Water Quality Standards Review
Stream Redesignation Evaluation

CLARION RIVER
CLARION COUNTY
Segment: Mainstem, inlet of Piney Lake to mouth
Stream Code: 49224
Drainage List: R

WATER QUALITY MONITORING SECTION (APF)
DIVISION OF WATER QUALITY STANDARDS
BUREAU OF WATER STANDARDS AND FACILITY REGULATION
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OCTOBER 2006

INTRODUCTION

The Clarion River main stem from the confluence of the East and West Branches downstream to the mouth is currently designated Cold Water Fishes (CWF). The section of the Clarion River from the inlet of Piney Lake (River Mile Index 37.4) to the mouth was evaluated for redesignation as Warmwater Fishes (WWF) based on a petition submitted jointly by the Iron Furnace Chapter of Trout Unlimited, the Alliance for Wetlands and Wildlife, the Commissioners of Clarion County, and Reliant Energy Mid-Atlantic Power Holding LLC on February 9, 2004. The petitioners requested redesignation of the stream reach from the inlet to Piney Lake downstream to the mouth on the basis of historical and present water quality and aquatic life data. The Environmental Quality Board (EQB) accepted the petition for further study on April 20, 2004. This report is based on surveys conducted by several organizations including Pennsylvania Department of Environmental Protection (DEP), Pennsylvania Fish and Boat Commission (PFBC), and Normandeau Associates.

GENERAL WATERSHED DESCRIPTION

The Clarion River is a large tributary to the Allegheny River located in the Ohio River watershed. The river originates at the confluence of its East and West Branches in Johnsonburg, Pennsylvania and flows for 102.6 miles in a southwesterly direction to its mouth near Parker, Pennsylvania and has a drainage area of approximately 1,252 square miles. This report covers the main stem of the Clarion River from the inlet of Piney Lake downstream to the mouth (Figure 1). The river flows through or borders the Clarion County townships of Clarion, Highland, Monroe, Paint, Piney, Beaver, Licking, Perry and Richland and is located in close proximity to Clarion and Callensburg boroughs. Most of the land use is characterized as rural, with forested, steep hillsides and intermittent agricultural areas. There is little industrial, commercial, or urbanized land use adjacent to the river, except for Clarion and Callensburg boroughs. Seasonal and year-round residences are located in valley low lands, with some development found on upland slopes. Inactive/abandoned strip mines exist in the lower reaches of the watershed as well as active and inactive oil and gas wells.

Two tributaries of the Clarion River that are heavily impacted by acid mine drainage (AMD), Deer Creek and Piney Creek, enter below Piney Lake at RMI 23.16 and RMI 23.50, respectively. These tributaries combine to drain 12% of the Clarion River basin. At base flow, their overall, combined impact on the Clarion River is diluted within several hundred yards below the lower Deer Creek tributary. At higher flows dilution occurs sooner. AMD abatement projects on Deer Creek and Piney Creek are ongoing. Other AMD impacted tributaries include Toby Creek and Mill Creek, which empty directly into Piney Lake at RMI 32.28 and RMI 37.36 respectively.

At RMI 26.2, Piney Hydroelectric Dam (“The Piney Project” operated by Reliant Energy) impounds approximately 16 miles of the Clarion River forming Piney Lake, an 800-acre lake with a normal maximum pool elevation of 1,093ft-msl. Completed circa 1924, the

dam is constructed of reinforced concrete and has a maximum height and total length of 139ft and 771ft, respectively. The maximum depth of Piney Lake at the dam is 89ft. Since 1995, the project has maintained a continuous minimum flow release of 100cfs during periods of no power generation from May 1 to October 31, and a twice daily 4 hour pulsed release during all other times to maintain about 500cfs minimum during winter.

In 1999, during periods of power generation (2.1 hr/day in August to 9.6 hr/day in May), the mean hourly discharge ranged from 2,107cfs to 3,215cfs. Discharge exceeds 3,750cfs approximately 10 percent of the time (GPU Genco, 1998). Clarion River flow below the dam can fluctuate from 100cfs to about 5,000cfs in approximately 15 minutes. The average daily lake draw down from power generation is 2ft in summer and 3ft in winter (Normandeau, 2000a).

At 100cfs base flow, a gated top release is the main source of water at the tailrace of the Clarion River below Piney Dam. During periods of power generation, the practice of releasing water from both the top and from mid-depth causes downstream DO concentrations to sag somewhat while water temperature remains relatively uniform. Because of thermal stratification, conditions for anoxia at lower depths of Piney Lake can exist—especially during periods of low inflow. Power generation seems to use water in the upper two-thirds of the water column, which results in releases of water lower in DO than with a top release. DO levels at the tailrace remain higher than the minimum WWF criterion (4.0mg/l); usually closer to the average criterion of 5mg/l.

WATER QUALITY AND USES

SURFACE WATER QUALITY

Water quality data has been collected monthly from several Department Water Quality Network stations (WQN) on the river (Figure 1). Temperature data from two WQN stations (843 and 821) and one US Army Corps of Engineers (COE) station were submitted by the petitioners for review. WQN 843 is an active monitoring station at Callensburg (RMI 16.5) and WQN 821 (RMI 23.7) is an inactive station near the town of Piney. The COE station is located 0.3 miles downstream of Piney Dam (RMI 26). Data from WQN 843 (Callensburg) for the period January 1991 to January 2001, when compared to criteria shows temperatures in excess of CWF criteria 52.3% of the time (Table 1). Warm Water Fishes (WWF) temperature criteria were exceeded six times at Callensburg during this period (5.6%). Data collected from other WQN stations proximal to Piney Dam between 1962 and 1991 show that CWF temperature criteria were exceeded 54.9% of the time below the dam (WQN 821 – Piney) and 46.7% of the time above the lake (WQN 822 – Cooksburg) (Table 2). Data collected by the Corps of Engineers from immediately below Piney Lake from 1981 to 1992 show that CWF criteria were exceeded 44.6% of the time while WWF criteria were violated 2 times (0.7%) (Table 3). Water quality parameters are also collected at WQN 843 and 821 (Tables 4-5).

Lake profiles from August 1995 and May - October 1999 for Piney Lake near the dam showed that criteria were violated for temperature and DO when compared to both the CWF and WWF criteria (Figures 2 and 3). Temperatures from upper lake stations showed numerous violations (Figure 4). Historical temperature profile data from 1980 indicated similar conditions with numerous CWF temperature violations (Table 6). Similarly, dissolved oxygen (DO) values both near the dam and at upper lake stations often violated CWF standards and, to a lesser extent, WWF standards (Figures 2-4). Anoxic conditions were often evident near the bottom in the summer months.

A review of the Department's discharger database revealed several NPDES permitted facilities that discharge directly into the Clarion River. The Clarion Municipal Sewage Treatment Plant discharges into Piney Lake at RMI 29.62. The Piney Project discharges industrial wastewater used for cooling and other electricity producing processes into Piney Lake near RMI 27.29. The Pennsylvania-American Water Company discharges industrial wastewater under permit # PA0000345 into Piney Lake in the vicinity of Clarion Borough.

Department records indicate that the Piney Project is the only surface water withdrawal on the Clarion River. It withdraws at RMI 27.33 for electric generation use.

AQUATIC BIOTA

Habitat. An assessment of the physical habitat the lower Clarion River was conducted by Normadeau Associates (2000b) in 1999 using EPA's Rapid Bioassessment Protocol (Barbour 1999). Based out of a maximum score of 200, the scores for the river ranged from 118 (at Piney Bridge, suboptimal) to 154 (at Callensburg, optimal/suboptimal) (Table 7). It was noted that iron precipitate (ferric hydroxide), which originates from AMD and coats much of the substrate at stations below the dam, is the primary reason the habitat assessments were lower in this section of the river.

Other than metal precipitates, sedimentation is not a significant problem in this stretch of river. Much of the river's suspended sediments are effectively removed by the Piney Lake impoundment. The tailrace area of the dam is clean of finer silt and smaller substrates because of scouring from flow releases during power generation activity (typically between 1,500cfs and 4,500cfs). A study conducted by Harza Engineering (2000) using mathematical simulation, predicts that high flow resulting from water releases during power generation does not possess significant scouring potential. Normandeau (2000b) found that within 10 miles downstream of the project, approximately 90% of the substrate was composed of gravel 2 inches or greater in size. The Harza Engineering models predicted scouring effects influence substrate up to 1.38 inches, which suggests some habitat loss for benthic macroinvertebrates in the river to nearly a mile below the dam during a power generation peak flow of 6,200cfs.

Benthos. Benthic macroinvertebrate data are collected yearly at WQN stations 843 (Callensburg) and 822 (located near Cooksburg, which is several miles above Piney Lake). The data for the 2 stations were compared using WQN 822 as a control station.

Data collected from 1999 and 2000 show a healthy macroinvertebrate community at Cooksburg, and a severely impacted community at Callensburg (Table 8). When the two stations were compared using selected metrics, WQN 843 had lower values for taxa richness, modified EPT index, and percent modified mayflies and higher values for modified HBI index when compared to WQN 822. This impacted community is a reflection of the epifaunal substrate embeddedness caused by iron precipitate and fluctuations in chemical water quality. The PFBC (1998) collected benthic macroinvertebrate data at Cooksburg (CR01) and two locations below Piney Dam (CR01A and CR03A) in August 1998 and Normandeau (2000b) collected data on several sites in the lower Clarion River and Piney Lake. These data also show similar benthic quality results as the WQN 822 and WQN 843 station data.

Fish. Normandeau Associates and the PFBC collected fisheries data from the study area (Figure 5). The documented fish community below Piney Lake is composed of at least 37 species while Piney Lake supports at least 30 species (Table 9). Piney Lake is dominated by fish species typically found in warmwater systems. The PFBC manages Piney Lake for warmwater species through supplemental stocking of walleye, tiger muskellunge, and channel catfish (Table 10). Normandeau (2000b) provided seasonal (spring, summer, and fall) fish length frequency data collected by use of electrofishing, seining, and gill nets (Tables 11-13). PFBC provided length frequency data derived from April gill netting (Table 14). The resident fish community in Piney Lake is comprised primarily of warmwater fish species such as yellow and brown bullheads, pumpkinseed, bluegill and largemouth bass. There are self-sustaining populations of several game species including yellow perch, smallmouth and largemouth bass, crappies, and assorted other panfish within Piney Lake. Cold water salmonids such as rainbow, brook and brown trout have been collected from Piney Lake but only during spring sampling (Normandeau 2000b). The PFBC also collected salmonids in their April gill net sampling however they did not take any other seasonal samples. These salmonids likely originated from upstream areas on the Clarion River or from some of its tributaries as many salmonids are stocked in upstream segments of the Clarion River and many of its tributaries. Salmonids may use Piney Lake during the late fall, winter, and spring, but it is unlikely that they are present in the lake during the summer as temperatures and DO levels are usually outside normal tolerances for these cold water fishes.

The PFBC provided electrofishing data collected at the Piney Dam spillway, Piney Creek, and Callensburg from 1995 –1998 (Tables 15-21). Normandeau Associates provided seasonal electrofishing data from the spillway, Piney bridge, Canoe Ripple, Callensburg, and St. Petersburg (Tables 22-24). The fish community found in the Clarion River below Piney Dam consists primarily of warmwater species. The presence of shiners and darters below the dam is likely due to the riverine nature of this stretch. Length frequency data indicate that there is the probability of natural reproduction of warmwater species. It is also likely that some fish immigrate into the area either from Piney Lake or the Allegheny River. Of note was the presence of 3 brown trout captured at the spillway in July of 1997. These fish most likely represent hold-over from stocking that year. At no other time do the data show trout maintenance in the Clarion River below the dam despite brook and brown trout stocking in Piney Creek, Canoe Creek,

and Turkey Run—tributaries of the Clarion River below Piney Lake. This indicates that the lower section of the Clarion River does not support the maintenance and propagation of cold-water fish communities.

Historical data was also provided by surveys conducted in 1969 (Brezina 1970). Data for macroinvertebrates for the Clarion River below Piney Dam indicated severely polluted conditions mainly due to AMD inputs. Fish surveys were also conducted; however, no fish were found in the section below Piney Dam.

PUBLIC RESPONSE AND PARTICIPATION SUMMARY

The Department provided public notice of this redesignation evaluation and requested any technical data from the general public through publication in the Pennsylvania Bulletin on May 15, 2004 (34 Pa. B 2644). A similar notice was also published in Clarion News newspaper of Clarion, PA, dated May 20, 2004. In addition, the Township Supervisors from Beaver, Clarion, Farmington, Highland, Licking, Millcreek, Monroe, Paint, Perry, Piney and Richland townships were notified of the evaluation in a letter dated April 30, 2004 and the Borough Councils from Callensburg, Clarion, St. Petersburg, and Strattanville were notified of the evaluation in a letter dated May 6, 2004. No additional information was provided in response to these notifications.

RECOMMENDATIONS

A review of available data indicates the existing use for the Clarion River from the inlet of Piney Lake downstream to the mouth is WWF. This is based on the combination of data that shows that the Clarion River in and below the impoundment created by Piney Dam has been used almost exclusively by warmwater fish species and frequently exceeds CWF criteria. This redesignation is supported by historical temperature data (Table 2) that suggests that the existing use of this section of the Clarion River prior to November 28, 1975 was more appropriately WWF and has remained so to the present.

It is the Department's conclusion that: 1) the designated use of this portion of the Clarion River is more restrictive than its existing use; 2) the designated use of CWF cannot be attained by implementing effluent limits required under sections 301(b) and 306 of the Federal Clean Water Act (33 U.S.C.A. §§ 1331(b) and 1316); 3) its current use designation cannot be attained by implementing cost-effective and reasonable best management practices (BMPs) for nonpoint source control; and 4) the conditions existing in Piney Dam are the result of limnological processes that occur naturally in impoundments and it is not feasible to restore the Clarion River to its original condition by removing Piney Dam or manage it in a way that would result in the attainment of its designated use.

Based on these findings, the Department recommends that the designated use of the Clarion River from the inlet of Piney Lake downstream to the mouth be changed from its current CWF designation to WWF. This recommendation is based on the physical characteristics of the water body, dominance of warm water fish species, and the management and stocking of warm water fish by the PFBC. The redesignation affects 37.4 miles of stream including the 800-acre Piney Lake. All tributaries to the Clarion River from the inlet of Piney Lake downstream to the mouth will retain their current designations.

REFERENCES

Barbour, MT, J Gerritsen, BD Snyder, and JB Stribling. 1999. Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers: Periphyton, Benthic Macroinvertebrates, and Fish. Second Edition. United States Environmental Protection Agency. EPA 841-B-99-002.

Brezina, E.R. 1970. Aquatic Biology Investigation on the Clarion River. DEP File Information.

COE, U.S. Army Corps of Engineers Huntington District, Water Quality Data from Storet, Station ID 4CLA20626

GPU Genco. 1998. Initial Information Packet, Piney project, FERC No. 309-PA. GPU Generation, Inc., Johnstown, PA

Harza Engineering, 2000. *Study of the Potential Scour of the Clarion River Channel Below Piney Dam.*

Kodrich, W.R. and J.R. Moore. 1980. Evaluation of the Clarion River below the Piney Dam for potential as a fishery resource-1980. Clarion State College, Clarion, PA. 20pp.

Normandeau Associates, Inc., 2000a. *Report on Water Quality Studies of the Clarion River Relative to the Relicensing of Piney Hydroelectric Project, FERC Project No. 309-PA.*

Normandeau Associates, Inc., 2000b. *Fish and Aquatic Macroinvertebrate Communities of Piney Lake and the Clarion River, Clarion County, PA.*

PA Fish & Boat Commission. Clarion River Fish and Benthic Macroinvertebrate Data. File Information. 1998.

Figure 1.
Clarion River
Present Designated Uses
WQN Stations

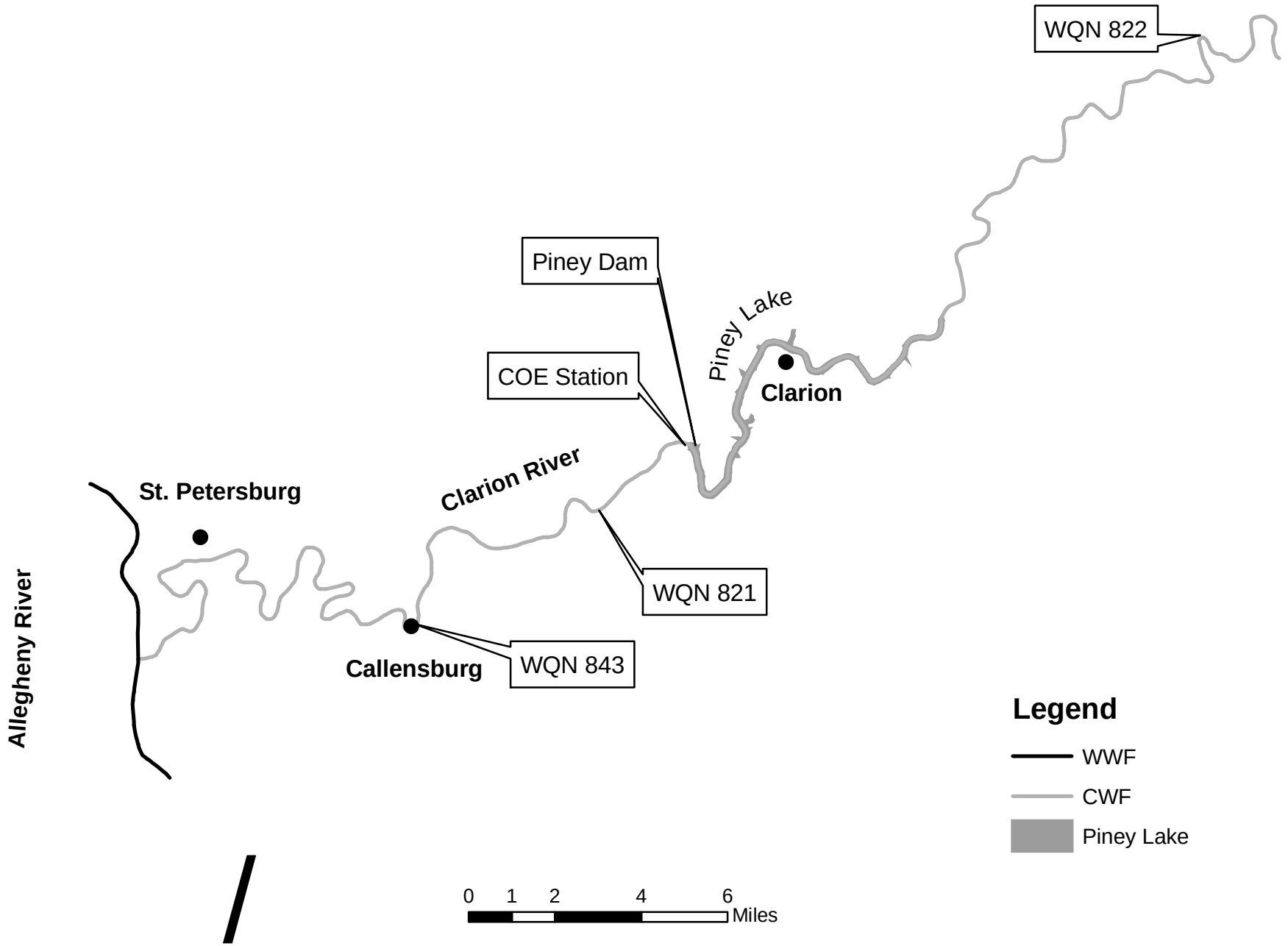
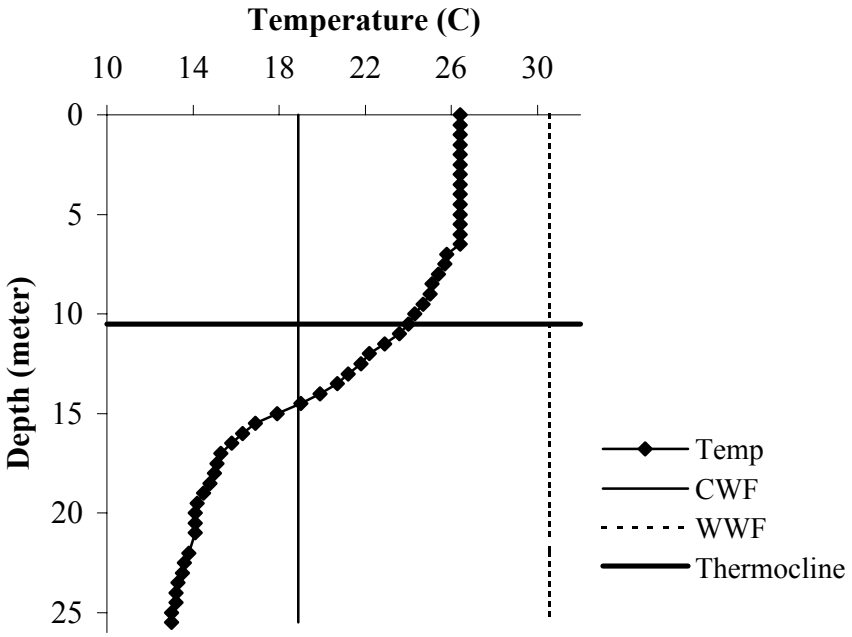


FIGURE 2.
WATER CHEMISTRY - Temperature and Dissolved Oxygen Profiles
PFBC 1995
August 10, 1995
Vertical lines depict parameter criteria.



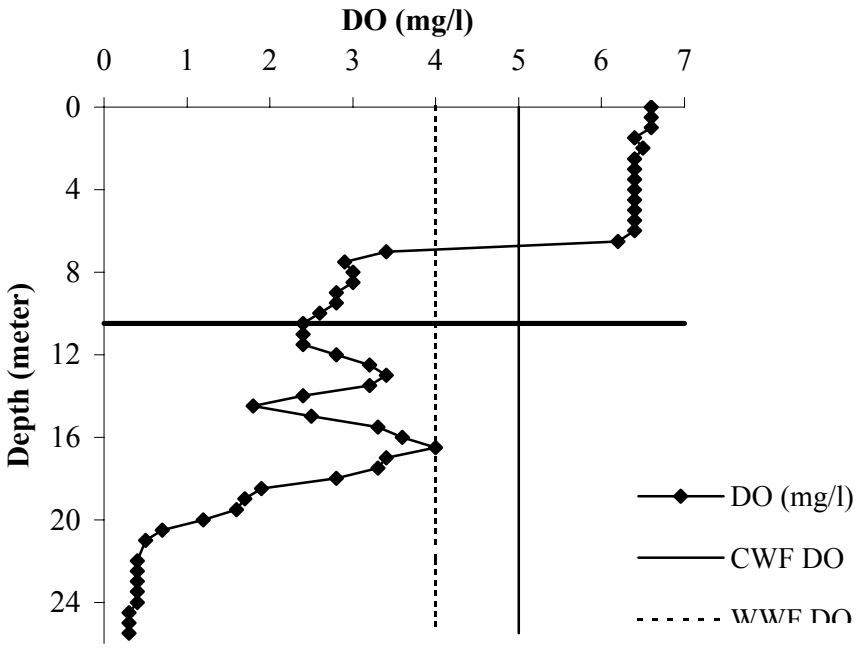


FIGURE 3.
WATER CHEMISTRY - Temperature and Dissolved Oxygen Profiles
Normandeau 2000
Vertical lines depict parameter criteria.

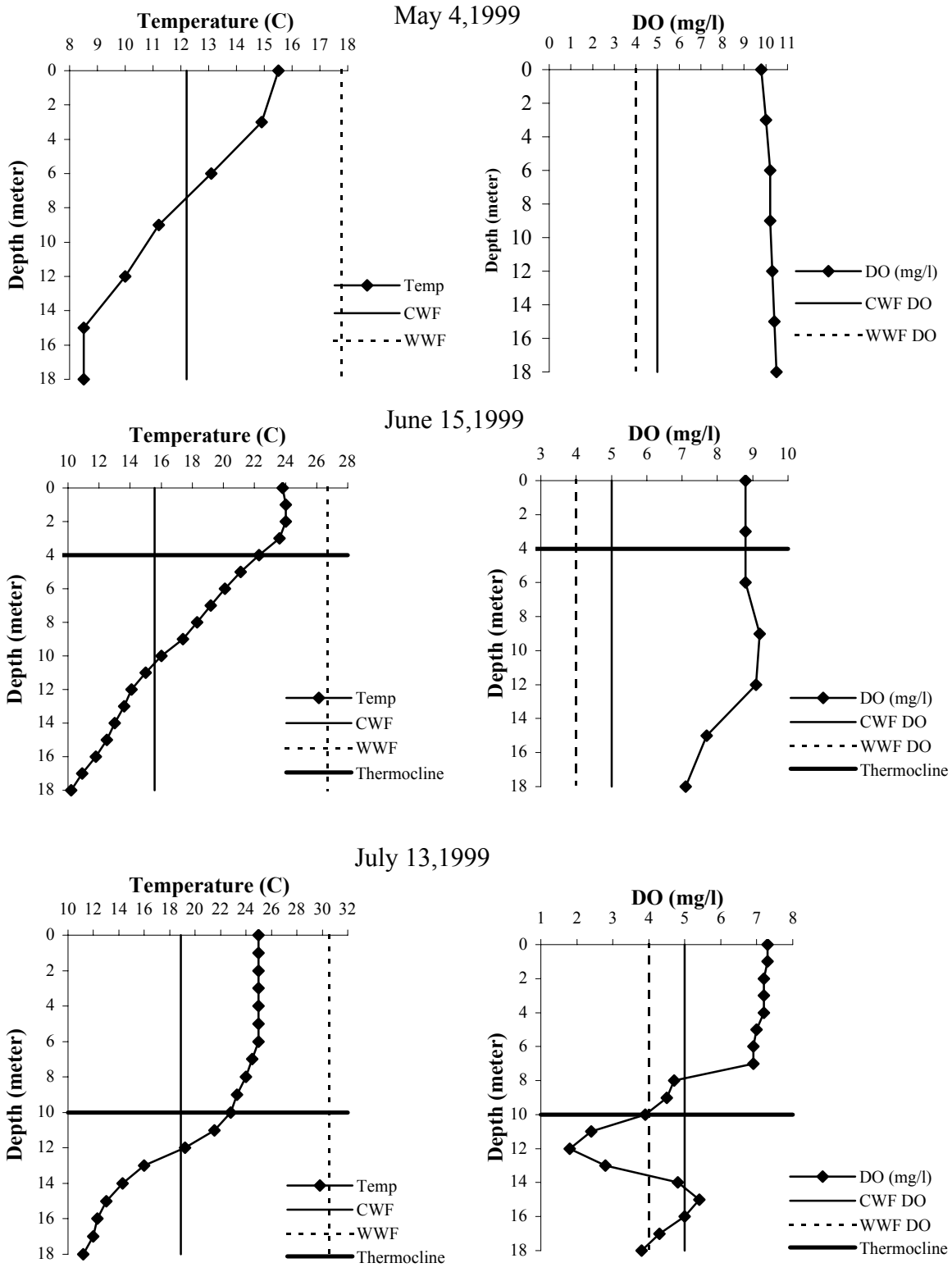
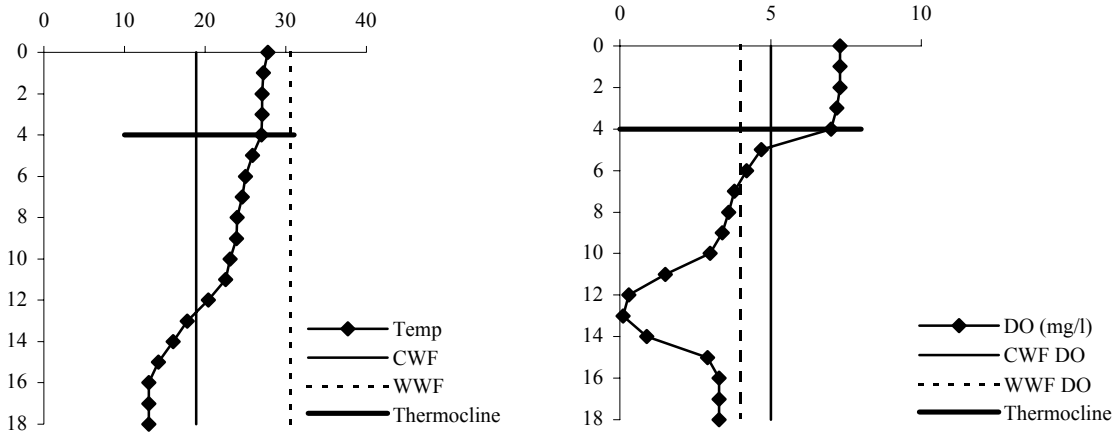
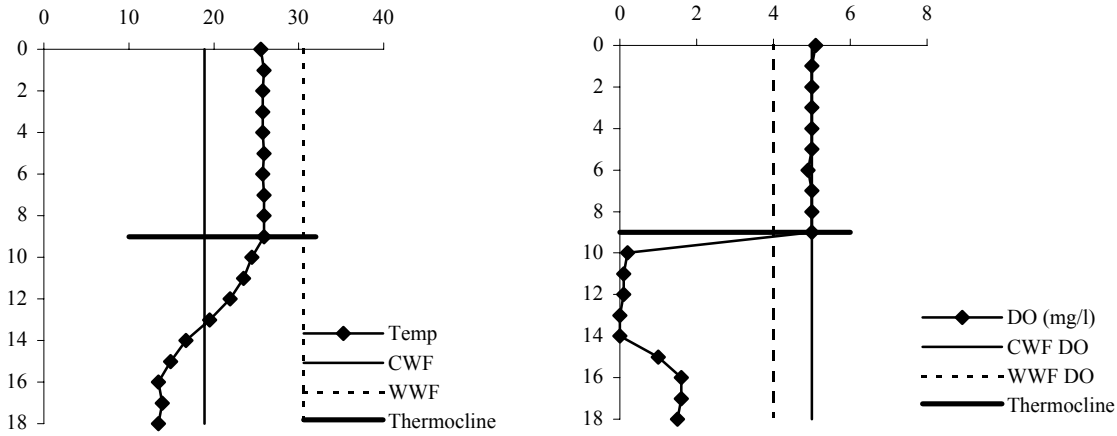


FIGURE 3. (cont.)
WATER CHEMISTRY - Temperature and Dissolved Oxygen Profiles

July 27,1999



August 10,1999



August 24,1999

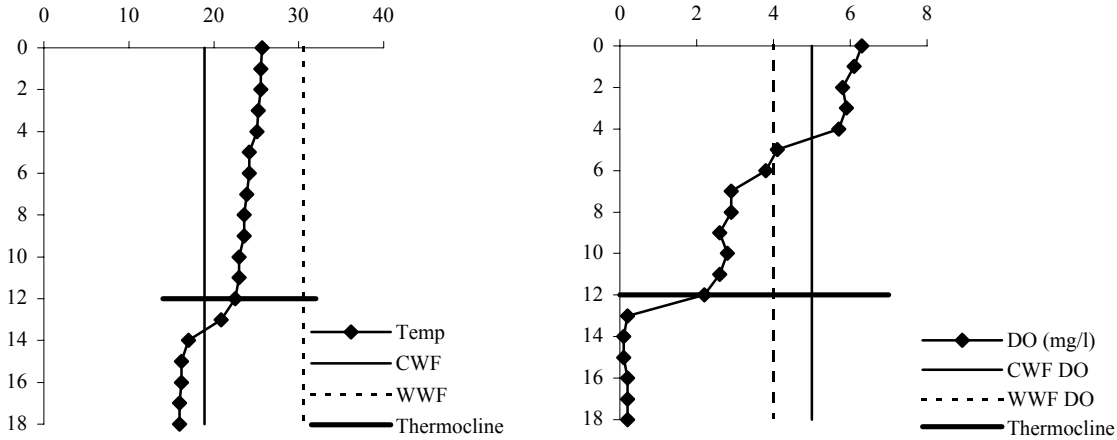


FIGURE 3. (cont.)
WATER CHEMISTRY - Temperature and Dissolved Oxygen Profiles

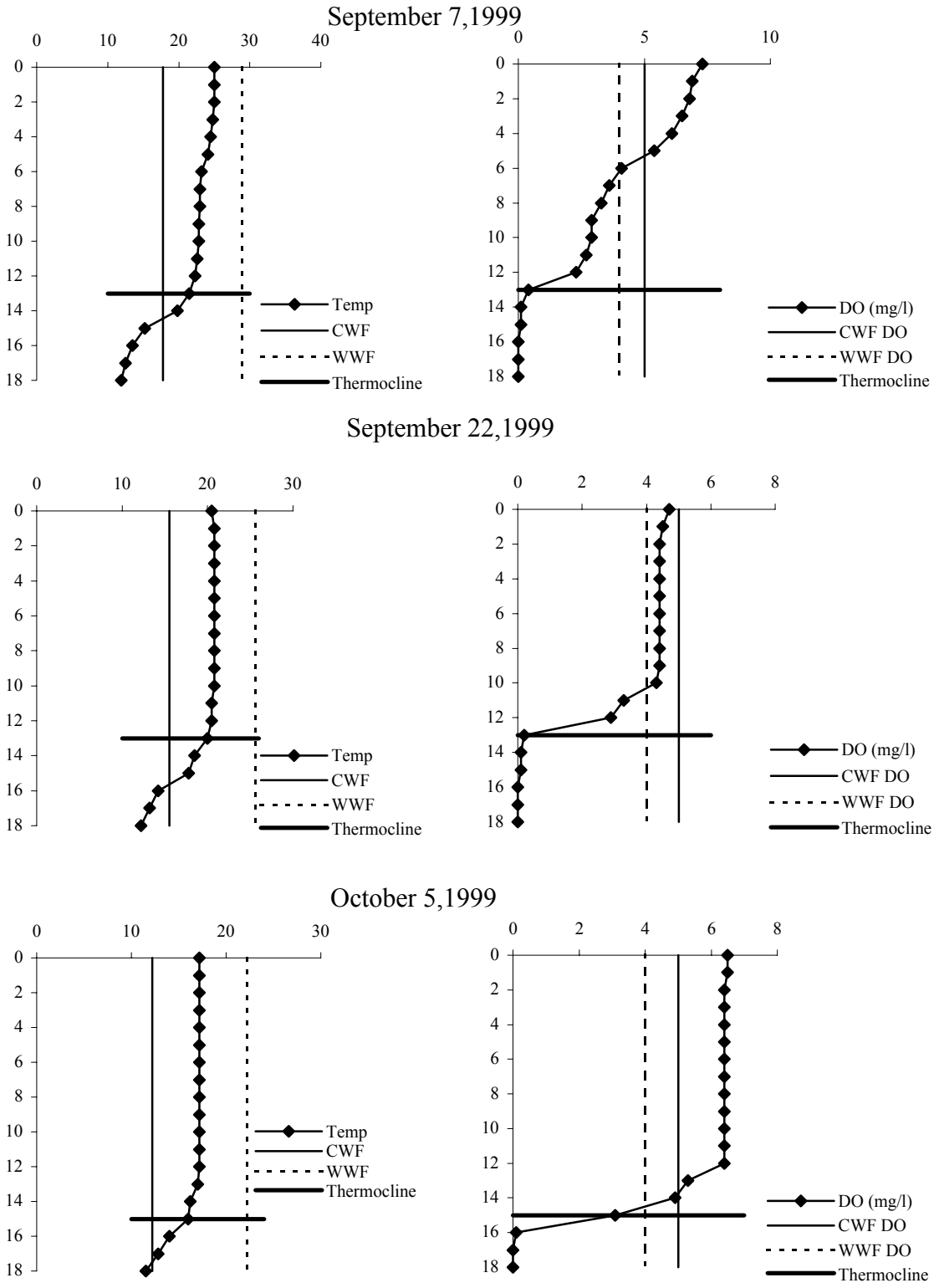
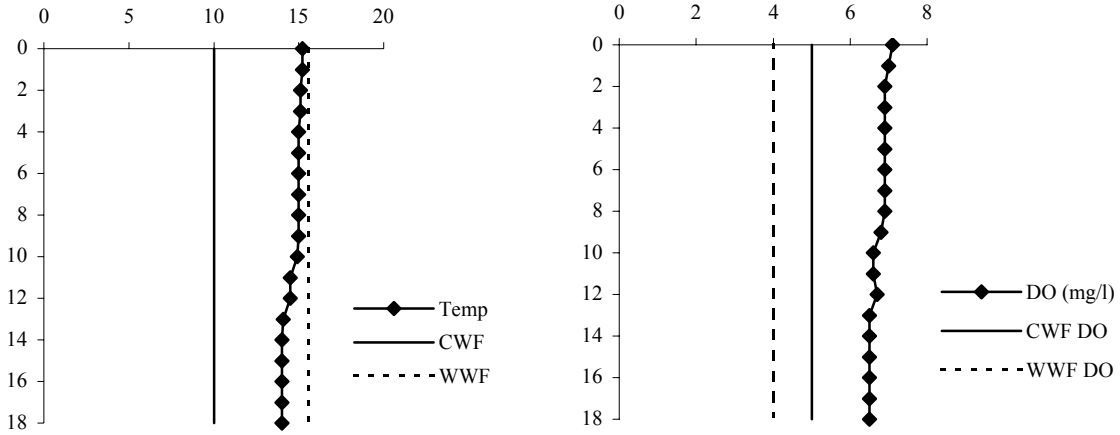
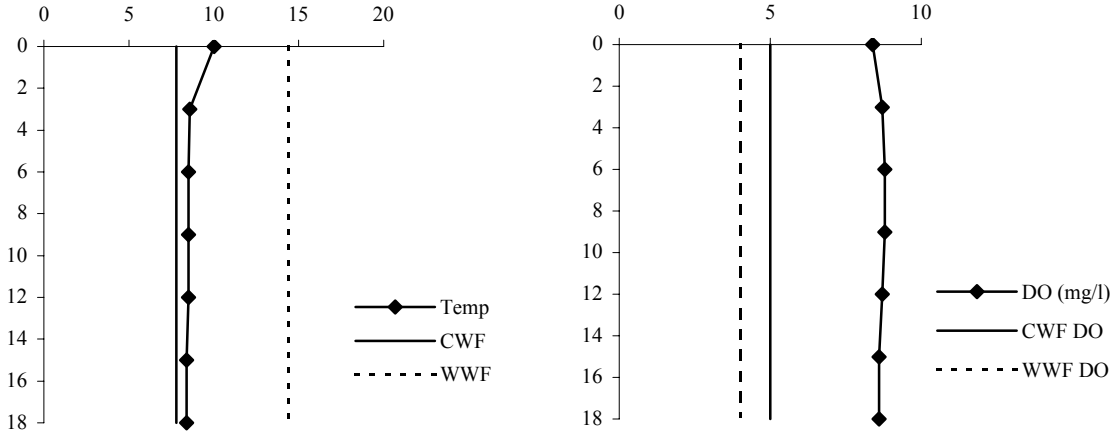


FIGURE 3. (cont.)
WATER CHEMISTRY - Temperature and Dissolved Oxygen Profiles

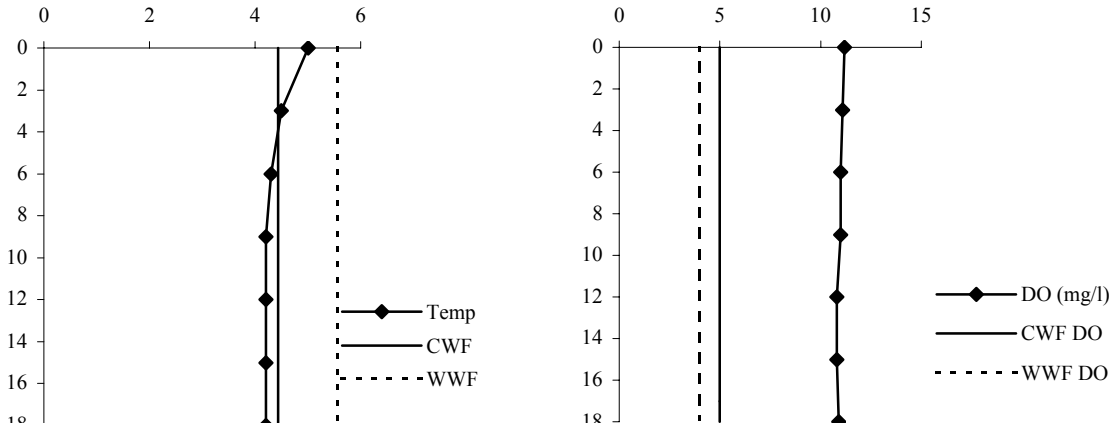
October 18,1999

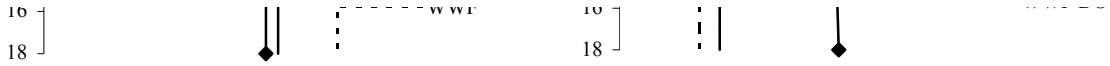


November 9,1999



December 6,1999




16
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16
18

FIGURE 4.
WATER CHEMISTRY - Temperature and Dissolved Oxygen Profiles
Normandeau 2000
Uplake stations August 2-3, 1999
Vertical lines depict parameter criteria.

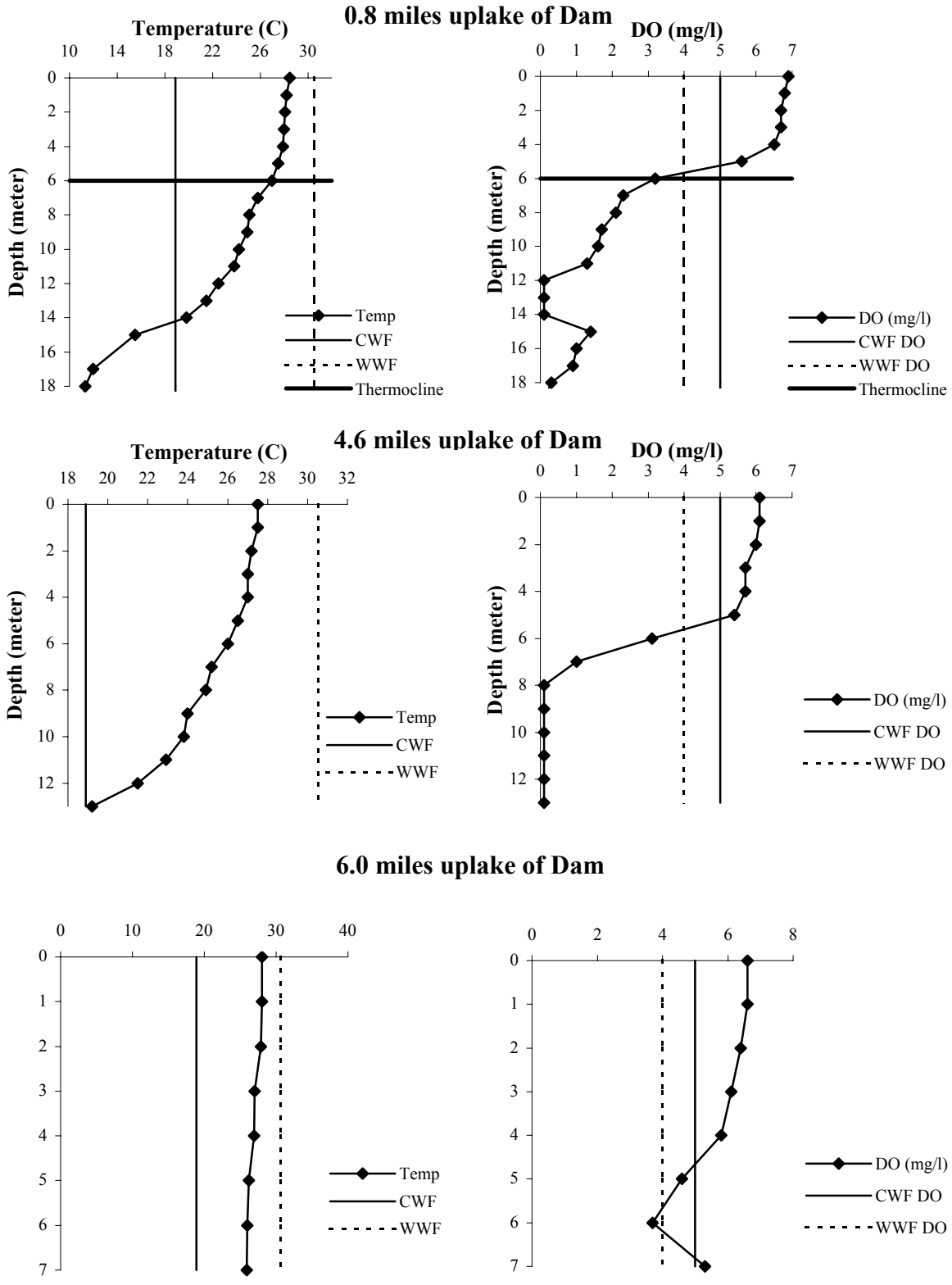
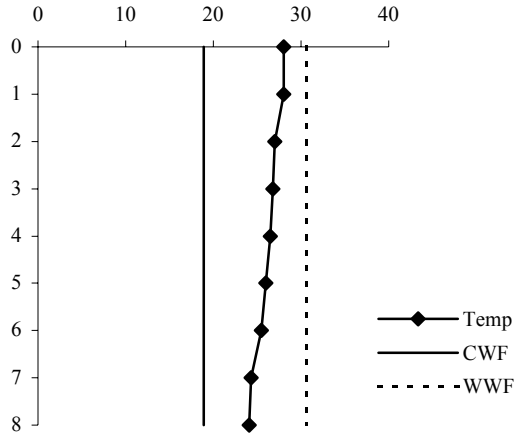
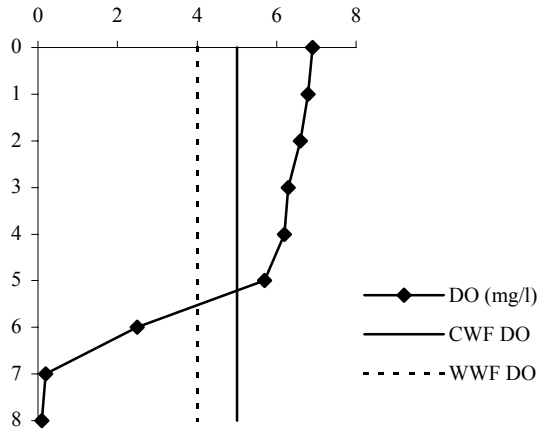


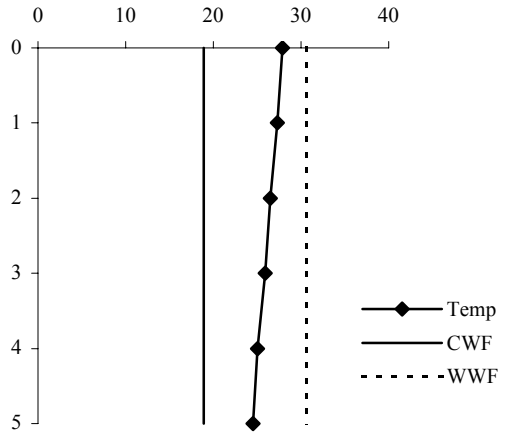
FIGURE 4. (cont.)
WATER CHEMISTRY - Temperature and Dissolved Oxygen Profiles

7.0 miles uplake of Dam





11.0 miles uplake of Dam



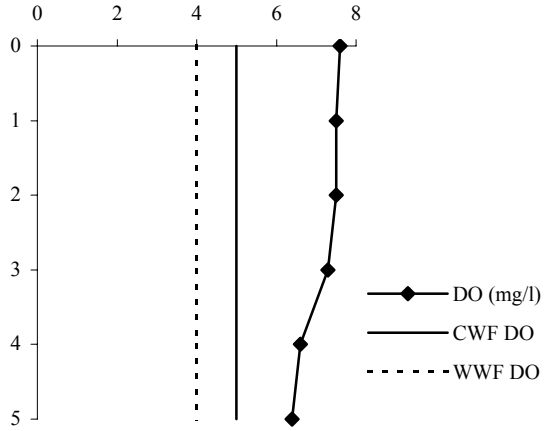


Figure 5.
Clarion River
Fish Sampling Stations

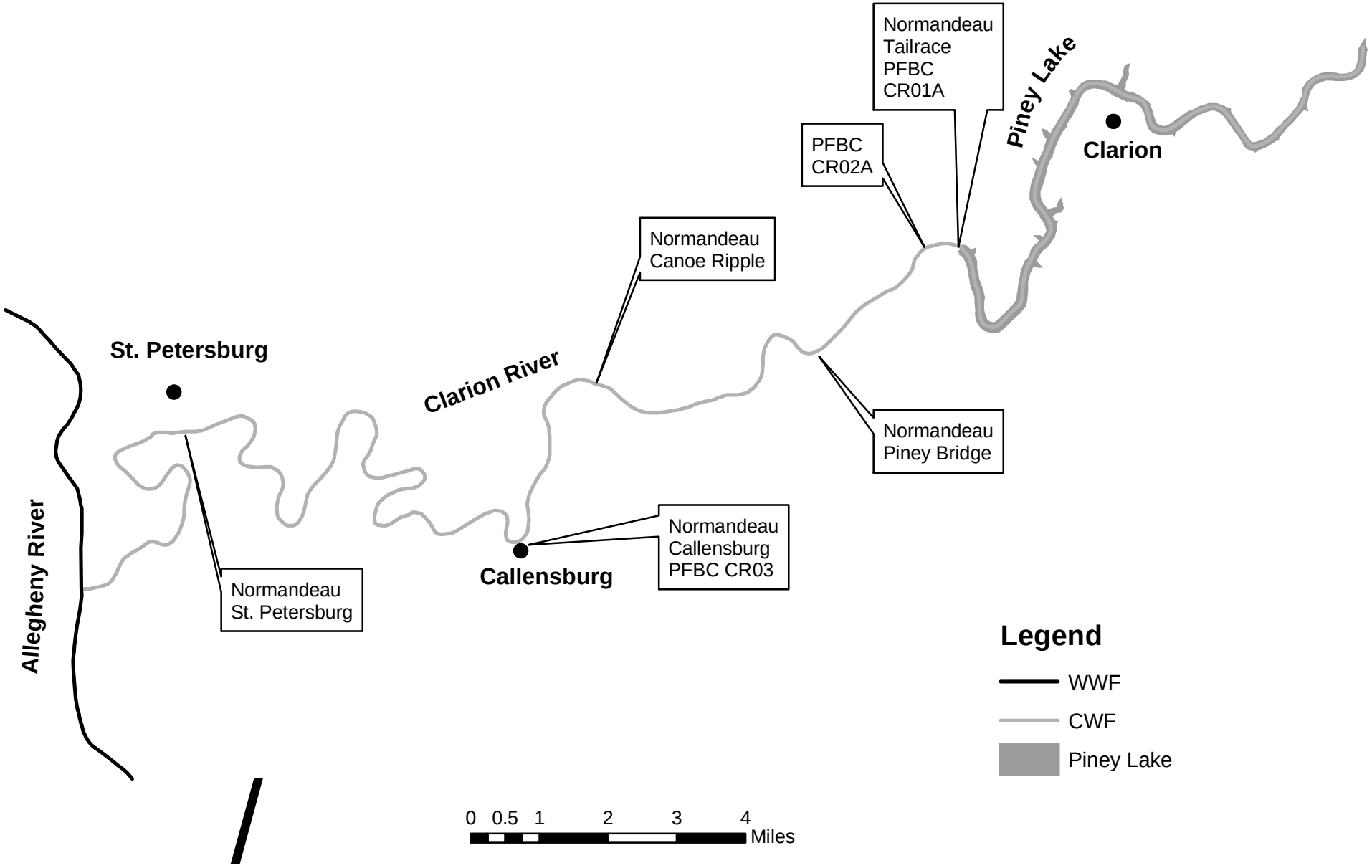


TABLE 1.
TEMPERATURE RECORDS FOR WQN 843 CALLENSBURG
JANUARY 1991 - 2001
PA DEP

Date	Temp °C	Date	Temp °C	Date	Temp °C
3-Jan-91	***4.0***	7-Jun-94	***18.9***	4-Nov-97	***8.3***
7-Feb-91	2.0	5-Jul-94	***23.8***	8-Dec-97	3.4
6-Mar-91	3.0	11-Aug-94	***20.4***	8-Jan-98	***8.0***
2-Apr-91	6.7	8-Sep-94	***18.3***	4-Feb-98	2.4
6-May-91	***14.0***	4-Oct-94	10.7	19-Mar-98	4.2
5-Jun-91	***19.0***	8-Nov-94	6.7	23-Apr-98	9.5
10-Jul-91	***23.0***	6-Dec-94	***6.1***	5-May-98	***13.4***
6-Aug-91	***24.0***	10-Jan-95	0.3	3-Jun-98	***20.1***
10-Sep-91	***22.0***	1-Feb-95	1.6	6-Jul-98	***24.7***
2-Oct-91	***17.0***	7-Mar-95	3.5	4-Aug-98	***26.1***
5-Nov-91	5.0	3-Apr-95	7.8	20-Oct-98	***13.0***
10-Dec-91	3.5	9-May-95	***12.3***	7-Dec-98	***9.8***
7-Jan-92	2.0	13-Jun-95	***15.9***	19-Jan-99	1.0
12-Feb-92	0.0	5-Jul-95	***21.4***	1-Mar-99	2.3
4-Mar-92	4.0	8-Aug-95	***26.0***	10-May-99	***15.3***
9-Apr-92	6.5	5-Sep-95	***24.6***	13-Jul-99	***22.3***
6-May-92	8.5	11-Oct-95	***14.9***	8-Nov-99	***7.8***
3-Jun-92	***18.0***	2-Nov-95	***14.2***	10-Feb-00	1.5
13-Jul-92	***21.8***	4-Dec-95	2.7	20-Apr-00	***11.6***
12-Aug-92	16.5	16-Jan-96	0.3	5-Jun-00	***16.1***
2-Sep-92	16.0	15-Feb-96	1.0	10-Aug-00	***20.9***
6-Oct-92	11.0	12-Mar-96	0.6	7-Sep-00	***22.9***
3-Nov-92	***8.0***	9-Apr-96	5.9	12-Oct-00	11.6
17-Dec-92	3.0	8-May-96	10.1	6-Dec-00	0.3
6-Jan-93	***5.0***	5-Jun-96	***17.4***	8-Jan-01	1.4
2-Feb-93	1.4	10-Jul-96	***20.4***		
8-Mar-93	2.5	14-Aug-96	***22.5***		
6-Apr-93	5.5	17-Sep-96	15.3		
11-May-93	***18.6***	3-Oct-96	***12.7***		
2-Jun-93	***16.6***	7-Nov-96	***8.0***	Total Exceeded	
6-Jul-93	***25.6***	4-Dec-96	***5.0***		
3-Aug-93	***21.0***	8-Jan-97	2.2	CWF	
1-Sep-93	***22.6***	3-Feb-97	0.8	52.3%	
14-Oct-93	7.4	12-Mar-97	3.5		
1-Nov-93	6.1	24-Apr-97	8.6	WWF	
7-Dec-93	***5.9***	7-May-97	10.6	5.6%	
12-Jan-94	0.7	10-Jun-97	***17.1***		
15-Feb-94	1.0	8-Jul-97	***20.9***		
7-Mar-94	1.6	14-Aug-97	***21.0***		
5-Apr-94	7.4	9-Sep-97	***20.2***		
2-May-94	***13.5***	7-Oct-97	***16.1***		

* Bold and italicized values indicate CWF criteria violations
* Bold and italicized and underlined values indicate WWF criteria violations

TABLE 2.
TEMPERATURE RECORDS FOR WQN 821 & WQN 822
WQN 821, Piney
June 1962 - November 1987
PADEP

Date	Temp °C *	Date	Temp °C *	Date	Temp °C *
4-Jun-62	***25.0***	18-Sep-72	***22.0***	16-Nov-83	***6.0***
5-Sep-62	***21.0***	18-Dec-72	3.0	7-Feb-84	1.0
5-Dec-62	2.0	7-Jun-73	***20.0***	17-May-84	11.0
14-Mar-63	3.0	4-Oct-73	***19.0***	29-Aug-84	18.0
21-Oct-63	2.5	18-Dec-73	2.0	19-Nov-84	2.0
9-Dec-63	3.0	1-Apr-74	5.0	11-Feb-85	1.0
17-Mar-64	***6.0***	24-Jun-74	***20.0***	14-Mar-85	3.5
27-May-64	***19.0***	18-Sep-74	***19.0***	6-May-85	***17.0***
25-Aug-64	***23.0***	13-Dec-74	***6.0***	7-Aug-85	***23.0***
16-Nov-64	***12.0***	10-Mar-75	3.0	14-Nov-85	***10.0***
16-Feb-65	3.0	23-Dec-75	1.0	19-Feb-86	1.5
12-May-65	***17.0***	9-Feb-76	0.0	8-May-86	***13.8***
17-Aug-65	***23.0***	12-May-76	10.0	13-Aug-86	***20.0***
5-Nov-65	***9.0***	16-Aug-76	17.5	5-Nov-86	***8.5***
9-Feb-66	3.0	16-Nov-76	***7.0***	11-Feb-87	0.0
3-May-66	9.0	24-May-77	***17.0***	14-May-87	***15.0***
22-Jul-66	***25.0***	30-Aug-77	***21.0***	19-Aug-87	***21.2***
21-Oct-66	***12.0***	29-Nov-77	5.2	12-Nov-87	7.2
17-Jan-67	1.0	8-Feb-78	1.0		
10-Apr-67	***9.0***	23-May-78	13.0		
11-Jul-67	***21.5***	9-Aug-78	***24.0***		
11-Oct-67	***12.3***	13-Nov-78	***8.3***	Total Exceeded	
12-Jan-68	2.0	21-Feb-79	0.5		
1-Apr-68	***10.0***	9-May-79	***14.5***	CWF	
25-Jul-68	***20.0***	23-Aug-79	***21.0***	54.9%	
23-Sep-68	***22.0***	7-Nov-79	***8.0***		
16-Dec-68	1.0	20-Feb-80	1.0	WWF	
21-Mar-69	3.0	21-May-80	13.5	2.9%	
26-Jun-69	***23.0***	27-Aug-80	***21.8***		
29-Sep-69	***18.0***	24-Nov-80	4.5		
22-Dec-69	1.0	18-Feb-81	1.2		
26-Mar-70	2.0	14-May-81	12.2		
22-Jun-70	***19.5***	17-Aug-81	***20.0***		
30-Sep-70	***18.0***	4-Nov-81	***10.0***		
23-Dec-70	2.0	3-Feb-82	0.0		
26-Mar-71	3.0	13-May-82	***16.0***		
21-Jun-71	***20.5***	23-Aug-82	***19.0***		
13-Sep-71	***23.5***	29-Sep-82	15.0		
14-Dec-71	***6.5***	16-Nov-82	***7.0***		
15-Mar-72	3.0	16-Feb-83	0.0		
20-Jul-72	***25.5***	9-May-83	12.0		
15-Aug-72	***19.0***	24-Aug-83	***26.0***		

* Bold and italicized values indicate CWF criteria violations
* Bold and italicized and underlined values indicate WWF criteria violations

TABLE 2 (continued).
TEMPERATURE RECORDS FOR WQN 821 & WQN 822
WQN 822 Cooksburg
June 1962 - December 1991
PADEP

Date	Temp °C *	Date	Temp °C *	Date	Temp °C *	Date	Temp °C *
4-Jun-62	***25.0***	20-Jul-72	***26.0***	3-Nov-83	***10.0***	2-Nov-89	***7.8***
5-Sep-62	***19.0***	15-Aug-72	***26.0***	28-Feb-84	1.0	6-Dec-89	0.5
6-Dec-62	1.0	19-Sep-72	***24.0***	22-May-84	***20.0***	4-Jan-90	1.3
14-Mar-63	3.0	18-Dec-72	0.5	30-Aug-84	12.0	7-Feb-90	***4.5***
21-Oct-63	2.2	8-Mar-73	***7.0***	19-Nov-84	3.0	7-Mar-90	1
9-Dec-63	1.0	7-Jun-73	***20.0***	13-Mar-85	4.0	10-Apr-90	7.5
28-Feb-64	1.0	4-Oct-73	***17.0***	14-May-85	***17.5***	9-May-90	***14***
18-May-64	***18.0***	18-Dec-73	2.0	20-Aug-85	***22.5***	14-Jun-90	***22***
17-Aug-64	***19.0***	1-Apr-74	4.4	18-Nov-85	***7.5***	5-Jul-90	***26.3***
9-Nov-64	7.0	24-Jun-74	***19.0***	18-Feb-86	1.5	7-Aug-90	***19***
16-Feb-65	1.0	18-Sep-74	***19.0***	19-May-86	***20.4***	6-Sep-90	***23.4***
25-May-65	17.0	13-Dec-74	***5.0***	14-Aug-86	***23.0***	11-Sep-90	16.3
17-Aug-65	***28.0***	10-Feb-75	3.0	6-Nov-86	5.5	3-Oct-90	11.5
5-Nov-65	7.0	25-Jun-75	***20.0***	18-Feb-87	0.8	6-Nov-90	***8.4***
9-Feb-66	2.0	22-Dec-75	0.0	14-May-87	***16.0***	4-Dec-90	2.7
3-May-66	9.5	16-Aug-76	16.0	20-Aug-87	***21.5***	10-Jan-91	1
2-Aug-66	***21.0***	16-Nov-76	4.0	12-Nov-87	6.0	11-Feb-91	1.5
26-Oct-66	7.0	24-May-77	***20.0***	21-Jan-88	0.3	12-Mar-91	0.9
16-Jan-67	1.0	18-Aug-77	***19.0***	17-Feb-88	0.5	3-Apr-91	3
11-Apr-67	8.0	30-Sep-77	13.0	8-Mar-88	2	8-May-91	10.5
11-Jul-67	***21.0***	29-Nov-77	2.2	7-Apr-88	***10.2***	6-Jun-91	***17***
10-Oct-67	12.0	23-May-78	14.0	9-May-88	***15***	9-Jul-91	***23.5***
18-Jan-68	3.0	9-Aug-78	***22.0***	7-Jun-88	***19.5***	7-Aug-91	***20***
5-Apr-68	***9.0***	28-Nov-78	2.4	6-Jul-88	***23.3***	4-Sep-91	***19***
24-Jun-68	***23.5***	9-May-79	***20.3***	10-Aug-88	***27.8***	3-Oct-91	***18.1***
26-Sep-68	***21.0***	9-Aug-79	***21.0***	18-Aug-88	***26.5***	7-Nov-91	3
17-Dec-68	0.5	7-Nov-79	6.0	13-Sep-88	***21.5***	12-Dec-91	4
21-Mar-69	5.5	20-Feb-80	1.0	18-Oct-88	***13***		
26-Jun-69	***23.0***	20-May-80	14.2	7-Nov-88	5.6		
18-Jul-69	***27.0***	20-Aug-80	***20.5***	14-Dec-88	0		
29-Sep-69	15.5	6-Nov-80	6.0	5-Jan-89	0	**Total Exceeded**	
19-Dec-69	0.5	17-Dec-80	0.5	8-Feb-89	1		
26-Mar-70	2.0	4-Feb-81	0.3	2-Mar-89	0.8	**CWF**	
22-Jun-70	***24.0***	13-May-81	11.0	6-Apr-89	8	**46.7%**	
30-Sep-70	***16.5***	4-Nov-81	***9.0***	15-May-89	9.2		
24-Dec-70	2.5	20-May-82	***16.0***	13-Jun-89	***15.8***	**TSF**	
26-Mar-71	3.5	18-Aug-82	***22.0***	6-Jul-89	18.5	**5.3%**	
22-Jun-71	***23.0***	15-Nov-82	4.0	1-Aug-89	***19***		
13-Sep-71	***21.5***	7-Feb-83	0.0	3-Aug-89	***24.2***		
14-Dec-71	3.0	12-May-83	***13.0***	5-Sep-89	17		
15-Mar-72	2.5	23-Aug-83	***26.0***	10-Oct-89	5		

* Bold and italicized values indicate CWF criteria violations

* Bold and italicized and underlined values indicate TSF criteria violations

TABLE 3.
TEMPERATURE RECORDS
0.33 MILES DOWNSTREAM OF PINEY DAM
January 1981 - December 1992
COE

Date	Temp °C	Date	Temp °C	Date	Temp °C	Date	Temp °C
12-Jan-81	1.1	14-Dec-82	***6.1***	8-Oct-84	***15.6***	8-Sep-86	***18.3***
26-Jan-81	0.0	27-Dec-82	3.3	22-Oct-84	***15.0***	22-Sep-86	***18.9***
9-Mar-81	2.2	10-Jan-83	1.1	14-Nov-84	***8.3***	13-Oct-86	***14.4***
13-Apr-81	6.7	24-Jan-83	0.0	26-Nov-84	3.9	27-Oct-86	9.4
27-Apr-81	5.0	15-Feb-83	0.0	10-Dec-84	2.2	10-Nov-86	***8.9***
11-May-81	12.2	1-Mar-83	2.8	24-Dec-84	3.9	25-Nov-86	3.9
25-May-81	***15.0***	14-Mar-83	***6.7***	14-Jan-85	3.3	8-Dec-86	3.3
8-Jun-81	***20.0***	30-Mar-83	3.9	28-Jan-85	1.1	22-Dec-86	3.3
13-Jul-81	***22.2***	18-Apr-83	7.8	25-Feb-85	1.1	12-Jan-87	1.1
27-Jul-81	***23.3***	25-Apr-83	5.6	11-Mar-85	4.4	26-Jan-87	1.1
10-Aug-81	***19.4***	10-May-83	12.2	25-Mar-85	4.4	9-Feb-87	2.0
24-Aug-81	***21.1***	24-May-83	13.3	8-Apr-85	7.2	23-Feb-87	1.0
28-Sep-81	***15.6***	25-May-83	12.8	29-Apr-85	***14.4***	9-Mar-87	2.2
12-Oct-81	10.0	13-Jun-83	***18.9***	13-May-85	***17.2***	13-Apr-87	***10.0***
21-Oct-81	***11.1***	28-Jun-83	***22.8***	27-May-85	***19.4***	27-Apr-87	***12.8***
27-Oct-81	***15.0***	11-Jul-83	***21.1***	10-Jun-85	***18.9***	11-May-87	***17.8***
29-Oct-81	***10.1***	26-Jul-83	***22.2***	8-Jul-85	***19.4***	1-Jun-87	***19.4***
9-Nov-81	***7.8***	8-Aug-83	***23.3***	22-Jul-85	***21.1***	8-Jun-87	***20.6***
23-Nov-81	***5.6***	23-Aug-83	***23.3***	12-Aug-85	***22.2***	22-Jun-87	***21.1***
14-Dec-81	2.2	12-Sep-83	***23.3***	26-Aug-85	***22.2***	14-Jul-87	***21.1***
28-Dec-81	2.2	26-Sep-83	***18.3***	9-Sep-85	***21.1***	27-Jul-87	***21.1***
11-Jan-82	1.1	10-Oct-83	***15.6***	23-Sep-85	***17.8***	10-Aug-87	***25.6***
25-Jan-82	1.1	31-Oct-83	10.0	14-Oct-85	***16.1***	24-Aug-87	***22.8***
8-Feb-82	1.1	14-Nov-83	***7.8***	29-Oct-85	***13.3***	21-Sep-87	***16.7***
22-Feb-82	1.1	28-Nov-83	***7.8***	11-Nov-85	***10.0***	28-Sep-87	14.4
8-Mar-82	1.1	12-Dec-83	3.9	29-Nov-85	***7.8***	12-Oct-87	11.7
22-Mar-82	4.4	26-Dec-83	0.0	9-Dec-85	3.3	26-Oct-87	10.0
14-Apr-82	4.4	9-Jan-84	0.6	23-Dec-85	1.1	10-Nov-87	***8.9***
27-Apr-82	10.0	23-Jan-84	0.0	27-Jan-86	0.6	23-Nov-87	***6.1***
28-Apr-82	***12.6***	6-Feb-84	0.6	10-Feb-86	2.2	14-Dec-87	4.4
11-May-82	***15.0***	27-Feb-84	***4.4***	24-Feb-86	3.3	28-Dec-87	3.3
24-May-82	***16.7***	12-Mar-84	2.2	10-Mar-86	2.2	11-Jan-88	1.7
15-Jun-82	***15.6***	9-Apr-84	6.1	24-Mar-86	***6.1***	25-Jan-88	3.3
29-Jun-82	***20.0***	18-Apr-84	9.9	15-Apr-86	***8.9***	8-Feb-88	0.6
19-Jul-82	***25.6***	23-Apr-84	8.9	28-Apr-86	11.1	22-Feb-88	1.1
26-Jul-82	***25.6***	21-May-84	13.9	8-May-86	***13.8***	14-Mar-88	4.4
5-Aug-82	***23.4***	28-May-84	***15.6***	9-May-86	***13.2***	28-Mar-88	4.4
9-Aug-82	***24.4***	11-Jun-84	***18.9***	12-May-86	***15.6***	11-Apr-88	***10.0***
23-Aug-82	***21.1***	25-Jun-84	***17.8***	26-May-86	***16.7***	26-Apr-88	9.4
13-Sep-82	***20.0***	9-Jul-84	16.7	9-Jun-86	***18.9***	4-May-88	8.6
28-Sep-82	***16.1***	24-Jul-84	***18.9***	23-Jun-86	***18.3***	9-May-88	***16.7***
11-Oct-82	***17.8***	12-Aug-84	***22.8***	14-Jul-86	***22.2***	23-May-88	14.4
25-Oct-82	***12.2***	27-Aug-84	***20.0***	28-Jul-86	***23.3***	13-Jun-88	***18.9***
8-Nov-82	***7.8***	10-Sep-84	***20.0***	11-Aug-86	***22.2***	27-Jun-88	***21.1***
22-Nov-82	4.4	1-Oct-84	***17.2***	25-Aug-86	***22.2***	11-Jul-88	***25.0***

TABLE 3. (cont.)
TEMPERATURE RECORDS
0.33 MILES DOWNSTREAM OF PINEY DAM
January 1981 - December 1992

Date	Temp °C	Date	Temp °C	Date	Temp °C
25-Jul-88	***24.4***	27-Aug-90	17.8	8-Jun-92	10.0
22-Aug-88	***22.8***	10-Sep-90	15.6	22-Jun-92	10.0
22-Aug-88	***22.8***	24-Sep-90	12.8	13-Jul-92	***20.0***
12-Sep-88	***19.4***	8-Oct-90	12.2	10-Aug-92	18.3
26-Sep-88	13.9	29-Oct-90	5.0	24-Aug-92	***20.0***
10-Oct-88	11.1	12-Nov-90	3.9	28-Sep-92	12.8
25-Oct-88	***12.8***	26-Nov-90	3.3	14-Oct-92	10.0
15-Nov-88	***7.8***	10-Dec-90	3.3	26-Oct-92	8.9
28-Nov-88	***8.9***	24-Dec-90	2.8	9-Nov-92	4.4
26-Dec-88	1.7	14-Jan-91	0.6	23-Nov-92	***8.3***
9-Jan-89	1.1	29-Jan-91	0.6	15-Dec-92	1.1
23-Jan-89	1.1	11-Feb-91	1.1	28-Dec-92	1.7
13-Feb-89	1.1	26-Feb-91	2.2		
27-Feb-89	0.0	11-Mar-91	4.4		
13-Mar-89	0.0	25-Mar-91	3.3		
27-Mar-89	***7.2***	8-Apr-91	6.1	Total Exceeded	
10-Apr-89	4.4	22-Apr-91	7.8		
24-Apr-89	10.0	13-May-91	8.9	CWF	
8-May-89	5.0	27-May-91	14.4	44.6%	
22-May-89	12.2	10-Jun-91	***15.6***		
26-Jun-89	15.6	25-Jun-91	***20.0***	WWF	
10-Jul-89	***20.0***	8-Jul-91	***20.6***	0.7%	
24-Jul-89	***21.1***	22-Jul-91	***21.1***		
16-Aug-89	***21.1***	5-Aug-91	***21.1***		
25-Oct-89	7.2	26-Aug-91	***21.1***		
28-Nov-89	4.4	9-Sep-91	***20.0***		
11-Dec-89	1.7	30-Sep-91	10.0		
27-Dec-89	0.0	10-Oct-91	8.3		
8-Jan-90	0.0	28-Oct-91	8.3		
23-Jan-90	0.6	11-Nov-91	6.7		
12-Feb-90	1.1	25-Nov-91	3.3		
26-Feb-90	0.6	9-Dec-91	3.3		
12-Mar-90	1.7	23-Dec-91	3.3		
26-Mar-90	3.3	13-Jan-92	2.8		
9-Apr-90	4.4	27-Jan-92	3.3		
23-Apr-90	7.2	10-Feb-92	0.6		
11-May-90	11.7	24-Feb-92	***3.9***		
15-May-90	10.0	9-Mar-92	4.4		
28-May-90	10.0	23-Mar-92	3.3		
7-Jun-90	***15.6***	15-Apr-92	4.4		
11-Jun-90	12.2	27-Apr-92	7.2		
25-Jun-90	12.8	11-May-92	8.9		
22-Aug-90	***20.3***	26-May-92	7.2		

* Bold and italicized values indicate CWF criteria violations
* Bold and italicized and underlined values indicate WWF criteria violations

Table 4.
Water Quality
DEP WQN 843

	Units	Date											
		20-Feb-02	24-Apr-02	12-Jun-02	14-Aug-02	20-Nov-02	16-Jan-03	19-Mar-03	10-Jun-03	15-Jul-03	17-Sep-03	15-Oct-03	18-Dec-03
Field Paramters													
Water Temp	C	3.2	12.7	20	28	7.1	0.81	5.94	14	26.6	16.5	11	1.5
pH	pH units	6.56	7	6	7.4	7.3	7.5	6.4	7.6	6.6	7.08	7.5	6.3
Specific Conductance	µmhos/cm	243	151	183.8	232	263	179	110	206	408	188	307	182
Oxygen, Dissolved	mg/l	12.3	7.18	9.33	9.4	10.92	13.85	18.62	10.7	8.2	8.5	10.4	13.6
Laboratory Parameters													
pH	pH units	6.3	6.4	6.2	6.6	7.1	6.4	6.3	6.9	6.1	6.9	6.4	6.6
Alkalinity	mg/l	7.4	7.4	5.2	16.2	22	8.4	5.2	11.4	5.2	9.6	7.8	5.4
Hardness, Total	mg/l	67	49	63	112	83	56	32	70	153	62	108	57
Total Dissolved Solids	mg/l	148	116	132	268	210	168	1364	188	314	158	244	414
Suspended Solid, Total	mg/l	18	<2	10	4	10	<2	22	<2	<2	<2	32	4
Aluminum, Total	µg/l	586	431	954	<200	458	307	714	206	<200	<200	1340	566
Nitrogen, Ammonia, Total	mg/l	0.04	0.04	<0.02	0.04	0.06	0.06	0.02	0.03	0.03	0.03	0.03	0.05
Nitrate Nitrogen, Total	mg/l	0.47	0.28	0.24	0.22	0.42	0.39	0.41	0.44	0.39	0.19	0.48	0.44
Nitrite Nitrogen, Total	mg/l	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Nitrogen, Total	mg/l	-	0.41	0.69	0.41	0.89	0.48	0.55	0.72	0.5	0.4	0.93	0.4
Phosphate, Ortho, Total	mg/l	-	0.02	0.012	<0.01	0.016	<0.01	0.024	<0.01	<0.01	<0.01	0.028	<0.01
Phosphorus, Total	mg/l	0.02	0.01	0.02	<0.01	0.022	<0.01	0.024	0.016	0.02	0.016	0.033	0.011
Calcium, Total	mg/l	16.4	11.8	14.5	26	20.2	13.5	8.07	17	34.3	14.8	23.8	13.2
Magnesium, Total	mg/l	6.39	4.64	6.51	11.4	7.98	5.3	2.92		16.4	6.02	11.7	5.936
Sulfate	mg/l	60.4	46.3	63.9	125	84.1	51.1	27.5	66.2	155	56.5	111	59.1
Copper, Total	µg/l	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Iron, Total	µg/l	1180	660	1130	125	1100	574	1190	394	158	318	2928	811
Lead, Total	µg/l	1.28	<1	1.1	<1	<1	<1	1.4	<1	<1	<1	<1	18
Manganese, Total	µg/l	1200	637	885	1080	881	580	559	795	1890	752	1957	855
Nickel, Total	µg/l	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Zinc, Total	µg/l	40	23	85	14	38	35	35	14	39	15	148	86
Organic Carbon, Total	mg/l	1.6	1.7	2.4	2.5	3.1	1.6	2.2	1.8	1.3	2.1	3.8	1.5
Specific Conductance	µmhos/cm	196.8	149.9	284	393	280	168.5	108	205	410	178.7	301	178.9

Table 5.
Water Quality
DEP WQN 821

		Date										
	Units	17-Jan-67	10-Apr-67	11-Jul-67	11-Oct-67	24-May-77	30-Aug-77	29-Nov-77	11-Feb-87	14-May-87	19-Aug-87	12-Nov-87
Field Paramters												
Temperature	C	1.00	9.00	21.50	12.29	17.00	21.00	5.20	0.00	15.00	21.20	7.20
pH		6.00	5.30	4.80	5.10	6.90	5.60	5.10	6.50	5.80	6.00	7.45
Oxygen, Dissolved	mg/l	11.00	9.00	7.00	10.00	8.10	7.30	11.40	13.00	9.60	7.10	11.60
Laboratory Parameters												
pH		5.50	4.60	4.60	5.20	5.40	5.60	5.90	6.30	6.30	6.00	6.40
Alkalinity, Total	mg/l	11	5	4	6	3	18	3	17	6	10	10
Acidity	mg/l	6	8	10	12	-	3	2	257	37	20	0
Hardness, Total	mg/l	112	78	92	80	60	62	62	79	50	73	68
Aluminum, Total	µg/l	96	70	220	910	-	250	300	570	570	150	170
Ammonia, Unionzed	mg/l	-	-	-	-	0	0	0	0	0	0	0
Nitrogen, Ammonia, Total	mg/l	-	-	-	-	0.06	0.08	0.10	0.12	0.10	0.12	0.08
Nitrate Nitrogen, Total	mg/l	-	-	-	-	0.23	0.37	0.70	0.36	0.26	0.20	0.20
Nitrite Nitrogen, Total	mg/l	-	-	-	-	<0.01	<0.01	<0.01	0.02	0.01	0.00	0.00
Phosphate, Ortho	mg/l	0.00	0.00	0.00	0.00	-	-	-	-	-	0.03	-
Phosphorus, Total	mg/l	-	-	-	-	0.06	0.01	0.02	0.01	0.01	-	0.02
Calcium, Dissolved	mg/l	-	-	-	-	13.60	32.10	10.40	-	10.00	17.35	15.88
Magnesium, Dissolved	mg/l	-	-	-	-	6.30	5.40	8.80	8.60	5.30	7.40	6.99
Chloride, Total	mg/l	23	10	17	9	14	12	-	-	7	11	11
Sulfate, Total	mg/l	36	66	81	59	46	40	30		65	83	71
Arsenic, Total	µg/l	-	-	-	-	-	-	-	-	-	4	-
Cadmium, Total	µg/l	-	-	-	-	-	1.00	9.00	15.10	-	0.27	-
Chromium, Total	µg/l	-	-	-	-	-	<10	-	-	-	4	-
Copper, Total	µg/l	-	-	-	-	-	20	-	-	-	50	-
Iron, Total	µg/l	600	800	400	600	350	650	620	1370	480	410	440
Lead, Total	µg/l	-	-	-	-	-	<10	-	-	-	4	-
Manganese, Total	µg/l	-	-	-	-	-	960	-	-	-	1440	-
Mercury, Total	µg/l	-	-	-	-	-	-	-	-	-	1	-
Nickel, Total	µg/l	-	-	-	-	-	50	-	-	-	50	-
Zinc, Total	µg/l	-	-	-	-	-	120	-	-	-	30	-
Specific Conductance	µmhos/cm	-	-	-	-	240	180	124	219	147	230	200
BOD, 5 Day, 20 C	mg/l	4.2	0.9	1.2	3.0	-	-	-	-	-	-	-

TABLE 6.
WATER CHEMISTRY
DISSOLVED OXYGEN PROFILES - Piney Lake
April - October 1980
Kodrich and Moore 1980

Depth (meter)	25-Apr-80 °C	22-May-80 °C	19-Jun-80 °C	16-Jul-80 °C	19-Aug-80 °C	9-Sep-80 °C	8-Oct-80 °C
0	***14.0***	***16.0***	**18.2**	***25.1***	***21.7***	***23.5***	***16.5***
5	***14.0***	***14.9***	16.1	***22.4***	***19.8***	***23.0***	***17.0***
10	***14.0***	14.0	15.0	***20.7***	***19.0***	***21.5***	***17.0***
15	***13.0***	***14.5***	12.9	14.7	18.8	***19.5***	***17.0***
20	11.0	***14.5***	11.6	12.0	13.3	15.3	***15.1***
25	11.0	14.0	11.0	11.7	12.5	13.0	***13.8***

* Bold and itacilized values indicate CWF violations

TABLE 7.
HABITAT ASSESSMENT SUMMARY

Clarion River 1999

Normandeau 2000b

HABITAT PARAMETER	scoring range	Tailrace	Piney Bridge	Canoe Ripple	Callensburg	St. Petersburg
1 . Epifaunal Substrate/ Available Cover	0 - 20	8	9	10	10	9
2 . Riffle Quality	0 - 20	13	7	17	18	14
3 . Embeddedness	0 - 20	3	3	3	3	3
4 . Channel Alteration	0 - 20	20	18	18	19	20
5 . Sediment Deposition	0 - 20	20	13	18	18	18
6 . Frequency of Riffles (or bends)/ Velocity-Depth Combinations	0 - 20	12	3	18	18	18
7 . Channel Flow Status	0 - 20	8	18	18	18	20
8 . Bank Vegetative Protection						
Left Bank	0 - 10	9	9	9	9	7
Right Bank	0 - 10	9	9	9	9	7
9 . Bank Stability						
Left Bank	0 - 10	9	9	9	9	7
Right Bank	0 - 10	9	9	9	9	7
10 . Riparian Vegetative Zone Width						
Left Bank	0 - 10	4	7	5	5	4
Right Bank	0 - 10	4	4	9	9	4
Total Score		128	118	152	154	138
Habitat Quality:		suboptimal	suboptimal	suboptimal/ optimal	suboptimal/ optimal	suboptimal

TABLE 8.
BENTHIC MACROINVERTEBRATE TAXA LIST
CLARION RIVER, CLARION COUNTY
WQN Stations 843 and 822
1999 and 2000

		WQN 843 7/8/1999	WQN 843 9/8/2000	WQN 822 8/5/1999	WQN 822 9/26/2000
MAYFLIES					
Baetidae	***Baetis***	-	-	-	1
otageniidae	***Leucrocut***	-	-	-	1
	Stenonem	-	6	8	23
sonychidae	***Isonychia***	-	-	30	36
tohyphidae	***Tricorytho***	-	-	-	1
STONEFLIES					
Perlidae	***Acroneuri***	1	-	-	-
CADDISFLIES					
ycentridae	***Brachycer***	-	-	46	12
psychidae	***Cheumato***	37	2	1	8
	Hydropsy	42	60	3	3
	Macroster	3	46	2	1
ydroptilidae	***Hydroptila***	-	-	2	-
potamidae	***Chimarra***	-	1	-	-
tropodidae	***Polycentr***	2	-	-	-
	Neureclips	-	-	-	3
TRUE FLIES					
Chironomidae		14	-	6	3
MISC. INSECT TAXA					
Corydalidae	***Corydalus***	-	2	-	-
	Nigronia	4	-	-	-
legastridae	***Cordulega***	-	-	-	-
Elmidae	***Optioserv***	-	3	2	5
Gomphidae		-	-	3	1
NON-INSECT TAXA					
Ancylidae	***Ferrissia***	-	-	-	4
Bivalvia	***Sphaeriida***	-	-	-	3
Oligochaeta		-	-	1	6
Total Number of Taxa		7	7	11	16
Metrics Comparison					
1. TAXA RICHNESS		7	7	11	16
2. MODIFIED EPT INDEX		2	3	4	6
3. MODIFIED HBI		5.29	4.1	2.55	3.97
4. % DOMINANT TAXA		40.8	50	44.2	32.4
5. % MODIFIED MAYFLIES		0	5	36.5	55

TABLE 9.
FISH SPECIES OCCURRENCE
PINEY LAKE AND CLARION RIVER DOWNSTREAM OF PINEY DAM
PFBC (1995-1997) AND NORMANDEAU (1999)

Common Name	Scientific Name	Piney Lake	Clarion River Downstream of Piney Lake
Mountain brook lamprey	*Ichthyomyzon greeleyi*	-	X
Common carp	*Cyprinus carpio*	X	X
Streamline chub	*Erimystax dissimilis*	-	X
Striped shiner	*Luxilus chrysocephalus*	X	-
River chub	*Nocomis micropogon*	X	X
Golden shiner	*Notemigonus crysoleucas*	X	X
Common shiner	*Notropis cornutus*	X	-
Silver shiner	*N. photogenis*	X	X
Rosyface shiner	*N. rubellus*	X	X
Mimic shiner	*N. volucellus*	X	X
Bluntnose minnow	*Pimephales notatus*	X	X
Creek chub	*Semotilus atromaculatus*	-	X
White sucker	*Catostomus commersoni*	X	X
Northern hog sucker	*Hypentelium nigricans*	X	X
Silver redhorse	*Moxostoma anisurum*	-	X
Golden redhorse	*M. erythrurum*	X	X
Yellow bullhead	*Ameiurus natalis*	X	X
Brown bullhead	*A. nebulosus*	X	X
Channel catfish	*Ictalurus punctatus*	X	X
Stonecat	*Noturus flavus*	-	X
Muskellunge	*Esox masquinongy*	-	X
Tiger muskellunge	*E. lucius x E. masqu. (hybrid)*	X	-
Rainbow trout	*Oncorhynchus mykiss*	X	-
Brown trout	*Salmo trutta*	X	X
Brook trout	*Salvelinus fontinalis*	X	-
Mottled sculpin	*Cottus bairdi*	-	X
Rock bass	*Ambloplites rupestris*	X	X
Green sunfish	*Lepomis cyanellus*	-	X
Pumpkinseed	*L. gibbosus*	X	X
Bluegill	*L. macrochirus*	X	X
Sunfish hybrid		-	X
Smallmouth bass	*Micropterus dolomieu*	X	X
Largemouth bass	*M. salmoides*	X	X
Black crappie	*Pomoxis nigromaculatus*	X	X
White crappie	*P. annularis*	X	-
Greenside darter	*Etheostoma blennioides*	X	X
Rainbow darter	*E. caeruleum*	-	X
Johnny darter	*E. nigrum*	-	X
Variegate darter	*E. variatum*	-	X
Banded darter	*E. zonale*	-	X
Yellow perch	*Perca flavescens*	X	X
Logperch	*Percina caprodes*	X	X
Blackside darter	*P. maculata*	-	X
Walleye	*Sander vitreum*	X	X
		30	37

TABLE 10.

PINEY LAKE - FISH STOCKING HISTORY

PFBC

Year	Species	Lifestage	Number Stocked
2004	Tiger Muskellunge	Fingerling	1,350
2004	Walleye	Fry	500,000
2004	Walleye	Phase 1	6,485
2003	Channel Catfish	Fingerling	1,350
2003	Tiger Muskellunge	Fingerling	1,350
2003	Walleye	Fry	500,000
2003	Walleye	Phase 1	6,500
2002	Tiger Muskellunge	Fingerling	1,347
2002	Walleye	Fry	500,000
2002	Walleye	Phase 1	6,500
2001	Tiger Muskellunge	Fingerling	1,349
2001	Walleye	Fry	500,000
2001	Walleye	Phase 1	6,500
2000	Channel Catfish	Fingerling	5,200
2000	Tiger Muskellunge	Fingerling	1,350
2000	Walleye	Fry	1,000,000
2000	Walleye	Phase 1	6,500
1999	Walleye	Fry	500,000
1999	Walleye	Fingerling	6,500
1999	Tiger Muskellunge	Fingerling	1,350
1998	Tiger Muskellunge	Fingerling	1,350
1998	Walleye	Fry	500,000
1997	Walleye	Phase 1	6,500
1997	Walleye	Fry	500,000
1997	Tiger Muskellunge	Fingerling	1,300
1996	Walleye	Fry	500,000
1996	Walleye	Fingerling	6,500
1996	Tiger Muskellunge	Fingerling	1,300
1995	Walleye	Fry	1,000,000
1995	Tiger Muskellunge	Fingerling	11,000
1977	Walleye	Phase 2	7,025

TABLE 11. FISH
Piney Lake; Spring 1999
Normandeau; Electrofishing, gill nets, and seine

Length group mm	Common carp	Striped shiner	Golden shiner	Silver shiner	Rosyface shiner	Mimic shiner	Bluntnose minnow	White sucker	Northern hogsucker	Golden redhorse	Yellow bullhead	Brown bullhead	Channel catfish	Tiger muskellunge
1 - 50	-	2	-	15	1	66	3	-	-	1	-	-	-	-
51 - 60	-	3	1	3	3	17	2	-	-	3	-	-	-	-
61 - 70	-	1	-	10	-	2	2	2	4	3	-	-	-	-
71 - 80	-	-	1	14	-	-	1	1	-	2	-	-	-	-
81 - 90	-	-	1	3	-	-	1	4	-	2	-	-	-	-
91 - 100	-	-	1	4	-	-	1	3	1	2	-	-	-	-
101 - 110	-	-	-	-	-	-	-	5	-	2	-	-	-	-
111 - 120	-	-	-	-	-	-	-	-	-	7	-	-	-	-
121 - 130	-	-	-	-	-	-	-	4	-	36	-	-	-	-
131 - 140	-	-	-	-	-	-	-	1	1	45	-	-	-	-
141 - 150	-	-	-	-	-	-	-	1	2	54	-	-	-	-
151 - 160	-	-	-	-	-	-	-	-	5	40	-	-	-	-
161 - 170	-	-	1	-	-	-	-	-	4	27	1	-	-	-
171 - 180	-	-	-	-	-	-	-	-	1	14	1	1	-	-
181 - 190	-	-	5	-	-	-	-	1	3	15	2	2	-	-
191 - 200	-	-	7	-	-	-	-	1	-	3	2	2	-	-
201 - 225	-	-	16	-	-	-	-	7	-	-	3	5	-	-
226 - 250	-	-	1	-	-	-	-	29	-	3	4	3	-	-
251 - 275	-	-	-	-	-	-	-	6	-	2	11	16	-	-
276 - 300	-	-	-	-	-	-	-	1	-	3	2	19	1	2
301 - 400	-	-	-	-	-	-	-	223	1	49	2	35	30	3
401 - 500	-	-	-	-	-	-	-	20	-	7	-	1	27	-
>501	1	-	-	-	-	-	-	-	-	-	-	-	5	8
Total	1	6	34	49	4	85	10	309	22	320	28	84	63	13

TABLE 11. FISH (cont.)
Piney Lake; Spring 1999
Normandeau; Electrofishing, gill nets, and seine

Length group mm	Brown trout	Brook trout	Rock bass	Pumpkinseed	Bluegill	Smallmouth bass	Largemouth bass	Black crappie	White crappie	Yellow perch	Logperch	Walleye
1 - 50	-	-	-	1	1	-	-	-	-	-	-	-
51 - 60	-	-	-	2	1	-	-	-	-	-	-	-
61 - 70	-	-	-	5	-	-	-	-	-	1	6	-
71 - 80	-	-	-	6	-	-	-	-	-	6	3	-
81 - 90	-	-	-	14	-	-	-	-	-	26	-	-
91 - 100	-	-	1	19	1	-	-	1	1	9	1	-
101 - 110	-	-	2	25	1	-	-	-	-	-	2	-
111 - 120	-	-	3	28	-	-	-	-	-	-	1	-
121 - 130	-	-	1	7	1	1	1	-	-	2	1	-
131 - 140	-	-	3	9	2	2		-	-	14	-	-
141 - 150	-	-	3	14	1	-	2	4	-	38	-	-
151 - 160	-	-	3	8	1	-	1	4	-	86	-	-
161 - 170	-	-	1	7	1	3	2	4	-	81	-	-
171 - 180	-	-	-	8	-	4	1	-	1	42	-	-
181 - 190	-	-	1	-	-	2	-	-	1	36	-	-
191 - 200	-	-	9	-	-	1	-	-	-	26	-	-
201 - 225	-	-	20	-	-	1	7	8	1	45	-	-
226 - 250	1	-	-	-	-	-	11	3	-	8	-	-
251 - 275	-	2	-	-	-	1	6	1	-	3	-	-
276 - 300	2	-	-	-	-	2	2	-		1	-	-
301 - 400	-	1	-	-	-	-	1	-	1	1	-	36
401 - 500	-	-	-	-	-	-	-	-	-	-	-	7
>501	-	-	-	-	-	-	-	-	-	-	-	2
Total	3	3	47	153	10	17	34	25	5	425	14	45

TABLE 12. FISH
Piney Lake; Summer 1999
Normandeau; Electrofishing, gill nets, and seine

Length group mm	Golden shiner	Silver shiner	Mimic shiner	Bluntnose minnow	White sucker	Northern hogsucker	Golden redhorse	Yellow bullhead	Brown bullhead	Channel catfish	Tiger muskellunge	Rock bass	Pumpkinseed
1 - 50	5	-	1	5	-	2	-	2	12	-	-	-	4
51 - 60	3	-	-	1	-	35	-	-	2	1	-	-	-
61 - 70	-	1	-	-	-	11	-	-	-	-	-	-	10
71 - 80	-	-	-	-	-	-	-	-	-	-	-	-	6
81 - 90	-	-	-	-	-	-	-	-	-	-	-	-	4
91 - 100	-	1	-	-	-	-	-	-	-	-	-	2	8
101 - 110	-	5	-	-	-	-	-	-	-	-	-	1	4
111 - 120	-	-	-	-	-	1	-	-	-	-	-	3	21
121 - 130	-	-	-	-	-	1	2	-	-	-	-	2	26
131 - 140	-	-	-	-	-	-	-	1	-	-	-	4	21
141 - 150	-	-	-	-	-	1	1	-	-	-	-	2	7
151 - 160	-	-	-	-	-	-	1	-	-	-	-	-	2
161 - 170	-	-	-	-	-	-	1	-	-	1	1	1	1
171 - 180	5	-	-	-	1	-	3	5	-	-	-	-	1
181 - 190	3	-	-	-	-	1	5	3	-	-	1	-	2
191 - 200	5	-	-	-	-	-	19	1	1	-	-	-	-
201 - 225	6	-	-	-	1	6	87	2	3	-	-	3	-
226 - 250	1	-	-	-	-	1	25	10	3	-	-	-	-
251 - 275	-	-	-	-	3	-	4	1	6	-	-	-	-
276 - 300	-	-	-	-	5	1	1	1		-	-	-	-
301 - 400	-	-	-	-	61	2	38	2	11	14	2	-	-
401 - 500	-	-	-	-	1	-	14	-	-	5	4	-	-
>501	-	-	-	-	-	-	1	-	-	2	-	-	-
Total	28	7	1	6	72	62	202	28	38	23	8	18	117

TABLE 12. FISH (cont.)
Piney Lake; Summer 1999
Normandeau; Electrofishing, gill nets, and seine

Length group mm	Bluegill	Smallmouth bass	Largemouth bass	Black crappie	White crappie	Yellow perch	Logperch	Walleye
1 - 50	11	1	-	-	1	-	1	-
51 - 60	-	2	-	2	1	4	6	-
61 - 70	-	3	1	-	-	-	-	-
71 - 80	-	3	7	-	-	-	-	-
81 - 90	1	1	8	-	-	-	1	-
91 - 100	1	-	7	-	-	3	4	-
101 - 110	3	-	3	-	-	22	4	-
111 - 120	1	-	1	-	-	16	4	-
121 - 130	-	1	-	-	-	11	-	-
131 - 140	-	-	-	1	1	3	1	-
141 - 150	-	-	-	1	1	6	-	-
151 - 160	1	5	-	1	3	8	-	-
161 - 170	-	-	-	-	12	12	-	-
171 - 180	-	1	-	-	1	20	-	-
181 - 190	-	-	3	1	-	8	-	-
191 - 200	-	-	2	2	1	15	-	-
201 - 225	-	1	8	2	3	13	-	-
226 - 250	-	2	1	2	11	7	-	-
251 - 275	-	-	1	-	2	-	-	-
276 - 300	-	-	1	-	-	-	-	-
301 - 400	-	1	3	-	-	-	-	7
401 - 500	-	2	-	-	-	-	-	4
>501	-	-	-	-	-	-	-	-
Total	18	23	46	12	37	148	21	11

TABLE 13. FISH
Piney Lake; Fall 1999
Normandeau; Electrofishing, gill nets, and seine

Length group mm	Common carp	Golden shiner	Common shiner	Silver shiner	White sucker	Northern hogsucker	Golden redhorse	Yellow bullhead	Brown bullhead	Channel catfish	Tiger muskellunge	Rock bass	Pumpkinseed
1 - 50	-	-	-	1	-	1	-	-	-	-	-	-	13
51 - 60	-	-	-	-	-	-	-	-	-	-	-	-	2
61 - 70	-	-	-	-	-	1	2	-	-	-	-	-	1
71 - 80	-	-	1	1	-	10	2	-	-	-	-	-	10
81 - 90	-	-	1	1	-	7	-	-	-	-	-	-	8
91 - 100	-	1	-	6	-	4	-	-	-	-	-	-	8
101 - 110	-	-	-	4	-	-	-	-	-	-	-	-	11
111 - 120	-	-	-	2	-	1	-	-	-	-	-	1	18
121 - 130	-	-	-	-	-	1	-	-	-	-	-	2	18
131 - 140	-	-	-	-	-	4	-	-	-	-	-	2	11
141 - 150	-	-	-	-	-	5	-	-	-	-	-	6	4
151 - 160	-	-	-	-	1	3	-	-	-	-	-	2	6
161 - 170	-	-	-	-	3	5	1	-	-	-	-	4	3
171 - 180	-	1	-	-	1	6	2	4	-	-	-	2	4
181 - 190	-	6	-	-	1	4	-	3	-	-	-	2	1
191 - 200	-	5	-	-	-	3	3	2	2	-	-	1	-
201 - 225	-	2	-	-	1	10	27	6	3	-	-	13	-
226 - 250	-	1	-	-	1	2	36	3	1	-	-	1	-
251 - 275	-	-	-	-	1	3	42	6	2	-	-	-	-
276 - 300	-	-	-	-	2	3	15	1		-	1	-	-
301 - 400	-	-	-	-	80	-	30	-	16	10	1	-	-
401 - 500	-	-	-	-	4	-	18	-	-	7	1	-	-
>501	1	-	-	-	-	-	-	-	-	6	9	-	-
Total	1	16	2	15	95	73	178	25	24	23	12	36	118

TABLE 13. FISH (cont.)
Piney Lake; Fall 1999
Normandeau; Electrofishing, gill nets, and seine

Length group mm	Bluegill	Smallmouth bass	Largemouth bass	Black crappie	White crappie	Greenside darter	Yellow perch	Logperch	Walleye
1 - 50	15	-	-	-	-	1	-	-	-
51 - 60	5	-	-	-	-	-	-	-	-
61 - 70	5	2	1	6	1	1	2	6	-
71 - 80	3	4	3	1	3	-	5	2	-
81 - 90	-	4	7	-	-	-	9	1	-
91 - 100	2	7	1	-	-	-	1	-	-
101 - 110	2	7	7	-	-	-	7	-	-
111 - 120	1	2	6	-	-	-	14	-	-
121 - 130	4	2	5	-	-	-	13	-	-
131 - 140	1	-	3	-	-	-	6	-	-
141 - 150	2	-	9	2	-	-	14	-	-
151 - 160	1	-	6	1	-	-	16	-	-
161 - 170	1	-	-	1	2	-	27	-	-
171 - 180	-	-	-	-	6	-	15	-	-
181 - 190	-	2	-	-	2	-	19	-	-
191 - 200	1	2	-	2	-	-	17	-	-
201 - 225	-	-	1	7	2	-	23	-	-
226 - 250	-	3	1	2	6	-	2	-	-
251 - 275	-	-	2	1	4	-	1	-	-
276 - 300	-	11	4	-	-	-	-	-	
301 - 400	-	29	2	-	1	-	-	-	15
401 - 500	-	11	-	-	-	-	-	-	14
>501	-	-	-	-	-	-	-	-	1
Total	43	86	58	23	27	2	191	9	30

TABLE 14. FISH
Piney Lake; April 1995
PFBC; Gill nets

Length group (mm)	Common carp	River chub	Golden shiner	Silver shiner	Creek chub	White sucker	Northern hogsucker	Golden redhorse	Yellow bullhead	Brown bullhead	Rainbow trout	Brown trout	Brook trout	Rock bass	Pumpkinseed	Black crappie	White crappie	Yellow perch
50 - 74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75 - 99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100 - 124	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	2
125 - 149	-	1	42	1	-	-	-	-	-	-	-	-	-	3	1	3	-	-
150 - 174	-	-	59	-	-	-	1	-	-	2	-	-	-	1	-	8	8	-
175 - 199	-	-	21	-	-	1	-	-	6	2	-	-	-	1	-	5	1	-
200 - 224	-	-	3	-	-	21	1	-	2	2	-	-	-	4	-	-	1	1
225 - 249	-	-	-	-	-	36	-	-	-	6	-	-	-	2	-	-	1	1
250 - 275	-	-	-	-	-	6	-	-	1	8	-	-	2	-	-	-	1	1
275 - 299	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-
300 - 324	-	-	-	-	2	8	-	-	-	3	-	-	-	-	-	-	-	-
325 - 349	1	-	-	-	-	43	-	-	-	-	-	1	-	-	-	-	-	-
350 - 374	1	-	-	-	-	47	-	1	-	-	-	-	1	-	-	-	-	-
375 - 399	2	-	-	-	-	15	-	-	-	-	-	-	-	-	-	-	-	-
400 - 424	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-
425 - 449	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450 - 474	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
475 - 499	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
500 - 524	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
525 - 549	-	-	-	-	-	-	-	-		-	1	-	-	-	-	-	-	-
Total	4	1	125	1	2	178	2	7	9	28	1	1	3	11	2	16	12	5

TABLE 15. FISH
Clarion River - Piney Creek (CR02); July 11, 1995
PFBC; Electrofishing

Length group (mm)	River chub	Golden shiner	Creek chub	White sucker	Northern hogsucker	Brown bullhead	Rock bass	Green sunfish	Pumpkinseed	Bluegill	Largemouth bass	Logperch	Blackside darter	Yellow perch
>49	-	-	-	-	-	-	-	-	2	-	-	-	-	-
50 - 74	-	-	-	-	1	-	1	1	30	7	-	-	-	-
75 - 99	-	-	-	1	1	-	-	1	4	1	1	-	-	-
100 - 124	-	-	-	-	-	-	1	-	2	-	-	-	-	-
125 - 149	-	-	-	2	-	-	-	-	-	-	-	-	-	2
150 - 174	-	-	-	-	-	-	-	-	-	-	-	-	-	1
175 - 199	1	-	-	1	-	1	-	-	-	-	-	-	-	-
200 - 224	-	-	-	2	-	-	-	-	-	-	-	-	-	-
225 - 249	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250 - 275	-	-	-	-	-	-	-	-	-	-	-	-	-	-
275 - 299	-	-	-	-	-	2	-	-	-	-	-	-	-	-
300 - 324	-	-	-	-	-	-	-	-	-	-	-	-	-	-
325 - 349	-	-	-	-	-	-	-	-	-	-	-	-	-	-
350 - 374	-	-	-	1	-	-	-	-	-	-	-	-	-	-
375 - 399	-	-	-	-	-	-	-	-	-	-	-	-	-	-
400 - 424	-	-	-	-	-	-	-	-	-	-	-	-	-	-
425 - 449	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450 - 474	-	-	-	-	-	-	-	-	-	-	-	-	-	-
475 - 499	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Total	1	1	1	8	2	3	2	2		8	1	1	1	3

TABLE 16. FISH
Clarion River - Callensburg (CR03); July 10, 1995
PFBC; Electrofishing

Length group (mm)	Northern hogsucker	Pumpkinseed	Greenside darter	Logperch	Blackside darter	Yellow perch
>49	-	-	-	-	-	-
50 - 74	-	1	-	-	-	-
75 - 99	1	2	-	-	-	-
100 - 124	-	-	-	-	-	-
125 - 149	-	-	-	-	-	1
150 - 174	-	-	-	-	-	2
175 - 199	-	-	-	-	-	1
Total	1	3	4	2	5	4

TABLE 17. FISH
Clarion River - Spillway (CR01A); September 12, 1996
PFBC; Electrofishing

Length group (mm)	River chub	Golden shiner	Unidentified shiner	Rock bass	?umpkinsee	Bluegill	Largemouth bass	Black crappie	Variegate darter	Logperch	Yellow perch
>49	-	-	-	-	-	1	-	-	-	-	-
50 - 74	-	-	-	-	-	1	1	-	-	-	-
75 - 99	1	-	-	1	5	6	-	-	-	-	-
100 - 124	-	-	-	-	-	1	1	-	-	-	1
125 - 149	-	-	-	1	-	-	1	-	-	-	-
150 - 174	-	-	-	-	-	-	-	1	-	-	1
Total	1	1	82	2	5	8	3	1	1	3	2

TABLE 18. FISH
Clarion River - Callensburg (CR03); July 18, 1996
PFBC; Electrofishing

Length group (mm)	Silver redhorse	Bluegill	Sunfish hybrid	Smallmouth bass
>49	-	-	-	-
50 - 74	-	-	-	-
75 - 99	-	-	-	-
100 - 124	-	-	-	-
125 - 149	-	-	-	-
150 - 174	-	1	1	-
175 - 199	-	-	-	-
200 - 224	-	-	-	-
225 - 249	-	-	-	-
250 - 275	-	-	-	-
275 - 299	-	-	-	-
300 - 324	-	-	-	-
325 - 349	-	-	-	-
350 - 374	-	-	-	-
375 - 399	-	-	-	-
400 - 424	-	-	-	1
425 - 449	-	-	-	-
450 - 474	1	-	-	-
475 - 499	-	-	-	-
500 - 524	1	-	-	-
Total	2	1	1	1

TABLE 19. FISH
Clarion River - Spillway (CR01A); July 18, 1997
PFBC; Electrofishing

Length group (mm)	Common carp	Northern hogsucker	Redhorse spp.	Brown bullhead	Muskellunge	Brown trout	Rock bass	Pumpkinseed	Logperch	Yellow perch	Walleye
>49	-	-	-	-	-	-	-	-	-	-	-
50 - 74	-	-	-	-	-	-	-	-	-	1	-
75 - 99	-	-	-	-	-	-	1	14	-	1	-
100 - 124	-	-	-	-	-	-	-	5	-	1	-
125 - 149	-	-	-	-	-	-	-	-	-	1	-
150 - 174	-	-	-	-	-	-	-	-	-	3	-
175 - 199	-	-	-	-	-	-	-	-	-	-	1
200 - 224	-	-	-	-	-	-	-	-	-	-	1
225 - 249	-	1	-	1	-	-	-	-	-	-	-
250 - 275	-	-	-	-	-	-	-	-	-	-	-
275 - 299	-	-	-	-	-	-	-	-	-	-	-
300 - 324	-	-	-	-	-	-	-	-	-	-	-
325 - 349	-	-	-	-	-	-	-	-	-	-	1
350 - 374	-	-	-	-	-	-	-	-	-	-	1
375 - 399	-	-	1	-	-	1	-	-	-	-	-
400 - 424	-	-	1	-	-	-	-	-	-	-	-
425 - 449	-	-	-	-	-	-	-	-	-	-	-
450 - 474	-	-	-	-	-	-	-	-	-	-	-
475 - 499	-	-	-	-	-	-	-	-	-	-	-
500 - 524	-	-	-	-	-	1	-	-		-	-
525 - 549	1	-	-	-	-	-	-	-	-	-	1
550 - 574	-	-	-	-	-	1	-	-	-	-	-
575 - 599	1	-	-	-	-	-	-	-	-	-	-
600 - 624	3	-	-	-	-	-	-	-	-	-	-
625 - 649	4	-	-	-	-	-	-	-	-	-	-
650 - 674	1	-	-	-	-	-	-	-	-	-	-
675 - 699	1	-	-	-	-	-	-	-	-	-	-
700 - 724	3	-	-	-	-	-	-	-	-	-	-
725 - 749	-	-	-	-	-	-	-	-	-	-	-
750 - 774	1	-	-	-	-	-	-	-	-	-	-
775 - 799	1	-	-	-	-	-	-	-	-	-	-
800 - 824	-	-	-	-	-	-	-	-	-	-	-
825 - 849	1	-	-	-	-	-	-	-	-	-	-
850 - 874	1	-	-	-	-	-	-	-	-	-	-
875 - 899	1	-	-	-	1	-	-	-	-	-	-
Total	19	1	2	1	1	3	1	19	1	7	5

TABLE 20. FISH
Clarion River - Piney Creek (CR02A); August 18, 1997
PFBC; Electrofishing

Length group (mm)	Common carp	River chub	White sucker	Northern hogsucker	Golden redhorse	Yellow bullhead	Rock bass	Pumpkinseed	Bluegill	Smallmouth bass	Largemouth bass	Greenside darter	Variegate darter	Logperch	Blackside darter	Yellow perch	Walleye
>49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50 - 74	-	-	-	-	-	-	-	2	-	1	1	-	-	-	-	-	-
75 - 99	-	-	-	-	-	-	-	6	-	4	-	-	-	-	-	1	-
100 - 124	-	1	-	-	-	-	-	13	3	-	-	-	-	-	-	6	-
125 - 149	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-
150 - 174	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
175 - 199	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200 - 224	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
225 - 249	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
250 - 275	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
275 - 299	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300 - 324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
325 - 349	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
350 - 374	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
375 - 399	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
400 - 424	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	-	-
Total	1	1	1	1	3	2	1	22	3	5	1	2	2	29	4	7	1

TABLE 21. FISH
Clarion River - Callensburg (CR03); August 18, 1997
PFBC; Electrofishing

Length group (mm)	Rosyface shiner	Rock bass	Smallmouth bass	Greenside darter	Blackside darter	Walleye
>49	-	-	-	-	-	-
50 - 74	-	-	3	-	-	-
75 - 99	-	-	1	-	-	-
100 - 124	-	-	-	-	-	-
125 - 149	-	-	-	-	-	-
150 - 174	-	-	-	-	-	-
175 - 199	-	1	-	-	-	-
200 - 224	-	-	-	-	-	-
225 - 249	-	-	-	-	-	-
250 - 275	-	-	-	-	-	-
275 - 299	-	-	-	-	-	-
300 - 324	-	-	-	-	-	-
325 - 349	-	-	-	-	-	1
Total	4	1	4	6	1	1

TABLE 22. FISH

CLARION RIVER - Spillway, Piney Bridge, Canoe Ripple, Callensburg and St. Petersburg; Spring 1999

Normandeau; Electrofishing

Length group mm	River chub	Silver shiner	Rosyface shiner	Mimic shiner	Bluntnose minnow	Creek chub	White sucker	Northern hogsucker	Yellow bullhead	Stonecat	Mottled sculpin	Rock bass	Pumpkinseed
1 - 50	-	-	4	4	-	-	-	-	-	-	-	-	-
51 - 60	1	1	1	9	2	1	-	-	-	-	-	1	1
61 - 70	2	-	1	1	5	-	-	1	-	1	-	-	-
71 - 80	-	-	1	-	-	-	-	2	-	-	-	-	-
81 - 90	-	-	-	-	2	-	1	1	-	-	1	-	-
91 - 100	-	-	-	-	2	-	1	-	-	-	-	-	-
101 - 110	-	-	-	-	-	-	2	-	-	-	-	-	-
111 - 120	-	-	-	-	-	-	-	-	-	-	-	1	-
121 - 130	-	-	-	-	-	-	-	-	-	-	-	-	-
131 - 140	-	-	-	-	-	-	-	-	-	-	-	-	-
141 - 150	-	-	-	-	-	-	-	-	-	-	-	-	-
151 - 160	-	-	-	-	-	-	-	-	-	-	-	-	-
161 - 170	-	-	-	-	-	-	-	1	-	-	-	-	-
171 - 180	-	-	-	-	-	-	-	-	2	-	-	-	-
181 - 190	-	-	-	-	-	-	-	-	-	-	-	-	-
191 - 200	1	-	-	-	-	-	-	-	1	-	-	-	-
201 - 225	-	-	-	-	-	-	-	-	-	-	-	-	-
226 - 250	-	-	-	-	-	-	-	-	-	-	-	-	-
251 - 275	-	-	-	-	-	-	-	-	-	-	-	-	-
276 - 300	-	-	-	-	-	-	-	-		-	-	-	-
301 - 400	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	4	1	7	14	11	1	4	5	3	1	1	2	1

TABLE 22. FISH (cont.)

CLARION RIVER - Spillway, Piney Bridge, Canoe Ripple, Callensburg and St. Petersburg; Spring 1999

Normandeau; Electrofishing

Length group mm	Smallmouth bass	Largemouth bass	Black crappie	Greenside darter	Rainbow darter	Johnny darter	Variegate darter	Banded darter	Logperch	Blackside darter
1 - 50	-	-	-	1	1	1	7	3	-	-
51 - 60	-	-	-	-	-	3	-	-	-	-
61 - 70	-	-	-	2	-	-	7	-	3	-
71 - 80	-	-	1	1	-	-	7	3	-	1
81 - 90	-	-	1	-	-	-	1	-	1	1
91 - 100	-	-	-	-	-	-	-	1	2	-
101 - 110	-	-	-	-	-	-	-	-	3	-
111 - 120	-	-	-	-	-	-	-	-	3	-
121 - 130	-	-	-	-	-	-	-	-	-	-
131 - 140	-	-	-	-	-	-	-	-	-	-
141 - 150	-	1	-	-	-	-	-	-	-	-
151 - 160	-	-	-	-	-	-	-	-	-	-
161 - 170	-	-	-	-	-	-	-	-	-	-
171 - 180	-	-	-	-	-	-	-	-	-	-
181 - 190	-	-	-	-	-	-	-	-	-	-
191 - 200	-	-	-	-	-	-	-	-	-	-
201 - 225	-	-	-	-	-	-	-	-	-	-
226 - 250	-	-	-	-	-	-	-	-	-	-
251 - 275	-	-	-	-	-	-	-	-	-	-
276 - 300	-	-	-	-	-	-	-		-	-
301 - 400	1	-	-	-	-	-	-	-	-	-
Total	1	1	2	4	1	4	22	7	12	2

TABLE 23. FISH

CLARION RIVER - Spillway, Piney Bridge, Canoe Ripple, Callensburg and St. Petersburg; Summer 1999

Normandeau; Summer 1999

Length group mm	Common carp	River chub	Silver shiner	Rosyface shiner	Mimic shiner	Bluntnose minnow	Northern hogsucker	Yellow bullhead	Channel catfish	Stonecat	Rock bass	Green sunfish
1 - 50	-	24	16	4	2	17	-	14	1	-	3	-
51 - 60	-	6	3	3	-	3	2	-	-	-	-	-
61 - 70	1	-	-	-	-	1	-	-	-	-	-	-
71 - 80	-	-	-	-	-	-	-	-	-	-	-	2
81 - 90	-	2	-	-	-	-	-	-	-	-	4	-
91 - 100	-	3	-	-	-	1	-	-	-	-	2	-
101 - 110	-	-	-	-	-	-	-	-	-	1	1	-
111 - 120	-	-	-	-	-	-	-	-	-	-	-	-
121 - 130	-	-	-	-	-	-	1	1	-	-	1	-
131 - 140	-	1	-	-	-	-	-	-	-	-	1	-
141 - 150	-	-	-	-	-	-	-	-	-	-	-	-
151 - 160	-	-	-	-	-	-	-	-	-	-	1	-
161 - 170	-	-	-	-	-	-	-	-	-	-	-	-
171 - 180	-	-	-	-	-	-	-	-	-	-	-	-
181 - 190	-	1	-	-	-	-	-	-	-	-	-	-
191 - 200	-	-	-	-	-	-	-	-	-	-	-	-
201 - 225	-	-	-	-	-	-	-	1	-	-	2	-
Total	1	37	19	7	2	22	3	16	1	1	15	2

TABLE 23. FISH (cont.)

CLARION RIVER - Spillway, Piney Bridge, Canoe Ripple, Callensburg and St. Petersburg; Summer 1999

Normandeau; Electrofishing

Length group mm	Pumpkinseed	Bluegill	Smallmouth bass	Largemouth bass	Greenside darter	Johnny darter	Variegate darter	Banded darter	Logperch	Blackside darter
1 - 50	2	2	-	-	1	11	1	6	-	-
51 - 60	-	-	1	1	-	-	1	-	3	-
61 - 70	1	-	-	-	-	-	9	-	7	1
71 - 80	9	-	-	-	-	-	4	-	-	3
81 - 90	1	-	2	-	2	-	2	-	-	-
91 - 100	3	-	-	-	-	-	-	-	-	-
101 - 110	-	1	-	-	-	-	-	-	-	-
111 - 120	2	-	-	1	-	-	-	-	-	-
121 - 130	-	-	-	2	-	-	-	-	-	-
131 - 140	-	-	-	-	-	-	-	-	1	-
141 - 150	-	-	-	-	-	-	-	-	-	-
151 - 160	-	-	-	-	-	-	-	-	-	-
161 - 170	-	-	-	-	-	-	-	-	-	-
171 - 180	-	-	-	-	-	-	-	-	-	-
181 - 190	-	-	-	-	-	-	-	-	-	-
191 - 200	-	-	-	-	-	-	-	-	-	-
201 - 225	-	-	-	-	-	-	-	-	-	-
Total	18	3	3	4	3	11	17	6	11	4

TABLE 24. FISH

CLARION RIVER - Spillway, Piney Bridge, Canoe Ripple, Callensburg and St. Petersburg; Fall 1999

Normandeau; Electrofishing

Length group mm	Mountain brook lamprey	Streamline chub	River chub	Golden shiner	Silver shiner	Rosyface shiner	Mimic shiner	Bluntnose minnow	White sucker	Northern hogsucker	Stonecat	Mottled sculpin	Rock bass
1 - 50	-	-	1	1	1	5	-	60	-	-	-	-	5
51 - 60	-	-	10	-	2	9	2	1	-	1	2	-	4
61 - 70	-	-	16	1	-	9	1	1	-	1	-	1	1
71 - 80	1	1	14	-	-	4	-	-	-	5	1	-	-
81 - 90	-	-	9	-	-	-	-	4	1	-	-	-	1
91 - 100	-	2	3	-	-	-	-	-	-	-	-	-	-
101 - 110	-	-	1	-	-	-	-	-	-	-	-	-	5
111 - 120	-	-	2	-	-	-	-	1	-	-	-	-	-
121 - 130	-	-	-	-	-	-	-	-	-	-	-	-	2
131 - 140	-	-	-	-	-	-	-	-	-	-	-	-	-
141 - 150	-	-	-	-	-	-	-	-	-	-	-	-	1
151 - 160	-	-	-	-	-	-	-	-	-	-	-	-	-
161 - 170	-	-	-	-	-	-	-	-	-	-	-	-	1
Total	1	3	56	2	3	27	3	67	1	7	3	1	20

Length group mm	Pumpkinseed	Bluegill	Smallmouth bass	Largemouth bass	Black crappie	Greenside darter	Rainbow darter	Johnny darter	Variegate darter	Banded darter	Logperch	Blackside darter
1 - 50	11	1	-	-	-	-	6	7	2	19	-	-
51 - 60	3	-	-	-	-	2	-	1	1	3	-	4
61 - 70	-	-	2	-	-	1	1	-	7	-	2	-
71 - 80	1	-	2	1	1	2	-	-	21	-	6	1
81 - 90	-	-	-	2	-	1	-	-	5	-	4	-
91 - 100	1	-	2	1	-	-	-	-	-	-	-	-
101 - 110	-	-	-	-	-	-	-	-	-	-	1	-
111 - 120	-	-	-	-	-	-	-	-	-	-	1	-
121 - 130	-	-	-	-	-	-	-	-	-	-	-	-
131 - 140	-	-	-	-	-	-	-	-	-	-	-	-
141 - 150	-	-	-	-	-	-	-	-	-	-	-	-
151 - 160	-	-	-	-	-	-	-	-	-	-	-	-
161 - 170	-	-	-	-	-	-	-	-	-	-	-	-
Total	16	1	6	4	1	6	7	8	36	22	14	5