Water Quality Analysis of Eutrophication for Piney Run Reservoir, Carroll County, MD

FINAL

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List of Abbreviations

CC-WRPP	Carroll County Water Resource Planning Division
cfs	Cubic Feet per Second
COMAR	Code of Maryland Regulation
CWA	Clean Water Act
DNR	Department of Natural Resources
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
m	Meters
MDE	Maryland Department of the Environment
mg/l	Milligrams Per Liter
mi^2	Square miles
NCHF	North Central Hardwood Forest
NGP	Northern Glaciated Plain
NLF	Northern Lakes and Forest
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSI	Trophic State Index
WCBP	Western Corn Belt Plains
WPP	Watershed Protection Plan
WQLS	Water Quality Limited Segment
µg/l	Micrograms Per Liter

EXECUTIVE SUMMARY

Section 303(d) of the federal Clean Water Act (CWA) and the U.S Environmental Protection Agency's (EPA) implementing regulations direct States to identify and list waters, known as water quality limited segments (WQLSs), in which current required controls of a specified substance are inadequate to achieve water quality standards. For each WQLS, the State is to either establish a Total Maximum Daily Load (TMDL) of the specified substance that the waterbody can receive without violating water quality standards, or demonstrate that water quality standards are being met.

Piney Run Reservoir in the South Branch Patapsco River watershed (02-13-09-08) was identified on Maryland's 1998 list of WQLSs as being impaired by nutrients and sediments. The sediment impairment was addressed in the "Water Quality Analysis of Sedimentation for Piney Run Reservoir in Carroll County, Maryland," approved by EPA in November 2003. The current report provides an analysis of recent nutrient-related monitoring data, which show that water quality parameters associated with nutrients fall within the State's standards at the present time. Piney Run Reservoir thus currently meets its designated use. However, the reservoir is borderline between mesotrophic and eutrophic status with respect to nutrient supply, biological productivity, water clarity, and oxygen depletion in the hypolimnion.

Because the data fall just within the State's water quality standards and the watershed is located in a rapidly developing area, Maryland Department of the Environment (MDE) will require that Carroll County develop a Watershed Protection Plan (WPP), otherwise MDE will develop a TMDL to assure the necessary protections. The WPP is to protect the quality of the water supply source, manage a recreational water resource, and monitor the effects of changes in the watershed that might generate new pollutant sources. MDE believes such a plan is needed to ensure that there is no additional degradation of water quality that could threaten the reservoir, and will protect water quality sooner and more effectively than a TMDL. Barring the receipt of any contradictory data, this report will be used to remove Piney Run Reservoir from the 303(d) list on the understanding that a WPP will be completed. Although the waters of Piney Run Reservoir do not display signs of eutrophication caused by excessive nutrients, the State reserves the right to require additional pollution controls in the watershed if evidence suggests that nutrients from the basin are contributing to downstream water quality problems.

1.0 INTRODUCTION

Section 303(d) of the federal Clean Water Act (CWA) and U.S. Environmental Protection Agency (EPA)'s implementing regulations direct each State to identify and list waters, known as water quality limited segments (WQLSs), in which current required controls of a specified substance are inadequate to achieve water quality standards. This list of impaired waters is commonly referred to as the "303(d) list". For each WQLS, the State is to either establish a Total Maximum Daily Load (TMDL) of the specified substance that the waterbody can receive without violating water quality standards, or demonstrate that water quality standards are being met.

A segment identified as a WQLS might not require the development and implementation of a TMDL if current information contradicts the previous finding of an impairment. Based on EPA's guidance for water quality-based decisions, the reasons obviating the need for a TMDL are as follows: (1) recent data indicate that the impairment no longer exists (*i.e.*, water quality standards are being met); (2) more recent and updated water quality modeling demonstrates that the waterbody attains standards; (3) refinements to water quality standards, or the interpretation of those standards, result in the attainment of the standard; and (4) corrections are made to errors in the original listing. Scenario 1 applies to Piney Run Reservoir. However, recent information shows that the reservoir is at the threshold of impairment and, therefore, warrants a Watershed Protection Plan (WPP).

Piney Run Reservoir, in the South Branch Patapsco River watershed (02-13-09-08), was identified on Maryland's 1998 303(d) list of WQLSs as being impaired by nutrients and sediments. The 1998 listing was prompted by an assessment of data associated with Piney Run Reservoir (Maryland Department of Natural Resources [DNR], 1995). This report provides more recent information that describes Piney Run Reservoir as being close to, but not exceeding, the applicable water quality standards associated with nutrient loading. The sediment impairment was addressed separately in 2003.

The reservoir is borderline between mesotrophic and eutrophic with respect to nutrient supply, biological productivity, water clarity, and oxygen depletion in the hypolimnion. Because the current water quality is close to the threshold of criteria for nutrients and the watershed lies in a rapidly developing area, Piney Run Reservoir warrants a WPP to protect the lake and to prevent any increase in phosphorus loads.

The remainder of this report describes the general setting of the Piney Run Reservoir watershed, presents a discussion of the water quality characterization process, and provides conclusions with regard to the characterization. The data suggest that Piney Run Reservoir is at or near its capacity to assimilate nutrient loads without violating water quality standards.

2.0 GENERAL SETTING

Piney Run Reservoir is an impoundment located near Eldersburg in Carroll County, Maryland (Figure 1). The impoundment, which is owned by the Carroll County Commissioners, lies on Piney Run, a tributary of the South Branch of the Patapsco River. An earthen dam was installed in 1974 for the purpose of water supply, flood control and creating the lake for recreational uses.

Piney Run Reservoir lies in the Piedmont ecoregion, which occurs between the Appalachian Mountains and the Atlantic Coastal Plain on the East Coast. Topography is rolling to moderately hilly, soils are varied, the land use is a mixture of forest, agricultural and developed, and there are few natural lakes (none in Maryland). The soils immediately surrounding the lake are the Glenelg-Chester-Manor association (Soil Conservation Service, 1969). These soils are generally well drained, chiefly rolling and hilly, micaceous soils that are deep over mica schist. The outer watershed area is comprised of soils of the Glenelg-Manor-Mt. Airy association. These soils are well drained and somewhat excessively drained, mainly hilly soils that are deep and moderately deep over schist.

Inflow to the lake is primarily via Piney Run and one unnamed tributary. Discharge from the reservoir is to Piney Run, which discharges to the South Branch Patapsco River. Land use in the watershed draining to Piney Run Reservoir is predominantly agricultural (Figure 2). Land use distribution in the watershed is approximately 24% developed, 22% forested/herbaceous, 4% open water, and 50% agricultural (Figure 3) (Maryland Department of Planning, 1997).

There is one point source contribution within the watershed. The South Carroll High School Wastewater Treatment Plant (NPDES Permit MD0024589) is operated by Carroll County Bureau of Utilities. Treated effluent is discharged into Piney Run. This facility has a permitted flow discharge of 50,000 GPD. Monitored parameters include BOD, TSS, TP, TN, and flow (see Appendix A).

Several relevant statistics for Piney Run Reservoir are provided below in Table 1.

Table 1. Current Physical Characteristics of Piney Run Reservoir

Location:	Carroll County, MD lat. 39.39^{o} long. 76.98^{o}
Surface Area:	298 acres = (12,763,080ft^2) = (1,185,729m^2)
Length:	1.24 mi
Maximum Width:	1200 feet
Average Lake Depth:	26 feet
Maximum Depth:	54.4 feet
Purpose	Water Supply, Recreation and Flood Control
Basin Code	02-13-09-08
Volume of Lake:	7,748 acre-feet (9,557,017 m^3)
Drainage Area to Lake:	10.4 mi^2
Average Discharge:	12.8 cfs

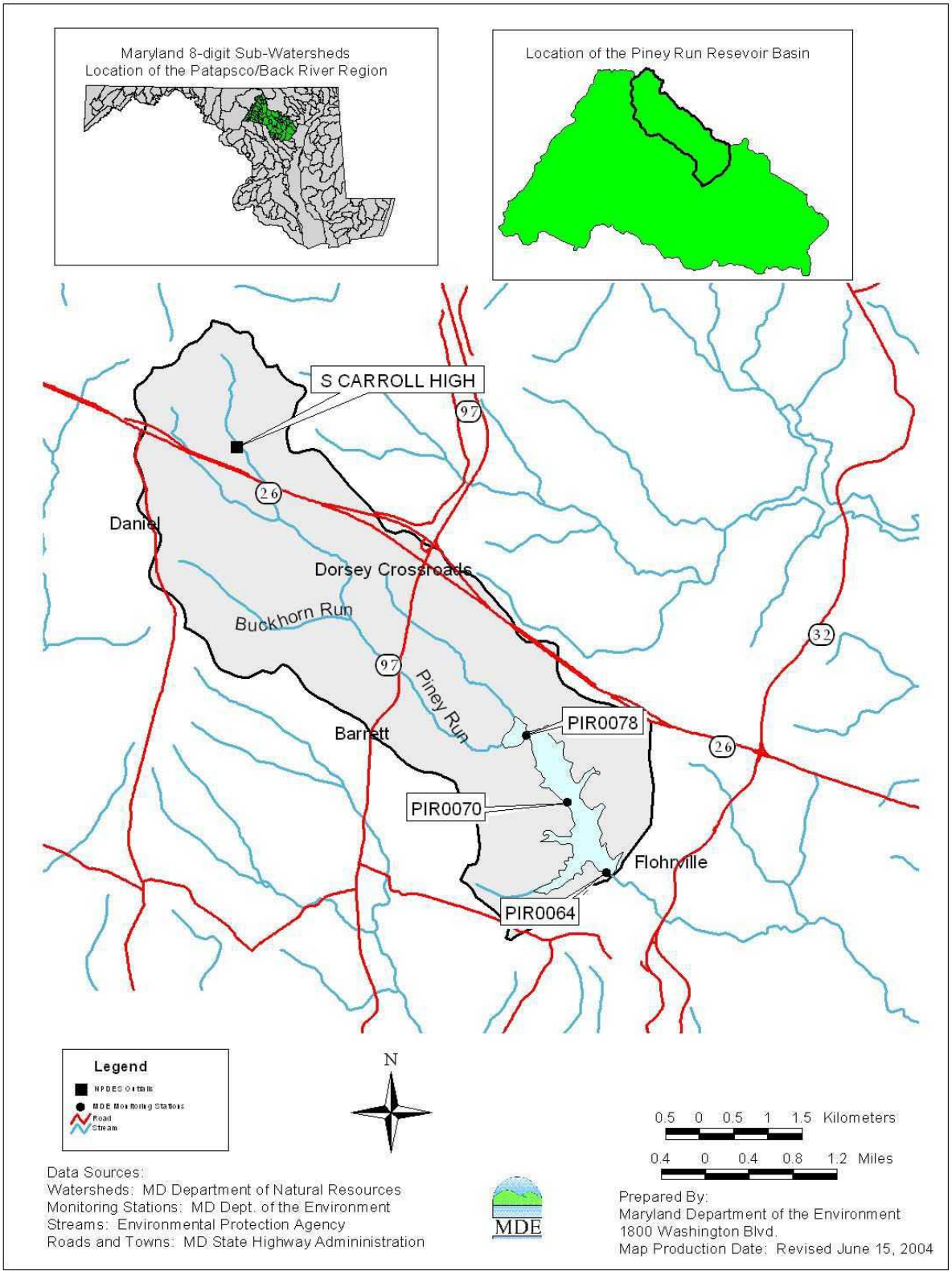

Figure 1. Location Map of Piney Run Reservoir in Carroll County, MD

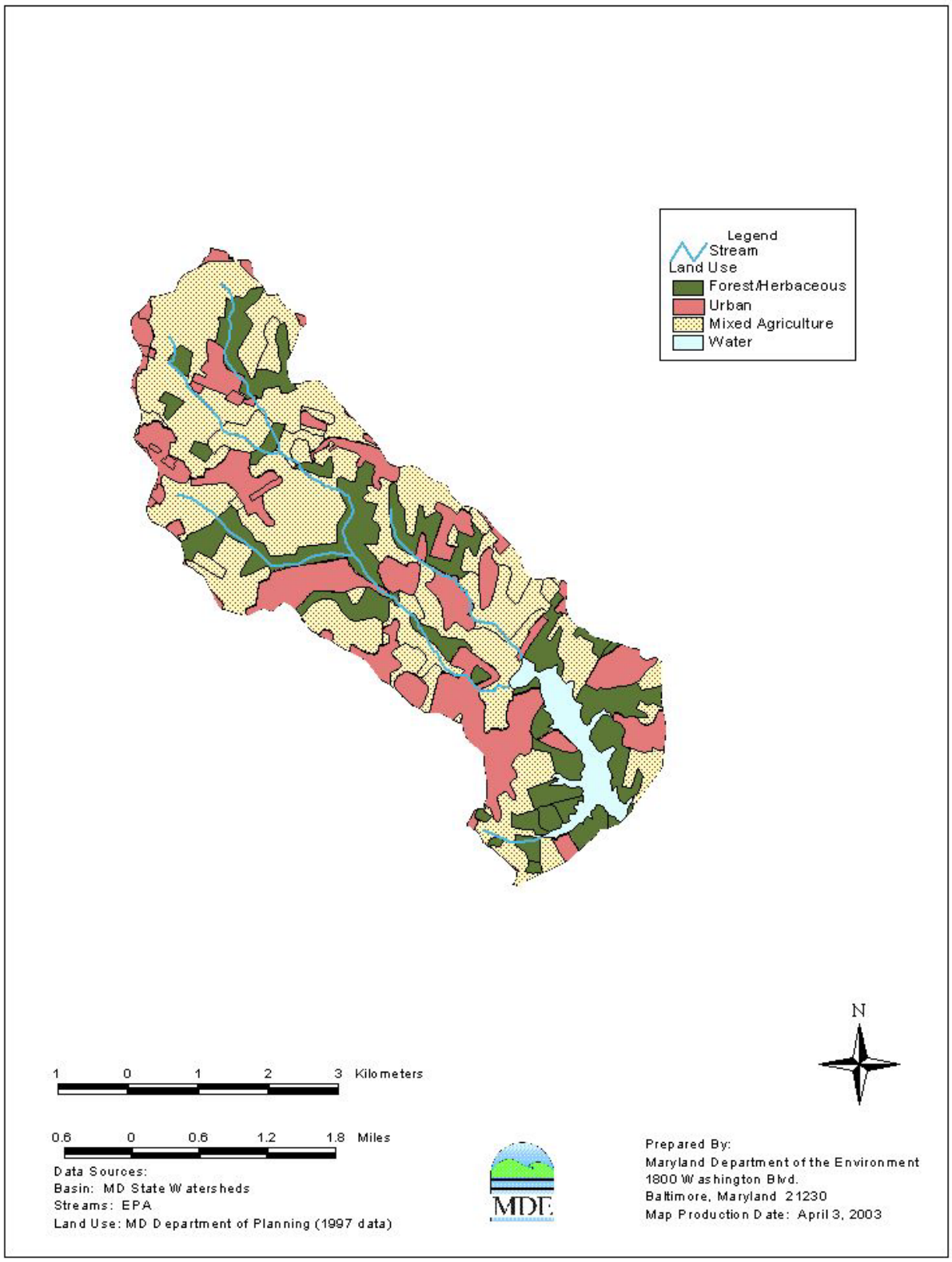

Figure 2. Predominant Land Use in the Piney Run Reservoir Watershed

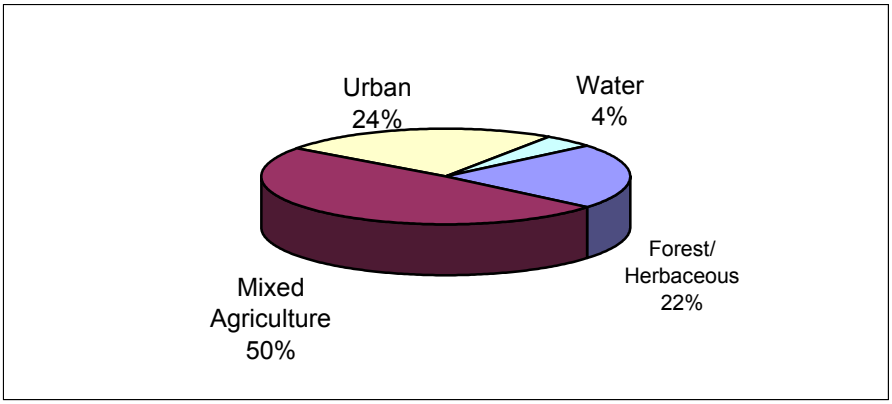

Figure 3. Land Use in Drainage Basin of Piney Run Reservoir

3.0 WATER QUALITY CHARACTERIZATION

Piney Run Reservoir was identified in the *Maryland Lake Water Quality Assessment Report* (DNR, 1993) as having nuisance levels of algae and dissolved oxygen (DO) levels below 2.0 mg/l in the lower one-half to two-thirds of the water column during stratification. As a result of this evaluation, Piney Run Reservoir was added to Maryland's 1998 303(d) list.

Piney Run Reservoir was monitored in October, November and December of 1999 and in 2000 (January through August) (MDE, 2000). Water samples were collected from a vertical profile of the water column. The Chesapeake Biological Laboratory analyzed samples for total phosphorus (TP), soluble orthophosphorus, nitrate and nitrite, total nitrogen (TN), total organic solvents and chlorophyll *a*. Physical measurements of depths, water temperatures, pH, conductivity and DO were recorded in the field from mainly the surface, and occasionally from middle and lower portions of the water column. Detailed water quality data are presented in Tables A1 through A11 (Appendix A). Carroll County Water Resource Planning Division's available monitoring data from 1991 to 2002 were also examined.

3.1 WATER QUALITY STANDARDS

A water quality standard is the combination of a designated use for a particular body of water and the water quality criteria established to protect that use. Designated uses include activities such as swimming, drinking water supply, and trout propagation and harvest. Water quality criteria consist of narrative statements and numeric values designed to protect the designated uses. Criteria may differ among waters with different designated uses.

Maryland's General Water Quality Criteria prohibit pollution of waters of the State by any material in amounts sufficient to create a nuisance or interfere directly or indirectly with designated uses. See Code of Maryland Regulations (COMAR) 26.08.02.03B(2). Excessive eutrophication, indicated by elevated levels of chlorophyll *a*, can produce nuisance levels of algae that interfere with designated uses such as fishing and swimming. Maryland's water

quality standards presently do not impose a limit on the concentration of nutrients in the water column.[1] Rather, Maryland manages nutrients indirectly by limiting their effects expressed in terms of excess algal growth and low DO. Piney Run Reservoir, an impoundment on a tributary of the Piney Run near Eldersburg, has been designated a Use III-P waterbody, pursuant to which it is protected for water contact recreation, natural trout waters and public water supply. See COMAR 26.08.02.02B. Use III-P waters are subject to a DO criterion of not less than 5.0 mg/l at any time, with minimum daily average of not less than 6 mg/l (COMAR 26.08.02.03-3E) unless natural conditions result in lower levels of DO (COMAR 26.08.02.03A). The DO concentration in the deeper portions of reservoirs occasionally falls below 5.0 mg/l due to natural thermal stratification.

The Use III-P designation requires that the reservoir not become eutrophic. An endpoint, seeking to preserve and enhance the mesotrophic status of the reservoir, is a maximum permissible chlorophyll *a* level of 10 μg/l. This corresponds approximately to a Carlson's Trophic State Index (TSI) of 53, which is at the boundary between mesotrophic and eutrophic condition (Carlson, 1977). Although designated as a drinking water supply, the reservoir is not currently used for that purpose.

Other states have adjusted their trophic-state expectation for lakes or impoundments with differing uses. Minnesota, for example, uses an ecoregion-based approach. Heiskary (2000) reports that individuals utilizing lakes for recreational purposes (water contact, fishing) demanded relatively clear, less enriched lakes in the Northern Lakes and Forest (NLF) and North Central Hardwood Forest (NCHF) ecoregions. In the Western Corn Belt Plains (WCBP) and Northern Glaciated Plains (NGP) ecoregions, however, users accepted relatively greater enrichment and less clarity. Under Minnesota's classification system, lakes in the NLF and NCHF ecoregions are considered to fully meet use support with Trophic State Indices (TSIs) of about 53 and 57, respectively. Lakes in the other two ecoregions, both of which are largely agricultural, are considered to fully support use with TSIs of about 60 (Heiskary, 2000).

[1] Maryland limits the ammonia form of nitrogen from wastewater treatment plants, due to its toxic effects on some aquatic organisms.

4.0 ASSESSMENT OF EUTROPHICATION

4.1 Nutrients

Nitrogen and phosphorus are essential nutrients for algae growth. However, common types of algae require different amounts of these two nutrients. If one nutrient is available in great abundance relative to the other nutrient, then the nutrient that is less available restricts the amount of plant matter that can be produced, regardless of the amount of the other nutrient that is available. This latter nutrient is called the "limiting nutrient".

In general, an N:P ratio in the range of 5:1 to 10:1 by mass is associated with plant growth being limited by neither phosphorus nor nitrogen. If the N:P ratio is greater than 10, phosphorus tends to be limiting, and if the N:P ratio is less than 5, nitrogen tends to be limiting (Chiandani et al., 1974). Examination of the TN:TP ratio indicates that Piney Run Reservoir is phosphorus limited; thus, efforts to manage nutrients should be focused on phosphorus. As mentioned earlier, Maryland's water quality standards presently do not place a limit on the concentration of nutrients in the water column. Rather, Maryland manages nutrients indirectly by limiting their effects expressed in terms of excess algal growth and low DO.

4.2 Dissolved Oxygen

Water temperatures taken during the sampling period ranged from 20.5°C to 29.5°C in the surface water depth (0 to1foot column); 9.3°C to 24.2°C in the 21 to 35 foot water column; and 8.8°C to 14.3°C in the 37 to 47 foot water column (CC-WRPD, 2001 (data goes to 2002)) (Table A9).

DO concentrations ranged from 0 to greater than 10 mg/l along the vertical profile. During the 2001 sampling period (July through September), DO concentrations as high as 9.2 mg/l were observed at the surface (0 -1foot depth) of Piney Run Reservoir, with DO values as low as 0.04 mg/l at a depth of 41 to 47 feet. Summer depth/DO profiles in other years were similar (see Table A9). Thermal stratification is a natural phenomenon that occurs seasonally in deeper lakes. The stratification of lakes isolates the deep water from the surface water, preventing the exchange of oxygen. This results in some degree of low DO in the water below the layer of stratification.

Oxygen depletion occurs discontinuously, coincident with the depth at which thermal stratification was observed (*i.e.*, about 22 feet and below) during the sampling events. Observed hypolimnetic DO concentrations fall below 10% saturation. This observation suggests that the reservoir is at the threshold of eutrophy (Table A9).

4.3 Chlorophyll *a*

Instantaneous chlorophyll *a* concentrations ranging from 0.0 to 77.25 µg/l were observed in Piney Run Lake (CC-WRPD, 2001; MDE, 2002) (Figure 1A). While not extreme when compared to peak concentrations (10 to 275 µg/l) in eutrophic lakes (Olem and Flock, 1990), a

chlorophyll *a* concentration of 10 µg/l is typically associated with the boundary between eutrophic and mesotrophic states of a lake (Chapra, 1997).

MDE analyzed growing-season chlorophyll *a* data (May through October) collected by Carroll County, and MDE. About 10 percent of the combined data (13 of 124) were abovethe 10mg/l target[2]. Considering only growing season data collected by both agencies, 9.7 percent of the chlorophyll *a* data exceeded 10 µg/l.

4.4 Conclusion

The data presented in this report indicate that water quality parameters associated with nutrient loading in Piney Run Reservoir fall just within the State's standards. Barring any contradictory future data, this information provides sufficient justification to revise Maryland's 303(d) list to remove the nutrient listing for Piney Run Reservoir. The data presented in this report, however, do suggest that Piney Run Reservoir is at the threshold of euthrophy, as indicated by chlorophyll *a* concentrations occasionally exceeding 10 µg/l. Similarly, the hypolimnetic DO concentrations approaching zero indicate that the lake is approaching eutrophic status.

5.0 RECOMMENDATION

Because Piney Run Reservoir is at the threshold of impairment, and because the watershed lies in a rapidly developing area, MDE will require that a Watershed Protection Plan (WPP) be developed by Carroll County for Piney Run Reservoir or MDE will develop a TMDL. The WPP will address current, potential and new phosphorus loadings, and must ensure that phosphorus loadings will not increase. MDE believes that a detailed WPP, combined with a Water Quality Analysis, will better protect the reservoir against further degradation because nonpoint sources dominate the phosphorus loading in the watershed, and the legal requirements for nonpoint source reductions under a TMDL are not clear. The proposed plan will need to be comprehensive in scope, including detailed monitoring, anti-degradation language, and expectations regarding best management practices including those for new development. MDE's current watershed cycling strategy targets the Upper Western Shore region—which includes the Piney Run watershed—for sampling again in 2007; substantial progress toward the goal of the WPP is expected to be apparent at that time. A formal TMDL will be developed in the event Piney Run Reservoir becomes impaired in the future.

6.0 PUBLIC PARTICIPATION

Public notification of the State's intent to address the nutrient listing was conducted in a variety of ways. The Department first met with Carroll County staff in 2002 to discuss MDE's intention

[2] Carroll County upgraded analytical techniques and switched chlorophyll analysis to Chesapeake Biological Laboratory (Solomons, MD) in 1998; MDE considered data from this point forward in its analyses. The County did not report chlorophyll data to MDE for 2001, and modified stations for 2002; these data are tabulated separately.

to address the nutrient impairment listing. Identified stakeholders (including local government contacts, tributary team chairs, and interested parties) were formally notified of MDE's intent to develop a nutrient WQA in March 2004.

Following this initial contact, these stakeholders were again notified on April 26, 2004 when the document began Interagency Review. The document went through a public comment period from July 19, 2004 to August 17, 2004 where the document was placed in the Carroll County Public Library, MDE's website and notices were published in the Carroll County Times. Following the public comment period, comments were reviewed and addressed through a comment response document. The documents were then submitted to EPA Region III at which time stakeholders were notified of this action. Once the document was approved by EPA Region III, stakeholders were notified of the action and the finalized document was posted on MDE's website.

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Appendix A

Table A1: Physical Water Quality Data— Piney Run Reservoir (MDE, 2000)

SAMPLING STATION	DATE START SAMPLING	TIME START SAMPLING	CONDUCTIVITY FIELD VALUE µMHOS/CM	WATER TEMPERATURE Celsius	SECCHI DEPTH METERS	DEPTH WATER SAMPLE TAKEN METERS	FIELD pH	DISSOLVED OXYGEN FIELD VALUE MG/L
PIR0078	03/13/2000	9:25	150.00	6.90	1.40	0.50	7.10	11.20
PIR0078	03/13/2000	9:25	150.00	6.90	1.40	1.00	7.10	11.20
PIR0078	03/13/2000	9:25	150.00	6.80	1.40	2.60	7.10	11.20
PIR0070	03/13/2000	9:35	150.00	7.50	1.80	0.50	7.20	11.40
PIR0070	03/13/2000	9:35	150.00	7.50	1.80	1.00	7.20	11.40
PIR0070	03/13/2000	9:35	150.00	7.30	1.80	3.00	7.20	11.30
PIR0070	03/13/2000	9:35	150.00	7.20	1.80	5.00	7.10	11.20
PIR0070	03/13/2000	9:35	150.00	7.10	1.80	7.00	7.10	11.20
PIR0070	03/13/2000	9:35	150.00	6.90	1.80	9.00	7.10	11.20
PIR0064	03/13/2000	9:50	150.00	7.90	1.80	0.50	7.30	11.60
PIR0064	03/13/2000	9:50	150.00	7.90	1.80	1.00	7.30	11.60
PIR0064	03/13/2000	9:50	150.00	7.80	1.80	4.00	7.20	11.60
PIR0064	03/13/2000	9:50	150.00	7.50	1.80	7.00	7.10	11.50
PIR0064	03/13/2000	9:50	150.00	7.20	1.80	10.00	7.10	11.10
PIR0064	03/13/2000	9:50	150.00	7.90	1.80	13.00	7.30	10.80
PIR0078	04/10/2000	8:30	150.00	10.70	2.20	0.50	7.30	10.10
PIR0078	04/10/2000	8:30	150.00	10.70	2.20	1.00	7.30	10.10
PIR0078	04/10/2000	8:30	150.00	10.00	2.20	2.40	7.30	10.20
PIR0070	04/10/2000	8:45	150.00	11.10	2.60	0.50	7.40	10.10
PIR0070	04/10/2000	8:45	150.00	11.10	2.60	1.00	7.40	10.20
PIR0070	04/10/2000	8:45	150.00	11.10	2.60	3.00	7.30	10.10
PIR0070	04/10/2000	8:45	150.00	11.10	2.60	6.00	7.30	10.10
PIR0070	04/10/2000	8:45	150.00	11.00	2.60	7.40	7.00	10.10
PIR0064	04/10/2000	9:00	150.00	11.40	2.60	0.50	7.50	10.20
PIR0064	04/10/2000	9:00	150.00	11.40	2.60	1.00	7.40	10.20
PIR0064	04/10/2000	9:00	150.00	11.40	2.60	4.00	7.40	10.10
PIR0064	04/10/2000	9:00	150.00	11.30	2.60	8.00	7.30	10.10
PIR0064	04/10/2000	9:00	150.00	10.90	2.60	10.00	7.10	9.60
PIR0064	04/10/2000	9:00	150.00	11.40	2.60	12.60	7.40	8.90
PIR0078	05/08/2000	9:45	155.00	22.00	3.10	0.50	7.80	9.80
PIR0078	05/08/2000	9:45	155.00	21.40	3.10	1.00	7.70	9.90
PIR0078	05/08/2000	9:45	155.00	20.40	3.10	1.50	7.70	10.20
PIR0070	05/08/2000	10:00	150.00	24.70	5.00	0.50	7.70	9.40
PIR0070	05/08/2000	10:00	150.00	21.40	5.00	1.00	7.70	9.90
PIR0070	05/08/2000	10:00	150.00	18.30	5.00	2.00	7.70	10.30
PIR0070	05/08/2000	10:00	150.00	16.50	5.00	3.00	7.60	10.30
PIR0070	05/08/2000	10:00	150.00	15.60	5.00	4.00	7.60	10.40
PIR0070	05/08/2000	10:00	150.00	14.80	5.00	5.00	7.40	10.00
PIR0070	05/08/2000	10:00	155.00	14.30	5.00	6.00	7.20	9.50

SAMPLING STATION	DATE START SAMPLING	TIME START SAMPLING	CONDUCTIVITY FIELD VALUE µMHOS/CM	WATER TEMPERATURE Celsius	SECCHI DEPTH METERS	DEPTH WATER SAMPLE TAKEN METERS	FIELD pH	DISSOLVED OXYGEN FIELD VALUE MG/L
PIR0070	05/08/2000	10:00	155.00	13.70	5.00	7.60	7.10	8.80
PIR0064	05/08/2000	10:15	150.00	22.50	7.50	0.50	7.60	9.10
PIR0064	05/08/2000	10:15	150.00	16.50	7.50	1.00	7.30	8.80
PIR0064	05/08/2000	10:15	150.00	14.90	7.50	3.00	7.10	9.00
PIR0064	05/08/2000	10:15	150.00	13.50	7.50	5.00	7.00	8.80
PIR0064	05/08/2000	10:15	155.00	12.60	7.50	7.00	6.90	8.20
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PIR0064	05/08/2000	10:15	160.00	10.80	7.50	11.00	6.50	4.30
PIR0064	05/08/2000	10:15	150.00	20.60	7.50	13.40	7.30	1.00
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PIR0070	07/24/2000	10:35	148.00	25.60	5.00	3.00	9.40	9.90
PIR0070	07/24/2000	10:35	149.00	23.80	5.00	5.00	7.60	8.40
PIR0070	07/24/2000	10:35	159.00	17.60	5.00	7.00	6.60	0.13
PIR0070	07/24/2000	10:35	167.00	14.80	5.00	8.50	6.70	0.17
PIR0064	07/24/2000	10:50	147.00	25.50	6.50	0.50	9.20	9.00
PIR0064	07/24/2000	10:50	147.00	25.50	6.50	1.00	9.20	9.00
PIR0064	07/24/2000	10:50	145.00	25.30	6.50	2.00	9.00	9.00
PIR0064	07/24/2000	10:50	147.00	20.40	6.50	4.00	7.60	8.90
PIR0064	07/24/2000	10:50	154.00	17.40	6.50	6.00	6.60	10.10
PIR0064	07/24/2000	10:50	159.00	13.80	6.50	8.00	6.60	0.40
PIR0064	07/24/2000	10:50	168.00	12.70	6.50	10.00	6.60	0.12
PIR0064	07/24/2000	10:50	147.00	25.50	6.50	12.00	9.20	0.13
PIR0078	08/07/2000	9:10	143.00	25.60		0.50	9.40	-
PIR0078	08/07/2000	9:10	147.00	25.60		1.00	9.60	-
PIR0078	08/07/2000	9:10	143.00	25.50		2.00	9.60	
PIR0078	08/07/2000	9:10	143.00	25.50		3.00	9.50	
PIR0070	08/07/2000	9:25	143.00	25.80	5.50	0.50	9.30	
PIR0070	08/07/2000	9:25	144.00	25.80	5.50	1.00	9.30	
PIR0070	08/07/2000	9:25	144.00	25.70	5.50	2.00	9.30	
PIR0070	08/07/2000	9:25	146.00	25.70	5.50	3.00	9.30	
PIR0070	08/07/2000	9:25	140.00	25.60	5.50	4.00	9.20	
PIR0064	08/07/2000	10:00	140.00	25.90	5.00	0.50	9.10	
PIR0064	08/07/2000	10:00	141.00	25.60	5.00	1.00	9.20	
PIR0064	08/07/2000	10:00	144.00	25.60	5.00	2.00	9.20	
PIR0064	08/07/2000	10:00	143.00	25.50	5.00	3.00	8.70	

PIR0064	08/07/2000	10:00	140.00	25.80	5.00	4.00	9.20	
PIR0078	09/05/2000	9:30	154.00	24.60	1.00	0.50	9.80	10.50
SAMPLING STATION	**DATE START SAMPLING**	**TIME START SAMPLING**	**CONDUCTIVITY FIELD VALUE µMHOS/CM**	**WATER TEMPERATURE Celsius**	**SECCHI DEPTH METERS**	**DEPTH WATER SAMPLE TAKEN METERS**	**FIELD pH**	**DISSOLVED OXYGEN FIELD VALUE MG/L**
PIR0078	09/05/2000	9:30	153.00	24.60	1.00	1.00	9.80	10.50
PIR0078	09/05/2000	9:30	152.00	24.30	1.00	1.80	9.10	7.70
PIR0070	09/05/2000	9:45	149.00	24.90	5.00	0.50	9.40	8.80
PIR0070	09/05/2000	9:45	149.00	24.90	5.00	1.00	9.40	8.80
PIR0070	09/05/2000	9:45	149.00	24.90	5.00	2.00	9.40	8.80
PIR0070	09/05/2000	9:45	149.00	24.90	5.00	3.00	9.40	8.80
PIR0070	09/05/2000	9:45	148.00	24.60	5.00	4.00	9.10	7.80
PIR0070	09/05/2000	9:45	150.00	24.10	5.00	5.00	7.50	5.40
PIR0070	09/05/2000	9:45	156.00	23.10	5.00	6.00	6.90	1.40
PIR0070	09/05/2000	9:45	165.00	18.80	5.00	7.60	6.70	0.10
PIR0064	09/05/2000	10:55	148.00	25.50	5.00	0.50	9.40	8.80
PIR0064	09/05/2000	10:55	148.00	25.50	5.00	1.00	9.40	8.80
PIR0064	09/05/2000	10:55	148.00	25.50	5.00	2.00	9.40	8.80
PIR0064	09/05/2000	10:55	148.00	25.50	5.00	3.00	9.40	8.80
PIR0064	09/05/2000	10:55	150.00	24.00	5.00	4.00	7.30	8.60
PIR0064	09/05/2000	10:55	155.00	22.60	5.00	5.00	6.80	5.10
PIR0064	09/05/2000	10:55	157.00	21.00	5.00	6.00	6.60	1.30
PIR0064	09/05/2000	10:55	158.00	19.10	5.00	7.00	6.70	0.40
PIR0064	09/05/2000	10:55	164.00	16.70	5.00	8.00	6.70	1.40
PIR0064	09/05/2000	10:55	169.00	14.60	5.00	9.00	6.70	0.10
PIR0064	09/05/2000	10:55	182.00	13.70	5.00	10.00	6.80	0.10
PIR0064	09/05/2000	10:55	197.00	13.00	5.00	11.00	7.00	0.10
PIR0064	09/05/2000	10:55	148.00	25.50	5.00	12.30	9.40	0.20

Table A2
Water Quality (Nutrient) Data, Piney Run Reservoir (MDE, 2000)

SAMPLING STATION	DATE START SAMPLING	TIME START SAMPLING	DEPTH WATER SAMPLE TAKEN METERS	TOTAL NITROGEN mg/L	TOTAL PHOSPHORUS mg/L	TN:TP
PIR0078	03/13/2000	9:25	0.50	2.04	0.02	118.84
PIR0070	03/13/2000	9:35	0.50	1.91	0.01	135.74
PIR0064	03/13/2000	9:50	0.50	1.92	0.02	106.24
PIR0064	03/13/2000	9:50	13.00	1.93	0.02	100.47
PIR0078	04/10/2000	8:30	0.50	2.02	0.01	140.42
PIR0070	04/10/2000	8:45	0.50	1.99	0.01	141.35
PIR0064	04/10/2000	9:00	0.50	1.96	0.02	121.05
PIR0064	04/10/2000	9:00	12.60	1.99	0.01	147.55
PIR0078	05/08/2000	9:45	0.50	2.00	0.01	153.75
PIR0070	05/08/2000	10:00	0.50	1.94	0.01	249.32
PIR0064	05/08/2000	10:15	0.50	1.95	0.01	234.46
PIR0064	05/08/2000	10:15	13.40	1.51	0.04	36.54
PIR0078	07/24/2000	10:20	0.50	1.44	0.02	88.28
PIR0070	07/24/2000	10:35	0.50	1.36	0.01	149.65
PIR0064	07/24/2000	10:50	0.50	1.36	0.01	208.68
PIR0064	07/24/2000	10:50	12.00	1.04	0.02	68.18
PIR0078	08/07/2000	9:10	0.50	1.27	0.01	121.67
PIR0070	08/07/2000	9:25	0.50	1.26	0.01	161.72
PIR0064	08/07/2000	10:00	0.50	1.33	0.01	138.82
PIR0064	08/07/2000	10:00	4.00	1.30	0.03	40.25
PIR0078	09/05/2000	9:30	0.50	1.17	0.02	51.27
PIR0070	09/05/2000	9:45	0.50	1.00	0.01	97.14
PIR0064	09/05/2000	10:55	0.50	0.99	0.01	127.00
PIR0064	09/05/2000	10:55	12.30	1.07	0.04	28.81

Table A3: Water Quality (Nutrient) Data, Piney Run Reservoir (Carroll County, 1994-2000)

Date	TP (Station 1)	TN (Station 1)	TP (Station 2)	TN (Station 2)	TP (Station 2-25)	TN (Station 2-25)	TP (Station 3)	TN (Station 3)	TP (Station 3-19)	TN (Station 3-19)	TP (Station 3-40)	TN (Station 3-40)
3/30/94	0.05	2.20	0.03	2.20	0.03	2.20	0.05	2.40			0.05	2.30
4/12/94	0.02	1.90	0.04	1.70	0.02	2.00	0.03	2.10			0.02	1.70
4/28/94	0.02	2.80	0.04	2.60	0.24	2.60	0.02	2.60			0.03	2.20
5/11/94	0.01	2.00	0.01	1.80	0.02	1.30	0.01	1.70			0.02	1.20
5/24/94	0.01	1.80	0.01	1.70	0.02	1.70	0.01	1.80			0.02	1.00
6/7/94	0.01	2.30	0.01	2.40	0.01	1.80	0.01	2.10			0.01	1.60
6/22/94	0.02	2.10	0.01	2.20	0.02	1.70	0.01	2.10			0.03	1.30
7/14/94	0.02	1.70	0.01	1.70	0.01	1.20	0.02	2.00			0.02	1.50
7/26/94	0.07	1.10	0.02	1.20	0.02	1.20	0.01	1.10			0.03	1.10
8/23/94	0.01	2.20	0.01	1.20	0.04	1.30	0.01	1.30			0.02	0.80
8/31/94	0.01	1.00	0.01	1.40	0.05	1.20	0.05	1.30			.01	0.80
9/14/94	0.01	1.50	0.01	1.10	0.01	1.50	0.01	1.10			0.02	0.80
09/27/94	0.02	1.70	0.01	0.90	0.02	1.30	0.01	0.80			0.12	1.20
10/12/94	0.01	0.90	0.01	0.90	---	---	0.01	0.80			0.05	0.60
11/16/94	0.01		0.01		---	---	0.01				0.01	
12/12/94	0.02	1.60	0.02	1.10	---	---	0.01	0.70			0.02	0.90
1/12/95	0.02	1.60	0.02	1.30	---	---	0.02	1.20			0.02	1.30
3/17/95	0.03	2.70	0.03	2.00	0.02	1.60	0.04	1.90			0.02	1.70
4/6/95	0.03	2.70	0.02	1.60	---	---	0.03	1.70			.03	1.80
4/28/95	0.01	1.60	0.01	1.60	0.01	1.50	0.01	1.60			0.02	1.60
5/8/95	0.04	1.60	0.01	1.50	0.01	1.70	0.03	1.40			0.02	1.40
5/23/95	0.01	1.70	0.01	1.50	0.01	1.40	0.01	0.80			0.01	0.90
6/1/95	0.07	2.10	0.01	2.20	0.02	1.20	0.01	2.30			0.09	1.50
6/14/95	0.01	1.30	0.03	2.00	0.08	0.80	0.05	1.20			0.12	0.40
7/10/95	0.01	1.50	0.01	2.90	0.01	1.30	0.01	1.00			0.10	1.30
7/19/95	0.01	1.60	0.15	1.60	0.01	1.30	0.03	1.40			0.02	1.10
08/23/95	0.11	1.10	0.28	4.50	0.10	1.00	0.09	0.90			0.13	1.40
09/06/95	0.03	1.70	0.08	1.80	0.03	1.70	0.11	1.60			0.05	1.60
09/20/95	0.19	1.50	0.03	1.50	0.26	1.30	0.13	1.40			4.90	1.40

10/04/95	---	---					0.02	2.00				
Date	TP (Station 1)	TN (Station 1)	TP (Station 2)	TN (Station 2)	TP (Station 2-25)	TN (Station 2-25)	TP (Station 3)	TN (Station 3)	TP (Station 3-19)	TN (Station 3-19)	TP (Station 3-40)	TN (Station 3-40)
10/18/95	0.04	1.70	0.04	1.40	0.05	1.40	0.04	1.50			3.10	1.10
11/02/95	---	---					0.01	2.10				
11/20/95	0.28	1.50	0.02	1.60	0.01	1.30	0.08	1.10				
03/13/96	0.02	2.00	0.02	2.10	0.01	1.90	0.02	2.00			0.02	1.80
04/12/96	0.02	2.90	0.01	3.70	0.06	3.00	0.17	2.00			0.01	2.30
05/08/96	0.04	2.00	0.05	1.60	0.05	1.60	0.08	1.60				---
05/22/96	0.30	1.70	0.30	2.10	0.60	1.60	0.50	2.00			0.40	1.80
06/05/96	0.01	1.20	0.15	2.00	0.15	1.60	0.14	2.70			0.15	1.30
06/26/96	0.05	3.10	0.07	2.50	0.03	1.90	0.03	2.30			0.03	1.70
07/10/96	0.01	4.60	0.01	4.10	0.03	1.40	0.01	5.00			0.08	4.10
07/24/96	0.18	2.50	0.01	2.00	0.01	1.50	0.15	2.10			0.06	2.10
08/09/96	0.01	1.30	0.24	1.50	0.60	1.20	0.01	1.50			0.48	0.90
08/23/96	0.24	1.10	0.06	2.40	0.07	1.00	0.21	1.90			0.12	1.60
09/16/96	0.23	1.50	0.07	1.20	0.07	1.40	0.21	1.10			0.12	2.50
09/30/96	0.42	1.70	0.02	1.60	0.23	1.80	0.03	2.00			0.98	1.30
10/23/96	0.07	1.60	0.04	1.60	0.06	1.70	0.14	1.50			0.07	3.20
10/31/96			0.12	1.70	0.06	1.50	0.21	1.60			0.22	1.70
11/26/96	0.35		0.09	1.60	0.05	1.40	0.15	2.00			0.09	1.90
12/18/96	0.11	1.80	0.05	2.70	0.05	2.60	0.05	2.60			0.06	2.40
04/17/97	0.01	2.50	0.03	2.50			0.02	2.60				
05/07/97	0.27	2.80	0.32	2.80			0.44	2.80			0.66	2.80
05/29/97	0.08	4.30	0.19	2.10	0.20	2.20	0.10	2.10			0.52	1.70
06/11/97	0.01	3.70	0.11	1.90	0.13	1.80	0.01	2.10			0.43	2.20
06/25/97	0.04	3.40	0.04	1.70	0.41	1.70	0.03	2.30			0.81	1.60
07/16/97	0.08	4.20	0.05	2.20	0.05	2.00	0.04	2.40			0.11	2.30
07/30/97	0.02	3.40	0.01	1.90	0.05	1.50	0.05	1.90			0.10	1.60
08/13/97	0.25	2.50	0.03	1.40	2.29	1.10	0.86	1.40			0.18	1.50
08/26/97	3.22	2.30	0.08	1.30	2.34	1.00	1.54	1.20			0.58	1.50
09/17/97	0.01	2.90	0.10	1.10	0.13	1.80	0.01	1.10			0.04	2.10
10/02/97	0.03	2.50	0.06	1.20	0.07	1.30	0.02	1.40			0.06	1.80

Date	TP (Station 1)	TN (Station 1)	TP (Station 2)	TN (Station 2)	TP (Station 2-25)	TN (Station 2-25)	TP (Station 3)	TN (Station 3)	TP (Station 3-19)	TN (Station 3-19)	TP (Station 3-40)	TN (Station 3-40)
10/15/97	0.16	2.70	0.10	1.20	0.11	1.50	0.01	1.30			0.11	1.90
10/29/97	0.01	2.70	0.01	1.20	0.01	1.50	0.01	1.40			0.29	2.00
11/12/97	0.01	3.20	0.01	1.70	0.01	1.50	0.01	1.60			0.01	1.80
11/25/97	0.05	2.50	0.04	1.10	0.04	1.40	0.02	1.40			0.03	1.60
12/17/97	0.03	1.20	0.02	1.20			0.04	1.10			0.02	1.20
01/22/98	0.01	1.80	0.01	0.90	0.01	0.90	0.04	1.00			0.06	0.80
02/18/98	0.11	1.80	0.01	0.80	0.10	1.00	0.13	1.20			0.14	1.00
		0.00		0.00		0.00						0.00
05/22/98		0.00		0.00		0.00						0.00
07/01/98		0.00		0.00		0.00						0.00
07/15/98		0.00		0.00		0.00						0.00
07/29/98		0.00		0.00		0.00						0.00
08/11/98		0.00		0.00		0.00						0.00
08/26/98		0.00		0.00		0.00						0.00
09/08/98		0.00		0.00		0.00						0.00
09/30/1998	0.01	1.23	0.01	1.08		1.26	0.01	1.10			0.02	1.59
11/04/1998	0.01	1.11	0.02	1.06		1.06	0.01	1.12	0.01	1.07	0.05	1.32
12/16/1998	0.01	1.33	0.01	1.21		1.25	0.01	1.20	0.01	1.23	0.01	1.22
01/28/99	0.03	2.80	0.02	1.57		1.59	0.02	1.55	0.02	1.54	0.02	1.54
02/15/99		0.00		0.00		0.00		0.00		0.00		0.00
03/15/99		0.00		0.00		0.00		0.00		0.00		0.00
04/27/99	0.01	1.92	0.01	1.88		1.85	0.01	1.94	0.01	1.78	0.01	1.75
05/12/99	0.01	1.84	0.01	1.75		1.49	0.01	1.82	0.01	1.75	0.01	1.62
06/08/99	0.01	1.76	0.01	1.70		1.61	0.01	1.77	0.01	1.80	0.02	1.54
06/23/99	0.01	1.57	0.01	1.56		1.25	0.00	1.50	0.00	1.47	0.01	1.42
07/07/99	0.01	1.36	0.01	1.34		1.25	0.01	1.38	0.00	1.37	0.02	1.32
07/22/99	0.02	1.18	0.01	1.21		1.40	0.01	1.20	0.01	1.19	0.03	1.24
08/04/99	0.04	1.14	0.01	1.24		1.05	0.01	1.07	0.01	1.08	0.01	1.08
08/19/99	0.02	1.03	0.01	0.88		1.21	0.01	0.91	0.01	0.96	0.03	0.98
09/09/99	0.01	0.81	0.01	0.75		1.01	0.01	0.92	0.01	0.89	0.02	0.86
09/24/99	0.02	0.93	0.02	0.89		0.83	0.01	0.85	0.01	0.83	0.02	1.05
10/07/99	0.03	1.20	0.01	0.85		0.88	0.01	0.86	0.01	0.82	0.02	1.12

10/28/99	0.01	1.07	0.01	0.92		0.93	0.02	0.97	0.01	0.93	0.01	0.90
11/18/99	0.03	1.35	0.02	0.96		0.98	0.02	1.11	0.02	0.87	0.02	0.91
12/21/99							0.02	1.17		0.00		0.00
Date	TP (Station 1)	TN (Station 1)	TP (Station 2)	TN (Station 2)	TP (Station 2-25)	TN (Station 2-25)	TP (Station 3)	TN (Station 3)	TP (Station 3-19)	TN (Station 3-19)	TP (Station 3-40)	TN (Station 3-40)
01/19/00							0.02	1.49	0.02	1.44		0.00
04/20/00	0.02	2.08	0.01	1.98			0.01	1.93	0.01	1.92	0.01	1.86
05/10/00	0.01	2.31	0.01	2.09			0.01	2.00	0.01	1.99	0.02	1.67
05/26/00	0.05	2.03	0.04	1.96			0.03	1.93	0.02	1.83	0.02	1.61
06/09/00	0.01	1.89	0.01	1.91			0.01	1.85	0.01	1.89	0.01	1.60
06/23/00	0.01	1.66	0.01	1.60			0.01	1.70	0.01	1.74	0.01	1.33
07/06/00	0.01	1.44	0.01	1.45			0.01	1.44	0.01	1.70	0.01	1.40
07/18/00		0.00		0.00				0.00		0.00		0.00
08/03/00	0.02	1.27	0.01	1.18			0.01	1.23	0.02	1.47	0.03	0.93
08/17/00	0.01	1.13	0.01	1.24			0.01	1.23	0.01	1.27	0.02	0.98
09/07/00	0.02	1.08	0.01	0.98			0.01	0.97	0.01	1.00	0.03	0.95
09/20/00	0.01	0.07	0.01	0.92			0.01	0.94	0.01	0.91	0.03	1.01
10/04/00	0.02	0.96	0.01	0.88			0.02	0.92	0.01	0.90	0.02	1.11
10/18/00	0.02	1.24	0.01	0.94			0.01	0.91	0.01	0.89	0.03	1.09
11/03/00	0.02	1.24	0.01	0.92			0.01	0.90	0.01	0.90	0.01	0.90
11/17/00							0.01	0.88				
12/15/00							0.01	0.98				

Table A4
Total Phosphorus Summary Statistics (mg/l) (Carroll County, 1994-1998)

	STATION 1	STATION 2	STATION 2-25	STATION 3	STATION 3-19	STATION 3-40
N	94	95	57	101	30	90
Geometric Mean	0.0273	0.0215	0.0464	0.0233	0.0107	0.0446
Arithmetic Average (Mean)	0.0871	0.0410	0.1616	0.0681	0.0115	0.1854
Maximum Value	3.2200	0.3200	2.3400	1.5400	0.0244	4.9000
Minimum Value	0.0074	0.0051	0.0100	0.0027	0.0042	0.0058
Median Value	0.0200	0.0139	0.0500	0.0160	0.0114	0.0268
Median Value (just CBL)	0.0144	0.0101	n/a	0.0101	0.0114	0.0188

Table A5: Raw Chlorophyll a data (µg/l) (Carroll County, 1994-2000)

SAMPLING DATE	SAMPLING STATION 1	SAMPLING STATION 2	SAMPLING STATION 3	SAMPLING STATION 3-19
3/30/94			18.00	
4/12/94			16.00	
4/28/94			3.00	
5/11/94			6.00	
5/24/94			3.00	
6/7/94			3.00	
6/22/94			3.00	
7/14/94			3.00	
7/26/94			5.00	
8/23/94			5.00	
8/31/94			5.00	
9/14/94			5.00	
09/27/94			7.00	
10/12/94			6.00	
11/16/94			28.00	
12/12/94			19.00	
1/12/95			7.00	
3/17/95			22.00	
4/6/95			25.00	
4/28/95			7.00	
5/8/95			5.00	
5/23/95			5.00	
6/1/95			5.00	
6/14/95			5.00	

7/10/95			5.00	
SAMPLING DATE	**SAMPLING STATION 1**	**SAMPLING STATION 2**	**SAMPLING STATION 3**	**SAMPLING STATION 3-19**
7/19/95			5.00	
08/23/95			5.00	
09/06/95			13.00	
09/20/95			11.00	
10/04/95			18.00	
10/18/95			5.00	
11/02/95			5.00	
11/20/95	5.00			
03/13/96	30.00			
05/08/96	5.00			
05/22/96	5.00			
06/26/96	5.00			
07/10/96	6.00			
07/24/96	5.00			
08/09/96	12.00			
08/23/96	6.00			
09/16/96	5.00	11.50		
09/30/96	12.00	15.20		
10/23/96	6.00	15.10		
10/31/96		7.20	6.20	
12/18/96			5.00	
05/07/97			5.00	
05/29/97			5.00	
06/11/97			5.00	
07/16/97			5.00	
07/30/97			5.00	
08/13/97			6.70	
08/26/97			5.00	
09/17/97			6.80	
10/02/97			8.20	
10/15/97			9.00	
10/29/97			5.00	
11/12/97			5.00	
11/25/97			6.50	
12/17/97			5.00	
01/22/98			5.00	
02/18/98			7.80	
09/30/98	3.51	3.92	4.10	
11/04/98	4.20	5.84	4.52	4.34
12/16/98	9.41	8.98	7.85	8.06
01/27/99	12.45	23.62	18.79	
04/27/99	2.72	1.77	1.37	1.80
05/12/99	2.48	1.17	0.82	1.55

06/08/99	2.20	1.94	1.40	2.35
06/23/99	2.80	2.50	2.28	2.86
SAMPLING DATE	**SAMPLING STATION 1**	**SAMPLING STATION 2**	**SAMPLING STATION 3**	**SAMPLING STATION 3-19**
07/07/99	2.67	2.59	1.58	1.39
07/22/99	2.74	3.36	1.55	1.05
08/04/99	1.50	2.08	2.28	2.68
08/19/99		4.39	4.45	6.76
09/09/99	2.75	2.53	1.61	2.48
09/24/99	5.45	4.61	2.74	3.40
10/07/99	11.33	5.22	4.49	4.84
10/28/99	15.12	10.73	15.38	11.35
11/18/99	15.56	19.59	19.48	12.83
12/21/99			4.67	
01/19/00			10.72	6.42
04/20/00	3.67	6.40	3.34	2.93
05/10/00	5.69	1.73	0.77	1.34
05/26/00	15.57	14.89	7.49	3.77
06/09/00	2.85	2.62	2.66	4.09
06/23/00	4.41	3.78	3.93	9.11
07/06/00	1.82	1.35	1.98	7.17
08/03/00	4.17	3.56	1.63	15.11
08/17/00	5.40	4.05	4.01	13.41
09/07/00	8.18	4.65	3.78	6.65
09/20/00	6.67	4.50	4.38	1.40
10/04/00	21.35	7.23	8.18	7.13
10/18/00	17.47	8.75	4.74	1.53
11/03/00	5.09	6.30	4.96	8.56
11/17/00			3.86	
12/15/00			4.22	

Table A6: Chlorophyll *a* Summary Statistics (µg/l), (Carroll County, 1994-2000)

	STATION 1	STATION 2	STATION 3	STATION 3-19
N	41	34	84	29
Geometric Mean	5.67	4.88	5.12	4.07
Mean	7.35	6.58	6.66	5.39
Maximum	30.00	23.62	28.00	15.11
Minimum	1.50	1.17	0.77	1.05
Median	5.00	4.56	5.00	4.09
Median (just CBL)	4.41	4.22	3.97	4.09

Table A7: Water Quality (Chlorophyll) Data Piney Run Reservoir (Carroll County, 2002)

Station	Date	Total P (mg /L)	Station	Date	Chl. a (ug/L)
1	04/17/02	0.011	1	04/17/02	1.550
2	04/17/02	0.010	2	04/17/02	1.900
2-25	04/17/02	0.012	2-25	04/17/02	
3	04/17/02	0.023	3	04/17/02	4.430
3-19	04/17/02	0.016	3-11	04/17/02	1.300
3-40	04/17/02	0.019	3-19	04/17/02	
4	04/17/02	0.016	3-40	04/17/02	
1	05/01/02	0.019	4	04/17/02	4.450
2	05/01/02	0.013	1	05/01/02	2.240
2-25	05/01/02	0.014	2	05/01/02	1.700
3	05/01/02	0.016	2-25	05/01/02	
3-19	05/01/02	0.017	3	05/01/02	1.600
3-40	05/01/02	0.016	3-11	05/01/02	1.510
1	07/11/02	0.024	3-19	05/01/02	1.690
2	07/11/02	0.009	1	07/11/02	3.650
2-25	07/11/02	0.020	2	07/11/02	2.500
3	07/11/02	0.010	2-25	07/11/02	
3-19	07/11/02	0.014	3	07/11/02	2.750
3-40	07/11/02	0.034	3-11	07/11/02	7.460
4	07/11/02	0.014	3-19	07/11/02	3.500
3	08/08/02	0.009	3-40	07/11/02	
3-19	08/08/02	0.012	4	07/11/02	
3-40	08/08/02	0.027	1	08/08/02	3.730
4	08/08/02	0.009	2	08/08/02	2.840
1	09/03/02	0.052	2-25	08/08/02	
2	09/03/02	0.013	3	08/08/02	3.400
2-25	09/03/02	0.023	3-11	08/08/02	3.280
3	09/03/02	0.015	3-19	08/08/02	3.500
3-19	09/03/02	0.012	3-40	08/08/02	
3-40	09/03/02	0.044	4	08/08/02	
4	09/03/02	0.014	1	09/03/02	10.280
1	10/03/02	0.027	2	09/03/02	7.130
2	10/03/02	0.014	2-25	09/03/02	
2-25	10/03/02	0.015	3	09/03/02	8.600

3	10/03/02	0.011	3-11	09/03/02	9.120
Station	**Date**	**Total P (mg /L)**	**Station**	**Date**	**Chl. a (ug/L)**
3-40	10/03/02	0.041	3-40	09/03/02	
4	10/03/02	0.013	4	09/03/02	

Table A8
Water Quality (Chlorophyll *a*) Data, Piney Run Reservoir (MDE, 2000)

SAMPLING STATION	SAMPLE DATE	SAMPLE TIME	SAMPLE DEPTH (m)	ACTIVE CHLOROPHYLL *a* (µg/L)	PHEOPHYTIN *a* (µg/L)
PIR0078	03/13/2000	9:25	0.50	6.35	0.97
PIR0070	03/13/2000	9:35	0.50	6.31	1.71
PIR0064	03/13/2000	9:50	0.50	6.92	1.20
PIR0064	03/13/2000	9:50	13.00	5.55	1.03
PIR0078	04/10/2000	8:30	0.50	4.49	0.30
PIR0070	04/10/2000	8:45	0.50	4.67	0.17
PIR0064	04/10/2000	9:00	0.50	4.49	0.09
PIR0064	04/10/2000	9:00	12.60	4.27	0.06
PIR0078	05/08/2000	9:45	0.50	2.24	0.02
PIR0070	05/08/2000	10:00	0.50	1.50	0.00
PIR0064	05/08/2000	10:15	0.50	-	-
PIR0064	05/08/2000	10:15	13.40	-	-
PIR0078	07/24/2000	10:20	0.50	4.19	0.52
PIR0070	07/24/2000	10:35	0.50	4.64	0.91
PIR0064	07/24/2000	10:50	0.50	2.09	0.21
PIR0064	07/24/2000	10:50	12.00	3.89	0.61
PIR0078	08/07/2000	9:10	0.50	4.49	0.30
PIR0070	08/07/2000	9:25	0.50	3.42	0.17
PIR0064	08/07/2000	10:00	0.50	0.00	4.19
PIR0064	08/07/2000	10:00	4.00	77.25	3.34
PIR0078	09/05/2000	9:30	0.50	4.70	1.28
PIR0070	09/05/2000	9:45	0.50	4.06	0.13
PIR0064	09/05/2000	10:55	0.50	2.99	0.15
PIR0064	09/05/2000	10:55	12.30	4.27	0.81

Table A9: Physical Water Quality Data, Piney Run Reservoir (Carroll County, 1998-2002)

Date	Station	Depth (feet)	Water Temp. (˚C)	DO (mg/l)	DO% Sat
05/22/1998	2	1	21.8	10.3	
05/22/1998	2	3	21.8	10.3	
05/22/1998	2	5	21.8	10.3	
05/22/1998	2	7	21.8	10.4	
05/22/1998	2	9	21.8	10.4	
05/22/1998	2	11	21.0	10.8	
05/22/1998	2	13	18.0	12	
05/22/1998	2	15	16.5	10.1	
05/22/1998	2	17	15.5	7.7	
05/22/1998	2	19	15.0	6.7	
05/22/1998	2	21	13.5	4.9	
05/22/1998	2	23	12.5	3.7	
05/22/1998	2	25	12.0	3	
05/22/1998	2	27	10.8	2.2	
05/22/1998	2	29	10.5	2.1	
05/22/1998	3	1	22.5	9.6	
05/22/1998	3	3	22.5	9.6	
05/22/1998	3	5	22.5	9.7	
05/22/1998	3	7	22.5	9.7	
05/22/1998	3	9	22.5	9.7	
05/22/1998	3	11	22.5	9.8	
05/22/1998	3	13	22.5	9.8	
05/22/1998	3	15	18.0	10.8	
05/22/1998	3	17	17.0	11.6	
05/22/1998	3	19	16.0	8.7	
05/22/1998	3	21	14.5	6.9	
05/22/1998	3	23	12.5	5.4	
05/22/1998	3	25	11.5	5	
05/22/1998	3	27	10.5	5.3	
05/22/1998	3	29	10.0	5.2	
05/22/1998	3	31	9.0	3.5	
05/22/1998	3	33	8.5	2.3	
05/22/1998	3	35	8.0	1.4	
05/22/1998	3	37	8.0	0.8	
05/22/1998	3	39	8.0	0.1	
05/22/1998	3	41	8.0	0.1	
05/22/1998	3	43	8.0	0.1	
05/22/1998	3	45	8.0	0.1	
05/22/1998	3	47	8.0	0.1	
07/01/1998	1	1	26.1	9.6	
07/01/1998	1	3	26.1	9.5	
07/01/1998	1	5	26.1	9.5	

Date	Station	Depth (feet)	Water Temp. (˚C)	DO (mg/l)	DO% Sat
07/01/1998	1	7	25.3	9.4	
07/01/1998	1	9	25.1	9.3	
07/01/1998	2	1	26.4	9.6	
07/01/1998	2	3	26.4	9.6	
07/01/1998	2	5	26.4	9.6	
07/01/1998	2	7	26.2	9.6	
07/01/1998	2	9	26.0	9.5	
07/01/1998	2	11	26.0	9.1	
07/01/1998	2	13	23.2	12.2	
07/01/1998	2	15	21.5	10.2	
07/01/1998	2	17	19.8	8.6	
07/01/1998	2	19	18.0	4.1	
07/01/1998	2	21	16.5	0.2	
07/01/1998	2	23	15.0	0.3	
07/01/1998	2	25	13.5	0.2	
07/01/1998	2	27	11.5	0.2	
07/01/1998	2	29	11.0	0.2	
07/01/1998	3	1	26.5	9.4	
07/01/1998	3	3	26.5	9.5	
07/01/1998	3	5	26.5	9.5	
07/01/1998	3	7	26.5	9.5	
07/01/1998	3	9	26.5	9.5	
07/01/1998	3	11	26.5	9.5	
07/01/1998	3	13	26.5	9.5	
07/01/1998	3	15	22.0	10.6	
07/01/1998	3	17	20.1	8	
07/01/1998	3	19	18.5	4.1	
07/01/1998	3	21	16.0	0.2	
07/01/1998	3	23	14.5	1.3	
07/01/1998	3	25	13.5	0.6	
07/01/1998	3	27	13.0	0.1	
07/01/1998	3	29	11.7	0.1	
07/01/1998	3	31	11.0	0.1	
07/01/1998	3	33	10.4	0.1	
07/01/1998	3	35	10.0	0.1	
07/01/1998	3	37	9.8	0.1	
07/01/1998	3	39	9.5	0.1	
07/01/1998	3	41	9.0	0.1	
07/01/1998	3	43	9.0	0.1	
07/01/1998	3	45	8.8	0.1	
07/01/1998	3	47	8.8	0	
07/15/1998	1	1	27.4	11.2	
07/15/1998	1	3	27.4	11.3	
07/15/1998	1	5	27.2	11.3	

Date	Station	Depth (feet)	Water Temp. (˚C)	DO (mg/l)	DO% Sat
07/15/1998	1	7	27.2	10.8	
07/15/1998	1	9	26.5	9.6	
07/15/1998	2	1	27.1	11.2	
07/15/1998	2	3	27.1	11.5	
07/15/1998	2	5	27.0	11.5	
07/15/1998	2	7	26.9	11.8	
07/15/1998	2	9	26.5	12.5	
07/15/1998	2	11	26.0	13	
07/15/1998	2	13	25.1	11.4	
07/15/1998	2	15	23.6	11.4	
07/15/1998	2	17	21.6	9.5	
07/15/1998	2	19	19.1	2.9	
07/15/1998	2	21	16.5	0.2	
07/15/1998	2	23	14.5	0.2	
07/15/1998	2	25	13.8	0.2	
07/15/1998	2	27	13.1	0.2	
07/15/1998	3	1	26.9	11.8	
07/15/1998	3	3	26.5	12.2	
07/15/1998	3	5	26.5	12.2	
07/15/1998	3	7	26.2	12.2	
07/15/1998	3	9	26.2	12.3	
07/15/1998	3	11	26.0	12.7	
07/15/1998	3	13	25.0	12.4	
07/15/1998	3	15	23.1	12.5	
07/15/1998	3	17	21.6	11.7	
07/15/1998	3	19	20.0	7.9	
07/15/1998	3	21	17.5	0.4	
07/15/1998	3	23	15.0	0.2	
07/15/1998	3	25	13.4	0.2	
07/15/1998	3	27	12.0	0.2	
07/15/1998	3	31	10.8	0.2	
07/15/1998	3	33	10.2	0.2	
07/15/1998	3	35	9.8	0.2	
07/15/1998	3	37	9.5	0.2	
07/15/1998	3	39	9.3	0.2	
07/15/1998	3	41	9.3	0.2	
07/15/1998	3	43	9.0	0.2	
07/15/1998	3	45	9.0	0.2	
07/29/1998	1	1	27.6	10.3	
07/29/1998	1	3	27.6	10.2	
07/29/1998	1	5	27.6	10.2	
07/29/1998	1	4	27.6	10.2	
07/29/1998	1	9	27.6	10.1	
07/29/1998	2	1	28.0	10.2	

Date	Station	Depth (feet)	Water Temp. (˚C)	DO (mg/l)	DO% Sat
07/29/1998	2	3	28.0	10.2	
07/29/1998	2	5	28.0	10.3	
07/29/1998	2	4	27.8	10.3	
07/29/1998	2	9	27.8	10.6	
07/29/1998	2	11	27.5	10.5	
07/29/1998	2	13	27.0	11.3	
07/29/1998	2	15	25.2	13.5	
07/29/1998	2	17	22.7	13.4	
07/29/1998	2	19	20.4	4.8	
07/29/1998	2	21	18.0	0.1	
07/29/1998	2	23	15.4	0.1	
07/29/1998	2	25	13.8	0.1	
07/29/1998	2	27	12.8	0.1	
07/29/1998	2	29	11.9	0.1	
07/29/1998	3	1	28.5	10	
07/29/1998	3	3	28.5	10.3	
07/29/1998	3	5	28.2	10.3	
07/29/1998	3	4	28.2	10.3	
07/29/1998	3	9	28.1	10.3	
07/29/1998	3	11	28.1	10.2	
07/29/1998	3	13	28.1	10.3	
07/29/1998	3	15	26.1	14.6	
07/29/1998	3	17	23.5	17.4	
07/29/1998	3	19	20.2	9.6	
07/29/1998	3	21	17.5	0.3	
07/29/1998	3	23	15.9	0	
07/29/1998	3	25	14.4	0	
07/29/1998	3	27	13.0	0	
07/29/1998	3	35	10.0	0	
07/29/1998	3	43	9.0	0	
08/11/1998	1	1	27.5	8.5	
08/11/1998	1	3	27.5	8.7	
08/11/1998	1	5	27.5	8.8	
08/11/1998	1	7	27.5	8.5	
08/11/1998	2	1	8.9	8.9	
08/11/1998	2	3	8.9	8.9	
08/11/1998	2	5	8.9	8.9	
08/11/1998	2	7	8.9	8.9	
08/11/1998	2	9	8.9	8.9	
08/11/1998	2	11	8.9	8.9	
08/11/1998	2	13	8.9	8.9	
08/11/1998	2	15	9.2	9.2	
08/11/1998	2	17	9.4	9.4	
08/11/1998	2	19	9.4	9.4	

Date	Station	Depth (feet)	Water Temp. (˚C)	DO (mg/l)	DO% Sat
08/11/1998	2	21	2.2	2.2	
08/11/1998	2	23	0.6	0.6	
08/11/1998	2	25	0.4	0.4	
08/11/1998	2	27	0.4	0.4	
08/11/1998	2	29	0.4	0.4	
08/11/1998	3	1	27.0	8.9	
08/11/1998	3	3	27.0	8.9	
08/11/1998	3	5	27.0	8.9	
08/11/1998	3	7	27.0	8.9	
08/11/1998	3	9	27.0	8.8	
08/11/1998	3	11	27.0	8.8	
08/11/1998	3	13	27.0	8.8	
08/11/1998	3	15	27.0	8.8	
08/11/1998	3	17	27.0	8.9	
08/11/1998	3	19	22.0	14.2	
08/11/1998	3	21	20.0	7.1	
08/11/1998	3	23	17.0	0.2	
08/11/1998	3	25	15.0	0.3	
08/11/1998	3	27	13.0	0.3	
08/11/1998	3	29	12.5	0.2	
08/11/1998	3	31	12.0	0.2	
08/11/1998	3	33	11.0	0.2	
08/11/1998	3	35	11.0	0.2	
08/11/1998	3	37	10.0	0.2	
08/11/1998	3	39	10.0	0.2	
08/11/1998	3	41	10.0	0.2	
08/11/1998	3	43	10.0	0.2	
08/11/1998	3	45	10.0	0.2	
08/11/1998	3	47	9.0	0.2	
08/26/1998	1	1	27.9	10	
08/26/1998	1	3	27.9	10.1	
08/26/1998	1	5	27.9	9.9	
08/26/1998	1	7	27.6	9.6	
08/26/1998	1	9	27.6	9.5	
08/26/1998	2	1	27.8	10.2	
08/26/1998	2	3	27.8	10.2	
08/26/1998	2	5	27.5	10.2	
08/26/1998	2	7	27.5	10.2	
08/26/1998	2	9	27.5	10.1	
08/26/1998	2	11	26.8	10.1	
08/26/1998	2	13	26.2	9.6	
08/26/1998	2	15	25.6	8.8	
08/26/1998	2	17	25.1	8.4	
08/26/1998	2	19	24.2	8.8	

08/26/1998	2	21	21.5	10.5	
08/26/1998	2	23	19.3	3	
08/26/1998	2	25	15.0	0	
08/26/1998	2	27	13.7	0	
08/26/1998	2	29	12.2	0	
08/26/1998	3	1	28.0	10.2	
08/26/1998	3	3	27.7	10.3	
08/26/1998	3	5	27.7	10.3	
08/26/1998	3	7	27.5	9.9	
08/26/1998	3	9	27.0	9.6	
08/26/1998	3	11	27.0	10.7	
08/26/1998	3	13	26.5	10.2	
08/26/1998	3	15	26.1	9.4	
08/26/1998	3	17	25.5	8.9	
08/26/1998	3	19	23.8	11	
08/26/1998	3	21	20.1	12.7	
08/26/1998	3	23	18.4	7.8	
08/26/1998	3	25	15.2	0	
08/26/1998	3	27	14.0	0	
08/26/1998	3	29	13.0	0	
08/26/1998	3	31	12.0	0	
08/26/1998	3	33	11.2	0	
08/26/1998	3	35	10.7	0	
08/26/1998	3	37	10.2	0	
08/26/1998	3	39	10.0	0	
08/26/1998	3	41	9.8	0	
08/26/1998	3	43	9.8	0	
09/08/1998	1	1	25.5	9.1	
09/08/1998	1	3	25.5	9.1	
09/08/1998	1	5	25.5	9	
09/08/1998	1	7	25.1	8.9	
09/08/1998	1	9	25.0	8.2	
09/08/1998	2	1	25.5	9.4	
09/08/1998	2	3	25.5	9.4	
09/08/1998	2	5	25.5	9.4	
09/08/1998	2	7	25.5	9.3	
09/08/1998	2	9	25.5	9.3	
09/08/1998	2	11	25.5	9.2	
09/08/1998	2	13	25.5	9	
09/08/1998	2	15	25.5	9.2	
09/08/1998	2	17	25.2	8.6	
09/08/1998	2	19	24.6	7.7	
09/08/1998	2	21	22.0	9.2	
09/08/1998	2	23	18.0	0.6	
09/08/1998	2	25	16.0	0.1	
09/08/1998	2	27	14.5	0	
09/08/1998	3	1	26.0	9.7	

Date	Station	Depth (feet)	Water Temp. (˚C)	DO (mg/l)	DO% Sat
09/08/1998	3	3	25.8	9.7	
09/08/1998	3	5	25.8	9.6	
09/08/1998	3	7	25.8	9.6	
09/08/1998	3	9	25.8	9.6	
09/08/1998	3	11	25.8	9.6	
09/08/1998	3	13	25.8	9.6	
09/08/1998	3	15	25.8	9.5	
09/08/1998	3	17	25.8	9.5	
09/08/1998	3	19	25.8	9.4	
09/08/1998	3	21	25.8	9.2	
09/08/1998	3	23	20.3	8.3	
09/08/1998	3	25	17.5	0	
09/08/1998	3	27	15.5	0	
09/08/1998	3	29	14.3	0	
09/30/1998	1	1	23.0	8.3	
09/30/1998	1	3	23.0	8.3	
09/30/1998	1	5	23.0	8.2	
09/30/1998	1	7	22.8	8.2	
09/30/1998	2	1	23.2	8.6	
09/30/1998	2	3	23.2	8.6	
09/30/1998	2	5	23.0	8.5	
09/30/1998	2	7	23.0	8.5	
09/30/1998	2	9	23.0	8.3	
09/30/1998	2	11	22.8	8.2	
09/30/1998	2	13	22.8	7.6	
09/30/1998	2	15	22.5	7	
09/30/1998	2	17	22.3	6.7	
09/30/1998	2	19	22.3	6.5	
09/30/1998	2	21	22.0	5.5	
09/30/1998	2	23	21.5	3.7	
09/30/1998	2	25	18.3	0	
09/30/1998	3	1	23.5	8.6	
09/30/1998	3	3	23.0	8.6	
09/30/1998	3	5	23.0	8.6	
09/30/1998	3	7	22.8	8.6	
09/30/1998	3	9	22.8	8.6	
09/30/1998	3	11	22.8	8.5	
09/30/1998	3	13	22.6	8.4	
09/30/1998	3	15	22.6	8	
09/30/1998	3	17	22.6	7.8	
09/30/1998	3	19	22.5	6.9	
09/30/1998	3	21	21.7	3.3	
09/30/1998	3	23	20.4	0	
09/30/1998	3	25	19.2	0	

09/30/1998	3	27	17.5	0	
09/30/1998	3	29	14.5	0	
09/30/1998	3	31	12.9	0	
09/30/1998	3	33	12.1	0	
09/30/1998	3	35	11.5	0	
09/30/1998	3	37	11.2	0	
09/30/1998	3	39	10.9	0	
09/30/1998	3	41	10.5	0	
09/30/1998	3	43	10.5	0	
11/04/1998	1	1	13.0	8.7	
11/04/1998	1	3	13.0	8.7	
11/04/1998	1	5	13.0	8.7	
11/04/1998	1	7	12.5	8.9	
11/04/1998	1	9	12.0	8.9	
11/04/1998	2	1	13.8	8.4	
11/04/1998	2	5	13.8	8.4	
11/04/1998	2	7	13.8	8.4	
11/04/1998	2	9	13.8	8.4	
11/04/1998	2	11	13.8	8.4	
11/04/1998	2	13	13.8	8.3	
11/04/1998	2	15	13.8	8.3	
11/04/1998	2	19	13.8	8.3	
11/04/1998	2	23	13.5	8.2	
11/04/1998	2	25	13.5	8.2	
11/04/1998	2	27	13.5	8.1	
11/04/1998	3	1	13.9	8	
11/04/1998	3	5	13.9	7.9	
11/04/1998	3	9	13.9	7.9	
11/04/1998	3	13		7.8	
11/04/1998	3	17	13.9	7.8	
11/04/1998	3	21	13.9	7.8	
11/04/1998	3	25	13.9	7.7	
11/04/1998	3	29	13.9	7.7	
11/04/1998	3	33	13.9	7.5	
11/04/1998	3	37	13.9	7.5	
11/04/1998	3	40	11.3	0	
12/16/1998	1	1	7.5	10.1	
12/16/1998	1	3	7.5	10	
12/16/1998	1	5	7.5	10	
12/16/1998	1	7	7.5	10.2	
12/16/1998	1	9	6.0	10.2	
12/16/1998	2	1	8.5	9.7	
12/16/1998	2	7	8.5	9.7	
12/16/1998	2	13	8.5	9.5	
12/16/1998	2	19	8.5	9.3	
12/16/1998	2	25	8.1	9.2	
12/16/1998	3	1	8.5	9.7	

12/16/1998	3	7	8.5	9.6	
12/16/1998	3	13	8.5	9.5	
12/16/1998	3	19	8.5	9.4	
12/16/1998	3	25	8.5	9.4	
12/16/1998	3	31	8.5	9.3	
12/16/1998	3	37	8.5	9.1	
01/27/1999	1	1	5.2	11	
01/27/1999	1	4	5.2	11	
Date	Station	Depth (feet)	Water Temp. (˚C)	DO (mg/l)	DO% Sat
01/27/1999	2	1	4.5	12.2	
01/27/1999	2	3	4.5	12.1	
01/27/1999	2	5	4.5	12	
01/27/1999	2	7	4.5	11.8	
01/27/1999	2	9	4.0	11.6	
01/27/1999	2	11	4.0	11.4	
01/27/1999	2	13	4.0	11.3	
01/27/1999	2	15	4.0	11.2	
01/27/1999	2	17	4.0	11.1	
01/27/1999	2	19	4.0	11	
01/27/1999	2	21	4.0	11	
01/27/1999	2	23	4.0	10.8	
01/27/1999	3	1	4.0	12.1	
01/27/1999	3	7	4.0	11.2	
01/27/1999	3	13	3.7	10.6	
01/27/1999	3	19	3.7	9.8	
01/27/1999	3	25	3.7	9.7	
01/27/1999	3	31	3.7	9.6	
01/27/1999	3	37	3.7	9.5	
04/27/1999	1	1	13.5	9.3	
04/27/1999	1	3	13.5	9	
04/27/1999	1	5	13.1	8.7	
04/27/1999	1	7	12.5	8.5	
04/27/1999	1	9	12.5	8.3	
04/27/1999	2	1	14.2	9.4	
04/27/1999	2	3	14.2	9.2	
04/27/1999	2	5	14.0	8.9	
04/27/1999	2	7	14.0	8.9	
04/27/1999	2	9	14.0	8.6	
04/27/1999	2	11	13.8	8.3	
04/27/1999	2	13	13.4	8	
04/27/1999	2	15	12.8	7.5	
04/27/1999	2	17	12.8	7.3	
04/27/1999	2	19	12.3	7	
04/27/1999	2	21	12.0	6.6	
04/27/1999	2	23	12.0	6.2	

04/27/1999	2	25	12.0	6.1	
04/27/1999	3	1	15.3	9.7	
04/27/1999	3	3	14.9	9.3	
04/27/1999	3	5	14.9	9.1	
04/27/1999	3	7	14.8	8.9	
04/27/1999	3	9	14.8	9	
04/27/1999	3	11	14.8	8.7	
04/27/1999	3	13	14.6	8.6	
04/27/1999	3	15	14.5	8.5	
04/27/1999	3	17	13.7	8.4	
04/27/1999	3	19	13.0	8.3	
04/27/1999	3	21	12.5	8.1	
04/27/1999	3	23	12.2	7.8	
04/27/1999	3	25	12.1	7.6	
04/27/1999	3	27	12.0	7.4	
04/27/1999	3	29	12.0	7.2	
04/27/1999	3	31	11.9	6.8	
04/27/1999	3	33	11.9	6.1	
04/27/1999	3	35	11.5	5.6	
04/27/1999	3	37	11.2	4.6	
04/27/1999	3	39	9.8	2.4	
04/27/1999	3	41	9.0	2.3	
05/12/1999	1	1	20.1	9	
05/12/1999	1	3	20.1	8.7	
05/12/1999	1	5	19.9	8.6	
05/12/1999	2	1	20.1	9	
05/12/1999	2	3	20.0	8.9	
05/12/1999	2	5	20.0	8.7	
05/12/1999	2	7	19.8	8.8	
05/12/1999	2	9	19.4	8.7	
05/12/1999	2	11	19.0	8.7	
05/12/1999	2	13	18.5	8.6	
05/12/1999	2	15	17.7	8.8	
05/12/1999	2	17	16.8	8.8	
05/12/1999	2	19	15.6	8.4	
05/12/1999	2	21	14.8	7.5	
05/12/1999	2	23	13.5	5.3	
05/12/1999	2	25	13.0	4	
05/12/1999	2	27	12.6	3	
05/12/1999	2	29	12.5	2.9	
05/12/1999	3	1	20.8	9.1	
05/12/1999	3	3	20.1	8.9	
05/12/1999	3	5	19.9	8.8	
05/12/1999	3	7	19.5	8.8	
05/12/1999	3	9	19.5	8.6	
05/12/1999	3	11	19.2	8.5	
05/12/1999	3	13	18.5	8.7	

Date	Station	Depth (feet)	Water Temp. (˚C)	DO (mg/l)	DO% Sat
05/12/1999	3	15	17.7	8.9	
05/12/1999	3	17	16.0	8.8	
05/12/1999	3	19	15.2	8.8	
05/12/1999	3	21	14.9	8.6	
05/12/1999	3	23	14.0	8.3	
05/12/1999	3	25	13.5	7.9	
05/12/1999	3	27	13.0	7.2	
05/12/1999	3	29	12.5	5.8	
05/12/1999	3	31	12.0	4.5	
05/12/1999	3	33	11.5	3.4	
05/12/1999	3	35	11.2	2.5	
05/12/1999	3	37	11.0	1.9	
05/12/1999	3	39	10.7	1.6	
06/08/1999	1	1	25.5	10	
06/08/1999	1	3	25.5	10	
06/08/1999	1	5	25.0	8.97	
06/08/1999	2	1	26.0	9.3	
06/08/1999	2	3	26.0	9.3	
06/08/1999	2	5	25.8	9.4	
06/08/1999	2	7	25.8	9.7	
06/08/1999	2	9	25.0	9.7	
06/08/1999	2	11	24.2	9.6	
06/08/1999	2	13	23.5	9.3	
06/08/1999	2	15	22.3	9.2	
06/08/1999	2	17	21.0	8.7	
06/08/1999	2	19	19.6	7.1	
06/08/1999	2	21	18.8	6.5	
06/08/1999	2	23	17.1	4.4	
06/08/1999	2	25	15.3	2.6	
06/08/1999	3	1	26.8	8.9	
06/08/1999	3	3	26.8	8.9	
06/08/1999	3	5	26.5	8.9	
06/08/1999	3	7	26.5	8.9	
06/08/1999	3	9	26.5	9	
06/08/1999	3	11	26.5	9.1	
06/08/1999	3	13	24.5	9	
06/08/1999	3	15	23.5	9.2	
06/08/1999	3	17	22.0	9.3	
06/08/1999	3	19	19.1	7.6	
06/08/1999	3	21	18.0	6.8	
06/08/1999	3	23	17.0	5.5	
06/08/1999	3	25	15.4	4.6	
06/08/1999	3	27	14.4	3.8	
06/08/1999	3	29	13.8	3.1	

06/08/1999	3	31	13.1	2.2	
06/08/1999	3	33	12.5	1.2	
06/08/1999	3	35	12.2	0.3	
06/08/1999	3	37	11.9	0.3	
06/08/1999	3	39	11.3	0.3	
06/23/1999	1	1	24.5	10.4	
06/23/1999	1	3	23.9	10.4	
06/23/1999	1	5	23.5	9.6	
06/23/1999	2	1	24.0	9	
06/23/1999	2	3	23.6	9.1	
06/23/1999	2	5	23.1	9	
06/23/1999	2	7	23.0	9.1	
06/23/1999	2	9	22.8	9.1	
06/23/1999	2	11	22.5	8.7	
06/23/1999	2	13	22.4	8.4	
06/23/1999	2	15	22.2	7.9	
06/23/1999	2	17	22.0	7.6	
06/23/1999	2	19	21.5	5.2	
06/23/1999	2	21	19.5	3.4	
06/23/1999	2	23	17.8	2.1	
06/23/1999	3	1	24.5	9.4	
06/23/1999	3	3	23.9	9.4	
06/23/1999	3	5	23.5	9.3	
06/23/1999	3	7	23.1	9.3	
06/23/1999	3	9	23.0	9.2	
06/23/1999	3	11	22.9	9.1	
06/23/1999	3	13	22.8	8.9	
06/23/1999	3	15	22.5	8.8	
06/23/1999	3	17	22.0	7.8	
06/23/1999	3	19	20.2	5.9	
06/23/1999	3	21	19.0	3.6	
06/23/1999	3	23	17.6	3.3	
06/23/1999	3	25	16.4	2.6	
06/23/1999	3	27	15.2	2.1	
06/23/1999	3	29	14.3	1.4	
06/23/1999	3	31	13.3	0.7	
06/23/1999	3	33	12.5	0.2	
06/23/1999	3	35	12.0	0.2	
06/23/1999	3	37	11.7	0.2	
06/23/1999	3	39	11.4	0.2	
07/07/1999	1	1	28.9	9.2	
07/07/1999	1	3	28.9	9.2	
07/07/1999	1	5	28.7	9.2	
07/07/1999	1	7	28.2	8.5	
07/07/1999	2	1	29.0	9.2	
07/07/1999	2	3	29.0	9.2	
07/07/1999	2	5	29.0	9.3	

07/07/1999	2	7	29.0	9.4	
07/07/1999	2	9	28.9	9.5	
07/07/1999	2	11	27.5	10.2	
07/07/1999	2	13	26.0	9.4	
07/07/1999	2	15	24.8	8.7	
07/07/1999	2	17	23.7	7.9	
07/07/1999	2	19	22.4	5.9	
07/07/1999	2	21	20.8	3.2	
07/07/1999	2	23	19.1	1.2	
07/07/1999	2	25	17.2	0.5	
07/07/1999	2	27	16.2	0.3	
07/07/1999	3	1	29.5	9.4	
07/07/1999	3	3	29.5	9.2	
07/07/1999	3	5	29.2	9	
07/07/1999	3	7	29.2	9.1	
07/07/1999	3	9	29.2	9.1	
07/07/1999	3	11	29.2	9.1	
07/07/1999	3	13	27.5	8.7	
07/07/1999	3	15	25.5	8.6	
07/07/1999	3	17	23.8	7.7	
07/07/1999	3	19	22.0	5.8	
07/07/1999	3	21	20.5	3.9	
07/07/1999	3	23	18.9	1.3	
07/07/1999	3	25	17.5	0.7	
07/07/1999	3	27	16.0	0.5	
07/07/1999	3	29	14.5	1.4	
07/07/1999	3	31	13.7	0.3	
07/07/1999	3	33	13.1	0.3	
07/07/1999	3	35	12.8	0.1	
07/07/1999	3	37	12.4	0.1	
07/07/1999	3	39	12.0	0.1	
07/22/1999	1	1	27.9	9.2	
07/22/1999	1	3	27.9	9.2	
07/22/1999	1	5	27.5	9	
07/22/1999	1	7	27.3	8.6	
07/22/1999	2	1	28.0	9.2	
07/22/1999	2	3	27.8	9.3	
07/22/1999	2	5	27.8	9.3	
07/22/1999	2	7	27.8	9.3	
07/22/1999	2	9	27.5	9.1	
07/22/1999	2	11	27.5	8.8	
07/22/1999	2	13	27.0	8.5	
07/22/1999	2	15	26.5	7.7	
07/22/1999	2	17	25.5	6.7	
07/22/1999	2	19	24.5	5.3	
07/22/1999	2	21	22.0	1.7	
07/22/1999	2	23	20.1	1.1	

07/22/1999	3	1	28.0	9.3	
07/22/1999	3	3	27.8	9.3	
07/22/1999	3	5	27.5	9.3	
07/22/1999	3	7	27.5	9.3	
07/22/1999	3	9	27.5	9.3	
07/22/1999	3	11	27.3	9.3	
07/22/1999	3	13	27.3	9.2	
07/22/1999	3	15	26.5	8.1	
07/22/1999	3	17	25.1	7.2	
07/22/1999	3	19	23.5	5.1	
07/22/1999	3	21	22.2	2.9	
07/22/1999	3	23	20.5	1.3	
07/22/1999	3	25	18.5	2	
07/22/1999	3	27	17.0	1.4	
07/22/1999	3	29	15.2	0.3	
07/22/1999	3	31	14.8	0.4	
07/22/1999	3	33	14.0	0.6	
07/22/1999	3	35	13.2	0.2	
07/22/1999	3	37	12.5	0.2	
07/22/1999	3	39	12.0	0.2	
07/22/1999	3	41	11.7	0.2	
08/04/1999	1	1	27.5	9.2	
08/04/1999	1	3	27.5	9.4	
08/04/1999	1	5	27.5	9.4	
08/04/1999	1	7	26.0	8	
08/04/1999	2	1	28.5	8.6	
08/04/1999	2	3	28.1	8.75	
08/04/1999	2	5	28.0	8.8	
08/04/1999	2	7	28.0	8.7	
08/04/1999	2	9	28.0	8.5	
08/04/1999	2	11	28.0	8.3	
08/04/1999	2	13	27.9	7.6	
08/04/1999	2	15	27.5	7.5	
08/04/1999	2	17	26.5	6	
08/04/1999	2	19	24.9	3.7	
08/04/1999	2	21	23.0	0.4	
08/04/1999	2	23	20.0	0.2	
08/04/1999	3	1	29.0	8.5	
08/04/1999	3	3	29.0	8.6	
08/04/1999	3	5	28.5	8.8	
08/04/1999	3	7	28.2	8.7	
08/04/1999	3	9	28.1	8.5	
08/04/1999	3	11	28.0	8.4	
08/04/1999	3	13	28.0	8.1	
08/04/1999	3	15	27.8	7.6	
08/04/1999	3	17	27.0	6.8	
08/04/1999	3	19	25.0	6	

08/04/1999	3	21	23.9	2.8	
08/04/1999	3	23	21.1	2.8	
08/04/1999	3	25	19.8	1.7	
08/04/1999	3	27	18.0	2.2	
08/04/1999	3	29	16.5	1.1	
08/04/1999	3	31	15.1	1.1	
08/04/1999	3	33	14.2	0.2	
08/04/1999	3	35	13.9	0.1	
08/04/1999	3	37	13.0	0.1	
08/04/1999	3	39	12.3	0.1	
08/04/1999	3	41	12.0	0.1	
08/04/1999	3	43	11.9	0.1	
08/19/1999	1	1	26.8	9.8	
08/19/1999	1	3	26.3	9.6	
08/19/1999	1	5	26.5	8.9	
08/19/1999	2	1	27.4	9.3	
08/19/1999	2	3	27.4	9.3	
08/19/1999	2	5	27.4	9.3	
08/19/1999	2	7	27.3	9.2	
08/19/1999	2	9	27.3	9.1	
08/19/1999	2	11	27.1	8.7	
08/19/1999	2	13	27.0	8	
08/19/1999	2	15	26.8	7.2	
08/19/1999	2	17	26.6	5.5	
08/19/1999	2	19	25.5	1	
08/19/1999	2	21	23.9	0.3	
08/19/1999	2	23	22.7	0	
08/19/1999	3	1	28.0	9.3	
08/19/1999	3	3	28.0	9.3	
08/19/1999	3	5	28.0	9.3	
08/19/1999	3	7	27.8	9.2	
08/19/1999	3	9	27.5	9.2	
08/19/1999	3	11	27.5	8.7	
08/19/1999	3	13	27.0	7.1	
08/19/1999	3	15	26.8	6.5	
08/19/1999	3	17	26.5	6.3	
08/19/1999	3	19	25.8	1.7	
08/19/1999	3	21	24.2	0.3	
08/19/1999	3	23	21.6	0.3	
08/19/1999	3	25	20.2	0	
08/19/1999	3	27	18.5	0	
08/19/1999	3	29	17.0	0	
08/19/1999	3	31	15.0	0	
08/19/1999	3	33	14.5	0	
08/19/1999	3	35	13.7	0	
08/19/1999	3	37	12.7	0	
08/19/1999	3	39	12.5	0	

09/09/1999	1	1	24.8	11.5	
09/09/1999	1	3	24.8	10.7	
09/09/1999	1	5	24.5	10.6	
09/09/1999	1	7	23.6	8.1	
09/09/1999	1	9	22.0	1.2	
09/09/1999	2	1	24.9	9.2	
09/09/1999	2	3	24.7	9.1	
09/09/1999	2	5	24.5	8.9	
09/09/1999	2	7	24.0	8.6	
09/09/1999	2	9	24.0	8.6	
09/09/1999	2	11	23.9	8.6	
09/09/1999	2	13	23.7	8.3	
09/09/1999	2	15	23.5	7.8	
09/09/1999	2	17	23.5	7.4	
09/09/1999	2	19	23.1	6.7	
09/09/1999	2	21	23.0	4.9	
09/09/1999	2	23	22.5	3.2	
09/09/1999	3	1	25.0	8.7	
09/09/1999	3	3	25.0	8.7	
09/09/1999	3	5	24.5	8.4	
09/09/1999	3	7	24.2	8.5	
09/09/1999	3	9	24.2	8.4	
09/09/1999	3	11	24.0	8.1	
09/09/1999	3	13	23.7	7.8	
09/09/1999	3	15	23.5	7.5	
09/09/1999	3	17	23.5	6.1	
09/09/1999	3	19	23.2	6	
09/09/1999	3	21	23.0	4.9	
09/09/1999	3	23	22.6	3.1	
09/09/1999	3	25	21.4	2	
09/09/1999	3	27	20.1	0	
09/09/1999	3	29	18.7	0	
09/09/1999	3	31	17.0	0	
09/09/1999	3	33	16.0	0	
09/09/1999	3	35	14.8	0	
09/09/1999	3	37	13.9	0	
09/09/1999	3	39	13.0	0	
09/09/1999	3	41	12.7	0	
09/09/1999	3	43	12.5	0	
09/09/1999	3	45	12.2	0	
09/24/1999	1	1	19.6	9.1	
09/24/1999	1	3	19.4	10.2	
09/24/1999	1	5	19.2	10.3	
09/24/1999	1	7	19.2	10.4	
09/24/1999	2	1	20.5	8.4	
09/24/1999	2	3	20.5	8.5	
09/24/1999	2	5	20.2	8.6	

09/24/1999	2	7	20.2	8.5	
09/24/1999	2	9	20.1	8.3	
09/24/1999	2	11	20.1	8.3	
09/24/1999	2	13	20.1	8.2	
09/24/1999	2	15	20.1	8.2	
09/24/1999	2	17	20.1	7.7	
09/24/1999	2	19	20.0	7.4	
09/24/1999	2	21	20.0	7.6	
09/24/1999	2	23	20.0	7.3	
09/24/1999	2	25	19.8	7	
09/24/1999	2	27	19.5	7	
09/24/1999	3	1	20.5	7.9	
09/24/1999	3	3	20.1	7.9	
09/24/1999	3	5	20.0	7.9	
09/24/1999	3	7	20.0	7.8	
09/24/1999	3	9	20.0	7.8	
09/24/1999	3	11	19.9	7.7	
09/24/1999	3	13	19.9	7.7	
09/24/1999	3	15	19.8	7.7	
09/24/1999	3	17	19.8	7.6	
09/24/1999	3	19	19.8	7.5	
09/24/1999	3	21	19.8	7.5	
09/24/1999	3	23	19.8	7.5	
09/24/1999	3	25	19.8	7.4	
09/24/1999	3	27	19.8	7.4	
09/24/1999	3	29	19.7	7.4	
09/24/1999	3	31	19.5	6.6	
09/24/1999	3	33	19.4	5	
09/24/1999	3	35	17.9	0	
09/24/1999	3	37	15.8	0	
09/24/1999	3	39	14.7	0	
09/24/1999	3	41	13.6	0	
10/07/1999	1	1	17.1	10.5	
10/07/1999	1	3	17.1	10.2	
10/07/1999	1	5	17.0	10.4	
10/07/1999	1	7	17.0	10.4	
10/07/1999	2	1	18.5	8.1	
10/07/1999	2	3	18.5	8	
10/07/1999	2	5	18.5	8	
10/07/1999	2	7	18.5	7.9	
10/07/1999	2	9	18.5	7.7	
10/07/1999	2	11	18.5	7.6	
10/07/1999	2	13	18.5	7.5	
10/07/1999	2	15	18.5	7.3	
10/07/1999	2	17	18.5	7.2	
10/07/1999	2	19	18.5	7.1	
10/07/1999	2	21	18.5	6.9	

10/07/1999	2	23	18.5	6.8	
10/07/1999	2	25	18.5	6.7	
10/07/1999	2	27	18.5	6.4	
10/07/1999	3	1	18.7	7.8	
10/07/1999	3	3		7.8	
10/07/1999	3	5	18.7	7.8	
10/07/1999	3	7		7.8	
10/07/1999	3	9	18.7	7.8	
10/07/1999	3	11		7.8	
10/07/1999	3	13	18.7	7.8	
10/07/1999	3	15		7.8	
10/07/1999	3	17	18.7	7.8	
10/07/1999	3	19		7.8	
10/07/1999	3	21	18.7	7.8	
10/07/1999	3	23		7.8	
10/07/1999	3	25	18.7	7.8	
10/07/1999	3	27		7.8	
10/07/1999	3	29	18.7	7.7	
10/07/1999	3	31		7.6	
10/07/1999	3	33	18.5	7.4	
10/07/1999	3	35		6	
10/07/1999	3	37	18.3	4.8	
10/07/1999	3	39		0.2	
10/07/1999	3	41	15.0	0.2	
10/28/1999	1	1	14.0	11.1	
10/28/1999	1	3	14.0	11.4	
10/28/1999	1	5	13.8	11	
10/28/1999	1	7	13.5	11.4	
10/28/1999	1	9	13.5	11.7	
10/28/1999	2	1	14.5	9.8	
10/28/1999	2	5	14.5	9.8	
10/28/1999	2	9	14.5	9.6	
10/28/1999	2	13	14.2	9.4	
10/28/1999	2	17	14.2	9.4	
10/28/1999	2	21	14.2	9.2	
10/28/1999	2	25	14.2	9.1	
10/28/1999	3	1	14.8	9.9	
10/28/1999	3	5	14.5	9.8	
10/28/1999	3	9	14.5	9.6	
10/28/1999	3	13	14.2	9.5	
10/28/1999	3	17	14.2	9.4	
10/28/1999	3	21	14.2	9.3	
10/28/1999	3	25	14.2	9.3	
10/28/1999	3	29	14.2	9.2	
10/28/1999	3	33	14.2	9.1	
10/28/1999	3	37	14.2	9	
10/28/1999	3	41	14.1	8.5	

11/28/1999	1	1	9.3	11	
11/28/1999	1	3	9.3	10.9	
11/28/1999	1	5	8.6	10.6	
11/28/1999	1	7	8.2	10.3	
11/28/1999	1	9	8.0	9.8	
11/28/1999	1	11	7.8	9.8	
11/28/1999	2	1	10.5	9.8	
11/28/1999	2	5	10.5	9.8	
11/28/1999	2	9	10.0	9.6	
11/28/1999	2	13	10.0	9.4	
11/28/1999	2	17	9.8	9.4	
11/28/1999	2	21	9.8	9.2	
11/28/1999	3	1	10.8	10.4	
11/28/1999	3	5	10.5	9.9	
11/28/1999	3	9	10.5	9.7	
11/28/1999	3	13	10.5	9.6	
11/28/1999	3	17	10.5	9.5	
11/28/1999	3	21	10.2	9.5	
11/28/1999	3	25	10.2	9.3	
11/28/1999	3	29	10.2	9.3	
11/28/1999	3	33	10.2	9.3	
11/28/1999	3	37	10.2	9.3	
11/28/1999	3	41	10.2	9.3	
04/20/2000	1	1	12.9	10.22	98.6
04/20/2000	1	3	12.4	10.26	98.1
04/20/2000	1	5	12.4	10.16	96.9
04/20/2000	1	7	12.2	9.98	94.8
04/20/2000	1	9	11.8	9.57	90.2
04/20/2000	2	1	13.2	10.26	99.7
04/20/2000	2	3	13.2	10.25	99.6
04/20/2000	2	5	13.1	10.2	99.4
04/20/2000	2	7	12.9	10.24	99.0
04/20/2000	2	9	12.8	10.24	98.6
04/20/2000	2	11	12.6	10.16	97.2
04/20/2000	2	13	12.5	10.08	96.3
04/20/2000	2	15	12.4	10.01	95.6
04/20/2000	2	17	12.3	9.85	93.9
04/20/2000	2	19	12.1	9.69	91.7
04/20/2000	2	21	12.0	9.77	92.4
04/20/2000	2	23	12.0	9.75	92.2
04/20/2000	2	25	12.0	9.74	92.0
04/20/2000	2	27	11.8	9.2	86.7
04/20/2000	2	29	11.7	8.98	84.3
04/20/2000	2	31	11.4	8.5	79.4
04/20/2000	3	1	13.1	10.26	99.4
04/20/2000	3	3	12.6	10.22	97.9
04/20/2000	3	5	12.4	10.25	97.8

04/20/2000	3	7	12.3	10.09	96.1
04/20/2000	3	9	12.2	10.1	95.9
04/20/2000	3	11	12.1	10.06	95.4
04/20/2000	3	13	12.1	10.01	94.9
04/20/2000	3	15	12.0	9.85	93.1
04/20/2000	3	17	11.9	9.68	91.4
04/20/2000	3	19	11.8	9.53	89.8
04/20/2000	3	21	11.8	9.44	88.9
04/20/2000	3	23	11.7	9.27	87.1
04/20/2000	3	25	11.7	9.26	86.9
04/20/2000	3	27	11.6	9.14	85.6
04/20/2000	3	31	11.5	8.97	83.9
04/20/2000	3	33	11.4	8.93	83.4
04/20/2000	3	35	11.3	8.6	80.1
04/20/2000	3	37	11.3	8.18	76.1
04/20/2000	3	39	11.2	7.6	70.5
04/20/2000	3	41	11.0	6.31	58.3
05/10/2000	1	1	24.9	8.88	110.3
05/10/2000	1	3	24.4	8.43	103.8
05/10/2000	1	5	23.1	9.81	117.7
05/10/2000	1	7	20.2	10.34	117.3
05/10/2000	1	9	18.6	10.31	113.3
05/10/2000	2	1	25.1	8.65	107.8
05/10/2000	2	3	24.7	8.71	107.3
05/10/2000	2	5	22.9	9.36	112
05/10/2000	2	7	19.7	9.96	111.9
05/10/2000	2	9	18.4	10.02	109.7
05/10/2000	2	11	17.5	10.19	109.6
05/10/2000	2	13	16.4	10.13	106.5
05/10/2000	2	15	15.8	10.35	107.5
05/10/2000	2	17	15.3	9.9	101.6
05/10/2000	2	19	14.8	9.52	96.8
05/10/2000	2	22	14.4	8.81	88.8
05/10/2000	2	23	13.7	7.64	75.8
05/10/2000	2	25	13.5	7.28	71.9
05/10/2000	2	27	13.2	6.19	60.7
05/10/2000	2	29	12.9	4.71	45.8
05/10/2000	3	1	24.4	8.3	102.1
05/10/2000	3	3	23.3	9.13	110
05/10/2000	3	5	20.5	9.15	104.6
05/10/2000	3	7	18.6	9.36	102.9
05/10/2000	3	9	17.8	9.04	97.8
05/10/2000	3	11	17.2	9.02	96.3
05/10/2000	3	13	16.3	9.41	98.8
05/10/2000	3	15	15.6	9.23	95.4
05/10/2000	3	17	15.1	9.2	94.1
05/10/2000	3	19	14.8	9.11	92.6

05/10/2000	3	21	14.3	9.02	90.6
05/10/2000	3	23	13.9	8.46	84.3
05/10/2000	3	25	13.7	8.3	82.2
05/10/2000	3	27	13.5	8.2	80.9
05/10/2000	3	29	13.3	7.92	77.8
05/10/2000	3	31	13.1	7.67	75
05/10/2000	3	33	12.7	6.98	67.7
05/10/2000	3	35	12.3	5.88	56.5
05/10/2000	3	37	12.1	5.08	48.5
05/10/2000	3	39	11.4	2.35	22.2
05/10/2000	3	41	11.2	1.73	16.1
05/10/2000	3	43	11.1	1.05	9.8
05/26/2000	1	1	20.1	8.82	99.4
05/26/2000	1	3	20.1	8.83	99.4
05/26/2000	1	5	19.9	8.86	99.5
05/26/2000	1	7	19.8	8.88	99.4
05/26/2000	1	9	19.4	8.36	92.8
05/26/2000	2	1	20.6	8.92	101.6
05/26/2000	2	3	20.5	8.92	101.3
05/26/2000	2	5	20.5	8.91	101.1
05/26/2000	2	7	20.4	8.87	100.5
05/26/2000	2	9	20.4	8.84	100.1
05/26/2000	2	11	20.1	8.55	96.3
05/26/2000	2	13	19.5	8.29	92.2
05/26/2000	2	15	18.5	7.24	78.9
05/26/2000	2	17	16.8	7.49	78.9
05/26/2000	2	19	15.7	7.68	78.8
05/26/2000	2	21	15.0	6.59	66.8
05/26/2000	3	1	21.1	8.82	101.3
05/26/2000	3	3	21.0	8.96	102.7
05/26/2000	3	5	20.9	9.04	103.4
05/26/2000	3	7	20.9	9.1	104.1
05/26/2000	3	9	20.8	9.18	104.8
05/26/2000	3	11	20.8	9.2	105.1
05/26/2000	3	13	20.8	9.25	105.6
05/26/2000	3	15	20.8	9.21	105.1
05/26/2000	3	17	17.2	8.4	89.1
05/26/2000	3	19	15.9	7.85	81.2
05/26/2000	3	21	15.1	6.92	70.2
05/26/2000	3	23	14.4	6.65	66.6
05/26/2000	3	25	14.1	6.12	60.8
05/26/2000	3	27	13.6	5.6	55
05/26/2000	3	29	13.3	5.04	49.2
05/26/2000	3	31	12.8	3.77	36.5
05/26/2000	3	33	12.6	3	28.6
05/26/2000	3	35	12.4	2.55	24.4
05/26/2000	3	37	12.4	2.18	20.8

05/26/2000	3	39	12.3	2.24	21.7
05/26/2000	3	41	12.2	1.8	17.1
05/26/2000	3	43	11.9	0.88	8.3
06/09/2000	1	1	21.7	8.83	101.9
06/09/2000	1	3	21.7	8.87	102.4
06/09/2000	1	5	21.5	8.81	101.6
06/09/2000	1	7	20.9	9.17	104.4
06/09/2000	1	9	20.5	8.73	98.4
06/09/2000	2	1	21.8	8.97	103.7
06/09/2000	2	3	21.7	8.98	103.6
06/09/2000	2	5	21.4	8.99	103.4
06/09/2000	2	7	21.2	8.94	102.2
06/09/2000	2	9	20.7	8.86	100.4
06/09/2000	2	11	20.4	8.67	97.5
06/09/2000	2	13	20.2	8.4	94.1
06/09/2000	2	15	19.9	7.99	89.1
06/09/2000	2	17	18.9	6.24	68.2
06/09/2000	2	19	18.0	5.46	58.6
06/09/2000	2	21	16.2	4.29	44.2
06/09/2000	2	23	14.8	2.71	27.2
06/09/2000	2	25	14.2	2.59	25.6
06/09/2000	2	27	13.9	2.07	20.4
06/09/2000	3	1	22.2	9	104.9
06/09/2000	3	3	22.0	8.97	104.1
06/09/2000	3	5	21.9	8.98	104
06/09/2000	3	7	21.8	9.05	104.6
06/09/2000	3	9	21.6	8.94	103.2
06/09/2000	3	11	21.2	9.06	103.5
06/09/2000	3	13	20.9	9.1	103.6
06/09/2000	3	15	20.6	8.85	99.8
06/09/2000	3	17	19.6	7.84	86.9
06/09/2000	3	19	17.5	5.32	56.4
06/09/2000	3	21	15.8	5.19	53.3
06/09/2000	3	23	15.1	4.98	49.9
06/09/2000	3	25	14.5	4.59	45.7
06/09/2000	3	27	14.0	4.03	39.7
06/09/2000	3	29	13.7	3.3	32.3
06/09/2000	3	31	13.3	2.68	26
06/09/2000	3	33	13.1	2.42	23.4
06/09/2000	3	35	12.8	1.55	14.9
06/09/2000	3	37	12.6	0.88	8.4
06/09/2000	3	39	12.4	0.36	3.4
06/23/2000	1	1.09	25.3	8.66	108.1
06/23/2000	1	3.01	25.3	8.71	108.7
06/23/2000	1	5	25.2	8.57	106.7
06/23/2000	1	6.96	24.9	8.76	108.4
06/23/2000	1	9.01	24.6	8.54	105

06/23/2000	2	0.98	25.6	8.39	105.2
06/23/2000	2	2.96	25.6	8.38	105.1
06/23/2000	2	4.98	25.5	8.46	105.9
06/23/2000	2	7.07	25.4	8.44	105.4
06/23/2000	2	9.01	25.2	8.62	107.3
06/23/2000	2	11.01	24.2	8.63	105.6
06/23/2000	2	13.08	23.1	7.67	91.7
06/23/2000	2	15.05	21.2	5.7	65.8
06/23/2000	2	17.05	20.0	4.91	55.4
06/23/2000	2	19.04	18.6	3.31	36.2
06/23/2000	2	21.02	17.3	2.24	23.9
06/23/2000	2	22.99	15.7	1.08	11.1
06/23/2000	2	25.06	14.9	0.77	7.8
06/23/2000	2	27.02	14.6	0.48	5
06/23/2000	3	0.99	25.7	8.35	104.9
06/23/2000	3	3	25.7	8.33	104.5
06/23/2000	3	5.08	25.6	8.35	104.8
06/23/2000	3	7.01	25.6	8.4	105.3
06/23/2000	3	8.97	25.6	8.43	105.6
06/23/2000	3	10.87	25.5	8.39	105
06/23/2000	3	13.04	25.3	8.39	104.7
06/23/2000	3	15.02	22.3	7.07	83.4
06/23/2000	3	16.99	20.5	5.71	65
06/23/2000	3	18.95	19.2	4.32	47.9
06/23/2000	3	21.02	17.2	2.68	28.6
06/23/2000	3	23.15	15.4	2.04	21
06/23/2000	3	25.04	15.0	2.21	22.4
06/23/2000	3	27.1	14.6	1.82	18.3
06/23/2000	3	28.99	14.3	1.66	16.6
06/23/2000	3	31.08	13.9	1.15	11.4
06/23/2000	3	33.02	13.4	0.61	6
06/23/2000	3	35.02	12.9	0.08	0.8
06/23/2000	3	37.04	12.8	0	0
06/23/2000	3	39.03	12.6	0	0
07/06/2000	1	1.04	26.9	9.49	121.5
07/06/2000	1	2.97	26.8	9.53	121.8
07/06/2000	1	5.02	26.7	10.57	134.7
07/06/2000	1	7.05	26.5	11.56	146.8
07/06/2000	1	9.08	26.4	11.79	149.5
07/06/2000	1	11.03	24.4	9.16	112
07/06/2000	2	1.03	27.2	8.87	114
07/06/2000	2	2.89	27.2	8.91	114.6
07/06/2000	2	5.02	27.2	8.98	115.5
07/06/2000	2	6.98	27.2	9.12	117.2
07/06/2000	2	9.02	27.1	9.06	116.2
07/06/2000	2	10.98	26.6	8.89	113.2
07/06/2000	2	13.06	25.6	8.61	107.4

07/06/2000	2	15.04	23.8	8.49	102.7
07/06/2000	2	16.95	21.9	6	70
07/06/2000	2	19.01	20.1	3.47	39.1
07/06/2000	2	21.05	18.5	1.32	14.4
07/06/2000	2	22.99	17.1	0.52	5.5
07/06/2000	2	24.98	15.3	0.29	2.9
07/06/2000	2	27.06	14.7	0.24	2.4
07/06/2000	3	1.06	27.8	8.58	111.6
07/06/2000	3	2.97	27.7	8.56	111
07/06/2000	3	5.04	27.6	8.56	111
07/06/2000	3	7.01	27.6	8.61	111.4
07/06/2000	3	9.06	27.5	8.62	111.5
07/06/2000	3	11.08	26.4	8.67	110
07/06/2000	3	13.05	25.9	7.98	100.2
07/06/2000	3	14.98	24.4	8.27	101.2
07/06/2000	3	17.03	22.2	6.67	78.2
07/06/2000	3	18.86	19.7	3.96	44.2
07/06/2000	3	20.99	18.1	1.84	19.8
07/06/2000	3	22.99	16.8	0.96	10.1
07/06/2000	3	25	15.7	0.45	4.6
07/06/2000	3	27	15.1	0.33	3.3
07/06/2000	3	29	14.6	0.23	2.3
07/06/2000	3	30.99	14.2	0.2	2
07/06/2000	3	32.97	13.8	0.12	1.2
07/06/2000	3	34.98	13.2	0.57	5.5
07/06/2000	3	37.02	12.6	0.4	3.9
07/18/2000	1	1	26.1	9.92	125
07/18/2000	1	2.89	25.9	9.63	120.9
07/18/2000	1	5.01	25.8	9.86	123.7
07/18/2000	1	7.03	25.8	9.8	122.8
07/18/2000	1	9.01	25.7	10.46	130.6
07/18/2000	2	1.06	26.7	8.83	112.6
07/18/2000	2	3.07	26.5	8.98	114
07/18/2000	2	4.95	26.4	9.05	114.7
07/18/2000	2	6.93	26.3	9.18	116.1
07/18/2000	2	8.88	26.3	9.23	116.7
07/18/2000	2	11.03	26.1	9.63	121.3
07/18/2000	2	12.98	25.9	9.01	113.2
07/18/2000	2	14.98	25.6	8.72	108.9
07/18/2000	2	17.03	24.3	8.79	107.1
07/18/2000	2	19.1	22.5	8.93	105.2
07/18/2000	2	21.01	19.9	4.5	50.4
07/18/2000	2	23.01	18.4	0.86	9.7
07/18/2000	2	25	16.4	0.05	0.5
07/18/2000	2	26.96	15.2	0.02	0.2
07/18/2000	3	1.04	27.0	8.63	110.6
07/18/2000	3	3	26.8	8.75	111.9

07/18/2000	3	5.09	26.7	8.89	113.3
07/18/2000	3	7.01	26.5	8.86	112.5
07/18/2000	3	9.02	26.4	8.83	112
07/18/2000	3	11.01	26.3	8.65	109.5
07/18/2000	3	13.09	26.0	8.56	107.8
07/18/2000	3	15.06	25.4	8.28	103.1
07/18/2000	3	17.08	24.7	8.33	102.4
07/18/2000	3	18.95	23.3	8.8	105.4
07/18/2000	3	21.01	19.9	4.35	48.7
07/18/2000	3	23.09	17.8	0.39	4.1
07/18/2000	3	25.02	16.6	0.22	2.3
07/18/2000	3	27.07	15.8	0.15	1.6
07/18/2000	3	29.03	14.9	0.1	1
07/18/2000	3	30.98	14.4	0.1	1
07/18/2000	3	32.96	14.1	0.09	0.9
07/18/2000	3	34.93	13.7	0.23	2.2
07/18/2000	3	36.99	13.3	0	0
07/18/2000	3	39.02	12.8	0	0
07/18/2000	3	41.03	12.6	0	0
08/03/2000	1	1.02	27.4	10.9	140.8
08/03/2000	1	3.05	27.4	10.88	140.4
08/03/2000	1	5.05	27.4	10.6	136.8
08/03/2000	1	7.05	27.1	10.91	139.7
08/03/2000	1	9.06	24.0	7.43	90.1
08/03/2000	1	10.94	22.1	1.48	17.3
08/03/2000	2	0.98	27.2	9.78	125.6
08/03/2000	2	3.15	27.2	9.94	127.7
08/03/2000	2	5.04	27.0	9.62	123.3
08/03/2000	2	7.02	26.9	9.36	119.7
08/03/2000	2	9.08	26.4	9.83	124.7
08/03/2000	2	11.04	25.7	10.23	128
08/03/2000	2	13.02	25.4	10.04	125
08/03/2000	2	15.08	24.9	9.05	111.6
08/03/2000	2	17.06	24.4	8.46	103.2
08/03/2000	2	19.06	23.6	8.72	104.9
08/03/2000	2	21.07	22.1	7.37	86.1
08/03/2000	2	23.04	19.9	0.62	7
08/03/2000	2	25.29	18.1	0.09	0.9
08/03/2000	2	26.88	16.7	0.04	0.5
08/03/2000	3	1.02	26.6	9.25	117.6
08/03/2000	3	3.01	26.6	9.28	117.9
08/03/2000	3	5.38	26.5	9.23	117.1
08/03/2000	3	7.07	26.4	9.23	117.1
08/03/2000	3	9.06	26.4	9.16	116.1
08/03/2000	3	11.08	26.4	9.05	114.6
08/03/2000	3	13.25	25.7	8.66	108.4
08/03/2000	3	15	25.1	7.83	97

08/03/2000	3	17.03	24.1	8.3	100.7
08/03/2000	3	19.12	23.5	9.25	111.1
08/03/2000	3	21.1	22.2	9.38	110.1
08/03/2000	3	23.07	20.4	1.4	15.8
08/03/2000	3	25.06	18.6	0.18	2
08/03/2000	3	27.16	16.3	1.11	11.6
08/03/2000	3	29.01	15.1	0.04	0.4
08/03/2000	3	31	14.4	0.02	0.2
08/03/2000	3	33.1	14.1	0	0
08/03/2000	3	35.17	13.8	0.01	0.1
08/03/2000	3	37.14	13.4	0	0
08/03/2000	3	39.03	12.9	0	0
08/03/2000	3	41.03	12.7	0	0
08/17/2000	1	1	25.4	10.63	132
08/17/2000	1	3	25.1	11.39	140.8
08/17/2000	1	5	24.8	12.56	154.5
08/17/2000	1	7	24.7	11.08	135.8
08/17/2000	1	9	22.2	4.51	52.9
08/17/2000	2	1	26.2	8.54	107.7
08/17/2000	2	3	26.0	8.72	109.6
08/17/2000	2	5	25.8	8.74	109.6
08/17/2000	2	7	25.7	8.88	111
08/17/2000	2	9	25.6	8.95	111.6
08/17/2000	2	11	25.6	9.05	112.7
08/17/2000	2	13	25.4	9.36	116.4
08/17/2000	2	15	25.4	9.38	116.4
08/17/2000	2	17	25.3	9.19	114.1
08/17/2000	2	19	25.0	8.86	109.3
08/17/2000	2	21	23.6	7.17	86.5
08/17/2000	2	23	21.8	3.01	34.9
08/17/2000	2	25	20.3	1.53	17.3
08/17/2000	2	27	17.3	0.16	1.7
08/17/2000	3	1	27.0	8.96	114.6
08/17/2000	3	3	26.8	8.64	110.2
08/17/2000	3	5	26.7	8.59	109.4
08/17/2000	3	7	26.7	8.64	110
08/17/2000	3	9	26.5	8.76	111
08/17/2000	3	11	25.8	8.89	111.4
08/17/2000	3	13	25.7	8.89	111.2
08/17/2000	3	15	25.7	8.79	109.8
08/17/2000	3	17	25.6	8.76	109.3
08/17/2000	3	19	25.1	9.41	116.3
08/17/2000	3	21	22.9	9.56	113.5
08/17/2000	3	23	21.3	3.56	41
08/17/2000	3	25	19.3	1.94	21.6
08/17/2000	3	27	17.7	0.28	3
08/17/2000	3	29	16.5	0.03	0.3

08/17/2000	3	31	15.5	0.01	0.1
08/17/2000	3	33	14.2	0.01	0.1
08/17/2000	3	35	13.7	0.02	0.2
08/17/2000	3	37	13.5	0.02	0.2
08/17/2000	3	39	13.3	0	0
09/07/2000	1	1	23.4	10.29	121.4
09/07/2000	1	3	23.3	10.53	124.1
09/07/2000	1	5	22.4	11.25	130.4
09/07/2000	1	7	22.3	11.41	132.1
09/07/2000	1	9	20.7	1.55	17.4
09/07/2000	2	1	24.0	8.2	97.9
09/07/2000	2	3	24.0	7.94	94.8
09/07/2000	2	5	24.0	7.91	94.4
09/07/2000	2	7	24.0	7.91	94.4
09/07/2000	2	9	23.9	7.95	94.9
09/07/2000	2	11	23.9	8.01	95.5
09/07/2000	2	13	23.9	8.01	95.4
09/07/2000	2	15	23.9	8.01	95.4
09/07/2000	2	17	23.9	7.93	94.5
09/07/2000	2	19	23.6	4.73	56
09/07/2000	2	21	23.1	1.33	15.6
09/07/2000	2	23	22.4	0.86	10
09/07/2000	2	25	21.4	0.04	0.4
09/07/2000	2	27	19.1	0.02	0.3
09/07/2000	3	1	24.6	7.8	94
09/07/2000	3	3	24.2	7.88	94.4
09/07/2000	3	5	24.1	7.83	93.6
09/07/2000	3	7	24.0	7.91	94.5
09/07/2000	3	9	24.0	7.75	92.6
09/07/2000	3	11	23.9	7.72	92
09/07/2000	3	13	23.9	7.92	94.4
09/07/2000	3	15	23.9	7.97	94.9
09/07/2000	3	17	23.8	7.81	93
09/07/2000	3	19	23.8	7.44	88.4
09/07/2000	3	21	22.9	2.91	33.7
09/07/2000	3	23	22.0	1.02	11.8
09/07/2000	3	25	21.2	0.39	4.5
09/07/2000	3	27	19.7	2.14	23.5
09/07/2000	3	29	18.0	0.61	6.5
09/07/2000	3	31	16.3	0.03	0.5
09/07/2000	3	33	15.1	0	0
09/07/2000	3	35	14.6	0	0.1
09/07/2000	3	37	14.2	0	0
09/07/2000	3	39	13.8	0	0
09/07/2000	3	41	13.6	0	0
09/07/2000	3	43	13.2	0	0
09/20/2000	1	1	22.8	7.91	94.1

09/20/2000	1	3	22.0	8.75	102.6
09/20/2000	1	5	19.4	10.17	113.4
09/20/2000	1	7	18.6	10.65	116.7
09/20/2000	1	9	17.2	6.73	71.5
09/20/2000	2	1	22.7	7.62	90.4
09/20/2000	2	3	22.2	7.69	90.4
09/20/2000	2	5	21.9	7.67	89.8
09/20/2000	2	7	21.9	7.67	89.7
09/20/2000	2	9	21.9	7.72	90.3
09/20/2000	2	11	21.8	7.69	89.9
09/20/2000	2	13	21.8	7.63	89.1
09/20/2000	2	15	21.8	7.47	87.4
09/20/2000	2	17	21.8	7.47	87.2
09/20/2000	2	19	21.8	7.29	85.1
09/20/2000	2	21	21.7	7.17	83.6
09/20/2000	2	23	21.5	6.66	77.3
09/20/2000	2	25	21.1	6.72	77.3
09/20/2000	2	27	20.0	1.23	13.9
09/20/2000	2	29	18.6	0.15	1.6
09/20/2000	3	1	22.5	7.8	92.3
09/20/2000	3	3	22.2	7.9	93
09/20/2000	3	5	22.1	7.81	91.6
09/20/2000	3	7	21.9	7.91	92.7
09/20/2000	3	9	21.9	7.98	93.3
09/20/2000	3	11	21.8	8	93.5
09/20/2000	3	13	21.8	7.99	93.2
09/20/2000	3	15	21.8	7.87	91.8
09/20/2000	3	17	21.7	7.72	90
09/20/2000	3	20	21.7	7.62	88.9
09/20/2000	3	21	21.7	7.52	87.7
09/20/2000	3	23	21.6	7.35	85.5
09/20/2000	3	25	21.1	5.83	67.1
09/20/2000	3	27	19.8	1.3	14.5
09/20/2000	3	29	18.4	1.26	13.8
09/20/2000	3	31	16.4	0.04	0.5
09/20/2000	3	33	15.8	0.02	0.2
09/20/2000	3	35	15.2	0	0
09/20/2000	3	37	14.4	0	0
09/20/2000	3	39	13.8	0	0
09/20/2000	3	41	13.4	0	0
09/20/2000	3	43	13.4	0	0
09/20/2000	3	45	13.3	0	0
10/04/2000	1	1	19.6	10.51	117.2
10/04/2000	1	3	19.5	10.92	121.8
10/04/2000	1	5	19.4	10.57	117.7
10/04/2000	1	7	17.7	10.16	109.3
10/04/2000	1	9	15.5	3.7	38

10/04/2000	2	1	20.4	68.7	9.37
10/04/2000	2	3	20.2	68.3	9.48
10/04/2000	2	5	20.2	68.3	9.52
10/04/2000	2	7	20.1	68.1	9.49
10/04/2000	2	9	19.8	67.6	9.42
10/04/2000	2	11	19.5	67.1	9.2
10/04/2000	2	13	19.3	66.8	8.59
10/04/2000	2	15	19.2	66.6	7.88
10/04/2000	2	17	19.1	66.3	7.4
10/04/2000	2	19	19.1	66.3	7.16
10/04/2000	2	21	18.9	66	6.6
10/04/2000	2	23	18.5	65.3	5.11
10/04/2000	2	25	18.2	64.7	5.2
10/04/2000	2	27	17.8	64	3.56
10/04/2000	3	1	20.7	9.26	105.6
10/04/2000	3	3	20.4	9.25	105.1
10/04/2000	3	5	20.4	9.06	102.7
10/04/2000	3	7	19.9	9.51	106.8
10/04/2000	3	9	19.6	9.21	102.8
10/04/2000	3	11	19.4	8.67	96.3
10/04/2000	3	13	19.3	8.19	90.8
10/04/2000	3	15	19.2	7.97	88.3
10/04/2000	3	17	19.1	7.6	84
10/04/2000	3	19	19.0	7.12	78.6
10/04/2000	3	21	18.9	6.51	71.6
10/04/2000	3	23	18.8	6.02	66.1
10/04/2000	3	25	18.6	5.06	55.4
10/04/2000	3	27	18.4	4.04	44.1
10/04/2000	3	29	18.0	2.53	27.4
10/04/2000	3	31	17.3	0.38	4.1
10/04/2000	3	33	16.2	0.09	0.9
10/04/2000	3	35	15.3	0.04	0.4
10/04/2000	3	37	15.2	0.03	0.3
10/04/2000	3	39	14.6	0.03	0.3
10/04/2000	3	41	13.9	0	0.2
10/04/2000	3	43	13.8	0	0
10/04/2000	3	45	13.6	0	0
10/04/2000	3	47	12.4	0.01	0
10/18/2000	1	1	16.4	9.11	94.3
10/18/2000	1	3	16.2	9.54	98.3
10/18/2000	1	5	16.1	9.78	100.5
10/18/2000	1	7	14.9	10.78	108.1
10/18/2000	1	9	13.7	7.29	71.1
10/18/2000	2	1	16.8	8.77	91.5
10/18/2000	2	3	16.8	8.77	91.5
10/18/2000	2	5	16.8	8.73	91.1
10/18/2000	2	7	16.8	8.73	91.1

10/18/2000	2	9	16.8	8.58	89.3
10/18/2000	2	11	16.8	8.48	88.4
10/18/2000	2	13	16.7	8.44	87.9
10/18/2000	2	15	16.7	8.39	87.2
10/18/2000	2	17	16.7	8.19	85.2
10/18/2000	2	19	16.7	8.06	83.8
10/18/2000	2	21	16.6	7.46	77.4
10/18/2000	2	23	16.4	7.07	73.2
10/18/2000	2	25	16.3	6.7	69.1
10/18/2000	2	27	16.2	6.21	63.9
10/18/2000	2	29	15.9	4.89	50.1
10/18/2000	3	1	16.6	7.3	76
10/18/2000	3	3	16.6	7.21	74.8
10/18/2000	3	5	16.6	7.2	74.7
10/18/2000	3	7	16.6	7.12	74
10/18/2000	3	9	16.6	7.11	73.8
10/18/2000	3	11	16.5	7.11	73.7
10/18/2000	3	13	16.5	7.06	73.3
10/18/2000	3	15	16.5	6.95	72
10/18/2000	3	17	16.4	6.35	65.7
10/18/2000	3	19	16.4	6.48	67
10/18/2000	3	21	16.3	6.37	65.8
10/18/2000	3	23	16.2	6.24	64.3
10/18/2000	3	25	16.1	6.12	63
10/18/2000	3	27	16.1	6	61.6
10/18/2000	3	29	16.0	5.88	60.4
10/18/2000	3	31	15.9	5.65	57.9
10/18/2000	3	33	15.8	5	51.2
10/18/2000	3	35	15.7	3.51	35.7
10/18/2000	3	37	15.6	1.72	17.4
10/18/2000	3	39	15.4	0.42	4.2
10/18/2000	3	41	14.7	0.13	1.3
10/18/2000	3	43	14.3	0.07	0.7
10/18/2000	3	45	13.9	0.04	0.3
11/03/2000	1	1	12.8	10.51	101.2
11/03/2000	1	3	12.4	10.97	104.7
11/03/2000	1	5	11.7	11.48	107.6
11/03/2000	1	7	11.5	11.68	109.1
11/03/2000	2	1	14.6	8.83	88.3
11/03/2000	2	3	14.1	8.91	88.3
11/03/2000	2	5	14.0	8.87	87.5
11/03/2000	2	7	14.0	8.83	87.2
11/03/2000	2	9	13.9	8.81	86.9
11/03/2000	2	11	13.9	8.63	85.1
11/03/2000	2	13	13.9	8.58	84.5
11/03/2000	2	15	13.9	8.57	84.4
11/03/2000	2	17	13.8	8.56	84.1

11/03/2000	2	19	13.7	8.41	82.4
11/03/2000	2	21	13.7	8.44	82.7
11/03/2000	2	23	13.6	8.83	86.6
11/03/2000	2	25	13.4	8.72	85
11/03/2000	2	27	13.3	8.61	83.8
11/03/2000	3	1	15.0	8.83	89
11/03/2000	3	3	14.6	8.82	88.1
11/03/2000	3	5	14.3	9.03	89.8
11/03/2000	3	7	14.2	9.11	90.4
11/03/2000	3	9	14.1	9.09	90
11/03/2000	3	11	14.1	9.04	89.3
11/03/2000	3	13	14.1	8.96	88.4
11/03/2000	3	15	14.1	8.94	88.4
11/03/2000	3	17	14.1	8.77	86.7
11/03/2000	3	19	14.1	8.71	86.1
11/03/2000	3	21	14.1	8.64	85.2
11/03/2000	3	23	14.0	8.48	83.7
11/03/2000	3	25	13.9	8.23	81.1
11/03/2000	3	28	13.8	7.97	78.4
11/03/2000	3	29	13.8	7.76	76.3
11/03/2000	3	31	13.7	8.06	79
11/03/2000	3	33	13.7	8.18	80.1
11/03/2000	3	35	13.6	8.13	79.6
11/03/2000	3	39	13.6	8.14	79.7
11/03/2000	3	41	13.6	8.26	80.8
11/03/2000	3	43	13.6	8.31	81.2
11/03/2000	3	45	13.6	8.27	80.9
11/17/2000	3	1	11.5	9.3	86.8
11/17/2000	3	2.92	11.4	9.1	84.8
11/17/2000	3	4.93	11.4	9.04	84.2
11/17/2000	3	7.14	11.4	9	83.8
11/17/2000	3	8.69	11.4	8.97	83.6
11/17/2000	3	11.23	11.4	9	83.9
11/17/2000	3	12.99	11.4	8.96	83.5
11/17/2000	3	15.12	11.4	8.88	82.8
12/15/2000	3	1.04	4.3	10.87	83.9
12/15/2000	3	3.02	4.3	10.76	82.8
12/15/2000	3	5.01	4.3	10.72	82.5
12/15/2000	3	6.98	4.3	10.64	81.9
12/15/2000	3	9.04	4.2	10.61	81.5
12/15/2000	3	10.98	4.2	10.59	81.4
12/15/2000	3	12.98	4.2	10.53	80.9
12/15/2000	3	14.98	4.2	10.52	80.9
02/20/2001	3	1	4.2	11.83	92
02/20/2001	3	3	4.1	11.81	91.6
02/20/2001	3	5	4.1	11.87	92
02/20/2001	3	7	4.0	11.75	91

02/20/2001	3	9	3.9	11.71	90.4
02/20/2001	3	11	3.9	11.7	90.5
02/20/2001	3	13	3.9	11.62	89.8
02/20/2001	3	15	3.9	11.65	90
02/20/2001	3	17	3.9	11.64	89.8
02/20/2001	3	19	3.9	11.61	89.6
03/14/2001	3	1	5.8	11.35	93.4
03/14/2001	3	3	5.7	11.42	93.8
03/14/2001	3	5	5.7	11.57	95
03/14/2001	3	7	5.7	11.49	94.2
03/14/2001	3	9	5.7	11.5	94.4
03/14/2001	3	11	5.7	11.55	94.7
03/14/2001	3	13	5.7	11.48	94.2
03/14/2001	3	15	5.7	11.44	93.8
03/14/2001	3	17	5.7	11.48	94.1
03/14/2001	3	19	5.7	11.45	93.9
04/30/2001	1	1	16.4	9.38	96.5
04/30/2001	1	3	15.9	9.52	97
04/30/2001	1	5	15.5	9.58	96.7
04/30/2001	1	7	15.3	9.7	97.5
04/30/2001	1	9	15.2	9.63	96.2
04/30/2001	1	11	14.6	10.11	100
04/30/2001	2	1	16.4	8.94	91.9
04/30/2001	2	3	16.0	9.15	93.2
04/30/2001	2	5	15.8	9.23	93.7
04/30/2001	2	7	15.5	9.37	94.5
04/30/2001	2	9	15.3	9.44	94.9
04/30/2001	2	11	15.0	9.47	94.5
04/30/2001	2	13	14.9	9.49	94.5
04/30/2001	2	15	14.7	9.61	95.2
04/30/2001	2	17	14.0	9.29	90.6
04/30/2001	2	19	12.4	8.92	84.1
04/30/2001	2	21	11.8	8.75	81.4
04/30/2001	2	23	11.4	8.53	78.5
04/30/2001	2	25	11.1	8.22	75.1
04/30/2001	2	27	10.8	7.68	69.6
04/30/2001	3	1	16.4	8.95	92.1
04/30/2001	3	3	16.0	9.21	93.8
04/30/2001	3	5	15.7	9.43	95.5
04/30/2001	3	7	15.7	9.54	96.6
04/30/2001	3	9	15.6	9.65	97.5
04/30/2001	3	11	15.2	9.73	97.5
04/30/2001	3	13	15.0	9.71	96.8
04/30/2001	3	15	14.6	9.61	95.1
04/30/2001	3	17	14.1	9.6	93.8
04/30/2001	3	19	12.1	8.95	83.8
04/30/2001	3	21	11.4	8.78	80.9

04/30/2001	3	23	11.1	8.6	78.7
04/30/2001	3	25	10.9	8.72	79.4
04/30/2001	3	28	10.7	8.69	78.5
04/30/2001	3	29	10.4	8.59	77.4
04/30/2001	3	31	10.2	8.36	74.9
04/30/2001	3	33	10.0	8.16	72.6
04/30/2001	3	35	9.8	7.96	70.7
04/30/2001	3	36	9.7	7.9	70
04/30/2001	3	37	8.9	6.85	59.6
04/30/2001	3	39	8.2	5.75	49.2
04/30/2001	3	39	8.2	5.55	47.5
04/30/2001	3	41	7.8	4.97	42.1
04/30/2001	3	43	7.8	4.8	40.6
05/15/2001	1	0.96	19.1	9.38	103.4
05/15/2001	1	2.97	18.9	9.47	103.9
05/15/2001	1	4.97	18.8	9.5	104.1
05/15/2001	1	6.98	18.5	9.51	103.5
05/15/2001	1	9.01	18.0	9.12	98.4
05/15/2001	1	9	18.1	9.17	98.8
05/15/2001	1	9	18.1	9.24	99.7
05/15/2001	1	1.01	19.7	9.39	104.6
05/15/2001	2	1	19.7	9.45	105.3
05/15/2001	2	3.07	19.7	9.58	106.7
05/15/2001	2	5.01	19.6	9.64	107.2
05/15/2001	2	7.03	19.5	9.74	108.2
05/15/2001	2	9.02	19.4	9.83	109
05/15/2001	2	11.04	19.3	9.87	109.2
05/15/2001	2	12.95	18.9	9.7	106.4
05/15/2001	2	15.05	18.1	9.41	101.6
05/15/2001	2	17.04	15.5	9.38	95.8
05/15/2001	2	19.07	14.2	8.73	86.7
05/15/2001	2	21.03	12.4	7.47	71.4
05/15/2001	2	23.04	11.8	6.84	64.5
05/15/2001	2	25.03	11.4	6.25	58.4
05/15/2001	2	26.98	11.1	5.65	52.4
05/15/2001	2	28.96	10.6	5.26	48.2
05/15/2001	3	0.97	20.2	9.36	105.4
05/15/2001	3	3.02	20.2	9.56	107.7
05/15/2001	3	4.98	20.2	9.75	109.8
05/15/2001	3	6.98	20.2	9.89	111.4
05/15/2001	3	8.95	20.1	9.9	111.3
05/15/2001	3	11.08	20.1	10.01	112.5
05/15/2001	3	14.96	18.4	9.99	108.5
05/15/2001	3	17.05	16.7	9.78	102.4
05/15/2001	3	18.99	15.1	9.51	96.2
05/15/2001	3	20.97	13.3	8.96	87.4
05/15/2001	3	22.85	12.3	8.53	81.3

05/15/2001	3	25.27	11.7	8.06	75.7
05/15/2001	3	26.92	11.2	7.62	70.8
05/15/2001	3	29.01	10.7	6.95	63.8
05/15/2001	3	31.03	10.3	6.24	56.7
05/15/2001	3	33.05	10.1	6.06	54.9
05/15/2001	3	35.02	9.8	5.32	47.8
05/15/2001	3	37.05	9.6	4.83	43.2
05/15/2001	3	39.06	9.2	4.19	37.1
05/31/2001	1	1.02	19.2	8.03	88.6
05/31/2001	1	3.04	19.2	7.82	86.2
05/31/2001	1	5.05	19.2	7.79	86
05/31/2001	1	7.09	18.7	7.6	83.1
05/31/2001	1	9.05	18.1	7.47	80.7
05/31/2001	1	10.97	17.6	7.13	76.1
05/31/2001	2	1.01	19.6	7.89	87.7
05/31/2001	2	3	19.6	7.92	88.1
05/31/2001	2	5.02	19.6	7.91	87.9
05/31/2001	2	7.03	19.7	7.9	88
05/31/2001	2	10.83	19.6	7.89	87.9
05/31/2001	2	10.94	19.7	7.87	87.6
05/31/2001	2	13.06	19.6	7.85	87.3
05/31/2001	2	14.93	19.3	7.63	84.3
05/31/2001	2	16.88	19.1	7.39	81.3
05/31/2001	2	18.97	15.9	6.14	63.4
05/31/2001	2	21.04	14.4	6	59.8
05/31/2001	2	23.07	12.7	4.62	44.3
05/31/2001	2	25.05	12.0	3.78	35.8
05/31/2001	2	27	11.9	3.44	32.5
05/31/2001	2	28.87	11.2	2.83	26.3
05/31/2001	3	1	19.8	7.96	89
05/31/2001	3	2.97	19.9	8.14	91.1
05/31/2001	3	5	19.9	8.18	91.5
05/31/2001	3	6.96	19.9	8.19	91.6
05/31/2001	3	9	19.9	8.2	91.7
05/31/2001	3	11	19.9	8.19	91.5
05/31/2001	3	12.98	19.9	8.18	91.5
05/31/2001	3	15.07	19.9	8.04	90
05/31/2001	3	16.96	19.9	8.03	89.8
05/31/2001	3	19.02	19.6	7.72	85.9
05/31/2001	3	20.89	15.4	6.6	67.4
05/31/2001	3	23.1	13.6	6.3	61.8
05/31/2001	3	25.04	11.9	5.64	53.3
05/31/2001	3	27.03	11.4	5.09	47.4
05/31/2001	3	28.92	11.0	4.58	42.3
05/31/2001	3	30.96	10.7	3.96	36.3
05/31/2001	3	32.96	10.5	3.47	31.7
05/31/2001	3	34.99	10.1	3	27.2

05/31/2001	3	36.93	9.9	2.62	23.6
05/31/2001	3	38.99	9.6	1.72	15.4
05/31/2001	3	40.98	9.2	0.73	6.5
06/12/2001	1	1.07	24.5	8.13	100
06/12/2001	1	3.1	24.3	8.08	99.1
06/12/2001	1	4.97	24.1	8.09	98.7
06/12/2001	1	7.04	23.9	7.86	95.6
06/12/2001	1	9.04	23.1	6.98	83.6
06/12/2001	2	1.17	24.6	8.1	99.9
06/12/2001	2	2.99	24.3	8.2	100.4
06/12/2001	2	5.04	24.2	8.23	100.6
06/12/2001	2	7.04	23.9	8.25	100.3
06/12/2001	2	9.05	23.1	8.23	98.7
06/12/2001	2	11.02	21.8	8.03	93.9
06/12/2001	2	13.05	21.2	7.63	88.1
06/12/2001	2	15.02	20.5	7.11	81
06/12/2001	2	17.02	19.7	6.63	74.4
06/12/2001	2	18.94	18.1	5.62	61.1
06/12/2001	2	21	15.3	4.4	45.1
06/12/2001	2	22.99	14.1	3.54	35.3
06/12/2001	2	24.97	13.1	2.86	27.9
06/12/2001	2	26.98	12.1	2.19	20.9
06/12/2001	2	28.97	11.1	1.42	13.3
06/12/2001	3	1.01	24.6	8.19	100.8
06/12/2001	3	3.08	24.3	8.27	101.5
06/12/2001	3	5	24.3	8.34	102.2
06/12/2001	3	7.01	24.2	8.35	102.2
06/12/2001	3	8.94	23.9	8.35	101.5
06/12/2001	3	11	22.6	8.36	99.2
06/12/2001	3	13.02	20.6	7.78	88.8
06/12/2001	3	14.98	20.0	7.45	84.1
06/12/2001	3	17	19.3	6.97	77.5
06/12/2001	3	18.97	18.4	6.2	67.8
06/12/2001	3	21.02	17.3	5.7	60.9
06/12/2001	3	23.01	14.3	4.85	48.6
06/12/2001	3	25.1	12.4	4.35	41.8
06/12/2001	3	27.06	11.6	3.65	34.5
06/12/2001	3	28.95	11.3	3.08	28.8
06/12/2001	3	30.98	10.9	2.34	21.7
06/12/2001	3	33.09	10.5	1.87	17.2
06/12/2001	3	34.99	9.9	0.82	7.5
06/12/2001	3	36.98	9.5	0.32	2.9
06/12/2001	3	39.01	9.2	0.24	2.2
06/12/2001	3	41	9.1	0.18	1.6
06/12/2001	3	43.03	9.0	0.15	1.4
06/12/2001	3	45.01	8.8	0.13	1.2
06/26/2001	1	1.1	25.9	9.04	112.7

06/26/2001	1	3.06	25.8	9.12	113.3
06/26/2001	1	5.05	25.6	9.14	113.2
06/26/2001	1	7.25	25.4	9.47	116.8
06/26/2001	1	9.01	24.9	9.94	121.6
06/26/2001	1	10.95	21.3	8.27	94.5
06/26/2001	2	0.99	26.7	8.66	109.5
06/26/2001	2	2.96	26.3	8.86	111.1
06/26/2001	2	4.98	26.1	8.96	111.9
06/26/2001	2	6.98	25.8	8.98	111.7
06/26/2001	2	9.02	25.6	9.02	111.7
06/26/2001	2	10.98	25.0	8.83	108.2
06/26/2001	2	13.07	24.1	8.59	103.4
06/26/2001	2	15.08	22.3	6	70
06/26/2001	2	17.01	20.7	4.56	51.5
06/26/2001	2	19.03	19.1	3.83	41.8
06/26/2001	2	21.03	17.3	2.46	25.9
06/26/2001	2	22.99	15.4	1.6	15.9
06/26/2001	2	25.05	13.4	0.79	7.7
06/26/2001	2	27.03	12.4	0.53	5
06/26/2001	2	28.98	11.7	0.44	4.1
06/26/2001	3	1.13	27.3	8.58	109.6
06/26/2001	3	3.02	27.0	8.74	111
06/26/2001	3	5.02	26.6	8.83	111.3
06/26/2001	3	7.04	25.9	8.97	111.8
06/26/2001	3	9.03	25.6	8.93	110.6
06/26/2001	3	11.06	25.1	8.94	109.8
06/26/2001	3	13.02	24.3	8.49	102.8
06/26/2001	3	15.03	22.3	7.16	83.4
06/26/2001	3	17.02	20.8	6.17	69.7
06/26/2001	3	18.99	19.1	5.13	56.1
06/26/2001	3	21.12	17.4	4.14	43.8
06/26/2001	3	23.02	14.9	3.23	32.3
06/26/2001	3	24.96	13.6	2.7	26.3
06/26/2001	3	27.04	13.0	2.48	23.8
06/26/2001	3	28.99	12.3	2.21	20.9
06/26/2001	3	30.84	11.7	1.79	16.7
06/26/2001	3	32.98	10.8	0.64	5.8
06/26/2001	3	34.97	9.9	0.31	2.8
06/26/2001	3	36.99	9.7	0.21	1.9
06/26/2001	3	39.06	9.6	0.16	1.5
06/26/2001	3	41.02	9.4	0.14	1.2
06/26/2001	3	43	9.3	0.12	1.1
06/26/2001	3	44.56	9.2	0.09	0.8
06/26/2001	3	46.92	9.1	0.09	0.8
07/11/2001	1	1.04	27.3	9.67	125.5
07/11/2001	1	3.24	27.1	10.09	130.5
07/11/2001	1	5	26.9	10.31	133

07/11/2001	1	7	26.9	10.49	135.1
07/11/2001	1	9	26.5	10.77	137.7
07/11/2001	2	1.02	27.3	9.34	121.3
07/11/2001	2	2.97	27.3	9.4	122
07/11/2001	2	5.01	27.3	9.46	122.8
07/11/2001	2	7.27	27.3	9.56	124.1
07/11/2001	2	9.85	27.2	9.8	126.9
07/11/2001	2	10.9	26.6	10.07	129
07/11/2001	2	12.98	26.0	9.71	123.2
07/11/2001	2	14.97	24.7	9.03	111.7
07/11/2001	2	17.03	23.0	6.99	83.8
07/11/2001	2	18.95	20.9	2.4	27.6
07/11/2001	2	20.98	17.6	1.02	11
07/11/2001	2	22.92	16.0	0.73	7.6
07/11/2001	2	24.88	14.1	0.48	4.8
07/11/2001	2	27.15	12.4	0.31	3
07/11/2001	2	29.1	11.8	0.25	2.3
07/11/2001	3	1	27.7	9.2	120.2
07/11/2001	3	3	27.7	9.35	122
07/11/2001	3	5	27.6	9.45	123.3
07/11/2001	3	7	27.6	9.6	125.2
07/11/2001	3	9	27.6	9.74	127
07/11/2001	3	11	27.6	9.81	127.8
07/11/2001	3	13	27.6	9.86	128.4
07/11/2001	3	15	26.3	9.69	123.4
07/11/2001	3	17	22.9	7.13	85.3
07/11/2001	3	19	20.2	2.96	33.5
07/11/2001	3	21	18.3	0.69	7.5
07/11/2001	3	23	15.4	0.45	4.6
07/11/2001	3	25	14.0	0.4	4
07/11/2001	3	26	13.3	0.38	3.6
07/11/2001	3	27	13.0	0.35	3.4
07/11/2001	3	29	11.9	0.2	1.9
07/11/2001	3	31	11.2	0.14	1.3
07/11/2001	3	33	10.6	0.11	1
07/11/2001	3	35	10.3	0.1	0.9
07/11/2001	3	37	10.2	0.1	0.9
07/11/2001	3	39	9.9	0.1	0.9
07/11/2001	3	41	9.8	0.09	0.8
07/24/2001	1	1.2	29.4	9.52	127.4
07/24/2001	1	3.02	28.6	9.22	121.8
07/24/2001	1	4.99	28.4	9.71	127.8
07/24/2001	1	6.98	28.2	10.73	140.5
07/24/2001	1	8.91	26.8	11.36	145.1
07/24/2001	2	0.94	28.4	8.6	113
07/24/2001	2	3.06	28.3	8.85	116.1
07/24/2001	2	4.97	27.8	9.08	118.1

07/24/2001	2	7.06	27.4	9.35	120.7
07/24/2001	2	9.02	27.1	9.36	120.3
07/24/2001	2	11.08	26.8	9.09	116.2
07/24/2001	2	13.04	26.4	8.89	112.8
07/24/2001	2	15.04	25.9	8.47	106.6
07/24/2001	2	17.25	24.7	7.98	98
07/24/2001	2	19.11	21.1	2.25	25.8
07/24/2001	2	21.02	18.3	1.27	13.8
07/24/2001	2	23.11	15.7	0.94	9.7
07/24/2001	2	25.01	14.3	0.56	5.6
07/24/2001	2	27.1	13.6	0.45	4.4
07/24/2001	2	28.96	12.8	0.37	3.6
07/24/2001	3	0.96	27.3	8.93	115.1
07/24/2001	3	3.03	27.2	9.2	118.4
07/24/2001	3	5.04	27.2	9.3	119.6
07/24/2001	3	7.01	27.0	9.42	120.8
07/24/2001	3	9.06	26.9	9.54	122.1
07/24/2001	3	11.01	26.8	9.55	122.1
07/24/2001	3	12.99	26.6	8.77	111.5
07/24/2001	3	14.97	25.1	6.74	83.5
07/24/2001	3	17.01	23.2	3.4	40.6
07/24/2001	3	18.97	21.1	1.47	16.9
07/24/2001	3	21.02	19.6	1.04	11.7
07/24/2001	3	23.1	17.8	0.74	7.9
07/24/2001	3	25.11	14.5	0.6	6
07/24/2001	3	27	13.1	0.48	4.7
07/24/2001	3	29.02	12.1	0.42	4
07/24/2001	3	31	11.4	0.27	2.5
07/24/2001	3	33.02	10.8	0.23	2.1
07/24/2001	3	35.07	10.4	0.19	1.7
07/24/2001	3	37.09	10.1	0.18	1.6
07/24/2001	3	39.01	9.7	0.16	1.4
07/24/2001	3	41.11	9.4	0.14	1.3
07/24/2001	3	42.97	9.3	0.11	1
07/24/2001	3	44.95	9.2	0.1	0.9
07/24/2001	3	47.09	9.1	0.09	0.8
08/06/2001	1	1.05	28.3	9.26	120.7
08/06/2001	1	3.05	28.1	8.95	116.1
08/06/2001	1	6.69	27.6	10.52	135.4
08/06/2001	1	7.04	27.3	10.23	131
08/06/2001	1	8.98	23.1	6.39	75.7
08/06/2001	1	10.97	21.3	1.7	19.5
08/06/2001	2	1.03	28.6	8.01	104.8
08/06/2001	2	2.99	28.0	8.11	105.1
08/06/2001	2	5.06	27.5	8.65	111.1
08/06/2001	2	6.99	27.1	8.7	111.1
08/06/2001	2	9.05	26.8	9.09	115.4

08/06/2001	2	11.06	26.4	8.49	107
08/06/2001	2	12.97	25.9	7.9	98.6
08/06/2001	2	15.54	25.3	6.58	81.2
08/06/2001	2	17	24.2	5.89	71.2
08/06/2001	2	20.03	22.7	2.49	29.2
08/06/2001	2	22.9	19.4	1.19	13.1
08/06/2001	2	22.98	16.6	1.02	10.6
08/06/2001	2	24.96	14.8	0.44	4.4
08/06/2001	2	28.26	13.8	0.31	3
08/06/2001	3	0.92	27.9	8.22	106.3
08/06/2001	3	3.02	27.8	8.26	106.7
08/06/2001	3	5.03	27.7	8.25	106.3
08/06/2001	3	7.05	27.0	8.59	109.3
08/06/2001	3	9.05	26.6	7.73	97.7
08/06/2001	3	10.98	26.2	8.1	101.7
08/06/2001	3	13.05	25.7	7.3	90.8
08/06/2001	3	14.96	25.1	5.97	73.5
08/06/2001	3	16.97	24.1	4.54	54.8
08/06/2001	3	18.98	21.8	1.07	12.4
08/06/2001	3	21.01	19.0	0.64	7
08/06/2001	3	23.04	16.5	0.47	4.9
08/06/2001	3	24.98	14.5	0.56	5.5
08/06/2001	3	27.71	13.1	1.24	12
08/06/2001	3	29.63	12.1	0.24	2.3
08/06/2001	3	31.04	11.3	0.17	1.6
08/06/2001	3	33.01	10.8	0.13	1.2
08/06/2001	3	34.97	10.4	0.09	0.8
08/06/2001	3	37.32	10.1	0.08	0.8
08/06/2001	3	38.96	9.6	0.07	0.6
08/06/2001	3	40.96	9.4	0.06	0.5
09/07/2001	1	1.01	26.6	9.27	118
09/07/2001	1	3.12	26.4	10.21	129.4
09/07/2001	1	5.02	25.8	11.6	145.6
09/07/2001	1	7.04	23.7	7.32	88.3
09/07/2001	1	8.96	22.8	4.27	50.8
09/07/2001	2	0.95	25.7	7.74	97.1
09/07/2001	2	3.06	25.7	7.73	96.9
09/07/2001	2	5.02	25.7	7.75	97.1
09/07/2001	2	7.02	25.6	7.8	97.5
09/07/2001	2	10.57	25.4	7.77	96.7
09/07/2001	2	11.24	25.3	7.7	95.8
09/07/2001	2	12.99	25.3	7.6	94.5
09/07/2001	2	14.99	25.1	7.02	86.8
09/07/2001	2	18.42	24.8	6.12	74.8
09/07/2001	2	19.12	23.8	2.84	34.4
09/07/2001	2	21.02	22.4	0.82	9.6
09/07/2001	2	23.03	17.8	1.42	15.3

09/07/2001	2	25.1	15.6	0.49	5
09/07/2001	2	27.02	14.3	0.31	3.1
09/07/2001	3	1.18	25.2	7.69	95.5
09/07/2001	3	3.06	25.2	7.72	95.8
09/07/2001	3	4.99	25.2	7.76	96.3
09/07/2001	3	7	25.1	7.76	96.2
09/07/2001	3	9.06	25.1	7.77	96.3
09/07/2001	3	10.98	25.1	7.79	96.5
09/07/2001	3	13.04	25.1	7.73	95.8
09/07/2001	3	15.04	25.1	7.77	96.3
09/07/2001	3	17	25.1	7.73	95.7
09/07/2001	3	18.94	24.1	4.42	53.7
09/07/2001	3	20.94	20.9	1.41	16.1
09/07/2001	3	23.02	18.4	0.77	8.4
09/07/2001	3	24.99	15.8	0.52	5.3
09/07/2001	3	26.99	14.1	0.46	4.6
09/07/2001	3	29.03	12.9	0.32	3.1
09/07/2001	3	31.07	11.7	0.17	1.6
09/07/2001	3	32.99	10.9	0.13	1.2
09/07/2001	3	34.98	10.3	0.11	1
09/07/2001	3	36.98	10.1	0.09	0.8
09/07/2001	3	38.97	9.9	0.08	0.7
09/07/2001	3	40.98	9.7	0.06	0.5
09/07/2001	3	43.02	9.4	0.05	0.4
09/07/2001	3	44.96	9.3	0.04	0.4
09/19/2001	1	1.04	23.3	9.81	117.3
09/19/2001	1	3.06	23.3	9.89	118.4
09/19/2001	1	5.02	23.2	10.59	126.4
09/19/2001	1	6.99	22.9	10.45	124.2
09/19/2001	1	8.95	20.4	7.39	83.6
09/19/2001	2	0.97	22.9	8.23	97.7
09/19/2001	2	3.02	22.9	8.19	97.2
09/19/2001	2	4.97	22.9	8.19	97.3
09/19/2001	2	6.95	22.8	8.17	96.8
09/19/2001	2	8.85	22.8	8.15	96.7
09/19/2001	2	8.87	22.8	8.16	96.8
09/19/2001	2	10.96	22.7	8	94.7
09/19/2001	2	13.13	22.7	7.78	91.9
09/19/2001	2	15.07	22.6	7.69	90.9
09/19/2001	2	17.03	22.4	7.13	83.9
09/19/2001	2	18.99	22.3	6.81	80
09/19/2001	2	21.01	22.0	5.87	68.6
09/19/2001	2	23.28	20.3	1.08	12.2
09/19/2001	2	25.07	17.4	0.73	7.7
09/19/2001	2	26.89	15.4	0.49	5
09/19/2001	3	1.07	22.6	7.67	90.5
09/19/2001	3	2.97	22.6	7.62	90

09/19/2001	3	5.05	22.6	7.59	89.6
09/19/2001	3	7	22.6	7.58	89.4
09/19/2001	3	9.01	22.6	7.57	89.3
09/19/2001	3	11.09	22.6	7.55	89.1
09/19/2001	3	13.11	22.6	7.55	89
09/19/2001	3	15.06	22.6	7.57	89.3
09/19/2001	3	17.05	22.5	7.57	89.3
09/19/2001	3	19.1	22.5	7.59	89.4
09/19/2001	3	21.01	21.7	5.37	62.3
09/19/2001	3	23	19.0	1.4	15.4
09/19/2001	3	25.01	16.1	0.77	7.9
09/19/2001	3	27.01	14.5	0.46	4.6
09/19/2001	3	29.04	13.1	0.38	3.7
09/19/2001	3	31.49	11.9	0.32	3
09/19/2001	3	33.01	11.1	0.28	2.6
09/19/2001	3	35.06	10.4	0.21	1.9
09/19/2001	3	37.03	10.1	0.17	1.5
09/19/2001	3	38.96	9.9	0.15	1.4
09/19/2001	3	41	9.7	0.14	1.3
09/19/2001	3	43	9.5	0.13	1.2
10/02/2001	1	1.02	18.8	8.08	89
10/02/2001	1	1	18.6	9.32	102.2
10/02/2001	1	3.05	18.3	9.72	105.8
10/02/2001	1	5.06	17.9	9.86	106.6
10/02/2001	1	7.03	17.0	10.75	114
10/02/2001	1	9.06	16.8	9.84	103.9
10/02/2001	1	11.17	16.4	9.38	98.3
10/02/2001	1	11.02	16.1	5.13	53.4
10/02/2001	1	13.03	15.8	7.06	73.1
10/02/2001	2	1.03	18.8	8.06	88.7
10/02/2001	2	2.99	18.8	8.04	88.5
10/02/2001	2	5.01	18.8	8.05	88.6
10/02/2001	2	7.06	18.8	8.02	88.2
10/02/2001	2	8.99	18.8	8.02	88.2
10/02/2001	2	11.15	18.7	8.04	88.3
10/02/2001	2	13.05	18.7	8.02	88.2
10/02/2001	2	16.42	18.7	8.02	88.2
10/02/2001	2	16.95	18.7	8.03	88.2
10/02/2001	2	18.99	18.7	8.01	88
10/02/2001	2	21.06	18.7	8.04	88.3
10/02/2001	2	23.1	18.7	8.03	88.1
10/02/2001	2	25.02	18.6	7.94	87
10/02/2001	2	27.05	16.6	2.81	29.6
10/02/2001	2	28.93	14.8	1.52	15.2
10/02/2001	3	1.09	18.9	7.86	86.7
10/02/2001	3	3.03	18.9	7.94	87.5
10/02/2001	3	4.97	18.8	7.93	87.4

10/02/2001	3	7.07	18.8	7.89	86.9
10/02/2001	3	9.06	18.8	7.86	86.6
10/02/2001	3	11.02	18.8	7.81	86
10/02/2001	3	12.98	18.8	7.8	85.9
10/02/2001	3	14.99	18.8	7.77	85.6
10/02/2001	3	17.03	18.8	7.75	85.3
10/02/2001	3	19.1	18.8	7.72	85
10/02/2001	3	21.02	18.8	7.68	84.5
10/02/2001	3	23.03	18.6	7.33	80.4
10/02/2001	3	25.01	18.2	6.23	67.8
10/02/2001	3	27	16.9	1.71	18.1
10/02/2001	3	29.05	14.0	0.94	9.4
10/02/2001	3	31.03	12.4	0.64	6.2
10/02/2001	3	33	11.5	0.5	4.7
10/02/2001	3	35.03	11.1	0.36	3.4
10/02/2001	3	36.98	10.8	0.31	2.9
10/02/2001	3	39.01	10.4	0.27	2.5
10/02/2001	3	40.88	9.8	0.24	2.2
10/02/2001	3	43.02	9.6	0.23	2
10/02/2001	3	44.99	9.5	0.2	1.8
10/29/2001	1	1.02	13.3	9.12	89.5
10/29/2001	1	3.05	12.8	10.3	100
10/29/2001	1	4.96	12.1	10.7	102.2
10/29/2001	1	6.99	11.6	8.9	84
10/29/2001	2	1.08	14.2	8.42	84.3
10/29/2001	2	2.97	14.2	8.03	80.3
10/29/2001	2	5.03	14.0	7.96	79.3
10/29/2001	2	7.03	13.9	8.01	79.7
10/29/2001	2	9.05	13.9	7.89	78.6
10/29/2001	2	10.98	13.9	7.81	77.7
10/29/2001	2	12.99	13.9	7.88	78.3
10/29/2001	2	14.89	13.8	7.94	78.8
10/29/2001	2	15	13.8	7.7	76.3
10/29/2001	2	17.03	13.7	7.76	76.8
10/29/2001	2	19.01	13.7	7.91	78.2
10/29/2001	2	21.03	13.6	7.92	78.1
10/29/2001	2	23.05	13.6	7.92	78.2
10/29/2001	2	25.05	13.5	7.94	78.3
10/29/2001	2	27	13.4	7.94	78.1
10/29/2001	2	27.01	13.4	7.95	78.2
10/29/2001	2	28.96	13.4	7.87	77.4
10/29/2001	3	1.08	14.1	8.36	83.4
10/29/2001	3	2.99	14.1	8.29	82.7
10/29/2001	3	5	14.1	8.26	82.3
10/29/2001	3	7	14.0	8.2	81.7
10/29/2001	3	9.02	14.0	8.22	81.9
10/29/2001	3	11.02	14.0	8.2	81.7

10/29/2001	3	13.02	14.0	8.18	81.4
10/29/2001	3	15.02	14.0	8.15	81.2
10/29/2001	3	17.09	13.9	8.1	80.7
10/29/2001	3	19.05	13.9	8.08	80.4
10/29/2001	3	21.04	13.9	8.05	80.1
10/29/2001	3	23.04	13.9	8.11	80.7
10/29/2001	3	25	13.9	8.15	81.1
10/29/2001	3	27.02	13.9	8.11	80.7
10/29/2001	3	29.03	13.9	8.1	80.6
10/29/2001	3	31.57	13.9	8.09	80.4
10/29/2001	3	33.08	13.8	7.8	77.4
10/29/2001	3	35.04	13.7	7.43	73.5
10/29/2001	3	37.1	12.8	3.2	31
10/29/2001	3	39.02	10.6	1.42	13.1
10/29/2001	3	41.03	10.2	1	9.1
10/29/2001	3	43	9.9	0.67	6.1
10/29/2001	3	44.99	9.7	0.55	5
10/29/2001	3	46.94	9.7	0.44	4
11/14/2001	1	1.05	11.1	9.56	89.2
11/14/2001	1	3.05	10.3	10.02	91.7
11/14/2001	1	5.05	9.4	9.47	85
11/14/2001	1	7	8.7	8.99	79.2
11/14/2001	1	8.99	8.3	8.15	71.1
11/14/2001	2	1.01	11.7	8.66	82.1
11/14/2001	2	3.02	11.7	8.52	80.5
11/14/2001	2	5	11.5	8.47	79.7
11/14/2001	2	7	11.4	8.43	79.4
11/14/2001	2	8.94	11.4	8.39	78.9
11/14/2001	2	10.98	11.4	8.35	78.5
11/14/2001	2	13.05	11.4	8.32	78.2
11/14/2001	2	15.05	11.4	8.33	78.2
11/14/2001	2	17.03	11.4	8.32	78.1
11/14/2001	2	19.21	11.3	8.32	78
11/14/2001	2	21.54	11.3	8.3	77.8
11/14/2001	2	23.02	11.3	8.23	77.2
11/14/2001	2	25.03	11.3	8.19	76.8
11/14/2001	2	27.02	11.2	7.77	72.7
11/14/2001	3	1	11.4	7.85	73.8
11/14/2001	3	3	11.4	7.81	73.3
11/14/2001	3	5	11.4	7.79	73.1
11/14/2001	3	7	11.3	7.73	72.6
11/14/2001	3	9	11.3	7.71	72.4
11/14/2001	3	11	11.3	7.69	72.2
11/14/2001	3	13	11.3	7.67	72
11/14/2001	3	15	11.3	7.66	71.9
11/14/2001	3	17	11.3	7.66	71.9
11/14/2001	3	19	11.3	7.67	71.9

11/14/2001	3	21	11.3	7.66	71.8
11/14/2001	3	23	11.3	7.66	71.8
11/14/2001	3	25	11.3	7.66	71.9
11/14/2001	3	27	11.3	7.66	71.8
11/14/2001	3	29	11.3	7.67	72
11/14/2001	3	31	11.3	7.67	72
11/14/2001	3	33	11.3	7.68	72
11/14/2001	3	35	11.3	7.7	72.2
11/14/2001	3	37	11.3	7.7	72.3
12/06/2001	3	1	11.26	8.96	83.3
12/06/2001	3	3	11.23	8.89	82.6
12/06/2001	3	5	10.91	8.91	82.1
12/06/2001	3	7	10.86	8.82	81.7
12/06/2001	3	9	10.84	8.8	81
12/06/2001	3	11	10.82	8.64	79.4
12/06/2001	3	13	10.78	8.36	76.8
12/06/2001	3	15	10.76	8.31	76.3
12/06/2001	3	17	10.7	8.03	73.6
12/06/2001	3	19	10.65	7.76	71
07/11/2002	1	0.99	27.3	10.23	132
07/11/2002	1	3.01	27.2	10.31	132.9
07/11/2002	1	4.98	27.1	10.81	138.9
07/11/2002	1	6.99	26.6	11.07	140.9
07/11/2002	1	8.78	26.2	11.98	151.5
07/11/2002	2	1	26.9	9.07	116.3
07/11/2002	2	3	26.9	9.16	117.5
07/11/2002	2	5	26.9	9.14	117.2
07/11/2002	2	7	26.9	9.18	117.7
07/11/2002	2	9	26.9	9.32	119.5
07/11/2002	2	11	26.9	9.31	119.4
07/11/2002	2	13	26.8	9.28	118.6
07/11/2002	2	15	26.2	8.85	111.9
07/11/2002	2	17	23.4	6.76	81.2
07/11/2002	2	19	21.6	2.86	33.1
07/11/2002	2	21	19.3	0.52	5.8
07/11/2002	2	23	17.7	0.37	4
07/11/2002	2	25	16.3	0.24	2.5
07/11/2002	2	27	15.2	0.17	1.7
07/11/2002	2	29	14.3	0.12	1.2
07/11/2002	2	31	13.6	0.16	1.5
07/11/2002	3	1	27.0	8.9	114.3
07/11/2002	3	3	27.0	8.88	114
07/11/2002	3	5	27.1	8.88	114
07/11/2002	3	7	27.1	8.89	114.2
07/11/2002	3	9	27.1	8.81	113.1
07/11/2002	3	11	27.0	8.88	113.9
07/11/2002	3	13	26.9	8.81	113

07/11/2002	3	16	26.6	8.72	111.1
07/11/2002	3	17	23.3	6.15	73.7
07/11/2002	3	19	20.6	1.04	12
07/11/2002	3	21	19.2	0.5	5.6
07/11/2002	3	26	16.8	0.33	3.5
07/11/2002	3	27	15.7	0.32	3.3
07/11/2002	3	31	14.2	0.17	1.7
07/11/2002	3	33	13.2	0.18	1.3
07/11/2002	3	35	12.3	0.17	1.7
07/11/2002	3	37	10.9	0.16	1.5
07/11/2002	3	39	10.6	0.18	1.6
07/11/2002	3	41	10.5	0.16	1.4
07/11/2002	3	43	10.3	0.13	1.2
07/11/2002	3	29	14.7	0.25	2.5
07/11/2002	3	27	15.4	0.29	3
07/11/2002	3	25	16.2	0.31	3.3
07/11/2002	3	15	26.3	8.51	107.8
07/25/2002	1	1.03	27.6	9.72	125
07/25/2002	1	3	27.6	9.67	124.3
07/25/2002	1	5.02	27.4	9.7	124.5
07/25/2002	1	7.07	27.4	9.61	123.2
07/25/2002	1	8.99	27.3	9.03	115.6
07/25/2002	2	0.98	27.6	9.3	119.5
07/25/2002	2	3.04	27.6	9.27	119.2
07/25/2002	2	5.03	27.6	9.2	118.2
07/25/2002	2	7.06	27.6	9.25	119
07/25/2002	2	9.08	27.6	9.24	119
07/25/2002	2	11.01	27.6	9.21	118.5
07/25/2002	2	13.02	27.1	8.4	107
07/25/2002	2	15.02	26.0	7.25	90.6
07/25/2002	2	17.01	24.6	5.4	65.9
07/25/2002	2	19.03	22.8	1.88	22.2
07/25/2002	2	21.08	21.1	0.58	6.6
07/25/2002	2	22.77	18.1	0.25	2.7
07/25/2002	2	25.29	16.6	0.25	2.6
07/25/2002	3	1	27.3	9.1	116.9
07/25/2002	3	3	27.3	9.06	115.9
07/25/2002	3	5	27.3	9.05	115.9
07/25/2002	3	7	27.4	8.97	114.9
07/25/2002	3	9	27.4	8.92	114.6
07/25/2002	3	11	27.4	8.92	114.3
07/25/2002	3	13	27.4	8.88	113.8
07/25/2002	3	15	26.2	7.5	94
07/25/2002	3	17	23.8	3.97	47.6
07/25/2002	3	19	23.0	3.76	41.3
07/25/2002	3	19	21.9	0.62	7.3
07/25/2002	3	21	20.1	0.46	5.1

07/25/2002	3	23	18.7	0.45	4.9
07/25/2002	3	23	18.2	0.39	4.2
07/25/2002	3	25	16.9	0.35	3.7
07/25/2002	3	27	15.8	0.28	2.9
07/25/2002	3	29	14.9	0.23	2.4
07/25/2002	3	31	14.1	0.38	3.7
07/25/2002	3	33	12.7	0.17	1.7
07/25/2002	3	36	11.4	0.16	1.5
07/25/2002	3	37	11.1	0.15	1.4
07/25/2002	3	39	10.8	0.17	1.5
07/25/2002	3	41	10.6	0.15	1.3
08/08/2002	1	1	26.7	9.17	116.4
08/08/2002	1	3	26.6	8.76	111.1
08/08/2002	1	5	26.3	9.11	114.8
08/08/2002	1	7	26.1	7.75	97.4
08/08/2002	1	9	25.7	2.88	35.9
08/08/2002	1	11	24.9	0.7	8.6
08/08/2002	2	1	26.7	7.48	95
08/08/2002	2	3	26.7	7.43	94.4
08/08/2002	2	5	26.7	7.38	93.7
08/08/2002	2	7	26.7	7.35	93.4
08/08/2002	2	9	26.7	7.32	93
08/08/2002	2	9	26.7	7.31	92.8
08/08/2002	2	11	26.7	7.36	93.4
08/08/2002	2	13	26.7	7.4	94
08/08/2002	2	15	26.7	7.44	94.4
08/08/2002	2	17	26.6	7.43	94.4
08/08/2002	2	19	23.6	0.86	10.4
08/08/2002	2	19	23.6	0.7	8.4
08/08/2002	2	21	20.7	0.38	4.4
08/08/2002	2	23	19.5	0.34	3.7
08/08/2002	2	25	16.9	0.26	2.8
08/08/2002	2	27	15.4	0.12	1.3
08/08/2002	3	1	26.8	7.72	98.4
08/08/2002	3	3	26.8	7.69	98
08/08/2002	3	5	26.8	7.68	97.8
08/08/2002	3	7	26.9	7.64	97.3
08/08/2002	3	9	26.9	7.62	97.1
08/08/2002	3	11	26.9	7.59	96.7
08/08/2002	3	13	26.8	7.6	96.7
08/08/2002	3	15	26.8	7.58	96.6
08/08/2002	3	17	26.8	7.55	96.2
08/08/2002	3	19	24.2	0.77	9.4
08/08/2002	3	21	22.1	0.55	6.4
08/08/2002	3	23	18.5	0.36	3.9
08/08/2002	3	25	17.7	0.33	3.3
08/08/2002	3	25	17.4	0.27	2.9

08/08/2002	3	27	16.1	0.2	2.2
08/08/2002	3	29	14.8	0.77	7.8
08/08/2002	3	31	13.9	0.17	1.6
08/08/2002	3	33	12.6	0.15	1.5
08/08/2002	3	35	11.7	0.14	1.3
08/08/2002	3	37	11.3	0.12	1.1
08/08/2002	3	39	11.0	0.12	1.1
08/08/2002	3	40	10.6	0.14	1.3
08/22/2002	1	0.98	29.1	9.91	130.8
08/22/2002	1	3	28.7	9.89	129.7
08/22/2002	1	5.01	28.0	10.73	139
08/22/2002	1	7.01	27.7	9.76	125.7
08/22/2002	1	9.01	27.5	8.18	105
08/22/2002	1	10.96	26.9	3.08	39.1
08/22/2002	2	1	28.1	7.6	
08/22/2002	2	3	28.0	7.51	
08/22/2002	2	5	27.9	7.54	
08/22/2002	2	7	27.9	7.69	
08/22/2002	2	9	27.8	7.71	
08/22/2002	2	11	27.8	7.6	
08/22/2002	2	13	27.8	7.54	
08/22/2002	2	15	27.7	7.07	
08/22/2002	2	15	27.7	7.08	
08/22/2002	2	17	26.6	1.39	
08/22/2002	2	19	24.6	0.8	
08/22/2002	2	21	21.9	0.6	
08/22/2002	2	23	19.9	0.46	
08/22/2002	2	25	17.3	0.25	
08/22/2002	2	27	15.5	0.2	
08/22/2002	3	1	27.6	7.53	96.7
08/22/2002	3	3	27.6	7.56	97.1
08/22/2002	3	5	27.6	7.51	96.5
08/22/2002	3	7	27.6	7.41	95.2
08/22/2002	3	9	27.6	7.44	95.6
08/22/2002	3	11	27.6	7.42	95.3
08/22/2002	3	13	27.3	6.92	88.5
08/22/2002	3	15	26.7	5.2	65.8
08/22/2002	3	17	25.8	4.01	49.9
08/22/2002	3	19	24.5	1.86	22.6
08/22/2002	3	22	22.1	0.24	2.6
08/22/2002	3	23	19.1	0.19	2
08/22/2002	3	25	17.0	0.18	1.9
08/22/2002	3	27	15.6	0.15	1.5
08/22/2002	3	29	14.2	0.16	1.6
08/22/2002	3	31	13.4	0.16	1.5
08/22/2002	3	33	12.7	0.15	1.4
08/22/2002	3	35	12.4	0.15	1.5

08/22/2002	3	36	12.2	0.14	1.3
08/22/2002	3	37	11.9	0.13	1.2
08/22/2002	3	39	11.3	0.14	1.3
08/22/2002	3	42	10.6	0.12	1.1
08/22/2002	3	43	10.3	0.14	1.2
08/22/2002	3	45	10.2	0.13	1.2
09/03/2002	1	1	24.6	9.38	114.7
09/03/2002	1	3	23.6	14.09	169.2
09/03/2002	1	4.98	22.9	8.18	96.9
09/03/2002	1	7.04	22.8	7.96	94.2
09/03/2002	1	8.96	21.3	4.39	50.4
09/03/2002	2	0.98	24.1	7.27	88.1
09/03/2002	2	3.01	23.7	7.14	85.9
09/03/2002	2	5.02	23.2	7.06	84.2
09/03/2002	2	7.06	23.2	6.91	82.3
09/03/2002	2	9.03	23.1	6.81	81.1
09/03/2002	2	11.04	23.1	6.94	82.6
09/03/2002	2	13.09	23.1	6.95	82.7
09/03/2002	2	15.05	23.1	6.91	82.2
09/03/2002	2	14.98	23.1	6.93	82.4
09/03/2002	2	17.03	23.1	6.87	81.6
09/03/2002	2	17.04	23.1	6.84	81.3
09/03/2002	2	19.05	22.9	5.4	64.1
09/03/2002	2	21.04	22.8	5.09	60.2
09/03/2002	2	23.02	20.3	0.3	3.4
09/03/2002	2	25.01	18.1	0.23	2.4
09/03/2002	2	27	16.7	0.2	2
09/03/2002	3	0.86	23.5	7.99	95.9
09/03/2002	3	3.06	23.3	8	95.5
09/03/2002	3	5.01	23.3	8.05	96.2
09/03/2002	3	7.05	23.2	7.93	94.6
09/03/2002	3	8.98	23.2	7.94	94.6
09/03/2002	3	11.11	23.2	7.86	93.6
09/03/2002	3	12.98	23.2	7.83	93.3
09/03/2002	3	15.03	23.2	7.8	92.8
09/03/2002	3	17.01	23.1	7.58	90.3
09/03/2002	3	19.02	22.8	6.4	75.7
09/03/2002	3	21.33	22.3	4.43	52
09/03/2002	3	23	20.9	1.02	11.7
09/03/2002	3	25.01	17.3	0.6	6.4
09/03/2002	3	26.97	15.9	0.33	3.4
09/03/2002	3	29.12	15.1	0.28	2.9
09/03/2002	3	31.12	13.9	0.22	2.1
09/03/2002	3	33	12.9	0.2	2
09/03/2002	3	35.01	11.8	0.18	1.7
09/03/2002	3	37.02	11.2	0.19	1.7
09/03/2002	3	39.03	10.8	0.17	1.5

09/03/2002	3	41.03	10.5	0.16	1.5
09/03/2002	3	43.03	10.3	0.15	1.4
09/03/2002	3	45.02	10.1	0.18	1.6
09/17/2002	1	1.01	24.5	9.78	119.7
09/17/2002	1	3.01	23.8	9.37	113.1
09/17/2002	1	5	23.5	9.31	111.7
09/17/2002	1	7.02	23.2	8.53	101.9
09/17/2002	1	9.02	23.2	8.08	96.4
09/17/2002	1	10.98	23.1	7	83.4
09/17/2002	2	1.01	24.3	8.43	102.7
09/17/2002	2	3.02	24.3	8.34	101.6
09/17/2002	2	5.02	23.7	8.24	99.4
09/17/2002	2	7	23.7	8.18	98.5
09/17/2002	2	9.02	23.6	8.04	96.7
09/17/2002	2	11	23.4	7.79	93.4
09/17/2002	2	12.98	23.3	7.66	91.6
09/17/2002	2	15.01	23.2	6.83	81.5
09/17/2002	2	16.96	22.9	5.38	63.8
09/17/2002	2	19.01	22.4	3.59	42.2
09/17/2002	2	21.02	22.0	2.72	31.7
09/17/2002	2	23.01	21.1	0.55	6.3
09/17/2002	2	25.04	19.9	0.23	2.6
09/17/2002	2	26.95	16.7	0.18	1.9
09/17/2002	3	1.02	23.8	8.39	101.3
09/17/2002	3	2.97	23.8	8.22	99.2
09/17/2002	3	5.03	23.7	8.13	98
09/17/2002	3	7.07	23.7	8.04	96.9
09/17/2002	3	8.98	23.7	7.98	96.2
09/17/2002	3	10.99	23.6	7.65	92
09/17/2002	3	13.04	23.2	7.13	85
09/17/2002	3	15.02	23.0	6	71.3
09/17/2002	3	17.34	22.8	5.25	62.2
09/17/2002	3	19.04	22.7	4.9	58
09/17/2002	3	20.97	22.4	3.96	46.6
09/17/2002	3	22.92	21.9	2.37	27.6
09/17/2002	3	25.03	18.7	0.36	3.9
09/17/2002	3	27.06	16.7	0.23	2.5
09/17/2002	3	29	15.3	0.19	1.9
09/17/2002	3	31	14.1	0.17	1.7
09/17/2002	3	33	12.8	0.15	1.5
09/17/2002	3	35	11.9	0.14	1.3
09/17/2002	3	37.02	11.4	0.15	1.4
09/17/2002	3	39.52	10.9	0.15	1.4
09/17/2002	3	40.96	10.7	0.13	1.2
09/17/2002	3	42.97	10.3	0.14	1.3
10/03/2002	1	1.02	23.4	10.51	126
10/03/2002	1	2.99	22.7	12.38	146.6

10/03/2002	1	5	22.4	9.14	107.6
10/03/2002	1	7	21.8	8.42	98
10/03/2002	1	8.98	21.6	9.01	104.3
10/03/2002	1	10.95	20.6	7.08	80.4
10/03/2002	2	0.97	23.3	8.73	104.5
10/03/2002	2	3.01	23.1	8.86	105.7
10/03/2002	2	5.07	22.7	8.93	105.7
10/03/2002	2	7.03	22.2	8.73	102.3
10/03/2002	2	8.99	21.9	8.56	99.9
10/03/2002	2	11.06	21.8	8.4	97.7
10/03/2002	2	13.03	21.7	8.11	94.1
10/03/2002	2	15	21.5	6.81	78.8
10/03/2002	2	17.02	21.4	6.62	76.4
10/03/2002	2	18.98	21.2	5.5	63.3
10/03/2002	2	21	20.9	4.32	49.4
10/03/2002	2	23.01	20.5	2.97	33.6
10/03/2002	2	25	20.0	1.07	12
10/03/2002	2	27.03	17.9	0.3	3.3
10/03/2002	3	1.02	22.9	8.66	103
10/03/2002	3	3.06	22.8	8.61	102.2
10/03/2002	3	4.93	22.6	8.25	97.3
10/03/2002	3	7.01	22.1	8.33	97.4
10/03/2002	3	9.06	21.8	7.88	91.8
10/03/2002	3	11.05	21.7	7.69	89.3
10/03/2002	3	13.08	21.6	7.71	89.4
10/03/2002	3	15.09	21.5	7.41	85.6
10/03/2002	3	16.97	21.4	7.05	81.3
10/03/2002	3	19.04	21.3	6.65	76.7
10/03/2002	3	21.04	21.2	6.24	71.7
10/03/2002	3	23.04	21.1	4.89	56.1
10/03/2002	3	25.07	20.3	0.89	10
10/03/2002	3	27.02	17.1	0.22	2.4
10/03/2002	3	29.03	15.6	0.2	2
10/03/2002	3	31.01	14.6	0.19	1.9
10/03/2002	3	33.03	13.4	0.16	1.5
10/03/2002	3	35.06	12.4	0.16	1.5
10/03/2002	3	37.01	11.6	0.14	1.4
10/03/2002	3	38.99	10.8	0.13	1.2
10/03/2002	3	41	10.5	0.12	1.1
10/03/2002	3	42.97	10.3	0.13	1.2
10/15/2002	2	1.04	18.8	6.94	75.4
10/15/2002	2	3	18.8	6.83	74.3
10/15/2002	2	5	18.8	6.76	73.5
10/15/2002	2	7.03	18.8	6.76	73.7
10/15/2002	2	9.02	18.8	6.81	74.1
10/15/2002	2	10.99	18.8	6.8	73.9
10/15/2002	2	12.98	18.8	6.78	73.7

10/15/2002	2	15.06	18.8	6.86	74.6
10/15/2002	2	17.03	18.8	6.94	75.5
10/15/2002	2	19.21	18.7	7.08	76.9
10/15/2002	2	21.04	18.7	6.93	75.2
10/15/2002	2	23.04	18.7	6.75	73.3
10/15/2002	2	25.05	18.7	6.65	72.1
10/15/2002	2	27.03	18.4	6.25	67.3
10/15/2002	3	1	18.9	7.43	81
10/15/2002	3	3.39	18.9	7.32	79.8
10/15/2002	3	5.03	18.9	7.38	80.4
10/15/2002	3	7	18.9	7.36	80.2
10/15/2002	3	9.03	18.9	7.29	79.5
10/15/2002	3	11.05	18.9	7.12	77.6
10/15/2002	3	12.97	18.9	7	76.3
10/15/2002	3	14.98	18.9	6.94	75.7
10/15/2002	3	17.11	18.9	6.95	75.7
10/15/2002	3	19.01	18.9	6.95	75.7
10/15/2002	3	20.97	18.9	6.93	75.4
10/15/2002	3	23.01	18.9	6.84	74.5
10/15/2002	3	25.06	18.8	6.66	72.4
10/15/2002	3	27.04	18.7	6.15	66.8
10/15/2002	3	29.1	17.1	0.56	5.9
10/15/2002	3	31.01	14.6	0.25	2.5
10/15/2002	3	33.05	13.5	0.2	2
10/15/2002	3	35.03	12.8	0.17	1.7
10/15/2002	3	36.99	12.0	0.15	1.4
10/15/2002	3	39	11.3	0.15	1.4

Table A10
Secchi Depth (feet) (Carroll County, 1991-2000)

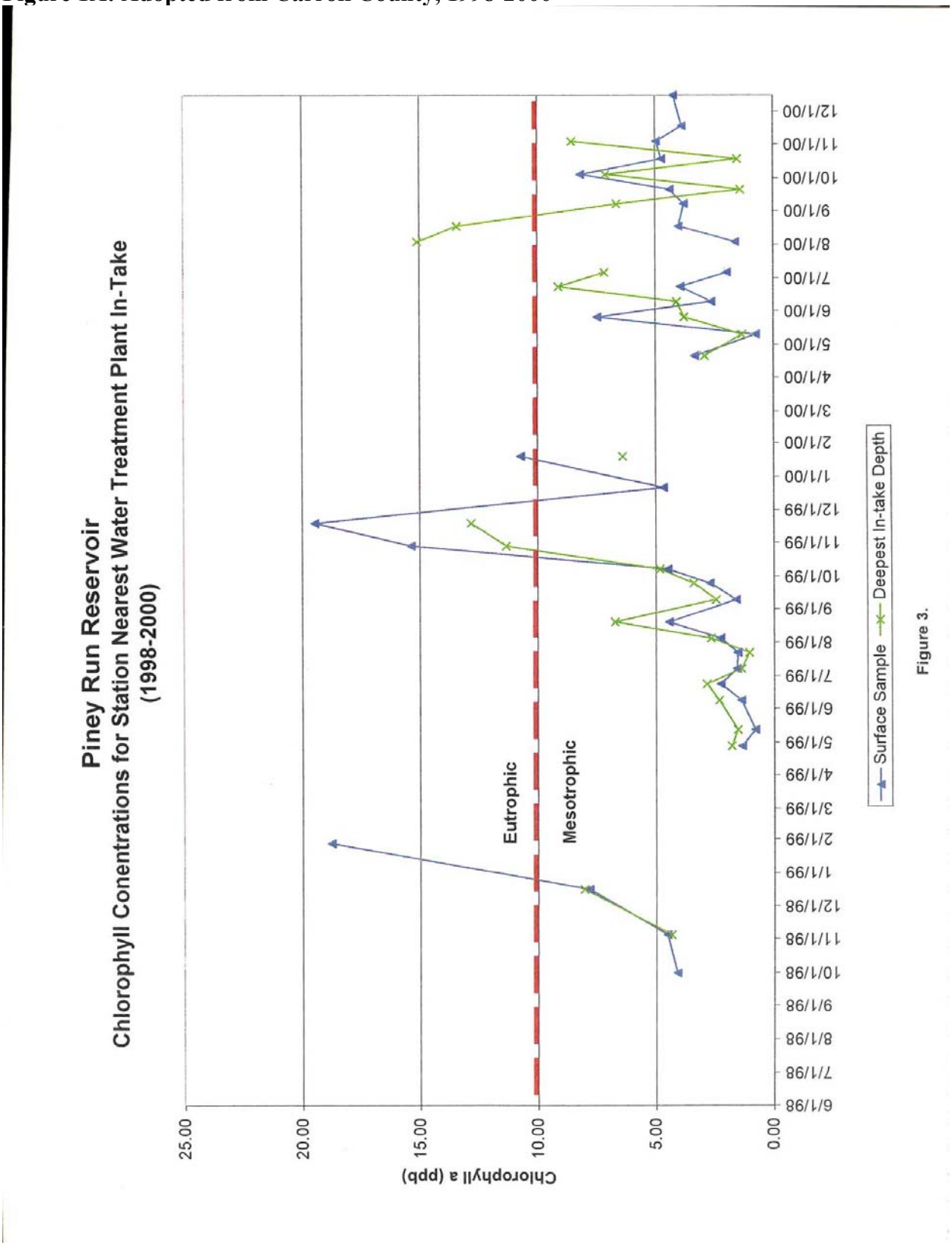
	STATION 1	STATION 2	STATION 3
N	112	127	127
Geometric Mean	5.93	8.50	9.07
Mean	6.46	9.54	10.36
Maximum	12.00	24.60	33.20
Minimum	0.50	2.30	3.00
Median	6.50	8.50	9.00

Table A11
Point Source Data (MD0024589)

NPDES	YEAR	MONTH	FLOW	TSS	TP
MD0024589	1996	1	0.01	2	0.08
MD0024589	1996	2	0.014	0.4	0.04
MD0024589	1996	3	0.015	2	0.16
MD0024589	1996	4	0.015	2	0.45
MD0024589	1996	5	0.016	0.3	0.4
MD0024589	1996	6	0.005	0.5	0.39
MD0024589	1996	7	0.003	1	0.05
MD0024589	1996	8	0.004	0.4	0.08
MD0024589	1996	9	0.009	1.1	0.26
MD0024589	1996	10	0.008	1	0.28
MD0024589	1996	11	0.007	1	0.38
MD0024589	1996	12	0.006	1	0.57
MD0024589	1997	1	0.007	1	0.33
MD0024589	1997	2	0.008	0.8	0.39
MD0024589	1997	3	0.007	1	0.12
MD0024589	1997	4	0.01	1	0.14
MD0024589	1997	5	0.011	2	0.17
MD0024589	1997	6	0.007	5	0.12
MD0024589	1997	7	0.002	1	0.15
MD0024589	1997	8	0.004	0.8	0.11
MD0024589	1997	9	0.006	1	0.49
MD0024589	1997	10	0.006	1	0.69
MD0024589	1997	11	0.007	2	0.19
MD0024589	1997	12	0.006	16	0.69
MD0024589	1998	1	0.006	1	0.08
MD0024589	1998	2	0.008	1	0.14
MD0024589	1998	3	0.008	0.3	0.04
MD0024589	1998	4	0.006	1	0.05
MD0024589	1998	5	0.007	0.3	0.11
MD0024589	1998	6	0.004	1	0.1
MD0024589	1998	7	0.002	1	0.06
MD0024589	1998	8	0.003	1	0.06
MD0024589	1998	9	0.008	0.3	0.28
MD0024589	1998	10	0.008	1	0.2
MD0024589	1998	11	0.006	2	0.49
MD0024589	1998	12	0.006	1	0.08
MD0024589	1999	1	0.006	1	0.09
MD0024589	1999	2	0.007	1	0.67
MD0024589	1999	3	0.007	2	0.57

MD0024589	1999	4	0.007	1	0.08
MD0024589	1999	5	0.007	1	0.09
MD0024589	1999	7	0.002	1	0.07
MD0024589	1999	8	0.002	1	0.04
MD0024589	1999	9	0.008	1	0.62
MD0024589	1999	10	0.007	0.3	0.13
MD0024589	1999	11	0.006	1	0.1
MD0024589	1999	12	0.005	0.4	0.07
MD0024589	2000	1	0.004	0.5	0.31
MD0024589	2000	2	0.007	0.2	0.31
MD0024589	2000	3	0.007	1	0.05
MD0024589	2000	4	0.007	1	0.09
MD0024589	2000	5	0.007	0.6	0.12
MD0024589	2000	7	0.004	1	0.05
MD0024589	2000	8	0.002	1	0.05
MD0024589	2000	9	0.003	1	0.07
MD0024589	2000	10	0.008	1	0.05
MD0024589	2000	11	0.006	1	0.22
MD0024589	2000	12	0.006	0.7	0.05
MD0024589	2000	12	0.005	1	0.24
MD0024589	2001	1	0.006	1	0.11
MD0024589	2001	2	0.006	1	0.07
MD0024589	2001	3	0.008	1	0.05
MD0024589	2001	4	0.007	0.8	0.04
MD0024589	2001	5	0.008	0.6	0.09
MD0024589	2001	6	0.006	1	0.04
MD0024589	2001	7	0.002	1	0.04
MD0024589	2001	8	0.003	1	0.02
MD0024589	2001	9	0.007	0.6	0.04
MD0024589	2001	10	0.007	0.6	0.08
MD0024589	2001	11	0.006	3	0.08
MD0024589	2001	12	0.006	1	0.05
MD0024589	2002	1	0.006	1	0.04
MD0024589	2002	2	0.006	2	0.08
MD0024589	2002	3	0.007	2	0.04
MD0024589	2002	4	0.006	1	0.06
MD0024589	2002	5	0.007	1	0.21
MD0024589	2002	6	0.003	1	0.13
MD0024589	2002	7	0.002	2	0.09
MD0024589	2002	8	0.003	1	0.06
MD0024589	2002	9	0.006	3	0.16
MD0024589	2002	10	0.007	1	0.15
MD0024589	2002	11	0.005	0.8	0.11
MD0024589	2002	12	0.004	1	0.04

Figure 1A: Adopted from Carroll County, 1998-2000



Appendix B

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard • Baltimore MD 21230
410-537-3000 • 1-800-633-6101

Robert L. Ehrlich, Jr.
Governor

Michael S. Steele
Lt. Governor

Kendl P. Philbrick
Acting Secretary

JUL 8 2003

Mr. Steve Horn
Department of Planning
County Office Building
225 North Center Street
Westminster MD 21157

Subject: Notice of the Intent to Develop Water Quality Analyses and Request for a Water Quality Management Plan for Piney Run Reservoir

Dear Mr. Horn:

As per discussions with Carroll County staff on January 18, 2002, March 1, 2002, and June 25, 2002, the Maryland Department of the Environment (MDE) is in the process of addressing the impaired water listings of Piney Run Reservoir for nutrients and sediments. MDE had anticipated addressing these listings in December 2002; however, work on this project was temporarily suspended to address other issues, as well as concerns expressed the County. The Department has resumed work on addressing the listing of the Piney Run Reservoir, and plans to submit the water quality analyses to the U.S. Environmental Protection Agency in early 2004.

Pursuant to discussions with your office, MDE proposes to complete the water quality analyses for Piney Run Reservoir. However, to address the potential degradation of the Reservoir, the County has the opportunity to avoid the development of a Total Maximum Daily Load that would have regulatory implications by completing a water quality management plan to improve, preserve and sustain water quality in Piney Run Reservoir.

The Department would like to schedule a meeting to discuss this opportunity and possible funding. Please contact Ms. Elaine Dietz at (410) 537-3667 or Ms. Melissa Chatham at (410) 537-3937 to schedule a meeting or if you have any questions or concerns. We look forward to working with you in this effort.

Sincerely,

Richard Eskin
Acting Director
Technical and Regulatory Services Administration

cc: Virginia F. Kearney, Water Management Administration
file

CARROLL COUNTY MARYLAND
225 N. Center Street
Westminster, Maryland 21157-5194
FAX 410-386-2120
1-888-302-8978
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Environment & Resource Protection
James E. Slater, Jr., AICP, QEP
Deputy Director
410-386-2756
E-mail: jslater@ccg.carr.org

Bureau of Resource Management
Tom Devilbiss, C.P.G., Chief

November 25, 2003

Mr. Richard Eskin
Acting Director, Technical & Reg. Services
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Re: Notice of Intent to Develop Water Quality Analyses and a Water Quality Management Plan for Piney Run Reservoir

Dear Mr. Eskin:

Carroll County concurs with the proposal to prepare a Water Quality Management Plan in lieu of TMDL history. County staff has already initiated preliminary planning to develop such a plan. When the draft scope of this document is completed, it will be forwarded to MDE for concurrence. At that point, a meeting to discuss the scope of the plan between MDE and the County would be beneficial.

The County has also had discussions with the Corps of Engineers concerning opportunity for assistance that may be available. The Corps offered to work with the County on development of the Plan under a cost-share agreement. It is anticipated that Carroll County will avail itself of this opportunity.

After completion of the draft scoping document, this office will contact MDE to schedule a meeting to discuss its content and that the Carroll County Board of Commissioners be given the opportunity to develop the Water Quality Management Plan in lieu of developing a TMDL for Piney Run which will allow for more effective resource management. The County appreciates this opportunity as well as MDE's openness to an alternative approach. Thank you.

Very truly yours,

James E. Slater, Jr., AICP/QEP
Deputy Director

JES:dks
C: Mr. Tom Devilbiss, Resource Management
Ms. Melissa Chatham, MDE
File
Chron
Code: MDE-Eskin-NOI4PRWaterQuality