11:32	
RBK-2	07/24/06	DO (mg/L)	0	8.83		12:10	
RBK-2	07/24/06	DO (mg/L)	11	10.7		12:10	
RBK-2	07/24/06	DO (mg/L)	21	15.3		12:10	
RBK-2	08/08/06	DO (mg/L)	0	8.34		11:55	
RBK-2	08/08/06	DO (mg/L)	10	8.71		11:55	
RBK-2	08/08/06	DO (mg/L)	20	9.16		11:55	
RBK-2	08/29/06	DO (mg/L)	0	6.9		11:28	
RBK-2	08/29/06	DO (mg/L)	10	7.09		11:44	
RBK-2	08/29/06	DO (mg/L)	20	8.06		11:55	
RBK-2	09/12/06	DO (mg/L)	0	8.64		11:35	
RBK-2	09/12/06	DO (mg/L)	10.5	8.82		11:45	
RBK-2	09/12/06	DO (mg/L)	21	10.23		11:54	
RBK-2	09/26/06	DO (mg/L)	0	7.41		11:25	
RBK-2	09/26/06	DO (mg/L)	11	7.87		11:25	
RBK-2	09/26/06	DO (mg/L)	21	8.31		11:25	
RBK-2	10/07/05	pH	0	8.66		14:10	
RBK-2	10/07/05	pH	11	8.64		14:15	
RBK-2	10/07/05	pH	20	7.32		14:40	
RBK-2	10/31/05	pH	0	8		10:30	
RBK-2	10/31/05	pH	11	8		10:30	
RBK-2	10/31/05	pH	20	8		10:30	
RBK-2	04/11/06	pH	10	8.89		12:33	
RBK-2	04/11/06	pH	21	8.27		11:50	
RBK-2	04/26/06	pH	0	8.96		11:45	
RBK-2	04/26/06	pH	11	8.64		11:45	
RBK-2	04/26/06	pH	21	8.05		12:00	
RBK-2	05/10/06	pH	0	8.18		11:55	
RBK-2	05/10/06	pH	11	7.8		12:00	
RBK-2	05/10/06	pH	20	7.45		12:05	
RBK-2	05/24/06	pH	0	8.87		11:36	
RBK-2	05/24/06	pH	9	8.83		11:36	
RBK-2	05/24/06	pH	18	8.84		11:36	
RBK-2	06/07/06	pH	0	8.73		12:45	
RBK-2	06/07/06	pH	14	7.63		12:45	
RBK-2	06/07/06	pH	28	7.43		12:45	
RBK-2	06/20/06	pH	0	7.22		11:50	
RBK-2	06/20/06	pH	10.5	8.35		11:50	
RBK-2	06/20/06	pH	20.5	8.15		11:50	
RBK-2	07/13/06	pH	0	8.8		11:32	
RBK-2	07/13/06	pH	11	7.75		11:32	
RBK-2	07/13/06	pH	21	7.35		11:32	
RBK-2	07/24/06	pH	0	10.15 ?		12:10	
RBK-2	07/24/06	pH	11	10 ?		12:10	
RBK-2	07/24/06	pH	21	7.64		12:10	
RBK-2	08/08/06	pH	0	9.46		11:55	
RBK-2	08/08/06	pH	10	9.33		11:55	
RBK-2	08/08/06	pH	20	8.86		11:55	
RBK-2	08/29/06	pH	0	9.48		11:28	
RBK-2	08/29/06	pH	10	8.53		11:44	
RBK-2	08/29/06	pH	20	7.09		11:55	
RBK-2	09/12/06	pH	0	9		11:35	
RBK-2	09/12/06	pH	10.5	8.48		11:45	
RBK-2	09/12/06	pH	21	7		11:54	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-2	09/26/06	pH	0	4.92		11:25	
RBK-2	09/26/06	pH	11	4.93		11:25	
RBK-2	09/26/06	pH	21	5		11:25	
RBK-2	10/07/05	Spec. Cond. (uS/cm)	0	0.63		14:10	
RBK-2	10/07/05	Spec. Cond. (uS/cm)	11	0.624		14:15	
RBK-2	10/07/05	Spec. Cond. (uS/cm)	20	0.82		14:40	
RBK-2	10/31/05	Spec. Cond. (uS/cm)	0	0.31		10:30	
RBK-2	10/31/05	Spec. Cond. (uS/cm)	11	0.31		10:30	
RBK-2	10/31/05	Spec. Cond. (uS/cm)	20	0.31		10:30	
RBK-2	04/11/06	Spec. Cond. (uS/cm)	0	9.06		12:49	
RBK-2	04/11/06	Spec. Cond. (uS/cm)	10	0.3		12:33	
RBK-2	04/11/06	Spec. Cond. (uS/cm)	21	0.332		11:50	
RBK-2	04/26/06	Spec. Cond. (uS/cm)	0	0.276		11:45	
RBK-2	04/26/06	Spec. Cond. (uS/cm)	11	0.291		11:45	
RBK-2	04/26/06	Spec. Cond. (uS/cm)	21	0.311		12:00	
RBK-2	05/10/06	Spec. Cond. (uS/cm)	0	0.296		11:55	
RBK-2	05/10/06	Spec. Cond. (uS/cm)	11	0.297		12:00	
RBK-2	05/10/06	Spec. Cond. (uS/cm)	20	0.306		12:05	
RBK-2	05/24/06	Spec. Cond. (uS/cm)	0	0.295		11:36	
RBK-2	05/24/06	Spec. Cond. (uS/cm)	9	0.297		11:36	
RBK-2	05/24/06	Spec. Cond. (uS/cm)	18	0.299		11:36	
RBK-2	06/07/06	Spec. Cond. (uS/cm)	0	0.262		12:45	
RBK-2	06/07/06	Spec. Cond. (uS/cm)	14	0.286		12:45	
RBK-2	06/07/06	Spec. Cond. (uS/cm)	28	0.285		12:45	
RBK-2	06/20/06	Spec. Cond. (uS/cm)	0	0.311		11:50	
RBK-2	06/20/06	Spec. Cond. (uS/cm)	10.5	0.368		11:50	
RBK-2	06/20/06	Spec. Cond. (uS/cm)	20.5	0.374		11:50	
RBK-2	07/13/06	Spec. Cond. (uS/cm)	0	0.298		11:32	
RBK-2	07/13/06	Spec. Cond. (uS/cm)	11	0.351		11:32	
RBK-2	07/13/06	Spec. Cond. (uS/cm)	21	0.372		11:32	
RBK-2	07/24/06	Spec. Cond. (uS/cm)	0	0.288		12:10	
RBK-2	07/24/06	Spec. Cond. (uS/cm)	11	0.325		12:10	
RBK-2	07/24/06	Spec. Cond. (uS/cm)	21	0.373		12:10	
RBK-2	08/08/06	Spec. Cond. (uS/cm)	0	0.26		11:55	
RBK-2	08/08/06	Spec. Cond. (uS/cm)	10	0.255		11:55	
RBK-2	08/08/06	Spec. Cond. (uS/cm)	20	0.28		11:55	
RBK-2	08/29/06	Spec. Cond. (uS/cm)	0	0.234		11:28	
RBK-2	08/29/06	Spec. Cond. (uS/cm)	10	0.269		11:44	
RBK-2	08/29/06	Spec. Cond. (uS/cm)	20	0.354		11:55	
RBK-2	09/12/06	Spec. Cond. (uS/cm)	0	0.195		11:35	
RBK-2	09/12/06	Spec. Cond. (uS/cm)	10.5	0.201		11:45	
RBK-2	09/12/06	Spec. Cond. (uS/cm)	21	0.97		11:54	
RBK-2	09/26/06	Spec. Cond. (uS/cm)	0	0.869		11:25	
RBK-2	09/26/06	Spec. Cond. (uS/cm)	11	0.876		11:25	
RBK-2	09/26/06	Spec. Cond. (uS/cm)	21	0.987		11:25	
RBK-2	10/07/05	TKN (mg/L)	0	1.2		14:10	
RBK-2	10/07/05	TKN (mg/L)	11	1.3		14:15	
RBK-2	10/07/05	TKN (mg/L)	20	4.3		14:40	
RBK-2	10/31/05	TKN (mg/L)	0	3.2		10:30	
RBK-2	10/31/05	TKN (mg/L)	11	1.8		10:30	
RBK-2	10/31/05	TKN (mg/L)	20	1.7		10:30	
RBK-2	04/11/06	TKN (mg/L)	0	1.4		12:49	
RBK-2	04/11/06	TKN (mg/L)	10	1.1		12:33	
RBK-2	04/11/06	TKN (mg/L)	21	1.4		11:50	
RBK-2	04/26/06	TKN (mg/L)	0	0.96		11:45	
RBK-2	04/26/06	TKN (mg/L)	11	1.3		11:45	
RBK-2	04/26/06	TKN (mg/L)	21	1.4		12:00	
RBK-2	05/10/06	TKN (mg/L)	0	1.1		11:55	
RBK-2	05/10/06	TKN (mg/L)	11	1.1		12:00	
RBK-2	05/10/06	TKN (mg/L)	20	1.8		12:05	
RBK-2	05/24/06	TKN (mg/L)	0	0.72		11:36	
RBK-2	05/24/06	TKN (mg/L)	9	0.91		11:36	
RBK-2	05/24/06	TKN (mg/L)	18	1.4		11:36	
RBK-2	06/07/06	TKN (mg/L)	0	0.83		12:45	
RBK-2	06/07/06	TKN (mg/L)	14	1.2		12:45	
RBK-2	06/07/06	TKN (mg/L)	28	2.2		12:45	
RBK-2	06/20/06	TKN (mg/L)	0	0.85		11:50	
RBK-2	06/20/06	TKN (mg/L)	10.5	1		11:50	
RBK-2	06/20/06	TKN (mg/L)	20.5	2.3		11:50	
RBK-2	07/13/06	TKN (mg/L)	0	0.77		11:32	
RBK-2	07/13/06	TKN (mg/L)	11	0.94		11:32	
RBK-2	07/13/06	TKN (mg/L)	21	2.3		11:32	
RBK-2	07/24/06	TKN (mg/L)	0	0.56		12:10	
RBK-2	07/24/06	TKN (mg/L)	11	1		12:10	
RBK-2	07/24/06	TKN (mg/L)	21	2.7		12:10	
RBK-2	08/08/06	TKN (mg/L)	0	2		11:55	
RBK-2	08/08/06	TKN (mg/L)	10	1.7		11:55	
RBK-2	08/08/06	TKN (mg/L)	20	3.1		11:55	
RBK-2	08/29/06	TKN (mg/L)	0	1.7		11:28	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-2	08/29/06	TKN (mg/L)	10	1.2		11:44	
RBK-2	08/29/06	TKN (mg/L)	20	3.1		11:55	
RBK-2	09/12/06	TKN (mg/L)	0	1.2		11:35	
RBK-2	09/12/06	TKN (mg/L)	10.5	1.3		11:45	
RBK-2	09/12/06	TKN (mg/L)	21	5		11:54	
RBK-2	09/26/06	TKN (mg/L)	0	1.3		11:25	
RBK-2	09/26/06	TKN (mg/L)	11	1.3		11:25	
RBK-2	09/26/06	TKN (mg/L)	21	3.8		11:25	
RBK-2	10/07/05	Total Nitrate + Nitrite (mg/L)	0	0.025	K	14:10	
RBK-2	10/07/05	Total Nitrate + Nitrite (mg/L)	11	0.025	K	14:15	
RBK-2	10/07/05	Total Nitrate + Nitrite (mg/L)	20	0.025	K	14:40	
RBK-2	10/31/05	Total Nitrate + Nitrite (mg/L)	0	0.025	K	10:30	
RBK-2	10/31/05	Total Nitrate + Nitrite (mg/L)	11	0.12		10:30	
RBK-2	10/31/05	Total Nitrate + Nitrite (mg/L)	20	0.13		10:30	
RBK-2	04/11/06	Total Nitrate + Nitrite (mg/L)	0	2.4		12:49	
RBK-2	04/11/06	Total Nitrate + Nitrite (mg/L)	10	2.8		12:33	
RBK-2	04/11/06	Total Nitrate + Nitrite (mg/L)	21	3.1		11:50	
RBK-2	04/26/06	Total Nitrate + Nitrite (mg/L)	0	2.6		11:45	
RBK-2	04/26/06	Total Nitrate + Nitrite (mg/L)	11	2.9		11:45	
RBK-2	04/26/06	Total Nitrate + Nitrite (mg/L)	21	1.8		12:00	
RBK-2	05/10/06	Total Nitrate + Nitrite (mg/L)	0	2.6		11:55	
RBK-2	05/10/06	Total Nitrate + Nitrite (mg/L)	11	2.4		12:00	
RBK-2	05/10/06	Total Nitrate + Nitrite (mg/L)	20	0.84		12:05	
RBK-2	05/24/06	Total Nitrate + Nitrite (mg/L)	0	2.4		11:36	
RBK-2	05/24/06	Total Nitrate + Nitrite (mg/L)	9	2.8		11:36	
RBK-2	05/24/06	Total Nitrate + Nitrite (mg/L)	18	1.6		11:36	
RBK-2	06/07/06	Total Nitrate + Nitrite (mg/L)	0	1.9		12:45	
RBK-2	06/07/06	Total Nitrate + Nitrite (mg/L)	14	1.5		12:45	
RBK-2	06/07/06	Total Nitrate + Nitrite (mg/L)	28	0.025	U	12:45	
RBK-2	06/20/06	Total Nitrate + Nitrite (mg/L)	0	0.55		11:50	
RBK-2	06/20/06	Total Nitrate + Nitrite (mg/L)	10.5	1		11:50	
RBK-2	06/20/06	Total Nitrate + Nitrite (mg/L)	20.5	0.23		11:50	
RBK-2	07/13/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	11:32	
RBK-2	07/13/06	Total Nitrate + Nitrite (mg/L)	11	0.025	U	11:32	
RBK-2	07/13/06	Total Nitrate + Nitrite (mg/L)	21	0.025	U	11:32	
RBK-2	07/24/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	12:10	
RBK-2	07/24/06	Total Nitrate + Nitrite (mg/L)	11	0.025	U	12:10	
RBK-2	07/24/06	Total Nitrate + Nitrite (mg/L)	21	0.025	U	12:10	
RBK-2	08/08/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	11:55	
RBK-2	08/08/06	Total Nitrate + Nitrite (mg/L)	10	0.025	U	11:55	
RBK-2	08/08/06	Total Nitrate + Nitrite (mg/L)	20	0.025	U	11:55	
RBK-2	08/29/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	11:28	
RBK-2	08/29/06	Total Nitrate + Nitrite (mg/L)	10	0.025	U	11:44	
RBK-2	08/29/06	Total Nitrate + Nitrite (mg/L)	20	0.025	U	11:55	
RBK-2	09/12/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	11:35	
RBK-2	09/12/06	Total Nitrate + Nitrite (mg/L)	10.5	0.025	U	11:45	
RBK-2	09/12/06	Total Nitrate + Nitrite (mg/L)	21	0.025	U	11:54	
RBK-2	09/26/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	11:25	
RBK-2	09/26/06	Total Nitrate + Nitrite (mg/L)	11	0.025	U	11:25	
RBK-2	09/26/06	Total Nitrate + Nitrite (mg/L)	21	0.025	U	11:25	
RBK-2	10/07/05	TP (mg/L)	0	0.087		14:10	
RBK-2	10/07/05	TP (mg/L)	11	0.011	K	14:15	
RBK-2	10/07/05	TP (mg/L)	20	0.39		14:40	
RBK-2	10/31/05	TP (mg/L)	0	0.065		10:30	
RBK-2	10/31/05	TP (mg/L)	11	0.12		10:30	
RBK-2	10/31/05	TP (mg/L)	20	0.11		10:30	
RBK-2	04/11/06	TP (mg/L)	0	0.052		12:49	
RBK-2	04/11/06	TP (mg/L)	10	0.052		12:33	
RBK-2	04/11/06	TP (mg/L)	21	0.067		11:50	
RBK-2	04/26/06	TP (mg/L)	0	0.041	B	11:45	
RBK-2	04/26/06	TP (mg/L)	11	0.078		11:45	
RBK-2	04/26/06	TP (mg/L)	21	0.062		12:00	
RBK-2	05/10/06	TP (mg/L)	0	0.023	B	11:55	
RBK-2	05/10/06	TP (mg/L)	11	0.042	B	12:00	
RBK-2	05/10/06	TP (mg/L)	20	0.15		12:05	
RBK-2	05/24/06	TP (mg/L)	0	0.029	B	11:36	
RBK-2	05/24/06	TP (mg/L)	9	0.034	B	11:36	
RBK-2	05/24/06	TP (mg/L)	18	0.1		11:36	
RBK-2	06/07/06	TP (mg/L)	0	0.046	B	12:45	
RBK-2	06/07/06	TP (mg/L)	14	0.046	B	12:45	
RBK-2	06/07/06	TP (mg/L)	28	0.097		12:45	
RBK-2	06/20/06	TP (mg/L)	0	0.15		11:50	
RBK-2	06/20/06	TP (mg/L)	10.5	0.07		11:50	
RBK-2	06/20/06	TP (mg/L)	20.5	0.098		11:50	
RBK-2	07/13/06	TP (mg/L)	0	0.043	B	11:32	
RBK-2	07/13/06	TP (mg/L)	11	0.082		11:32	
RBK-2	07/13/06	TP (mg/L)	21	0.18		11:32	
RBK-2	07/24/06	TP (mg/L)	0	0.052		12:10	
RBK-2	07/24/06	TP (mg/L)	11	0.11		12:10	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-2	07/24/06	TP (mg/L)	21	0.19		12:10	
RBK-2	08/08/06	TP (mg/L)	0	0.14		11:55	
RBK-2	08/08/06	TP (mg/L)	10	0.11		11:55	
RBK-2	08/08/06	TP (mg/L)	20	0.3		11:55	
RBK-2	08/29/06	TP (mg/L)	0	0.098		11:28	
RBK-2	08/29/06	TP (mg/L)	10	0.09		11:44	
RBK-2	08/29/06	TP (mg/L)	20	0.27		11:55	
RBK-2	09/12/06	TP (mg/L)	0	0.077		11:35	
RBK-2	09/12/06	TP (mg/L)	10.5	0.098		11:45	
RBK-2	09/12/06	TP (mg/L)	21	0.18		11:54	
RBK-2	09/26/06	TP (mg/L)	0	0.083		11:25	
RBK-2	09/26/06	TP (mg/L)	11	0.055		11:25	
RBK-2	09/26/06	TP (mg/L)	21	0.4		11:25	
RBK-2	10/07/05	Turbidity (NTU)	0	0		14:10	
RBK-2	10/07/05	Turbidity (NTU)	11	3		14:15	
RBK-2	10/07/05	Turbidity (NTU)	20	0		14:40	
RBK-2	10/31/05	Turbidity (NTU)	0	1		10:30	
RBK-2	10/31/05	Turbidity (NTU)	11	1		10:30	
RBK-2	10/31/05	Turbidity (NTU)	20	1		10:30	
RBK-2	04/11/06	Turbidity (NTU)	0	0.294		12:49	
RBK-2	04/11/06	Turbidity (NTU)	10	8		12:33	
RBK-2	04/11/06	Turbidity (NTU)	21	9		11:50	
RBK-2	04/26/06	Turbidity (NTU)	0	1		11:45	
RBK-2	04/26/06	Turbidity (NTU)	11	182?		11:45	
RBK-2	04/26/06	Turbidity (NTU)	21	5		12:00	
RBK-2	05/10/06	Turbidity (NTU)	0	3		11:55	
RBK-2	05/10/06	Turbidity (NTU)	11	7		12:00	
RBK-2	05/10/06	Turbidity (NTU)	20	7		12:05	
RBK-2	05/24/06	Turbidity (NTU)	0	8		11:36	
RBK-2	05/24/06	Turbidity (NTU)	9	7		11:36	
RBK-2	05/24/06	Turbidity (NTU)	18	2		11:36	
RBK-2	06/07/06	Turbidity (NTU)	0	224		12:45	
RBK-2	06/07/06	Turbidity (NTU)	14	33		12:45	
RBK-2	06/07/06	Turbidity (NTU)	28	80		12:45	
RBK-2	06/20/06	Turbidity (NTU)	0	2		11:50	
RBK-2	06/20/06	Turbidity (NTU)	10.5	24		11:50	
RBK-2	06/20/06	Turbidity (NTU)	20.5	11		11:50	
RBK-2	07/13/06	Turbidity (NTU)	0	891		11:32	
RBK-2	07/13/06	Turbidity (NTU)	11	214		11:32	
RBK-2	07/13/06	Turbidity (NTU)	21	17		11:32	
RBK-2	07/24/06	Turbidity (NTU)	0	0		12:10	
RBK-2	07/24/06	Turbidity (NTU)	11	0		12:10	
RBK-2	07/24/06	Turbidity (NTU)	21	0		12:10	
RBK-2	08/08/06	Turbidity (NTU)	0	10		11:55	
RBK-2	08/08/06	Turbidity (NTU)	10	10		11:55	
RBK-2	08/08/06	Turbidity (NTU)	20	31		11:55	
RBK-2	08/29/06	Turbidity (NTU)	0	-10		11:28	
RBK-2	08/29/06	Turbidity (NTU)	10	-10		11:44	
RBK-2	08/29/06	Turbidity (NTU)	20	-10		11:55	
RBK-2	09/12/06	Turbidity (NTU)	0	31		11:35	
RBK-2	09/12/06	Turbidity (NTU)	10.5	29		11:45	
RBK-2	09/12/06	Turbidity (NTU)	21	8		11:54	
RBK-2	09/26/06	Turbidity (NTU)	0	59		11:25	
RBK-2	09/26/06	Turbidity (NTU)	11	53		11:25	
RBK-2	09/26/06	Turbidity (NTU)	21	156		11:25	
RBK-2	10/07/05	Water Temp (F)	0	19.3		14:10	
RBK-2	10/07/05	Water Temp (F)	11	18.6		14:15	
RBK-2	10/07/05	Water Temp (F)	20	16.1		14:40	
RBK-2	10/31/05	Water Temp (F)	0	13		10:30	
RBK-2	10/31/05	Water Temp (F)	11	13		10:30	
RBK-2	10/31/05	Water Temp (F)	20	13		10:30	
RBK-2	04/11/06	Water Temp (F)	0	14.3		12:49	
RBK-2	04/11/06	Water Temp (F)	10	14.6		12:33	
RBK-2	04/11/06	Water Temp (F)	21	12.6		11:50	
RBK-2	04/26/06	Water Temp (F)	0	17.9		11:45	
RBK-2	04/26/06	Water Temp (F)	11	15.4		11:45	
RBK-2	04/26/06	Water Temp (F)	21	11.9		12:00	
RBK-2	05/10/06	Water Temp (F)	0	20		11:55	
RBK-2	05/10/06	Water Temp (F)	11	18.5		12:00	
RBK-2	05/10/06	Water Temp (F)	20	14.6		12:05	
RBK-2	05/24/06	Water Temp (F)	0	20.3		11:36	
RBK-2	05/24/06	Water Temp (F)	9	19.3		11:36	
RBK-2	05/24/06	Water Temp (F)	18	19.5		11:36	
RBK-2	06/07/06	Water Temp (F)	0	25.1		12:45	
RBK-2	06/07/06	Water Temp (F)	14	19.8		12:45	
RBK-2	06/07/06	Water Temp (F)	28	16.3		12:45	
RBK-2	06/20/06	Water Temp (F)	0	28.2		11:50	
RBK-2	06/20/06	Water Temp (F)	10.5	23.8		11:50	
RBK-2	06/20/06	Water Temp (F)	20.5	21.1		11:50	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-2	07/13/06	Water Temp (F)	0	26.6		11:32	
RBK-2	07/13/06	Water Temp (F)	11	23.9		11:32	
RBK-2	07/13/06	Water Temp (F)	21	21.2		11:32	
RBK-2	07/24/06	Water Temp (F)	0	28.6		12:10	
RBK-2	07/24/06	Water Temp (F)	11	25		12:10	
RBK-2	07/24/06	Water Temp (F)	21	20		12:10	
RBK-2	08/08/06	Water Temp (F)	0	28.5		11:55	
RBK-2	08/08/06	Water Temp (F)	10	27.4		11:55	
RBK-2	08/08/06	Water Temp (F)	20	25.8		11:55	
RBK-2	08/29/06	Water Temp (F)	0	25.6		11:28	
RBK-2	08/29/06	Water Temp (F)	10	24.8		11:44	
RBK-2	08/29/06	Water Temp (F)	20	21.9		11:55	
RBK-2	09/12/06	Water Temp (F)	0	23.3		11:35	
RBK-2	09/12/06	Water Temp (F)	10.5	22.6		11:45	
RBK-2	09/12/06	Water Temp (F)	21	18.7		11:54	
RBK-2	09/26/06	Water Temp (F)	0	20.5		11:25	
RBK-2	09/26/06	Water Temp (F)	11	19.4		11:25	
RBK-2	09/26/06	Water Temp (F)	21	18.4		11:25	
RBK-3	10/07/05	Ch-a (mg/m^3)	0	2.7		13:07	
RBK-3	10/07/05	Ch-a (mg/m^3)	7	61		13:10	
RBK-3	10/07/05	Ch-a (mg/m^3)	14	8		13:20	
RBK-3	10/31/05	Ch-a (mg/m^3)	0	89		9:52	
RBK-3	10/31/05	Ch-a (mg/m^3)	7	19		9:52	
RBK-3	10/31/05	Ch-a (mg/m^3)	14	NA		9:52	
RBK-3	04/11/06	Ch-a (mg/m^3)	0	61		11:22	
RBK-3	04/11/06	Ch-a (mg/m^3)	6	150		10:59	
RBK-3	04/11/06	Ch-a (mg/m^3)	13	170		10:29	
RBK-3	04/26/06	Ch-a (mg/m^3)	0	8		10:45	
RBK-3	04/26/06	Ch-a (mg/m^3)	7	7.1		11:10	
RBK-3	04/26/06	Ch-a (mg/m^3)	15	7.7		11:15	
RBK-3	05/10/06	Ch-a (mg/m^3)	0	2.7		11:25	
RBK-3	05/10/06	Ch-a (mg/m^3)	8	3.6		11:30	
RBK-3	05/10/06	Ch-a (mg/m^3)	14	3.6		11:35	
RBK-3	05/24/06	Ch-a (mg/m^3)	0	0.5	U	10:56	
RBK-3	05/24/06	Ch-a (mg/m^3)	6	0.5	U	10:56	
RBK-3	05/24/06	Ch-a (mg/m^3)	12	2.7		10:56	
RBK-3	06/07/06	Ch-a (mg/m^3)	0	6.2		12:05	
RBK-3	06/07/06	Ch-a (mg/m^3)	7	5.3		12:05	
RBK-3	06/07/06	Ch-a (mg/m^3)	13	5.3		12:05	
RBK-3	06/20/06	Ch-a (mg/m^3)	0	6.2		11:10	
RBK-3	06/20/06	Ch-a (mg/m^3)	6.5	0.89		11:10	
RBK-3	06/20/06	Ch-a (mg/m^3)	13	0.5	U	11:10	
RBK-3	07/13/06	Ch-a (mg/m^3)	0	20		11:00	
RBK-3	07/13/06	Ch-a (mg/m^3)	7	20		11:00	
RBK-3	07/13/06	Ch-a (mg/m^3)	13.5	12		11:00	
RBK-3	07/24/06	Ch-a (mg/m^3)	0	0.5	U	12:45	
RBK-3	07/24/06	Ch-a (mg/m^3)	7	0.8		12:45	
RBK-3	07/24/06	Ch-a (mg/m^3)	13.5	0.7		12:45	
RBK-3	08/08/06	Ch-a (mg/m^3)	0	53		11:25	
RBK-3	08/08/06	Ch-a (mg/m^3)	6	48		11:25	
RBK-3	08/08/06	Ch-a (mg/m^3)	12	37		11:25	
RBK-3	08/29/06	Ch-a (mg/m^3)	0	51		10:50	
RBK-3	08/29/06	Ch-a (mg/m^3)	8	60		11:00	
RBK-3	08/29/06	Ch-a (mg/m^3)	13	33		11:07	
RBK-3	09/12/06	Ch-a (mg/m^3)	0	29		10:59	
RBK-3	09/12/06	Ch-a (mg/m^3)	7.5	28		11:05	
RBK-3	09/12/06	Ch-a (mg/m^3)	15	24		11:10	
RBK-3	09/26/06	Ch-a (mg/m^3)	7	22		11:00	
RBK-3	09/26/06	Ch-a (mg/m^3)	13.5	12		11:00	
RBK-3	10/07/05	Dissolved Phosphorus (mg/L)	0	0.028	B	13:07	
RBK-3	10/07/05	Dissolved Phosphorus (mg/L)	7	0.028	B	13:10	
RBK-3	10/07/05	Dissolved Phosphorus (mg/L)	14	0.021	B	13:20	
RBK-3	10/31/05	Dissolved Phosphorus (mg/L)	0	0.051		9:52	
RBK-3	10/31/05	Dissolved Phosphorus (mg/L)	7	0.056		9:52	
RBK-3	10/31/05	Dissolved Phosphorus (mg/L)	14	0.056		9:52	
RBK-3	04/11/06	Dissolved Phosphorus (mg/L)	0	0.028	B	11:22	
RBK-3	04/11/06	Dissolved Phosphorus (mg/L)	6	0.033	B	10:59	
RBK-3	04/11/06	Dissolved Phosphorus (mg/L)	13	0.034	B	10:29	
RBK-3	04/26/06	Dissolved Phosphorus (mg/L)	0	0.035	B	10:45	
RBK-3	04/26/06	Dissolved Phosphorus (mg/L)	7	0.059		11:10	
RBK-3	04/26/06	Dissolved Phosphorus (mg/L)	15	0.042	B	11:15	
RBK-3	05/10/06	Dissolved Phosphorus (mg/L)	0	0.028	B	11:25	
RBK-3	05/10/06	Dissolved Phosphorus (mg/L)	8	0.031	B	11:30	
RBK-3	05/10/06	Dissolved Phosphorus (mg/L)	14	0.11		11:35	
RBK-3	05/24/06	Dissolved Phosphorus (mg/L)	0	0.025	B	10:56	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-3	05/24/06	Dissolved Phosphorus (mg/L)	6	0.03	B	10:56	
RBK-3	05/24/06	Dissolved Phosphorus (mg/L)	12	0.038	B	10:56	
RBK-3	06/07/06	Dissolved Phosphorus (mg/L)	0	0.041	B	12:05	
RBK-3	06/07/06	Dissolved Phosphorus (mg/L)	7	0.036	B	12:05	
RBK-3	06/07/06	Dissolved Phosphorus (mg/L)	13	0.028	B	12:05	
RBK-3	06/20/06	Dissolved Phosphorus (mg/L)	0	0.017	B	11:10	
RBK-3	06/20/06	Dissolved Phosphorus (mg/L)	6.5	0.021	B	11:10	
RBK-3	06/20/06	Dissolved Phosphorus (mg/L)	13	0.013	B	11:10	
RBK-3	07/13/06	Dissolved Phosphorus (mg/L)	0	0.012	B	11:00	
RBK-3	07/13/06	Dissolved Phosphorus (mg/L)	7	0.012	B	11:00	
RBK-3	07/13/06	Dissolved Phosphorus (mg/L)	13.5	0.0096	U	11:00	
RBK-3	07/24/06	Dissolved Phosphorus (mg/L)	0	0.03	B	12:45	
RBK-3	07/24/06	Dissolved Phosphorus (mg/L)	7	0.052		12:45	
RBK-3	07/24/06	Dissolved Phosphorus (mg/L)	13.5	0.038	B	12:45	
RBK-3	08/08/06	Dissolved Phosphorus (mg/L)	0	0.076		11:25	
RBK-3	08/08/06	Dissolved Phosphorus (mg/L)	6	0.057		11:25	
RBK-3	08/08/06	Dissolved Phosphorus (mg/L)	12	0.052		11:25	
RBK-3	08/29/06	Dissolved Phosphorus (mg/L)	0	0.025	B	10:50	
RBK-3	08/29/06	Dissolved Phosphorus (mg/L)	8	0.03	B	11:00	
RBK-3	08/29/06	Dissolved Phosphorus (mg/L)	13	0.043	B	11:07	
RBK-3	09/12/06	Dissolved Phosphorus (mg/L)	0	0.029	B	10:59	
RBK-3	09/12/06	Dissolved Phosphorus (mg/L)	7.5	0.026	B	11:05	
RBK-3	09/12/06	Dissolved Phosphorus (mg/L)	15	0.031	B	11:10	
RBK-3	09/26/06	Dissolved Phosphorus (mg/L)	0	0.0096	U	11:00	
RBK-3	09/26/06	Dissolved Phosphorus (mg/L)	7	0.017	B	11:00	
RBK-3	09/26/06	Dissolved Phosphorus (mg/L)	13.5	0.023	B	11:00	
RBK-3	10/07/05	DO (mg/L)	0	8.65		13:07	
RBK-3	10/07/05	DO (mg/L)	7	8.76		13:10	
RBK-3	10/07/05	DO (mg/L)	14	8.45		13:20	
RBK-3	10/31/05	DO (mg/L)	0	11.4		9:52	
RBK-3	10/31/05	DO (mg/L)	7	11.4		9:52	
RBK-3	10/31/05	DO (mg/L)	14	11.2		9:52	
RBK-3	04/11/06	DO (mg/L)	0	12.49		11:22	
RBK-3	04/11/06	DO (mg/L)	6	12.79		10:59	
RBK-3	04/11/06	DO (mg/L)	13	12.86		10:29	
RBK-3	04/26/06	DO (mg/L)	0	9.84		10:45	
RBK-3	04/26/06	DO (mg/L)	7	10.22		11:10	
RBK-3	04/26/06	DO (mg/L)	15	10.99		11:15	
RBK-3	05/10/06	DO (mg/L)	0	9.75		11:25	
RBK-3	05/10/06	DO (mg/L)	8	10.07		11:30	
RBK-3	05/10/06	DO (mg/L)	14	10.5		11:35	
RBK-3	05/24/06	DO (mg/L)	0	11.76		10:56	
RBK-3	05/24/06	DO (mg/L)	6	10.93		10:56	
RBK-3	05/24/06	DO (mg/L)	12	11.3		10:56	
RBK-3	06/07/06	DO (mg/L)	0	8.79		12:05	
RBK-3	06/07/06	DO (mg/L)	7	9.2		12:05	
RBK-3	06/07/06	DO (mg/L)	13	11.23		12:05	
RBK-3	06/20/06	DO (mg/L)	0	9.12		11:10	
RBK-3	06/20/06	DO (mg/L)	6.5	9.37		11:10	
RBK-3	06/20/06	DO (mg/L)	13	9.97		11:10	
RBK-3	07/13/06	DO (mg/L)	0	8.03		11:00	
RBK-3	07/13/06	DO (mg/L)	7	8.17		11:00	
RBK-3	07/13/06	DO (mg/L)	13.5	9.31		11:00	
RBK-3	07/24/06	DO (mg/L)	0	11.49		12:45	
RBK-3	07/24/06	DO (mg/L)	7	12.55		12:45	
RBK-3	07/24/06	DO (mg/L)	13.5	17.98		12:45	
RBK-3	08/08/06	DO (mg/L)	0	8.27		11:25	
RBK-3	08/08/06	DO (mg/L)	6	7.92		11:25	
RBK-3	08/08/06	DO (mg/L)	12	8.59		11:25	
RBK-3	08/29/06	DO (mg/L)	0	7.7		10:50	
RBK-3	08/29/06	DO (mg/L)	8	7.05		11:00	
RBK-3	08/29/06	DO (mg/L)	13	7.31		11:07	
RBK-3	09/12/06	DO (mg/L)	0	8.6		10:59	
RBK-3	09/12/06	DO (mg/L)	7.5	8.61		11:05	
RBK-3	09/12/06	DO (mg/L)	15	9.28		11:10	
RBK-3	09/26/06	DO (mg/L)	0	6.99		11:00	
RBK-3	09/26/06	DO (mg/L)	7	7.54		11:00	
RBK-3	09/26/06	DO (mg/L)	13.5	7.72		11:00	
RBK-3	10/07/05	pH	0	8.36		13:07	
RBK-3	10/07/05	pH	7	8.08		13:10	
RBK-3	10/07/05	pH	14	8.31		13:20	
RBK-3	10/31/05	pH	0	8.2		9:52	
RBK-3	10/31/05	pH	7	8.3		9:52	
RBK-3	10/31/05	pH	14	6.4		9:52	
RBK-3	04/11/06	pH	0	9.07		11:22	
RBK-3	04/11/06	pH	6	9.08		10:59	
RBK-3	04/11/06	pH	13	8.75		10:29	
RBK-3	04/26/06	pH	0	7.92		10:45	
RBK-3	04/26/06	pH	7	8.63		11:10	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-3	04/26/06	pH	15	8.27		11:15	
RBK-3	05/10/06	pH	0	7.23		11:25	
RBK-3	05/10/06	pH	8	7.87		11:30	
RBK-3	05/10/06	pH	14	7.68		11:35	
RBK-3	05/24/06	pH	0	8.2		10:56	
RBK-3	05/24/06	pH	6	8.72		10:56	
RBK-3	05/24/06	pH	12	8.77		10:56	
RBK-3	06/07/06	pH	0	8.65		12:05	
RBK-3	06/07/06	pH	7	8.62		12:05	
RBK-3	06/07/06	pH	13	7.59		12:05	
RBK-3	06/20/06	pH	0	7.74		11:10	
RBK-3	06/20/06	pH	6.5	7.78		11:10	
RBK-3	06/20/06	pH	13	6.49		11:10	
RBK-3	07/13/06	pH	0	8.61		11:00	
RBK-3	07/13/06	pH	7	8.77		11:00	
RBK-3	07/13/06	pH	13.5	7.61		11:00	
RBK-3	07/24/06	pH	0	7.88		12:45	
RBK-3	07/24/06	pH	7	8.03		12:45	
RBK-3	07/24/06	pH	13.5	8.54		12:45	
RBK-3	08/08/06	pH	0	9.38		11:25	
RBK-3	08/08/06	pH	6	9.24		11:25	
RBK-3	08/08/06	pH	12	7.94		11:25	
RBK-3	08/29/06	pH	0	8.39		10:50	
RBK-3	08/29/06	pH	8	8.89		11:00	
RBK-3	08/29/06	pH	13	8.64		11:07	
RBK-3	09/12/06	pH	0	8.6		10:59	
RBK-3	09/12/06	pH	7.5	8.98		11:05	
RBK-3	09/12/06	pH	15	7.28		11:10	
RBK-3	09/26/06	pH	0	4.71		11:00	
RBK-3	09/26/06	pH	7	4.82		11:00	
RBK-3	09/26/06	pH	13.5	4.79		11:00	
RBK-3	10/07/05	Spec. Cond. (uS/cm)	0	0.628		13:07	
RBK-3	10/07/05	Spec. Cond. (uS/cm)	7	0.639		13:10	
RBK-3	10/07/05	Spec. Cond. (uS/cm)	14	0.643		13:20	
RBK-3	10/31/05	Spec. Cond. (uS/cm)	0	0.31		9:52	
RBK-3	10/31/05	Spec. Cond. (uS/cm)	7	0.32		9:52	
RBK-3	10/31/05	Spec. Cond. (uS/cm)	14	0.34		9:52	
RBK-3	04/11/06	Spec. Cond. (uS/cm)	0	0.291		11:22	
RBK-3	04/11/06	Spec. Cond. (uS/cm)	6	0.293		10:59	
RBK-3	04/11/06	Spec. Cond. (uS/cm)	13	0.305		10:29	
RBK-3	04/26/06	Spec. Cond. (uS/cm)	0	0.327		10:45	
RBK-3	04/26/06	Spec. Cond. (uS/cm)	7	0.294		11:10	
RBK-3	04/26/06	Spec. Cond. (uS/cm)	15	0.3		11:15	
RBK-3	05/10/06	Spec. Cond. (uS/cm)	0	0.331		11:25	
RBK-3	05/10/06	Spec. Cond. (uS/cm)	8	0.302		11:30	
RBK-3	05/10/06	Spec. Cond. (uS/cm)	14	0.301		11:35	
RBK-3	05/24/06	Spec. Cond. (uS/cm)	0	0.315		10:56	
RBK-3	05/24/06	Spec. Cond. (uS/cm)	6	0.342		10:56	
RBK-3	05/24/06	Spec. Cond. (uS/cm)	12	0.3		10:56	
RBK-3	06/07/06	Spec. Cond. (uS/cm)	0	0.271		12:05	
RBK-3	06/07/06	Spec. Cond. (uS/cm)	7	0.269		12:05	
RBK-3	06/07/06	Spec. Cond. (uS/cm)	13	0.286		12:05	
RBK-3	06/20/06	Spec. Cond. (uS/cm)	0	0.31		11:10	
RBK-3	06/20/06	Spec. Cond. (uS/cm)	6.5	0.315		11:10	
RBK-3	06/20/06	Spec. Cond. (uS/cm)	13	0.357		11:10	
RBK-3	07/13/06	Spec. Cond. (uS/cm)	0	0.308		11:00	
RBK-3	07/13/06	Spec. Cond. (uS/cm)	7	0.292		11:00	
RBK-3	07/13/06	Spec. Cond. (uS/cm)	13.5	0.338		11:00	
RBK-3	07/24/06	Spec. Cond. (uS/cm)	0	0.281		12:45	
RBK-3	07/24/06	Spec. Cond. (uS/cm)	7	0.309		12:45	
RBK-3	07/24/06	Spec. Cond. (uS/cm)	13.5	0.38		12:45	
RBK-3	08/08/06	Spec. Cond. (uS/cm)	0	0.259		11:25	
RBK-3	08/08/06	Spec. Cond. (uS/cm)	6	0.258		11:25	
RBK-3	08/08/06	Spec. Cond. (uS/cm)	12	0.315		11:25	
RBK-3	08/29/06	Spec. Cond. (uS/cm)	0	0.272		10:50	
RBK-3	08/29/06	Spec. Cond. (uS/cm)	8	0.25		11:00	
RBK-3	08/29/06	Spec. Cond. (uS/cm)	13	0.253		11:07	
RBK-3	09/12/06	Spec. Cond. (uS/cm)	0	0.197		10:59	
RBK-3	09/12/06	Spec. Cond. (uS/cm)	7.5	0.195		11:05	
RBK-3	09/12/06	Spec. Cond. (uS/cm)	15	0.266		11:10	
RBK-3	09/26/06	Spec. Cond. (uS/cm)	0	0.975		11:00	
RBK-3	09/26/06	Spec. Cond. (uS/cm)	7	0.844		11:00	
RBK-3	09/26/06	Spec. Cond. (uS/cm)	13.5	0.894		11:00	
RBK-3	10/07/05	TKN (mg/L)	0	1.5		13:07	
RBK-3	10/07/05	TKN (mg/L)	7	1.2		13:10	
RBK-3	10/07/05	TKN (mg/L)	14	1.9		13:20	
RBK-3	10/31/05	TKN (mg/L)	0	1.9		9:52	
RBK-3	10/31/05	TKN (mg/L)	7	1.9		9:52	
RBK-3	10/31/05	TKN (mg/L)	14	2.1		9:52	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-3	04/11/06	TKN (mg/L)	0	1.2		11:22	
RBK-3	04/11/06	TKN (mg/L)	6	1.4		10:59	
RBK-3	04/11/06	TKN (mg/L)	13	1.4		10:29	
RBK-3	04/26/06	TKN (mg/L)	0	0.97		10:45	
RBK-3	04/26/06	TKN (mg/L)	7	1.1		11:10	
RBK-3	04/26/06	TKN (mg/L)	15	1.3		11:15	
RBK-3	05/10/06	TKN (mg/L)	0	1.1		11:25	
RBK-3	05/10/06	TKN (mg/L)	8	1.4		11:30	
RBK-3	05/10/06	TKN (mg/L)	14	1.7		11:35	
RBK-3	05/24/06	TKN (mg/L)	0	0.74		10:56	
RBK-3	05/24/06	TKN (mg/L)	6	0.82		10:56	
RBK-3	05/24/06	TKN (mg/L)	12	0.98		10:56	
RBK-3	06/07/06	TKN (mg/L)	0	0.88		12:05	
RBK-3	06/07/06	TKN (mg/L)	7	0.65		12:05	
RBK-3	06/07/06	TKN (mg/L)	13	0.99		12:05	
RBK-3	06/20/06	TKN (mg/L)	0	0.83		11:10	
RBK-3	06/20/06	TKN (mg/L)	6.5	0.95		11:10	
RBK-3	06/20/06	TKN (mg/L)	13	1.3		11:10	
RBK-3	07/13/06	TKN (mg/L)	0	1		11:00	
RBK-3	07/13/06	TKN (mg/L)	7	0.97		11:00	
RBK-3	07/13/06	TKN (mg/L)	13.5	1.4		11:00	
RBK-3	07/24/06	TKN (mg/L)	0	0.58		12:45	
RBK-3	07/24/06	TKN (mg/L)	7	0.83		12:45	
RBK-3	07/24/06	TKN (mg/L)	13.5	1.5		12:45	
RBK-3	08/08/06	TKN (mg/L)	0	1.6		11:25	
RBK-3	08/08/06	TKN (mg/L)	6	1.8		11:25	
RBK-3	08/08/06	TKN (mg/L)	12	1.5		11:25	
RBK-3	08/29/06	TKN (mg/L)	0	0.86		10:50	
RBK-3	08/29/06	TKN (mg/L)	8	0.45		11:00	
RBK-3	08/29/06	TKN (mg/L)	13	1.4		11:07	
RBK-3	09/12/06	TKN (mg/L)	0	1.2		10:59	
RBK-3	09/12/06	TKN (mg/L)	7.5	1.1		11:05	
RBK-3	09/12/06	TKN (mg/L)	15	2.1		11:10	
RBK-3	09/26/06	TKN (mg/L)	0	1.5		11:00	
RBK-3	09/26/06	TKN (mg/L)	7	1.5		11:00	
RBK-3	09/26/06	TKN (mg/L)	13.5	1.2		11:00	
RBK-3	10/07/05	Total Nitrate + Nitrite (mg/L)	0	0.025	K	13:07	
RBK-3	10/07/05	Total Nitrate + Nitrite (mg/L)	7	0.025	K	13:10	
RBK-3	10/07/05	Total Nitrate + Nitrite (mg/L)	14	0.025	K	13:20	
RBK-3	10/31/05	Total Nitrate + Nitrite (mg/L)	0	0.058	B	9:52	
RBK-3	10/31/05	Total Nitrate + Nitrite (mg/L)	7	0.14		9:52	
RBK-3	10/31/05	Total Nitrate + Nitrite (mg/L)	14	0.025	K	9:52	
RBK-3	04/11/06	Total Nitrate + Nitrite (mg/L)	0	2.3		11:22	
RBK-3	04/11/06	Total Nitrate + Nitrite (mg/L)	6	2.2		10:59	
RBK-3	04/11/06	Total Nitrate + Nitrite (mg/L)	13	2.3		10:29	
RBK-3	04/26/06	Total Nitrate + Nitrite (mg/L)	0	2.9		10:45	
RBK-3	04/26/06	Total Nitrate + Nitrite (mg/L)	7	2.9		11:10	
RBK-3	04/26/06	Total Nitrate + Nitrite (mg/L)	15	2.4		11:15	
RBK-3	05/10/06	Total Nitrate + Nitrite (mg/L)	0	2.4		11:25	
RBK-3	05/10/06	Total Nitrate + Nitrite (mg/L)	8	3.3		11:30	
RBK-3	05/10/06	Total Nitrate + Nitrite (mg/L)	14	1.6		11:35	
RBK-3	05/24/06	Total Nitrate + Nitrite (mg/L)	0	2.4		10:56	
RBK-3	05/24/06	Total Nitrate + Nitrite (mg/L)	6	2.3		10:56	
RBK-3	05/24/06	Total Nitrate + Nitrite (mg/L)	12	2.7		10:56	
RBK-3	06/07/06	Total Nitrate + Nitrite (mg/L)	0	1.8		12:05	
RBK-3	06/07/06	Total Nitrate + Nitrite (mg/L)	7	1.7		12:05	
RBK-3	06/07/06	Total Nitrate + Nitrite (mg/L)	13	1.5		12:05	
RBK-3	06/20/06	Total Nitrate + Nitrite (mg/L)	0	0.58		11:10	
RBK-3	06/20/06	Total Nitrate + Nitrite (mg/L)	6.5	0.72		11:10	
RBK-3	06/20/06	Total Nitrate + Nitrite (mg/L)	13	1.4		11:10	
RBK-3	07/13/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	11:00	
RBK-3	07/13/06	Total Nitrate + Nitrite (mg/L)	7	0.025	U	11:00	
RBK-3	07/13/06	Total Nitrate + Nitrite (mg/L)	13.5	0.025	U	11:00	
RBK-3	07/24/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	12:45	
RBK-3	07/24/06	Total Nitrate + Nitrite (mg/L)	7	0.025	U	12:45	
RBK-3	07/24/06	Total Nitrate + Nitrite (mg/L)	13.5	0.025	U	12:45	
RBK-3	08/08/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	11:25	
RBK-3	08/08/06	Total Nitrate + Nitrite (mg/L)	6	0.025	U	11:25	
RBK-3	08/08/06	Total Nitrate + Nitrite (mg/L)	12	0.025	U	11:25	
RBK-3	08/29/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	10:50	
RBK-3	08/29/06	Total Nitrate + Nitrite (mg/L)	8	0.025	U	11:00	
RBK-3	08/29/06	Total Nitrate + Nitrite (mg/L)	13	0.025	U	11:07	
RBK-3	09/12/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	10:59	
RBK-3	09/12/06	Total Nitrate + Nitrite (mg/L)	7.5	0.025	U	11:05	
RBK-3	09/12/06	Total Nitrate + Nitrite (mg/L)	15	0.025	U	11:10	
RBK-3	09/26/06	Total Nitrate + Nitrite (mg/L)	0	0.025	U	11:00	
RBK-3	09/26/06	Total Nitrate + Nitrite (mg/L)	7	0.025	U	11:00	
RBK-3	09/26/06	Total Nitrate + Nitrite (mg/L)	13.5	0.025	U	11:00	
RBK-3	10/07/05	TP (mg/L)	0	0.1		13:07	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-3	10/07/05	TP (mg/L)	7	0.096		13:10	
RBK-3	10/07/05	TP (mg/L)	14	0.1		13:20	
RBK-3	10/31/05	TP (mg/L)	0	0.097		9:52	
RBK-3	10/31/05	TP (mg/L)	7	0.12		9:52	
RBK-3	10/31/05	TP (mg/L)	14	0.11		9:52	
RBK-3	04/11/06	TP (mg/L)	0	0.074		11:22	
RBK-3	04/11/06	TP (mg/L)	6	0.068		10:59	
RBK-3	04/11/06	TP (mg/L)	13	0.1		10:29	
RBK-3	04/26/06	TP (mg/L)	0	0.037	B	10:45	
RBK-3	04/26/06	TP (mg/L)	7	0.069		11:10	
RBK-3	04/26/06	TP (mg/L)	15	0.099		11:15	
RBK-3	05/10/06	TP (mg/L)	0	0.032	B	11:25	
RBK-3	05/10/06	TP (mg/L)	8	0.038	B	11:30	
RBK-3	05/10/06	TP (mg/L)	14	0.16		11:35	
RBK-3	05/24/06	TP (mg/L)	0	0.019	B	10:56	
RBK-3	05/24/06	TP (mg/L)	6	0.034	B	10:56	
RBK-3	05/24/06	TP (mg/L)	12	0.038	B	10:56	
RBK-3	06/07/06	TP (mg/L)	0	0.046	B	12:05	
RBK-3	06/07/06	TP (mg/L)	7	0.025	B	12:05	
RBK-3	06/07/06	TP (mg/L)	13	0.061		12:05	
RBK-3	06/20/06	TP (mg/L)	0	0.057		11:10	
RBK-3	06/20/06	TP (mg/L)	6.5	0.066		11:10	
RBK-3	06/20/06	TP (mg/L)	13	0.087		11:10	
RBK-3	07/13/06	TP (mg/L)	0	0.071		11:00	
RBK-3	07/13/06	TP (mg/L)	7	0.071		11:00	
RBK-3	07/13/06	TP (mg/L)	13.5	0.08		11:00	
RBK-3	07/24/06	TP (mg/L)	0	0.06		12:45	
RBK-3	07/24/06	TP (mg/L)	7	0.079		12:45	
RBK-3	07/24/06	TP (mg/L)	13.5	0.15		12:45	
RBK-3	08/08/06	TP (mg/L)	0	0.12		11:25	
RBK-3	08/08/06	TP (mg/L)	6	0.13		11:25	
RBK-3	08/08/06	TP (mg/L)	12	0.11		11:25	
RBK-3	08/29/06	TP (mg/L)	0	0.11		10:50	
RBK-3	08/29/06	TP (mg/L)	8	0.08		11:00	
RBK-3	08/29/06	TP (mg/L)	13	0.1		11:07	
RBK-3	09/12/06	TP (mg/L)	0	0.087		10:59	
RBK-3	09/12/06	TP (mg/L)	7.5	0.11		11:05	
RBK-3	09/12/06	TP (mg/L)	15	0.094		11:10	
RBK-3	09/26/06	TP (mg/L)	0	0.094		11:00	
RBK-3	09/26/06	TP (mg/L)	7	0.096		11:00	
RBK-3	09/26/06	TP (mg/L)	13.5	0.069		11:00	
RBK-3	10/07/05	Turbidity (NTU)	0	3		13:07	
RBK-3	10/07/05	Turbidity (NTU)	7	3		13:10	
RBK-3	10/07/05	Turbidity (NTU)	14	2		13:20	
RBK-3	10/31/05	Turbidity (NTU)	0	1		9:52	
RBK-3	10/31/05	Turbidity (NTU)	7	18		9:52	
RBK-3	10/31/05	Turbidity (NTU)	14	4		9:52	
RBK-3	04/11/06	Turbidity (NTU)	0	11		11:22	
RBK-3	04/11/06	Turbidity (NTU)	6	20		10:59	
RBK-3	04/11/06	Turbidity (NTU)	13	35		10:29	
RBK-3	04/26/06	Turbidity (NTU)	0	1		10:45	
RBK-3	04/26/06	Turbidity (NTU)	7	2		11:10	
RBK-3	04/26/06	Turbidity (NTU)	15	4		11:15	
RBK-3	05/10/06	Turbidity (NTU)	0	3		11:25	
RBK-3	05/10/06	Turbidity (NTU)	8	5		11:30	
RBK-3	05/10/06	Turbidity (NTU)	14	163?		11:35	
RBK-3	05/24/06	Turbidity (NTU)	0	5		10:56	
RBK-3	05/24/06	Turbidity (NTU)	6	4		10:56	
RBK-3	05/24/06	Turbidity (NTU)	12	3		10:56	
RBK-3	06/07/06	Turbidity (NTU)	0	26		12:05	
RBK-3	06/07/06	Turbidity (NTU)	7	22		12:05	
RBK-3	06/07/06	Turbidity (NTU)	13	338		12:05	
RBK-3	06/20/06	Turbidity (NTU)	0	1		11:10	
RBK-3	06/20/06	Turbidity (NTU)	6.5	5		11:10	
RBK-3	06/20/06	Turbidity (NTU)	13	19		11:10	
RBK-3	07/13/06	Turbidity (NTU)	0	9		11:00	
RBK-3	07/13/06	Turbidity (NTU)	7	111		11:00	
RBK-3	07/13/06	Turbidity (NTU)	13.5	0		11:00	
RBK-3	07/24/06	Turbidity (NTU)	0	0		12:45	
RBK-3	07/24/06	Turbidity (NTU)	7	0		12:45	
RBK-3	07/24/06	Turbidity (NTU)	13.5	45		12:45	
RBK-3	08/08/06	Turbidity (NTU)	0	10		11:25	
RBK-3	08/08/06	Turbidity (NTU)	6	10		11:25	
RBK-3	08/08/06	Turbidity (NTU)	12	50		11:25	
RBK-3	08/29/06	Turbidity (NTU)	0	-10		10:50	
RBK-3	08/29/06	Turbidity (NTU)	8	-10		11:00	
RBK-3	08/29/06	Turbidity (NTU)	13	-10		11:07	
RBK-3	09/12/06	Turbidity (NTU)	0	40		10:59	
RBK-3	09/12/06	Turbidity (NTU)	7.5	38		11:05	

Station ID	Date	Parameter	Sample Depth (ft)	Value	Qualifier	Time	Note
RBK-3	09/12/06	Turbidity (NTU)	15	29		11:10	
RBK-3	09/26/06	Turbidity (NTU)	0	51		11:00	
RBK-3	09/26/06	Turbidity (NTU)	7	49		11:00	
RBK-3	09/26/06	Turbidity (NTU)	13.5	75		11:00	
RBK-3	10/07/05	Water Temp (F)	0	19.2		13:07	
RBK-3	10/07/05	Water Temp (F)	7	18.7		13:10	
RBK-3	10/07/05	Water Temp (F)	14	19.1		13:20	
RBK-3	10/31/05	Water Temp (F)	0	13		9:52	
RBK-3	10/31/05	Water Temp (F)	7	13		9:52	
RBK-3	10/31/05	Water Temp (F)	14	14		9:52	
RBK-3	04/11/06	Water Temp (F)	0	14.5		11:22	
RBK-3	04/11/06	Water Temp (F)	6	15		10:59	
RBK-3	04/11/06	Water Temp (F)	13	14.6		10:29	
RBK-3	04/26/06	Water Temp (F)	0	16.8		10:45	
RBK-3	04/26/06	Water Temp (F)	7	16.3		11:10	
RBK-3	04/26/06	Water Temp (F)	15	14.8		11:15	
RBK-3	05/10/06	Water Temp (F)	0	20.6		11:25	
RBK-3	05/10/06	Water Temp (F)	8	20		11:30	
RBK-3	05/10/06	Water Temp (F)	14	18.4		11:35	
RBK-3	05/24/06	Water Temp (F)	0	18.2		10:56	
RBK-3	05/24/06	Water Temp (F)	6	20.2		10:56	
RBK-3	05/24/06	Water Temp (F)	12	19.3		10:56	
RBK-3	06/07/06	Water Temp (F)	0	25.9		12:05	
RBK-3	06/07/06	Water Temp (F)	7	24.9		12:05	
RBK-3	06/07/06	Water Temp (F)	13	20.9		12:05	
RBK-3	06/20/06	Water Temp (F)	0	26.7		11:10	
RBK-3	06/20/06	Water Temp (F)	6.5	26.6		11:10	
RBK-3	06/20/06	Water Temp (F)	13	25.1		11:10	
RBK-3	07/13/06	Water Temp (F)	0	26.5		11:00	
RBK-3	07/13/06	Water Temp (F)	7	26.3		11:00	
RBK-3	07/13/06	Water Temp (F)	13.5	24		11:00	
RBK-3	07/24/06	Water Temp (F)	0	28.4		12:45	
RBK-3	07/24/06	Water Temp (F)	7	26.7		12:45	
RBK-3	07/24/06	Water Temp (F)	13.5	18.5		12:45	
RBK-3	08/08/06	Water Temp (F)	0	27.8		11:25	
RBK-3	08/08/06	Water Temp (F)	6	27.8		11:25	
RBK-3	08/08/06	Water Temp (F)	12	25.6		11:25	
RBK-3	08/29/06	Water Temp (F)	0	24.9		10:50	
RBK-3	08/29/06	Water Temp (F)	8	25.1		11:00	
RBK-3	08/29/06	Water Temp (F)	13	24.7		11:07	
RBK-3	09/12/06	Water Temp (F)	0	22.9		10:59	
RBK-3	09/12/06	Water Temp (F)	7.5	22.9		11:05	
RBK-3	09/12/06	Water Temp (F)	15	21.1		11:10	
RBK-3	09/26/06	Water Temp (F)	0	20.6		11:00	
RBK-3	09/26/06	Water Temp (F)	7	19.3		11:00	
RBK-3	09/26/06	Water Temp (F)	13.5	19.2		11:00	
RBK-3 (DUP)	08/08/06	Ch-a (mg/m^3)		42		11:25	
RBK-3 (DUP)	08/08/06	Dissolved Phosphorus (mg/L)		0.071		11:25	
RBK-3 (DUP)	08/08/06	DO (mg/L)		7.87		11:25	
RBK-3 (DUP)	08/08/06	pH		9.28		11:25	
RBK-3 (DUP)	08/08/06	Spec. Cond. (uS/cm)		0.282		11:25	
RBK-3 (DUP)	08/08/06	TKN (mg/L)		1.8		11:25	
RBK-3 (DUP)	08/08/06	Total Nitrate + Nitrite (mg/L)		0.025	U	11:25	
RBK-3 (DUP)	08/08/06	TP (mg/L)		0.11		11:25	
RBK-3 (DUP)	08/08/06	Turbidity (NTU)		10		11:25	
RBK-3 (DUP)	08/08/06	Water Temp (F)		28.2		11:25	

Notes:
* = estimated value
B = Result is less than the Report Limit (RL), but greater than or equal to the method detection limit
K = Actual value not known, but known to be less than value shown (often used for a value below detection level).
U = Analyte was not detected at or above the stated limit.

FINAL APPROVED TMDL REPORT

Salt Fork Vermilion River Watershed

Prepared for: **Illinois Environmental Protection Agency**

October 2007

Spoon Branch (IL_BPJD-02): Dissolved oxygen

Salt Fork Vermilion River (IL_BPJ-10): Nitrate, pH

Salt Fork Vermilion River (IL_BPJ-08): Nitrate, pH

Salt Fork Vermilion River (IL_BPJ-03): Nitrate, fecal coliform bacteria

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INTRODUCTION

Section 303(d) of the 1972 Clean Water Act requires States to define impaired waters and identify them on a list, which is referred to as the 303(d) list. The State of Illinois has issued the 2006 303(d) list, which is available on the web at: http://www.epa.state.il.us/water/tmdl/303d-list.html. Section 303(d) of the Clean Water Act and EPA's Water Quality Planning and Management Regulations (40 CFR Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for water bodies that are not meeting designated uses under technology-based controls. The TMDL process establishes the allowable loading of pollutants or other quantifiable parameters for a water body based on the relationship between pollution sources and instream conditions. This allowable loading represents the maximum quantity of the pollutant that the waterbody can receive without exceeding water quality standards. The TMDL also takes into account a margin of safety, which reflects scientific uncertainty, as well as the effects of seasonal variation. By following the TMDL process, States can establish water quality-based controls to reduce pollution from both point and nonpoint sources, and restore and maintain the quality of their water resources (USEPA, 1991).

Spoon Branch (IL_BPJD-02) and Salt Fork Vermilion River (IL_BPJ-10, IL_BPJ-08, and IL_BPJ-03) are listed on the 2006 Illinois Section 303(d) List of Impaired Waters (IEPA, 2006a) as waterbodies that are not meeting their designated uses. Because there are drinking water intakes in this watershed, these waterbodies have been targeted as high priority waterbodies for TMDL development. This document presents the TMDLs designed to allow these waterbodies to fully support their designated uses. The report covers each step of the TMDL process and is organized as follows:

- Problem Identification
- Required TMDL Elements
- Watershed Characterization
- Description of Applicable Standards and Numeric Targets
- Development of Water Quality Model
- TMDL Development
- Public Participation and Involvement
- Implementation Plan

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1. PROBLEM IDENTIFICATION

The impairments in waters of the Salt Fork Vermilion River Watershed addressed in this report are summarized below, with the parameters (causes) that they are listed for, and the impairment status of each designated use, as identified in the 303(d) list (IEPA, 2006a). This report includes a dissolved oxygen TMDL for Spoon Branch, and fecal coliform, nitrate and pH TMDLs for segments of the Salt Fork Vermilion River. The pollutants addressed in this TMDL are indicated in bold in the table below. While TMDLs are currently only being developed for pollutants that have numerical water quality standards, many controls that are implemented to address TMDLs for these pollutants will reduce other pollutants as well. For example, any controls to reduce fecal coliform loads from watershed sources such as runoff, would also serve to reduce nutrient loads to a stream segment, as the sources contributing fecal coliform are often also nutrient sources.

Spoon Branch	
Assessment Unit ID	IL_BPJD-02
Length (miles)	13.72
Listed For	Habitat assessment, **dissolved oxygen**
Use Support[1]	Aquatic life (N), fish consumption (X), primary contact (X), secondary contact (X), aesthetic quality (X)

[1]F=full support, N=nonsupport, X=not assessed

Salt Fork Vermilion River	
Assessment Unit ID	IL_BPJ-10
Length (miles)	13.61
Listed For	Fish kills, ammonia (total), total suspended solids, **pH,** nitrogen (total), phosphorus (total), **nitrate-nitrogen**
Use Support[1]	Aquatic life (N), fish consumption (X), public and food processing water supply (N), primary contact (X), secondary contact (X)

[1]F=full support, N=nonsupport, X=not assessed

Salt Fork Vermilion River	
Assessment Unit ID	IL_BPJ-08
Length (miles)	3.17
Listed For	Fish kills, iron, ammonia (total), total suspended solids, **pH,** nitrogen (total), phosphorus (total), **nitrate-nitrogen**
Use Support[1]	Aquatic life (N), fish consumption (X), public and food processing water supply (N), primary contact (X), secondary contact (X)

[1]F=full support, N=nonsupport, X=not assessed

Salt Fork Vermilion River	
Assessment Unit ID	IL_BPJ-03
Length (miles)	9.97
Listed For	Fish kills, iron, total suspended solids, nitrogen (total), phosphorus (total), **nitrate-nitrogen, fecal coliform**
Use Support[1]	Aquatic life (N), fish consumption (X), public and food processing water supply (N), primary contact (N), secondary contact (X)

[1]F=full support, N=nonsupport, X=not assessed

2. REQUIRED TMDL ELEMENTS

USEPA Region 5 guidance for TMDL development requires TMDLs to contain eleven specific components. Each of those components is summarized below, by waterbody, and will be described in detail in subsequent sections of this report.

Spoon Branch (IL_BPJD-02)

1. **Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking**: Spoon Branch, HUC 05120109. The pollutant of concern addressed in this TMDL is **dissolved oxygen**. Low flow has been identified as the source of low instream dissolved oxygen. Spoon Branch is reported on the 2006 303(d) list as being in category 5, meaning available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed (IEPA, 2006a). Illinois EPA has prioritized listed waterbodies on a watershed basis. This segment has a high priority ranking because it is located within a watershed that contains one or more waterbodies that are less than full support for public and food processing water supply use.
2. **Description of Applicable Water Quality Standards and Numeric Water Quality Target**:

   The IEPA guidelines (IEPA, 2006a) for identifying dissolved oxygen as a cause of impairment in streams state that dissolved oxygen is a potential cause of impairment of the aquatic life use if greater than 10% of the samples are less than 5 mg/l. The TMDL target for dissolved oxygen is 5.0 mg/l. For QUAL2E model runs, segment-specific modeling targets (5.0 mg/l plus half of the estimated segment-specific diurnal) were used to consider diurnal variation and ensure that the 5.0 mg/l water quality standard is met.
3. **Loading Capacity – Linking Water Quality and Pollutant Sources:**
   Based on a review of all available data, dissolved oxygen violations of the water quality standard were observed to occur only during low flow conditions. QUAL2E water quality model simulations for low flow conditions showed that, even with external BOD and ammonia loads set to zero, compliance with the dissolved oxygen standards was not attained. Examination of model results indicated that sediment oxygen demand (SOD) was the dominant source of the oxygen deficit and that DO standards could only be attained via reduction of SOD. Although SOD is the overwhelming oxygen sink, the true cause of low DO is a lack of base flow (which greatly exacerbates the effect of SOD). Due to the expected presence of dissolved oxygen standard violations at zero external loading, a TMDL is not being conducted for dissolved oxygen.

Salt Fork Vermilion River (IL_BPJ-10)

1. **Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking:** Salt Fork Vermilion River, HUC 05120109. The pollutants of concern addressed in this TMDL are **nitrate and pH**. Potential sources contributing to the **nitrate** impairment include nonpoint source runoff from agricultural and developed lands, permitted sewage treatment plants and failing septic systems. The source of the **pH** impairment is unclear, but stormwater

runoff and algal growth in Homer Lake may be contributing. Salt Fork Vermilion River (IL-BPJ-10) is reported on the 2006 303(d) list as being in category 5, meaning available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed (IEPA, 2006). Illinois EPA has prioritized listed waterbodies on a watershed basis. This segment has a high priority ranking because it is located within a watershed that contains one or more waterbodies that are less than full support for public and food processing water supply use.

2. **Description of Applicable Water Quality Standards and Numeric Water Quality Target:**

The IEPA guidelines (IEPA, 2006a) for identifying nitrate as a cause of impairment in streams state that nitrate is a potential cause of impairment of the public and food processing supply use if 10% of observations exceed a 10 mg/l for water samples collected in 1999 or later, or for any single parameter in treated water, at least one violation of an applicable Maximum Contaminant Level occurs during the most recent three years of readily available data; or the public water supply uses a treatment approach, beyond conventional, without which a violation of at least one Maximum Contaminant Level is expected during the most recent three years of readily available data. The TMDL target for nitrate is 10 mg/l.

The IEPA guidelines (IEPA, 2006a) for identifying pH as a cause of impairment in streams state that pH is a potential cause of impairment of the aquatic life use if greater than 10% of the samples are less than 6.5 SU or greater than 9.0 SU. The TMDL target for pH is the range between 6.5 and 9.0.

3. **Loading Capacity – Linking Water Quality and Pollutant Sources**:

Loading capacity was determined for each impairment cause in segment IL_BPJ-10, as presented below.

Nitrate

A load capacity calculation was completed to determine the maximum nitrate loads that will maintain compliance with the target under a range of flow conditions:

IL_BPJ-10 Flow (cfs)	Allowable Nitrate Load (lbs/day)
39	2,104
47	2,535
63	3,398
79	4,261
158	8,522
789	42,556
3,947	212,887

pH

Because pH is not a load, but rather a measure of acidity and/or alkalinity of a given solution, this TMDL uses an other appropriate measure (40 CFR section 130.2(i) rather than an actual mass-per-unit time measure. For this TMDL, the

State's numeric pH criterion (6.5 – 9.0 SU) is used as the TMDL target (other appropriate measure) for segment IL_BPJ-10.

4. **Load Allocations (LA)**: Load allocations designed to achieve compliance with the above TMDLs are as follows:

Nitrate

IL_BPJ-10 Flow (cfs)	Nitrate Load Allocation (lbs/day)
39	20
47	408
63	1,185
79	1,962
158	3,836
789	34,466
3947	187,765

pH

The pH TMDL target for nonpoint sources in the Salt Fork Vermilion River segment IL_BPJ-10 watershed is between 6.5 and 9.0 standard units.

5. **Wasteload Allocations (WLA)**: Wasteload allocations are presented below, by impairment.

Nitrate

There are 7 permitted sewage treatment plants in the Salt Fork Vermilion (IL_BPJ-10) watershed with a potential to discharge nitrate. These are the Country Club Manor Condos; Country Manor MHP-Urbana; Gifford STP; Ogden STP; Rantoul STP; St. Joseph SD STP; and Urbana-Champaign SD NE STP. The WLA for these dischargers was calculated based on the permitted design flow for these dischargers and a nitrate concentration that is consistent with meeting the TMDL target (10 mg/l). The design average flow for each facility was used to develop the WLA for lower flow conditions (below the 50^{th} percentile ambient flow), and the design maximum flow was used to calculate WLAs for higher ambient flow conditions. The total WLA for the 7 point dischargers in the IL_BPJ-10 watershed equals 1,873 lbs/day during low ambient flow and periods of no excess flow discharge. During higher flows, the WLA is 3,821 lbs/day. During periods of excess flow discharge, an additional WLA of 13 lbs/day applies. A WLA for the Rantoul emergency high level bypass was not calculated as this outfall rarely discharges. When it does discharge it is must truly be an emergency and must comply with the provisions of 40 CFR § 122.41(m). A separate WLA for the Urbana-Champaign flood protection overflow was not calculated because the WLA Urbana-Champaign includes the discharges from this point. The configuration of the main STP outfall (001) and outfall 003 (flood protection outfall) is such that once the receiving stream reaches a certain level, flow can no longer occur by gravity through the main STP outfall (001) and so it is pumped to the flood protection level outfall (003).

There are four municipal separate storm sewer systems (MS4) permittees in the Champaign urbanized area in the watershed. These are: City of Urbana, University of Illinois at Urbana-Champaign, Champaign County and City of Champaign. These permittees are located approximately 25 miles upstream of the upstream end of segment BPJ-10. These MS4 areas are not expected to contribute to nitrate violations due to their distance upstream of the impaired segment and the fact that typical stormwater nitrate concentrations from all urban land uses are typically less than 1 mg/l. A WLA is not calculated for the four MS4 permittees.

pH

There are 14 point source dischargers in the Salt Fork Vermilion (IL_BPJ-10) watershed that currently have pH limits in their permits. These are the Country Club Manor Condos; Country Manor MHP-Urbana; Gifford STP; Material Service Corporation; Ogden STP; Rantoul STP; St. Joseph SD STP; Urbana-Champaign SD NE STP; Homer WTP; Illinois Central Railroad-Champaign; Ludlow WTP; Prairie View Estates MHP WTP; Royal WTP and Safety Clean Corporation. Effluent pH levels for these point sources shall be between 6.0 and 9.0 standard units at the point of discharge. These limitations will ensure that point sources do not cause pH in the Salt Fork Vermilion River to exceed 9.0 standard units.

6. **Margin of Safety**: Both explicit and implicit margins of safety were incorporated into this TMDL, as described below.

Nitrate

The nitrate TMDL contains an implicit and explicit Margin of Safety. An implicit Margin of Safety is provided via the use of a conservative model to define load capacity. The model assumes no loss of nitrate that enters the river, and therefore represents an upper bound of expected concentrations for a given pollutant load. The TMDL also contains an explicit Margin of Safety of 10%. This 10% MOS was included in addition to the implicit MOS to address potential uncertainty in the effectiveness of load reduction alternatives. This Margin of Safety can be reviewed in the future as new data are developed.

IL_BPJ-10 Flow (cfs)	Nitrate Margin of Safety (lbs/day)
39	210
47	254
63	340
79	426
158	852
789	4,256
3947	21,289

pH

The pH TMDL for segment IL_BPJ-10 incorporates an implicit margin of safety. The targets used for this TMDL ensure that loads from the point and nonpoint sources must individually meet the pH target of 6.5 – 9.0 standard units. Point source permits include pH limits of 6.0 – 9.0. As long as pH from both point and nonpoint sources are consistent with the TMDL target, water quality standards in this segment will be met.

7. **Seasonal Variation**:

   Nitrate

   The TMDL was conducted with an explicit consideration of seasonal variation. The nitrate standard will be met regardless of flow conditions in any season because the load capacity calculations specify target loads for the entire range of flow conditions that are possible to occur in the river.

   pH

   The TMDL was conducted with an explicit consideration of seasonal variation. The pH standard will be met regardless of season because the TMDL requirements apply year-round.

8. **Reasonable Assurances**: In terms of reasonable assurances for point sources, Illinois EPA administers the NPDES permitting program for treatment plants, stormwater permitting and CAFO permitting. The permits for the point source dischargers in the watershed will be modified if necessary as part of the permit review process (typically every 5 years) to ensure that they are consistent with the applicable wasteload allocations.

   In terms of reasonable assurances for nonpoint sources, Illinois EPA is committed to:

   - Convene local experts familiar with nonpoint sources of pollution in the watershed
   - Ensure that they define priority sources and identify restoration alternatives
   - Develop a voluntary implementation plan that includes accountability.

   Local agencies and institutions with an interest in watershed management will be important for successful implementation of this TMDL. Detail on watershed activities is provided in the Stage 1 Report.

9. **Monitoring Plan to Track TMDL Effectiveness**: A monitoring plan is included as part of the implementation plan.

10. **Transmittal Letter**: A transmittal letter from Illinois EPA to USEPA accompanies the final TMDL report.

11. **Public Participation:** Numerous opportunities were provided for local watershed institutions and the general public to be involved. A number of phone calls were made to identify and acquire data and information as part of the watershed characterization (Stage 1 work) and TMDL development (Stage 3 work). As reports were produced for each stage of work, the Agency posted them to their website. In December 2005, a public meeting was conducted in Royal, Illinois to present the Stage 1 findings. A second public meeting was conducted in Royal, Illinois on August 9, 2007 to present the results of this TMDL and Implementation Plan.

Salt Fork Vermilion River (IL_BPJ-08)

1. **Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking**: Salt Fork Vermilion River, HUC 05120109. The pollutants of concern addressed in this TMDL are **nitrate and pH**. Potential sources contributing to the **nitrate** impairment include nonpoint source runoff from agricultural and developed lands, permitted sewage treatment plants and failing septic systems. The source of the **pH** impairment is unclear, but stormwater runoff and algal growth in Homer Lake may be contributing. Salt Fork Vermilion River (IL-BPJ-08) is reported on the 2006 303(d) list as being in category 5, meaning available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed (IEPA, 2006a). Illinois EPA has prioritized listed waterbodies on a watershed basis. This segment has a high priority ranking because it is located within a watershed that contains one or more waterbodies that are less than full support for public and food processing water supply use.

2. **Description of Applicable Water Quality Standards and Numeric Water Quality Target:**

   The IEPA guidelines (IEPA, 2006a) for identifying nitrate as a cause of impairment in streams state that nitrate is a potential cause of impairment of the public and food processing supply use if 10% of observations exceed a 10 mg/l for water samples collected in 1999 or later, or for any single parameter in treated water, at least one violation of an applicable Maximum Contaminant Level occurs during the most recent three years of readily available data; or the public water supply uses a treatment approach, beyond conventional, without which a violation of at least one Maximum Contaminant Level is expected during the most recent three years of readily available data. The TMDL target for nitrate is 10 mg/l.

   The IEPA guidelines (IEPA, 2006a) for identifying pH as a cause of impairment in streams state that pH is a potential cause of impairment of the aquatic life use if greater than 10% of the samples are less than 6.5 SU or greater than 9.0 SU. The TMDL target for pH is the range between 6.5 and 9.0.

3. **Loading Capacity – Linking Water Quality and Pollutant Sources**:

   Loading capacity was determined for each impairment cause in segment IL_BPJ-08, as presented below.

   Nitrate

   A load capacity calculation was completed to determine the maximum nitrate loads that will maintain compliance with the target under a range of flow conditions:

IL_BPJ-08 Flow (cfs)	Allowable Nitrate Load (lbs/day)
40	2,157
48	2,589
64	3,452
81	4,369
161	8,684
805	43,419
4027	217,202

pH

Because pH is not a load, but rather a measure of acidity and/or alkalinity of a given solution, this TMDL uses an other appropriate measure (40 CFR section 130.2(i) rather than an actual mass-per-unit time measure. For this TMDL, the State's numeric pH criterion (6.5 – 9.0 SU) is used as the TMDL target (other appropriate measure) for segment IL_BPJ-08.

4. **Load Allocations (LA)**: Load allocations designed to achieve compliance with the above TMDLs are as follows:

Nitrate

IL_BPJ-08 Flow (cfs)	Nitrate Load Allocation (lbs/day)
40	68
48	457
64	1,233
81	2,059
161	3,982
805	35,243
4,027	191,648

pH

The pH TMDL target for nonpoint sources in the Salt Fork Vermilion River segment IL_BPJ-08 watershed is between 6.5 and 9.0 standard units.

5. **Wasteload Allocations (WLA)**: Wasteload allocations are presented below, by impairment. The dischargers discussed below are the same as those previously discussed for the IL_BPJ-10 watershed, as they discharge upstream of both segment IL_BPJ-08 and segment IL_BPJ-10.

Nitrate

There are 7 permitted sewage treatment plants in the Salt Fork Vermilion (IL_BPJ-08) watershed with a potential to discharge nitrate. These are the Country Club Manor Condos; Country Manor MHP-Urbana; Gifford STP; Ogden STP; Rantoul STP; St. Joseph SD STP; and Urbana-Champaign SD NE STP. The WLA for these dischargers was calculated based on the permitted design flow for these dischargers and a nitrate concentration that is consistent with meeting the TMDL target (10 mg/l). The design average flow for each facility was used to develop the WLA for lower flow conditions (below the 50th percentile ambient flow), and the design maximum flow was used to calculate WLAs for higher ambient flow conditions. The total WLA for the 7 point dischargers in the IL_BPJ-10 watershed equals 1,873 lbs/day during low ambient flow and periods of no excess flow discharge. During higher flows, the WLA is 3,821 lbs/day. During periods of excess flow discharge, an additional WLA of 13 lbs/day applies. A WLA for the Rantoul emergency high level bypass was not calculated as this outfall rarely discharges. When it does discharge it is must truly be an emergency and must comply with the provisions of 40 CFR § 122.41(m). A separate WLA for the Urbana-Champaign flood protection overflow was not calculated because the WLA Urbana-Champaign includes the discharges from this point. The configuration of the main STP outfall (001) and outfall 003 (flood protection outfall) is such that once the receiving stream reaches a certain level, flow can no longer occur by gravity through the main STP outfall (001) and so it is pumped to the flood protection level outfall (003).

There are four municipal separate storm sewer systems (MS4) permittees in the Champaign urbanized area in the watershed. These are: City of Urbana, University of Illinois at Urbana-Champaign, Champaign County and City of Champaign. These permittees are located approximately 38 miles upstream of the upstream end of segment BPJ-08. These MS4 areas are not expected to contribute to nitrate violations due to their distance upstream of the impaired segment and the fact that typical stormwater nitrate concentrations from all urban land uses are typically less than 1 mg/l. A WLA is not calculated for the four MS4 permittees.

pH

There are 14 point source dischargers in the Salt Fork Vermilion (IL_BPJ-08) watershed that currently have pH limits in their permits. These are the Country Club Manor Condos; Country Manor MHP-Urbana; Gifford STP; Material Service Corporation; Ogden STP; Rantoul STP; St. Joseph SD STP; Urbana-Champaign SD NE STP, Homer WTP, Illinois Central Railroad-Champaign, Ludlow WTP, Prairie View Estates MHP WTP, Royal WTP and Safety Clean Corporation. Effluent pH levels for these point sources shall be between 6.0 and 9.0 standard units at the point of discharge. These limitations will ensure that point sources do not cause pH in the Salt Fork Vermilion River to exceed 9.0 standard units.

6. **Margin of Safety:** Both explicit and implicit margins of safety were incorporated into this TMDL, as described below.

Nitrate

The nitrate TMDL contains an implicit and explicit Margin of Safety. An implicit Margin of Safety is provided via the use of a conservative model to define load capacity. The model assumes no loss of nitrate that enters the river, and therefore represents an upper bound of expected concentrations for a given pollutant load. The TMDL also contains an explicit Margin of Safety of 10%. This 10% MOS was included in addition to the implicit MOS to address potential uncertainty in the effectiveness of load reduction alternatives. This Margin of Safety can be reviewed in the future as new data are developed.

Salt Fork Vermilion R (IL_BPJ-08) Flow (cfs)	Nitrate Margin of Safety (lbs/day)
40	216
48	259
64	345
81	437
161	868
805	4,342
4,027	21,720

pH

The pH TMDL for segment IL_BPJ-08 incorporates an implicit margin of safety. The targets used for this TMDL ensure that loads from the point and nonpoint sources must individually meet the pH target of 6.5 – 9.0 standard units. Point source permits include pH limits of 6.0 – 9.0. As long as pH from both point and nonpoint sources are consistent with the TMDL target, water quality standards in this segment will be met.

7. **Seasonal Variation:**

Nitrate

The TMDL was conducted with an explicit consideration of seasonal variation. The nitrate standard will be met regardless of flow conditions in any season because the load capacity calculations specify target loads for the entire range of flow conditions that are possible to occur in the river.

pH

The TMDL was conducted with an explicit consideration of seasonal variation. The pH standard will be met regardless of season because the TMDL requirements apply year-round.

8. **Reasonable Assurances:** In terms of reasonable assurances for point sources, Illinois EPA administers the NPDES permitting program for treatment plants, stormwater permitting and CAFO permitting. The permits for the point source dischargers in the watershed will be modified if necessary as part of the permit review process (typically every 5 years) to ensure that they are consistent with the applicable wasteload allocations.

In terms of reasonable assurances for nonpoint sources, Illinois EPA is committed to:

- Convene local experts familiar with nonpoint sources of pollution in the watershed
- Ensure that they define priority sources and identify restoration alternatives
- Develop a voluntary implementation plan that includes accountability.

Local agencies and institutions with an interest in watershed management will be important for successful implementation of this TMDL. Detail on watershed activities is provided in the Stage 1 Report.

9. **Monitoring Plan to Track TMDL Effectiveness:** A monitoring plan is included as part of the implementation plan.

10. **Transmittal Letter:** A transmittal letter from Illinois EPA to USEPA accompanies the final TMDL report.

11. **Public Participation:** Numerous opportunities were provided for local watershed institutions and the general public to be involved. A number of phone calls were made to identify and acquire data and information as part of the watershed characterization (Stage 1 work) and TMDL development (Stage 3 work). As reports were produced for each stage of work, the Agency posted them to their website. In December 2005, a public meeting was conducted in Royal, Illinois to present the Stage 1 findings. A second public meeting was conducted in Royal, Illinois on August 9, 2007 to present the results of this TMDL and Implementation Plan.

Salt Fork Vermilion River (IL_BPJ-03)

1. **Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking:** Salt Fork Vermilion River, HUC 05120109. The pollutants of concern addressed in this TMDL are **nitrate and fecal coliform bacteria**. Potential sources contributing to the **nitrate** impairment include nonpoint source runoff from agricultural and developed lands, permitted sewage treatment plants and failing septic systems. Potential sources contributing to the **fecal coliform** impairment include permitted sewage treatment plants with disinfection exemptions, nonpoint source runoff from agricultural and developed lands, and failing septic systems. Salt Fork Vermilion River (IL-BPJ-03) is reported on the 2006 303(d) list as being in category 5, meaning available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed (IEPA, 2006a). Illinois EPA has prioritized listed waterbodies on a watershed basis. This segment has a high priority ranking because it is located within a watershed that contains one or more waterbodies that are less than full support for public and food processing water supply use.

2. **Description of Applicable Water Quality Standards and Numeric Water Quality Target:**

   The IEPA guidelines (IEPA, 2006a) for identifying nitrate as a cause of impairment in streams state that nitrate is a potential cause of impairment of for the public and food processing supply use if 10% of observations exceed a 10 mg/l for water samples collected in 1999 or later, or for any single parameter in treated water, at least one violation of an applicable Maximum Contaminant Level occurs during the most recent three years of readily available data; or the public water supply uses a treatment approach, beyond conventional, without which a violation of at least one Maximum Contaminant Level is expected during the most recent three years of readily available data. The TMDL target for nitrate is 10 mg/l.

The IEPA guidelines (IEPA, 2006a) for identifying fecal coliform as a cause of impairment in streams state that fecal coliform is a potential cause of impairment of the primary contact use if the geometric mean of all samples collected during May through October (minimum five samples) is greater than 200 colony forming units (cfu)/100 ml, or if greater than 10% of all samples exceed 400 cfu/100 ml. For the Salt Fork Vermilion River TMDL for fecal coliform, the target is set at 200 cfu/100 ml across the entire flow regime during May-October.

3. Loading Capacity – Linking Water Quality and Pollutant Sources:

Loading capacity was determined for each impairment cause in segment IL_BPJ-03, as presented below.

Nitrate

A load capacity calculation was completed to determine the maximum nitrate loads that will maintain compliance with the target under a range of flow conditions:

IL_BPJ-03 Flow (cfs)	Allowable Nitrate Load (lbs/day)
50	2,697
60	3,236
80	4,315
100	5,394
200	10,787
1000	53,937
5000	269,683

Fecal Coliform

A load capacity calculation was completed to determine the maximum fecal coliform loads that will maintain compliance with the fecal coliform target for May through October under a range of flow conditions:

IL_BPJ-03 Flow (cfs)	Allowable Fecal coliform Load (cfu/day)
50	2.45E+11
60	2.94E+11
80	3.91E+11
100	4.89E+11
200	9.79E+11
1000	4.89E+12
5000	2.45E+13

4. **Load Allocations (LA)**: Load allocations designed to achieve compliance with the above TMDLs are as follows:

Nitrate

IL_BPJ-03 Flow (cfs)	Nitrate Load Allocation (lbs/day)
50	528
60	1,013
80	1,984
100	2,955
200	5,815
1000	44,649
5000	238,821

Fecal coliform

IL_BPJ-03 Flow (cfs)	Fecal coliform Load Allocation (cfu/day)
50	7.23E+10
60	1.21E+11
80	2.19E+11
100	3.17E+11
200	6.25E+11
1000	4.54E+12
5000	2.41E+13

5. **Wasteload Allocations (WLA)**: Wasteload allocations are presented below, by impairment.

Nitrate

There are 10 permitted sewage treatment plants in the Salt Fork Vermilion (IL_BPJ-03) watershed which have a potential to discharge nitrate. These are the Country Club Manor Condos; Country Manor MHP-Urbana; Fithian STP; Gifford STP; Oakwood STP; Oakwood Township High School; Ogden STP; Rantoul STP; St. Joseph SD STP; and Urbana-Champaign SD NE STP. The WLA for these dischargers was calculated based on the permitted design flow for these dischargers and a nitrate concentration that is consistent with meeting the TMDL target (10 mg/l). The design average flow for each facility was used to develop the WLA for lower flow conditions (below the 50^{th} percentile ambient flow), and the design maximum flow was used to calculate WLAs for higher ambient flow conditions. The total WLA for the 10 point dischargers in the IL_BPJ-03 watershed equals 1,900 lbs/day during low ambient flow and periods of no excess flow discharge. During higher flows, the WLA is 3,881 lbs/day. During periods of excess flow discharge, an additional WLA of 13 lbs/day applies. A WLA for the Rantoul emergency high level bypass was not calculated as this outfall rarely discharges. When it does discharge it is must truly be an emergency and must comply with the provisions of 40 CFR § 122.41(m). A separate WLA for the Urbana-Champaign flood protection overflow was not calculated because the WLA Urbana-Champaign includes the discharges from this point. The configuration of the main STP outfall (001) and outfall 003 (flood protection outfall) is such that once the receiving stream reaches a certain level, flow can no longer occur by gravity through the main STP outfall (001) and so it is pumped to the flood protection level outfall (003).

There are four municipal separate storm sewer systems (MS4) permittees in the Champaign urbanized area in the watershed. These are: City of Urbana, University of Illinois at Urbana-Champaign, Champaign County and City of Champaign. These permittees are located approximately 41 miles upstream of the upstream end of segment BPJ-03 and comprise 3.26% of the watershed area. These MS4 areas are not expected to contribute to nitrate violations due to their distance upstream of the impaired segment and the fact that typical stormwater nitrate concentrations from all urban land uses are typically less than 1 mg/l. A WLA is not calculated for the four MS4 permittees.

Fecal coliform

There are 10 permitted sewage treatment plants which have the potential to discharge fecal coliform bacteria in the IL_BPJ-03 watershed. Nine of these facilities have year-round disinfection exemptions and one, Rantoul STP, has a seasonal exemption. The ten facilities are: Country Club Manor Condos; Country Manor MHP-Urbana; Fithian STP; Gifford STP; Oakwood STP; Oakwood Township High School; Ogden STP; Rantoul STP; St. Joseph SD STP; and Urbana-Champaign SD NE STP. The WLA for these dischargers was calculated from their current permitted design flows and a fecal coliform concentration of 200 cfu/100ml, consistent with meeting water quality standards at the downstream end of their exempted reach. The design average flow for each facility was used to develop the WLA for lower flow conditions (below the 50th percentile ambient flow), and the design maximum flow was used to calculate WLAs for higher ambient flow conditions. The WLA for these facilities equals 1.72E+11cfu/day during low ambient flow and periods of no excess flow. The WLA for these facilities during higher ambient flows equals 3.52E+11 cfu/day. The Urbana-Champaign SD NE STP excess flow outfall has a WLA of 1.16E+09 cfu/day during periods of excess flow discharge. This load was calculated using average reported flow volumes per overflow event and a fecal coliform concentration consistent with the TMDL target (200 cfu/100ml). A WLA for the Rantoul emergency high level bypass was not calculated as this outfall rarely discharges. When it does discharge it is must truly be an emergency and must comply with the provisions of 40 CFR § 122.41(m). A separate WLA for the Urbana-Champaign flood protection overflow was not calculated because the WLA Urbana-Champaign includes the discharges from this point. The configuration of the main STP outfall (001) and outfall 003 (flood protection outfall) is such that once the receiving stream reaches a certain level, flow can no longer occur by gravity through the main STP outfall (001) and so it is pumped to the flood protection level outfall (003).

There are four municipal separate storm sewer systems (MS4) permittees in the Champaign urbanized area in the watershed. These are: City of Urbana, University of Illinois at Urbana-Champaign, Champaign County and City of Champaign. These permittees are located approximately 41 miles upstream of the upstream end of segment BPJ-03 and comprise 3.26% of the watershed area. Due to the distance of the MS4 upstream of the impaired segment and expected dilution and die-off, the MS4 is not expected to contribute to fecal violations in segment BPJ-03 and a WLA is not calculated.

6. **Margin of Safety**: Both explicit and implicit margins of safety were incorporated into this TMDL, as described below.

Nitrate

The nitrate TMDL contains an implicit and explicit Margin of Safety. An implicit Margin of Safety is provided via the use of a conservative model to define load capacity. The model assumes no loss of nitrate that enters the river, and therefore represents an upper bound of expected concentrations for a given pollutant load. The TMDL also contains an explicit Margin of Safety of 10%. This 10% MOS was included in addition to the implicit MOS to address potential uncertainty in the effectiveness of load reduction alternatives. This Margin of Safety can be reviewed in the future as new data are developed.

IL_BPJ-03 Flow (cfs)	Nitrate Margin of Safety (lbs/day)
50	270
60	324
80	431
100	539
200	1,079
1000	5,394
5000	26,968

Fecal coliform

The TMDL contains an implicit margin of safety for fecal coliform, through the use of multiple conservative assumptions. The TMDL target (no more than 200 cfu/100 ml at any time) is more conservative than the more restrictive portion of the fecal coliform water quality standard (geometric mean of 200 cfu/100 ml for all samples collected May through October). An additional implicit Margin of Safety is provided via the use of a conservative model to define load capacity. The model assumes no decay of bacteria that enter the river, and therefore represents an upper bound of expected concentrations for a given pollutant load.

7. **Seasonal Variation**:

Nitrate

The TMDL was conducted with an explicit consideration of seasonal variation. The nitrate standard will be met regardless of flow conditions in any season because the load capacity calculations specify target loads for the entire range of flow conditions that are possible to occur in the river.

Fecal coliform

This TMDL was conducted with an explicit consideration of seasonal variation. The load duration curve approach used for the TMDL evaluated seasonal loads because only May through October water quality data were used in the analysis, consistent with the specification that the standard only applies during this period. The fecal coliform standard will be met regardless of flow conditions in the applicable season because the load capacity calculations specify target loads for the entire range of flow conditions that are possible to occur at any given point in the season where the standard applies.

8. **Reasonable Assurances**: In terms of reasonable assurances for point sources, Illinois EPA administers the NPDES permitting program for treatment plants, stormwater permitting and CAFO permitting. The permits for the point source dischargers in the watershed will be modified if necessary as part of the permit review process (typically every 5 years) to ensure that they are consistent with the applicable wasteload allocations.

   In terms of reasonable assurances for nonpoint sources, Illinois EPA is committed to:

   a. Convene local experts familiar with nonpoint sources of pollution in the watershed
   b. Ensure that they define priority sources and identify restoration alternatives
   c. Develop a voluntary implementation plan that includes accountability.

   Local agencies and institutions with an interest in watershed management will be important for successful implementation of this TMDL. Detail on watershed activities is provided in the Stage 1 Report.

9. **Monitoring Plan to Track TMDL Effectiveness**: A monitoring plan is included as part of the implementation plan.

10. **Transmittal Letter**: A transmittal letter from Illinois EPA to USEPA accompanies the final TMDL report.

11. **Public Participation:** Numerous opportunities were provided for local watershed institutions and the general public to be involved. A number of phone calls were made to identify and acquire data and information as part of the watershed characterization (Stage 1 work) and TMDL development (Stage 3 work). As reports were produced for each stage of work, the Agency posted them to their website. In December 2005, a public meeting was conducted in Royal, Illinois to present the Stage 1 findings. A second public meeting was conducted in Royal, Illinois on August 9, 2007 to present the results of this TMDL and Implementation Plan.

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3. WATERSHED CHARACTERIZATION

The Stage 1 Report presents and discusses information describing the Salt Fork Vermilion River watershed to support the identification of sources contributing to the listed impairments as applicable. Watershed characterization activities were focused on gaining an understanding of key features of the watershed, including geology and soils, climate, land cover, hydrology, urbanization and population growth, point source discharges and watershed activities.

The impaired waterbodies addressed in this report are all located within the Salt Fork Vermilion River watershed. This watershed encompassing the impaired waterbodies is located in east-central Illinois and drains approximately 500 square miles. The dominant land use is agriculture, primarily corn and soybean. Approximately 73% of the watershed is located in eastern Champaign County and 27% is in western Vermilion County. Drainage ditches and subsurface field tile drains were installed over the last century to drain the naturally wet soils (SFSC CCSWCD, 2007).

The waterbodies of concern addressed in this report are: Salt Fork Vermilion River (IL_BPJ-03, IL_BPJ-08, IL_BPJ-10) and Spoon Branch (IL_BPJD02).

Figure 1 shows a map of the watershed and includes waterways, impaired waterbodies, public water intakes and other key features. The map also shows the locations of point source discharges that have a permit to discharge under the National Pollutant Discharge Elimination System (NPDES). Table 1 lists the permitted discharges in the watershed. Note that this list differs slightly from that presented in the Stage 1 report. The permits for two discharges listed in the Stage 1 report (J.R. & Sons, Inc. and Thomasboro WTP) have been terminated, while the Paxton STP was listed in the Stage 1 report in error; it is not located within the Salt Fork Vermilion watershed).

Table 1. Permitted Dischargers

NPDES ID	Facility Name	Permit Expiration Date
IL0024619	Country Club Manor Condos	8/31/2007
IL0027278	Country Manor MHP - Urbana	8/31/2010
IL0034088	Fairmount WTP	10/31/2003
ILG580060	Fithian STP	12/31/2007
ILG580214	Gifford STP	12/31/2007
ILG640113	Homer WTP	1/31/2005
IL0004545	Illinois Central Railroad-Cham	11/30/2009
IL0063711	Ludlow WTP	10/31/2007
IL0063002	Material Service Corp Fairmount	4/30/2010
ILG580216	Oakwood STP	12/31/2007
IL0055751	Oakwood Township High School	4/30/2007
ILG580132	Ogden STP	12/31/2007
ILG640225	Prairie View Estates MHP WTP	9/30/2004
IL0022128	Rantoul STP	11/30/2010
ILG640131	Royal WTP	8/31/2004
IL0072052	Safety-Kleen Corporation	11/30/2008
IL0023086	St. Joseph SD STP	10/31/2010
IL0031500	Urbana-Champaign SD NE STP	5/31/2011

Several of the waterbodies previously discussed in the Stage 1 report are not addressed in this document. One waterbody, Homer Lake, has already had a TMDL developed (Tetra Tech, 2006b); this TMDL was approved by USEPA Region 5 in October 2006. Other waterbodies have been previously discussed (see Table 5-1 in the Stage 1 report) as not requiring a TMDL at this time because numeric water quality standards do not currently exist or because the listing was initially based on a fish kill, which was a one-time occurrence in July 2002[1]. Waterbodies that have been approved for delisting by USEPA Region 5 since the Stage 1 report are discussed below.

Stage 2 monitoring was conducted in 2006 at nine stations within six segments in the Salt Fork Vermilion River watershed. The sampled segments and parameters monitored are summarized in Table 2 and results can be found in the Stage 2 report.

[1] The Urbana & Champaign Sanitary District (UCSD) and the University of Illinois have adopted a set of measures to ensure that discharges of this nature will not occur again. These measures include emphasis on written communications and an effort on the part of UI to find alternatives to using high-concentration ammonia solutions. Details regarding these measures can be obtained from UCSD (SFSC CCSWCD, 2007).

Table 2. Stage 2 sampling summary

Waterbody	Segment	Field parameters	Lab parameters
Salt Fork Vermilion River	IL_BPJ-10	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2+NO_3, TP, TDP, BOD_5, NH_3, TSS
	IL_BPJ-08	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2+NO_3, TP, TDP, BOD_5, NH_3, TSS, fecal coliform
	IL_BPJ-03	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2+NO_3, TP, TDP, BOD_5, NH_3, TSS
Jordan Creek[1]	IL_BPJA-03	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2+NO_3, TP, TDP, BOD_5, NH_3, TSS, fecal coliform
Saline Branch	IL_BPJC08	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2+NO_3, TP, TDP, BOD_5, NH_3, TSS
Spoon Branch	IL_BPJD02	pH, conductivity, DO, turbidity, Secchi disk, temperature, flow	TKN, NO_2+NO_3, TP, TDP, BOD_5, NH_3, TSS

Jordan Creek is a tributary to segment IL_BPJ-03

BOD_5	5-Day biochemical oxygen demand	TKN	Total Kjeldahl Nitrogen
DO	Dissolved oxygen	TDP	Total dissolved phosphorus
NH_3	Ammonia	TP	Total phosphorus
NO_2	Nitrite	TSS	Total suspended solids
NO_3	Nitrate		

Recent monitoring data, including Stage 2 sampling results, in combination with 2006 Intensive Basin Survey (IBS) data and IEPA data collected between 2004 and 2006 as part of the ambient monitoring program and a 2006 facility related stream survey for the Urbana-Champaign Sanitary District, were reviewed to evaluate whether some of the segments in the Salt Fork Vermilion watershed should be delisted. The results of this assessment are summarized below by segment. All of the delistings presented in Table 3 have been reviewed and approved by US EPA Region V. In addition to the delistings, an analysis of recent data resulted in one new 303(d) listing; fecal coliform was added as a cause of impairment on the 2006 integrated report, based on a review of ambient water quality data. Five of 22 fecal coliform samples (2004-2006 data) analyzed for segment IL_BPJ-03 exceeded 200 cfu/100ml.

Table 3. Listing Changes Since Stage 1 Report

Segment	Parameter	Data (# violations/# samples)	Recommendation
Salt Fork Vermilion R (IL_BPJ-03)	Nitrate	5/17 > 10 mg/l	No change. Develop nitrate TMDL
	Dissolved iron	0/22 > 300 ug/l	Delist dissolved iron. No violations since 2004
	Fecal coliform	5/22 > 400 cfu/100ml	Added as a cause in 2006 assessment. Develop fecal TMDL
Salt Fork Vermilion R. (IL_BPJ-08)	pH	1/14 > 9 SU	No change. Develop pH TMDL
	Nitrate	3/12 > 10 mg/l	No change. Develop nitrate TMDL
	Dissolved iron	0/2 > 300 ug/l	Delist dissolved iron. Original listing was based on extrapolation of data from downstream station (BPJ03)
	Fecal coliform	4/9 > 400 cfu/100ml	No change. May be listed in 2008. Sampled to support BPJ-03 TMDL. A TMDL will not be developed for this parameter at this time.
Salt Fork Vermilion R. (IL_BPJ-10)	pH	2/21 > 9 SU	No change. Develop pH TMDL
	Nitrate	7/21 > 10 mg/l	No change. Develop nitrate TMDL
Spoon Branch (IL_BPJD-02)	Dissolved oxygen[1]	2/25 < 5 mg/l	No change. Develop dissolved oxygen TMDL
Saline Branch (IL_BPJC-06)	Boron	0/29 > 1000 ug/l	Delist boron. No violations since 2001.
Saline Branch (IL_BPJC-08)	Dissolved oxygen	0/6 < 5 mg/l	Delist dissolved oxygen

[1]Due to an error in recording the field data, only 1 DO violation is noted in the Stage 2 report. As noted above, two violations were recorded on Spoon Branch during the Stage 2 monitoring, supporting the need for TMDL development.

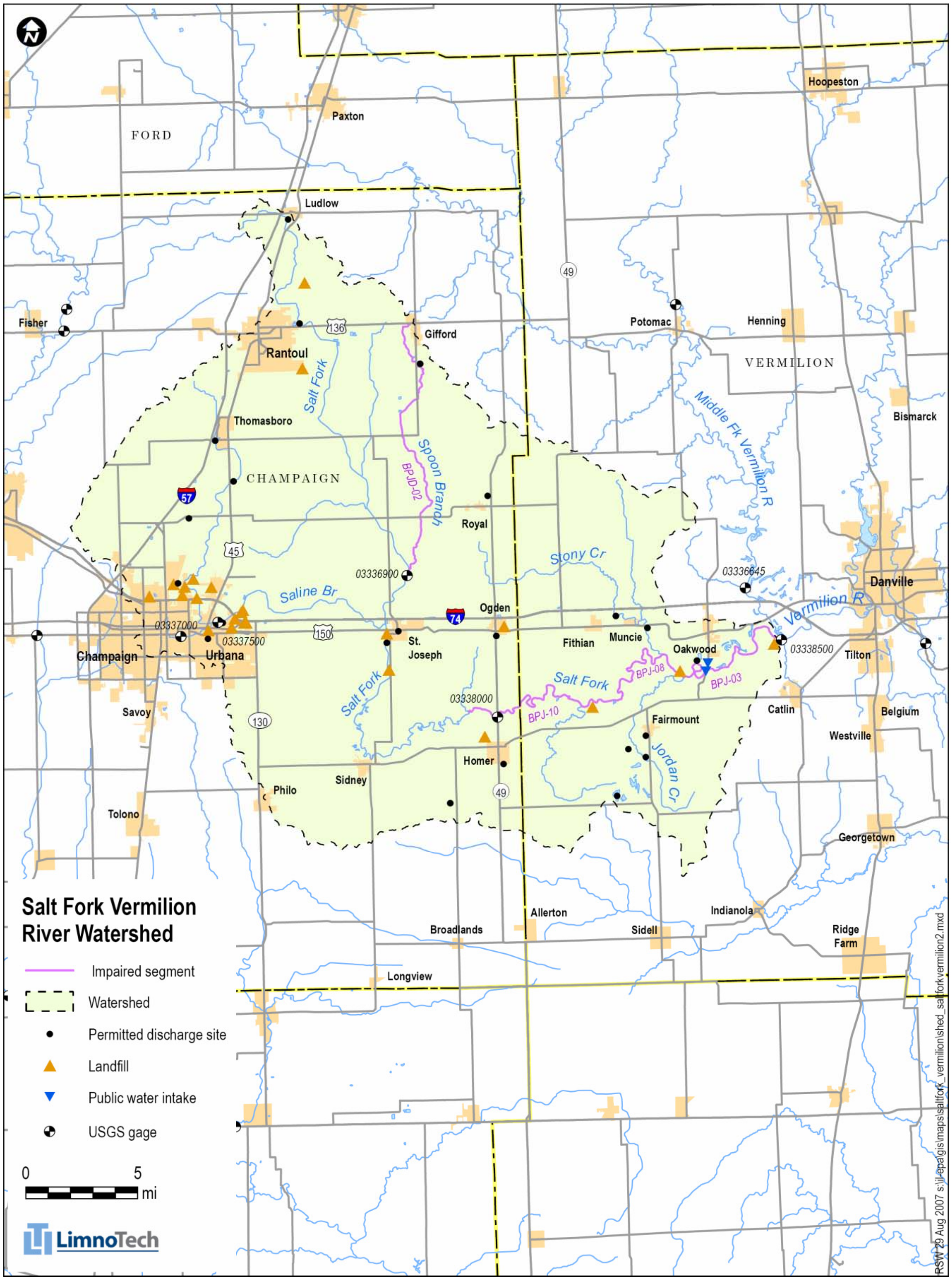

Figure 1. Base Map of Salt Fork Vermilion River Watershed

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4. DESCRIPTION OF APPLICABLE STANDARDS AND NUMERIC TARGETS

A water quality standard includes the designated uses of the waterbody, water quality criteria to protect designated uses, and an antidegradation policy to maintain and protect existing uses and high quality waters. Water quality criteria are sometimes in a form that are not directly amenable for use in TMDL development and may need to be translated into a target value for TMDLs. This section discusses the applicable designated uses, use support, criteria and TMDL targets for waterbodies in the Salt Fork Vermilion River watershed that are addressed in this report.

4.1 DESIGNATED USES AND USE SUPPORT

Water quality assessments in Illinois are based on a combination of chemical (water, sediment and fish tissue), physical (habitat and flow discharge), and biological (macroinvertebrate and fish) data. Illinois EPA conducts its assessment of water bodies using a set of seven designated uses: aquatic life, aesthetic quality, indigenous aquatic life (for specific Chicago-area waterbodies), primary contact (swimming), secondary contact, public and food processing water supply, and fish consumption (IEPA, 2006a). For each water body, and for each designated use applicable to the water body, Illinois EPA's assessment concludes one of two possible "use-support" levels:

- Fully Supporting (the water body attains the designated use); or
- Not Supporting (the water body does not attain the designated use).

Water bodies assessed as "Not Supporting" for any designated use are identified as impaired. Waters identified as impaired based on biological (macroinvertebrate, macrophyte, algal and fish), chemical (water, sediment and fish tissue), and/or physical (habitat and flow discharge) monitoring data are placed on the 303(d) list. Potential causes and sources of impairment are also identified for impaired waters (IEPA, 2006).

Following the U.S. EPA regulations at 40 CFR Part 130.7(b)(4), the Illinois Section 303(d) list was prioritized on a watershed basis. Illinois EPA watershed boundaries are based on the USGS ten-digit hydrologic units to provide the state with the ability to address watershed issues at a manageable level and document improvements to a watershed's health (IEPA, 2006).

4.2 WATER QUALITY CRITERIA

Illinois has established water quality criteria and guidelines for allowable concentrations of fecal coliform, nitrate, dissolved oxygen and pH under its CWA Section 305(b) program, as summarized below. A comparison of available water quality data to these criteria is provided in the Stage 1 Report.

4.2.1 Fecal Coliform

The general use water quality standard (35 IAC 302.209) for fecal coliform in Illinois waters is as follows:

> During the months May through October, based on a minimum of five samples taken over not more that an 30 day period, fecal coliform (STORET number 31616) shall not exceed a geometric mean of 200 per 100ml, nor shall more than 10% of the samples during any 30 day period exceed 400 per 100 ml in protected waters. Protected waters are defined as waters which, due to natural characteristics, aesthetic value or environmental significance are deserving of protection from pathogenic organisms. Protected waters will meet one or both of the following conditions:
>
> 1. Presently support or have the physical characteristics to support primary contact;
> 2. Flow through or adjacent to parks or residential areas.

The IEPA guidelines (IEPA, 2006a) for identifying fecal coliform as a cause of impairment in streams state that fecal coliform is a potential cause of impairment of the primary contact use if the geometric mean of all samples collected during May through October (minimum five samples) is greater than 200 cfu/100 mL, or if greater than 10% of all samples exceed 400 cfu/100 mL.

4.2.2 Nitrate

The water quality standard for nitrate in Illinois waters designated for public and food processing water supply (35 IAC 302.304) is that the level of nitrate-nitrogen (STORET number 00620) of 10 mg/l shall not be exceeded.

The IEPA guidelines (IEPA, 2006a) for identifying nitrate as a cause of impairment in streams state that nitrate is a potential cause of impairment for the public and food processing supply use if 10% of observations exceed a 10 mg/l for water samples collected in 1999 or later, or for any single parameter in treated water, at least one violation of an applicable Maximum Contaminant Level occurs during the most recent three years of readily available data; or the public water supply uses a treatment approach, beyond conventional, without which a violation of at least one Maximum Contaminant Level is expected during the most recent three years of readily available data.

4.2.3 Dissolved oxygen

The water quality standard for dissolved oxygen in Illinois waters designated for aquatic life (35 IAC 302.206) is that dissolved oxygen shall not be less than 6.0 mg/L during at least 16 hours of any 24 hour period, nor less than 5.0 mg/L at any time.

The water quality standard for dissolved oxygen in Illinois waters designated for aquatic life is that dissolved oxygen shall not be less than 6.0 mg/L during at least 16 hours of any 24 hour period, nor less than 5.0 mg/L at any time.

The aquatic life guideline for streams indicates impairment if more than 10% of the observations measured in the last five years are below 5 mg/L.

4.2.4 pH

The water quality standard for pH in Illinois waters designated for aquatic life (35 IAC 302.204) states that pH (STORET number 00400) shall be within the range of 6.5 to 9.0 except for natural causes. The aquatic life guideline for streams indicates impairment if more than 10% of the observations measured in the last five years are greater than 9.0 SU or less than 6.5 SU.

4.3 DEVELOPMENT OF TMDL TARGETS

The TMDL target is a numeric endpoint specified to represent the level of acceptable water quality that is to be achieved by implementing the TMDL. Where possible, the water quality criterion for the pollutant of concern is used as the numeric endpoint. When appropriate numeric standards do not exist, surrogate parameters must be selected to represent the designated use.

4.3.1 Fecal Coliform

For the Salt Fork Vermilion fecal coliform TMDL, the target was set at 200 cfu/100 mL.

4.3.2 Nitrate

For the Salt Fork Vermilion nitrate TMDLs, the target was set at 10 mg/l.

4.3.3 Dissolved oxygen

The water quality standard for dissolved oxygen in Illinois waters designated for aquatic life is that dissolved oxygen shall not be less than 6.0 mg/L during at least 16 hours of any 24 hour period, nor less than 5.0 mg/L at any time. For Spoon Branch, the target was based upon the water quality criterion for dissolved oxygen of 5 mg/L. The QUAL2E model used to calculate the TMDL predicts a daily average dissolved oxygen concentration and does not directly predict daily minimum values. QUAL2E results can be translated into a form comparable to a daily minimum, by subtracting the observed difference between daily average and daily minimum dissolved oxygen from the model output. Daily minimum dissolved oxygen data are not available for Spoon Branch, therefore a difference of about 2 mg/L was estimated based on observed degrees of oxygen supersaturation. For QUAL2E model runs, a target of 5 mg/L plus 2 mg/L, or 7 mg/L total, was used to consider diurnal variation and ensure that the 5.0 mg/L water quality standard is met.

4.3.4 pH

For Salt Fork Vermilion River segments IL_BPJ-08 and IL_BPJ-10, the target was set to the water quality criterion of $6.5 \leq pH \leq 9.0$.

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5. DEVELOPMENT OF WATER QUALITY MODELS

Water quality models are used to define the relationship between pollutant loading and the resulting water quality. The dissolved oxygen assessment is based on the QUAL2E model. A model was not applied for the pH TMDL. The TMDLs for nitrate and fecal coliform apply the Load Duration Curve approach in conjunction with a load capacity calculation. The development of these approaches is described in the following sections, including information on:

- Model selection
- Modeling approach
- Model inputs
- Model calibration (QUAL2E)/analysis (Load duration)

5.1 QUAL2E MODEL

The QUAL2E water quality model was used to define the relationship between external oxygen-demanding loads and the resulting concentrations of dissolved oxygen in Spoon Branch. QUAL2E is a one-dimensional stream water quality model applicable to dendritic, well-mixed streams. It assumes that the major pollutant transport mechanisms, advection and dispersion, are significant only along the main direction of flow. The model allows for multiple waste discharges, water withdrawals, tributary flows, and incremental inflows and outflows.

5.1.1 Model Selection

A discussion of the model selection process for the Salt Fork Vermilion River watershed is provided in the Stage 1 Report.

Of the models discussed in the Stage 1 Report, the QUAL2E model (Brown and Barnwell, 1987) was selected to address dissolved oxygen impairments. QUAL2E is the most commonly used water quality model for addressing low flow conditions. Because problems are restricted to low flow conditions, watershed loads during these periods are not expected to be significant contributors to the impairment. For this reason, an empirical approach was selected for determining watershed loads.

5.1.2 Modeling Approach

The approach selected for the dissolved oxygen assessment is based upon discussions with IEPA and their Scientific Advisory Committee. The approach consists of using data collected during 2006 dry weather surveys to define current loads to the river, and using the QUAL2E model to define the extent to which loads must be reduced to meet water quality standards. This is the simple approach presented in the discussion of the model selection process provided in the Stage 1 report. The dominant land use in the watershed is agriculture. Implementation plans for nonpoint sources will consist of voluntary controls, applied on an incremental basis. The approach taken for these TMDLs, will expedite these implementation efforts.

Determination of existing loading sources and prioritization of restoration alternatives may be conducted by local experts as part of the implementation process (see Section 8). Based upon their recommendations, a locally-led, voluntary implementation plan could be developed that includes both accountability and the potential for adaptive management. A local watershed committee recently completed a draft implementation plan for portions of this watershed; the committee is encouraged to continue working on the plan through adaptive management.

5.1.3 Model Inputs

This section provides an overview of the model inputs required for QUAL2E application, and how they were derived. The following categories of inputs are required for QUAL2E:

- Model options (title data)
- Model segmentation
- Hydraulic characteristics
- Reach kinetic coefficients
- Initial conditions
- Incremental inflow conditions
- Headwater characteristics
- Point source flows and loads

5.1.3.a *Model Options*

This portion of the input file defines the specific water quality parameters to be simulated. QUAL2E was set up to simulate biochemical oxygen demand, the nitrogen series and dissolved oxygen.

5.1.3.b *Model Segmentation*

The QUAL2E model divides the river being simulated into discrete segments (called "reaches") that are considered to have constant channel geometry and hydraulic characteristics. Reaches are further divided into "computational elements", which define the interval at which results are provided. The Spoon Branch QUAL2E model consists of 5 reaches, which are comprised of a varying number of computational elements. Computational elements have a fixed length of 0.25 miles. Reaches are defined with respect to tributaries and water quality monitoring stations. Model segmentation is presented below in Table 4.

Table 4 QUAL2E Segmentation

Reach	River miles	Number of computational elements	Other Features
1	11.3 – 13.8	10	
2	7.0 – 11.3	17	Gifford STP
3	2.7 – 7.0	17	
4	1.0 – 2.7	7	
5	0.0 – 1.0	4	

5.1.3.c *Hydraulic Characteristics*

A functional representation was used to describe the hydraulic characteristics of the system. For each reach, velocity and depth were specified, based on measurements taken during the field survey.

5.1.3.d *Reach Kinetic Coefficients*

Kinetic coefficients were set at typical values in the absence of specific data. Model sediment oxygen demand (SOD) and reaeration rates were adjusted to match minimum observed dissolved oxygen concentrations. Decay rates for BOD and ammonia were not calibrated because concentrations were generally low; uncertainty in these rates will have little affect on model predictions.

5.1.3.e *Initial Conditions*

Initial model conditions were based on field observations for the survey date when dissolved oxygen violations were observed. Specifically, site-specific information on creek flow, velocity, morphometry, and concentrations of BOD and nitrogen were used to specify initial conditions.

5.1.3.f *Incremental Inflow Conditions*

Aside from Reach 1, incremental inflows were used in the model to represent the assumed increase of flow with increasing drainage area. Drainage flows were based on incremental drainage areas and the recorded daily average flow of 19 cfs at the USGS Salt Fork Vermilion gage (03336900) for the date of the August field survey (8/30/2006).

5.1.3.g *Headwater Characteristics*

Headwater characteristics for Reach 1 were based on watershed-typical values and drainage area-based flow.

5.1.3.h *Point Source Flows and Loads*

The model considers a single point source, the Gifford sewage treatment plant (STP). The Royal water treatment plant is also in the Spoon Branch watershed but its iron filter backwash is assumed not to contribute any significant oxygen-demanding load. The

Gifford STP discharge flow was considered to be the monthly average flow from the Discharge Monitoring Report.

5.1.4 QUAL2E Calibration

QUAL2E model calibration consisted of:

1. Applying the model with all inputs specified as above
2. Comparing model results to dissolved oxygen data
3. Adjusting model coefficients to provide the best comparison between model predictions and observed dissolved oxygen data.

The QUAL2E dissolved oxygen calibration is discussed below. The model was initially applied with the model inputs as specified above. Observed data for the survey conducted August 30, 2006 (the date when the dissolved oxygen violations were observed) were used for calibration purposes.

QUAL2E was calibrated to match the dissolved oxygen concentrations measured at stations BPJD-01 and BPJD-02 (these stations are shown in Figure 2 of the Stage 2 report. Model results initially overpredicted the observed dissolved oxygen data. The source of dissolved oxygen was reaeration. Initially there were no important sinks as BOD and ammonia concentrations were low, the time of day indicated the upper portion of the diurnal variation curve and there were no measurements of sediment oxygen demand. The mismatch between model and data was minimized during the calibration process by assuming a reasonable level of sediment oxygen demand in the lower portion of Spoon Branch as well as adjusting the reaeration rates. The resulting dissolved oxygen predictions compared well to the measured concentrations, as shown in Figure 2. The QUAL2E model output files from the calibration run are included in Attachment 1.

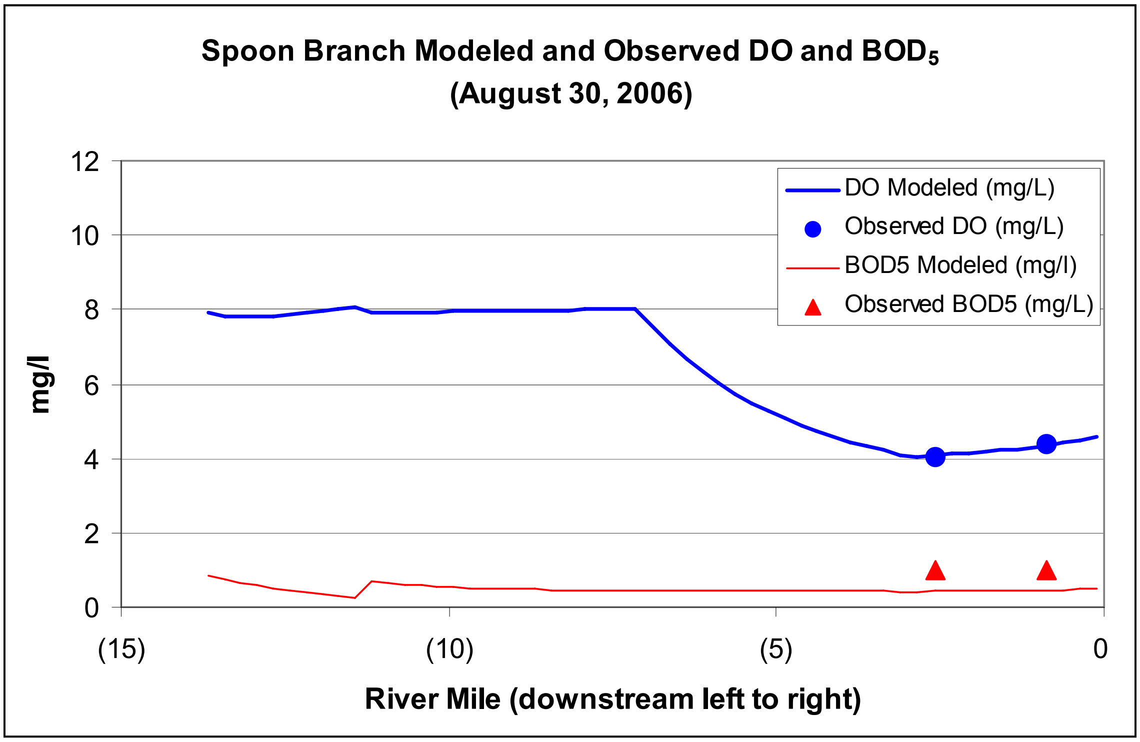

Figure 2. QUAL2E Calibration Spoon Branch

5.2 LOAD DURATION CURVE ANALYSIS

A load duration curve approach was used in the fecal coliform and nitrate analysis for the Salt Fork Vermilion River. A load-duration curve is a graphical representation of observed pollutant load compared to maximum allowable load over the entire range of flow conditions (Freedman, et al, 2003). The load duration curve provides information to:

- Help identify the issues surrounding the problem and differentiate between point and nonpoint source problems, as discussed immediately below;
- Address frequency of deviations (how many samples lie above the curve vs. those that plot below); and
- Aid in establishing the level of implementation needed, by showing the magnitude by which existing loads exceed standards for different flow conditions.

5.2.1 Model Selection

The load-duration curve approach was selected for nitrate and fecal coliform TMDLs because it is a simpler approach that can be supported with the available data and still support the selected level of TMDL implementation for this TMDL. The load-duration curve approach identifies broad categories of nitrate and fecal coliform sources and the extent of control required from these source categories to attain water quality standards.

5.2.2 Approach

The load duration curve approach uses stream flows for the period of record to gain insight into the flow conditions under which exceedances of the water quality standard occur. A load-duration curve is developed by: 1) ranking the daily flow data from lowest to highest, calculating the percent of days these flows were exceeded, and graphing the results; 2) translating the flow duration curve (produced in step 1) into a load duration curve by multiplying the flows by the water quality standard; and 3) plotting observed pollutant loads (measured concentrations times stream flow) on the same graph. Observed loads that fall above the load duration curve exceed the maximum allowable load, while those that fall on or below the line do not exceed the maximum allowable load. An analysis of the observed loads relative to the load duration curve provides information on whether the pollutant source is point or nonpoint in nature.

5.2.3 Data inputs

This section describes the flow and water quality data used to support development of the load duration curve for nitrate and fecal coliform bacteria.

5.2.3.a *Flow*

Daily flow measurements are available from the USGS for the Salt Fork Vermilion River near St. Joseph, IL (USGS gage number 03336900) for the period from 1958-2007, however, data were not available for the period October 1991-June 2004. Missing flows were estimated using the USGS gage on the Middle Fork Vermilion River above Oakwood (03336645), adjusting for the difference in drainage areas between the two gages. To estimate flows for each of the listed segments, the gaged and estimated flows at St. Joseph were adjusted for the size of the drainage area. The adjustment ratio for each segment is as follows:

- Salt Fork Vermilion River (IL_BPJ-03) - multiplied by 3.73 because the watershed for IL_BPJ-03 is 3.73 times the size of the watershed at the USGS gage (0333900).
- Salt Fork Vermilion River (IL_BPJ-08) - multiplied by 2.9 because the watershed for IL_BPJ-08 is 2.9 times the size of the watershed at the USGS gage (0333900).
- Salt Fork Vermilion River (IL_BPJ-10) - multiplied by 2.85 because the watershed for IL_BPJ-10 is 2.85 times the size of the watershed at the USGS gage (0333900).

5.2.3.b *Nitrate*

Historical nitrate data presented in the Stage 1 report, along with additional data collected in 2006 as part of the Stage 2 effort were used in the nitrate analysis.

- For Salt Fork Vermilion River segment IL_BPJ-03, data collected between 1967 and 2006 were used in the analysis.
- For Salt Fork Vermilion River segment IL_BPJ-08, data collected between 1985 and 2006 were used.
- For Salt Fork Vermilion River segment IL_BPJ-10, data collected between 1985 and 2006 were used.

5.2.3.c *Fecal coliform*

Fecal coliform data collected by IEPA and as part of the Stage 2 monitoring effort were used in the analysis. Data used in the fecal coliform analysis cover the period 1999 to 2006. Only data for the months of May-October were used because the water quality standard applies only during this period.

5.2.4 Analysis

A flow duration curve was generated by ranking daily flow data from lowest to highest, calculating the percent of days these flows were exceeded, and graphing the results. Load duration curves for nitrate and fecal coliform were generated by multiplying the flows in the duration curve by the water quality standard of 10 mg/L for nitrate and 200 cfu/100 mL for fecal coliform bacteria. The load duration curves are shown with a solid line in Figures 3 through 6; Figures 3, 4 and 5 are for nitrate, and Figure 6 is for fecal coliform. Observed pollutant loads of nitrate were calculated using available concentration data paired with corresponding flows, and were plotted on the same graphs. For fecal coliform, observed pollutant loads were calculated in the same manner, using only measurements collected between May and October. The worksheets for these analyses are provided in Attachments 2 and 3.

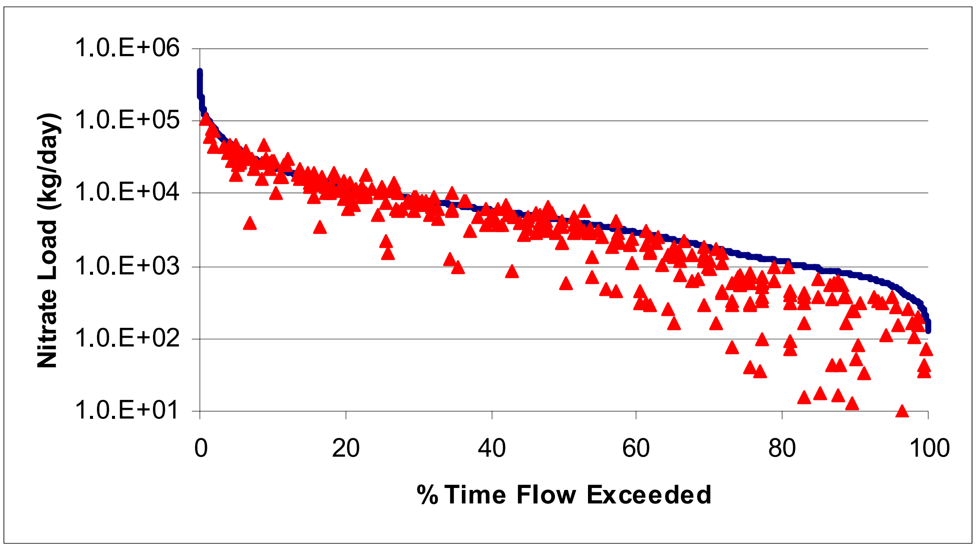

Figure 3. Nitrate Load Duration Curve for Salt Fork Vermilion River (IL_BPJ-03) with Observed Loads (triangles)

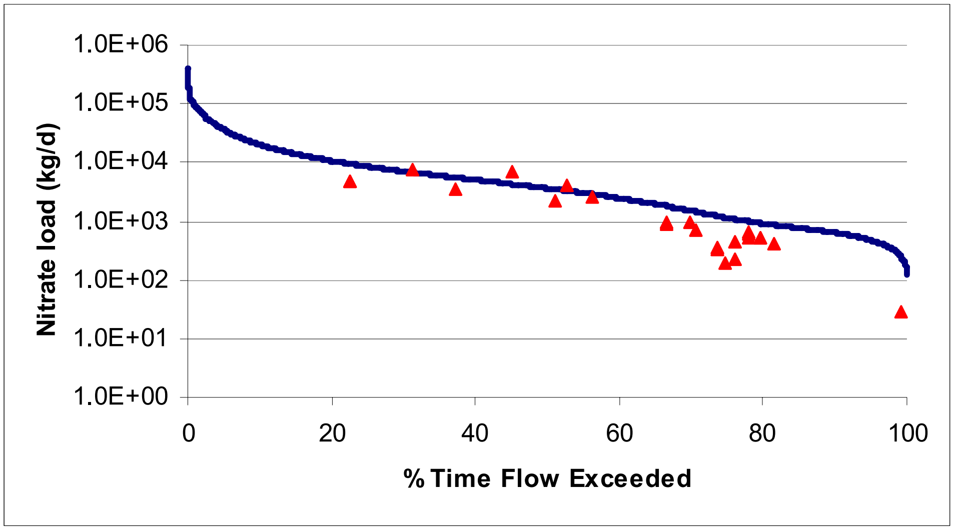

Figure 4. Nitrate Load Duration Curve for Salt Fork Vermilion River (IL_BPJ-08) with Observed Loads (triangles)

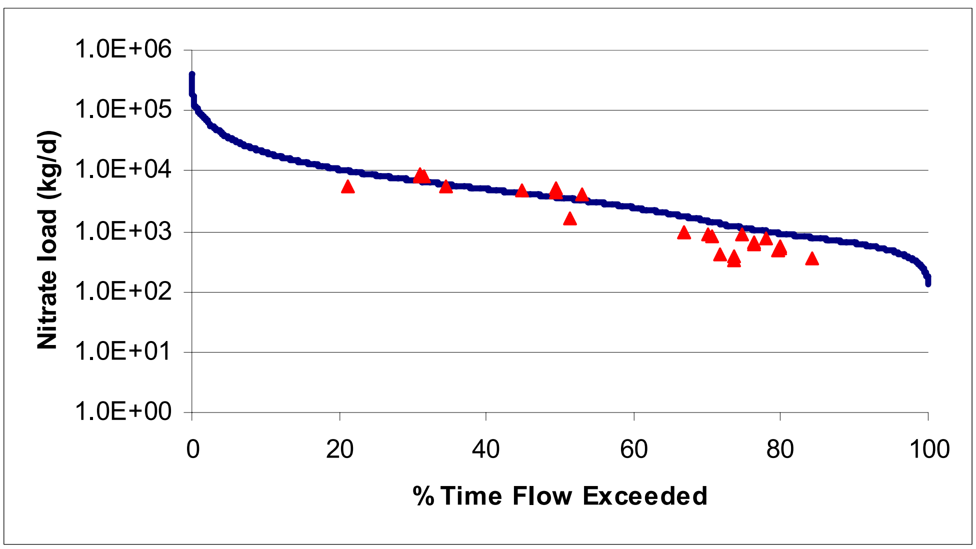

Figure 5. Nitrate Load Duration Curve for Salt Fork Vermilion River (IL_BPJ-10) with Observed Loads (triangles)

In Figures 3,4 and 5, the data show that exceedances of the nitrate target generally occur at higher flows in all three stream segments, and not at lower flows. This indicates that wet weather sources contribute to observed violations of the water quality standard. Nitrate data are not available for segments IL_BPJ-08 and IL_BPJ-10 for the higher river flows (flows in the upper 20th percentile).

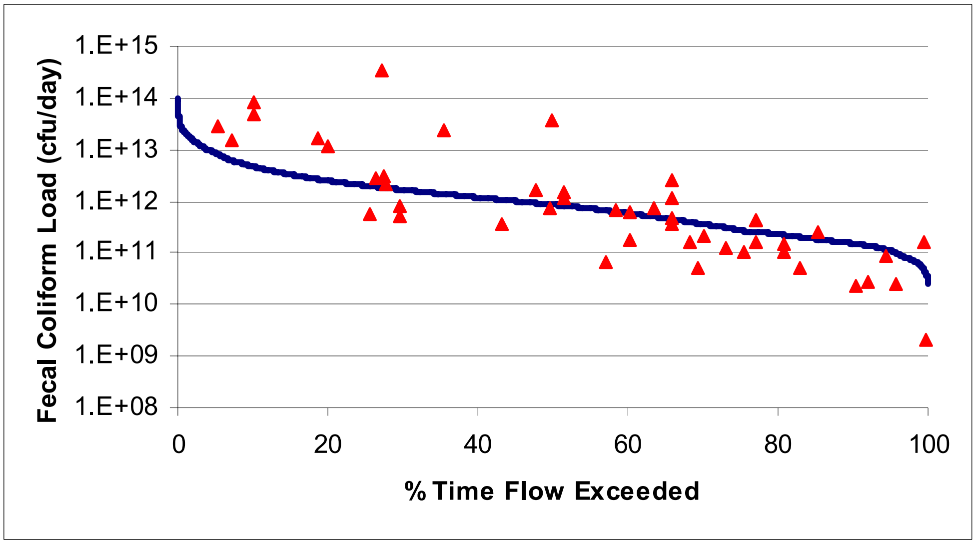

Figure 6. Fecal Coliform Load Duration Curve for Salt Fork Vermilion River (IL_BPJ-03) with Observed Loads (triangles)

Figure 6 indicates that observed fecal coliform loads exceed the target over the range of flows, with more frequent and extreme violations occurring at higher flows. These results indicate both wet and dry weather sources are contributing to violations of the fecal coliform target.

5.3 pH APPROACH

The pH TMDL did not require application of a model. An analysis of available pH data vs. flow for segments IL_BPJ-08 and IL_BPJ-10 showed that pH exceedances (> 9 SU) have generally been observed during lower flow conditions (Figures 7 and 8). No pH measurements < 6.5 SU have been recorded.

Algal blooms due to high nutrient loads can cause high pH. However, the available data do not point to instream algal productivity as the cause of the pH exceedances. During the Stage 2 monitoring, most of the pH exceedances were observed in the morning, on a single date in October 2006. If algal blooms in the river were the cause of the high pH, one would expect exceedances later in the day, and more likely during the summer. Further, dissolved oxygen levels at the time of these exceedances were well below saturation; if the high pH were due to productivity, one would expect much higher dissolved oxygen at the time of the high pH measurements. Homer Lake, which flows into the Salt Fork Vermilion River at Segment BPJ-10, is listed on the 303(d) list as impaired by excessive algal growth and total phosphorus. A TMDL was completed for Homer Lake in 2006 (Tetra Tech, 2006b). It is possible that algal growth in Homer Lake contributes to the pH exceedances, but current data are insufficient to determine whether this is the case.

The available point source data do not show exceedances of the upper pH limit of 9.0 standard units. It is possible that stormwater runoff, for example from the Material Service Corporation limestone quarry, could contribute to high pH in portions of segments BPJ-08 and BPJ-10. The sampling notes for the Stage 2 monitoring note heavy rain during sample collection on October 12, 2006, when high pH values were observed at several stations, even though a lower stream flow was recorded that day (flows are measured upstream of the sampling stations, so it is possible that stormwater outfalls were discharging downstream even though the flow station at St. Joseph recorded low flow). Runoff from the quarry, however, would not explain the high pH observed at monitoring station BPJ-10, which is upstream of the quarry outfalls. It is recommended that both Homer Lake and stormwater runoff from the quarry be investigated as potential sources during follow-up monitoring (described in Section 8.6).

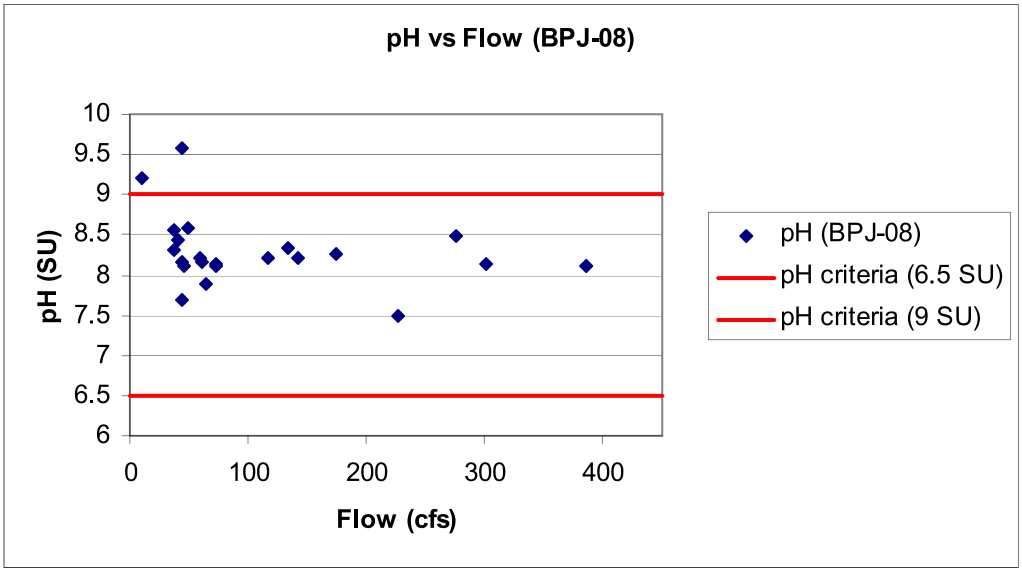

Figure 7. pH vs. Flow: Salt Fork Vermilion River (IL_BPJ-08)

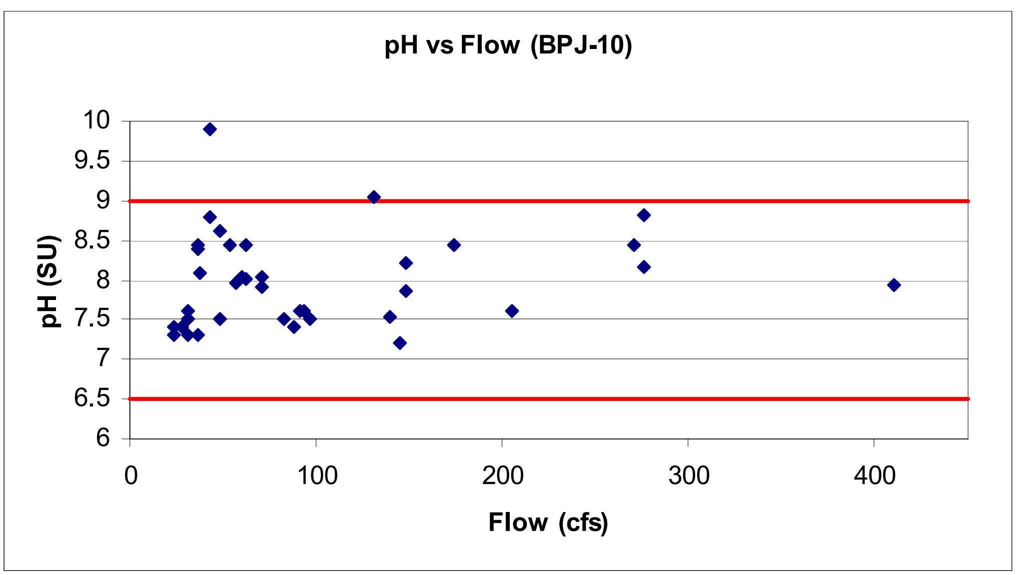

Figure 8. pH vs. Flow: Salt Fork Vermilion River (IL_BPJ-10)

6. TMDL DEVELOPMENT

This section presents the development of the total maximum daily load for the impaired waterbodies in Salt Fork Vermilion River watershed. It begins with a description of how the total loading capacity was calculated, and then describes how the loading capacity is allocated among point sources, non-point sources, and the margin of safety. A discussion of critical conditions and seasonality considerations is also provided.

6.1 DISSOLVED OXYGEN

A dissolved oxygen assessment was conducted for Spoon Branch (IL_BPJD-02). Results of this assessment indicate that low stream flows, combined with existing sediment oxygen demand, preclude attainment of dissolved oxygen standards, even in the complete absence of external pollutant loads. Because low flow is the primary cause of the low dissolved oxygen, no TMDLs are being developed for dissolved oxygen. Details of the assessments are discussed below.

6.1.1 Calculation of Loading Capacity

The loading capacity is defined as the maximum pollutant load that a waterbody can receive and still maintain compliance with water quality standards.

The first step in determining the loading capacity was to reduce external sources of oxygen-demanding substances (BOD and ammonia) to determine whether these reductions would result in the river attaining the dissolved oxygen target.[2].

QUAL2E simulations showed that, even with permitted loads set to zero, compliance with the dissolved oxygen standards was not attained. Sediment oxygen demand (SOD) was the dominant source of the oxygen deficit, and therefore DO standards can only be attained during critical periods via reduction of SOD. Although SOD is the dominant source of the oxygen deficit, the true cause of low dissolved oxygen is a lack of base flow (which greatly exacerbates the effect of SOD). Due to the expected presence of dissolved oxygen standard violations as zero external loading, and because TMDLs cannot be written for flow, a TMDL is not being conducted for dissolved oxygen.

6.2 FECAL COLIFORM TMDL

A load capacity calculation approach was applied to support development of a fecal coliform TMDL for Salt Fork Vermilion River segment IL_BPJ-03.

6.2.1 Calculation of Loading Capacity

The loading capacity is defined as the maximum pollutant load that a waterbody can receive and still maintain compliance with water quality standards.

The loading capacity for Salt Fork Vermilion River segment IL_BPJ-03 was defined over a range of specified flows based on expected Salt Fork Vermilion River flows. The

[2] This modeling target considers estimated diurnal variation and ensures that the 5.0 mg/L water quality standard is met.

allowable loading capacity was computed by multiplying flow by the TMDL target (200 cfu/100 mL). The fecal coliform loading capacity for IL_BPJ-03 is presented in Table 5.

Table 5. Fecal Coliform Load Capacity (IL_BPJ-03)

Flow (cfs)	BPJ-03 Allowable Load (cfu/day)
50	2.45E+11
60	2.94E+11
80	3.91E+11
100	4.89E+11
200	9.79E+11
1000	4.89E+12
5000	2.45E+13

To put these allowable loads in context, the maximum fecal coliform concentrations recorded between May and October were examined for each flow duration interval in order to estimate the percent reduction in existing loads required to meet the 200 cfu/100 mL target. As shown in Table 6, a greater reduction is needed at higher river flows to meet the target. During these higher flow periods, fecal coliform measurements were observed to exceed 200 cfu/100 mL more frequently.

Table 6. Required Reductions in Existing Loads under Different Flow Conditions (IL_BPJ-03)

Flow Percentile Interval	Flow (cfs)	# Samples > 200/ # Samples (May-Oct)	Maximum Observed Fecal Coliform Concentration (cfu/100 ml)	Percent Reduction to Meet Target
0-60	119 - 20,004	16/22	38,000	99%
60-80	47 - 119	7/15	1200	83%
80-100	0 - 47	2/10	700	71%

6.2.2 Allocation

A TMDL consists of waste load allocations (WLAs) for point sources, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS). This definition is typically illustrated by the following equation:

$$TMDL = WLA + LA + MOS$$

The WLA for the ten sewage treatment plants in the Salt Fork Vermilion River segment IL_BPJ-03 watershed was calculated based on either the design average flow or design maximum flow for these dischargers (as discussed below) and a fecal coliform concentration that is consistent with meeting the TMDL target (200 cfu/100mL). Because these facilities all have disinfection exemptions, the WLA is based on the dischargers meeting 200 cfu/100 mL at the downstream end of their exempted reach. The design average flow for each facility was used to develop the WLA for lower flow conditions (below the 50^{th} percentile ambient flow) and the design maximum flow was used to calculate WLAs for higher ambient flow conditions. WLAs are presented in Table 7. The total WLA for the 10 point source dischargers in the IL_BPJ-03 watershed is 1.72E+11 cfu/day during low ambient flow and periods of no excess flow discharge. During higher flows, the WLA is3.52E+11 cfu/day.

In addition to the dischargers presented in Table 7, the Rantoul STP has a permit for an emergency high level bypass and the Urbana-Champaign SD NE STP has a permit for one excess flow outfall and one flood protection overflow. The WLA for the Urbana-Champaign excess flow outfall was calculated based on reported average overflow volumes per event and a concentration of 200 cfu/100ml, consistent with water quality standards. The WLA for the excess flow outfall equals 1.16E+09 cfu/day. A WLA for the Rantoul emergency high level bypass was not calculated as this outfall rarely discharges. When it does discharge it is must truly be an emergency and must comply with the provisions of 40 CFR § 122.41(m). A separate WLA for the Urbana-Champaign flood protection overflow was not calculated because the WLA Urbana-Champaign includes the discharges from this point. The configuration of the main STP outfall (001) and outfall 003 (flood protection outfall) is such that once the receiving stream reaches a certain level, flow can no longer occur by gravity through the main STP outfall (001) and so it is pumped to the flood protection level outfall (003).

Table 7. Segment IL_BPJ-03 Permitted Dischargers and WLAs for Fecal Coliform

NPDES ID	Facility Name	Disinfection Exemption?	Permit Expiration Date	WLA based on average design flow (cfu/day)[3]	WLA based on maximum design flow (cfu/day)[4]
IL0024619	Country Club Manor Condos	Year-round	8/31/2007	7.58E+07	1.52E+08
IL0027278	Country Manor MHP – Urbana	Year-round	8/31/2010	2.27E+07	6.82E+07
ILG580060	Fithian STP	Year-round	12/31/2007	5.30E+08	7.58E+08
ILG580214	Gifford STP	Year-round	12/31/2007	1.06E+09	2.65E+09
ILG580216	Oakwood STP[1]	Year-round	12/31/2007	1.67E+09	4.17E+09
IL0055751	Oakwood Township High School	Year-round	4/30/2007	1.89E+08	4.77E+08
ILG580132	Ogden STP	Year-round	12/31/2007	7.05E+08	2.62E+09
IL0022128	Rantoul STP	Seasonal (Nov-Apr)	11/30/2010	3.28E+10	6.55E+10
IL0023086	St. Joseph SD STP	Year-round	10/31/2010	4.24E+09	1.36E+10
IL0031500	Urbana-Champaign SD NE STP	Year-round[2]	5/31/2011	1.31E+11	2.62E+11
			TOTAL	**1.72E+11**	**3.52E+11**

[1] Discharges directly to Segment BPJ-03

[2] Seasonal exemption (Nov-Apr) begins 35 months after 6/1/2006; This facility will then begin UV treatment.

[3] Design average flow for each facility was used to develop the WLA for lower flow conditions (below the 50^{th} percentile ambient flow)

[4] Design maximum flow for each facility was used to develop the WLA for higher flow conditions (above the 50^{th} percentile ambient flow)

There are four municipal separate storm sewer systems (MS4) permittees in the Champaign urbanized area in the watershed. These are:

- City of Urbana (ILR400462,
- University of Illinois at Urbana-Champaign (ILR400523),
- Champaign County (ILR400256), and
- City of Champaign (ILR400313).

These permittees are located approximately 41 miles upstream of the upstream end of segment BPJ-03. These MS4 areas are not expected to contribute to fecal coliform violations due to their distance upstream of the impaired segment, expected dilution and bacteria die-off, and the relatively small area (3.26%) of the watershed they comprise. A WLA is not calculated for the four MS4 permittees.

The remainder of the loading capacity is given to the load allocation for nonpoint sources as an implicit MOS was used in this TMDL (Table 8). The load allocations are not divided into individual source categories for purposes of this TMDL, as it is the intent of the implementation plan to provide detail on the contributions of specific sources to the overall fecal coliform load.

Table 8. Fecal Coliform TMDL for Segment IL_BPJ-03 Salt Fork Vermilion River[1]

Flow (cfs)	Allowable Load (cfu/day)	Wasteload Allocation (WLA) (cfu/day)	Excess Flow WLA (cfu/day)[2]	Load Allocation (LA) (cfu/day)
50	2.45E+11	1.72E+11		7.23E+10
60	2.94E+11	1.72E+11		1.21E+11
80	3.91E+11	1.72E+11		2.19E+11
100	4.89E+11	1.72E+11		3.17E+11
200	9.79E+11	3.52E+11	1.16E+09	6.25E+11
1000	4.89E+12	3.52E+11	1.16E+09	4.54E+12
5000	2.45E+13	3.52E+11	1.16E+09	2.41E+13

[1] This TMDL has an implicit Margin of Safety, so MOS is not included in this table.
[2]For purposes of this table, the Urbana-Champaign SD NE STP excess flow outfall discharges only during high flows.

6.2.3 Critical Condition

TMDLs must take into account critical environmental conditions to ensure that the water quality is protected during times when it is most vulnerable. Figure 6 provides a graphical depiction of the data compared to the load capacity, showing that exceedances of the TMDL target occur over the full range of flow conditions. TMDL development utilizing the load-duration approach applies to the full range of flow conditions; therefore critical conditions were addressed during TMDL development.

6.2.4 Seasonality

This TMDL was conducted with an explicit consideration of seasonal variation. The load capacity calculation approach used for the TMDL evaluated seasonal loads because only May through October water quality data were used in the analysis, consistent with the specification that the standard only applies during this period. The fecal coliform standard will be met regardless of flow conditions in the applicable season because the load capacity calculations specify target loads for the entire range of flow conditions that are possible to occur in any given point in the season where the standard applies.

6.2.5 Margin of Safety

Total maximum daily loads are required to contain a Margin of Safety (MOS) to account for any uncertainty concerning the relationship between pollutant loading and receiving water quality. The MOS can be either implicit (e.g., incorporated into the TMDL analysis through conservative assumptions), or explicit (e.g., expressed in the TMDL as a portion of the loading), or expressed as a combination of both. The fecal coliform TMDL contains an implicit margin of safety, through the use of multiple conservative assumptions. First, the TMDL target (no more than 200 cfu/100 mL at any point in time) is more conservative than the more restrictive portion of the fecal coliform water quality standard (geometric mean of 200 cfu/100 mL for all samples collected May through October). An additional implicit Margin of Safety is provided via the use of a conservative model to define load capacity. The model assumes no decay of bacteria that enter the river, and therefore represents an upper bound of expected concentrations for a given pollutant load. This margin of safety can be reviewed in the future as new data are developed.

6.3 NITRATE TMDL

A load capacity calculation approach was applied to support development of nitrate TMDLs for the Salt Fork Vermilion River (Segments IL_BPJ-03, IL_BPJ-08 and IL_BPJ-10).

6.3.1 Calculation of Loading Capacity

The loading capacity is defined as the maximum pollutant load that a waterbody can receive and still maintain compliance with water quality standards. The loading capacity was defined over a range of specified flows based on expected flows. The allowable loading capacity was computed by multiplying flow by the TMDL target concentration. The nitrate loading capacities for three segments of the Salt Fork Vermilion River are discussed below.

6.3.1.a *Salt Fork Vermilion River (IL_BPJ-03)*

The nitrate loading capacity for Salt Fork Vermilion River (IL_BPJ-03) was calculated based on Salt Fork Vermilion River flows and the TMDL target for nitrate of 10 mg/l (Table 9).

Table 9. Nitrate Load Capacity (IL_BPJ-03)

Flow (cfs)	Allowable Load IL_BPJ-03 (lbs/day)
50	2,697
60	3,236
80	4,315
100	5,394
200	10,787
1,000	53,937
5,000	269,683

The maximum nitrate concentrations were examined for each flow duration interval in order to estimate the percent reduction in existing loads required to meet the 10 mg/L target. A reduction of 9% to 44% in nitrate loading is required to meet the TMDL target over the range of flows observed in the river. No reduction is needed during low flow conditions (Table 10).

Table 10. **Required Reductions in Existing Loads under Different Flow Conditions (IL_BPJ-03)**

Flow Percentile Interval	Flow (cfs)	# Samples > 10 mg/l/ # Samples	Maximum Nitrate Concentration (mg/L)	Percent Reduction to Meet Target
0-60	119 - 20,004	50/197	18	44%
60-80	47 - 119	1/72	11	9%
80-100	0 - 47	0/51	9	--

6.3.1.b *Salt Fork Vermilion River (IL_BPJ-08)*

The nitrate loading capacity for Salt Fork Vermilion River (IL_BPJ-08) was calculated based on Salt Fork Vermilion River flows and the TMDL target for nitrate of 10 mg/l (Table 11).

Table 11. Nitrate Load Capacity (IL_BPJ-08)

Flow (cfs)	Allowable Load IL_BPJ-08 (lbs/day)
40	2,157
48	2,589
64	3,452
81	4,369
161	8,684
805	43,419
4027	217,202

The maximum nitrate concentrations were examined for each flow duration interval, as shown in Table 12, in order to estimate the percent reduction in existing loads required to meet the 10 mg/L target. Reductions of up to 38% in current loads are needed at higher river flows to meet the TMDL target. No reduction in nitrate load is needed at lower river flows.

Table 12. **Required Reductions in Existing Loads under Different Flow Conditions (IL_BPJ-08)**

Flow Percentile Interval	Flow (cfs)	# Samples > 10 mg/l/# Samples	Maximum Nitrate Concentration (mg/L)	Percent Reduction to Meet Target
0-60	96 - 16111	3/8	16	38%
60-100	0 - 96	0/16	7	--

6.3.1.c *Salt Fork Vermilion River (IL_BPJ-10)*

The nitrate loading capacity for Salt Fork Vermilion River (IL_BPJ-10) was calculated based on Salt Fork Vermilion River flows and the TMDL target for nitrate of 10 mg/L (Table 13).

Table 13. Nitrate Load Capacity (IL_BPJ-10)

Flow (cfs)	Allowable Load IL_BPJ-10 (lbs/day)
39	2,104
47	2,535
63	3,398
79	4,261
158	8,522
789	42,556
3947	212,887

The maximum nitrate concentrations were examined for each flow duration interval, as shown in Table 14, in order to estimate the percent reduction in existing loads required to meet the 10 mg/L target. Reductions of up to 29% in current loads are needed at higher river flows to meet the TMDL target.

Table 14. Required Reductions in Existing Loads under Different Flow Conditions (IL_BPJ-10)

Flow Percentile Interval	Flow (cfs)	# Samples > 10 mg/l/# Samples	Maximum Nitrate Concentration (µg/L)	Percent Reduction to Meet Target
0-60	94 - 15792	7/10	14	29%
60-100	0 - 94	0/15	8	--

6.3.2 Allocation

A TMDL consists of waste load allocations (WLAs) for point sources, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS). This definition is typically illustrated by the following equation:

$$TMDL = WLA + LA + MOS$$

6.3.2.a *Salt Fork Vermilion River (IL_BPJ-03)*

The WLA for the 10 point source discharges in the Salt Fork Vermilion River segment IL_BPJ-03 watershed was calculated based on the permitted design flow for these dischargers and a nitrate concentration that is consistent with meeting the TMDL target (10 mg/l). The design average flow for each facility was used to develop the WLA for lower flow conditions (below the 50th percentile ambient flow), and the design maximum flow was used to calculate WLAs for higher ambient flow conditions. The total nitrate WLA for the 10 point dischargers in the IL_BPJ-03 watershed equals 1,900 lbs/day during low ambient flow and periods of no excess flow discharge. During higher flows, the WLA is 3,881 lbs/day. During periods of excess flow discharge, an additional WLA of 13 lbs/day applies. A WLA for the Rantoul emergency high level bypass was not calculated as this outfall rarely discharges. When it does discharge it is must truly be an emergency and must comply with the provisions of 40 CFR § 122.41(m). A separate WLA for the Urbana-Champaign flood protection overflow was not calculated because the WLA Urbana-Champaign includes the discharges from this point. The configuration of the main STP outfall (001) and outfall 003 (flood protection outfall) is such that once the receiving stream reaches a certain level, flow can no longer occur by gravity through the main STP outfall (001) and so it is pumped to the flood protection level outfall (003). WLAs are presented in Table 15.

In addition to the dischargers presented in Table 15, the Urbana-Champaign SD NE STP has a permit for one excess flow outfall. The WLA for the Urbana-Champaign excess flow outfall was calculated based on reported average overflow volumes per event and a concentration of 10 mg/l, consistent with water quality standards. The WLA for the excess flow outfall equals 13 lbs/day.

Table 15. Segment IL_BPJ-03 Permitted Dischargers and WLAs for Nitrate

NPDES ID	Facility Name	Permit Expiration Date	WLA based on average design flow (lbs/day)[1]	WLA based on maximum design flow (lbs/day)[2]
IL0024619	Country Club Manor Condos	8/31/2007	0.83	1.67
IL0027278	Country Manor MHP - Urbana	8/31/2010	0.25	0.75
ILG580060	Fithian STP	12/31/2007	5.84	8.35
ILG580214	Gifford STP	12/31/2007	11.69	29.22
ILG580216	Oakwood STP	12/31/2007	18.37	45.92
IL0055751	Oakwood Township High School	4/30/2007	2.09	5.26
ILG580132	Ogden STP	12/31/2007	7.76	28.89
IL0022128	Rantoul STP	11/30/2010	361.53	722.22
IL0023086	St. Joseph SD STP	10/31/2010	46.76	149.45
IL0031500	Urbana-Champaign SD NE STP	5/31/2011	1,444.44	2,888.88
		TOTAL	**1,900**	**3,881**

1 Design average flow for each facility was used to develop the WLA for lower flow conditions (below the 50th percentile ambient flow)

2 Design maximum flow for each facility was used to develop the WLA for higher flow conditions (above the 50th percentile ambient flow)

There are four municipal separate storm sewer systems (MS4) permittees in the Champaign urbanized area in the watershed. These are:

- City of Urbana (ILR400462,
- University of Illinois at Urbana-Champaign (ILR400523),
- Champaign County (ILR400256), and
- City of Champaign (ILR400313).

These permittees are located approximately 41 miles upstream of the upstream end of segment BPJ-03. These MS4 areas are not expected to contribute to nitrate violations due to their distance upstream of the impaired segment and the fact that typical stormwater nitrate concentrations from all urban land uses are typically less than 1 mg/l. A WLA is not calculated for the four MS4 permittees.

The remainder of the loading capacity is given to the load allocation for nonpoint sources and the MOS (Table 16). The load allocations are not divided into individual source categories for purposes of this TMDL, as it is the intent of the implementation plan to provide detail on the contributions of specific sources to the overall nitrate load.

Table 16. Nitrate TMDL for Salt Fork Vermilion River (Segment IL_BPJ-03)

Flow (cfs)	Allowable Load (lbs/day)	MOS (10%) (lbs/day)	Wasteload Allocation (WLA) (lbs/day)	Excess flow WLA (lbs/day)[1]	Load Allocation (LA) (lbs/day)
50	2,697	270	1,900		528
60	3,236	324	1,900		1,013
80	4,315	431	1,900		1,984
100	5,394	539	1,900		2,955
200	10,787	1,079	3,881	13	5,815
1,000	53,937	5,394	3,881	13	44,649
5,000	269,683	26,968	3,881	13	238,821

[1] For purposes of this table, the Urbana-Champaign SD NE STP excess flow outfall discharges only during high flows. Salt Fork Vermilion River (IL_BPJ-08)

The nitrate WLA for the 7 point source discharges in the Salt Fork Vermilion River segment IL_BPJ-08 watershed was calculated based on the permitted design flow for these dischargers and a nitrate concentration that is consistent with meeting the TMDL target (10 mg/l). WLAs are presented in Table 17. The total WLA for the 7 point dischargers in the IL_BPJ-10 watershed equals 1,873 lbs/day during low ambient flow and periods of no excess flow discharge. During higher flows, the WLA is 3,821 lbs/day. These dischargers are located within both the IL_BPJ-08 watershed and the previously discussed IL_BPJ-03 watershed, as they are upstream of both of these segments.

In addition to the dischargers presented in Table 17, the Rantoul STP has a permit for an emergency high level bypass and the Urbana-Champaign SD NE STP has a permit for one excess flow outfall and one flood protection overflow. A WLA for the Rantoul emergency high level bypass was not calculated as this outfall rarely discharges. When it does discharge it is must truly be an emergency and must comply with the provisions of 40 CFR § 122.41(m). A separate WLA for the Urbana-Champaign flood protection overflow was not calculated because the WLA Urbana-Champaign includes the discharges from this point. The configuration of the main STP outfall (001) and outfall 003 (flood protection outfall) is such that once the receiving stream reaches a certain level, flow can no longer occur by gravity through the main STP outfall (001) and so it is pumped to the flood protection level outfall (003). The WLA for the Urbana-Champaign excess flow outfall was calculated based on reported average overflow volumes per event and a concentration of 10 mg/l, consistent with water quality standards. The WLA for the excess flow outfall equals 13 lbs/day.

Table 17. Segment IL_BPJ-08 Permitted Dischargers and WLAs for Nitrate

NPDES ID	Facility Name	Permit Expiration Date	WLA based on average design flows(lbs/day)	WLA based on maximum design flow (lbs/day)
IL0024619	Country Club Manor Condos	8/31/2007	0.83	1.67
IL0027278	Country Manor MHP - Urbana	8/31/2010	0.25	0.75
ILG580214	Gifford STP	12/31/2007	11.69	29.22
ILG580132	Ogden STP	12/31/2007	7.76	28.89
IL0022128	Rantoul STP	11/30/2010	361.53	722.22
IL0023086	St. Joseph SD STP	10/31/2010	46.76	149.45
IL0031500	Urbana-Champaign SD NE STP	5/31/2011	1,444.44	2,888.88
		TOTAL	**1,873**	**3,821**

There are four municipal separate storm sewer systems (MS4) permittees in the Champaign urbanized area in the watershed. These are:

- City of Urbana (ILR400462,
- University of Illinois at Urbana-Champaign (ILR400523),
- Champaign County (ILR400256), and
- City of Champaign (ILR400313).

These permittees are located approximately 38 miles upstream of the upstream end of segment BPJ-08. These MS4 areas are not expected to contribute to nitrate violations due to their distance upstream of the impaired segment and the fact that typical stormwater nitrate concentrations from all urban land uses are typically less than 1 mg/l. A WLA is not calculated for the four MS4 permittees.

The remainder of the loading capacity is given to the load allocation for nonpoint sources and the MOS (Table 18). The load allocations are not divided into individual source categories for purposes of this TMDL, as it is the intent of the implementation plan to provide detail on the contributions of specific sources to the overall nitrate load.

Table 18. Nitrate TMDL for Salt Fork Vermilion River (Segment IL_BPJ-08)

Flow (cfs)	Allowable Load (lbs/day)	MOS (10%) (lbs/day)	Wasteload Allocation (WLA) (lbs/day)	Excess Flow WLA (lbs/day)[1]	Load Allocation (LA) (lbs/day)
40	2,157	216	1,873		68
48	2,589	259	1,873		457
64	3,452	345	1,873		1,233
81	4,369	437	1,873		2,059
161	8,684	868	3,821	13	3,982
805	43,419	4,342	3,821	13	35,243
4,027	217,202	21,720	3,821	13	191,648

[1] For purposes of this table, the Urbana-Champaign SD NE STP excess flow outfall discharges only during high flows.

6.3.2.b *Salt Fork Vermilion River (IL_BPJ-10)*

The WLA for the 7 point source discharges in the Salt Fork Vermilion River segment IL_BPJ-10 watershed was calculated based on the permitted design flow for these dischargers and a nitrate concentration that is consistent with meeting the TMDL target (10 mg/l). WLAs are presented in Table 19. The total WLA for the 7 point dischargers in the IL_BPJ-10 watershed equals 1,873 lbs/day during low ambient flow and periods of no excess flow discharge. During higher flows, the WLA is 3,821 lbs/day. These are the same dischargers discussed previously for downstream segments as they are located within the watersheds for all three nitrate-impaired segments (IL_BPJ-03, IL_BPJ-08 and IL_BPJ-10).

In addition to the dischargers presented in Table 19, the Rantoul STP has a permit for an emergency high level bypass and the Urbana-Champaign SD NE STP has a permit for one excess flow outfall and one flood protection overflow. A WLA for the Rantoul emergency high level bypass was not calculated as this outfall rarely discharges. When it does discharge it is must truly be an emergency and must comply with the provisions of 40 CFR § 122.41(m). A separate WLA for the Urbana-Champaign flood protection overflow was not calculated because the WLA Urbana-Champaign includes the discharges from this point. The configuration of the main STP outfall (001) and outfall 003 (flood protection outfall) is such that once the receiving stream reaches a certain level, flow can no longer occur by gravity through the main STP outfall (001) and so it is pumped to the flood protection level outfall (003). The WLA for the Urbana-Champaign excess flow outfall was calculated based on reported average overflow volumes per event and a concentration of 10 mg/l, consistent with water quality standards. The WLA for the excess flow outfall equals 13 lbs/day.

Table 19. Segment IL_BPJ-10 Permitted Dischargers and WLAs for Nitrate

NPDES ID	Facility Name	Permit Expiration Date	WLA based on average design flows(lbs/day)	WLA based on maximum design flow (lbs/day)
IL0024619	Country Club Manor Condos	8/31/2007	0.83	1.67
IL0027278	Country Manor MHP - Urbana	8/31/2010	0.25	0.75
ILG580214	Gifford STP	12/31/2007	11.69	29.22
ILG580132	Ogden STP	12/31/2007	7.76	28.89
IL0022128	Rantoul STP	11/30/2010	361.53	722.22
IL0023086	St. Joseph SD STP	10/31/2010	46.76	149.45
IL0031500	Urbana-Champaign SD NE STP	5/31/2011	1,444.44	2,888.88
		TOTAL	**1,873**	**3,821**

There are four municipal separate storm sewer systems (MS4) permittees in the Champaign urbanized area in the watershed. These are:

- City of Urbana (ILR400462,
- University of Illinois at Urbana-Champaign (ILR400523),
- Champaign County (ILR400256), and
- City of Champaign (ILR400313).

These permittees are located approximately 25 miles upstream of the upstream end of segment BPJ-10. These MS4 areas are not expected to contribute to nitrate violations due to their distance upstream of the impaired segment and the fact that typical stormwater nitrate concentrations from all urban land uses are typically less than 1 mg/l. A WLA is not calculated for the four MS4 permittees.

The remainder of the loading capacity is given to the load allocation for nonpoint sources and the MOS (Table 20). The load allocations are not divided into individual source categories for purposes of this TMDL, as it is the intent of the implementation plan to provide detail on the contributions of specific sources to the overall nitrate load.

Table 20. Nitrate TMDL for Salt Fork Vermilion River (Segment IL_BPJ-10)

Flow (cfs)	Allowable Load (lbs/day)	MOS (10%) (lbs/day)	Wasteload Allocation (WLA) (lbs/day)	Excess Flow WLA (lbs/day)[1]	Load Allocation (LA) (lbs/day)
39	2,104	210	1,873		20
47	2,535	254	1,873		408
63	3,398	340	1,873		1,185
79	4,261	426	1,873		1,962
158	8,522	852	3,821	13	3,836
789	42,556	4,256	3,821	13	34,466
3,947	212,887	21,289	3,821	13	187,765

[1] For purposes of this table, the Urbana-Champaign SD NE STP excess flow outfall discharges only during high flows.

6.3.3 Critical Condition

TMDLs must take into account critical environmental conditions to ensure that the water quality is protected during times when it is most vulnerable. Figures 3 through 5 provide a graphical depiction of the data compared to the load capacity, showing that exceedances of the TMDL target primarily occur during higher flows. TMDL development utilizing the load-duration approach applies to the full range of flow conditions; therefore critical conditions were addressed during TMDL development.

6.3.4 Seasonality

This TMDL was conducted with an explicit consideration of seasonal variation. The nitrate standard will be met regardless of flow conditions in any season because the load capacity calculations specify target loads for the entire range of flow conditions that are possible to occur in the river.

6.3.5 Margin of Safety

Total maximum daily loads are required to contain a Margin of Safety (MOS) to account for any uncertainty concerning the relationship between pollutant loading and receiving water quality. The MOS can be either implicit (e.g., incorporated into the TMDL analysis through conservative assumptions), or explicit (e.g., expressed in the TMDL as a portion of the loading), or expressed as a combination of both. The nitrate TMDLs contain a combination of both types. An implicit Margin of Safety is provided via the use of a conservative model to define load capacity. The model assumes no loss of nitrate that enters the river, and therefore represents an upper bound of expected concentrations for a given pollutant load. The TMDL also contains an explicit margin of safety of 10%. This 10% margin of safety was included in addition to the implicit margin of safety to address potential uncertainty in the effectiveness of load reduction alternatives. This margin of safety can be reviewed in the future as new data are developed.

6.4 pH TMDL

A pH TMDL was developed for two segments of the Salt Fork Vermilion River IL_BPJ-08 and IL_BPJ-10).

6.4.1 Calculation of Loading Capacity

Because pH is not a load, but rather a measure of acidity and/or alkalinity of a given solution, this TMDL uses an *other appropriate measure* (40 CFR section 130.2(i)) rather than an actual mass-per-unit time measure. For this TMDL, the State's numeric pH criterion (6.5 – 9.0 SU) is used as the TMDL target. Thus, the TMDL ensures that both point and nonpoint source activities meet the pH criterion at the point of discharge.

6.4.1.a *Salt Fork Vermilion River (IL_BPJ-08)*

Within the Salt Fork Vermilion River (IL_BPJ-08) watershed, 2 of 23 (9%) pH measurements taken between 1985 and 2006 were above the 9.0 SU maximum water quality standard, with violations occurring in 2001 and 2006. None of the measurements were below the 6.5 SU minimum water quality standard. Although the pH measurements were collected downstream of the point source dischargers, there is no data to suggest that point sources are contributing to pH criteria exceedances because all of the upstream facilities were all in compliance with their permit limits. However, it is possible that stormwater runoff from Material Service Corporation Fairmont Quarry could be contributing due to the fact that this is a limestone quarry which has two outfalls that discharge into the upstream IL_BPJ-10 watershed and because sampling to monitor permit compliance is only required once a month. It should be noted, however, that no violations of the pH permit limit were observed in recent discharge monitoring reports. Calcareous (alkaline) groundwater seeps have been identified elsewhere as a potential source contributing to high instream pH (pH> 9.0 SU), but IEPA groundwater staff believe such groundwater sources are unlikely in this watershed. Algal growth in Homer Lake is another possible source of the high pH.

6.4.1.b *Salt Fork Vermilion River (IL_BPJ-10)*

Within the Salt Fork Vermilion River (IL_BPJ-10) watershed, 2 of 37 (5%) pH measurements taken between 1966 and 2006 were above the 9.0 SU maximum water quality standard, with both violations occurring in 2006. None of the measurements were below the 6.5 SU minimum water quality standard. Although the pH measurements were collected downstream of the point source dischargers, there is no data to suggest that point sources are contributing to pH criteria exceedances because all of the upstream facilities were all in compliance with their permit limits. However, it is possible that stormwater runoff from Material Service Corporation Fairmont Quarry could be contributing due to the fact that this is a limestone quarry which has two outfalls that discharge in this segment's watershed. As noted above, no violations of the pH permit limit were observed in recent discharge monitoring reports. Calcareous (alkaline) groundwater seeps have been identified elsewhere as a potential source contributing to high instream pH (pH> 9.0 SU), but IEPA groundwater staff believe such groundwater sources are unlikely in this watershed. Algal growth in Homer Lake is another possible source of the high pH.

6.4.2 Allocation

A TMDL consists of wasteload allocations (WLAs) for point sources, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS). This definition is typically illustrated by the following equation:

$$TMDL = WLA + LA + MOS$$

6.4.2.a *Salt Fork Vermilion River (IL_BPJ-08)*

Within the IL_BPJ-08 watershed, the pH target for nonpoint sources equals 6.5 – 9.0 standard units (SU). The pH target for the 14 NPDES permitted dischargers with pH permit limits equals 6.5 – 9.0 SU (the current pH permit limit for these facilities is 6.0 – 9.0 SU; these pH limits will remain; the lower pH limit is not affected by the TMDL). These point source dischargers are shown in Table 21.

Table 21. Point Sources with a pH Limit for Salt Fork Vermilion River (Segments IL_BPJ-08 and IL_BPJ-10)

NPDES ID	Facility Name	Permit Expiration Date
IL0024619	Country Club Manor Condos	8/31/2007
IL0027278	Country Manor MHP - Urbana	8/31/2010
ILG580214	Gifford STP	12/31/2007
ILG640113	Homer WTP	1/31/2005
IL0004545	Illinois Central Railroad-Cham	11/30/2009
IL0063711	Ludlow WTP	10/31/2007
IL0063002	Material Service Corporation	4/30/2010
ILG580132	Ogden STP	12/31/2007
ILG640225	Prairie View Estates MHP WTP	9/30/2004
IL0022128	Rantoul STP	11/30/2010
ILG640131	Royal WTP	8/31/2004
IL0072052	Safety-Kleen Corporation	11/30/2008
IL0023086	St. Joseph SD STP	10/31/2010
IL0031500	Urbana-Champaign SD NE STP	5/31/2011

The Margin of Safety for this segment is discussed in section 6.4.5.

6.4.2.b *Salt Fork Vermilion River (IL_BPJ-10)*

Within the IL_BPJ-10 watershed, the pH target for nonpoint sources equals 6.5 – 9.0 standard units (SU). The pH target for the 14 NPDES permitted dischargers with pH permit limits equals 6.5 – 9.0 SU (the current pH permit limit for these facilities is 6.0 – 9.0 SU; these pH limits will remain; the lower pH limit is not affected by the TMDL). These point source dischargers are shown previously in Table 21, as the same dischargers are located within both the IL_BPJ-10 segment and the upstream IL_BPJ-08 segment.

6.4.3 Critical Condition

TMDLs must take into account critical environmental conditions to ensure that the water quality is protected during times when it is most vulnerable. TMDL development utilizing this approach applies to the full range of environmental conditions; therefore critical conditions were addressed during TMDL development.

6.4.4 Seasonality

This TMDL was conducted with an explicit consideration of seasonal variation. The pH allocations will be applicable for all seasons to ensure the target is met throughout the year.

6.4.5 Margin of Safety

Total maximum daily loads are required to contain a Margin of Safety (MOS) to account for any uncertainty concerning the relationship between pollutant loading and receiving water quality. The MOS can be either implicit (e.g., incorporated into the TMDL analysis through conservative assumptions), or explicit (e.g., expressed in the TMDL as a portion of the loading), or expressed as a combination of both. This pH TMDL incorporates an implicit margin of safety. The allocations used in this TMDL ensure that point and nonpoint sources must individually meet the pH target of 6.5 to 9.0 SU. If both point and nonpoint sources are consistent with these allocations, then water quality standards in Salt Fork Vermilion River segments IL_BPJ-08 and IL_BPJ-10 will be met.

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7. PUBLIC PARTICIPATION AND INVOLVEMENT

The TMDL process included numerous opportunities for local watershed institutions and the general public to be involved. A number of phone calls were made to identify and acquire data and information (see the Stage 1 Report).

The draft Stage 1 Report for this watershed was available to the public for review on the Illinois EPA website. Hard copies were also available at several locations throughout the watershed. A public meeting was held at 6:30 pm on December 13, 2005 in Royal, Illinois. Attendees registered and listened to an introduction to the TMDL Program from Illinois EPA and a presentation on the Stage 1 findings by TetraTech. This was followed by a general question and answer session.

The draft TMDL and Implementation Plan for this watershed was available to the public for review on the Illinois EPA website. Hard copies were also available at several locations throughout the watershed. A public meeting was held at 6:00 pm on August 9, 2007 in Royal, Illinois. Attendees registered and listened to a presentation on the Stage 3 findings by LimnoTech. This was followed by a general question and answer session.

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8. IMPLEMENTATION PLAN

TMDLs were developed for the Salt Fork Vermilion River watershed, to address a number of water quality impairments in the listed streams. Specifically, TMDLs were developed for nitrate for Salt Fork Vermilion River segments IL_BPJ-03, IL_BPJ-08, and IL_BPJ-10, for fecal coliform for Salt Fork Vermilion River segment IL_BPJ-03 and for pH for Salt Fork Vermilion River segments IL_BPJ-08 and IL_BPJ-10. The dissolved oxygen assessment for Spoon Branch (IL_BPJD-02) determined that low flow was the cause of the low dissolved oxygen and TMDLs were not completed for dissolved oxygen. The TMDLs that were completed, determined that significant reductions in existing fecal coliform and nitrate loadings were needed to meet water quality objectives. The cause of high pH remains unclear, but may be related to stormwater runoff, algal blooms, or background sources. The next step in the TMDL process is to develop an implementation plan that includes both accountability and the potential for adaptive management. This section identifies a number of alternative actions to be considered by local stakeholders for TMDL implementation; these alternative actions are summarized, and recommendations are presented for implementation actions and additional monitoring.

8.1 EXISTING CONTROLS

The local Natural Resource Conservation Service (NRCS), Farm Service Agency (FSA), and Soil and Water Conservation District (SWCD) offices have information on existing best management practices within the watershed, and can be contacted to understand what efforts have been made or are planned to control nonpoint sources.

Prior to TMDL development, information on land uses and agricultural practices was obtained as part of the Watershed Characterization (Tetra Tech, 2006). It was estimated that there are:

- 2,436 acres of grass filter strips;
- 170 acres of tree buffers; and
- 354 acres of grass waterways

The Vermilion County SWCD indicated that no-till practices are in use within the watershed, and riparian restoration and wetland restoration are also occurring (VCSWCD, 2007). Local landowners participate in the Conservation Reserve Program, and there has been an increase in the number of grazing contracts in the last few years, focusing on better grazing management and restriction of livestock from waterways (VCSWCD, 2007). The Champaign County SWCD identified 67 acres of wetland restoration taking place in St. Joseph, nutrient management planning in the Homer Lake area, nutrient management planning with a large livestock operation in Gifford through the Environmental Quality Incentives Program, and strip-till practices in the Homer Lake area as some of the on-going efforts in the watershed (CCSWCD, 2007). Approximately three-fourths of the drainage ditches and streams have filter strips or run through wooded areas (CCSWCD, 2007). The Champaign County SWCD also sent homeowners in the Homer Lake area an EPA pamphlet on the importance of maintaining septic systems (CCSWCD, 2007).

A group of local stakeholders has developed a draft watershed implementation plan to address many of the impairments described in these TMDLs (SFSC CCSWCD, 2007). The plan includes similar recommendations to this TMDL implementation plan, but provides more detail on costs and specific implementation strategies, and can serve as the primary basis for implementation activities. The local watershed committee is encouraged to continue pursuing implementation activities and using an adaptive management approach. Segment BPJ-03 was not included in the committee's draft implementation plan.

8.2 IMPLEMENTATION APPROACH

The approach to be taken for TMDL development and implementation is based upon discussions with Illinois EPA and its Scientific Advisory Committee. The approach consists of the following steps, with the first three steps corresponding to TMDL development and the latter two steps corresponding to implementation:

1. Use existing data to define overall existing pollutant loads, as opposed to developing a watershed model that might define individual loading sources.
2. Apply appropriate models (e.g. QUAL2E, load response curve) to define the load-response relationship and determine the maximum allowable pollutant load that the lakes can assimilate and still attain water quality standards.
3. Compare the maximum allowable load to the existing load to define the extent to which existing loads must be reduced in order to meet water quality standards.
4. Develop a voluntary implementation plan that includes both accountability and the potential for adaptive management.
5. Carry out adaptive management through the implementation of a long-term monitoring plan designed to assess the effectiveness of pollution controls as they are implemented, as well as progress towards attaining water quality standards.

This approach is designed to accelerate the pace at which TMDLs are being developed for sites dominated by nonpoint sources, which will allow implementation activities (and water quality improvement) to begin sooner. The approach also places decisions on the types of nonpoint source controls to be implemented at the local level, which will allow those with the best local knowledge to prioritize sources and identify restoration alternatives. The Association of Illinois Soil and Water Conservation Districts (SWCDs), using Section 319 grant funding, have made available a Watershed Liaison to provide educational, informational, and technical assistance to local agencies and communities. The liaison can assist in establishing local watershed planning groups, as well as acting as an overall facilitator for coordination between local, state, and Federal agencies. The local watershed committee utilized the watershed liaison in developing its implementation plan.

The adaptive management approach to be followed recognizes that models used for decision-making are approximations, and that there are never enough data to completely remove uncertainty. The adaptive process allows decision-makers to proceed with initial decisions based on modeling, and then to update these decisions as experience and knowledge improve.

Steps One through Three described above have been completed; this plan represents Step Four of the process. The local watershed committee's implementation plan also relates to Step Four. Step Five is briefly described in the last section of this document, and may be conducted as implementation proceeds.

8.3 IMPLEMENTATION ALTERNATIVES

Based on the objectives for the TMDLs, information obtained at the public meetings, and experience in other watersheds, a number of alternatives have been identified for the implementation phase of these TMDLs. As discussed earlier in this plan, a number of BMPs, including filter strips, grade stabilization structures, ponds, and conservation tillage, have been implemented in this watershed. No comprehensive inventory of BMPs was identified in preparing this plan and it is not known whether any study of the effectiveness of the BMPs has been undertaken.

For the dissolved oxygen assessment, the primary cause of low D.O. was determined to be low flow. Implementation alternatives are therefore focused on improving aeration, improving flow rate and decreasing water temperature. The alternatives include:

- Conservation Buffers
- Rock Riffles
- Streambank Enhancement and Protection

For the fecal coliform TMDLs, implementation alternatives focused on livestock, failing septic systems, and permitted point sources:

- Point Source Controls
- Private Sewage Disposal System Inspection and Maintenance Program
- Restriction of Livestock Access
- Conservation Buffers
- Wetland Restoration

For the nitrate TMDL, the primary cause of high nitrate was determined to be nonpoint source runoff during wet weather. Implementation alternatives are therefore focused on reducing pollutant loading from nonpoint source runoff, particularly agricultural runoff. The alternatives include:

- Tile Drain Management
- Nutrient Management
- Conservation Tillage
- Conservation Buffers
- Restriction of Livestock Access
- Wetland Restoration

For the pH TMDLs, the source of elevated pH remains unclear; possible sources include stormwater from the Material Service Corporation limestone quarry that discharges to

Jordan Creek, Olive Branch, Baum Branch and an unnamed tributary to the Salt Fork Vermilion River, and Homer Lake due to high algal levels. Additional monitoring is recommended to assist in identifying the source of the pH impairment. The only controllable sources may be the point source discharges, so point source controls are the sole alternative presented herein to address the pH impairment.

Each of these alternatives is described briefly in this section, including information about their costs and effectiveness in reducing loadings of the constituents of concern. Costs have been updated from their original sources, based on literature citations, to 2007 costs using the Engineering News Record Construction Cost Index, as provided by the Natural Resource Conservation Service (NRCS)[3]. Some of the measures described below are most applicable to a single pollutant, while others will have broader applicability.

It should be noted that there is usually a wide range in the effectiveness of the various practices; this is largely due to variations in climate, soils, crops, topography, design, construction, and maintenance of the practices (NRCS, 2006).

8.3.1 Conservation Buffers

Conservation buffers are areas or strips of land maintained in permanent vegetation to help control pollutants (NRCS, 1999), generally by slowing the rate of runoff, while filtering sediment and nutrients. Depending on site characteristics, vegetation may include trees, shrubs, grasses, or a combination of these. Additional benefits may include the creation of wildlife habitat, improved aesthetics, and potential economic benefits from marketing specialty forest crops (Trees Forever, 2005). This category of controls includes buffer strips, field borders, filter strips, vegetative barriers, riparian buffers, etc. (NRCS, 1999).

Filter strips and similar vegetative control methods can be very effective in reducing pollutant transport to streams. Besides controlling sediment and nutrient inputs, vegetated filter strips and riparian buffers can also be used to reduce bacteria; riparian buffer zones have bacteria removal efficiencies of 43-57% (Commonwealth of Virginia, 2003).

Conservation buffers can help stabilize a stream and reduce its water temperature (NRCS, undated). Riparian buffers can work to improve instream dissolved oxygen concentrations by promoting increased infiltration and baseflow, and by lowering stream temperature.

Costs of conservation buffers vary from about $215/acre for filter strips of introduced grasses or direct seeding of riparian buffers, to approximately $375/acre for filter strips of native grasses or planting bare root riparian buffers, to more than $1,075/acre for riparian buffers using bare root stock shrubs (NRCS, 2005).

The Conservation Practices Cost-Share Program (CPP), part of the Illinois Conservation 2000 Program, provides cost sharing for conservation practices including field borders and filter strips (http://www.agr.state.il.us/Environment/conserv/index.html). The Department of Agriculture distributes funding for the cost-share program to Illinois' soil and water conservation districts (SWCDs), which prioritize and select projects. The Illinois Buffer Partnership offers cost sharing for installation of streamside buffer

[3] http://www.economics.nrcs.usda.gov/cost/priceindexes/index.html

plantings at selected sites. Additional funding for conservation buffers may be available through other sources such as the Conservation Reserve Program.

8.3.2 Rock Riffles

Rock riffles are in-stream structures constructed by placement of rock across the stream channel, from bank to bank, to form a shallow pool upstream of the structure and a rock apron sloping gently downstream from the structure. This mimics the natural pool-riffle sequence and has a number of benefits including reduction of erosive velocities, trapping of sediment bedload, stabilization of stream grade, energy dissipation, and habitat improvement. Because they increase stream turbulence, they can also be very effective in increasing in-stream dissolved oxygen concentrations.

Rock riffles are relatively simple in construction, essentially consisting of low, semi- or fully-submerged rock dams spanning the channel from bank to bank. Standard designs are available from the Natural Resource Conservation Service and the U.S. Army Corps of Engineers. Cost is mainly a function of the quantity of stone required, which varies with the size of the stream, so it is not possible to give a fixed unit price for rock riffles. Recent stream assessments conducted by the Illinois Department of Agriculture have estimated the cost for a single rock riffle on rural streams in agricultural areas to be approximately $10,000. This cost is based solely on the cost of rock and does not include engineering, permitting, contractor mobilization, site access, or other ancillary construction elements. Rock riffles are typically installed in series, so overall project costs will be a function of the length of stream covered by the rock riffles.

Because of the high potential cost of installing rock riffles throughout the watershed, additional study is recommended to prioritize sites. Such study should include direct observation of bank conditions, as well as an assessment of stream hydraulics and geomorphology to support identification and design of effective stabilization measures.

8.3.3 Streambank Enhancement and Protection

Erosion of the banks and beds of tributary streams can contribute to a number of impairments in the Salt Fork Vermilion watershed. This sediment load affects dissolved oxygen and can increase fecal coliform loads. Streambank stabilization, including grade stabilization to reduce erosive velocities and shear stresses, is a key measure in reducing loads.

A recent aerial assessment report observed that installation of riffle-pool sequences could have a beneficial impact on nitrates, dissolved oxygen, bank stability, and improved aquatic habitat (IDOA, 2005). This report recommended stabilizing eroding bends with Stone Toe Protection, Stream Barbs, or Bendway Weirs. The total cost of treating sites within the impaired segments of the Salt Fork Vermilion River is estimated at $1.83 million (IDOA, 2005).

Because of the potential cost of stabilizing streambanks throughout the watershed, additional study is recommended to prioritize sites for streambank stabilization. Such study should include direct observations of bank conditions, as well as an assessment of stream hydraulics and geomorphology to support identification and design of effective stabilization measures.

8.3.4 Point Source Controls

Sewage from treatment plants treating domestic and/or municipal waste contain fecal coliform--it is indigenous to sanitary sewage. In Illinois, a number of these treatment plants have applied for and received disinfection exemptions that allow a facility to discharge wastewater without disinfection. All of these treatment facilities are required to comply with the geometric mean fecal coliform water quality standard of 200 cfu/100 mL at the closest point downstream where recreational use occurs in the receiving water, or where the water flows into a fecal-impaired segment. Facilities with year-round disinfection exemptions may be required to provide the Agency with updated information to demonstrate compliance with these requirements. Facilities directly discharging into a fecal-impaired segment may have their year-round disinfection exemption revoked through future NPDES permitting actions. There are ten NPDES permitted discharges with the potential to discharge fecal coliform in the watershed upstream of the impaired river segments. Most of these facilities currently have year-round disinfection exemptions, as shown in Table 22; as such, they do not employ a disinfection process that would reduce fecal coliform counts in their effluents.

Table 22. Point Sources Expected to Discharge Fecal Coliform Bacteria

NPDES ID	Facility Name	Disinfection Exemption?	Average Design Flow (MGD)	Permit Expiration Date
IL0024619	Country Club Manor Condos	Year-round	0.0100	8/31/2007
IL0027278	Country Manor MHP – Urbana	Year-round	0.0030	8/31/2010
ILG580060	Fithian STP	Year-round	0.0700	12/31/2007
ILG580214	Gifford STP	Year-round	0.1400	12/31/2007
ILG580216	Oakwood STP	Year-round	0.2200	12/31/2007
IL0055751	Oakwood Township High School	Year-round	0.0250	4/30/2007
ILG580132	Ogden STP	Year-round	0.0930	12/31/2007
IL0022128	Rantoul STP	Seasonal (Nov-Apr)	4.3300	11/30/2010
IL0023086	St. Joseph SD STP	Year-round	0.4200	10/31/2010
IL0031500	Urbana-Champaign SD NE STP	Year-round[1]	17.3000	5/31/2011

[1]Seasonal exemption (Nov-Apr) begins 35 months after 6/1/2006

Fourteen NPDES permitted dischargers in this watershed have permit limits for pH, as shown in Table 23. IEPA will continue to monitor the discharge monitoring reports submitted to the Agency by these facilities and ensure that pH limits are not violated.

Table 23. Point Sources with a pH Limit for Salt Fork Vermilion River (Segments IL_BPJ-08 and IL_BPJ-10)

NPDES ID	Facility Name	Permit Expiration Date
IL0024619	Country Club Manor Condos	8/31/2007
IL0027278	Country Manor MHP - Urbana	8/31/2010
ILG580214	Gifford STP	12/31/2007
ILG640113	Homer WTP	1/31/2005
IL0004545	Illinois Central Railroad-Cham	11/30/2009
IL0063711	Ludlow WTP	10/31/2007
IL0063002	Material Service Corporation	4/30/2010
ILG580132	Ogden STP	12/31/2007
ILG640225	Prairie View Estates MHP WTP	9/30/2004
IL0022128	Rantoul STP	11/30/2010
ILG640131	Royal WTP	8/31/2004
IL0072052	Safety-Kleen Corporation	11/30/2008
IL0023086	St. Joseph SD STP	10/31/2010
IL0031500	Urbana-Champaign SD NE STP	5/31/2011

8.3.5 Private Sewage Disposal System Inspection and Maintenance Program

Based on a discussion with the Vermilion County Health Department, it was determined that the city of Oakwood is served by public sewer, but most of the watershed for segment IL_BPJ-03 is served primarily by private sewage disposal systems (VCHD, 2007). County health officials contacted were unable to estimate the percent of septic systems that are failing, and indicated that they do not have a proactive inspection program. They inspect systems at the time of installation, if requested at the time a home is sold, and in response to complaints (VCHD, 2007).

IEPA has proposed a permitting program for individual private sewage disposal systems. The proposed general permit is intended to minimize discharges to the ground surface and receiving waters, and includes requirements designed to protect surface waters (IEPA, 2006b). IEPA held three public hearings throughout the state to solicit questions and comments about the proposed permit.

A more proactive program to maintain functioning systems and address nonfunctioning systems could be developed to minimize the potential for releases from private sewage disposal systems, and may be required under the proposed general permit. The USEPA has developed guidance for managing private sewage disposal systems (EPA, 2005). This guidance includes procedures for assessing existing conditions, assessing public health and environmental risks, selecting a management approach, and implementing a management program (including funding information).

This alternative would require the commitment of staff time for County Health Department personnel; cost depends on whether the additional inspection activities could be accomplished by existing staff or would require additional personnel.

8.3.6 Restrict Livestock Access to Lake and Tributaries

Livestock are a source of bacteria, and are present within the Salt Fork Vermilion River watershed (Tetra Tech, 2006). In addition, livestock can cause or exacerbate streambank erosion and trample riparian buffers. The 2002 Census of Agriculture (USDA, 2002) indicates there are several thousand livestock head in the counties making up the Salt Fork Vermilion River watershed.

One recommended component of TMDL implementation would be to voluntarily restrict livestock access to the creek. This could be accomplished by fencing and installation of alternative systems for livestock watering. Livestock exclusion and other grazing management measures have been shown to reduce fecal coliform counts by 29 to 46% (EPA, 2003). The principal direct costs of providing grazing practices range from relatively low variable costs of dispersed salt blocks to higher capital and maintenance costs of supplementary water supply improvements. Improving the distribution of grazing pressure by developing a planned grazing system or strategically locating water troughs, salt, or feeding areas to draw cattle away from riparian zones can result in improved utilization of existing forage, better water quality, and improved riparian habitat. Fencing costs are estimated as $3,600 to $4,150 per mile (USEPA, 2003). Capital costs for pipeline watering range from $0.33 to $2.70 per foot, while watering tanks and troughs range from $300 to $1,700 each (EPA, 2003).

8.3.7 Wetland Restoration

Wetland restoration involves the rehabilitation of a drained or degraded wetland to its natural condition, including its vegetation, soils and hydrology. Wetland restoration can be an effective BMP for reducing loads of sediments, nutrients, and bacteria (Johnston et al., 1990; Braskerud et al., 2005). Wetlands constructed as buffer zones between cropland and the Embarras River in central Illinois showed nitrate reductions of approximately 67% (Illinois Groundwater Consortium, 1995/96).

A wetland restoration project may be as simple as breaking drain tiles and blocking drainage ditches, or it may require more engineering effort to restore hydrology and hydric vegetation communities. In addition to improving water quality, wetland restoration provides additional benefits for flood control, habitat and recreation. Costs for wetland restoration vary widely, depending on the acreage, the nature of the work, and land/easement costs. However, a general unit cost of $520 to $1,250 per acre has been suggested (USFWS, 2006) for simple restoration projects in Illinois.

8.3.8 Tile Drain Management

Tile drainage systems are used extensively in Illinois to lower the water table. Drainage not only removes excess water, leading to a reduction of crop stress and increased yield, but it also allows earlier access to the field for planting, harvesting, and other agrotechnical operations (Cooke, 2004). Nitrate, which is soluble in water, is transported through tile drainage systems to a down-gradient surface outlet.

Several BMPs exist that may reduce the nitrate loads delivered from tile drains. A modified drainage water management system has been shown to reduce nitrates flowing from drainage tile into streams by 46 percent (Cooke, undated). This system reduces the volume of drainage water flowing from a tile outlet. An automated control structure placed at the outlet of a tile system controls the level of the water table in the soil. The rate at which water flows out can be controlled by adjusting the opening of the gate on the structure. By raising the water level, flows from the tile drains, and therefore loads, can be controlled (Cooke, 2004).

Subsurface bioreactors are another BMP that may reduce the nitrate load from tile drains. A bioreactor is an underground trench filled with carbon material (such as wood chips or corn cobs) that may be mixed with gravel, through which tile water is allowed to flow. Bacteria in the soil break down nitrates in the tile water, greatly decreasing the nitrate concentration in the effluent (Cooke, undated). U of I researchers have found nitrate removal efficiency to be about 25 percent in past studies. These systems provide an alternate pathway and are designed so that there is no decrease in drainage effectiveness. The outlet of the bioreactor is placed lower than the level of the existing tile, so water will more likely follow this pathway. One limitation of these controls is that if the flow capacity of the bioreactor is exceeded, the water will pass through the existing tile outlet (Cooke, 2004). Bioreactors have no adverse effects on production. They are designed such that they do not restrict drainage. Unlike other edge-of-field practices such as wetlands or buffer strips, they do not necessitate taking land out of production.

Installation of tile drains at shallower depths and tighter spacing is another practice that may reduce nitrate loads, while providing the same intensity of drainage. Shallow drainage can be used as new drainage systems are installed or older systems are replaced. With shallower drains, the water table is higher in winter and early spring, resulting in a larger anaerobic zone that promotes the denitrification of excess nitrate-nitrogen below the tile drains. Much of the nitrate that would normally be leached through deep tiles between growing seasons will be converted to a gas and released to the atmosphere. A practical advantage of shallow tile drains is that there is more plant available water in the root zone during the growing season. In dry years there will be less drought stress because of added soil water storage capacity while in wet years excess water above the tiles is removed as quickly and efficiently as it is with deeper drains (Cooke and Kalita, undated).

The Champaign County Soil and Water Conservation District currently offers tile mapping services for approximately $2.25/ac using color infrared photography to assist farmers in identifying the exact location of their tile drain lines. Cooke (2005) estimates that the cost of retrofitting tile drain systems with outlet control structures ranges from $20 to $40 per acre. Construction of new tile drain systems with outlet control is approximately $75/ac. The yield increases associated with installation of tile drain systems are expected to offset the cost of installation (Cooke, 2005). It is assumed that outlet control structures have a system life of 30 years.

8.3.9 Nutrient Management

Nutrient management plans are designed to minimize nutrient losses from agricultural lands, and therefore minimize the amount of nitrogen (and phosphorus) transported into the watershed. Because agriculture is the most common land use in the watershed, controls focused on reducing nitrate loads from these areas are expected to help reduce nitrate loads delivered to the watershed. The focus of a nutrient management plan is to increase the efficiency with which applied nutrients are used by crops, thereby reducing the amount available to be transported to both surface and ground waters (EPA, 2003). In this watershed, drainage ditches and subsurface field tile drains were installed over the last century to drain the naturally wet soils (SFSC CCSWCD, 2007).

A nutrient management plan identifies the amount, source, time of application, and placement of each nutrient needed to produce each crop grown on each field each year, to optimize efficient use of all sources of nutrients (including soil reserves, commercial fertilizer, legume crops, and organic sources) and minimize the potential for losses that lead to degradation of soil and water quality (UIUC, 2005).

Steps in developing a nutrient management plan include (UIUC, 2005):

- Assess the natural nutrient sources (soil reserves and legume contributions).
- Identify fields or areas within fields that require special nutrient management precautions.
- Assess nutrient needs for each field by crop.
- Determine quantity of nutrients that will be available from organic sources, such as manure or industrial or municipal wastes.
- Allocate nutrients available from organic sources.
- Calculate the amount of commercial fertilizer needed for each field.
- Determine the ideal time and method of application.
- Select nutrient sources that will be most effective and convenient for the operation.

Best management practices specific to nitrogen are described in the Illinois Agronomy Handbook (http://iah.aces.uiuc.edu/pdf/Agronomy_HB/12chapter.pdf).

In the Homer Lake watershed, a recent 319 project completed by the local SWCD showed an average reduction of 12 lbs/acre of nitrogen fertilizer when a nutrient management plan was used. A Pennsylvania State University study on the relative effectiveness of nutrient management in controlling nitrogen and phosphorus indicated that total nitrogen loads can achieve a 15% reduction (EPA, 2003). Costs of developing nutrient management plans have been estimated at $7 to $20/acre (EPA, 2003). These costs are often offset by the savings associated with using less fertilizer. For example, a study in Iowa showed that improved nutrient management on cornfields led to a savings of about $3.70/acre (EPA, 2003).

Nitrogen fertilizer recommendations for the central portion of the state are to use 166 – 204 lbs/acre for corn following corn, and 161 – 196 lbs/acre for corn following soybeans (IIUC, 2005; see http://extension.agron.iastate.edu/soilfertility/nrate.aspx). The Agricultural Water Institute (AWI) has been evaluating several forms of nutrient management in the Sangamon River/Lake Decatur watershed using a 2004 Targeted Watershed Grant. Historically, Illinois farmers have applied fertilizer according to methods outlined in the University of Illinois Agronomy Handbook. However, under the 2004 Targeted Watershed Grant, AWI developed curves that optimized the amount of fertilizer to be used for corn crops based on the price of corn versus the price of fertilizer.

The curve evaluated the cost effectiveness of improving corn yield by adding more fertilizer while also evaluating the additional cost of using more fertilizer. This practice was piloted in the watershed in the 2005 and 2006 growing seasons, and resulted in approximately a 20-lb reduction in nitrogen applied per acre of corn per season. However, as corn prices began rising during the 2007 growing season, many farmers abandoned these curves as a guide for fertilizer application and began applying fertilizer at the original application rates (AWI, 2007).

8.3.10 Conservation Tillage

The objective of conservation tillage is to provide profitable crop production while minimizing soil erosion (UIUC, 2005). This reduction in erosion also reduces the amount of nutrients, particularly phosphorus, lost from the land and delivered to the watershed. The NRCS has replaced the term conservation tillage with the term crop residue management, or the year-round management of residue to maintain the level of cover needed for adequate control of erosion. This often requires more than 30% residue cover after planting (UIUC, 2005). Conservation tillage/crop residue management systems are recognized as cost-effective means of significantly reducing soil erosion and maintaining productivity. The most recent Illinois Soil Transect Survey (IDOA, 2006) suggests that a large percentage of cropland in the watershed is farmed using reduced till, mulch till, or no till methods. For example, 95% of the land under soybean production in Champaign County, and 70% of the land under soybean production in Vermilion County is farmed using these conservation tillage methods. The percentages for corn production using these methods are 27% and 3%, respectively, for Champaign and Vermilion Counties, and 100% and 0%, respectively, for small grain fields. Additional conservation tillage measures should be considered as part of this implementation plan, particularly for cornfields.

Conservation tillage practices have been reported to reduce total nitrogen (including organic nitrogen, ammonia, and nitrate) loads by 55% (EPA, 2003). A wide range of costs has been reported for conservation tillage practices, ranging from $13/acre to $85/acre in capital costs (EPA, 2003). For no-till, costs per acre provided in the Illinois Agronomy Handbook for machinery and labor range from $37 to $68 per acre, depending on the farm size and planting methods used (UIUC, 2005). In general, the total cost per acre for machinery and labor decreases as the amount of tillage decreases and farm size increases (UIUC, 2005).

8.4 IDENTIFYING PRIORITY AREAS FOR CONTROLS

Priority areas for locating controls were identified through a review of available information. Information reviewed included: tributary water quality data; an aerial assessment report; and GIS-based information. Based on this review, it is recommended that streambank stabilization be initiated in the Salt Fork Vermilion River watershed to reduce bank erosion, and that this work occur concurrently with watershed controls in priority areas. Additional data collection is also recommended, to help focus control efforts.

8.4.1 Tributary Monitoring

Available water quality data obtained as part of the Stages 1 and 2 work were reviewed and little tributary monitoring data were identified. Additional data collection is therefore recommended to help understand where loads are being generated in the watershed and focus control efforts. Specific data collection recommendations are provided in the Monitoring and Adaptive Management section later in this Implementation Plan.

8.4.2 Aerial Assessment Report

A recent aerial assessment report observed that installation of riffle-pool sequences could have a beneficial impact on nitrates, dissolved oxygen, bank stability, and improved aquatic habitat (IDOA, 2005). This report recommended stabilizing eroding bends with Stone Toe Protection, Stream Barbs, or Bendway Weirs. Using costs presented in the report, the estimated cost to stabilize the segments described is approximately $1.83 million (IDOA, 2005). Because of the potential cost of stabilizing streambanks throughout the watershed, additional study is recommended to prioritize sites for streambank stabilization. Such study should include direct observations of bank conditions, as well as an assessment of stream hydraulics and geomorphology to support identification and design of effective stabilization measures.

8.4.3 GIS Analysis

GIS soils, land use and topography data were analyzed to identify areas that are expected to generate the highest sediment and associated pollutant loads. Within the GIS, maps were generated to show areas with steep slopes, defined as slopes greater than 9%, and highly erodible soils; these maps are included as Figure 9 and Figure 10, respectively. Finally, priority areas for best management practices (BMPs) were defined as agricultural areas that have both steep slopes and highly erodible soils, and these are shown in Figure 11. These maps serve as a good starting point for selecting areas to target for implementing control projects, to maximize the benefit of the controls. Note that this watershed has few areas of steep slopes; thus, Figure 11 shows relatively few high priority areas. However, Figure 10 shows larger areas having highly erodible soils, which will also benefit from controls. These areas may need to be assessed to determine if any soil erosion control practices are currently in place.

GIS analysis was also used to investigate the presence of hydric soils in the watershed to determine whether wetland restoration or creation is a viable option within this watershed. To support this analysis, areas having hydric soils, which are not already developed, forested, or covered by water or wetlands were identified. A significant proportion of the Salt Fork Vermilion watershed was identified as being potentially suitable for wetland restoration or creation. These areas are shown in Figure 12.

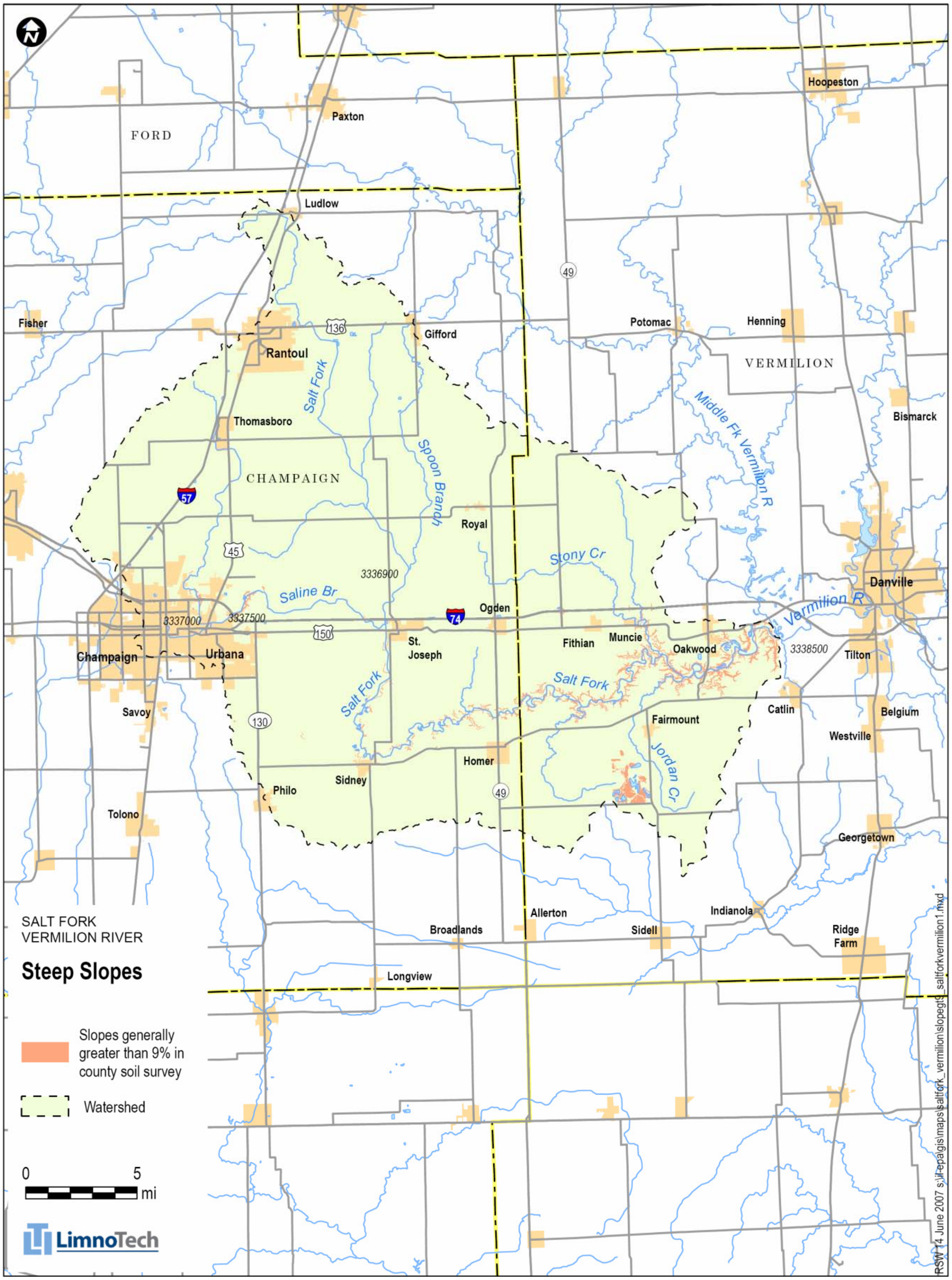

Figure 9. Areas with Steep Slopes

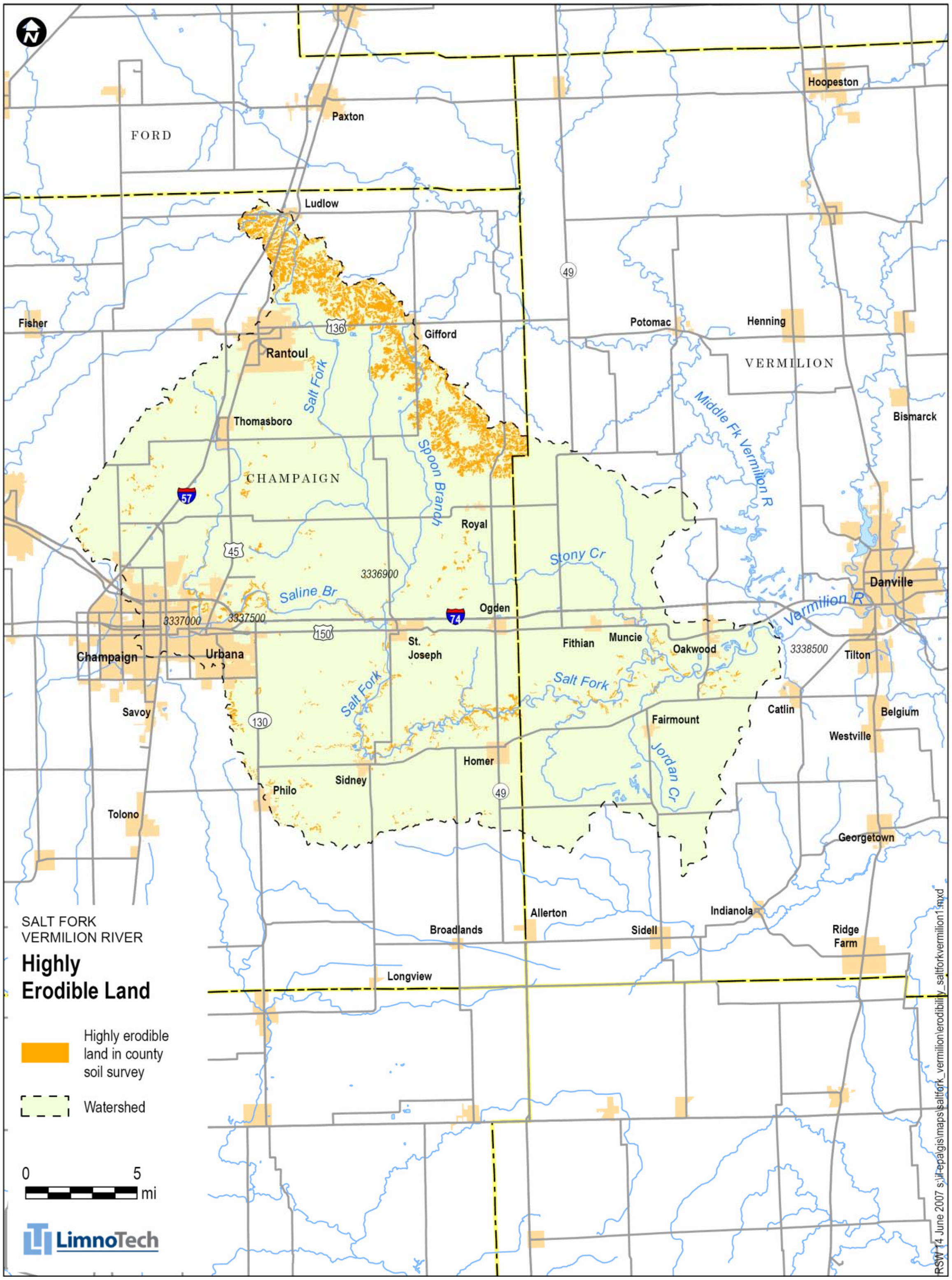

Figure 10. Areas of Highly Erodible Land

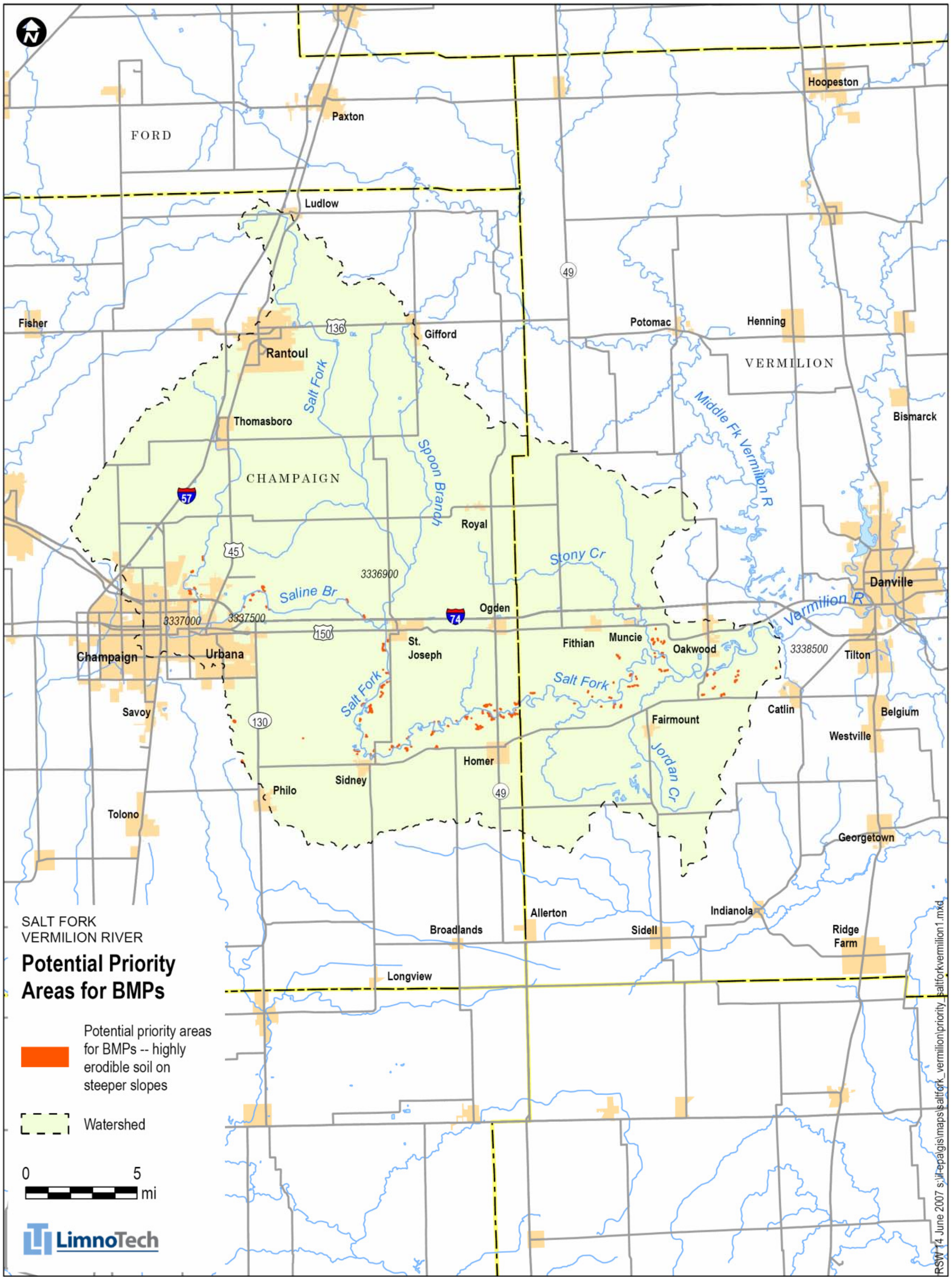

Figure 11. Potential Priority Areas for BMPs

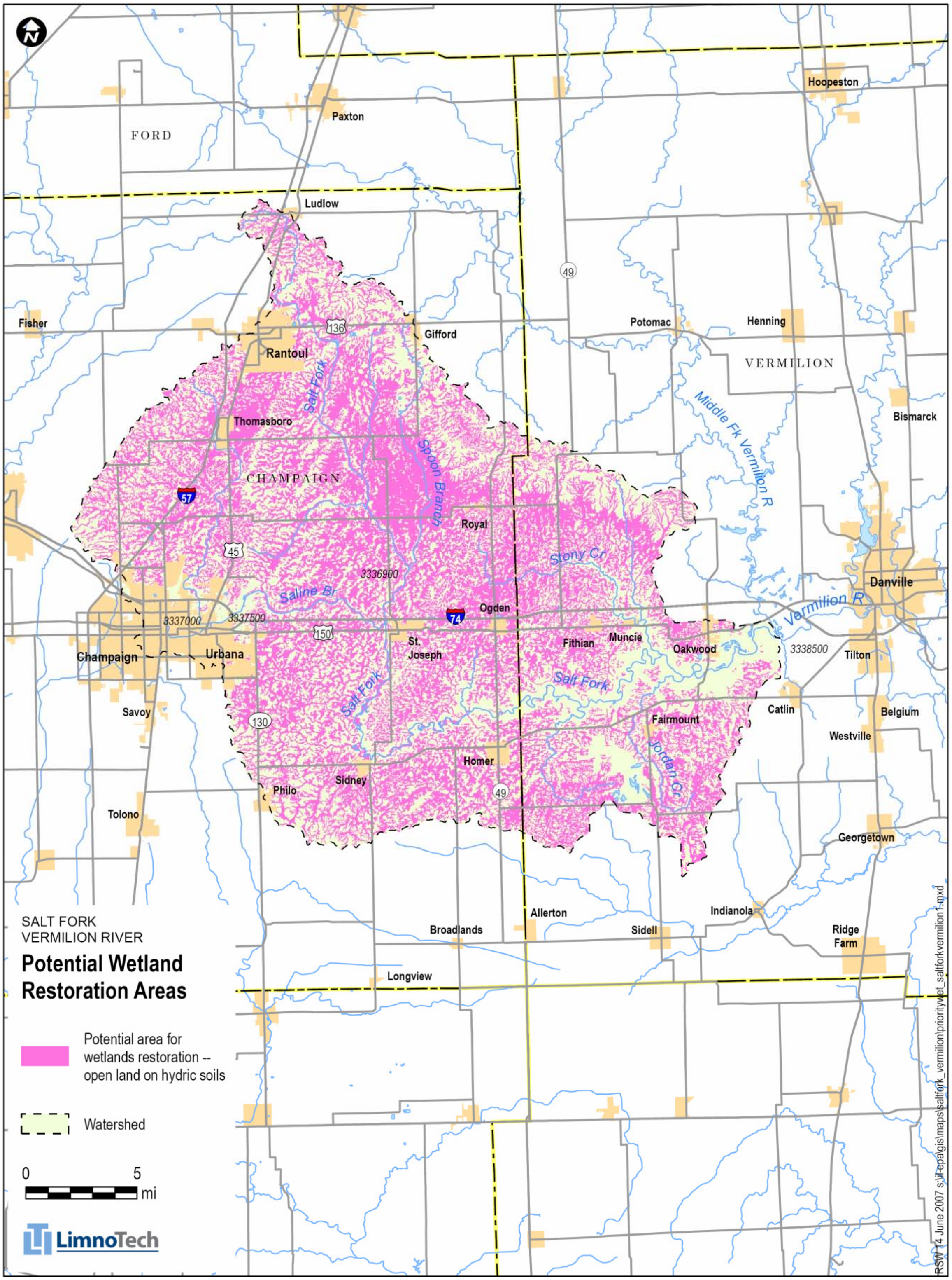

Figure 12. Potential Wetland Restoration Areas

8.5 REASONABLE ASSURANCE

The U.S. EPA requires states to provide reasonable assurance that the load reductions identified in the TMDL will be met. Reasonable assurance for point sources means that NPDES permits will be consistent with any applicable wasteload allocation contained in the TMDL. In terms of reasonable assurance for point sources, Illinois EPA administers the NPDES permitting program for treatment plants, stormwater permitting and CAFO permitting. The permits for the contributing point source dischargers in the watershed will be modified if necessary to ensure they are consistent with the applicable wasteload allocations presented in the TMDLs. Permit information for these facilities is summarized in Table 24.

Table 24. Permitted Dischargers

NPDES ID	Facility Name	Permit Expiration Date
IL0024619	Country Club Manor Condos	8/31/2007
IL0027278	Country Manor MHP - Urbana	8/31/2010
IL0034088	Fairmount WTP	10/31/2003
ILG580060	Fithian STP	12/31/2007
ILG580214	Gifford STP	12/31/2007
ILG640113	Homer WTP	1/31/2005
IL0004545	Illinois Central Railroad-Cham	11/30/2009
IL0063711	Ludlow WTP	10/31/2007
IL0063002	Material Service Corporation	4/30/2010
ILG580216	Oakwood STP	12/31/2007
IL0055751	Oakwood Township High School	4/30/2007
ILG580132	Ogden STP	12/31/2007
ILG640225	Prairie View Estates MHP WTP	9/30/2004
IL0022128	Rantoul STP	11/30/2010
ILG640131	Royal WTP	8/31/2004
IL0072052	Safety-Kleen Corporation	11/30/2008
IL0023086	St. Joseph SD STP	10/31/2010
IL0031500	Urbana-Champaign SD NE STP	5/31/2011

For nonpoint sources, reasonable assurance means that nonpoint source controls are specific to the pollutant of concern, implemented according to an expeditious schedule and supported by reliable delivery mechanisms and adequate funding (U.S. EPA, 1999).

One of the most important aspects of implementing nonpoint source controls is obtaining adequate funding to implement voluntary or incentive-based programs. Funding is available from a variety of sources, including those listed below. It should be noted that the programs listed are based on the 2002 Farm Bill, which expires on September 30, 2007. It is currently unknown what conservation programs will be included in a future farm bill.

- *Illinois Nutrient Management Planning Program*, cosponsored by the Illinois Department of Agriculture (IDOA) and IEPA (http://www.agr.state.il.us/Environment/LandWater/tmdl.html). This program targets funding to Soil and Water Conservation Districts (SWCDs) for use in impaired waters. The nutrient management plan practice cost share is only available to landowners/operators with land in TMDL watersheds. The dollar amount allocated to each eligible SWCD is based on their portion of the total number of cropland acres in eligible watersheds.
- *Clean Water Act Section 319 grants* to address nonpoint source pollution (http://www.epa.state.il.us/water/financial-assistance/non-point.html). Section 319 of the Clean Water Act provides Federal funding for states for the implementation of approved nonpoint source (NPS) management programs. Funding under these grants has been used in Illinois to finance projects that demonstrate cost-effective solutions to NPS problems. Projects must address water quality issues relating directly to NPS pollution. Funds can be used for the implementation of watershed management plans, including the development of information/education programs, and for the installation of best management practices. Applications are accepted June 1 through August 1 of each year. The maximum federal funding available is 60 percent, with the remaining 40 percent coming from local match. The program period is two years unless otherwise approved. This is a reimbursement program.
- *Conservation 2000* (http://www.epa.state.il.us/water/conservation-2000/), which funds nine programs across three state natural resource agencies (IEPA, IDOA, and the Department of Natural Resources). Conservation 2000 is an initiative designed to take a broad-based, long-term ecosystem approach to conserving, restoring, and managing Illinois' natural lands, soils, and water resources while providing additional high-quality opportunities for outdoor recreation. This program includes the Priority Lake and Watershed Implementation Program and the Clean Lakes Program.
- *Conservation Practices Cost-Share Program*. (http:/www.agr.state.il.us/Environment/conserv/index.html). Another component of Conservation 2000, the Conservation Practices Program (CPP) focuses on conservation practices, such as terraces, filter strips and grass waterways, that are aimed at reducing soil loss on Illinois cropland. IDOA distributes funding for the cost-share program to Illinois' SWCDs, which prioritize and select projects. Construction costs are divided between the state and landowners.
- *Conservation Reserve Program* administered by the Farm Service Agency (http://www.nrcs.usda.gov/programs/crp/). The Conservation Reserve Program (CRP) provides technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. CRP is administered by the Farm Service Agency, with NRCS providing technical land eligibility determinations, conservation planning and practice implementation.

- *Wetlands Reserve Program* (http://www.nrcs.usda.gov/programs/wrp/). NRCS's Wetlands Reserve Program (WRP) is a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. The NRCS provides technical and financial support to help landowners with their wetland restoration efforts. This program offers landowners an opportunity to establish long-term conservation and wildlife practices and protection. Figure 12 shows potential wetland restoration areas. These are areas with hydric soils that are not currently developed, covered by water, or forested.
- *Environmental Quality Incentive Program* sponsored by NRCS (general information at http://www.nrcs.usda.gov/PROGRAMS/EQIP/; Illinois information and materials at http://www.il.nrcs.usda.gov/programs/eqip/). The Environmental Quality Incentives Program (EQIP) provides a voluntary conservation program for farmers and ranchers that promotes agricultural production and environmental quality as compatible national goals. EQIP offers financial and technical assistance to eligible participants to install or implement structural and management practices on eligible agricultural land. EQIP may cost-share up to 75 percent of the costs of certain conservation practices (for example, fencing off livestock from stream access, grassed waterways, nutrient management, riparian buffers, and wetland restoration). Incentive payments may be provided for up to three years to encourage producers to carry out management practices they may not otherwise use without the incentive.
- *Wildlife Habitat Incentives Program* (WHIP) (http://www.il.nrcs.usda.gov/programs/whip/index.html). WHIP is an NRCS program for developing and improving wildlife habitat, primarily on private lands. It provides both technical assistance and cost-share payments to help establish and improve fish and wildlife habitat.
- *Funding for Private Sewage Systems.* EPA guidance (2005) indicates that funding might be available through programs such as the USDA Rural Utilities Service. (http://www.epa.gov/owm/septic/pubs/onsite_handbook.pdf)

In terms of reasonable assurances for nonpoint sources, Illinois EPA is committed to:

- Convene local experts familiar with nonpoint sources of pollution in the watershed
- Ensure that they define priority sources and identify restoration alternatives
- Develop a voluntary implementation plan that includes accountability
- Use the results of future monitoring to conduct adaptive management.

8.6 MONITORING AND ADAPTIVE MANAGEMENT

Future monitoring is needed to assess the effectiveness of the various restoration alternatives and to conduct adaptive management. The Illinois EPA conducts a variety of lake and stream monitoring programs (IEPA, 2002). Ongoing stream monitoring programs include: a statewide 213-station Ambient Water Quality Monitoring Network (AWQMN), which collects water quality data from fixed stations on a routine basis; an Intensive Basin Survey Program that covers all major watersheds on a five-year rotation basis; and a Facility-Related Stream Survey Program that conducts approximately 20-30 stream surveys each year. IEPA operates four water quality monitoring programs in the Salt Fork watershed:

- Ambient Water Quality Network (AWQMN)
- Facility Related Stream Surveys (FRSS)
- Intensive Basin Surveys
- Ambient Lakes Monitoring Program

Several other organizations monitor water quality in the watershed. Salt Fork River Partners conduct monitoring at 4 sites in the watershed. One of these sites is on segment IL_BPJ-10. Also active in the watershed are volunteers who have conducted monitoring within the watershed as part of IDNR's RiverWatch program; none of the sites previously monitored are in the vicinity of the segments discussed in this TMDL.

Local agencies and watershed organizations are encouraged to conduct additional monitoring to assess sources of pollutants and evaluate changes in water quality in the lake.

In particular, the following monitoring is recommended to support source identification and evaluate water quality improvements as watershed controls are implemented:

- Fecal coliform monitoring is recommended for Segment IL_BPJ-03 during wet and dry weather at:
    - the upstream end of segment BPJ-03 (near Oakwood)
    - Jordan Creek near the mouth (750E crossing)
    - Jordan Creek upstream (at 1100N), just downstream of the strip-mined area.
- pH monitoring is recommended during lower flows at:
    - the 1250N road crossing of Olive Branch to assess the impact of the Material Service Corps limestone quarry on pH.
    - Salt Fork Vermilion River mainstem at the previously-sampled BPJ10, BPJ16 and BPJ08 stations described in the Stage 2 monitoring report to track pH improvements as controls are implemented.
    - Just downstream of the Homer Lake outlet to assess the impact of this source on pH in the Salt Fork Vermilion River.
- Nitrate monitoring is recommended during wet weather at:
    - Salt Fork Vermilion River mainstem at the previously-sampled BPJ10, BPJ16, BPJ08 and BPJ03 stations described in the Stage 2 monitoring report to track nitrate improvements are controls are implemented.
    - Tributary monitoring near the mouths of Jordan Creek and Olive Branch to assess nitrate contributions from these areas

    - Monitoring at the 2400E road crossing, near the upstream end of segment IL_BPJ-10 to assess nitrate contributions from upstream sources.
- Dissolved oxygen monitoring during low flow conditions is also recommended for Spoon Branch to assess improvements as controls are implemented.
    - Suggested locations include the previously sampled BPJD01 location (at bridge 2.5 miles west of Royal) and BPJD02 (3.5 miles north-northeast of St. Joseph).

These activities will provide additional information to identify or confirm potential sources of the pollutants of concern, and assist in targeting implementation efforts.

Continued monitoring efforts will provide the basis for assessment of the effectiveness of the TMDLs, as well as future adaptive management decisions. As various alternatives are implemented, the monitoring will determine their effectiveness and identify which alternatives should be expanded, and which require adjustments to meet the TMDL goals.

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Attachment 1. QUAL2E Model Files

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TITLE01              Spoon Branch TMDL
TITLE02              CALIBRATION -- adjust SOD in reaches 3-5
TITLE03   NO         CONSERVATIVE MINERAL   I
TITLE04   NO         CONSERVATIVE MINERAL  II
TITLE05   NO         CONSERVATIVE MINERAL III
TITLE06   NO         TEMPERATURE
TITLE07  YES         5-DAY BIOCHEMICAL OXYGEN DEMAND
TITLE08   NO         ALGAE AS CHL-A IN UG/L
TITLE09   NO         PHOSPHORUS CYCLE AS P IN MG/L
TITLE10                (ORGANIC-P; DISSOLVED-P)
TITLE11  YES         NITROGEN CYCLE AS N IN MG/L
TITLE12                (ORGANIC-N; AMMONIA-N; NITRITE-N;' NITRATE-N)
TITLE13  YES         DISSOLVED OXYGEN IN MG/L
TITLE14   NO         FECAL COLIFORM IN NO./100 ML
TITLE15   NO         ARBITRARY NON-CONSERVATIVE
ENDTITLE
LIST DATA INPUT
NOWRITE OPTIONAL SUMMARY
NO FLOW AUGMENTATION
STEADY STATE
NO TRAPEZOIDAL CHANNELS
NO PRINT LCD/SOLAR DATA
NO PLOT DO AND BOD
FIXED DNSTM CONC (YES=1)=        0.          5D-ULT BOD CONV K COEF  =     0.230
INPUT METRIC            =        0.          OUTPUT METRIC           =        0.
NUMBER OF REACHES       =        5.          NUMBER OF JUNCTIONS     =        0.
NUM OF HEADWATERS       =        1.          NUMBER OF POINT LOADS   =        1.
TIME STEP (HOURS)       =        1.          LNTH. COMP. ELEMENT (MI)=      0.25
MAXIMUM ROUTE TIME (HRS)=       60.          TIME INC. FOR RPT2 (HRS)=       1.0
LATITUDE OF BASIN (DEG) =  40.18621          LONGITUDE OF BASIN (DEG)=  88.02113
STANDARD MERIDIAN (DEG) =        0.          DAY OF YEAR START TIME  =      242.
EVAP. COEF.,(AE)        =   0.00068          EVAP. COEF.,(BE)        =   0.00027
ELEV. OF BASIN (ELEV)   =     712.0          DUST ATTENUATION COEF.  =      0.06
ENDATA1
O UPTAKE BY NH3 OXID(MG O/MG N)=  3.43   O UPTAKE BY NO2 OXID(MG O/MG N)=   1.14
O PROD  BY ALGAE (MG O/MG A)   =   1.8   O UPTAKE BY ALGAE (MG O/MG A)  =   1.90
N CONTENT OF ALGAE (MG N/MG A) =   0.09  P CONTENT OF ALGAE (MG P/MG A) =  0.014
ALG MAX SPEC GROWTH RATE(1/DAY)=   2.0   ALGAE RESPIRATION RATE (1/DAY) =  0.105
N HALF SATURATION CONST (MG/L) =   0.03  P HALF SATURATION CONST  (MG/L)=  0.005
LIN ALG SHADE CO (1/H-UGCHA/L) =  0.003  NLIN SHADE (1/H-(UGCHA/L)**2/3)=  0.000
LIGHT FUNCTION OPTION (LFNOPT) =    2.0  LIGHT SATURATION COEF (INT/MIN)=   0.66
DAILY AVERAGING OPTION (LAVOPT)=    3.0  LIGHT AVERAGING FACTOR  (INT)  =    0.9
NUMBER OF DAYLIGHT HOURS (DLH) =   14.2  TOTAL DAILY SOLAR RADTN (INT)  =  1500.
ALGY GROWTH CALC OPTION(LGROPT)=    2.0  ALGAL PREF FOR NH3-N (PREFN)   =    0.1
ALG/TEMP SOLR RAD FACTOR(TFACT)=   0.45  NITRIFICATION INHIBITION COEF  =    0.6
ENDATA1A
THETA    SOD RATE  1.060
ENDATA1B
STREAM REACH     1. RCH= Upst to Gifford   FROM         13.8    TO           11.3
STREAM REACH     2. RCH= Gifford to 01 1   FROM         11.3    TO            7.0
STREAM REACH     3. RCH= Gifford to 01 2   FROM          7.0    TO            2.7
STREAM REACH     4. RCH= 01 to 02          FROM          2.7    TO            1.0
STREAM REACH     5. RCH= 02 to confluenc   FROM          1.0    TO            0.0
ENDATA2
ENDATA3
FLAG FIELD RCH=  1.         10.          1.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  2.         17.          6.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
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FLAG FIELD RCH=  3.        17.         2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  4.         7.         2.2.2.2.2.2.2.
FLAG FIELD RCH=  5.         4.         2.2.2.5.
ENDATA4
HYDRAULICS RCH=  1.     100.0   0.023077     1.00       2.00   0.000    0.020
HYDRAULICS RCH=  2.     100.0   0.023077     1.00       2.00   0.000    0.020
HYDRAULICS RCH=  3.     100.0   0.023077     1.00       2.00   0.000    0.020
HYDRAULICS RCH=  4.     100.0   0.059259     1.00       1.50   0.000    0.020
HYDRAULICS RCH=  5.     100.0   0.059259     1.00       1.50   0.000    0.020
ENDATA5
TEMP/LCD          1.     700.00   0.06   0.10   80.0   60.0  29.59    2.0
TEMP/LCD          2.     700.00   0.06   0.10   80.0   60.0  29.59    2.0
TEMP/LCD          3.     700.00   0.06   0.10   80.0   60.0  29.59    2.0
TEMP/LCD          4.     700.00   0.06   0.10   80.0   60.0  29.59    2.0
TEMP/LCD          5.     700.00   0.06   0.10   80.0   60.0  29.59    2.0
ENDATA5A
REACT COEF RCH=   1.   0.230   0.000  0.0000  1.    0.30  0.0000  0.0000
REACT COEF RCH=   2.   0.230   0.000  0.0000  1.    0.30  0.0000  0.0000
REACT COEF RCH=   3.   0.230   0.000  0.1200  1.    0.30  0.0000  0.0000
REACT COEF RCH=   4.   0.230   0.000  0.0800  1.    0.30  0.0000  0.0000
REACT COEF RCH=   5.   0.230   0.000  0.0400  1.    0.30  0.0000  0.0000
ENDATA6
N AND P COEF   RCH=  1.0    0.1    0.0    0.5    0.0    3.0    0.1    0.0    0.0
N AND P COEF   RCH=  2.0    0.1    0.0    0.5    0.0    3.0    0.1    0.0    0.0
N AND P COEF   RCH=  3.0    0.1    0.0    0.5    0.0    3.0    0.1    0.0    0.0
N AND P COEF   RCH=  4.0    0.1    0.0    0.5    0.0    3.0    0.1    0.0    0.0
N AND P COEF   RCH=  5.0    0.1    0.0    0.5    0.0    3.0    0.1    0.0    0.0
ENDATA6A
ALG/OTHER COEF RCH=  1.0   15.0    2.0    0.1    0.0    0.0    0.0    0.0
ALG/OTHER COEF RCH=  2.0   15.0    2.0    0.1    0.0    0.0    0.0    0.0
ALG/OTHER COEF RCH=  3.0   15.0    2.0    0.1    0.0    0.0    0.0    0.0
ALG/OTHER COEF RCH=  4.0   15.0    2.0    0.1    0.0    0.0    0.0    0.0
ALG/OTHER COEF RCH=  5.0   15.0    2.0    0.1    0.0    0.0    0.0    0.0
ENDATA6B
INITIAL COND-1 RCH=   1.  69.10   8.50   1.00   0.00   0.00   0.00  0.000    0.0
INITIAL COND-1 RCH=   2.  69.10   8.50   1.00   0.00   0.00   0.00  0.000    0.0
INITIAL COND-1 RCH=   3.  69.10   8.50   1.00   0.00   0.00   0.00  0.000    0.0
INITIAL COND-1 RCH=   4.  70.20   4.00   1.00   0.00   0.00   0.00  0.000    0.0
INITIAL COND-1 RCH=   5.  70.20   4.00   1.00   0.00   0.00   0.00  0.000    0.0
ENDATA7
INITIAL COND-2 RCH=   1.    0.1    0.2   0.09    0.0  0.038  0.004  0.022
INITIAL COND-2 RCH=   2.    0.1    0.2   0.09    0.0  0.038  0.004  0.022
INITIAL COND-2 RCH=   3.    0.1    0.2   0.09    0.0  0.038  0.004  0.022
INITIAL COND-2 RCH=   4.    0.1    0.3   0.08    0.0    0.1  0.009  0.041
INITIAL COND-2 RCH=   5.    0.1    0.3   0.08    0.0    0.1  0.009  0.041
ENDATA7A
INCR INFLOW-1  RCH=   1.  0.000  69.10   8.0   1.0   0.0   0.0   0.0   0.0   0.0
INCR INFLOW-1  RCH=   2. 1.8645  69.10   8.0   1.0   0.0   0.0   0.0   0.0   0.0
INCR INFLOW-1  RCH=   3. 1.8645  69.10   8.0   1.0   0.0   0.0   0.0   0.0   0.0
INCR INFLOW-1  RCH=   4.  0.737  70.20   9.0   1.0   0.0   0.0   0.0   0.0   0.0
INCR INFLOW-1  RCH=   5.  0.434  70.20   9.0   1.0   0.0   0.0   0.0   0.0   0.0
ENDATA8
INCR INFLOW-2  RCH=   1.   0.10   0.20   0.09   0.00  0.038  0.004  0.022
INCR INFLOW-2  RCH=   2.   0.10   0.20   0.09   0.00  0.038  0.004  0.022
INCR INFLOW-2  RCH=   3.   0.10   0.20   0.09   0.00  0.038  0.004  0.022
INCR INFLOW-2  RCH=   4.   0.10   0.30   0.08   0.00   0.10  0.004  0.041
INCR INFLOW-2  RCH=   5.   0.10   0.30   0.08   0.00   0.10  0.004  0.041
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ENDATA8A
ENDATA9
HEADWTR-1 HDW=   1.    Spoon Branch    1.084 70.00  8.00  1.00  0.0   0.0   0.0
ENDATA10
HEADWTR-2 HDW=   1.  0.00   0.0  0.10  0.20  0.09  0.00 0.038  0.004 0.022
ENDATA10A
POINTLD-1 PTL=   1. Gifford STP 0.00 0.13300  77.0   7.0   4.7   0.0   0.0   0.0
ENDATA11
POINTLD-2 PTL=   1.  0.00   0.0  0.00  0.20  0.09  0.00 0.038  0.004 0.022
ENDATA11A
ENDATA12
ENDATA13
ENDATA13A
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                                                        * * * QUAL-2E  STREAM QUALITY
ROUTING MODEL * * *
                                                                     Version 3.22  --  May
1996

          $$$ (PROBLEM TITLES) $$$

         CARD TYPE                             QUAL-2E PROGRAM TITLES
         TITLE01              Spoon Branch TMDL
         TITLE02              CALIBRATION -- adjust SOD in reaches 3-5
         TITLE03   NO         CONSERVATIVE MINERAL   I
         TITLE04   NO         CONSERVATIVE MINERAL  II
         TITLE05   NO         CONSERVATIVE MINERAL III
         TITLE06   NO         TEMPERATURE
         TITLE07  YES         5-DAY BIOCHEMICAL OXYGEN DEMAND
         TITLE08   NO         ALGAE AS CHL-A IN UG/L
         TITLE09   NO         PHOSPHORUS CYCLE AS P IN MG/L
         TITLE10                (ORGANIC-P; DISSOLVED-P)
         TITLE11  YES         NITROGEN CYCLE AS N IN MG/L
         TITLE12                (ORGANIC-N; AMMONIA-N; NITRITE-N;' NITRATE-N)
         TITLE13  YES         DISSOLVED OXYGEN IN MG/L
         TITLE14   NO         FECAL COLIFORM IN NO./100 ML
         TITLE15   NO         ARBITRARY NON-CONSERVATIVE
         ENDTITLE

          $$$ DATA TYPE 1 (CONTROL DATA) $$$

         CARD TYPE                                     CARD TYPE
         LIST DATA INPUT              0.00000
0.00000
         NOWRITE OPTIONAL SUMMARY     0.00000
0.00000
         NO FLOW AUGMENTATION         0.00000
0.00000
         STEADY STATE                 0.00000
0.00000
         NO TRAPEZOIDAL CHANNELS      0.00000
0.00000
         NO PRINT LCD/SOLAR DATA      0.00000
0.00000
         NO PLOT DO AND BOD           0.00000
0.00000
         FIXED DNSTM CONC (YES=1)=    0.00000          5D-ULT BOD CONV K COEF  =
0.23000
         INPUT METRIC            =    0.00000          OUTPUT METRIC           =
0.00000
         NUMBER OF REACHES       =    5.00000          NUMBER OF JUNCTIONS     =
0.00000
         NUM OF HEADWATERS       =    1.00000          NUMBER OF POINT LOADS   =
1.00000
         TIME STEP (HOURS)       =    1.00000          LNTH. COMP. ELEMENT (MI)=
0.25000
         MAXIMUM ROUTE TIME (HRS)=   60.00000          TIME INC. FOR RPT2 (HRS)=
1.00000
         LATITUDE OF BASIN (DEG) =   40.18621          LONGITUDE OF BASIN (DEG)=
88.02113
```

STANDARD MERIDIAN (DEG) = 0.00000 DAY OF YEAR START TIME =
242.00000
EVAP. COEF.,(AE) = 0.00068 EVAP. COEF.,(BE) =
0.00027
ELEV. OF BASIN (ELEV) = 712.00000 DUST ATTENUATION COEF. =
0.06000
ENDATA1 0.00000
0.00000

$$$ DATA TYPE 1A (ALGAE PRODUCTION AND NITROGEN OXIDATION CONSTANTS)
$$$

CARD TYPE CARD TYPE
O UPTAKE BY NH3 OXID(MG O/MG N)= 3.4300 O UPTAKE BY NO2
OXID(MG O/MG N)= 1.1400
O PROD BY ALGAE (MG O/MG A) = 1.8000 O UPTAKE BY ALGAE
(MG O/MG A) = 1.9000
N CONTENT OF ALGAE (MG N/MG A) = 0.0900 P CONTENT OF ALGAE
(MG P/MG A) = 0.0140
ALG MAX SPEC GROWTH RATE(1/DAY)= 2.0000 ALGAE RESPIRATION
RATE (1/DAY) = 0.1050
N HALF SATURATION CONST (MG/L) = 0.0300 P HALF SATURATION
CONST (MG/L)= 0.0050
LIN ALG SHADE CO (1/FT-UGCHA/L=) 0.0030 NLIN SHADE(1/FT-
(UGCHA/L)**2/3)= 0.0000
LIGHT FUNCTION OPTION (LFNOPT) = 2.0000 LIGHT SAT'N COEF
(BTU/FT2-MIN) = 0.6600
DAILY AVERAGING OPTION (LAVOPT)= 3.0000 LIGHT AVERAGING
FACTOR (INT) = 0.9000
NUMBER OF DAYLIGHT HOURS (DLH) = 14.2000 TOTAL DAILY SOLR
RAD (BTU/FT-2)= 1500.0000
ALGY GROWTH CALC OPTION(LGROPT)= 2.0000 ALGAL PREF FOR NH3-
N (PREFN) = 0.1000
ALG/TEMP SOLR RAD FACTOR(TFACT)= 0.4500 NITRIFICATION
INHIBITION COEF = 0.6000
ENDATA1A 0.0000
0.0000

$$$ DATA TYPE 1B (TEMPERATURE CORRECTION CONSTANTS FOR RATE
COEFFICIENTS) $$$

CARD TYPE	RATE CODE	THETA VALUE	
THETA(1)	BOD DECA	1.047	DFLT
THETA(2)	BOD SETT	1.024	DFLT
THETA(3)	OXY TRAN	1.024	DFLT
THETA(4)	SOD RATE	1.060	USER
THETA(5)	ORGN DEC	1.047	DFLT
THETA(6)	ORGN SET	1.024	DFLT
THETA(7)	NH3 DECA	1.083	DFLT
THETA(8)	NH3 SRCE	1.074	DFLT
THETA(9)	NO2 DECA	1.047	DFLT
THETA(10)	PORG DEC	1.047	DFLT
THETA(11)	PORG SET	1.024	DFLT
THETA(12)	DISP SRC	1.074	DFLT
THETA(13)	ALG GROW	1.047	DFLT
THETA(14)	ALG RESP	1.047	DFLT

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        THETA(15)      ALG SETT        1.024     DFLT
        THETA(16)      COLI DEC        1.047     DFLT
        THETA(17)      ANC DECA        1.000     DFLT
        THETA(18)      ANC SETT        1.024     DFLT
        THETA(19)      ANC SRCE        1.000     DFLT
        ENDATA1B

         $$$ DATA TYPE 2 (REACH IDENTIFICATION) $$$

        CARD TYPE           REACH ORDER AND IDENT              R. MI/KM
R. MI/KM
        STREAM REACH     1.0  RCH= Upst to Gifford   FROM         13.8    TO
11.3
        STREAM REACH     2.0  RCH= Gifford to 01 1   FROM         11.3    TO
7.0
        STREAM REACH     3.0  RCH= Gifford to 01 2   FROM          7.0    TO
2.7
        STREAM REACH     4.0  RCH= 01 to 02          FROM          2.7    TO
1.0
        STREAM REACH     5.0  RCH= 02 to confluenc   FROM          1.0    TO
0.0
        ENDATA2          0.0                                       0.0
0.0

         $$$ DATA TYPE 3 (TARGET LEVEL DO AND FLOW AUGMENTATION SOURCES) $$$

        CARD TYPE                  REACH  AVAIL HDWS TARGET     ORDER OF AVAIL
SOURCES
        ENDATA3                     0.         0.       0.0   0.   0.   0.   0.
0.   0.

         $$$ DATA TYPE 4 (COMPUTATIONAL REACH FLAG FIELD) $$$

        CARD TYPE        REACH ELEMENTS/REACH            COMPUTATIONAL FLAGS
        FLAG FIELD        1.       10.
1.2.2.2.2.2.2.2.2.2.0.0.0.0.0.0.0.0.0.0.
        FLAG FIELD        2.       17.
6.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.0.0.0.
        FLAG FIELD        3.       17.
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.0.0.0.
        FLAG FIELD        4.        7.
2.2.2.2.2.2.2.0.0.0.0.0.0.0.0.0.0.0.0.0.
        FLAG FIELD        5.        4.
2.2.2.5.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.
        ENDATA4           0.        0.
0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.

         $$$ DATA TYPE 5 (HYDRAULIC DATA FOR DETERMINING VELOCITY AND DEPTH)
$$$

        CARD TYPE        REACH  COEF-DSPN  COEFQV    EXPOQV    COEFQH   EXPOQH
CMANN
        HYDRAULICS        1.    100.00     0.023     1.000     2.000     0.000
0.020
        HYDRAULICS        2.    100.00     0.023     1.000     2.000     0.000
0.020
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         HYDRAULICS        3.    100.00     0.023     1.000     2.000     0.000
0.020
         HYDRAULICS        4.    100.00     0.059     1.000     1.500     0.000
0.020
         HYDRAULICS        5.    100.00     0.059     1.000     1.500     0.000
0.020
         ENDATA5           0.      0.00     0.000     0.000     0.000     0.000
0.000

          $$$ DATA TYPE 5A (STEADY STATE TEMPERATURE AND CLIMATOLOGY DATA) $$$

         CARD TYPE                        DUST     CLOUD   DRY BULB  WET
BULB     ATM               SOLAR RAD
                         REACH   ELEVATION     COEF     COVER     TEMP      TEMP
PRESSURE     WIND   ATTENUATION
         TEMP/LCD          1.      700.00      0.06      0.10     80.00
60.00     29.59      2.00      1.00
         TEMP/LCD          2.      700.00      0.06      0.10     80.00
60.00     29.59      2.00      1.00
         TEMP/LCD          3.      700.00      0.06      0.10     80.00
60.00     29.59      2.00      1.00
         TEMP/LCD          4.      700.00      0.06      0.10     80.00
60.00     29.59      2.00      1.00
         TEMP/LCD          5.      700.00      0.06      0.10     80.00
60.00     29.59      2.00      1.00
         ENDATA5A          0.        0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00

          $$$ DATA TYPE 6 (REACTION COEFFICIENTS FOR DEOXYGENATION AND
REAERATION) $$$

         CARD TYPE        REACH     K1        K3       SOD          K2OPT     K2
COEQK2    OR   EXPQK2
                                                       RATE
TSIV COEF  OR    SLOPE

FOR OPT 8      FOR OPT 8
         REACT COEF        1.      0.23      0.00      0.000         1.      0.30
0.000       0.00000
         REACT COEF        2.      0.23      0.00      0.000         1.      0.30
0.000       0.00000
         REACT COEF        3.      0.23      0.00      0.120         1.      0.30
0.000       0.00000
         REACT COEF        4.      0.23      0.00      0.080         1.      0.30
0.000       0.00000
         REACT COEF        5.      0.23      0.00      0.040         1.      0.30
0.000       0.00000
         ENDATA6           0.      0.00      0.00      0.000         0.      0.00
0.000       0.00000

           $$$ DATA TYPE 6A (NITROGEN AND PHOSPHORUS CONSTANTS) $$$

         CARD TYPE           REACH    CKNH2    SETNH2     CKNH3      SNH3
CKNO2     CKPORG   SETPORG     SPO4
         N AND P COEF          1.      0.10      0.00      0.50      0.00
3.00      0.10      0.00      0.00
```

```
         N AND P COEF          2.      0.10      0.00      0.50      0.00
3.00      0.10      0.00      0.00
         N AND P COEF          3.      0.10      0.00      0.50      0.00
3.00      0.10      0.00      0.00
         N AND P COEF          4.      0.10      0.00      0.50      0.00
3.00      0.10      0.00      0.00
         N AND P COEF          5.      0.10      0.00      0.50      0.00
3.00      0.10      0.00      0.00
         ENDATA6A              0.      0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00

          $$$ DATA TYPE 6B (ALGAE/OTHER COEFFICIENTS) $$$

         CARD TYPE           REACH    ALPHAO    ALGSET    EXCOEF      CK5
CKANC    SETANC    SRCANC
                                                                   CKCOLI
         ALG/OTHER COEF        1.     15.00      2.00      0.10      0.00
0.00      0.00      0.00
         ALG/OTHER COEF        2.     15.00      2.00      0.10      0.00
0.00      0.00      0.00
         ALG/OTHER COEF        3.     15.00      2.00      0.10      0.00
0.00      0.00      0.00
         ALG/OTHER COEF        4.     15.00      2.00      0.10      0.00
0.00      0.00      0.00
         ALG/OTHER COEF        5.     15.00      2.00      0.10      0.00
0.00      0.00      0.00
         ENDATA6B              0.      0.00      0.00      0.00      0.00
0.00      0.00      0.00

          $$$ DATA TYPE 7 (INITIAL CONDITIONS) $$$

         CARD TYPE           REACH    TEMP       D.O.      BOD       CM-1
CM-2      CM-3       ANC      COLI
         INITIAL COND-1        1.     69.10      8.50      1.00      0.00
0.00      0.00      0.00      0.00
         INITIAL COND-1        2.     69.10      8.50      1.00      0.00
0.00      0.00      0.00      0.00
         INITIAL COND-1        3.     69.10      8.50      1.00      0.00
0.00      0.00      0.00      0.00
         INITIAL COND-1        4.     70.20      4.00      1.00      0.00
0.00      0.00      0.00      0.00
         INITIAL COND-1        5.     70.20      4.00      1.00      0.00
0.00      0.00      0.00      0.00
         ENDATA7               0.      0.00      0.00      0.00      0.00
0.00      0.00      0.00      0.00

          $$$ DATA TYPE 7A (INITIAL CONDITIONS FOR CHOROPHYLL A, NITROGEN, AND
PHOSPHORUS) $$$

         CARD TYPE           REACH    CHL-A     ORG-N     NH3-N     NO2-N
NO3-N     ORG-P     DIS-P
         INITIAL COND-2        1.      0.10      0.20      0.09      0.00
0.04      0.00      0.02
         INITIAL COND-2        2.      0.10      0.20      0.09      0.00
0.04      0.00      0.02
         INITIAL COND-2        3.      0.10      0.20      0.09      0.00
0.04      0.00      0.02
```

```
         INITIAL COND-2        4.      0.10      0.30      0.08      0.00
0.10      0.01      0.04
         INITIAL COND-2        5.      0.10      0.30      0.08      0.00
0.10      0.01      0.04
         ENDATA7A              0.      0.00      0.00      0.00      0.00
0.00      0.00      0.00
```

$$$ DATA TYPE 8 (INCREMENTAL INFLOW CONDITIONS) $$$

```
         CARD TYPE           REACH     FLOW      TEMP      D.O.       BOD
CM-1      CM-2      CM-3       ANC      COLI
         INCR INFLOW-1         1.     0.000     69.10      8.00      1.00
0.00      0.00      0.00      0.00      0.00
         INCR INFLOW-1         2.     1.865     69.10      8.00      1.00
0.00      0.00      0.00      0.00      0.00
         INCR INFLOW-1         3.     1.865     69.10      8.00      1.00
0.00      0.00      0.00      0.00      0.00
         INCR INFLOW-1         4.     0.737     70.20      9.00      1.00
0.00      0.00      0.00      0.00      0.00
         INCR INFLOW-1         5.     0.434     70.20      9.00      1.00
0.00      0.00      0.00      0.00      0.00
         ENDATA8               0.     0.000      0.00      0.00      0.00
0.00      0.00      0.00      0.00      0.00
```

$$$ DATA TYPE 8A (INCREMENTAL INFLOW CONDITIONS FOR CHLOROPHYLL A, NITROGEN, AND PHOSPHORUS) $$$

```
         CARD TYPE           REACH    CHL-A     ORG-N     NH3-N     NO2-N
NO3-N     ORG-P     DIS-P
         INCR INFLOW-2         1.      0.10      0.20      0.09      0.00
0.04      0.00      0.02
         INCR INFLOW-2         2.      0.10      0.20      0.09      0.00
0.04      0.00      0.02
         INCR INFLOW-2         3.      0.10      0.20      0.09      0.00
0.04      0.00      0.02
         INCR INFLOW-2         4.      0.10      0.30      0.08      0.00
0.10      0.00      0.04
         INCR INFLOW-2         5.      0.10      0.30      0.08      0.00
0.10      0.00      0.04
         ENDATA8A              0.      0.00      0.00      0.00      0.00
0.00      0.00      0.00
```

$$$ DATA TYPE 9 (STREAM JUNCTIONS) $$$

```
         CARD TYPE              JUNCTION ORDER AND IDENT         UPSTRM
JUNCTION   TRIB
         ENDATA9                0.                                 0.        0.
0.
```

$$$ DATA TYPE 10 (HEADWATER SOURCES) $$$

```
         CARD TYPE    HDWTR     NAME              FLOW      TEMP      D.O.
BOD      CM-1      CM-2      CM-3
                      ORDER
         HEADWTR-1      1.      Spoon Branch      1.08     70.00      8.00
1.00      0.00      0.00      0.00
```

ENDATA10 0. 0.00 0.00 0.00
0.00 0.00 0.00 0.00

$$$ DATA TYPE 10A (HEADWATER CONDITIONS FOR CHLOROPHYLL, NITROGEN, PHOSPHORUS,
COLIFORM AND SELECTED NON-CONSERVATIVE CONSTITUENT) $$$

CARD TYPE	HDWTR ORDER	ANC	COLI	CHL-A	ORG-N	NH3-N	NO2-N	NO3-N	ORG-P	DIS-P
HEADWTR-2	1.	0.00	0.00E+00	0.10	0.20	0.09	0.00	0.04	0.00	0.02
ENDATA10A	0.	0.00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

$$$ DATA TYPE 11 (POINT SOURCE / POINT SOURCE CHARACTERISTICS) $$$

CARD TYPE	POINT LOAD ORDER	NAME	EFF	FLOW	TEMP	D.O.	BOD	CM-1	CM-2	CM-3
POINTLD-1	1.	Gifford STP	0.00	0.13	77.00	7.00	4.70	0.00	0.00	0.00
ENDATA11	0.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

$$$ DATA TYPE 11A (POINT SOURCE CHARACTERISTICS - CHLOROPHYLL A, NITROGEN, PHOSPHORUS,
COLIFORMS AND SELECTED NON-CONSERVATIVE CONSTITUENT) $$$

CARD TYPE	POINT LOAD ORDER	ANC	COLI	CHL-A	ORG-N	NH3-N	NO2-N	N03-N	ORG-P	DIS-P
POINTLD-2	1.	0.00	0.00E+00	0.00	0.20	0.09	0.00	0.04	0.00	0.02
ENDATA11A	0.	0.00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

$$$ DATA TYPE 12 (DAM CHARACTERISTICS) $$$

	DAM	RCH	ELE	ADAM	BDAM	FDAM	HDAM
ENDATA12	0.	0.	0.	0.00	0.00	0.00	0.00

$$$ DATA TYPE 13 (DOWNSTREAM BOUNDARY CONDITIONS-1) $$$

CARD TYPE TEMP D.O. BOD CM-1 CM-2 CM-3 ANC COLI

ENDATA13 DOWNSTREAM BOUNDARY CONCENTRATIONS ARE UNCONSTRAINED

$$$ DATA TYPE 13A (DOWNSTREAM BOUNDARY CONDITIONS-2) $$$

CARD TYPE CHL-A ORG-N NH3-N NO2-N
NH3-N ORG-P DIS-P

ENDATA13A DOWNSTREAM BOUNDARY CONCENTRATIONS ARE
UNCONSTRAINED

STEADY STATE ALGAE/NUTRIENT/DISSOLVED OXYGEN SIMULATION; CONVERGENCE SUMMARY:

VARIABLE	ITERATION	NUMBER OF NONCONVERGENT ELEMENTS
NITRIFICATION INHIBITION	1	55
NITRIFICATION INHIBITION	2	28
NITRIFICATION INHIBITION	3	22
NITRIFICATION INHIBITION	4	10
NITRIFICATION INHIBITION	5	0
NITRIFICATION INHIBITION	6	0

STREAM QUALITY SIMULATION
OUTPUT PAGE NUMBER 1
QUAL-2E STREAM QUALITY ROUTING MODEL
Version 3.22 -- May 1996

***** STEADY STATE SIMULATION *****

** HYDRAULICS SUMMARY **

ELE ORD	RCH NUM	ELE NUM	BEGIN LOC MILE	END LOC MILE	FLOW CFS	POINT SRCE CFS	INCR FLOW CFS	VEL FPS	TRVL TIME DAY	DEPTH FT	WIDTH FT	VOLUME K-FT-3	BOTTOM AREA K-FT-2	X-SECT AREA FT-2	DSPRSN COEF FT-2/S
1	1	1	13.80	13.55	1.08	0.00	0.00	0.025	0.611	2.000	21.667	57.20	33.88	43.33	0.34
2	1	2	13.55	13.30	1.08	0.00	0.00	0.025	0.611	2.000	21.667	57.20	33.88	43.33	0.34
3	1	3	13.30	13.05	1.08	0.00	0.00	0.025	0.611	2.000	21.667	57.20	33.88	43.33	0.34
4	1	4	13.05	12.80	1.08	0.00	0.00	0.025	0.611	2.000	21.667	57.20	33.88	43.33	0.34
5	1	5	12.80	12.55	1.08	0.00	0.00	0.025	0.611	2.000	21.667	57.20	33.88	43.33	0.34
6	1	6	12.55	12.30	1.08	0.00	0.00	0.025	0.611	2.000	21.667	57.20	33.88	43.33	0.34
7	1	7	12.30	12.05	1.08	0.00	0.00	0.025	0.611	2.000	21.667	57.20	33.88	43.33	0.34
8	1	8	12.05	11.80	1.08	0.00	0.00	0.025	0.611	2.000	21.667	57.20	33.88	43.33	0.34
9	1	9	11.80	11.55	1.08	0.00	0.00	0.025	0.611	2.000	21.667	57.20	33.88	43.33	0.34
10	1	10	11.55	11.30	1.08	0.00	0.00	0.025	0.611	2.000	21.667	57.20	33.88	43.33	0.34
11	2	1	11.30	11.05	1.33	0.13	0.11	0.031	0.499	2.000	21.667	57.20	33.88	43.33	0.42
12	2	2	11.05	10.80	1.44	0.00	0.11	0.033	0.461	2.000	21.667	57.20	33.88	43.33	0.45
13	2	3	10.80	10.55	1.55	0.00	0.11	0.036	0.428	2.000	21.667	57.20	33.88	43.33	0.49
14	2	4	10.55	10.30	1.66	0.00	0.11	0.038	0.400	2.000	21.667	57.20	33.88	43.33	0.52
15	2	5	10.30	10.05	1.77	0.00	0.11	0.041	0.375	2.000	21.667	57.20	33.88	43.33	0.55
16	2	6	10.05	9.80	1.88	0.00	0.11	0.043	0.353	2.000	21.667	57.20	33.88	43.33	0.59
17	2	7	9.80	9.55	1.98	0.00	0.11	0.046	0.334	2.000	21.667	57.20	33.88	43.33	0.62
18	2	8	9.55	9.30	2.09	0.00	0.11	0.048	0.316	2.000	21.667	57.20	33.88	43.33	0.66
19	2	9	9.30	9.05	2.20	0.00	0.11	0.051	0.300	2.000	21.667	57.20	33.88	43.33	0.69

20	2	10	9.05	8.80	2.31	0.00	0.11	0.053	0.286	2.000	21.667	57.20	33.88	43.33	0.73
21	2	11	8.80	8.55	2.42	0.00	0.11	0.056	0.273	2.000	21.667	57.20	33.88	43.33	0.76
22	2	12	8.55	8.30	2.53	0.00	0.11	0.058	0.261	2.000	21.667	57.20	33.88	43.33	0.80
23	2	13	8.30	8.05	2.64	0.00	0.11	0.061	0.251	2.000	21.667	57.20	33.88	43.33	0.83
24	2	14	8.05	7.80	2.75	0.00	0.11	0.064	0.241	2.000	21.667	57.20	33.88	43.33	0.86
25	2	15	7.80	7.55	2.86	0.00	0.11	0.066	0.231	2.000	21.667	57.20	33.88	43.33	0.90
26	2	16	7.55	7.30	2.97	0.00	0.11	0.069	0.223	2.000	21.667	57.20	33.88	43.33	0.93
27	2	17	7.30	7.05	3.08	0.00	0.11	0.071	0.215	2.000	21.667	57.20	33.88	43.33	0.97

28	3	1	7.00	6.75	3.19	0.00	0.11	0.074	0.207	2.000	21.667	57.20	33.88	43.33	1.00
29	3	2	6.75	6.50	3.30	0.00	0.11	0.076	0.201	2.000	21.667	57.20	33.88	43.33	1.04
30	3	3	6.50	6.25	3.41	0.00	0.11	0.079	0.194	2.000	21.667	57.20	33.88	43.33	1.07
31	3	4	6.25	6.00	3.52	0.00	0.11	0.081	0.188	2.000	21.667	57.20	33.88	43.33	1.11
32	3	5	6.00	5.75	3.63	0.00	0.11	0.084	0.182	2.000	21.667	57.20	33.88	43.33	1.14
33	3	6	5.75	5.50	3.74	0.00	0.11	0.086	0.177	2.000	21.667	57.20	33.88	43.33	1.17
34	3	7	5.50	5.25	3.85	0.00	0.11	0.089	0.172	2.000	21.667	57.20	33.88	43.33	1.21
35	3	8	5.25	5.00	3.96	0.00	0.11	0.091	0.167	2.000	21.667	57.20	33.88	43.33	1.24
36	3	9	5.00	4.75	4.07	0.00	0.11	0.094	0.163	2.000	21.667	57.20	33.88	43.33	1.28
37	3	10	4.75	4.50	4.18	0.00	0.11	0.096	0.158	2.000	21.667	57.20	33.88	43.33	1.31
38	3	11	4.50	4.25	4.29	0.00	0.11	0.099	0.154	2.000	21.667	57.20	33.88	43.33	1.35
39	3	12	4.25	4.00	4.40	0.00	0.11	0.101	0.151	2.000	21.667	57.20	33.88	43.33	1.38
40	3	13	4.00	3.75	4.51	0.00	0.11	0.104	0.147	2.000	21.667	57.20	33.88	43.33	1.42
41	3	14	3.75	3.50	4.62	0.00	0.11	0.107	0.143	2.000	21.667	57.20	33.88	43.33	1.45
42	3	15	3.50	3.25	4.73	0.00	0.11	0.109	0.140	2.000	21.667	57.20	33.88	43.33	1.48

STREAM QUALITY SIMULATION
OUTPUT PAGE NUMBER 2
QUAL-2E STREAM QUALITY ROUTING MODEL
Version 3.22 -- May 1996

***** STEADY STATE SIMULATION *****

** HYDRAULICS SUMMARY **

ELE ORD	RCH NUM	ELE NUM	BEGIN LOC MILE	END LOC MILE	FLOW CFS	POINT SRCE CFS	INCR FLOW CFS	VEL FPS	TRVL TIME DAY	DEPTH FT	BOTTOM WIDTH FT	VOLUME K-FT-3	BOTTOM AREA K-FT-2	X-SECT AREA FT-2	DSPRSN COEF FT-2/S
43	3	16	3.25	3.00	4.84	0.00	0.11	0.112	0.137	2.000	21.667	57.20	33.88	43.33	1.52
44	3	17	3.00	2.75	4.95	0.00	0.11	0.114	0.134	2.000	21.667	57.20	33.88	43.33	1.55
45	4	1	2.70	2.45	5.05	0.00	0.11	0.299	0.051	1.500	11.250	22.28	18.81	16.88	3.21
46	4	2	2.45	2.20	5.16	0.00	0.11	0.306	0.050	1.500	11.250	22.28	18.81	16.88	3.27
47	4	3	2.20	1.95	5.26	0.00	0.11	0.312	0.049	1.500	11.250	22.28	18.81	16.88	3.34
48	4	4	1.95	1.70	5.37	0.00	0.11	0.318	0.048	1.500	11.250	22.28	18.81	16.88	3.41
49	4	5	1.70	1.45	5.47	0.00	0.11	0.324	0.047	1.500	11.250	22.28	18.81	16.88	3.47
50	4	6	1.45	1.20	5.58	0.00	0.11	0.331	0.046	1.500	11.250	22.28	18.81	16.88	3.54
51	4	7	1.20	0.95	5.68	0.00	0.11	0.337	0.045	1.500	11.250	22.28	18.81	16.88	3.61
52	5	1	1.00	0.75	5.79	0.00	0.11	0.343	0.045	1.500	11.250	22.28	18.81	16.88	3.68
53	5	2	0.75	0.50	5.90	0.00	0.11	0.350	0.044	1.500	11.250	22.28	18.81	16.88	3.74
54	5	3	0.50	0.25	6.01	0.00	0.11	0.356	0.043	1.500	11.250	22.28	18.81	16.88	3.81
55	5	4	0.25	0.00	6.12	0.00	0.11	0.362	0.042	1.500	11.250	22.28	18.81	16.88	3.88

STREAM QUALITY SIMULATION
OUTPUT PAGE NUMBER 3
QUAL-2E STREAM QUALITY ROUTING MODEL
Version 3.22 -- May 1996

***** STEADY STATE SIMULATION *****

** REACTION COEFFICIENT SUMMARY **

RCH NUM	ELE NUM	DO SAT MG/L	K2 OPT	OXYGN REAIR 1/DAY	BOD DECAY 1/DAY	BOD SETT 1/DAY	SOD RATE G/F2D	ORGN DECAY 1/DAY	ORGN SETT 1/DAY	NH3 DECAY 1/DAY	NH3 SRCE MG/F2D	NO2 DECAY 1/DAY	ORGP DECAY 1/DAY	ORGP SETT 1/DAY	DISP SRCE MG/F2D	COLI DECAY 1/DAY	ANC DECAY 1/DAY	ANC SETT 1/DAY	ANC SRCE MG/F2D
1	1	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	2	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	3	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	4	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	5	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	6	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	7	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	8	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	9	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	10	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	3	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	6	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	7	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	8	8.89	1	0.30	0.24	0.00	0.00	0.10	0.00	0.52	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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  2   9   8.89   1   0.30   0.24   0.00   0.00   0.10   0.00   0.52   0.00
3.06   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  2  10   8.89   1   0.30   0.24   0.00   0.00   0.10   0.00   0.52   0.00
3.06   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  2  11   8.89   1   0.30   0.24   0.00   0.00   0.10   0.00   0.52   0.00
3.06   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  2  12   8.89   1   0.30   0.24   0.00   0.00   0.10   0.00   0.52   0.00
3.06   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  2  13   8.89   1   0.30   0.24   0.00   0.00   0.10   0.00   0.52   0.00
3.06   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  2  14   8.89   1   0.30   0.24   0.00   0.00   0.10   0.00   0.52   0.00
3.06   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  2  15   8.89   1   0.30   0.24   0.00   0.00   0.10   0.00   0.52   0.00
3.06   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  2  16   8.89   1   0.30   0.24   0.00   0.00   0.10   0.00   0.52   0.00
3.06   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  2  17   8.89   1   0.30   0.24   0.00   0.00   0.10   0.00   0.52   0.00
3.06   0.00   0.00   0.00   0.00   0.00   0.00   0.00


  3   1   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.52   0.00
3.05   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3   2   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.52   0.00
3.04   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3   3   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.52   0.00
3.03   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3   4   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.51   0.00
3.02   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3   5   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.51   0.00
3.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3   6   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.51   0.00
2.99   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3   7   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.51   0.00
2.97   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3   8   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.50   0.00
2.95   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3   9   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.50   0.00
2.94   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3  10   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.50   0.00
2.92   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3  11   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.49   0.00
2.90   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3  12   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.49   0.00
2.89   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3  13   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.49   0.00
2.87   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3  14   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.49   0.00
2.85   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  3  15   8.89   1   0.30   0.24   0.00   0.12   0.10   0.00   0.48   0.00
2.84   0.00   0.00   0.00   0.00   0.00   0.00   0.00
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STREAM QUALITY SIMULATION

QUAL-2E STREAM QUALITY ROUTING MODEL

Version 3.22 -- May 1996

***** STEADY STATE SIMULATION *****

** REACTION COEFFICIENT SUMMARY **

RCH NUM	ELE NUM	DO SAT MG/L	K2 OPT	OXYGN REAIR 1/DAY	BOD DECAY 1/DAY	BOD SETT 1/DAY	SOD RATE G/F2D	ORGN DECAY 1/DAY	ORGN SETT 1/DAY	NH3 DECAY 1/DAY	NH3 SRCE MG/F2D	NO2 DECAY 1/DAY	ORGP DECAY 1/DAY	ORGP SETT 1/DAY	DISP SRCE MG/F2D	COLI DECAY 1/DAY	ANC DECAY 1/DAY	ANC SETT 1/DAY	ANC SRCE MG/F2D
3	16	8.89	1	0.30	0.24	0.00	0.12	0.10	0.00	0.48	0.00	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	17	8.89	1	0.30	0.24	0.00	0.12	0.10	0.00	0.48	0.00	2.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	1	8.78	1	0.31	0.24	0.00	0.09	0.11	0.00	0.50	0.00	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	2	8.78	1	0.31	0.24	0.00	0.09	0.11	0.00	0.50	0.00	2.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	3	8.78	1	0.31	0.24	0.00	0.09	0.11	0.00	0.51	0.00	2.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	4	8.78	1	0.31	0.24	0.00	0.09	0.11	0.00	0.51	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	5	8.78	1	0.31	0.24	0.00	0.09	0.11	0.00	0.51	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	6	8.78	1	0.31	0.24	0.00	0.09	0.11	0.00	0.51	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	7	8.78	1	0.31	0.24	0.00	0.09	0.11	0.00	0.51	0.00	2.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	1	8.78	1	0.31	0.24	0.00	0.04	0.11	0.00	0.51	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2	8.78	1	0.31	0.24	0.00	0.04	0.11	0.00	0.51	0.00	2.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	3	8.78	1	0.31	0.24	0.00	0.04	0.11	0.00	0.51	0.00	2.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	4	8.78	1	0.31	0.24	0.00	0.04	0.11	0.00	0.52	0.00	2.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00

STREAM QUALITY SIMULATION
OUTPUT PAGE NUMBER 5
QUAL-2E STREAM QUALITY ROUTING MODEL
Version 3.22 -- May 1996

***** STEADY STATE SIMULATION *****

** WATER QUALITY VARIABLES **

RCH NUM	ELE NUM	TEMP DEG-F	CM-1	CM-2	CM-3	DO MG/L	BOD MG/L	ORGN MG/L	NH3N MG/L	NO2N MG/L	NO3N MG/L	SUM-N MG/L	ORGP MG/L	DIS-P MG/L	SUM-P MG/L	COLI #/100ML	ANC	CHLA UG/L
1	1	69.10	0.00	0.00	0.00	7.90	0.87	0.19	0.08	0.01	0.05	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
1	2	69.10	0.00	0.00	0.00	7.84	0.76	0.18	0.07	0.01	0.07	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
1	3	69.10	0.00	0.00	0.00	7.81	0.67	0.17	0.06	0.01	0.09	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
1	4	69.10	0.00	0.00	0.00	7.81	0.58	0.16	0.05	0.01	0.11	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
1	5	69.10	0.00	0.00	0.00	7.83	0.51	0.15	0.05	0.01	0.13	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
1	6	69.10	0.00	0.00	0.00	7.86	0.45	0.14	0.04	0.01	0.14	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
1	7	69.10	0.00	0.00	0.00	7.91	0.39	0.13	0.04	0.01	0.15	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
1	8	69.10	0.00	0.00	0.00	7.96	0.34	0.12	0.03	0.01	0.16	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
1	9	69.10	0.00	0.00	0.00	8.01	0.30	0.12	0.03	0.01	0.17	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
1	10	69.10	0.00	0.00	0.00	8.06	0.26	0.11	0.03	0.01	0.18	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
2	1	69.10	0.00	0.00	0.00	7.94	0.68	0.12	0.04	0.01	0.17	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
2	2	69.10	0.00	0.00	0.00	7.93	0.64	0.12	0.04	0.01	0.16	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
2	3	69.10	0.00	0.00	0.00	7.93	0.60	0.12	0.04	0.01	0.16	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
2	4	69.10	0.00	0.00	0.00	7.94	0.58	0.12	0.04	0.01	0.16	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
2	5	69.10	0.00	0.00	0.00	7.94	0.55	0.12	0.04	0.01	0.16	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
2	6	69.10	0.00	0.00	0.00	7.95	0.53	0.12	0.04	0.01	0.16	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
2	7	69.10	0.00	0.00	0.00	7.96	0.52	0.12	0.04	0.01	0.16	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00
2	8	69.10	0.00	0.00	0.00	7.96	0.51	0.12	0.04	0.01	0.16	0.33	0.00	0.02	0.03	.00E+00	0.00	0.00

2	9	69.10	0.00	0.00	0.00	7.97	0.50	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
2	10	69.10	0.00	0.00	0.00	7.98	0.49	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
2	11	69.10	0.00	0.00	0.00	7.98	0.48	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
2	12	69.10	0.00	0.00	0.00	7.99	0.47	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
2	13	69.10	0.00	0.00	0.00	7.99	0.47	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
2	14	69.10	0.00	0.00	0.00	8.00	0.46	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
2	15	69.10	0.00	0.00	0.00	8.00	0.46	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
2	16	69.10	0.00	0.00	0.00	8.00	0.45	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
2	17	69.10	0.00	0.00	0.00	8.00	0.45	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				

3	1	69.10	0.00	0.00	0.00	7.50	0.45	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	2	69.10	0.00	0.00	0.00	7.06	0.44	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	3	69.10	0.00	0.00	0.00	6.67	0.44	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	4	69.10	0.00	0.00	0.00	6.32	0.44	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	5	69.10	0.00	0.00	0.00	6.01	0.44	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	6	69.10	0.00	0.00	0.00	5.74	0.44	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	7	69.10	0.00	0.00	0.00	5.49	0.43	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	8	69.10	0.00	0.00	0.00	5.27	0.43	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	9	69.10	0.00	0.00	0.00	5.07	0.43	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	10	69.10	0.00	0.00	0.00	4.89	0.43	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	11	69.10	0.00	0.00	0.00	4.72	0.43	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	12	69.10	0.00	0.00	0.00	4.58	0.43	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	13	69.10	0.00	0.00	0.00	4.44	0.43	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	14	69.10	0.00	0.00	0.00	4.32	0.43	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				
3	15	69.10	0.00	0.00	0.00	4.21	0.43	0.12	0.04	0.01
0.16	0.33	0.00	0.02	0.03.00E+00	0.00	0.00				

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         STREAM QUALITY SIMULATION
OUTPUT PAGE NUMBER     6
         QUAL-2E STREAM QUALITY ROUTING MODEL
Version 3.22  --  May 1996
                                                  ***** STEADY STATE SIMULATION
*****

                                                     ** WATER QUALITY VARIABLES
**

RCH ELE              CM-1   CM-2   CM-3
ANC
NUM NUM       TEMP                              DO    BOD   ORGN   NH3N   NO2N
NO3N  SUM-N   ORGP  DIS-P  SUM-P   COLI               CHLA
             DEG-F                            MG/L   MG/L   MG/L   MG/L   MG/L
MG/L   MG/L   MG/L   MG/L   MG/L #/100ML             UG/L

  3  16      69.10   0.00   0.00   0.00   4.10   0.42   0.12   0.04   0.01
0.16   0.33   0.00   0.02   0.03.00E+00   0.00   0.00
  3  17      69.10   0.00   0.00   0.00   4.01   0.42   0.12   0.04   0.01
0.16   0.33   0.00   0.02   0.03.00E+00   0.00   0.00


  4   1      70.20   0.00   0.00   0.00   4.09   0.43   0.13   0.04   0.01
0.16   0.33   0.01   0.04   0.05.00E+00   0.00   0.00
  4   2      70.20   0.00   0.00   0.00   4.12   0.43   0.13   0.04   0.01
0.16   0.33   0.01   0.04   0.05.00E+00   0.00   0.00
  4   3      70.20   0.00   0.00   0.00   4.15   0.44   0.13   0.04   0.01
0.16   0.34   0.01   0.04   0.05.00E+00   0.00   0.00
  4   4      70.20   0.00   0.00   0.00   4.18   0.45   0.13   0.04   0.01
0.16   0.34   0.01   0.04   0.05.00E+00   0.00   0.00
  4   5      70.20   0.00   0.00   0.00   4.21   0.45   0.14   0.04   0.01
0.16   0.34   0.01   0.04   0.05.00E+00   0.00   0.00
  4   6      70.20   0.00   0.00   0.00   4.23   0.46   0.14   0.04   0.01
0.16   0.35   0.01   0.04   0.05.00E+00   0.00   0.00
  4   7      70.20   0.00   0.00   0.00   4.26   0.46   0.14   0.04   0.01
0.16   0.35   0.01   0.04   0.05.00E+00   0.00   0.00


  5   1      70.20   0.00   0.00   0.00   4.34   0.47   0.14   0.04   0.01
0.16   0.35   0.01   0.04   0.05.00E+00   0.00   0.00
  5   2      70.20   0.00   0.00   0.00   4.41   0.47   0.15   0.04   0.01
0.16   0.35   0.01   0.04   0.05.00E+00   0.00   0.00
  5   3      70.20   0.00   0.00   0.00   4.49   0.48   0.15   0.04   0.01
0.16   0.35   0.01   0.04   0.05.00E+00   0.00   0.00
  5   4      70.20   0.00   0.00   0.00   4.56   0.48   0.15   0.05   0.01
0.16   0.36   0.01   0.04   0.05.00E+00   0.00   0.00
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***** STEADY STATE SIMULATION *****

** DISSOLVED OXYGEN DATA **

COMPONENTS OF DISSOLVED OXYGEN MASS BALANCE (MG/L-DAY)

ELE ORD	RCH NUM	ELE NUM	TEMP DEG-F	DO SAT MG/L	DO MG/L	DO DEF MG/L	DAM INPUT MG/L	NIT INHIB FACT	F-FNCTN INPUT	OXYGN REAIR	NET C-BOD	SOD	P-R	NH3-N	NO2-N
1	1	1	69.10	8.89	7.90	0.99	0.00	0.99	13.10	0.30	-0.21	0.00	0.00	-0.14	-0.03
2	1	2	69.10	8.89	7.84	1.05	0.00	0.99	0.00	0.32	-0.18	0.00	0.00	-0.12	-0.04
3	1	3	69.10	8.89	7.81	1.08	0.00	0.99	0.00	0.33	-0.16	0.00	0.00	-0.11	-0.04
4	1	4	69.10	8.89	7.81	1.08	0.00	0.99	0.00	0.33	-0.14	0.00	0.00	-0.09	-0.03
5	1	5	69.10	8.89	7.83	1.06	0.00	0.99	0.00	0.32	-0.12	0.00	0.00	-0.08	-0.03
6	1	6	69.10	8.89	7.86	1.02	0.00	0.99	0.00	0.31	-0.11	0.00	0.00	-0.07	-0.03
7	1	7	69.10	8.89	7.91	0.98	0.00	0.99	0.00	0.30	-0.09	0.00	0.00	-0.07	-0.02
8	1	8	69.10	8.89	7.96	0.93	0.00	0.99	0.00	0.28	-0.08	0.00	0.00	-0.06	-0.02
9	1	9	69.10	8.89	8.01	0.88	0.00	0.99	0.00	0.27	-0.07	0.00	0.00	-0.06	-0.02
10	1	10	69.10	8.89	8.06	0.82	0.00	0.99	0.00	0.25	-0.06	0.00	0.00	-0.05	-0.02
11	2	1	69.10	8.89	7.94	0.95	0.00	0.99	2.73	0.29	-0.16	0.00	0.00	-0.07	-0.02
12	2	2	69.10	8.89	7.93	0.95	0.00	0.99	1.33	0.29	-0.15	0.00	0.00	-0.07	-0.02
13	2	3	69.10	8.89	7.93	0.95	0.00	0.99	1.33	0.29	-0.14	0.00	0.00	-0.07	-0.02
14	2	4	69.10	8.89	7.94	0.95	0.00	0.99	1.33	0.29	-0.14	0.00	0.00	-0.07	-0.02
15	2	5	69.10	8.89	7.94	0.94	0.00	0.99	1.33	0.29	-0.13	0.00	0.00	-0.07	-0.02
16	2	6	69.10	8.89	7.95	0.94	0.00	0.99	1.33	0.29	-0.13	0.00	0.00	-0.07	-0.02
17	2	7	69.10	8.89	7.96	0.93	0.00	0.99	1.33	0.28	-0.12	0.00	0.00	-0.07	-0.02
18	2	8	69.10	8.89	7.96	0.92	0.00	0.99	1.33	0.28	-0.12	0.00	0.00	-0.07	-0.02

19	2	9	69.10	8.89	7.97	0.92	0.00	0.99	1.33	0.28	-0.12	0.00	0.00	-0.07	-0.02
20	2	10	69.10	8.89	7.98	0.91	0.00	0.99	1.33	0.28	-0.12	0.00	0.00	-0.07	-0.02
21	2	11	69.10	8.89	7.98	0.91	0.00	0.99	1.33	0.28	-0.11	0.00	0.00	-0.07	-0.02
22	2	12	69.10	8.89	7.99	0.90	0.00	0.99	1.33	0.27	-0.11	0.00	0.00	-0.07	-0.02
23	2	13	69.10	8.89	7.99	0.90	0.00	0.99	1.33	0.27	-0.11	0.00	0.00	-0.07	-0.02
24	2	14	69.10	8.89	8.00	0.89	0.00	0.99	1.33	0.27	-0.11	0.00	0.00	-0.07	-0.02
25	2	15	69.10	8.89	8.00	0.89	0.00	0.99	1.33	0.27	-0.11	0.00	0.00	-0.07	-0.02
26	2	16	69.10	8.89	8.00	0.88	0.00	0.99	1.33	0.27	-0.11	0.00	0.00	-0.07	-0.02
27	2	17	69.10	8.89	8.00	0.88	0.00	0.99	1.33	0.27	-0.11	0.00	0.00	-0.07	-0.02
28	3	1	69.10	8.89	7.50	1.39	0.00	0.99	1.33	0.42	-0.11	-2.20	0.00	-0.07	-0.02
29	3	2	69.10	8.89	7.06	1.83	0.00	0.99	1.33	0.56	-0.11	-2.20	0.00	-0.07	-0.02
30	3	3	69.10	8.89	6.67	2.22	0.00	0.98	1.33	0.68	-0.10	-2.20	0.00	-0.07	-0.02
31	3	4	69.10	8.89	6.32	2.57	0.00	0.98	1.33	0.78	-0.10	-2.20	0.00	-0.07	-0.02
32	3	5	69.10	8.89	6.01	2.88	0.00	0.97	1.33	0.88	-0.10	-2.20	0.00	-0.07	-0.02
33	3	6	69.10	8.89	5.74	3.15	0.00	0.97	1.33	0.96	-0.10	-2.20	0.00	-0.07	-0.02
34	3	7	69.10	8.89	5.49	3.40	0.00	0.96	1.33	1.03	-0.10	-2.20	0.00	-0.07	-0.02
35	3	8	69.10	8.89	5.27	3.62	0.00	0.96	1.33	1.10	-0.10	-2.20	0.00	-0.07	-0.02
36	3	9	69.10	8.89	5.07	3.82	0.00	0.95	1.33	1.16	-0.10	-2.20	0.00	-0.07	-0.02
37	3	10	69.10	8.89	4.89	4.00	0.00	0.95	1.33	1.22	-0.10	-2.20	0.00	-0.07	-0.02
38	3	11	69.10	8.89	4.72	4.16	0.00	0.94	1.33	1.27	-0.10	-2.20	0.00	-0.07	-0.02
39	3	12	69.10	8.89	4.58	4.31	0.00	0.94	1.33	1.31	-0.10	-2.20	0.00	-0.07	-0.02
40	3	13	69.10	8.89	4.44	4.45	0.00	0.93	1.33	1.35	-0.10	-2.20	0.00	-0.07	-0.02
41	3	14	69.10	8.89	4.32	4.57	0.00	0.93	1.33	1.39	-0.10	-2.20	0.00	-0.07	-0.02
42	3	15	69.10	8.89	4.21	4.68	0.00	0.92	1.33	1.43	-0.10	-2.20	0.00	-0.07	-0.02

STREAM QUALITY SIMULATION
OUTPUT PAGE NUMBER 8
QUAL-2E STREAM QUALITY ROUTING MODEL
Version 3.22 -- May 1996

***** STEADY STATE SIMULATION *****

** DISSOLVED OXYGEN DATA **

COMPONENTS OF DISSOLVED OXYGEN MASS BALANCE (MG/L-DAY)

ELE ORD	RCH NUM	ELE NUM	TEMP DEG-F	DO SAT MG/L	DO MG/L	DO DEF MG/L	DAM INPUT MG/L	NIT INHIB FACT	F-FNCTN INPUT	OXYGN REAIR	NET C-BOD	SOD	P-R	NH3-N	NO2-N
43	3	16	69.10	8.89	4.10	4.79	0.00	0.91	1.33	1.46	-0.10	-2.20	0.00	-0.07	-0.02
44	3	17	69.10	8.89	4.01	4.88	0.00	0.91	1.33	1.48	-0.10	-2.20	0.00	-0.07	-0.02
45	4	1	70.20	8.78	4.09	4.69	0.00	0.91	3.68	1.45	-0.10	-2.02	0.00	-0.07	-0.02
46	4	2	70.20	8.78	4.12	4.66	0.00	0.92	3.68	1.44	-0.11	-2.02	0.00	-0.07	-0.02
47	4	3	70.20	8.78	4.15	4.63	0.00	0.92	3.68	1.43	-0.11	-2.02	0.00	-0.07	-0.02
48	4	4	70.20	8.78	4.18	4.60	0.00	0.92	3.68	1.42	-0.11	-2.02	0.00	-0.07	-0.02
49	4	5	70.20	8.78	4.21	4.57	0.00	0.92	3.68	1.41	-0.11	-2.02	0.00	-0.07	-0.02
50	4	6	70.20	8.78	4.23	4.55	0.00	0.92	3.68	1.41	-0.11	-2.02	0.00	-0.08	-0.02
51	4	7	70.20	8.78	4.26	4.53	0.00	0.92	3.68	1.40	-0.11	-2.02	0.00	-0.08	-0.02
52	5	1	70.20	8.78	4.34	4.44	0.00	0.93	3.79	1.37	-0.11	-1.01	0.00	-0.08	-0.02
53	5	2	70.20	8.78	4.41	4.37	0.00	0.93	3.79	1.35	-0.11	-1.01	0.00	-0.08	-0.02
54	5	3	70.20	8.78	4.49	4.29	0.00	0.93	3.79	1.33	-0.12	-1.01	0.00	-0.08	-0.02
55	5	4	70.20	8.78	4.56	4.23	0.00	0.94	3.79	1.31	-0.12	-1.01	0.00	-0.08	-0.02

Attachment 2. Nitrate Load Duration Worksheets

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Data for Nitrate Load Duration Curve

BPJ-03 Flow (cfs)	% of Time Exceeded	Nitrate load (kg/day)
5.14	100.0	126
12.3	98.8	301
13.4	98.3	328
15.5	97.7	379
16.8	97.1	410
17.9	96.6	438
19.8	96.0	485
21.2	95.4	520
22.4	94.9	547
23.8	94.3	582
24.9	93.7	608
26.0	93.2	635
26.8	92.6	656
28.0	92.1	684
28.8	91.5	705
29.6	90.9	723
30.2	90.4	739
31.3	89.8	766
32.1	89.2	785
32.8	88.7	802
33.5	88.1	821
34.2	87.5	838
35.0	87.0	855
36.0	86.4	882
36.0	85.9	882
36.0	85.3	882
39.6	84.7	970
39.6	84.2	970
39.6	83.6	970
39.6	83.0	970
43.3	82.5	1,058
43.3	81.9	1,058
43.3	81.3	1,058
44.7	80.8	1,094
46.9	80.2	1,146
46.9	79.7	1,146
46.9	79.1	1,146
50.5	78.5	1,235
50.5	78.0	1,235
50.5	77.4	1,235
54.1	76.8	1,323
54.1	76.3	1,323
54.1	75.7	1,323
57.7	75.1	1,411
57.7	74.6	1,411
58.1	74.0	1,422
61.3	73.5	1,499
62.6	72.9	1,532
64.9	72.3	1,587
67.1	71.8	1,641
68.5	71.2	1,675
72.1	70.6	1,764
72.1	70.1	1,764
75.7	69.5	1,852
79.3	68.9	1,940
79.3	68.4	1,940
82.9	67.8	2,028
86.5	67.3	2,116
86.5	66.7	2,116
90.1	66.1	2,205
93.7	65.6	2,293
95.0	65.0	2,325
97.3	64.4	2,381
100.9	63.9	2,469
104.0	63.3	2,544
105.1	62.8	2,571
108.1	62.2	2,646
111.7	61.6	2,734

Observed Data

Date	BPJ-03 Flow (cfs)	Concentration (mg/l)	Percentile	Nitrate load (kg/day)
8/31/1967	34.96	0.5	86.90	42.8
11/2/1967	61.28	2	72.98	300
3/4/1968	187.43	7	47.81	3,210
4/10/1968	479.40	8.8	21.44	10,321
5/1/1968	191.04	7.2	47.30	3,365
6/5/1968	515.44	12	19.92	15,132
7/24/1968	266.73	4.7	37.05	3,067
8/28/1968	75.69	1.6	69.25	296
10/2/1968	39.65	4.3	83.04	417
11/21/1968	50.46	2.7	77.10	333
1/15/1969	108.13	5.6	61.93	1,481
2/26/1969	209.06	5.4	44.64	2,762
3/31/1969	464.98	7.9	22.21	8,987
4/22/1969	1211.10	9	7.61	26,667
5/28/1969	173.01	1.4	50.27	593
6/30/1969	93.72	0.7	65.05	160
8/28/1969	33.88	0.2	87.74	17
9/29/1969	30.28	0.7	90.24	52
10/22/1969	133.37	1.4	57.14	457
12/1/1969	219.87	1.6	42.84	861
12/17/1969	140.57	1.4	55.90	481
2/16/1970	108.13	1.1	61.93	291
3/30/1970	396.49	1.6	25.81	1,552
5/14/1970	623.57	2.3	16.39	3,509
6/24/1970	115.34	1.6	60.38	452
8/13/1970	36.04	0.2	85.20	18
11/2/1970	281.15	1.4	35.45	963
1/19/1971	111.74	1.1	61.24	301
3/24/1971	291.96	1.8	34.26	1,286
4/26/1971	97.32	1.1	64.20	262
6/3/1971	115.34	1.1	60.38	310
9/22/1971	61.28	0.5	72.98	75
10/28/1971	43.25	0.7	80.91	74
12/29/1971	400.10	2.3	25.60	2,251
3/29/1972	504.63	7.5	20.28	9,259
5/30/1972	191.04	9	47.30	4,206
7/5/1972	180.22	6.6	48.94	2,910
7/27/1972	61.28	4	72.98	600
8/22/1972	50.46	0.8	77.10	99
9/20/1972	50.46	4.8	77.10	593
10/17/1972	93.72	8	65.05	1,834
11/30/1972	569.51	7.2	17.96	10,032
1/4/1973	2094.20	7.2	3.76	36,889
2/14/1973	349.63	8.5	29.16	7,271
3/15/1973	1510.28	8.9	5.87	32,885
4/11/1973	731.71	9.2	13.65	16,469
5/9/1973	454.16	8.7	22.67	9,667
6/6/1973	1986.07	8.2	4.20	39,843
7/11/1973	237.90	8.2	40.43	4,773
8/17/1973	504.63	4.9	20.28	6,049
9/20/1973	50.46	4.1	77.10	506
10/24/1973	46.86	8.6	78.95	986
12/4/1973	652.41	5.8	15.54	9,258
12/28/1973	1622.01	7.3	5.42	28,968
2/27/1974	868.68	8	11.29	17,002
3/26/1974	454.16	8.3	22.67	9,222
4/18/1974	637.99	8.7	15.99	13,579
5/29/1974	1236.34	7.4	7.40	22,383
6/19/1974	594.74	8.8	17.19	12,804
6/28/1974	875.89	7.9	11.17	16,929
7/2/1974	526.25	8.9	19.49	11,459
7/10/1974	519.04	6.5	19.77	8,254
7/17/1974	230.69	6.4	41.41	3,612
8/27/1974	122.55	3.7	59.24	1,109
9/24/1974	54.07	2.2	75.46	291
11/21/1974	367.66	6.7	27.71	6,026
12/17/1974	374.87	6.5	27.28	5,961
7/15/1975	136.97	5.5	56.51	1,843

Data for Nitrate Load Duration Curve | **Observed Data**

BPJ-03 Flow (cfs)	% of Time Exceeded	Nitrate load (kg/day)	Date	BPJ-03 Flow (cfs)	Concentration (mg/l)	Percentile	Nitrate load (kg/day)
114.0	61.1	2,790	9/14/1976	32.44	2.1	88.68	167
115.3	60.5	2,822	1/18/1978	154.99	8.39999	53.44	3,185
118.9	59.9	2,910	1/18/1978	154.99	8.4	53.44	3,185
122.6	59.4	2,998	2/22/1978	97.32	5.99999	64.20	1,429
126.2	58.8	3,086	2/22/1978	97.32	6	64.20	1,429
128.6	58.2	3,146	3/28/1978	2335.70	7.99999	3.25	45,714
129.8	57.7	3,175	3/28/1978	2335.70	8	3.25	45,714
134.2	57.1	3,282	4/17/1978	306.38	8.2	32.76	6,146
137.0	56.6	3,351	5/10/1978	511.84	9.5	20.06	11,896
140.6	56.0	3,439	5/10/1978	511.84	9.49999	20.06	11,896
144.2	55.4	3,527	5/26/1978	356.84	9.29999	28.59	8,119
147.8	54.9	3,616	5/26/1978	356.84	9.3	28.59	8,119
151.4	54.3	3,704	6/26/1978	212.66	7.39999	44.06	3,850
155.0	53.7	3,792	6/26/1978	212.66	7.4	44.06	3,850
158.6	53.2	3,880	7/14/1978	1913.98	6.2	4.37	29,032
162.2	52.6	3,968	8/16/1978	64.88	2.8	71.84	444
163.2	52.0	3,994	9/21/1978	50.46	4.7	77.10	580
165.8	51.5	4,056	10/19/1978	39.65	3.8	83.04	369
169.4	50.9	4,145	11/30/1978	64.88	6.9	71.84	1,095
173.0	50.4	4,233	12/21/1978	75.69	7.8	69.25	1,444
176.6	49.8	4,321	1/11/1979	104.53	9.8	62.81	2,506
180.2	49.2	4,409	2/15/1979	54.07	6.1	75.46	807
183.8	48.7	4,497	3/14/1979	1434.58	9.7	6.27	34,044
187.4	48.1	4,586	4/10/1979	836.24	12	11.74	24,550
191.0	47.5	4,674	5/2/1979	857.87	12	11.43	25,185
194.6	47.0	4,762	6/5/1979	216.27	9	43.25	4,762
198.2	46.4	4,850	6/5/1979	216.27	8.9	43.25	4,709
201.9	45.8	4,938	7/17/1979	154.99	7.6	53.44	2,882
205.5	45.3	5,026	7/17/1979	154.99	7.5	53.44	2,844
209.1	44.7	5,115	8/6/1979	879.49	8	11.09	17,213
212.7	44.2	5,203	9/17/1979	100.93	4.1	63.47	1,012
216.3	43.6	5,291	10/16/1979	57.67	3.8	74.07	536
219.9	43.0	5,379	10/16/1979	57.67	4.1	74.07	578
223.5	42.5	5,467	11/8/1979	54.07	2.3	75.46	304
228.1	41.9	5,580	12/6/1979	108.13	6	61.93	1,587
233.7	41.3	5,717	1/17/1980	90.11	6.5	65.94	1,433
235.9	40.8	5,772	2/27/1980	111.74	7.4	61.24	2,023
241.5	40.2	5,908	3/13/1980	454.16	9	22.67	10,000
245.1	39.6	5,996	5/7/1980	223.48	9.3	42.40	5,085
252.3	39.1	6,173	5/7/1980	223.48	9.4	42.40	5,139
255.9	38.5	6,261	5/27/1980	227.08	13	41.92	7,222
259.5	38.0	6,349	6/16/1980	1005.65	11	9.51	27,064
265.0	37.4	6,483	7/24/1980	68.49	1	70.96	168
270.3	36.8	6,614	8/12/1980	54.07	0.3	75.46	40
273.9	36.3	6,702	9/11/1980	43.25	4.4	80.91	466
281.1	35.7	6,878	10/3/1980	34.96	4	86.90	342
284.8	35.1	6,967	10/28/1980	64.88	2.7	71.84	429
288.5	34.6	7,057	12/9/1980	151.39	3.7	53.98	1,370
295.6	34.0	7,231	12/31/1980	33.16	4.7	88.34	381
302.8	33.4	7,407	1/22/1981	29.56	4.2	90.70	304
306.4	32.9	7,496	2/19/1981	919.14	4.6	10.45	10,344
313.6	32.3	7,672	3/17/1981	82.90	6.9	67.51	1,399
320.8	31.8	7,848	4/23/1981	677.64	12	14.95	19,894
324.4	31.2	7,937	5/21/1981	1059.72	18	8.90	46,667
331.6	30.6	8,113	6/25/1981	821.82	15	11.98	30,159
338.8	30.1	8,289	9/4/1981	461.37	11	22.34	12,416
346.0	29.5	8,466	9/30/1981	3928.88	6.4	1.33	61,517
353.2	28.9	8,642	11/10/1981	248.71	10	39.21	6,085
360.4	28.4	8,818	1/6/1982	1052.51	12	9.01	30,900
367.7	27.8	8,995	3/17/1982	2004.09	9.6	4.15	47,069
376.8	27.2	9,218	4/14/1982	674.04	10	15.01	16,490
385.7	26.7	9,436	5/20/1982	158.60	8	52.84	3,104
392.9	26.1	9,612	6/24/1982	187.43	12	47.81	5,503
403.6	25.6	9,875	8/11/1982	234.29	6.3	40.84	3,611
410.9	25.0	10,053	9/23/1982	50.46	3	77.10	370
425.3	24.4	10,406	11/4/1982	248.71	6	39.21	3,651
432.5	23.9	10,582	12/21/1982	436.14	11	23.62	11,737
443.9	23.3	10,859	2/4/1983	670.43	8.8	15.08	14,434

Data for Nitrate Load Duration Curve

BPJ-03 Flow (cfs)	% of Time Exceeded	Nitrate load (kg/day)
454.2	22.7	11,111
468.6	22.2	11,464
475.8	21.6	11,640
490.2	21.0	11,993
504.6	20.5	12,346
515.4	19.9	12,610
533.5	19.4	13,051
544.3	18.8	13,316
562.3	18.2	13,757
580.3	17.7	14,198
598.3	17.1	14,639
620.0	16.5	15,168
639.5	16.0	15,646
659.6	15.4	16,138
683.1	14.8	16,713
706.5	14.3	17,284
731.7	13.7	17,901
756.9	13.2	18,519
785.8	12.6	19,224
818.2	12.0	20,018
857.9	11.5	20,988
893.9	10.9	21,870
930.0	10.3	22,751
984.0	9.8	24,074
1030.9	9.2	25,221
1091.2	8.7	26,697
1153.4	8.1	28,219
1225.5	7.5	29,982
1296.9	7.0	31,730
1416.6	6.4	34,656
1520.6	5.8	37,200
1677.1	5.3	41,030
1816.7	4.7	44,445
2011.3	4.1	49,207
2162.7	3.6	52,910
2472.7	3.0	60,494
2836.7	2.5	69,401
3320.6	1.9	81,239
3935.6	1.3	96,284
4785.3	0.8	117,072
7893.8	0.2	193,122

Observed Data

Date	BPJ-03 Flow (cfs)	Concentration (mg/l)	Percentile	Nitrate load (kg/day)
3/16/1983	162.20	8.7	52.10	3,452
4/13/1983	1430.98	11	6.29	38,510
5/4/1983	3226.01	5.6	1.98	44,198
6/22/1983	565.90	9.1	18.08	12,599
8/18/1983	43.25	0.89	80.91	94
11/2/1983	198.25	5.9	46.16	2,862
12/8/1983	998.44	9	9.59	21,984
3/15/1984	540.67	8.1	18.91	10,714
4/19/1984	612.76	9.1	16.66	13,642
5/10/1984	335.22	8.8	30.37	7,217
6/21/1984	241.50	8.8	40.00	5,199
7/18/1984	57.67	4.7	74.07	663
8/22/1984	43.25	2.9	80.91	307
9/19/1984	27.03	5.7	92.47	377
11/7/1984	33.16	4.5	88.34	365
12/13/1984	129.76	6.6	57.67	2,095
1/16/1985	75.69	10	69.25	1,852
3/6/1985	1268.78	9.7	7.12	30,109
4/15/1985	666.83	10	15.19	16,314
5/23/1985	165.81	9.4	51.47	3,813
7/2/1985	133.37	13	57.14	4,242
8/19/1985	255.92	7.4	38.29	4,633
9/16/1985	72.09	5.3	70.00	935
10/16/1985	82.90	3.1	67.51	629
12/10/1985	645.20	8.9	15.76	14,049
1/15/1986	147.78	8.4	54.60	3,037
2/20/1986	569.51	8.8	17.96	12,261
3/25/1986	324.40	9.9	31.17	7,857
4/30/1986	144.18	7.3	55.12	2,575
6/17/1986	410.91	12	24.98	12,064
7/15/1986	421.72	4.9	24.48	5,056
8/4/1986	57.67	3.9	74.07	550
9/10/1986	33.52	6.6	88.11	541
10/7/1986	133.37	7	57.14	2,284
12/2/1986	1658.06	9.4	5.32	38,131
1/13/1987	176.62	7.8	49.77	3,370
2/17/1987	414.51	10	24.80	10,141
3/24/1987	194.64	8.3	46.68	3,952
4/28/1987	335.22	10	30.37	8,201
6/2/1987	205.46	6.6	45.15	3,317
7/20/1987	79.30	3.4	68.36	660
9/9/1987	57.67	5.5	74.07	776
11/3/1987	32.44	4.8	88.68	381
12/10/1987	976.81	12	9.82	28,677
1/21/1988	1092.16	6.1	8.62	16,299
3/7/1988	677.64	11	14.95	18,236
4/5/1988	731.71	12	13.65	21,482
5/19/1988	122.55	7.7	59.24	2,309
6/23/1988	50.46	4.8	77.10	593
8/11/1988	39.65	0.16	83.04	16
9/15/1988	21.63	7.1	95.13	376
11/10/1988	151.39	1.9	53.98	704
12/14/1988	64.88	9.4	71.84	1,492
1/19/1989	183.83	12	48.41	5,397
2/23/1989	111.74	11	61.24	3,007
4/13/1989	450.56	16	22.89	17,637
5/10/1989	288.36	15	34.58	10,582
6/20/1989	158.60	15	52.84	5,820
8/2/1989	54.07	5.2	75.46	688
9/14/1989	241.50	7.3	40.00	4,313
11/8/1989	43.25	3.9	80.91	413
12/12/1989	33.88	7.6	87.74	630
1/24/1990	75.69	6.9	69.25	1,278
2/28/1990	1056.11	12	8.97	31,005
3/28/1990	346.03	11	29.42	9,312
5/9/1990	234.29	11	40.84	6,305
7/3/1990	551.49	14	18.51	18,889
8/2/1990	133.37	6.9	57.14	2,251

Data for Nitrate Load Duration Curve			Observed Data				
BPJ-03 Flow (cfs)	**% of Time Exceeded**	**Nitrate load (kg/day)**	**Date**	**BPJ-03 Flow (cfs)**	**Concentration (mg/l)**	**Percentile**	**Nitrate load (kg/day)**
			9/26/1990	39.65	3.3	83.04	320
			11/1/1990	194.64	11	46.68	5,238
			12/10/1990	385.68	12	26.58	11,323
			1/16/1991	3323.33	8.9	1.88	72,362
			3/5/1991	515.44	11	19.92	13,871
			4/3/1991	403.70	11	25.38	10,864
			5/22/1991	313.59	12	32.21	9,206
			6/26/1991	72.09	6.6	70.00	1,164
			8/21/1991	31.00	3.1	89.81	235
			9/30/1991	20.55	5.3	95.69	266
			11/14/1991	38.01	7	84.96	651
			12/18/1991	270.57	12	36.60	7,943
			2/4/1992	207.96	9.6	45.00	4,884
			3/17/1992	177.77	9.9	49.68	4,306
			6/3/1992	70.44	10	70.84	1,723
			7/13/1992	395.79	11	26.04	10,651
			8/12/1992	88.33	10	66.60	2,161
			9/23/1992	35.78	6.1	86.50	534
			11/18/1992	744.63	9.9	13.41	18,035
			12/16/1992	1252.22	9.9	7.25	30,329
			2/1/1993	479.65	10	21.44	11,735
			3/9/1993	3656.04	8.6	1.59	76,923
			4/7/1993	648.47	9.7	15.73	15,389
			5/24/1993	483.00	6	21.26	7,090
			6/28/1993	289.58	8.8	34.53	6,234
			8/18/1993	320.88	6.5	31.62	5,103
			9/28/1993	1744.17	4.3	5.03	18,349
			11/15/1993	1699.44	6	5.19	24,946
			12/20/1993	673.07	7.5	15.06	12,350
			3/2/1994	122.99	6.5	59.11	1,956
			3/29/1994	307.47	5.9	32.74	4,438
			4/28/1994	1565.28	6.8	5.60	26,040
			6/30/1994	73.79	5.5	69.89	993
			8/15/1994	13.42	3.2	98.19	105
			9/6/1994	10.40	1.37	99.35	35
			9/26/1994	25.72	5.3	93.21	333
			11/2/1994	34.66	6.8	87.09	577
			1/4/1995	91.68	6.7	65.80	1,503
			2/1/1995	207.96	8.3	45.00	4,223
			2/27/1995	93.92	5.7	65.02	1,310
			3/29/1995	379.02	6.8	26.97	6,305
			4/26/1995	346.60	6.7	29.40	5,681
			5/11/1995	1788.89	10.6	4.82	46,391
			6/14/1995	225.85	11.2	42.24	6,188
			9/7/1995	20.13	3.2	95.80	158
			10/16/1995	14.53	4.5	97.71	160
			12/12/1995	45.84	8.9	80.64	998
			1/29/1996	190.07	9	47.61	4,185
			2/29/1996	333.18	9.5	30.57	7,744
			3/28/1996	156.53	7.7	53.32	2,949
			4/19/1996	107.33	7.9	62.64	2,074
			5/20/1996	500.89	11.6	20.66	14,215
			7/19/1996	58.14	5	74.02	711
			8/26/1996	31.31	3.1	89.65	237
			10/9/1996	15.65	6.7	97.31	257
			11/25/1996	38.01	4.1	84.96	381
			1/7/1997	289.58	8.4	34.53	5,951
			2/19/1997	521.01	8.9	19.75	11,345
			3/13/1997	612.69	11.47	16.76	17,193
			3/13/1997	612.69	11.5	16.76	17,238
			4/30/1997	165.47	7.9	51.95	3,198
			7/8/1997	222.49	9.1	42.69	4,953
			8/27/1997	59.26	4.5	73.96	652
			9/18/1997	24.60	5	93.78	301
			10/15/1997	17.89	0.01	96.48	0
			11/20/1997	12.30	6.4	98.71	193
			1/6/1998	590.33	7.2	17.37	10,399
			3/13/1998	652.94	12.4	15.53	19,808

Data for Nitrate Load Duration Curve | **Observed Data**

BPJ-03 Flow (cfs)	% of Time Exceeded	Nitrate load (kg/day)	Date	BPJ-03 Flow (cfs)	Concentration (mg/l)	Percentile	Nitrate load (kg/day)
			4/29/1998	317.53	8.66	31.89	6,727
			6/4/1998	250.44	10.02	39.16	6,139
			8/4/1998	1341.67	1.17	6.74	3,840
			8/31/1998	31.31	0.17	89.65	13
			9/28/1998	13.42	0.01	98.19	0
			11/4/1998	53.67	0.27	76.92	35
			12/8/1998	33.54	0.53	87.91	43
			1/3/2000	17.89	0.23	96.48	10
			2/14/2000	29.07	0.46	91.12	33
			3/24/2000	131.93	8.7	57.55	2,808
			6/1/2000	387.97	15	26.53	14,237
			8/15/2000	9.06	1.96	99.55	43
			9/13/2000	12.30	5.02	98.71	151
			10/30/2000	8.39	3.6	99.64	74
			12/13/2000	89.44	10	66.48	2,188
			1/17/2001	167.71	6.9	51.36	2,831
			2/27/2001	4774.10	9.4	0.77	109,791
			3/29/2001	200.13	11	46.07	5,386
			5/2/2001	134.17	7.3	57.04	2,396
			5/29/2001	400.26	7.7	25.58	7,540
			7/19/2001	30.19	1.14	90.36	84
			8/20/2001	23.48	1.99	94.33	114
			10/24/2001	1677.08	7.8	5.25	32,003
			11/28/2001	188.95	6.5	47.69	3,005
			1/17/2002	108.45	9.7	61.88	2,574
			2/19/2002	1104.64	10	8.56	27,025
			3/27/2002	276.16	12	36.13	8,108
			5/8/2002	546.73	13	18.73	17,388
			6/13/2002	952.58	12	10.05	27,966
			7/22/2002	41.37	1.6	82.86	162
			9/4/2002	90.56	3.39	65.86	751
			1/22/2004	195.66	7.86	46.62	3,762
			08/31/06	61.28	2.2	72.98	330
			10/12/06	54.07	4.5	75.46	595
			7/11/2006	176.62	4.9	49.77	2,117
			08/10/06	90.11	5.2	65.94	1,146
			09/28/06	46.86	5.6	78.95	642
			09/14/06	50.46	5.9	77.10	728
			7/26/2006	75.69	6.5	69.25	1,204
			05/09/06	374.87	11	27.28	10,088
			5/25/2006	342.43	11	29.71	9,215
			07/11/06	176.62	4.9	49.77	2,117
			09/28/06	46.86	5.6	78.95	642
			09/14/06	50.46	5.9	77.10	728
			07/26/06	75.69	6.5	69.25	1,204
			05/25/06	342.43	11	29.71	9,215
			06/21/06	165.81	12	51.47	4,868
			06/08/06	187.43	14	47.81	6,420

Data for Nitrate Load Duration Curve

BPJ-08 Flow (cfs)	% of Time Exceeded	Nitrate load (kg/day)
4.1	100.0	101.3
9.9	98.8	242.3
10.8	98.3	264
12.5	97.7	305
13.5	97.1	330
14.4	96.6	352
16.0	96.0	391
17.1	95.4	419
18.0	94.9	441
19.2	94.3	469
20.0	93.7	490
20.9	93.2	511
21.6	92.6	529
22.5	92.1	551
23.2	91.5	568
23.8	90.9	582
24.3	90.4	595
25.2	89.8	617
25.8	89.2	632
26.4	88.7	646
27.0	88.1	661
27.6	87.5	675
28.2	87.0	689
29.0	86.4	710
29.0	85.9	710
29.0	85.3	710
31.9	84.7	781
31.9	84.2	781
31.9	83.6	781
31.9	83.0	781
34.8	82.5	852
34.8	81.9	852
34.8	81.3	852
36.0	80.8	881
37.7	80.2	923
37.7	79.7	923
37.7	79.1	923
40.6	78.5	994
40.6	78.0	994
40.6	77.4	994
43.5	76.8	1065
43.5	76.3	1065
43.5	75.7	1065
46.4	75.1	1136
46.4	74.6	1136
46.8	74.0	1146
49.4	73.5	1207
50.4	72.9	1234
52.3	72.3	1278
54.0	71.8	1322
55.2	71.2	1349
58.1	70.6	1420
58.1	70.1	1420
61.0	69.5	1491
63.9	68.9	1562
63.9	68.4	1562
66.8	67.8	1633
69.7	67.3	1705
69.7	66.7	1705
72.6	66.1	1776
75.5	65.6	1847
76.5	65.0	1873
78.4	64.4	1918
81.3	63.9	1989
83.7	63.3	2049
84.6	62.8	2071
87.1	62.2	2131
90.0	61.6	2202

Observed Data

Date	BPJ-08 Flow (cfs)	Concentration (mg/l)	Percentile	Nitrate load (kg/day)
8/15/01	8.1	1.2	99.4	23.0
8/5/86	46.4	1.7	74.1	193.2
10/11/01	36.0	2.0	80.7	176.2
8/31/06	49.4	2.8	73.0	338.1
8/31/06	49.4	2.9	73.0	350.1
9/2/97	29.7	4.6	85.1	334.4
7/3/01	48.6	4.7	73.9	559.1
10/6/05	40.6	5.2	77.1	517.0
11/1/05	386.1	5.2	21.4	4,911.9
11/1/05	386.1	5.2	21.4	4,911.9
8/10/06	72.6	5.5	65.9	976.5
9/28/06	37.7	5.5	78.9	507.8
9/28/06	37.7	5.7	78.9	526.3
9/14/06	40.6	6.2	77.1	616.5
7/11/06	142.2	6.4	49.8	2,227.2
9/14/06	40.6	6.4	77.1	636.4
10/23/85	226.4	6.6	35.5	3,656.2
7/26/06	61.0	6.7	69.3	999.3
5/25/06	275.8	11.0	29.7	7,421.8
6/21/06	133.5	13.0	51.5	4,247.1
6/6/06	174.2	16.0	43.2	6,818.1
6/26/06	116.1	9.3	55.1	2,636.3
8/9/06	72.6	5.0	65.9	894.9
10/11/06	43.5	4.3	75.5	459.2

Data for Nitrate Load Duration Curve | **Observed Data**

BPJ-08 Flow (cfs)	% of Time Exceeded	Nitrate load (kg/day)	Date	BPJ-08 Flow (cfs)	Concentration (mg/l)	Percentile	Nitrate load (kg/day)
91.8	61.1	2247					
92.9	60.5	2273					
95.8	59.9	2344					
98.7	59.4	2415					
101.6	58.8	2486					
103.6	58.2	2533					
104.5	57.7	2557					
108.1	57.1	2644					
110.3	56.6	2699					
113.2	56.0	2770					
116.1	55.4	2841					
119.0	54.9	2912					
121.9	54.3	2983					
124.8	53.7	3054					
127.7	53.2	3125					
130.6	52.6	3196					
131.5	52.0	3216					
133.5	51.5	3267					
136.4	50.9	3338					
139.3	50.4	3409					
142.2	49.8	3480					
145.1	49.2	3551					
148.1	48.7	3622					
151.0	48.1	3693					
153.9	47.5	3764					
156.8	47.0	3835					
159.7	46.4	3906					
162.6	45.8	3977					
165.5	45.3	4048					
168.4	44.7	4119					
171.3	44.2	4190					
174.2	43.6	4261					
177.1	43.0	4332					
180.0	42.5	4403					
183.7	41.9	4494					
188.2	41.3	4604					
190.0	40.8	4648					
194.5	40.2	4758					
197.4	39.6	4829					
203.2	39.1	4972					
206.1	38.5	5043					
209.0	38.0	5114					
213.4	37.4	5221					
217.7	36.8	5327					
220.6	36.3	5398					
226.4	35.7	5540					
229.3	35.1	5611					
232.3	34.6	5684					
238.0	34.0	5824					
243.9	33.4	5966					
246.8	32.9	6037					
252.6	32.3	6179					
258.4	31.8	6321					
261.3	31.2	6392					
267.1	30.6	6534					
272.9	30.1	6676					
278.7	29.5	6818					
284.5	28.9	6960					
290.3	28.4	7102					
296.1	27.8	7244					
303.5	27.2	7424					
310.6	26.7	7599					
316.4	26.1	7741					
325.1	25.6	7953					
330.9	25.0	8096					
342.6	24.4	8381					
348.4	23.9	8523					
357.5	23.3	8746					

Data for Nitrate Load Duration Curve			Observed Data				
BPJ-08 Flow (cfs)	% of Time Exceeded	Nitrate load (kg/day)	Date	BPJ-08 Flow (cfs)	Concentration (mg/l)	Percentile	Nitrate load (kg/day)
365.8	22.7	8949					
377.4	22.2	9233					
383.2	21.6	9375					
394.8	21.0	9659					
406.4	20.5	9943					
415.1	19.9	10156					
429.6	19.4	10511					
438.4	18.8	10724					
452.9	18.2	11079					
467.4	17.7	11434					
481.9	17.1	11790					
499.3	16.5	12216					
515.1	16.0	12601					
531.2	15.4	12997					
550.2	14.8	13460					
569.0	14.3	13920					
589.3	13.7	14417					
609.6	13.2	14915					
632.9	12.6	15483					
659.0	12.0	16122					
690.9	11.5	16903					
719.9	10.9	17613					
749.0	10.3	18324					
792.5	9.8	19389					
830.3	9.2	20312					
878.9	8.7	21501					
929.0	8.1	22727					
987.0	7.5	24147					
1044.5	7.0	25555					
1140.9	6.4	27912					
1224.6	5.8	29961					
1350.7	5.3	33045					
1463.1	4.7	35795					
1619.9	4.1	39630					
1741.8	3.6	42613					
1991.4	3.0	48721					
2284.6	2.5	55894					
2674.4	1.9	65429					
3169.6	1.3	77545					
3854.0	0.8	94288					
6357.5	0.2	155538					

Data for Nitrate Load Duration Curve

BPJ-10 Flow (cfs)	% of Time Exceeded	Nitrate load (kg/day)
4.1	100.0	99.3
9.7	98.8	237.5
10.6	98.3	259.1
12.2	97.7	299.3
13.2	97.1	323.9
14.1	96.6	345.5
15.7	96.0	382.9
16.8	95.4	410.3
17.7	94.9	431.9
18.8	94.3	459.5
19.6	93.7	480.3
20.5	93.2	501.2
21.2	92.6	518.3
22.1	92.1	539.8
22.8	91.5	556.9
23.3	90.9	570.9
23.8	90.4	583.0
24.7	89.8	604.6
25.3	89.2	619.6
25.9	88.7	633.5
26.5	88.1	647.8
27.0	87.5	661.4
27.6	87.0	675.3
28.5	86.4	696.2
28.5	85.9	696.2
28.5	85.3	696.2
31.3	84.7	765.8
31.3	84.2	765.8
31.3	83.6	765.8
31.3	83.0	765.8
34.1	82.5	835.4
34.1	81.9	835.4
34.1	81.3	835.4
35.3	80.8	863.8
37.0	80.2	905.0
37.0	79.7	905.0
37.0	79.1	905.0
39.8	78.5	974.6
39.8	78.0	974.6
39.8	77.4	974.6
42.7	76.8	1044.2
42.7	76.3	1044.2
42.7	75.7	1044.2
45.5	75.1	1113.9
45.5	74.6	1113.9
45.9	74.0	1122.9
48.4	73.5	1183.5
49.4	72.9	1209.3
51.2	72.3	1253.1
53.0	71.8	1295.6
54.1	71.2	1322.7
56.9	70.6	1392.3
56.9	70.1	1392.3
59.8	69.5	1461.9
62.6	68.9	1531.5
62.6	68.4	1531.5
65.4	67.8	1601.2
68.3	67.3	1670.8
68.3	66.7	1670.8
71.1	66.1	1740.4
74.0	65.6	1810.0
75.0	65.0	1835.5
76.8	64.4	1879.6
79.7	63.9	1949.2
82.1	63.3	2008.2
83.0	62.8	2029.8
85.4	62.2	2088.5
88.2	61.6	2158.1

Observed Data

Date	BPJ-10 Flow (cfs)	Concentration (mg/l)	Percentile	Nitrate load (kg/day)
8/6/86	48.4	2.7	73.0	319.5
8/30/06	54.1	3.1	71.0	410.0
8/31/06	48.4	3.3	73.0	390.5
10/9/85	31.3	4.8	83.0	367.6
7/11/06	139.4	5.0	49.8	1,705.6
9/2/97	29.1	5.1	85.1	363.4
8/9/06	71.1	5.5	65.9	957.2
7/12/06	409.8	5.6	19.8	5,613.8
8/10/06	71.1	5.7	65.9	992.0
10/12/06	42.7	5.7	75.5	595.2
9/27/06	37.0	5.9	78.9	534.0
7/25/06	56.9	6.1	70.0	849.3
9/28/06	37.0	6.1	78.9	552.1
7/26/06	59.8	6.2	69.3	906.4
10/12/06	42.7	6.5	75.5	678.8
9/14/06	39.8	7.6	77.1	740.7
9/13/06	45.5	7.8	74.1	868.8
7/7/97	192.4	9.4	39.9	4,425.0
5/23/06	173.6	11.0	42.8	4,671.2
5/8/06	276.0	12.0	29.2	8,103.3
6/8/06	148.0	12.0	47.8	4,344.0
5/25/06	270.3	12.0	29.7	7,936.2
6/19/06	276.0	13.0	29.2	8,778.6
6/21/06	130.9	13.0	51.5	4,163.0
6/8/06	148.0	14.0	47.8	5,068.0

Data for Nitrate Load Duration Curve			Observed Data				
BPJ-10 Flow (cfs)	% of Time Exceeded	Nitrate load (kg/day)	Date	BPJ-10 Flow (cfs)	Concentration (mg/l)	Percentile	Nitrate load (kg/day)
90.0	61.1	2202.6					
91.1	60.5	2227.7					
93.9	59.9	2297.3					
96.7	59.4	2366.9					
99.6	58.8	2436.6					
101.5	58.2	2483.3					
102.4	57.7	2506.2					
105.9	57.1	2591.3					
108.1	56.6	2645.4					
111.0	56.0	2715.0					
113.8	55.4	2784.6					
116.7	54.9	2854.3					
119.5	54.3	2923.9					
122.4	53.7	2993.5					
125.2	53.2	3063.1					
128.0	52.6	3132.7					
128.9	52.0	3152.7					
130.9	51.5	3202.3					
133.7	50.9	3271.9					
136.6	50.4	3341.6					
139.4	49.8	3411.2					
142.3	49.2	3480.8					
145.1	48.7	3550.4					
148.0	48.1	3620.0					
150.8	47.5	3689.6					
153.7	47.0	3759.3					
156.5	46.4	3828.9					
159.3	45.8	3898.5					
162.2	45.3	3968.1					
165.0	44.7	4037.7					
167.9	44.2	4107.3					
170.7	43.6	4177.0					
173.6	43.0	4246.6					
176.4	42.5	4316.2					
180.1	41.9	4405.1					
184.5	41.3	4513.1					
186.2	40.8	4556.3					
190.7	40.2	4664.3					
193.5	39.6	4733.9					
199.2	39.1	4873.1					
202.0	38.5	4942.7					
204.9	38.0	5012.3					
209.2	37.4	5117.7					
213.4	36.8	5221.2					
216.3	36.3	5290.8					
222.0	35.7	5430.0					
224.8	35.1	5499.7					
227.7	34.6	5571.2					
233.3	34.0	5708.5					
239.0	33.4	5847.7					
241.9	32.9	5917.4					
247.6	32.3	6056.6					
253.3	31.8	6195.8					
256.1	31.2	6265.4					
261.8	30.6	6404.7					
267.5	30.1	6543.9					
273.2	29.5	6683.1					
278.9	28.9	6822.4					
284.6	28.4	6961.6					
290.2	27.8	7100.8					
297.4	27.2	7277.1					
304.5	26.7	7448.9					
310.2	26.1	7588.1					
318.6	25.6	7795.4					
324.4	25.0	7936.2					
335.8	24.4	8214.7					
341.5	23.9	8353.9					
350.4	23.3	8572.7					

Data for Nitrate Load Duration Curve			Observed Data				
BPJ-10 Flow (cfs)	% of Time Exceeded	Nitrate load (kg/day)	Date	BPJ-10 Flow (cfs)	Concentration (mg/l)	Percentile	Nitrate load (kg/day)
358.5	22.7	8771.6					
369.9	22.2	9050.1					
375.6	21.6	9189.3					
387.0	21.0	9467.8					
398.4	20.5	9746.2					
406.9	19.9	9955.1					
421.1	19.4	10303.2					
429.7	18.8	10512.0					
443.9	18.2	10860.1					
458.1	17.7	11208.2					
472.4	17.1	11556.2					
489.4	16.5	11973.9					
504.9	16.0	12351.7					
520.7	15.4	12739.7					
539.3	14.8	13193.8					
557.7	14.3	13644.7					
577.6	13.7	14132.0					
597.6	13.2	14619.3					
620.3	12.6	15176.3					
645.9	12.0	15802.8					
677.2	11.5	16568.6					
705.7	10.9	17264.7					
734.1	10.3	17960.9					
776.8	9.8	19005.1					
813.8	9.2	19910.1					
861.5	8.7	21075.6					
910.6	8.1	22277.1					
967.5	7.5	23669.4					
1023.9	7.0	25048.8					
1118.3	6.4	27359.0					
1200.4	5.8	29367.6					
1324.0	5.3	32390.7					
1434.1	4.7	35086.4					
1587.8	4.1	38845.7					
1707.3	3.6	41769.5					
1952.0	3.0	47756.5					
2239.4	2.5	54787.7					
2621.4	1.9	64133.6					
3106.9	1.3	76010.2					
3777.7	0.8	92421.5					
6231.7	0.2	152458.8					

Attachment 3. Fecal Coliform Load Duration Worksheets

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Data for Fecal Coliform Load Duration Curve

BPJ-03 Flow (cfs)	% of Time Exceeded	Fecal load (cfu/day)
5.1	99.99	2.52E+10
12.3	98.82	6.02E+10
13.4	98.25	6.57E+10
15.5	97.69	7.58E+10
16.8	97.13	8.21E+10
17.9	96.56	8.75E+10
19.8	96.00	9.70E+10
21.2	95.44	1.04E+11
22.4	94.87	1.09E+11
23.8	94.31	1.16E+11
24.9	93.74	1.22E+11
26.0	93.18	1.27E+11
26.8	92.62	1.31E+11
28.0	92.05	1.37E+11
28.8	91.49	1.41E+11
29.6	90.93	1.45E+11
30.2	90.36	1.48E+11
31.3	89.80	1.53E+11
32.1	89.24	1.57E+11
32.8	88.67	1.61E+11
33.5	88.11	1.64E+11
34.2	87.55	1.68E+11
35.0	86.98	1.71E+11
36.0	86.42	1.76E+11
36.0	85.86	1.76E+11
36.0	85.29	1.76E+11
39.6	84.73	1.94E+11
39.6	84.16	1.94E+11
39.6	83.60	1.94E+11
39.6	83.04	1.94E+11
43.3	82.47	2.12E+11
43.3	81.91	2.12E+11
43.3	81.35	2.12E+11
44.7	80.78	2.19E+11
46.9	80.22	2.29E+11
46.9	79.66	2.29E+11
46.9	79.09	2.29E+11
50.5	78.53	2.47E+11
50.5	77.97	2.47E+11
50.5	77.40	2.47E+11
54.1	76.84	2.65E+11
54.1	76.28	2.65E+11
54.1	75.71	2.65E+11
57.7	75.15	2.82E+11
57.7	74.58	2.82E+11
58.1	74.02	2.85E+11
61.3	73.46	3.00E+11
62.6	72.89	3.06E+11
64.9	72.33	3.18E+11
67.1	71.77	3.28E+11
68.5	71.20	3.35E+11
72.1	70.64	3.53E+11
72.1	70.08	3.53E+11
75.7	69.51	3.70E+11
79.3	68.95	3.88E+11
79.3	68.39	3.88E+11
82.9	67.82	4.06E+11
86.5	67.26	4.23E+11
86.5	66.69	4.23E+11

Observed Data

Date	BPJ-03 Flow (cfs)	Concentration (cfu/100 ml)	Percentile	Fecal load (cfu/day)
5/18/99	516.5	900	19.9	1E+13
6/21/99	216.9	70	43.2	4E+11
8/12/99	20.1	50	95.8	2E+10
6/1/00	388.0	290	26.5	3E+12
7/17/00	43.6	100	80.8	1E+11
8/15/00	9.1	700	99.6	2E+11
10/30/00	8.4	10	99.6	2E+09
5/2/01	134.2	20	57.0	7E+10
5/29/01	400.3	60	25.6	6E+11
7/19/01	30.2	30	90.4	2E+10
8/20/01	23.5	150	94.3	9E+10
10/24/01	1677.1	690	5.3	3E+13
5/8/02	546.7	1200	18.7	2E+13
6/13/02	952.6	3400	10.0	8E+13
7/22/02	41.4	50	82.9	5E+10
9/4/02	90.6	160	65.9	4E+11
10/8/02	28.0	39	91.9	3E+10
5/6/03	954.8	2000	10.0	5E+13
6/18/03	367.8	230	27.7	2E+12
7/30/03	180.0	170	49.6	7E+11
9/4/03	1274.6	500	7.1	2E+13
10/23/03	118.5	60	60.2	2E+11
5/18/04	373.4	330	27.4	3E+12
6/28/04	281.8	3400	35.4	2E+13
8/10/04	126.2	220	58.4	7E+11
9/14/04	36.0	280	85.2	2E+11
10/19/04	115.3	210	60.4	6E+11
6/29/05	90.1	210	65.9	5E+11
8/24/05	50.5	340	77.1	4E+11
9/13/05	43.3	145	80.9	2E+11
5/9/06	374.9	38000	27.3	3E+14
5/25/06	342.4	63	29.7	5E+11
5/25/06	342.4	99	29.7	8E+11
6/8/06	187.4	350	47.8	2E+12
6/21/06	165.8	280	51.5	1E+12
6/21/06	165.8	380	51.5	2E+12
7/10/06	100.9	300	63.5	7E+11
7/11/06	176.6	8700	49.8	4E+13
7/26/06	75.7	27	69.3	5E+10
8/10/06	90.1	1200	65.9	3E+12
8/29/06	90.1	520	65.9	1E+12
8/31/06	61.3	81	73.0	1E+11
9/14/06	50.5	340	77.1	4E+11
9/21/06	50.5	135	77.1	2E+11
10/12/06	54.1	81	75.5	1E+11
10/24/06	79.3	86	68.4	2E+11
10/25/06	72.1	117	70.0	2E+11

Data for Fecal Coliform Load Duration Curve

BPJ-03 Flow (cfs)	% of Time Exceeded	Fecal load (cfu/day)	Observed Data: Date	BPJ-03 Flow (cfs)	Concentration (cfu/100 ml)	Percentile	Fecal load (cfu/day)
90.1	66.13	4.41E+11					
93.7	65.57	4.59E+11					
95.0	65.00	4.65E+11					
97.3	64.44	4.76E+11					
100.9	63.88	4.94E+11					
104.0	63.31	5.09E+11					
105.1	62.75	5.14E+11					
108.1	62.19	5.29E+11					
111.7	61.62	5.47E+11					
114.0	61.06	5.58E+11					
115.3	60.50	5.64E+11					
118.9	59.93	5.82E+11					
122.6	59.37	6.00E+11					
126.2	58.81	6.17E+11					
128.6	58.24	6.29E+11					
129.8	57.68	6.35E+11					
134.2	57.11	6.57E+11					
137.0	56.55	6.70E+11					
140.6	55.99	6.88E+11					
144.2	55.42	7.06E+11					
147.8	54.86	7.23E+11					
151.4	54.30	7.41E+11					
155.0	53.73	7.58E+11					
158.6	53.17	7.76E+11					
162.2	52.61	7.94E+11					
163.2	52.04	7.99E+11					
165.8	51.48	8.11E+11					
169.4	50.92	8.29E+11					
173.0	50.35	8.47E+11					
176.6	49.79	8.64E+11					
180.2	49.23	8.82E+11					
183.8	48.66	9.00E+11					
187.4	48.10	9.17E+11					
191.0	47.53	9.35E+11					
194.6	46.97	9.53E+11					
198.2	46.41	9.70E+11					
201.9	45.84	9.88E+11					
205.5	45.28	1.01E+12					
209.1	44.72	1.02E+12					
212.7	44.15	1.04E+12					
216.3	43.59	1.06E+12					
219.9	43.03	1.08E+12					
223.5	42.46	1.09E+12					
228.1	41.90	1.12E+12					
233.7	41.34	1.14E+12					
235.9	40.77	1.15E+12					
241.5	40.21	1.18E+12					
245.1	39.64	1.20E+12					
252.3	39.08	1.23E+12					
255.9	38.52	1.25E+12					
259.5	37.95	1.27E+12					
265.0	37.39	1.30E+12					
270.3	36.83	1.32E+12					
273.9	36.26	1.34E+12					
281.1	35.70	1.38E+12					
284.8	35.14	1.39E+12					
288.5	34.57	1.41E+12					
295.6	34.01	1.45E+12					
302.8	33.45	1.48E+12					

Data for Fecal Coliform Load Duration Curve

BPJ-03 Flow (cfs)	% of Time Exceeded	Fecal load (cfu/day)	Observed Data: Date	BPJ-03 Flow (cfs)	Concentration (cfu/100 ml)	Percentile	Fecal load (cfu/day)
306.4	32.88	1.50E+12					
313.6	32.32	1.53E+12					
320.8	31.76	1.57E+12					
324.4	31.19	1.59E+12					
331.6	30.63	1.62E+12					
338.8	30.06	1.66E+12					
346.0	29.50	1.69E+12					
353.2	28.94	1.73E+12					
360.4	28.37	1.76E+12					
367.7	27.81	1.80E+12					
376.8	27.25	1.84E+12					
385.7	26.68	1.89E+12					
392.9	26.12	1.92E+12					
403.6	25.56	1.98E+12					
410.9	24.99	2.01E+12					
425.3	24.43	2.08E+12					
432.5	23.87	2.12E+12					
443.9	23.30	2.17E+12					
454.2	22.74	2.22E+12					
468.6	22.18	2.29E+12					
475.8	21.61	2.33E+12					
490.2	21.05	2.40E+12					
504.6	20.48	2.47E+12					
515.4	19.92	2.52E+12					
533.5	19.36	2.61E+12					
544.3	18.79	2.66E+12					
562.3	18.23	2.75E+12					
580.3	17.67	2.84E+12					
598.3	17.10	2.93E+12					
620.0	16.54	3.03E+12					
639.5	15.98	3.13E+12					
659.6	15.41	3.23E+12					
683.1	14.85	3.34E+12					
706.5	14.29	3.46E+12					
731.7	13.72	3.58E+12					
756.9	13.16	3.70E+12					
785.8	12.60	3.85E+12					
818.2	12.03	4.00E+12					
857.9	11.47	4.20E+12					
893.9	10.90	4.37E+12					
930.0	10.34	4.55E+12					
984.0	9.78	4.82E+12					
1030.9	9.21	5.04E+12					
1091.2	8.65	5.34E+12					
1153.4	8.09	5.64E+12					
1225.5	7.52	6.00E+12					
1296.9	6.96	6.35E+12					
1416.6	6.40	6.93E+12					
1520.6	5.83	7.44E+12					
1677.1	5.27	8.21E+12					
1816.7	4.71	8.89E+12					
2011.3	4.14	9.84E+12					
2162.7	3.58	1.06E+13					
2472.7	3.01	1.21E+13					
2836.7	2.45	1.39E+13					
3320.6	1.89	1.63E+13					
3935.6	1.32	1.93E+13					
4785.3	0.76	2.34E+13					
7893.8	0.20	3.86E+13					

Attachment 4. Responsiveness Summary

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Responsiveness Summary

This responsiveness summary responds to substantive questions and comments received during the public comment period from July 26, 2007 through August 17, 2006 postmarked, including those from the August 9, 2007 public meeting discussed below.

What is a TMDL?

A Total Maximum Daily Load (TMDL) is the sum of the allowable amount of a pollutant that a water body can receive from all contributing sources and still meet water quality standards or designated uses. The Salt Fork Vermilion River watershed Stage 3 TMDL report details the necessary reduction in pollutant loads to the impaired water bodies to ensure compliance with applicable water quality standards. The Illinois EPA implements the TMDL program in accordance with Section 303(d) of the federal Clean Water Act and regulations thereunder.

Background

The watershed targeted for TMDL development is the Salt Fork Vermilion River watershed, which originates in Champaign County and flows through Vermilion County. The watershed encompasses an area of approximately 320,000 acres (500 square miles). Land use in the watershed is predominately agriculture. Ten stream segments and one lake in the Salt Fork Vermilion watershed are listed as being impaired according to the *Illinois Integrated Water Quality Report and Section 303(d) List-2006.* . The Clean Water Act and USEPA regulations require that states develop TMDLs for waters on the Section 303(d) List. Illinois EPA is currently developing TMDLs for pollutants that have numeric water quality standards. Therefore TMDLs were developed for the segments listed below. A TMDL for Homer Lake was approved by USEPA in October, 2006.

Impaired waterbodies and the causes for which TMDLs are addressed in this report are as follows—Spoon Branch segment BPJD-02: dissolved oxygen; Salt Fork Vermilion River segment BPJ-08: nitrate and pH; Salt Fork Vermilion River segment BPJ-10: nitrate and pH; Salt Fork Vermilion River segment BPJ-03: nitrate and total fecal coliform.
The Illinois EPA contracted with Tetra Tech, Inc., to prepare the Stage 1 and Stage 2 reports, and with Limno Tech, Inc. for preparing the Stage 3 report for the Salt Fork Vermilion River watershed.

Public Meetings

Public meetings were held in the Village of Royal on December 13, 2005 and August 9, 2007. The Illinois EPA provided public notice for both meetings by placing display ads in the Champaign News Gazette. This notice gave the date, time, location, and purpose of the meeting. The notice also provided references to obtain additional information about this specific site, the TMDL Program and other related issues. Approximately 123 individuals and organizations were also sent the public notice by first class mail. The draft TMDL Report was available for review at the Champaign County Soil and Water

Conservation District office, the Vermilion County Soil and Water Conservation District office, as well as the Agency's website at http://www.epa.state.il.us/public-notices .

The Stage 3 public meeting started at 6:00 p.m. on Tuesday, August 7, 2007. It was attended by approximately 12 people and concluded at 7:45 p.m. with the meeting record remaining open until midnight, August 17, 2007.

Questions and Comments

1. How many IEPA sampling stations are on the Salt Fork segments?

   Response: There are three stations used by IEPA in collecting water quality data: BPJ-03, BPJ-07, and BPJ-08.

2. Was Boneyard Creek de-listed?

   Response: No. According to the *Illinois Integrated Water Quality Report and Section 303(d) List-2006,* Boneyard Creek segment BPJCA is listed as impaired for aquatic life use. The causes of impairments are DDT, Hexachlorobenzene, and PCBs. These pollutants were detected in the sediment, and do not have numeric water quality standards. At this time, Illinois EPA develops TMDLs for pollutants with numeric water quality standards, so a TMDL was not developed for this segment.

3. Does fecal coliform have an impact on aquatic life in the streams?

   Response: Fecal coliform is not harmful to aquatic life. It is used as an indicator for the potential presence of other harmful bacteria and pathogens. The standard for fecal coliform is to protect humans from ingesting water through primary contact, such as swimming or water skiing.

4. Can you identify the species source of fecal coliform through testing?

   Response: Laboratory DNA analysis is available to distinguish the sources that contribute the bacteria in the water. Illinois EPA labs currently do not use this analysis because of the high costs associated with such analyses.

5. Is the disinfection exemption different from a chlorine exemption?

   Response: The term "chlorine exemption" is not found anywhere in Illinois Pollution Control Board or Illinois EPA regulations. The term came about in the late 1980's when the Board was considering regulatory revisions to the disinfection requirements of 35 Ill. Adm. Code 304. At that time chlorination was the only method of disinfection utilized in all of Illinois. Because of this, many facilities began referring to disinfection exemptions as "chlorine exemptions".

6. Are there any incentives or enforcement for nonpoint source pollution?

Response: Illinois EPA has no regulatory authority over nonpoint sources. There are grant and cost-share program incentives to assist with installation of nonpoint source best management practices. These are identified in the Implementation Plan Section of the TMDL report.

7. Did you rule out point sources as pollutant contributors?

   Response: Point sources were ruled out as pollutant contributors to observed pH impairments through a review of discharge monitoring data; there were no violations of the pH permit limits. Point sources were also ruled out as nitrate contributors. The effect of point sources on instream nitrate concentrations is greatest during lower stream flows, when their relative contribution was highest. As shown in the nitrate load duration curves, no nitrate violations were observed during low flow conditions.

   Point sources were not ruled out as pollutant contributors for fecal coliform. There are ten point sources in the watershed, which have disinfection exemptions. Nine of these currently have year-round disinfection exemptions. All of these treatment plants are required to comply with the geometric mean fecal coliform water quality standard of 200 cfu/100ml at the closest point downstream where recreational use occurs in the receiving water, or where the water flows into a fecal-impaired segment. IEPA may require facilities with year-round disinfection exemptions to provide the Agency with updated information to demonstrate compliance with these requirements. Facilities directly discharging into a fecal-impaired segment may have their year-round disinfection exemption revoked through future NPDES permitting actions.

8. Is there an NPDES permit for nitrates?

   Response: Managers in the section responsible for issuing NPDES permits are not aware of any NPDES permits in the state of Illinois that contain limits for nitrates. However, a few industrial facilities are required to monitor for nitrates in their treated wastewater. Regulating nitrates is somewhat complex in that many nitrogen-contained compounds are converted to nitrates once discharged into waters. Ammonia and organic nitrogen compounds are converted to the more stable nitrate compounds by natural processes in waters. Some states have therefore regulated total nitrogen in NPDES permits which authorize discharges into nitrate-sensitive watersheds.

9. It is unfortunate that this and other TMDL studies prepared for Illinois watersheds fail to make use of all existing data. It is our understanding

that many researchers from universities and consulting firms are issued collection permits by Illinois Department of Natural Resources (IDNR) whenever they collect specimens from waters of the State. Such is known to be the case for the Spoon River where University of Illinois professors have collected fish and analyzed the data under contract to the U.S. Environmental Protection Agency. Since the State maintains records of such collection permits, and since many of the studies are taxpayer-funded, why are such data not analyzed as part of the TMDL studies conducted for Illinois watersheds?

Response: Illinois EPA utilizes data that is readily available and that is not of questionable quality. Simply because someone has collected data does not mean that Illinois EPA or our consultants have access to this data.

Illinois EPA routinely requests that if any entity has data that they wish to be used in the TMDL process that they submit it. Simply because data has been collected does not mean that the data is suitable for use in TMDL studies or that we are aware of existence of such data. During Stage 1 of this TMDL, we requested that those that had data in this watershed so inform us and that such data be made available to us. The TMDL was developed utilizing the data that was available to us. In short, if we do not have the data, we cannot use the data.

10. For Spoon Branch, insufficient evidence is provided to support the conclusion for the cause of low dissolved oxygen. Sediment oxygen demand and other key parameters in the model were not measured, and some calculated values were manually overridden without sound justification in order to force the model results to match the measured data. The draft Stage 3 report presents only a weakly-supported hypothesis about the cause of low DO and the potential for eliminating the impairment. The hypothesis was derived from a modeling exercise, and we do not object to that. Our objection focuses on the lack of SOD measurements, the lack of evidence of zero reaeration, and the absence of any investigation of sediment origin.

    Response: In spite of the lack of SOD measurements, sufficient data on other water quality parameters allowed us to confidently rule out other direct sources such as the Gifford STP and the direct impact of nonpoint sources as the cause of the dissolved oxygen problems. Through the process of elimination and multiple model scenario runs, SOD was identified as the only remaining oxygen sink. Because DO violations have only been observed during low flow conditions and because the effect of SOD on instream dissolved oxygen decreases as

flow increases, low flow was determined to be the cause of the low DO. Furthermore, the reaeration rate in the model is not set at zero.

11. The impaired segment BPJD of the Spoon Branch has been studied in great detail by a fluvial geomorphologist (Bruce Rhoads) and aquatic ecologist Edwin Herricks, both professors at the University of Illinois. Frequent observations have also been made by Prairie Rivers Network during the last 4 years in connection with a dredging project that was conducted just upstream of the two sampling stations. Based on these observations, it is possible to propose another equally valid hypothesis for evaluation before this Stage 3 report is finalized.

    Response: Illinois EPA was and still is interested in the other "equally valid hypothesis" for this stream. During the implementation of this TMDL, latitude is available for additional, more specific, monitoring and for further refinement of causes as well as for practices that address a high array of problems (see comment and response 12). Should information become available, we will consider the information and whether or not the conclusions reached in this TMDL are still valid. However, at this time, Illinois EPA remains confident that point sources permitted by Illinois EPA are not the cause of the low dissolved oxygen in Spoon Branch (see comment and response 10) and is proceeding with finalization of this TMDL report. Illinois EPA notes that information regarding this watershed was requested in 2005 during the Stage 1 TMDL public notice process (see comment and response 9) and remains open to working with those that may have additional information on this watershed throughout the TMDL implementation process.

12. The low DO in the Spoon Branch is caused by maintenance practices in the upstream channel and tributaries. By maintaining the banks in an inherently unstable configuration, bank failures release significant amounts of organic matter that is generally transported through the high-gradient reaches, and likely to be deposited in the low-gradient reaches near the mouth. Moreover maintenance practices that periodically remove the benches that form at the toes of the banks not only induce bank failures, but also widen the channel bottom by a factor of 3 or more. Such activities destroy the inset channel and slow the flow, depositing smaller particles of sediment as the dredged segments attempt to re-establish stable benches and low flow channels as described by Rhoads et al. Finally to ensure access for these maintenance activities, the banks are clear-cut and maintained free of trees, allowing sunlight to produce algal blooms that exacerbate the magnitude of DO fluctuations. The narrow low flow channels are easily shaded by the tall grasses and other vegetation that grows atop the benches, but when the channel bottom is widened by dredging the water surface is exposed to sunlight for nearly

the entire day. We respectfully request that this hypothesis be given equal weight in the final Stage 3 report, and that additional data and analysis be done to ensure that the real cause of the degradation is found.

Response: Thank you for your comment. The implementation plan includes practices such as stream bank stabilization and riparian buffers, which may address the problems you mention.

13. The draft report was prematurely declared “complete” without collecting enough data to identify the pollutants causing the pH violations, or identifying their sources. We respectfully request that sufficient data be obtained to identify the causes and sources of the impairment before the Stage 3 report is finalized.

    Response: The implementation plan leaves open the opportunity to sample, as necessary, to further refine and quantify sources of high pH in the Salt Fork Vermilion River. USEPA guidance directs states to use readily available data for developing TMDLs. Since this data is not readily available, the TMDL will be submitted to USEPA. Based on preliminary discussion with USEPA Region V, the pH TMDLs developed for the Salt Fork Vermilion River will not be approved, since pollutant loads have not been identified.

14. In regards to the nitrate and fecal impairments, the Draft Stage 3 report determined that substantial reductions in these pollutants were required. It allocated certain loads to existing point sources, and the remainder to existing nonpoint dischargers. However it did not address the following question: “What about new point sources that may be added in the future? Whose allocation would be reduced in order to accommodate the growth? How would such decisions be made?

    Response: The TMDL should identify pollutant loading and load reductions necessary to remedy the impairment. Implementation strategies to achieve those reductions will be developed around known and anticipated loads within the tributary watershed. For existing sources whose permits are expiring and scheduled for renewal, the agency will incorporate whatever additional monitoring may be needed to support development of the TMDL and upon approval by USEPA of a TMDL, any effluent load reductions specified for those specific sources in the TMDL will be incorporated into each permit. Should new point sources emerge that were not anticipated in the TMDL, a review and possible revision of the TMDL may be necessary. It is very difficult if not impossible to speculate at this stage what ultimate requirements may be placed upon new sources. It would be prudent that anyone proposing new development explore alternatives that do not necessitate additional discharges into impaired water bodies in the Salt Fork Vermilion River watershed. If

new loading is determined to be necessary it may require revision of the TMDL and affiliated load allocations.

15. The draft report also fails to identify contributions of specific sources, point or nonpoint, to the overall load. We request that additional data be collected and such determinations be made before the report is finalized.

    Response: The report identifies loads for each point source and the rest is allocated to nonpoint source. As correctly indicated in the comments, different nonpoint source contributions are not identified. That data is simply not available and specific estimates were not quantified. The implementation plan suggests that further monitoring could be conducted to determine the loadings from specific nonpoint sources. Individual point sources in the watershed may be asked to submit effluent data so that their impacts on the impaired segments can be more accurately quantified.

16. Finally the draft report does not address the following questions suggested by the data presented: Why are there no nitrate violations in the upper part of the watershed, where the type of corn/bean agriculture is the same as in the downstream parts that are impaired? Does the failure to address such questions reveal a lack of interest on the part of the authors in identifying the sources of the pollution sources that are causing the impairments?

    Response: Stream segments upstream of Salt Fork Vermilion River segment BPJ-10 are not designated as being used as public water supplies. The nitrate standard only applies to segments that are designated as public water supplies. Therefore, the report does not specifically address nitrate loads upstream of segment BPJ-10 because the water quality standard does not apply to those upstream segments. However, since the TMDL program uses a watershed approach, the best management practices that are recommended in the implementation plan for reducing nitrate in the impaired segments apply to the entire watershed.

17. In its present form the Draft Stage 3 report provides insufficient information for development of an implementation plan. This deficiency must be remedied before an implementation plan can be developed.

    Response: The implementation plan acknowledges that additional water quality data and investigation of specific nonpoint sources is the first step in identifying priority areas for implementing best management practices. The TMDL implementation plan is intended to be used as a planning document for local stakeholders to use in developing a more specific, locally-led plan.

18. The draft report states that an "adaptive management" approach should be taken to achieve water quality standards, based on entirely voluntary actions taken by landowners. Such an approach requires that the actions taken must be large enough to be measured, to enable the next "adaptation" to be based on sound science. Given the magnitude of some of the reductions percentage reductions required (e.g. nitrate and bacteria), it seems obvious that a purely voluntary approach is certain to be inadequate, in the absence of multi-million dollar subsidies being made available to the "volunteers".

Response: Thank you for your comment.

19. It seems disingenuous to recommend proceeding with such an implementation approach in light of the findings of this draft report. Therefore we ask that the final version of this draft report provide answers to the following questions:

    a) Based on the Agency's experiences in similar locations, what is a realistic estimate of the cost ($/ton) of reducing nitrate runoff from nonpoint sources?

Response: There are numerous factors which make it difficult to estimate the cost of reducing pollutant loads in terms of dollars per unit of pollutant from nonpoint source runoff. Different practices yield different percent reductions. Costs can be based on installing/ adopting and maintaining practices, and lost revenue may also be taken into consideration. A particular practice's reduction potential is often site specific, and is difficult to quantify on a watershed scale. Any combination of adopted practices will yield different reductions with different costs.

    b) What is your best estimate of funding for such activities that are likely to be provided to the watershed from state and federal sources?

Response: It is difficult to estimate funding that may be available in the future. Many of the federal agriculture conservation programs mentioned in the implementation plan are based on the 2002 Farm Bill, which expires the end of September 2006. A new 2007 Farm Bill is currently being written, and at this time it is unknown what programs it will include and the dollar amounts allocated to each program, or what share of those dollars will be allocated to Champaign and Vermilion Counties. Likewise, the funds allocated to state programs depend on how much is allocated in each year's state budget. USEPA 319 funds available to Illinois changes each federal fiscal year as well, and this funding has decreased over the last few years. 319 funding for an individual watersheds depends on the scope

of the project and the needs of other watershed projects throughout the state, as the application process is competitive.

c) At the rate implied by the answers to the two foregoing questions, how long is it likely to take to eliminate the nitrate impairments from the Salt Fork of the Vermilion River?

Response: Since implementation of nonpoint sources is entirely voluntary and because future funding is unknown, it is difficult to establish a timeframe for the stream to meet the water quality standard.

d) Please provide answers to the corresponding questions for pH and fecal coliform impairments.

Response: The answers given above are not unique to nitrates and also apply to pH and fecal coliform.

20. Figure 1 should indicate the numbers of additional USGS gauging stations, particularly 03336645 since it was discussed in the report.

    Response: Response: Figure 1 has been revised as suggested.

21. We agree with the approach of using load duration curves for the nitrate TMDLs because this method is simple and technically sound and provides a good visual tool for analysis.

    Response: Thank you for your comment.

22. The load duration curves demonstrate that nitrate is a wet weather problem. This implies that wastewater treatment plants (WWTPs) are not the primary cause of the impairment. The point source wasteload allocations (WLAs) are significantly lower than the nonpoint source load allocations (LAs) at high flows and are even significantly less than the margin of safety (MOS). Considering the method used to set the WLAs, this indicates the WWTPs are a negligible source of nitrate at high flows.

    Response: We agree with the principles indicated in this comment, but note that authorization of any proposed future loadings from point sources likely to increase pollutants for which the water remains impaired must comply with state and federal regulations.

23. The IEPA is developing water quality standards for nutrients now, with expected completion in 2008. These may include a total nitrogen (TN) limit, which would include nitrate. We believe that the WWTPs shouldn't be asked to meet a 10 mg/L nitrate WLA now when we don't yet know if and at what level the future total nitrogen standard will be set. The capital

cost for UCSD to comply with new nitrate or TN limits will likely be in the millions of dollars; therefore, it would be best to wait until the water quality standards are set so the UCSD has more accurate information with which to plan and design the necessary improvements.

Response: We conceptually agree with this comment, but note that NPDES regulations require compliance with existing water quality standards at the time of permit issuance. This federal requirement remains in effect even though a water quality standard is being revised.

24. The IEPA should consider sampling the stream reaches upstream of BPJ-10 before finalizing and implementing WLAs at all WWTPs. As noted in the implementation plan, sources are not yet well-defined.

Response: Illinois EPA is not likely going to be able to provide additional sampling outside of our routine basin-intensive and facility-related stream surveys due to resource constraints. However, the implementation plan leaves open the opportunity for additional data to be collected for further refinement of allocations.

25. The implementation plan does not indicate how or when the WLAs will be implemented. It appears the implementation focus will be primarily on nonpoint sources, which is appropriate since nitrate violations appear to be a wet weather phenomenon. We request that when and if the WLAs are incorporated into WWTP permits, they be incorporated as concentration-based permit limits and not as mass limits. This approach allows for future growth, and the TMDL report acknowledges that this approach is consistent with water quality standards.

Response: Concentration-based wasteload allocations (WLAs) are inconsistent with intent of the federal Clean Water Act in total maximum daily load (TMDL) development. The "L" in TMDL stands for load, and TMDLs are required to contain WLAs in units of mass (or, in the case of bacterial TMDLs, colony-forming units) per day. States generally do not have the flexibility to express WLAs in units of concentration.

26. Based on the above points, we suggest setting the nitrate WLAs at current effluent nitrate concentrations for now. Implementation of nonpoint source reductions could begin immediately as suggested in the implementation plan. When new water quality standards for TN are implemented, some of the WWTP WLAs can be reallocated to nonpoint source load allocations if necessary.

Response: The TMDL, because of the impairment, is based on the existing not to exceed 10 mg/L nitrate standard for public water

supplies (PWS). Illinois EPA does not expect that the PWS standard will be changed when (or if) total nitrogen standards are put in place for general use waters. WLAs have been established for the stream flows where this standard has been violated. For wastewater treatment facilities, the WLAs are based on DMF for stream flows where the discharge is expected to be above the DAF, which is consistent with the current load limits in NPDES permits. As expressed in the previous response to comments, Illinois EPA is unable to express WLAs in terms of concentration.

27. The permit expiration date for UCSD should be corrected in Table 7 on page 41. The correct expiration date is May 31, 2011.

    Response: Thank you for your comment. The report will be corrected.

28. For the most part, we liked the approach of using a load duration curve for the fecal coliform TMDL because it is simple and provides a good visual tool for analysis. However, it does not account for fecal coliform decay as noted in the TMDL report and as discussed below. The report text should also make it clear that the load duration curve was developed using the target of 200 cfu/100 mL rather than the fecal coliform water quality standard. The 200 cfu/100 mL standard is actually a 30-day geometric mean, and it doesn't appear that enough data were collected (five samples within a 30-day period) to determine compliance with this part of the standard. Use of a 200 cfu/100 mL target is also a concern to us.

    Response: The report does state that the fecal coliform target is a not-to-exceed value of 200 cfu/100mL. This target is considered a conservative value in meeting the geometric mean portion of the standard. You are correct that die-off calculations were not employed for each facility when developing the TMDL. Because of the conservatism used in the TMDL for fecal coliform, we are not applying an explicit margin of safety, but instead are using the conservatism of the TMDL develop as an implicit margin of safety. A margin of safety is required by the federal Clean Water Act to be included in all TMDLs. In the future, facilities within the watershed may be asked to submit total fecal coliform effluent data for the purposes of determining their individual impact on Salt Fork Vermilion River segment BPJ-03.

29. Having two implicit margins of safety may be overly conservative. Regarding decay, UCSD's limited stream monitoring data (May 2005) indicates some decay between the effluent and a downstream station on Saline Branch segment BPJC-06. Considerably more decay would be expected in the 43 miles between UCSD's outfall and BPJ-03. Combining this conservativeness with a target of 200 cfu/100 mL maximum (rather than 200 cfu/100 mL geometric mean) may lead to overly restrictive limits

for WWTPs, particularly those that are located far upstream of BPJ-03.

Response: Illinois EPA does not believe at this point that this TMDL will result in overly restrictive limits for wastewater treatment plants. However, should more restrictive limits be required in the future to ensure compliance with water quality standards, wastewater treatment plants through the NPDES permit renewal process have the opportunity to gather additional data and perform studies to demonstrative and further refine the appropriate permit limitations.

30. The new permit limit for UCSD's Northeast WWTP effluent fecal coliform (400 cfu/mL daily maximum) was presumably intended to meet water quality standards in Saline Branch. Since Saline Branch and several downstream segments of the Salt Fork Vermillion River are not listed as impaired for fecal coliform, a more restrictive limit for UCSD does not appear justified.

    Response: The TMDL target for Waste Load Allocations does not apply to end of pipe effluent; it applies to meeting 200 cfu/100mL at the beginning of Salt Fork Vermilion River segment BPJ-03. Illinois EPA experience with wastewater treatment plants indicates that facilities that disinfect using a properly designed and operated system generally discharge at a level much lower than 400 cfu/100 mL. Illinois EPA can consider revising the fecal coliform limitation in the UCSD permit to be the fecal coliform water quality standard if so requested during the permit renewal.

31. After disinfection is implemented at UCSD's Northeast WWTP, we expect 90 to 95 percent removal or more of WWTP-related fecal coliform in Saline Branch BP JC-06.

    Response: Thank you for your comment.

32. We suggest the IEPA sample stream reaches upstream of BPJ-08 before finalizing and implementing WLAs at the WWTPs. Currently, the sources of fecal coliform are not well-defined.

    Response: See response to question 24.

33. The implementation plan does not explicitly indicate how or when the WLAs will be implemented. We request that when and if they are incorporated into WWTP permits, the WLAs be incorporated as concentration-based permit limits and not cfu/day limits. Using concentration-based limits allows for future growth, and the TMDL report acknowledges that this approach is consistent with water quality standards.

Response: A concentration-based approach is not consistent with the requirements of the federal Clean Water Act. See response to question 25.

34. We request the WLA for UCSD be set at its new permit limit (400 cfu/100mL daily maximum) or possibly higher, based on the above arguments.

Response: The WLA for UCSD will remain at meeting 200 cfu/100ml at the beginning of segment BPJ-03. The end of pipe discharge of 400 cfu/100ml will remain in effect unless Illinois EPA determines that alternative fecal coliform limits are appropriate.