Boundary Dam Hydroelectric Project
Water Quality Data Summary Report 2004-2006

Pend Oreille River-Boundary Reach

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Prepared for
Seattle City Light

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1.0 INTRODUCTION

Between 2004 and 2006, Seattle City Light (SCL) contracted Taylor Associates, Inc. (TAI) to conduct water quality monitoring in the Boundary Reservoir reach of the Pend Oreille River (Water Resource Inventory Area 62). This summary report provides a brief overview of data collection methods and results for the 2004 through 2006 monitoring period.

During the 2004 through 2006 monitoring period, temperature was monitored at eight sites, water quality data were collected at six sites, and macrophyte-related data was collected at four sites (Figure 1). This monitoring data will partly support a water temperature model being developed for the Pend Oreille River.

For each year, monitoring methods varied slightly and are briefly described in Section 2.0. More in-depth descriptions of field methods and data collected during the three-year monitoring period can be found in the annual reports produced by TAI (Taylor 2005b, Taylor 2006b, and Taylor 2006c). These annual reports contain background information, field observations, reviews of flagged data for each task, and appendices containing field data sheets and Microsoft Excel™ spreadsheets with detailed monitoring results.

In this report, activities associated with each of the data collection tasks are discussed. The data are transmitted in Excel files saved on a CD attached to the back of the report. Per the scope of work for producing this report, data analysis is limited to the calculation of summary statistics (mean, standard deviation, minimum, and maximum), several summary graphics, and no analytical discussion of the data.

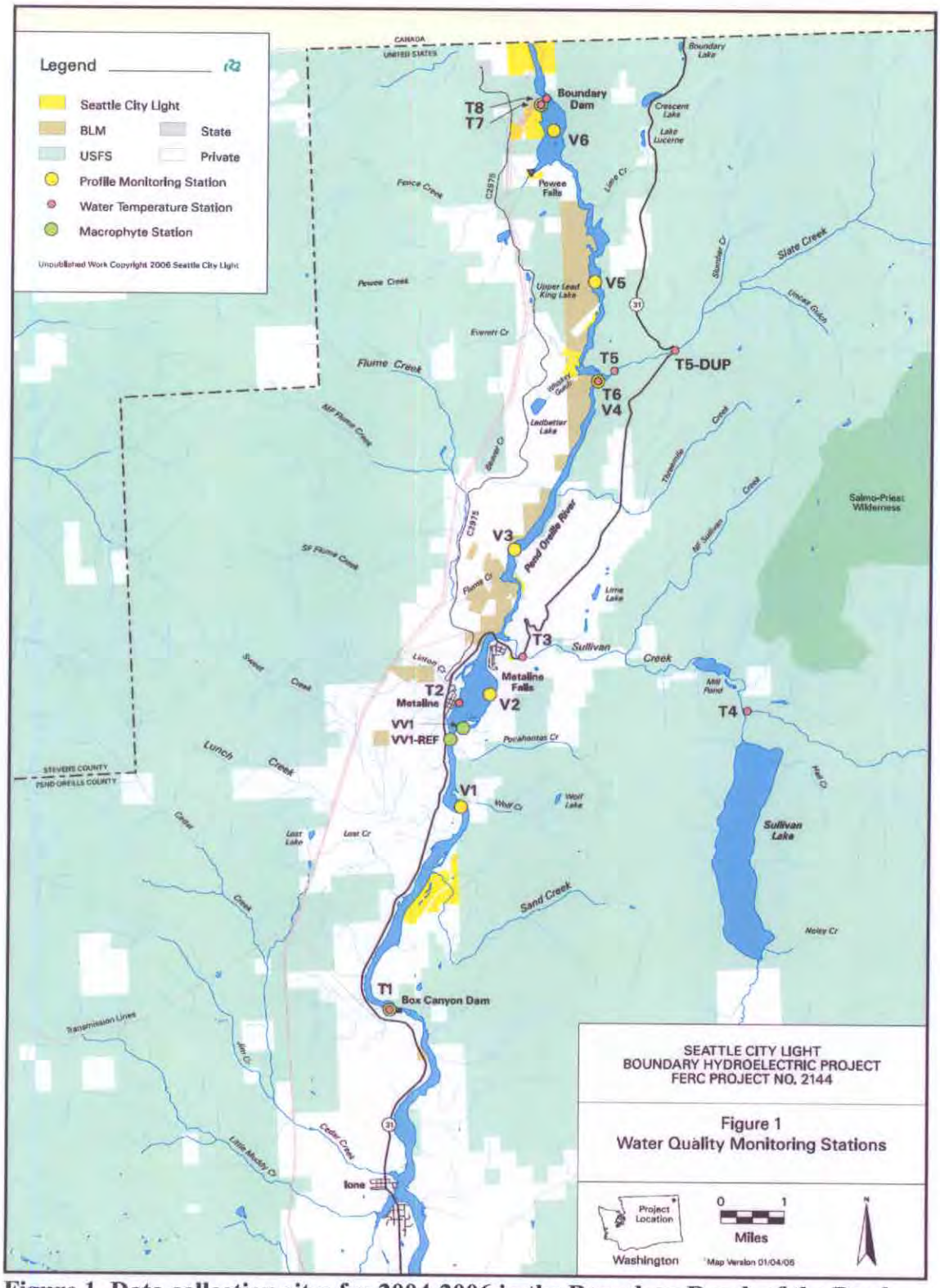


Figure 1. Data collection sites for 2004-2006 in the Boundary Reach of the Pend Oreille River.

Note: In 2004 and 2005, monitoring stations included water quality/profile monitoring (yellow), and water temperature (pink) stations. In 2006, macrophyte stations (green) were added to the list of stations monitored previously in 2004 and 2005.

2.0 METHODS

This section provides an overview of monitoring methods used to collect data on the Boundary Reach of the Pend Oreille River during the three-year monitoring period. The Boundary Reach refers to the section of the Pend Oreille River between Box Canyon Dam and Boundary Dam. This overview includes a list of station names and locations as well as parameters monitored during the three-year monitoring period. A complete discussion of monitoring methods can be found in the initial project scopes of work, water quality monitoring plans (Taylor 2005a, Taylor 2006a), and the annual project reports (Taylor 2005b, Taylor 2006b, and Taylor 2006c). Data analysis was of limited scope for this report and included only calculation of summary statistics for each data collection area (mean, standard deviation, minimum, and maximum values for water temperature, vertical profiling and water quality sampling, and macrophytes).

2.1 OVERVIEW

Taylor Associates, Inc. (TAI) monitored water quality in the Boundary Reach of the Pend Oreille River for Seattle City Light from 2004 through 2006. Data collected during the 2004 through 2006 monitoring period included (1) water temperature via Hobo temperature probes, (2) *in-situ* water quality (pH, temperature, dissolved oxygen, and conductivity) via a multi-parameter water quality meter (YSI sonde 600 QS sonde with a 650 MDS display), (3) grab water samples collected for laboratory analyses (total hardness, Kjeldahl nitrogen, nitrate-nitrite, ammonia, total phosphorus, soluble reactive phosphorus, and chlorophyll *a*), and (4) water quality data (in-situ and grab water samples) collected near macrophyte beds to help understand any relationship between marcophyte growth and any impacts on water chemistry, particularly pH (in 2006 only).

Water temperature data were collected in the mainstem Pend Oreille River and selected tributaries in the Boundary Reach using Hobo temperature probes (Hobo Water Temp Pro and Water Temp Pro v2) deployed at eight stations. *In-situ* measurements and grab samples were collected in the Pend Oreille River at six stations during 2004 and 2005 and an additional two stations in 2006. Macrophyte-related data were collected at four stations in 2006.

Table 1 below summarizes both the site visit dates for data collection and the data download dates during the three-year monitoring period. Actual dates of data downloads are indicated in bold type in Table 1. In 2004, data downloading occurred only once. In

2005 and 2006, the project scope was modified and additional download dates were added to minimize data gaps and help ensure more complete data records.

Table 1. Summary of site visit dates.

2004	2005	2006
July 22/23	**April 13/14**	**April 11/12**
August 3	**July 12**	May 2/3
August 17	August 1	June 6/7
August 31	August 8	**July 11/12**
September 14	August 23	August 1/2
September 28	September 20	**September 6/7**
November 1/2	**November 15/16**	October 4/5
		November 7/8

2.2 WATER TEMPERATURE

Beginning in July 2004, Hobo temperature probes were deployed at eight monitoring stations numbered T1 through T8 in the Boundary Reach of the Pend Oreille River (Figure 1). At three of the eight stations (T2, T6, and T7), a vertical deployment was used which consisted of five temperature probes spread along a line at even depth intervals (see Taylor 2005a, 2006b, 2006c for actual depths) to characterize water temperature for the entire water column.

At the remaining five stations (T1, T3, T4, T5, and T8), single surface probes were deployed. During 2004 and 2005, duplicate probes were placed at stations T1 and T8. During 2006, duplicate probes were placed at all five stations. Typically, probes were deployed for the whole year, except for Stations T2 and T6 where buoys were removed for the winter. Seasonal buoy removals were done to avoid damage to the temperature probes from either ice in the winter or high flow during the early spring. A list of station names, location information, and number of probes deployed for continuous temperature monitoring in the Boundary Reach is provided in Table 2.

Table 2. Stations with submersible logging water temperature probes.

Station Name[1]	Latitude[2]	Longitude[2]	Location	No. probes
T1. Box Canyon Dam	N 48° 46.82'	W 117° 24.77'	Hung from deck over tailrace.	2 (duplicate)
T2. Metaline Pool	N 48° 50.95'	W 117° 23.14'	Buoy station.	5 (vertical string)
T3. Sullivan Creek Down	N 48° 51.62'	W 117° 21.81'	At USGS gauge 12398000, Sullivan Ck at Metaline Falls.	1 (2004, 2005) 2 (duplicate, 2006)
T4. Sullivan Creek Up	N 48° 50.75'	W 117° 17.22'	Upstream of Sullivan Lake Road	1 (2004, 2005) 2 (duplicate, 2006)
T5. Slate Creek	N 48° 55.51'	W 117° 19.66'	Approximately 50 meters upstream from creek mouth.	1 (2004, 2005) 2 (duplicate, 2006)
T6. Slate Pool	N 48° 55.37'	W 117° 19.94'	Buoy station.	5 (vertical string)
T7. Boundary Intake	N 48° 59.18'	W 117° 21.03'	Hung from deck over trash rack.	5 (vertical string, 2004, 2005) 7 (vertical string, 2006)
T8. Boundary Tailrace	N 48° 59.29'	W 117° 21.01'	Hung from observation deck over tailrace.	2 (duplicate)

Notes:

[1]Mainstem stations are in plain print, and tributary stations are in italics.

[2]Datum WGS 84.

Hobo temperature probes were programmed to collect data every 20 minutes, and temperature data were downloaded during site visits beginning in November 2004 (see Table 1).Over the monitoring period, these site visits typically occurred between April and November with actual data downloading occurring during specific sites visits highlighted in Table 1. Data downloading frequency increased over the three years to help ensure collection of data.

After each download, a quality control check was completed and questionable data were flagged if a period of data was determined unrepresentative of actual water temperatures. Examples of circumstances causing data to be flagged included periods when (1) a probe was suspected to be out of water (made evident by an abrupt, upward change in temperature readings and determined to be exposed to air verses water) and (2) short-term variations in temperature of two degrees Centigrade or more compared to the

immediate temperature trend. Flagged data were excluded from the summary statistics calculations of mean, standard deviation, minimum, and maximum values.

Complete methods for temperature monitoring are described in previous water quality monitoring plans (Taylor 2005a, 2006a) and annual project reports (Taylor 2005b, 2006b, 2006c). These plans and reports include discussion of quality assurance/quality control measures, data completeness, descriptions of typical flagged data periods, and specific conditions associated with each sampling date.

2.3 VERTICAL PROFILING AND WATER QUALITY SAMPLING

Table 3 provides a list of station names, location information, and monitored years for the water quality vertical profiles and grab sample locations in the Boundary Reach. These vertical profile and grab sample stations are shown in Figure 1.

Table 3. Station locations for vertical profiling/measurement of water quality.

Station Name[1]	Latitude[2]	Longitude[2]	Location[3]	Years
V1. Wolf Creek.	N 48° 49.61'	W 117° 23.21'	In Pend Oreille River (POR) adjacent to Wolf Creek inlet.	2004, 2005, 2006
V2. Metaline Old.	N 48° 51.16'	W 117° 22.52'	Former thalweg of POR across from City of Metaline.	2004, 2005, 2006
V3. PO Mine	N 48° 52.97'	W 117° 21.98'	Adjacent to mine and downstream of mine tailings pile.	2004, 2005, 2006
V4. Slate Creek.	N 48° 55.37'	W 117° 19.94'	Downstream of Slate Creek across from campsite on left bank.	2004, 2005, 2006
V5. Everett Creek.	N 48° 56.75'	W 117° 20.05'	Upstream of Everett Creek Island, adjacent to coniferous tree with fanned top on right bank.	2004, 2005, 2006
V6. Boundary Lake (Reservoir).	N 48° 58.71'	W 117° 20.73'	Forebay, across from triple aspens on left bank.	2004, 2005, 2006

Notes: [1]Mainstem stations are in plain print.
[2]Datum WGS 84
[3]Right bank and left bank refer to conventional understanding of these terms, which is determined facing downstream.

During all three monitoring years, water temperature, pH, dissolved oxygen concentration (DO), and specific conductance was measured and recorded during site visits (see Table 1 for site visit dates) at of the each of six vertical profiling stations (see Figure 1 – Stations V1 through V6). Measurement of these water quality parameters was made via *in-situ* (at the water quality station) by conducting vertical profiles of the water

column using a multi-parameter water quality meter (YSI sonde). In addition, secchi depth measurements were made at each vertical profile station during each site visit.

Vertical profiling data were collected by using a multi-parameter water quality meter. TAI staff accessed each station by boat and lowered the meter to specified depths, waiting a full minute for readings to stabilize, and noting the values of temperature, dissolved oxygen, pH, and conductivity on a field sheet (and in the meter's electronic memory). At each vertical profiling station, measurement of these water quality parameters were made at 9 to 15 equidistant vertical locations along each profile depending upon the depth of the water column (Table 4). For example, both stations V1 and V2 had a maximum depth of 15 meters and were profiled at one-meter intervals for 15 water column measurements. Water column depth was initially determined from depth soundings using sonar on the boat. To navigate back to each vertical profiling station, GPS was used.

Table 4. Vertical profile station's maximum site depths and profile depth intervals.

Station Name	Maximum Site Depth (meters)	Profile Depth Intervals (meters)		
		2004	2005	2006
V1. Wolf Creek.	15	1	1	1
V2. Metaline Old.	15	1	1	1
V3. PO Mine	42	2	3	3
V4. Slate Creek.	48	3	4	3
V5. Everett Creek.	66	6	6	6
V6. Boundary Lake (Reservoir).	79	6	7	8

The multi-parameter water quality meters were calibrated prior to each field visit and immediately afterwards throughout the field season following manufacturer instructions (YSI 2001). In addition, DO was calibrated once or twice each field day to adjust for changing weather conditions.

In 2006, water samples were collected as grab samples and analyzed in the laboratory for chlorophyll *a*, hardness, and a suite of nutrients (nitrate-nitrite, total nitrogen, total phosphorus, and soluble reactive phosphorus). During each sampling episode, surface water samples were collected for chlorophyll *a* and nutrient analyses, water samples from the 15-foot depth were collected for chlorophyll *a* analysis, and bottom of the water column samples were collected for hardness analysis. Surface samples were collected by

dipping bottles by hand and samples from the 15-foot and bottom depths were collected using a Van Dorn water sampler.

Complete methods for vertical profiling and grab sampling are described in previous water quality monitoring plans (Taylor 2005a, 2006a) and annual project reports (Taylor 2005b, 2006b, 2006c). These plans and reports include discussion of quality assurance/quality control measures, data completeness, and specific conditions associated with each sampling date.

2.4 MACROPHYTES

During the 2006 monitoring year, water quality data related to macrophyte growth were collected to assess the relative influence macrophytes might be having on water quality in the Boundary reservoir, particularly on pH. Macrophyte and phytoplankton growth can have diurnal effects on pH. Since elevated pH levels are of possible concern in this water body, water quality conditions relative to macrophyte growth were measured to provide a preliminary assessment on whether there is a relationship between macrophyte growth in the Boundary reservoir and pH levels.

Table 5 below lists the four water quality sampling stations and locations used to collect data for this preliminary assessment. Data were collected along vertical profiles at all four of these stations and included measurement of water temperature, pH, dissolved oxygen, and specific conductance using a multi-parameter water quality meter.

At stations T1 (Box Canyon Tailrace) and T7 (Boundary Forebay) , multi-parameter water quality vertical profile data were collected simultaneously in the early morning (0500-0600) and late afternoon hours (1600-1500) in order to provide data for periods before and after peak daily photosynthesis activity. For clarity, note that the data set shows simultaneous data collection in early morning and early afternoon at both stations only in October and November 2006. For June through September 2006, data collection was conducted by collecting early morning and early afternoon data at each station on different days (not at both stations simultaneously). In other words, data at the Boundary Station (T7) was collected in the early morning and early afternoon one day. On a separate day, data was collected at the Box Station (T1) in early morning and early afternoon. This was not the original design of this sampling program, but may yield meaningful information nevertheless.

The two other stations were located at a significant macrophyte bed (size-wise) in the Metaline Pool area; vertical vegetation 1 (VV1) station within the macrophyte bed and vertical vegetation 1-reference (VV1-Ref) station located immediately upstream of the macrophyte bed (Figure 1). Again, a multi-parameter probe was used to collect water quality data long a vertical water column profile (temperature, DO, pH and conductivity). Water samples were collected from the VV1 and VV1-Ref stations following the same methodology as described in Sec 2.3 – Vertical Profiling and Water Quality Sampling. Water samples collected were properly containerized and delivered to the laboratory within prescribed holding times and analyzed in the laboratory for the following parameters: chlorophyll *a*, hardness, nitrate-nitrite, total nitrogen, total phosphorus, and soluble reactive phosphorus.

Detailed methods for the collection and handling of these data can be found in the 2006 monitoring plan (Taylor 2006a). The 2006 plan and the 2006 data report (Taylor 2006c) include discussion of quality assurance/quality control measures, data completeness, and specific conditions associated with each sampling date. Descriptions and locations of the macrophyte stations, locations, and sampling year are summarized in Table 5.

Table 5. 2006 Macrophyte water quality sampling stations.

Station Name[1]	Latitude[2]	Longitude[2]	Location[3]
T1. Box Canyon Dam	N 48° 46.82'	W 117° 24.77'	Box Canyon Dam tailrace (same as T1)
T7. Boundary Intake	N 48° 59.18'	W 117° 21.03'	Boundary Dam forebay (same as T7)
VV1. Vertical Vegetation Station.	N 48° 50.67'	W 117° 23.12'	In shallow area across from Metaline with established macrophyte bed
VV1-Ref. Vertical Vegetation Station.	N 48° 50.52'	W 117° 23.39'	In thalweg of river approx 200 feet upriver of VV1-Macrophyte

Notes:

[1]Mainstem stations are in plain print.

[2]Datum WGS 84

[3]Right bank and left bank refer to conventional understanding of these terms, which is determined facing downstream.

3.0 RESULTS

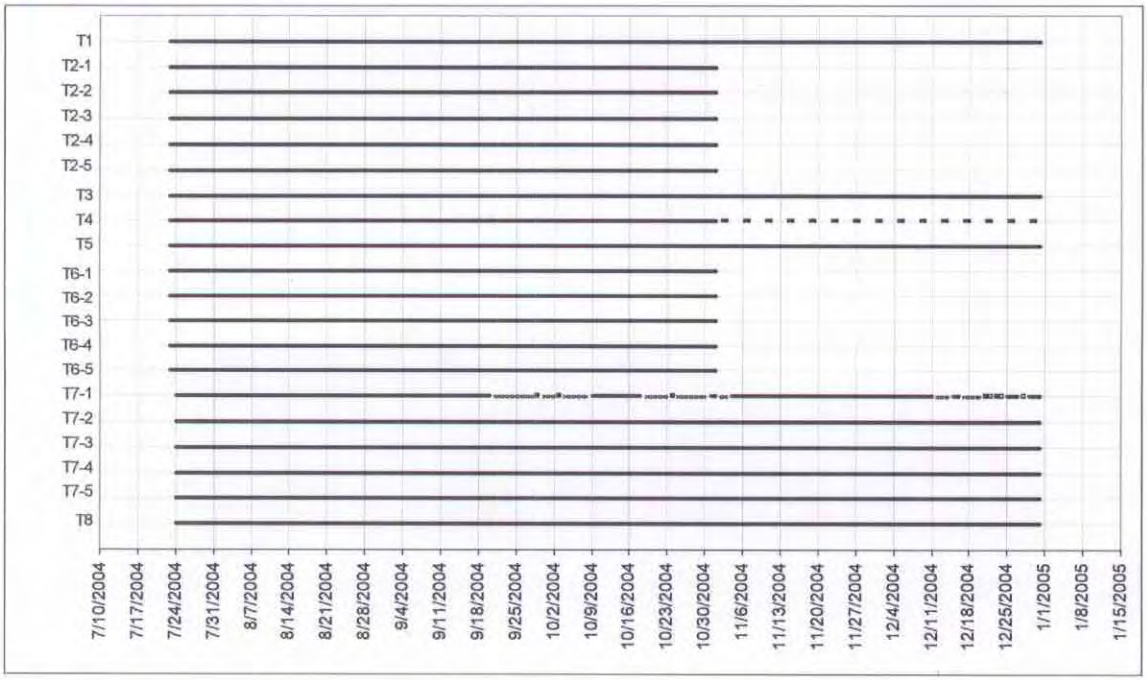
This section presents the results of the three-year data monitoring of the Boundary Reach of the Pend Oreille River. Data presented include summary statistics for water temperature, vertical profiling and water quality sampling, and macrophytes. All data summaries are found in the report appendices: Appendix A- Temperature 2004-2006 Summary Data, Appendix B-Vertical Profiling and Water Sampling Data 2004-2006 Summary Data, and Appendix C-Macrophyte Station 2006 Summary Data. The complete 3-year data set can be found on the attached CD.

3.1 WATER TEMPERATURE

In Figure 2 through Figure 4, the annual data records for the eight temperature monitoring stations are graphically shown for each monitoring year. Periods of data gaps are shown with a dotted line. For complete explanation of these data gaps, refer to the annual data reports (Taylor 2005a, 2006b, 2006c).

Mean, standard deviation, minimum, and maximum values for all eight stations (and data for their associated depths) are summarized by year in Appendix A.1 (Table 1. 2004, Table 2. 2005 and Table 3. 2006). Electronic files of the temperature monitoring data are included on the data CD attached to the back of the report. In addition, data that has been flagged as being not representative of actual conditions is found in Appendix A.2 (Table 1. 2004, Table 2. 2005 and Table 3. 2006). Appendix A.3 contains summary graphics of maximum daily temperatures at stations T1 and T8 and at stations T3, and T5.

Figure 2. 2004 Data Record

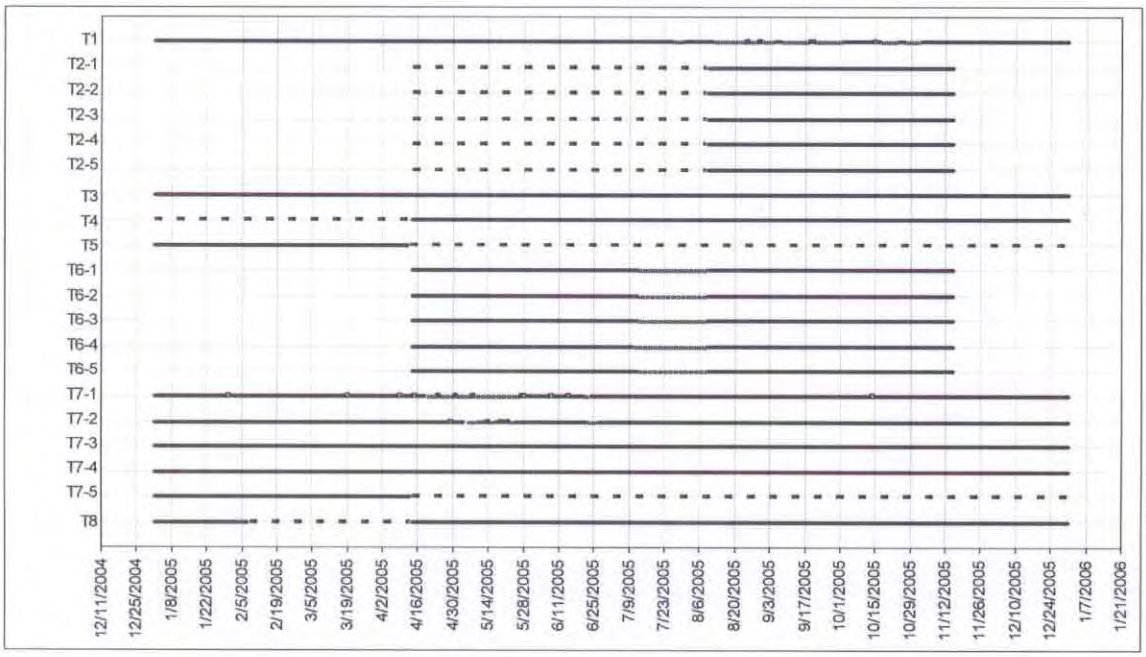


Legend

	good data
	questionable data >24 hrs
o	questionable data 12-24 hrs
	missing data
	no probe in place

T1	Box Canyon Tailrace	T6-2	Slate Pool, depth 2
T2-1	Metaline Pool, depth 1	T6-3	Slate Pool, depth 3
T2-2	Metaline Pool, depth 2	T6-4	Slate Pool, depth 4
T2-3	Metaline Pool, depth 3	T6-5	Slate Pool, depth 5
T2-4	Metaline Pool, depth 4	T7-1	Boundary Intake, depth 1
T2-5	Metaline Pool, depth 5	T7-2	Boundary Intake, depth 2
T3	Sullivan Creek Downstream	T7-3	Boundary Intake, depth 3
T4	Sullivan Creek Upstream	T7-4	Boundary Intake, depth 4
T5	Slate Creek	T7-5	Boundary Intake, depth 5
T6-1	Slate Pool, depth 1	T8	Boundary Tailrace

Figure 3. 2005 Data Record

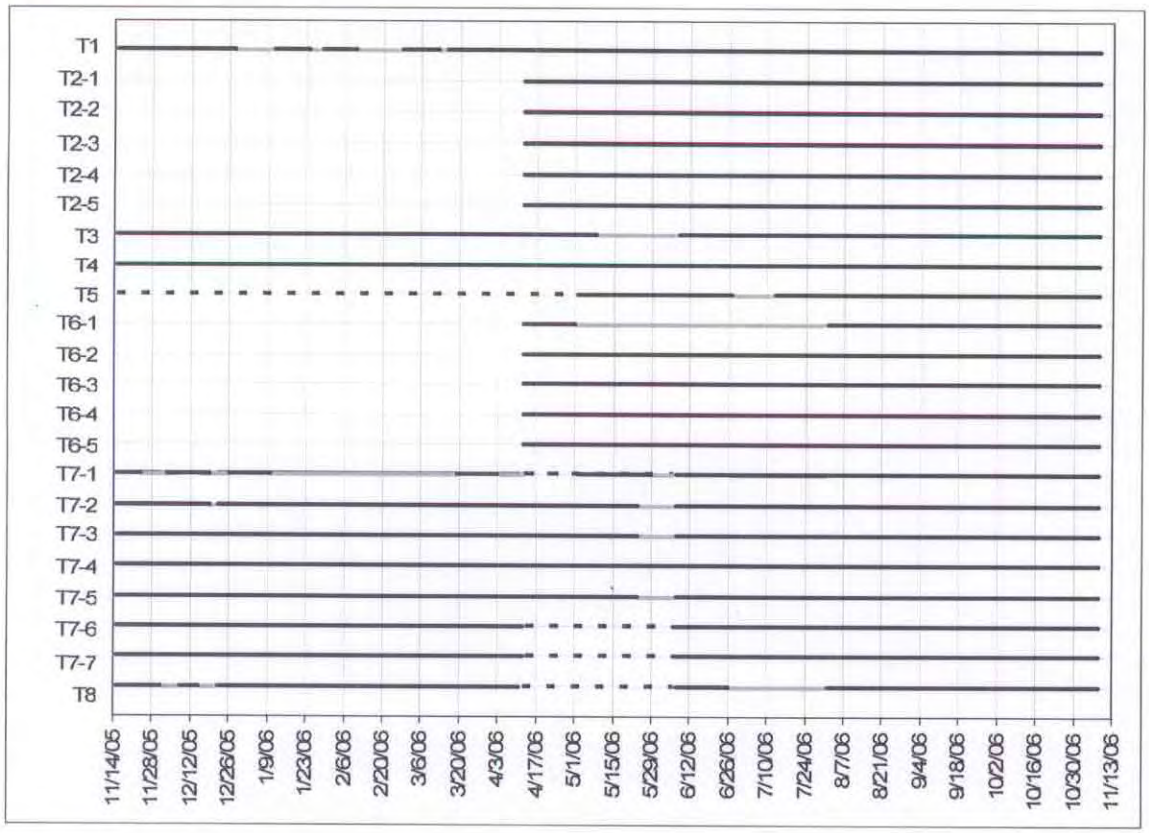


Legend

	good data
	questionable data >24 hrs
○	questionable data 12-24 hrs
	missing data
	no probe in place

T1	Box Canyon Tailrace	T6-2	Slate Pool, depth 2
T2-1	Metaline Pool, depth 1	T6-3	Slate Pool, depth 3
T2-2	Metaline Pool, depth 2	T6-4	Slate Pool, depth 4
T2-3	Metaline Pool, depth 3	T6-5	Slate Pool, depth 5
T2-4	Metaline Pool, depth 4	T7-1	Boundary Intake, depth 1
T2-5	Metaline Pool, depth 5	T7-2	Boundary Intake, depth 2
T3	Sullivan Creek Downstream	T7-3	Boundary Intake, depth 3
T4	Sullivan Creek Upstream	T7-4	Boundary Intake, depth 4
T5	Slate Creek	T7-5	Boundary Intake, depth 5
T6-1	Slate Pool, depth 1	T8	Boundary Tailrace

Figure 4. 2006 Data Record



Legend

	good data
	questionable data >24 hrs
○	questionable data 12-24 hrs
	missing data
	no probe in place

T1	Box Canyon Tailrace	T6-2	Slate Pool, depth 2
T2-1	Metaline Pool, depth 1	T6-3	Slate Pool, depth 3
T2-2	Metaline Pool, depth 2	T6-4	Slate Pool, depth 4
T2-3	Metaline Pool, depth 3	T6-5	Slate Pool, depth 5
T2-4	Metaline Pool, depth 4	T7-1	Boundary Intake, depth 1
T2-5	Metaline Pool, depth 5	T7-2	Boundary Intake, depth 2
T3	Sullivan Creek Downstream	T7-3	Boundary Intake, depth 3
T4	Sullivan Creek Upstream	T7-4	Boundary Intake, depth 4
T5	Slate Creek	T7-5	Boundary Intake, depth 5
T6-1	Slate Pool, depth 1	T8	Boundary Tailrace

3.2 VERTICAL PROFILES

For all six vertical profiling stations (V1 – V6), the mean, standard deviation, minimum, and maximum values for pH, dissolved oxygen, specific conductance, and temperature are summarized in Appendix B.1. In this appendix, there are six tables (Table 1 through Table 6), each one summarizing the data for one station over the 3-year record.

The pH data were also evaluated for exceedences of the Washington State water quality standards for the Boundary Reach, pH must be between 6.5 and 8.5 (WAC 173-201A, 2006). Exceedences of the pH criterion of 8.5 are summarized by station in Appendix B.2. For each station, the frequency of exceedences and the maximum exceedence for each year is shown.

Appendix B.3 contains summary graphics of temperature and pH profiles on selected days at Everett Creek Station no. V5. Electronic files of the vertical profiling data are included on the data CD attached to the back of the report.

3.3 MACROPHYTES

This section summarizes results for water quality data collection relative to the potential effects of macrophytes on water quality in the Boundary Reach, particularly pH. Additionally, results from a macrophyte-related water quality data collection in October 2006 are included in this section; this was done to help inform the diurnal variation in water quality.

3.3.1 Water Quality

During 2006, water quality data were collected to determine the potential effects of macrophyte beds on water quality in Boundary Reservoir, particularly pH. There were four data collection stations for this effort (VV1, VV1-Ref, T1, and T7). Data measured and recorded in the field included temperature, pH, conductivity, and dissolved oxygen. These data were collected *in-situ* along vertical profiles using a multi-parameter water quality meter.

In addition to the field data measured and recorded, water samples were collected at two of the stations (VV1 and VV1-Ref) for laboratory analyses. These water samples were analyzed in the laboratory for chlorophyll *a*, hardness, nitrate-nitrite, total nitrogen, total phosphorus, and soluble reactive phosphorus. Detailed methods for collecting these data can be found in the 2006 monitoring plan (Taylor Associates, Inc. 2006a). The station

names, locations, sampling dates, and vertical profile sampling depths at each of these stations are summarized in Table 6.

Table 6. Macrophyte stations, sampling dates, and measurement depths.

Station Name	Locations	Date	No. Depths Measured	Max. Depth (m)
T1 Box Canyon Tailrace AM/PM	Box Canyon Dam tailrace (same as T1)	6/7/06	11	21.0
		7/12/06	11	21.0
		8/1/06	11	23.0
		9/6/06	9	17.0
		10/4/06	10	19.0
		11/7/06	11	21.0
T7 Boundary Forebay AM/PM	Boundary Dam forebay (same as T7)	6/6/06	15	29.0
		7/11/06	15	28.0
		8/1/06	12	27.0
		9/6/06	14	27.0
		10/4/06	11	21.0
		11/7/06	11	21.0
VV1 Macrophyte	Shallow area across from Metaline with established macrophyte bed	6/7/06	5	4.0
		7/12/06	3	1.3
		8/2/06	4	1.5
		9/7/06	4	1.5
		10/5/06	3	1.0
		11/8/06	3	1.0
VV1-Ref Macrophyte Reference	Thalweg of river approx 200 feet upriver of VV1 Macrophyte	6/7/06	11	9.5
		7/12/06	10	10.0
		8/2/06	11	11.0
		9/7/06	11	11.0
		10/5/06	10	10.0
		11/8/06	10	10.0

Vertical profile data recorded at the Box Canyon Dam tailrace (T1) and Boundary Forebay (T7) occurred simultaneously during the early morning (starting at approximately 05:00) and simultaneously in late afternoon (starting at approximately 16:00) in order to provide data for periods before and after peak daily photosynthesis activity. Again, this happened only in October and November. From June through September 2006, data collection was done by collecting early morning and early afternoon data on one day at the Boundary Station (T7) and the same done on a different day at the Box Station (T1).

Vertical profile data were collected from two vertical vegetation stations – one from within a significant macrophyte bed (VV1) and the other from a reference station (VV1-Ref). The reference station was located upstream of the macrophyte bed station, free to the extent possible of any influence from the macrophyte bed.

Unfortunately, water samples (chlorophyll *a*, nutrients and hardness) were not collected at the VV1 and VV1-Ref stations during the 2006 sampling period, except during the November site visit (this was an oversight by field technicians). In November, water samples from VV1 and VV1-Ref stations were collected by dipping bottles by hand at the surface while samples from the bottom depth were collected using a Van Dorn water sampler.

Data tables and field sheets from the macrophyte stations are presented in Appendix C. Laboratory and vertical profile field data from the macrophyte stations have been entered onto Excel spreadsheets; electronic files of the macrophyte station data are included on the data CD attached at the back of the report.

Because of the oversight in water sample collection at VV1 and VV1-Ref stations during the site visits from June through October 2006, TAI performed additional data collection at these stations during October when the data collection oversight was realized. The intention of this special macrophyte data collection was to help inform the diurnal variation in water quality in and near the macrophyte bed (station VV1) that was sampled.

The special macrophyte data collection effort consisted of multi-parameter water quality meter measurements (pH, DO, temperature, and specific conductance) and laboratory analyses of water samples at the VV1 and VV1-Ref stations on Oct 12 and 13. The water sample and VP parameters were the same as those analyzed for other the VP stations (chlorophyll-a, hardness, nitrate+nitrite, ammonia-N, total N, total P, and soluble reactive P), with the addition of alkalinity. Data were collected in two-hour intervals from 0.5-meter depth over approximately six hours on each day from approximately 9:00 to 15:00.

Weather conditions during the special macrophyte data collection were foggy or overcast in the mornings with very sunny skies in the afternoon of October 12, 2006 and partly sunny skies in the afternoon of October 13, 2006. Macrophytes were visually inspected for general growing condition, which was noted as light green to dark green and fully grown, but not decomposing. Tables and graphs from the special macrophyte data collection are presented in Appendix C. Electronic files of data from the special macrophyte data collection are included on the data CD attached at the back of the report.

4.0 SUMMARY

In 2006, TAI completed the third and final year of monitoring studies for water temperature and water quality assessment in the Boundary Reach of the Pend Oreille River. This summary report contains abbreviated descriptions of field methods and monitoring results for the three-year monitoring period occurring between 2004 and 2006 at the Boundary Reach. The report is intended to be a compendium of the data collected with minimal actual analysis of the collected data. General observations of the data are included to inform the reader of key points.

REFERENCES

Taylor Associates, Inc. 2005a. Boundary Project Water Quality Report 2004, Pend Oreille River-Boundary Reach. Prepared for Seattle City Light. April 2005.

Taylor Associates, Inc. 2005b. Water Quality Monitoring Plan, Boundary Reach of the Pend Oreille River. Prepared for Seattle City Light. June 2005.

Taylor Associates, Inc. 2006a. 2006 Water Quality Monitoring Plan, Boundary Reach of the Pend Oreille River. Prepared for Seattle City Light. March 2006.

Taylor Associates, Inc. 2006b. Boundary Hydroelectric Project, Water Quality Data Report 2005, Pend Oreille River-Boundary Reach. Prepared for Seattle City Light. May 2006.

Taylor Associates, Inc. 2006b. Boundary Dam Hydroelectric Project, Water Quality Data Report 2005, Pend Oreille River-Boundary Reach. Prepared for Seattle City Light. December 2006.

WAC 173-201A, 2006. Water Quality Standards for Surface Waters of the State of Washington, Chapter 173-201A WAC, Amended November 20, 2006.

Washington State Department of Ecology. 2004. Quality Assurance Project Plan. Pend Oreille River Temperature Total Maximum Daily Load Technical Study. Au: Paul J. Pickett. Washington State Department of Ecology, Environmental Assessment Program. Publication No. 04-03-109. September 2004.

YSI. 2001. YSI Environmental Operations Manual, 6-Series Environmental Monitoring Systems. YSI Incorporated, Yellow Spring, OH.

APPENDIX A –TEMPERATURE 2004-2006 SUMMARY DATA

A.1. Temperature Data Summary

Table 1. 2004 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
T1. Box Canyon Dam	5.2	n	676	2232	2160	2235	2160	2232
		data used (%)	100	99.9	100	100	100	99.9
		mean	23.25	22.93	17.67	13.35	7.10	4.26
		std dev	0.41	1.16	1.51	2.24	1.02	0.50
		min	22.27	20.53	15.56	9.24	5.13	3.22
		max	23.83	24.46	21.03	16.42	9.24	5.13
T1. Box Canyon (duplicate)	5.2	n	678	2232	2160	2235	2160	2232
		data used (%)	100	99.9	100	100	100	99.9
		mean	23.21	22.89	17.63	13.30	7.04	4.20
		std dev	0.41	1.16	1.52	2.25	1.03	0.50
		min	22.25	20.51	15.51	9.19	5.05	3.14
		max	23.79	24.44	21.01	16.37	9.16	5.05
T2. Metaline Pool (depth 1)	1	n	620	2232	2160	2235	99	Buoy removed for winter
		data used (%)	100	99.9	100	100	100	
		mean	23.41	22.95	17.71	13.38	8.89	
		std dev	0.40	1.16	1.51	2.27	0.22	
		min	22.42	20.46	15.49	9.16	8.47	
		max	24.36	24.73	21.01	16.65	9.16	
T2. Metaline Pool (depth 2)	3.2	n	620	2232	2160	2235	99	Buoy removed for winter
		data used (%)	100	99.9	100	100	100	
		mean	23.26	22.85	17.60	13.27	8.81	
		std dev	0.37	1.16	1.52	2.24	0.21	
		min	22.15	20.37	15.39	9.09	8.39	
		max	24.03	24.61	20.89	16.32	9.06	

Table 1. 2004 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04

Table 1. 2004 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
T2. Metaline Pool (depth 3)	5.4	n	620	2232	2160	2235	99	Buoy removed for winter
		data used (%)	100	99.9	100	100	100	
		mean	23.35	22.95	17.70	13.38	8.90	
		std dev	0.37	1.16	1.52	2.26	0.21	
		min	22.23	20.48	15.49	9.16	8.49	
		max	24.07	24.70	21.01	16.42	9.16	
T2. Metaline Pool (depth 4)	7.6	n	620	2232	2160	2235	99	Buoy removed for winter
		data used (%)	100	99.9	100	100	100	
		mean	23.33	22.93	17.68	13.36	8.90	
		std dev	0.37	1.16	1.52	2.25	0.22	
		min	22.20	20.46	15.49	9.16	8.47	
		max	24.05	24.68	21.01	16.42	9.16	
T2. Metaline Pool (depth 5)	9.8	n	620	2232	2160	2235	99	Buoy removed for winter
		data used (%)	100	99.9	100	100	100	
		mean	23.24	22.84	17.59	13.29	8.81	
		std dev	0.37	1.16	1.52	2.25	0.22	
		min	22.11	20.39	15.39	9.09	8.39	
		max	23.98	24.58	20.91	16.44	9.09	
T3. Sullivan Creek Down	0.6	n	672	2232	2160	2235	2159	2232
		data used (%)	100	99.9	100	100	100	99.9
		mean	16.58	16.14	12.19	11.92	6.43	2.78
		std dev	1.07	1.37	1.16	1.73	1.21	0.75
		min	14.34	13.69	9.58	8.52	3.83	1.18
		max	18.51	19.06	15.39	14.39	8.49	4.19

Table 1. 2004 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04

Table 1. 2004 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
T4. Sullivan Creek Up	0.3	n	669	2232	2160	2235	46	Probe not recovered
		data used (%)	100	99.9	100	100	100	
		mean	12.92	12.34	9.07	5.97	2.27	
		std dev	1.51	1.36	1.12	1.83	0.29	
		min	10.22	9.58	5.75	2.05	1.89	
		max	15.46	15.68	12.49	9.02	2.77	
T5. Slate Creek	1	n	615	2232	2160	2235	2159	2232
		data used (%)	100	99.9	100	100	100	99.9
		mean	12.30	12.28	9.21	6.20	2.57	1.45
		std dev	0.88	0.99	1.01	1.79	0.78	0.77
		min	10.52	10.03	6.15	2.24	0.44	0.00
		max	14.15	14.58	12.24	8.72	4.19	2.82
T6. Slate Pool (depth 1)	1	n	617	2232	2160	2235	99	Buoy removed for winter
		data used (%)	100	99.9	100	100	100	
		mean	23.38	22.95	17.73	13.39	8.97	
		std dev	0.38	1.12	1.56	2.23	0.16	
		min	22.25	20.39	15.44	9.31	8.64	
		max	24.05	24.70	21.22	16.46	9.31	
T6. Slate Pool (depth 2)	11	n	617	2232	2160	2235	100	Buoy removed for winter
		data used (%)	100	99.9	100	100	100	
		mean	23.34	22.95	17.75	13.42	9.01	
		std dev	0.39	1.11	1.56	2.23	0.16	
		min	22.20	20.41	15.46	9.36	8.69	

Table 1. 2004 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
	max	23.95	24.58	21.25	16.49	9.36	

Table 1. 2004 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
T6. Slate Pool (depth 3)	21	n	617	2232	2160	2235	100	Buoy removed for winter
		data used (%)	100	99.9	100	100	100	
		mean	23.23	22.85	17.66	13.33	8.92	
		std dev	0.38	1.11	1.56	2.23	0.16	
		min	22.11	20.32	15.34	9.29	8.59	
		max	23.83	24.48	21.15	16.42	9.29	
T6. Slate Pool (depth 4)	31	n	617	2232	2160	2235	100	Buoy removed for winter
		data used (%)	100	99.9	100	100	100	
		mean	23.27	22.88	17.72	13.40	8.99	
		std dev	0.38	1.10	1.55	2.23	0.16	
		min	22.15	20.39	15.44	9.34	8.67	
		max	23.91	24.56	21.22	16.46	9.34	
T6. Slate Pool (depth 5)	41	n	617	2232	2160	2235	100	Buoy removed for winter
		data used (%)	100	99.9	100	100	100	
		mean	23.21	22.82	17.71	13.41	8.99	
		std dev	0.37	1.10	1.54	2.23	0.16	
		min	22.18	20.34	15.44	9.36	8.67	
		max	23.86	24.56	21.20	16.49	9.36	
T7. Boundary Intake (depth 1)	3	n	603	2204	1613	1132	1965	1540
		data used (%)	100	98.6	74.7	50.6	91	68.9
		mean	23.17	23.13	18.54	13.78	7.25	4.30
		std dev	0.47	0.90	1.50	2.02	1.01	0.58
		min	22.35	20.17	15.56	9.24	5.64	3.35

Table 1. 2004 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
	max	24.27	24.46	22.63	16.77	9.61	5.64

Table 1. 2004 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
T7. Boundary Intake (depth 2)	9	n	607	2232	1998	2091	2157	2169
		data used (%)	100	99.9	92.5	93.6	99.9	97
		mean	23.12	23.10	18.24	13.77	7.36	4.37
		std dev	0.45	0.94	1.59	2.12	1.04	0.52
		min	22.25	20.72	15.70	9.26	5.72	3.35
		max	23.81	24.46	21.37	16.84	9.63	5.72
T7. Boundary Intake (depth 3)	15	n	608	2232	2158	2235	2159	2232
		data used (%)	100	99.9	99.9	100	100	99.9
		mean	22.96	22.95	17.94	13.64	7.24	4.25
		std dev	0.44	0.95	1.62	2.14	1.04	0.52
		min	22.08	20.56	15.56	9.49	5.62	3.38
		max	23.57	24.17	21.06	16.51	9.51	5.62
T7. Boundary Intake (depth 4)	21	n	608	2232	2160	2235	2159	2232
		data used (%)	100	99.9	100	100	100	99.9
		mean	22.94	22.93	17.93	13.64	7.25	4.27
		std dev	0.45	0.95	1.63	2.14	1.04	0.51
		min	22.03	20.56	15.56	9.49	5.62	3.38
		max	23.52	24.12	21.01	16.49	9.51	5.62
T7. Boundary Intake (depth 5)	27	n	608	2232	2160	2235	2159	2232
		data used (%)	100	99.9	100	100	100	99.9
		mean	22.95	22.92	17.92	13.64	7.25	4.28
		std dev	0.45	0.95	1.63	2.14	1.04	0.51
		min	22.03	20.58	15.56	9.51	5.64	3.41
		max	23.52	24.12	21.03	16.42	9.53	5.64

Table 1. 2004 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
T8. Boundary Tailrace	5	n	603	2232	2160	2235	2160	2232
		data used (%)	100	99.9	100	100	100	99.9
		mean	23.09	23.08	18.03	13.71	7.34	4.36
		std dev	0.45	0.93	1.64	2.14	1.03	0.53
		min	21.44	20.75	15.63	9.58	5.69	3.46
		max	23.69	24.32	21.18	16.51	9.61	5.85
T8. Boundary Tailrace (duplicate)	5	n	603	2232	2160	2235	2160	2232
		data used (%)	100	99.9	100	100	100	99.9
		mean	23.07	23.06	18.01	13.69	7.31	4.34
		std dev	0.45	0.93	1.64	2.15	1.03	0.53
		min	22.15	20.72	15.63	9.56	5.67	3.43
		max	23.69	24.32	21.13	16.49	9.58	5.82

Table 2. 2005 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05
T1. Box Canyon Dam	5.2	n	2232	2016	1893	2156	2232	2160	1823	943	506	1260	2078	2232
		data used (%)	99.9	100	84.7	99.8	99.9	100	81.6	42.2	23.4	56.5	96.2	99.9
		mean	0.86	2.50	4.96	7.09	12.27	15.34	19.37	20.65	21.43	18.84	7.25	1.12
		std dev	1.11	0.45	1.61	1.52	0.77	1.02	1.30	4.31	3.20	5.04	1.46	1.18
		min	0.02	1.56	-1.79	4.90	10.66	13.47	16.94	10.86	13.52	9.46	4.12	0.08
		max	3.27	3.27	10.22	10.91	13.95	17.80	22.13	37.02	30.72	34.76	9.95	4.12
T1. Box Canyon (duplicate)	5.2	n	2232	2016	2232	2156	2232	2149	391	Recorded air temps (Logger found twisted and out of water)			1109	2080
		data used (%)	99.9	100	99.9	99.8	99.9	99.5	17.5				51.3	93.1
		mean	0.79	2.44	5.35	8.02	12.80	15.64	18.72				5.99	1.00
		std dev	1.12	0.44	0.91	1.95	1.30	1.25	0.50				0.78	1.21
		min	-0.06	1.78	3.04	5.05	10.61	13.74	17.94				4.04	0.00
		max	3.20	3.20	6.59	11.90	16.39	18.37	19.58				7.39	4.04
T2. Metaline Pool (depth 1)	1	n	Buoy removed for winter			Buoy lost due to high flows				1688	2160	2235	1107	Buoy removed for winter
		data used (%)								100	100	100	100	
		mean								22.56	17.90	13.04	8.69	
		std dev								1.09	1.52	1.16	0.79	
		min								20.53	15.34	10.37	7.24	
		max								24.82	21.25	15.53	10.37	
T2. Metaline Pool (depth 2)	3	n	Buoy removed for winter			Buoy lost due to high flows				1688	2160	2235	1107	Buoy removed for winter
		data used (%)								100	100	100	100	
		mean								22.46	17.83	12.98	8.62	
		std dev								1.07	1.51	1.15	0.79	
		min								20.48	15.29	10.30	7.17	
		max								24.56	21.01	15.44	10.30	
T2. Metaline Pool (depth 3)	5	n	Buoy removed for winter			Buoy lost due to high flows				1688	2160	2235	1108	Buoy removed for winter
		data used (%)								100	100	100	100	
		mean								22.45	17.83	13.00	8.65	
		std dev								1.06	1.51	1.15	0.79	
		min								20.48	15.32	10.32	7.19	
		max								24.41	20.98	15.41	10.32	
T2. Metaline Pool (depth 4)	7	n	Buoy removed for winter			Buoy lost due to high flows				1688	2160	2235	1108	Buoy removed for winter
		data used (%)								100	100	100	100	
		mean								22.45	17.83	12.99	8.63	
		std dev								1.06	1.51	1.15	0.79	
		min								20.48	15.29	10.32	7.17	
		max								24.36	21.01	15.41	10.32	

Table 2. 2005 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05

Table 2. 2005 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05
T2. Metaline Pool (depth 5)	9	n	Buoy removed for winter			Buoy lost due to high flows				1688	2160	2235	1108	Buoy removed for winter
		data used (%)								100	100	100	100	
		mean								22.45	17.84	13.01	8.66	
		std dev								1.06	1.51	1.15	0.79	
		min								20.48	15.32	10.35	7.19	
		max								24.36	20.98	15.41	10.35	
T3. Sullivan Creek Down	0.6	n	2232	2016	2232	2157	2232	2160	2232	2232	2160	2235	2158	2232
		data used (%)	99.9	100	99.9	99.9	99.9	100	99.9	99.9	100	100	99.9	99.9
		mean	1.07	1.48	3.15	5.34	7.35	10.19	13.97	15.24	12.01	11.41	6.83	1.61
		std dev	0.82	0.66	0.47	0.96	1.35	1.15	1.39	1.14	1.35	0.81	1.48	0.84
		min	-0.06	0.25	1.91	3.43	4.66	8.39	11.05	12.51	8.72	9.02	3.54	0.00
		max	2.88	2.88	4.32	8.00	11.61	13.31	17.70	18.03	15.27	12.73	9.81	3.78
T4. Sullivan Creek Up	0.3, 0.9 [1]	n	Probe not recoverd			1251	2232	2160	2232	2232	2160	2235	2158	2232
		data used (%)				100	99.9	100	99.9	99.9	100	100	99.9	99.9
		mean				4.10	5.85	8.18	11.06	11.39	8.45	6.22	2.66	0.33
		std dev				1.06	1.41	1.33	1.55	1.47	1.42	0.99	1.03	0.46
		min				1.94	2.88	5.85	7.47	8.00	4.74	4.25	0.08	0.00
		max				6.66	10.15	12.07	14.70	15.01	11.81	8.87	4.74	1.75
T5. Slate Creek	1, 1.2 [2]	n	2232	2016	2232	896	Data lost due to logger malfunction						Probe not recovered	
		data used (%)	99.9	100	99.9	100								
		mean	0.81	0.92	2.40	3.44								
		std dev	0.96	0.89	0.41	0.47								
		min	0.00	0.00	1.40	2.42								
		max	2.77	2.72	3.49	4.48								
T6. Slate Pool (depth 1)	1	n	Buoy removed for winter			1259	2232	2160	889	1685	2160	2235	1109	Buoy removed for winter
		data used (%)				100	99.9	100	39.8	75.4	100	100	100	
		mean				9.33	12.84	15.69	19.08	22.54	17.97	13.07	8.69	
		std dev				1.51	1.26	1.22	0.51	1.07	1.55	1.14	0.81	
		min				7.52	10.76	14.00	18.01	20.44	15.34	10.44	7.29	
		max				11.93	16.34	18.44	19.91	24.82	21.22	15.49	10.44	
T6. Slate Pool (depth 2)	11	n	Buoy removed for winter			1259	2232	2160	894	1685	2160	2235	1109	Buoy removed for winter
		data used (%)				100	99.9	100	40	75.4	100	100	100	
		mean				9.31	12.84	15.72	19.10	22.41	17.86	12.99	8.62	
		std dev				1.51	1.27	1.22	0.50	1.04	1.54	1.14	0.81	
		min				7.47	10.71	14.05	18.01	20.41	15.27	10.37	7.22	
		max				11.93	16.39	18.49	19.82	24.12	20.82	15.41	10.37	

Table 2. 2005 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05

Table 2. 2005 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05
T6. Slate Pool (depth 3)	21	n	Buoy removed for winter			1259	2232	2160	889	1685	2160	2235	1109	Buoy removed for winter
		data used (%)				100	99.9	100	39.8	75.4	100	100	100	
		mean				9.21	12.74	15.63	19.01	22.45	17.89	13.03	8.65	
		std dev				1.50	1.27	1.22	0.51	1.03	1.54	1.14	0.81	
		min				7.34	10.59	13.95	17.92	20.48	15.29	10.42	7.24	
		max				11.83	16.27	18.39	19.98	24.15	20.87	15.46	10.42	
T6. Slate Pool (depth 4)	31	n	Buoy removed for winter			1259	2232	2160	746	1686	2160	2235	1109	Buoy removed for winter
		data used (%)				100	99.9	100	33.4	75.4	100	100	100	
		mean				9.26	12.80	15.70	18.99	22.29	17.75	12.90	8.53	
		std dev				1.50	1.27	1.22	0.51	1.03	1.53	1.14	0.81	
		min				7.42	10.64	13.98	17.96	20.32	15.18	10.27	7.12	
		max				11.88	16.34	18.46	19.82	24.00	20.72	15.32	10.30	
T6. Slate Pool (depth 5)	41	n	Buoy removed for winter			1258	2232	2160	896	1685	2160	2235	1109	Buoy removed for winter
		data used (%)				100	99.9	100	40.1	75.4	100	100	100	
		mean				9.22	12.77	15.69	19.07	22.43	17.89	13.05	8.68	
		std dev				1.47	1.28	1.22	0.51	1.02	1.53	1.14	0.81	
		min				7.44	10.42	14.00	17.92	20.39	15.29	10.37	7.24	
		max				11.86	16.37	18.46	20.20	24.17	20.89	15.49	10.44	
T7. Boundary Intake (depth 1)	3, 5 [3]	n	1849	1741	2126	1444	826	1648	2006	2194	2160	2051	1631	1685
		data used (%)	82.7	86.4	95.1	66.9	37	76.3	89.8	98.2	100	91.8	75.5	75.4
		mean	0.89	2.42	5.17	7.25	12.95	15.68	20.65	22.78	18.47	13.27	8.03	1.28
		std dev	1.08	0.43	1.10	1.68	1.57	1.14	1.38	0.76	1.57	1.13	1.27	1.22
		min	0.05	1.81	2.45	5.08	11.01	13.88	17.94	20.94	15.51	10.98	6.05	0.14
		max	3.46	3.35	6.69	11.54	16.51	18.60	23.11	24.34	20.96	15.51	11.03	4.09
T7. Boundary Intake (depth 2)	9, 11 [3]	n	2230	2004	2226	1952	1525	1986	2232	2232	2160	2216	2156	2149
		data used (%)	99.8	99.4	99.6	90.4	68.2	91.9	99.9	99.9	100	99.1	99.8	96.2
		mean	0.97	2.51	5.24	7.66	12.95	15.68	20.52	22.81	18.50	13.33	7.75	1.41
		std dev	1.10	0.44	1.08	1.76	1.32	1.10	1.36	0.74	1.57	1.10	1.52	1.45
		min	0.14	1.91	2.74	5.13	11.08	14.22	17.99	20.98	15.58	11.03	4.61	0.16
		max	3.51	3.30	6.84	11.78	16.27	18.25	22.90	23.83	21.03	15.58	11.08	5.08
T7. Boundary Intake (depth 3)	15, 17 [3]	n	2232	2016	2232	2153	2232	2160	2232	2232	2160	2235	2158	2223
		data used (%)	99.9	100	99.9	99.7	99.9	100	99.9	99.9	100	100	99.9	99.5
		mean	0.87	2.41	5.12	7.77	12.72	15.68	20.36	22.66	18.34	13.20	7.62	1.27
		std dev	1.11	0.43	1.07	1.94	1.16	1.16	1.35	0.74	1.57	1.09	1.51	1.45
		min	0.02	1.83	2.64	5.02	10.93	14.10	17.87	20.87	15.44	10.91	4.95	-1.67
		max	3.38	3.17	6.36	12.20	16.11	17.87	22.73	23.76	20.89	15.49	10.93	4.95

Table 2. 2005 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05

Table 2. 2005 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05
T7. Boundary Intake (depth 4)	21, 23 [3]	n	2232	2016	2232	2154	2232	2160	2232	2232	2160	2235	2157	2159
		data used (%)	99.9	100	99.9	99.7	99.9	100	99.9	99.9	100	100	99.9	100
		mean	0.91	2.43	5.13	7.77	12.71	15.69	20.36	22.66	18.33	13.20	7.63	1.34
		std dev	1.11	0.43	1.07	1.92	1.16	1.15	1.35	0.74	1.57	1.09	1.51	1.45
		min	0.02	1.86	2.66	5.05	10.91	14.10	17.87	20.87	15.46	10.91	4.97	0.08
		max	3.41	3.17	6.33	11.81	16.11	17.89	22.78	23.69	20.91	15.49	10.96	4.97
T7. Boundary Intake (depth 5)	27, 29 [3]	n	2232	2016	2232	965	Probe not recovered							
		data used (%)	99.9	100	99.9	100								
		mean	0.93	2.45	5.14	6.12								
		std dev	1.11	0.43	1.07	0.80								
		min	0.05	1.89	2.69	5.05								
		max	3.41	3.20	6.31	7.49								
T8. Boundary Tailrace	5	n	2232	505	Probes removed by divers	1195	2232	2160	2232	2232	1971	2235	2155	1490
		data used (%)	99.9	25		55.3	99.9	100	99.9	99.9	91.3	100	99.8	66.7
		mean	0.99	3.12		9.20	12.78	15.74	20.48	22.82	18.47	13.30	7.73	1.00
		std dev	1.11	0.16		1.44	1.15	1.15	1.38	0.72	1.60	1.10	1.50	1.12
		min	0.11	2.69		7.34	10.98	14.19	17.96	21.06	15.61	11.05	5.05	0.14
		max	3.54	3.35		11.78	16.25	18.01	22.87	23.88	21.10	15.65	11.13	5.18
T8. Boundary Tailrace (duplicate)	5	n	2232	505	Probes removed by divers	1195	2232	2160	2232	2232	2026	2235	2155	1558
		data used (%)	99.9	25		55.3	99.9	100	99.9	99.9	93.8	100	99.8	69.7
		mean	0.96	3.09		9.14	12.71	15.67	20.40	22.74	18.39	13.23	7.67	1.04
		std dev	1.11	0.16		1.44	1.15	1.15	1.38	0.72	1.58	1.09	1.50	1.17
		min	0.08	2.69		7.14	10.91	14.12	17.89	20.98	15.53	11.01	5.00	0.08
		max	3.54	3.33		11.71	16.18	17.96	22.80	23.79	21.03	15.58	11.05	5.15

[1] Moved depth from 0.3 to 0.9 meters on 4/13/2005.

[2] Moved depth from 1 m to 1.2 meters on 4/13/2005.

[3] Lowered probe by 2 meters on 4/14/2005.

Table 3. 2006 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06
T1. Box Canyon Dam	5.2	n	2232	2016	2161	2155	2232	2160	2231	2232	2160	2235	542
		data used (%)	99.9	100	96.7	99.8	99.9	100	99.8	99.9	100	100	100
		mean	2.96	1.98	3.89	7.35	11.66	16.01	22.70	22.37	18.63	13.37	8.35
		std dev	0.20	1.21	1.11	1.23	1.38	1.78	1.28	0.39	1.85	1.90	0.40
		min	2.18	0.19	1.81	6.03	9.14	13.19	20.17	21.20	15.70	9.49	7.85
		max	3.27	3.62	6.03	10.20	13.67	20.41	25.21	23.64	21.20	17.01	9.49
T1. Box Canyon (duplicate)	5.2	n	1412	982	2162	2157	2232	2160	2232	2232	2160	2235	482
		data used (%)	63.2	48.7	96.7	99.9	99.9	100	99.9	99.9	100	100	100
		mean	2.90	2.70	3.81	7.27	11.58	15.93	22.63	22.30	18.57	13.31	8.29
		std dev	0.16	0.97	1.11	1.23	1.38	1.78	1.28	0.39	1.85	1.91	0.43
		min	2.13	0.50	1.72	5.95	9.06	13.11	20.08	21.13	15.65	9.44	7.80
		max	3.20	3.54	5.98	10.12	13.59	20.34	25.14	23.57	21.13	16.94	9.44
T2. Metaline Pool (depth 1)	1, 0.3 [1], 0.6 [2]	n	Buoy removed for winter			1330	2230	2160	2230	2231	2158	2234	458
		data used (%)				100	99.8	100	99.8	99.8	99.9	100	100
		mean				8.01	11.71	15.99	22.71	22.36	18.64	13.35	8.34
		std dev				1.40	1.34	1.77	1.27	0.46	1.85	1.92	0.43
		min				6.03	9.06	13.14	20.13	20.98	15.63	9.41	7.85
		max				11.10	13.79	20.58	25.48	23.64	21.44	17.13	9.39
T2. Metaline Pool (depth 2)	3, 2.3 [1], 2.7 [3]	n	Buoy removed for winter			1331	2231	2160	2229	2232	2159	2235	458
		data used (%)				100	99.8	100	99.7	99.9	100	100	100
		mean				7.86	11.69	16.01	22.72	22.36	18.63	13.37	8.37
		std dev				1.33	1.37	1.77	1.27	0.45	1.85	1.90	0.43
		min				6.05	9.09	13.14	20.15	21.03	15.65	9.44	7.87
		max				10.39	13.67	20.65	25.40	23.52	21.44	17.01	9.41
T2. Metaline Pool (depth 3)	5, 4.3 [1], 4.9 [4]	n	Buoy removed for winter			1330	2231	2160	2230	2230	2159	2235	459
		data used (%)				100	99.8	100	99.8	99.8	100	100	100
		mean				7.84	11.67	16.00	22.70	22.34	18.62	13.36	8.35
		std dev				1.33	1.38	1.77	1.27	0.45	1.85	1.91	0.43
		min				6.03	9.06	13.14	20.15	21.01	15.65	9.44	7.85
		max				10.37	13.69	20.56	25.38	23.55	21.39	17.01	9.41
T2. Metaline Pool (depth 4)	7, 6.3 [1], 7.3 [5]	n	Buoy removed for winter			1331	2231	2160	2229	2230	2159	2235	458
		data used (%)				100	99.8	100	99.7	99.8	100	100	100
		mean				7.90	11.71	16.04	22.72	22.36	18.64	13.39	8.40
		std dev				1.33	1.38	1.77	1.27	0.45	1.84	1.90	0.42
		min				6.08	9.11	13.19	20.17	21.06	15.68	9.46	7.90

Table 3. 2006 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06
		max				10.47	13.71	20.63	25.40	23.55	21.41	17.03	9.46

Table 3. 2006 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06
T2. Metaline Pool (depth 5)	9, 8.3 [1], 9.1 [6]	n	Buoy removed for winter			1331	2231	2160	2229	2229	2159	2235	458
		data used (%)				100	99.8	100	99.7	99.8	100	100	100
		mean				7.82	11.63	15.97	22.65	22.28	18.56	13.31	8.32
		std dev				1.33	1.38	1.77	1.27	0.45	1.84	1.90	0.42
		min				6.00	9.04	13.09	20.10	20.96	15.61	9.39	7.82
		max				10.37	13.67	20.51	25.33	23.47	21.34	16.96	9.39
T3. Sullivan Creek Down	0.6, 0.5 [7]	n	2232	2016	2232	2149	691	1687	2231	2232	2159	2235	527
		data used (%)	99.9	100	99.9	99.5	30.9	78.1	99.8	99.9	100	100	100
		mean	2.49	1.65	2.92	5.03	5.27	10.91	15.73	15.01	12.73	11.10	7.35
		std dev	0.21	0.93	0.77	0.80	0.63	1.55	1.07	0.91	1.40	1.29	0.32
		min	1.70	-0.03	1.13	3.43	3.96	8.49	13.59	12.80	9.83	7.17	6.79
		max	2.98	3.33	4.90	7.37	6.54	14.89	18.89	17.13	15.92	13.38	7.95
T3. Sullivan Creek Down (duplicate)	0.5	n	Prior to install of duplicate probe							2190	407	Unable to retrieve and download due to high flows	
		data used (%)								100	100		
		mean								14.95	13.88		
		std dev								0.91	0.90		
		min								12.73	11.95		
		max								17.06	15.63		
T4. Sullivan Creek Up	0.9	n	2232	2016	2232	2157	2232	2160	2231	2232	2160	2235	477
		data used (%)	99.9	100	99.9	99.9	99.9	100	99.8	99.9	100	100	100
		mean	1.56	0.78	2.00	3.69	4.88	7.56	11.74	11.23	9.19	5.70	2.82
		std dev	0.35	0.91	1.03	0.92	0.98	1.58	1.51	1.23	1.36	1.68	1.36
		min	0.47	-0.06	-0.03	1.83	2.66	5.39	8.77	8.32	6.28	0.72	0.69
		max	2.32	3.04	4.74	6.61	7.19	12.68	15.70	14.17	12.65	9.04	5.80
T4. Sullivan Creek Up (duplicate)	0.9	n	Prior to install of duplicate probe			1384	2232	2160	2232	2231	2159	2235	478
		data used (%)				100	99.9	100	99.9	99.8	100	100	100
		mean				3.81	4.61	7.42	11.74	11.23	9.20	5.69	2.80
		std dev				0.99	0.93	1.69	1.52	1.23	1.35	1.68	1.36
		min				1.91	2.58	4.97	8.74	8.32	6.36	0.69	0.66
		max				6.66	7.19	12.34	15.72	14.17	12.70	9.04	5.77
T5. Slate Creek	1	n	Probe not recovered				2108	1974	1420	2231	2159	2235	476
		data used (%)					100	91.4	63.5	99.8	100	100	100
		mean					5.06	7.36	10.87	10.20	8.60	5.38	2.32
		std dev					0.84	1.08	1.08	0.78	1.13	1.62	1.44
		min					3.04	5.67	8.20	8.37	5.95	0.47	-0.06
		max					7.29	11.37	13.14	12.07	11.25	8.34	5.41

Table 3. 2006 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06

Table 3. 2006 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06
T6. Slate Pool (depth 1)	1, 0.5 [8]	n	Buoy removed for winter			1333	99	Probe exposed to air temps.	23	2231	2158	2231	468
		data used (%)				100	4.4		1	99.8	99.9	99.8	100
		mean				7.74	10.02		23.37	22.25	18.62	13.29	8.28
		std dev				1.32	0.17		0.19	0.45	1.85	1.92	0.47
		min				5.92	9.63		23.04	20.77	15.49	9.51	7.75
		max				10.22	10.30		23.81	23.86	21.39	16.92	9.51
T6. Slate Pool (depth 2)	11	n	Buoy removed for winter			1333	2228	2159	2231	2231	2158	2232	468
		data used (%)				100	99.7	100	99.8	99.8	99.9	99.9	100
		mean				7.74	11.58	15.90	22.66	22.28	18.67	13.39	8.39
		std dev				1.32	1.35	1.76	1.26	0.44	1.83	1.91	0.47
		min				5.92	8.94	12.99	20.17	20.87	15.70	9.63	7.87
		max				10.25	13.59	20.51	25.23	23.64	21.10	16.99	9.63
T6. Slate Pool (depth 3)	21	n	Buoy removed for winter			1333	2229	2159	2230	2231	2159	2232	468
		data used (%)				100	99.7	100	99.8	99.8	100	99.9	100
		mean				7.78	11.55	15.88	22.64	22.25	18.64	13.38	8.38
		std dev				1.32	1.35	1.76	1.26	0.44	1.83	1.91	0.47
		min				5.95	8.87	12.99	20.15	20.82	15.68	9.61	7.85
		max				10.30	13.57	20.48	25.21	23.64	21.08	16.96	9.58
T6. Slate Pool (depth 4)	31	n	Buoy removed for winter			1333	2229	2159	2230	2231	2159	2232	468
		data used (%)				100	99.7	100	99.8	99.8	100	99.9	100
		mean				7.83	11.46	15.80	22.60	22.19	18.60	13.34	8.34
		std dev				1.32	1.34	1.77	1.26	0.44	1.83	1.91	0.47
		min				6.00	8.62	12.78	20.10	20.77	15.65	9.58	7.80
		max				10.32	13.52	20.44	25.16	23.62	21.06	16.94	9.56
T6. Slate Pool (depth 5)	41	n	Buoy removed for winter			1333	2229	2159	2231	2231	2159	2232	468
		data used (%)				100	99.7	100	99.8	99.8	100	99.9	100
		mean				7.84	11.11	15.47	22.37	21.85	18.46	13.28	8.29
		std dev				1.32	1.34	1.80	1.28	0.43	1.80	1.90	0.47
		min				6.03	8.07	12.07	19.56	20.32	15.46	9.53	7.70
		max				10.35	13.45	20.34	25.09	23.40	20.79	16.87	9.51
T7. Boundary Intake (depth 1)	5, 0.1 [9], 2.7 [10]	n	779	Probe exposed to air temps.	944	277	2002	1779	2225	2231	2157	2205	449
		data used (%)	34.9		42.2	12.8	89.6	82.4	99.5	99.8	99.9	98.7	100
		mean	2.47		4.67	6.09	11.53	16.10	22.44	22.41	19.18	13.58	8.71
		std dev	0.65		0.77	0.25	1.29	1.62	1.20	0.52	1.82	1.95	0.71
		min	1.04		3.38	5.72	9.16	14.07	19.96	21.82	15.94	10.15	7.87
		max	3.14		5.75	6.59	13.64	20.10	24.29	24.29	21.82	16.68	10.15

Table 3. 2006 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06

Table 3. 2006 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06
T7. Boundary Intake (depth 2)	11, 5.5 [11]	n	2197	1974	2227	2154	1760	1779	2226	2231	2157	2233	449
		data used (%)	98.3	97.9	99.6	99.7	78.7	82.4	99.6	99.8	99.9	99.9	100
		mean	2.88	2.14	3.69	7.31	11.34	16.19	22.55	22.52	19.29	13.69	8.82
		std dev	0.47	1.19	1.16	1.19	1.31	1.61	1.21	0.52	1.83	1.94	0.72
		min	1.21	0.38	0.77	5.80	9.26	14.17	20.08	21.94	16.06	10.25	8.00
		max	3.27	3.67	5.80	10.37	13.55	20.17	25.04	24.39	21.94	16.80	10.25
T7. Boundary Intake (depth 3)	17, 8.2 [12]	n	2232	2016	2232	2152	1758	1779	2226	2231	2156	2234	447
		data used (%)	99.9	100	99.9	99.6	78.7	82.4	99.6	99.8	99.8	100	100
		mean	2.78	2.05	3.58	7.27	11.25	16.10	22.47	22.45	19.20	13.60	8.73
		std dev	0.45	1.18	1.14	1.21	1.30	1.61	1.21	0.52	1.83	1.94	0.72
		min	1.10	0.27	0.72	5.67	9.19	14.10	20.01	21.87	15.99	10.15	7.90
		max	3.17	3.56	5.69	10.10	13.76	20.06	24.94	24.32	21.84	16.70	10.15
T7. Boundary Intake (depth 4)	23, 11 [13]	n	2232	2016	2232	2154	2228	2147	2227	2231	2156	2232	452
		data used (%)	99.9	100	99.9	99.7	99.7	99.4	99.6	99.8	99.8	99.9	100
		mean	2.80	2.07	3.60	7.28	11.60	15.82	22.47	22.44	19.18	13.63	8.76
		std dev	0.43	1.18	1.14	1.21	1.32	1.63	1.21	0.51	1.84	1.93	0.73
		min	1.13	0.30	0.72	5.69	9.21	11.86	20.03	21.87	15.99	10.22	7.92
		max	3.20	3.59	5.69	10.15	13.69	20.08	24.90	24.32	21.87	16.73	10.22
T7. Boundary Intake (depth 5)	29, 13.7 [14]	n	Probe not recovered				1655	1778	2226	2231	2156	2232	452
		data used (%)					77.9	82.3	99.6	99.8	99.8	99.9	100
		mean					11.34	16.11	22.46	22.42	19.12	13.60	8.72
		std dev					1.31	1.61	1.20	0.50	1.85	1.93	0.73
		min					9.19	14.10	20.03	21.87	15.96	10.20	7.90
		max					13.74	20.06	24.82	24.29	21.87	16.70	10.20
T7. Boundary Intake (depth 6)	16.5	n	Prior to install of probe				1652	1779	2227	2231	2157	2234	448
		data used (%)					77.7	82.4	99.6	99.8	99.9	100	100
		mean					11.29	16.11	22.44	22.40	19.09	13.59	8.70
		std dev					1.31	1.61	1.19	0.49	1.84	1.92	0.71
		min					9.16	14.10	20.01	21.87	15.96	10.17	7.92
		max					13.79	20.08	24.80	24.29	21.87	16.68	10.17
T7. Boundary Intake (depth 7)	19.2	n	Prior to install of probe				Probe not recovered	1779	2227	2231	2157	2234	448
		data used (%)						82.4	99.6	99.8	99.9	100	100
		mean						16.14	22.45	22.42	19.10	13.61	8.70
		std dev						1.60	1.19	0.49	1.85	1.92	0.69
		min						14.12	20.06	21.89	15.99	10.17	7.95

Table 3. 2006 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06
		max						20.13	24.80	24.32	21.89	16.68	10.20

Table 3. 2006 Monthly Temperature Summary for Eight Monitoring Stations at Various Depths

Station Name	Depth (meters)		Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06
T8. Boundary Tailrace	5	n	2232	2005	2232	887		1658	1298	556	1904	2235	455
		data used (%)	99.9	99.5	99.9	100		98.5	58.1	24.9	88.1	100	100
		mean	2.86	2.12	3.66	6.96	Probe not	16.14	22.04	22.27	18.90	13.59	8.68
		std dev	0.44	1.19	1.15	1.75	recovered	1.57	0.99	0.53	1.71	1.94	0.71
		min	1.18	0.36	0.77	5.77		14.07	19.94	21.10	15.99	10.17	7.90
		max	3.27	4.61	5.80	19.20		20.08	25.04	24.58	21.75	16.70	10.22
T8. Boundary Tailrace (duplicate)	5	n	2232	2005	2232	887				2187	2160	2184	457
		data used (%)	99.9	99.5	99.9	100				100	100	97.7	100
		mean	2.81	2.07	3.61	6.92	Probe not	Prior to re-installation		22.33	19.11	13.53	8.69
		std dev	0.44	1.19	1.15	1.79	recovered	of duplicate probe		0.47	1.80	1.94	0.72
		min	1.13	0.30	0.72	5.72				21.49	15.92	8.37	7.87
		max	3.22	4.35	5.72	18.68				24.24	21.75	16.70	10.42

[1] Reinstalled on 4/12/2006 at a depth 0.7 m shallower than in 2005.

[2] Reinstalled with a stronger set-up on 5/2/2006 at a new depth of 0.6 m.

[3] Reinstalled with a stronger set-up on 5/2/2006 at a new depth of 2.7 m.

[4] Reinstalled with a stronger set-up on 5/2/2006 at a new depth of 4.9 m.

[5] Reinstalled with a stronger set-up on 5/2/2006 at a new depth of 7.3 m.

[6] Reinstalled with a stronger set-up on 5/2/2006 at a new depth of 9.1 m.

[7] Depth moved from 0.6 m to 0.5 m on 4/11/2006.

[8] Depth moved from 1 m to 0.5 m on 4/12/2006.

[9] Depth moved from 5 m to 0.1 m on 4/12/2006.

[10] Reinstalled with a stronger set-up on 5/2/2006 at a new depth of to 2.7 m.

[11] Reinstalled with a stronger set-up on 5/2/2006 at a new depth of 5.5 m.

[12] Reinstalled with a stronger set-up on 5/2/2006 at a new depth of 8.2 m.

[13] Reinstalled with a stronger set-up on 5/2/2006 at a new depth of to 11 m.

[14] Reinstalled with a stronger set-up on 5/2/2006 at a new depth of 13.7 m.

A.2. Flagged Temperature Data Summary

TABLE 1. BOUNDARY TEMPERATURE MONITORING DATA REVIEW
HOBO TEMPERATURE DATALOGGER FLAGGED DATA 2004

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
T1	779143	7/22/2004	14:31	7/22/2004	14:31	Temp settling following installation
T2	779147	11/2/2004	9:02	11/2/2004	9:02	Downloaded approx. 9:00/Redeployed 9:30 11/2/2004
	779146	11/2/2004	9:02	11/2/2004	9:02	Downloaded approx. 9:00/Redeployed 9:30 11/2/2004
T3	780971	11/1/2004	14:49	11/1/2004	14:49	Downloaded approx. 14:50/Redeployed 15:00 11/1/2004
T5	780970	11/2/2004	9:31	11/2/2004	9:38	Downloaded approx. 9:30/Redeployed 9:40 11/2/2004
T7	779148	9/23/2004	21:39	9/23/2004	21:39	Logger likely recording air temps
	779148	9/26/2004	18:59	9/26/2004	18:59	Logger likely recording air temps
	779148	11/1/2004	13:59	11/1/2004	13:59	Downloaded approx. 13:55/Redeployed 14:15 11/1/2004
	779150	11/1/2004	13:58	11/1/2004	13:58	Downloaded approx. 13:55/Redeployed 14:15 11/1/2004
	780972	11/1/2004	14:00	11/1/2004	14:00	Downloaded approx. 13:55/Redeployed 14:15 11/1/2004
	780972	9/17/2004	17:40	9/17/2004	21:00	Logger likely recording air temps
	780972	brief periods 9/20/2004 through 10/9/2004				Logger likely recording air temps (see data for exact times)
	780972	10/14/2004	18:40	10/14/2004	21:20	Logger likely recording air temps
	780972	10/15/2004	20:20	10/15/2004	20:40	Logger likely recording air temps
	780972	brief periods 10/19/2004 throughout 10/21/2004				Logger likely recording air temps (see data for exact times)
	780972	10/23/2004	19:20	10/23/2004	22:00	Logger likely recording air temps
	780972	brief periods 10/26/2004 throughout 10/30/2004				Logger likely recording air temps (see data for exact times)
	780972	11/1/2004	14:00	11/1/2004	14:00	Logger likely recording air temps
	780972	11/24/2004	18:20	11/24/2004	18:40	Logger likely recording air temps
	780972	12/8/2004	21:40	12/8/2004	21:40	Logger likely recording air temps
	780972	brief periods 12/11/2004 throughout 12/12/2004				Logger likely recording air temps (see data for exact times)
	780972	brief periods 12/17/2004 throughout 12/19/2004				Logger likely recording air temps (see data for exact times)
	780972	brief periods 12/21/2004 throughout 12/22/2004				Logger likely recording air temps (see data for exact times)
	780972	brief periods throughout 12/24/2004				Logger likely recording air temps (see data for exact times)
	780972	12/28/2004	17:00	12/28/2004	20:00	Logger likely recording air temps
	780972	12/31/2004	21:20	12/31/2004	21:40	Logger likely recording air temps
	780974	11/1/2004	13:58	11/1/2004	13:58	Downloaded approx. 13:55/Redeployed 14:15 11/1/2004

TABLE 1. BOUNDARY TEMPERATURE MONITORING DATA REVIEW
HOBO TEMPERATURE DATALOGGER FLAGGED DATA 2004

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
	780977	brief periods throughout 7/27/2004				Logger likely recording air temps (see data for exact times)
	780977	brief periods 8/30/2004 throughout 9/4/2004				Logger likely recording air temps (see data for exact times)
	780977	brief periods 9/17/2004 throughout 9/18/2004				Logger likely recording air temps (see data for exact times)
	780977	brief periods 9/20/2004 throughout 11/7/2004				Logger likely recording air temps (see data for exact times)
	780977	11/1/2004	14:00	11/1/2004	14:00	Downloaded approx. 13:55/Redeployed 14:15 11/1/2004
	780977	brief periods 11/19/2004 throughout 11/20/2004				Logger likely recording air temps (see data for exact times)
	780977	brief periods 11/24/2004 throughout 11/27/2004				Logger likely recording air temps (see data for exact times)
	780977	brief periods 11/29/2004 throughout 11/30/2004				Logger likely recording air temps (see data for exact times)
	780977	brief periods 12/2/2004 throughout 12/4/2004				Logger likely recording air temps (see data for exact times)
	780977	brief periods 12/8/2004 throughout 12/25/2004				Logger likely recording air temps (see data for exact times)
	780977	brief periods 12/27/2004 throughout 12/28/2004				Logger likely recording air temps (see data for exact times)
	780977	brief periods throughout 12/31/2004				Logger likely recording air temps (see data for exact times)

* All times are Pacific Standard

TABLE 2. BOUNDARY TEMPERATURE MONITORING DATA REVIEW
HOBO TEMPERATURE DATALOGGER FLAGGED DATA 2005

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
T1	779143	3/5/2005	18:51	3/6/2005	3:51	Logger twisted by turbulence, found on water surface.
	779143	3/10/2005	22:31	3/10/2005	23:31	Logger twisted by turbulence, found on water surface.
	779143	3/11/2005	22:11	3/12/2005	5:31	Logger twisted by turbulence, found on water surface.
	779143	3/12/2005	9:31	3/12/2005	10:51	Logger twisted by turbulence, found on water surface.
	779143	3/12/2005	19:11	3/13/2005	10:31	Logger twisted by turbulence, found on water surface.
	779143	3/13/2005	12:31	3/13/2005	12:51	Logger twisted by turbulence, found on water surface.
	779143	3/16/2005	18:11	3/17/2005	6:31	Logger twisted by turbulence, found on water surface.
	779143	3/17/2005	8:11	3/17/2005	11:51	Logger twisted by turbulence, found on water surface.
	779143	3/17/2005	17:31	3/18/2005	7:11	Logger twisted by turbulence, found on water surface.
	779143	3/18/2005	12:31	3/18/2005	15:51	Logger twisted by turbulence, found on water surface.
	779143	3/18/2005	16:31	3/19/2005	1:11	Logger twisted by turbulence, found on water surface.
	779143	3/19/2005	17:51	3/20/2005	6:11	Logger twisted by turbulence, found on water surface.
	779143	3/24/2005	20:11	3/25/2005	0:31	Logger twisted by turbulence, found on water surface.
	779143	3/26/2005	22:11	3/27/2005	1:11	Logger twisted by turbulence, found on water surface.
	779143	4/14/2005	12:44	4/14/2005	12:44	Downloaded approx. 12:45/Redeployed 12:50 4/14/2005
	779143	various times from 7/27/2005 through 11/2/2005				Logger likely recording air temps (see data for exact times)
	779143	11/15/2005	13:04	11/15/2005	13:04	Downloaded approx. 13:00 11/15/2005
	779143	11/15/2005	14:00	11/15/2005	14:00	Redeployed approx. 13:40 11/15/2005
T1 Dup	780978	4/14/2005	12:47	4/14/2005	12:47	Downloaded approx. 12:45/Redeployed 12:50 4/14/2005
	780978	7/3/2005	19:27	7/4/2005	3:47	Logger twisted by turbulence, found on water surface.
	780978	7/4/2005	16:47	7/5/2005	3:07	Logger twisted by turbulence, found on water surface.
	780978	7/6/2005	22:27	7/7/2005	6:47	Logger twisted by turbulence, found on water surface.
	780978	7/7/2005	14:27	11/15/2005	13:07	Logger twisted by turbulence, found on water surface.
	780978	11/15/2005	13:27	11/15/2005	13:27	Downloaded approx. 13:30 11/15/2005
	780978	11/15/2005	14:00	11/15/2005	14:00	Redeployed approx 13:40 11/15/2005
	780978	12/29/2005	21:20	12/31/2005	23:40	Logger likely exposed to air temps.
T2	780976	11/15/2005	15:00	11/15/2005	15:00	Downloaded approx. 15:00 11/15/2005/Not redeployed
T6	902034	8/8/2005	14:17	8/8/2005	14:17	Temp. settling post install
	779152	7/13/2005	8:30	8/8/2005	14:30	Buoy swept into trash rack due to high flows, likely air temps.
	780973	7/13/2005	10:13	8/8/2005	14:17	Buoy swept into trash rack due to high flows, likely air temps.
	780969	7/13/2005	8:32	8/8/2005	14:12	Buoy swept into trash rack due to high flows, likely air temps.
	779144	7/11/2005	8:50	8/8/2005	14:10	Buoy swept into trash rack due to high flows, likely air temps.
	779149	7/13/2005	10:44	8/8/2005	14:24	Buoy swept into trash rack due to high flows, likely air temps.

TABLE 2. BOUNDARY TEMPERATURE MONITORING DATA REVIEW
HOBO TEMPERATURE DATALOGGER FLAGGED DATA 2005

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
T7	779148	4/14/2005	10:59	4/14/2005	11:40	Downloaded approx. 11:00/Redeployed 11:30 4/14/2005
	779148	11/16/2005	12:00	11/16/2005	12:00	Downloaded approx. 12:00 11/16/2005
	779148	11/16/2005	12:20	11/16/2005	12:20	Redeployed approx. 12:15 11/16/2005
	779148	12/21/2005	11:00	12/21/2005	13:40	Logger likely exposed to air temps.
	779150	4/14/2005	10:58	4/14/2005	11:37	Downloaded approx. 11:00/Redeployed 11:30 4/14/2005
	779150	11/16/2005	11:57	11/16/2005	11:57	Downloaded approx. 12:00 11/16/2005
	779150	11/16/2005	12:20	11/16/2005	12:20	Redeployed approx. 12:15 11/16/2005
	779150	12/20/2005	16:00	12/21/2005	16:00	Logger likely exposed to air temps.
	780972	1/4/2005	21:20	1/4/2005	21:40	Logger likely recording air temps
	780972	brief periods 2/25/2005 throughout 2/26/2005				Logger likely recording air temps (see data for exact times)
	780972	3/16/2005	20:20	3/16/2005	20:20	Logger likely recording air temps
	780972	3/19/2005	16:20	3/19/2005	16:40	Logger likely recording air temps
	780972	3/29/2005	20:20	3/29/2005	21:00	Logger likely recording air temps
	780972	brief periods 4/1/2005 throughout 4/2/2005				Logger likely recording air temps (see data for exact times)
	780972	brief periods 4/8/2005 throughout 4/9/2005				Logger likely recording air temps (see data for exact times)
	780972	4/14/2005	11:00	4/14/2005	11:43	Downloaded approx. 11:00/Redeployed 11:30 4/14/2005
	780972	4/21/2005	13:03	4/21/2005	14:03	Logger likely recording air temps
	780972	brief periods throughout 4/23/2005				Logger likely recording air temps (see data for exact times)
	780972	brief periods 4/25/2005 throughout 4/30/2005				Logger likely recording air temps (see data for exact times)
	780972	brief periods 5/2/2005 throughout 5/7/2005				Logger likely recording air temps (see data for exact times)
	780972	brief periods 5/9/2005 throughout 5/25/2005				Logger likely recording air temps (see data for exact times)
	780972	6/21/2005	22:23	6/22/2005	0:43	Logger likely recording air temps
	780972	brief periods 6/23/2005 throughout 6/27/2005				Logger likely recording air temps (see data for exact times)
	780972	6/29/2005	21:03	6/29/2005	22:03	Logger likely recording air temps
	780972	brief periods 10/14/2005 throughout 10/15/2005				Logger likely recording air temps (see data for exact times)
	780972	11/16/2005	12:03	11/16/2005	12:03	Downloaded approx. 12:00/Redeployed 12:30 11/16/2005
	780972	11/26/2005	20:40	11/26/2006	21:00	Logger likely exposed to air temps.
	780972	12/20/2005	10:20	12/21/2005	13:40	Logger likely exposed to air temps.

TABLE 2. BOUNDARY TEMPERATURE MONITORING DATA REVIEW
HOBO TEMPERATURE DATALOGGER FLAGGED DATA 2005

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
	780974	4/14/2005	10:58	4/14/2005	10:58	Downloaded approx. 11:00/Redeployed 11:30 4/14/2005
	780977	brief periods 1/2/2005 throughout 1/7/2005				Logger likely recording air temps (see data for exact times)
	780977	1/15/2005	21:40	1/15/2005	21:40	Logger likely recording air temps
	780977	1/19/2005	16:40	1/19/2005	19:00	Logger likely recording air temps
	780977	brief periods 1/21/2005 throughout 2/5/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 2/7/2005 throughout 2/8/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 2/10/2005 throughout 2/16/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 2/18/2005 throughout 2/19/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 2/24/2005 throughout 2/26/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 3/3/2005 throughout 3/4/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 3/16/2005 throughout 3/17/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 3/19/2005 throughout 3/20/2005				Logger likely recording air temps (see data for exact times)
	780977	3/23/2005	20:20	3/23/2005	20:40	Logger likely recording air temps
	780977	3/26/2005	19:00	3/26/2005	19:20	Logger likely recording air temps
	780977	brief periods 3/28/2005 throughout 4/2/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 4/4/2005 throughout 4/5/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 4/7/2005 throughout 4/12/2005				Logger likely recording air temps (see data for exact times)
	780977	4/14/2005	11:00	4/14/2005	11:20	Downloaded approx. 11:00/Redeployed 11:20 4/14/2005
	780977	brief periods 4/14/2005 throughout 4/16/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 4/18/2005 throughout 5/31/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 6/2/2005 throughout 6/9/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 6/14/2005 throughout 6/16/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 6/18/2005 throughout 7/10/2005				Logger likely recording air temps (see data for exact times)
	780977	7/12/2005	17:06	7/12/2005	23:46	Logger likely recording air temps
	780977	brief periods 7/16/2005 throughout 7/17/2005				Logger likely recording air temps (see data for exact times)
	780977	7/27/2005	17:06	7/27/2005	18:46	Logger likely recording air temps
	780977	brief periods 8/2/2005 throughout 8/6/2005				Logger likely recording air temps (see data for exact times)
	780977	8/10/2005	19:46	8/10/2005	19:46	Logger likely recording air temps
	780977	8/13/2005	13:06	8/13/2005	18:26	Logger likely recording air temps
	780977	10/6/2005	17:26	10/6/2005	20:06	Logger likely recording air temps
	780977	brief periods 10/8/2005 throughout 10/9/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 10/11/2005 throughout 10/20/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 10/27/2005 throughout 10/28/2005				Logger likely recording air temps (see data for exact times)
	780977	brief periods 11/1/2005 throughout 11/5/2005				Logger likely recording air temps (see data for exact times)

TABLE 2. BOUNDARY TEMPERATURE MONITORING DATA REVIEW
HOBO TEMPERATURE DATALOGGER FLAGGED DATA 2005

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
	780977	11/8/2005	22:06	11/8/2005	23:46	Logger likely recording air temps
	780977	brief periods 11/10/2005 throughout 11/11/2005				Logger likely recording air temps (see data for exact times)
	780977	11/15/2005	17:26	11/15/2005	21:06	Logger likely recording air temps
	780977	11/16/2005	12:06	11/16/2005	12:06	Downloaded approx. 12:00/Redeployed 12:15 11/16/2005
	780977	11/22/2005	17:40	11/22/2005	17:40	Logger likely exposed to air temps.
	780977	11/25/2005	17:20	12/2/2005	21:40	Logger likely exposed to air temps.
	780977	12/15/2005	17:20	12/15/2005	21:00	Logger likely exposed to air temps.
	780977	12/20/2005	9:40	12/25/2005	21:40	Logger likely exposed to air temps.
T8	780970	9/2/2005	0:19	9/2/2005	7:59	Logger likely recording air temps
	780970	9/2/2005	23:59	9/3/2005	7:59	Logger likely recording air temps
	780970	9/9/2005	23:59	9/10/2005	9:19	Logger likely recording air temps
	780970	9/11/2005	21:59	9/12/2005	5:59	Logger likely recording air temps
	780970	9/13/2005	2:39	9/13/2005	4:59	Logger likely recording air temps
	780970	9/17/2005	1:59	9/17/2005	6:19	Logger likely recording air temps
	780970	9/18/2005	1:39	9/18/2005	10:59	Logger likely recording air temps
	780970	9/20/2005	0:59	9/20/2005	4:59	Logger likely recording air temps
	780970	9/22/2005	1:59	9/22/2005	5:39	Logger likely recording air temps
	780970	9/23/2005	1:59	9/23/2005	4:59	Logger likely recording air temps
	780970	12/2/2005	0:00	12/7/2005	3:00	Logger likely exposed to air temps.
	780970	12/16/2005	1:20	12/21/2005	5:00	Logger likely exposed to air temps.
T8 Dup	780971	9/2/2005	0:19	9/2/2005	7:59	Logger likely recording air temps
	780971	9/2/2005	23:59	9/3/2005	7:59	Logger likely recording air temps
	780971	9/10/2005	0:39	9/10/2005	9:19	Logger likely recording air temps
	780971	11/16/2005	7:59	11/16/2005	7:59	Downloaded approx. 8:00/Redeployed 8:15 11/16/2005
	780971	12/2/2005	0:00	12/6/2005	5:00	Logger likely exposed to air temps.
	780971	12/16/2005	1:40	12/21/2005	4:40	Logger likely exposed to air temps.

* All times are Pacific Standard

TABLE 3. BOUNDARY TEMPERATURE MONITORING DATA REVIEW
HOBO TEMPERATURE DATALOGGER FLAGGED DATA 2006

Station	Serial Number of DataLogger	Flagged Data Range				Notes About Flagged Data
		Start Date	Start Time*	End Date	End Time*	
T1	779143	3/13/2006	13:40	3/14/2006	13:00	Logger likely exposed to air temps.
	780973	7/12/2006	5:02	7/12/2006	5:02	Logger Retrieved approx. 5:00/ Redeployed 5:15
	780973	9/7/2006	11:22	9/21/2006	9:42	Logger Retrieved approx. 11:20/Sent to Onset for repair and data retrieval. Logger replaced on 9/7/2006 with SN 779143
T1 Dup	780978	1/1/2006	0:00	1/10/2006	3:40	Logger likely exposed to air temps.
	780978	1/25/2006	19:40	1/28/2006	0:40	Logger likely exposed to air temps.
	780978	2/11/2006	22:00	2/26/2006	6:20	Logger likely exposed to air temps.
	780978	3/13/2006	13:40	3/14/2006	12:40	Logger likely exposed to air temps.
	780978	4/11/2006	15:20	4/11/2006	15:20	Downloaded approx. 15:20 4/11/2006/Not redeployed
T2	902029	5/2/2006	13:21	5/2/2006	13:21	Logger Retrieved 12:30/Redeployed 13:35
	902029	7/12/2006	8:21	7/12/2006	8:41	Logger Retrieved approx. 8:30/ Redeployed 9:00
	902029	8/1/2006	8:41	8/1/2006	8:41	Logger Retrieved approx. 8:45/ Redeployed 8:55
	902029	9/6/2006	8:21	9/6/2006	8:21	Logger Retrieved approx. 8:40/ Redeployed 9:10
	902029	9/6/2006	8:41	9/6/2006	8:41	Downloaded approx. 8:20/Redeployed approx. 8:40 9/6/2006
	902029	10/4/2006	9:21	10/4/2006	9:21	Anomalous reading, possibly exposed to air temps.
	902030	5/2/2006	13:15	5/2/2006	13:15	Logger Retrieved 12:30/Redeployed 13:35
	902030	7/12/2006	8:15	7/12/2006	8:15	Logger Retrieved 8:30/Redeployed 9:00
	902030	7/12/2006	8:15	7/12/2006	8:55	Logger Retrieved approx. 8:30/ Redeployed 9:00
	902030	9/6/2006	8:35	9/6/2006	8:35	Downloaded approx. 8:20/Redeployed approx. 8:40 9/6/2006
	902031	5/2/2006	13:20	5/2/2006	13:20	Logger Retrieved 12:30/Redeployed 13:35
	902031	7/12/2006	8:20	7/12/2006	8:20	Logger Retrieved 8:30/Redeployed 9:00
	902031	7/12/2006	8:20	7/12/2006	8:40	Logger Retrieved approx. 8:30/ Redeployed 9:00
	902031	8/1/2006	8:40	8/1/2006	9:00	Logger Retrieved approx. 8:45/ Redeployed 8:55
	902031	9/6/2006	8:40	9/6/2006	8:40	Downloaded approx. 8:20/Redeployed approx. 8:40 9/6/2006
	902033	5/2/2006	13:17	5/2/2006	13:17	Logger Retrieved 12:30/Redeployed 13:35
	902033	7/12/2006	8:17	7/12/2006	8:17	Logger Retrieved 8:30/Redeployed 9:00
	902033	7/12/2006	8:17	7/12/2006	8:57	Logger Retrieved approx. 8:30/ Redeployed 9:00
	902033	8/1/2006	8:37	8/1/2006	8:57	Logger Retrieved approx. 8:45/ Redeployed 8:55
	902033	9/6/2006	8:37	9/6/2006	8:37	Downloaded approx. 8:20/Redeployed approx. 8:40 9/6/2006

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
	902034	5/2/2006	13:19	5/2/2006	13:19	Logger Retrieved 12:30/Redeployed 13:35
	902034	7/12/2006	8:19	7/12/2006	8:19	Logger Retrieved 8:30/Redeployed 9:00
	902034	7/12/2006	8:19	7/12/2006	8:59	Logger Retrieved approx. 8:30/ Redeployed 9:00
	902034	8/1/2006	8:39	8/1/2006	9:19	Logger Retrieved approx. 8:45/ Redeployed 8:55
	902034	9/6/2006	8:39	9/6/2006	8:39	Logger Retrieved approx. 8:40/ Redeployed 9:10
T3	779152	5/10/2006	14:22	6/7/2006	13:22	Probe was found out of water on bank on 6/7/06
	779152	7/12/2006	12:22	7/12/2006	12:22	Logger Retrieved 12:18/Redeployed 12:27
	779152	9/6/2006	15:42	9/6/2006	15:42	Logger Retrieved 15:35/ Redeployed 15:55
	1021140	7/3/2006	15:04	8/1/2006	13:44	Prior to install
	1021140	9/6/2006	15:44	9/6/2006	15:44	Logger Retrieved 15:35/ Redeployed 15:55
T4	779145	4/11/2006	18:20	4/11/2006	18:20	Downloaded approx. 18:20 4/11/2006/Not redeployed
	779149	7/12/2006	7:17	7/12/2006	7:17	Logger Retrieved 7:15/ Redeployed 7:30
	779149	8/1/2006	12:57	8/1/2006	12:57	Logger Retrieved 12:57/ Redeployed 13:05
	779149	9/7/2006	7:17	9/7/2006	7:17	Downloaded approx. 7:00/Redeployed approx. 7:15 9/7/2006
	902028	7/12/2006	7:16	7/12/2006	7:16	Logger Retrieved 7:15/ Redeployed 7:30
T5	779145	6/28/2006	10:18	7/12/2006	6:38	Probe was found out of water on 7/12/06
	779145	7/12/2006	6:38	7/12/2006	6:38	Logger Retrieved 6:35/ Redeployed 6:45
	779145	8/1/2006	17:58	8/1/2006	17:58	Logger Retrieved 17:50/ Redeployed 18:05
	779145	9/7/2006	6:38	9/7/2006	6:38	Logger Retrieved 6:30/ Redeployed 6:50
T6	980083	5/2/2006	9:10	7/11/2006	10:50	Station located at shallowest position along buoy profile station - potential influence of direct sunlight may be causing noise in data
	980083	7/11/2006	10:30	7/11/2006	11:10	Logger Retrieved 10:10/ Redeployed 10:50
	980083	7/11/2006	11:30	7/31/2006	16:10	Daily fluctuations greater than expected. Logger is closest to surface.
	980083	8/1/2006	10:10	8/1/2006	10:10	Logger Retrieved 10:05/ Redeployed 10:10
	980083	9/6/2006	10:10	9/6/2006	10:30	Logger Retrieved 10:00/ Redeployed 10:30
	980083	9/6/2006	10:30	9/6/2006	10:30	Downloaded approx. 10:20/Redeployed approx. 10:30 9/6/2006
	980083	10/4/2006	11:10	10/4/2006	11:10	Anomalous reading, possibly exposed to air temps.

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
	980084	5/2/2006	9:34	5/2/2006	9:54	Logger Retrieved 8:45/ Redeployed 10:10
	980084	6/6/2006	11:14	6/6/2006	11:14	Logger Retrieved/Redeployed approx 11:00
	980084	7/11/2006	10:54	7/11/2006	10:54	Logger Retrieved/Redeployed approx 11:00
	980084	7/11/2006	10:54	7/11/2006	11:00	Logger Retrieved 10:10/ Redeployed 10:50
	980084	8/1/2006	10:14	8/1/2006	10:14	Logger Retrieved 10:05/ Redeployed 10:10
	980084	9/6/2006	10:14	9/6/2006	10:30	Logger Retrieved 10:00/ Redeployed 10:30
	980084	9/6/2006	10:30	9/6/2006	10:30	Downloaded approx. 10:20/Redeployed approx. 10:30 9/6/2006
	980089	5/2/2006	8:53	5/2/2006	9:53	Logger Retrieved 8:45/ Redeployed 10:10
	980089	6/6/2006	11:13	6/6/2006	11:13	Logger Retrieved/Redeployed approx 11:00
	980089	7/11/2006	10:53	7/11/2006	10:53	Logger Retrieved 10:10
	980089	7/11/2006	10:53	7/11/2006	11:13	Logger Retrieved 10:10/ Redeployed 10:50
	980089	8/1/2006	10:13	8/1/2006	10:13	Logger Retrieved 10:05/ Redeployed 10:10
	980089	9/6/2006	10:13	9/6/2006	10:13	Logger Retrieved 10:00/ Redeployed 10:30
	980090	5/2/2006	9:12	5/2/2006	9:32	Logger Retrieved 8:45/ Redeployed 10:10
	980090	6/6/2006	11:12	6/6/2006	11:12	Logger Retrieved/Redeployed approx 11:00
	980090	7/11/2006	10:52	7/11/2006	10:52	Logger Retrieved/Redeployed approx 10:45
	980090	7/11/2006	10:52	7/11/2006	11:12	Logger Retrieved 10:10/ Redeployed 10:50
	980090	8/1/2006	10:12	8/1/2006	10:12	Logger Retrieved 10:05/ Redeployed 10:10
	980090	9/6/2006	10:11	9/6/2006	10:11	Logger Retrieved 10:00/ Redeployed 10:30
	980090	9/6/2006	10:12	9/6/2006	10:12	Downloaded approx. 9:50/Redeployed approx. 10:10 9/6/2006
	980091	5/2/2006	8:31	5/2/2006	11:51	Logger Retrieved 8:45/ Redeployed 10:10
	980091	6/6/2006	11:11	6/6/2006	11:11	Retrieval Time Not Recorded/Redeployed 10:00
	980091	7/11/2006	10:51	7/11/2006	10:51	Logger Retrieved/Redeployed approx 10:45
	980091	7/11/2006	10:51	7/11/2006	10:54	Logger Retrieved 10:10/ Redeployed 10:50
	980091	8/1/2006	10:11	8/1/2006	10:11	Logger Retrieved 10:05/ Redeployed 10:10
	980091	9/6/2006	10:08	9/6/2006	10:08	Logger Retrieved 10:00/ Redeployed 10:30
	980091	9/6/2006	10:11	9/6/2006	10:11	Downloaded approx. 9:50/Redeployed approx. 10:10 9/6/2006

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
T7	779148	4/12/2006	9:20	4/12/2006	10:00	Downloaded approx. 9:30 4/12/2006/Not redeployed
	780972	1/16/2006	18:20	1/16/2006	22:00	Logger likely exposed to air temps.
	780972	1/18/2006	19:00	1/18/2006	22:00	Logger likely exposed to air temps.
	780972	1/19/2006	19:00	1/19/2006	21:20	Logger likely exposed to air temps.
	780972	1/25/2006	20:20	1/25/2006	20:20	Logger likely exposed to air temps.
	780972	1/28/2006	21:00	1/28/2006	22:00	Logger likely exposed to air temps.
	780972	2/4/2006	20:20	2/4/2006	22:00	Logger likely exposed to air temps.
	780972	2/6/2006	19:00	2/6/2006	21:20	Logger likely exposed to air temps.
	780972	2/8/2006	20:20	2/8/2006	22:00	Logger likely exposed to air temps.
	780972	2/11/2006	20:20	2/11/2006	22:00	Logger likely exposed to air temps.
	780972	2/16/2006	19:00	2/16/2006	20:00	Logger likely exposed to air temps.
	780972	2/17/2006	18:00	2/17/2006	21:00	Logger likely exposed to air temps.
	780972	2/18/2006	20:40	2/18/2006	21:00	Logger likely exposed to air temps.
	780972	3/3/2006	18:40	3/3/2006	19:00	Logger likely exposed to air temps.
	780972	3/7/2006	21:20	3/7/2006	22:00	Logger likely exposed to air temps.
	780972	4/8/2006	17:40	4/8/2006	17:40	Logger likely exposed to air temps.
	780972	4/12/2006	9:20	4/12/2006	10:00	Downloaded approx. 9:30 4/12/2006/Not redeployed
	780972	5/25/2006	12:14	6/6/2006	6:54	Tangled line at site. DataLogger Retrieved at 5:50/ Redeployed 6:30
	780972	7/11/2006	5:54	7/11/2006	6:14	Logger Retrieved 6:10
	780972	7/11/2006	5:54	7/11/2006	7:34	Logger Retrieved approx 5:36/ Redeployed 7:20
	780972	8/1/2006	15:34	8/1/2006	15:34	Logger Retrieved 15:33/ Redeployed 15:43
	780972	9/6/2006	6:14	9/6/2006	6:14	Logger Retrieved 5:50/ Redeployed 6:43
	780972	9/6/2006	6:34	9/6/2006	6:54	Downloaded approx. 6:15, Deployed approx. 6:30 9/6/2006
	780972	10/4/2006	6:34	10/4/2006	6:54	Anomalous reading, possibly exposed to air temps.

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
	780977	1/7/2006	19:40	1/7/2006	21:40	Logger likely exposed to air temps.
	780977	1/11/2006	22:00	3/18/2006	21:00	Logger likely exposed to air temps.
	780977	4/4/2006	21:20	4/13/2006	9:20	Logger likely exposed to air temps.
	780977	7/11/2006	5:59	7/11/2006	6:19	Logger Retrieved 6:10
	780977	7/11/2006	5:59	7/11/2006	7:19	Logger Retrieved approx 5:36/ Redeployed 7:20
	780977	8/1/2006	15:39	8/1/2006	15:39	Logger Retrieved 15:33/ Redeployed 15:43
	780977	9/6/2006	6:19	9/6/2006	6:39	Logger Retrieved 5:50/ Redeployed 6:43
	780977	9/6/2006	6:59	9/6/2006	6:59	Downloaded approx. 6:40, Deployed approx. 7:00 9/6/2006
	780977	10/4/2006	6:39	10/4/2006	6:39	Anomalous reading, possibly exposed to air temps.
	779150	4/12/2006	9:20	4/12/2006	10:20	Downloaded approx. 9:30 4/12/2006/Not redeployed
	780971	5/9/2006	21:53	5/9/2006	21:53	Anomalous readings
	780971	5/9/2006	23:13	5/9/2006	23:13	Anomalous readings
	780971	5/25/2006	18:13	5/25/2006	23:33	Anomalous readings
	780971	5/30/2006	12:53	6/6/2006	6:53	Tangled line at site. DataLogger Retrieved at 5:50/ Redeployed 6:30
	780971	7/3/2006	22:53	7/3/2006	22:53	Anomalous readings
	780971	7/11/2006	5:53	7/11/2006	5:53	Logger Retrieved/Redeployed approx 5:45
	780971	7/11/2006	5:53	7/11/2006	7:33	Logger Retrieved approx 5:36/ Redeployed 7:20
	780971	8/1/2006	15:33	8/1/2006	15:33	Logger Retrieved 15:33/ Redeployed 15:43
	780971	9/6/2006	6:13	9/6/2006	6:13	Logger Retrieved 5:50/ Redeployed 6:43
	780971	9/6/2006	6:33	9/6/2006	6:53	Downloaded approx. 6:15, Deployed approx. 6:30 9/6/2006
	780971	10/4/2006	6:33	10/4/2006	6:33	Anomalous reading, possibly exposed to air temps.
	780971	10/10/2006	18:53	10/10/2006	20:33	Anomalous reading, possibly exposed to air temps.
	780971	10/12/2006	21:13	10/12/2006	21:33	Anomalous reading, possibly exposed to air temps.
	780971	10/13/2006	20:13	10/13/2006	21:53	Anomalous reading, possibly exposed to air temps.
	780971	10/14/2006	20:13	10/14/2006	21:53	Anomalous reading, possibly exposed to air temps.
	780971	10/17/2006	21:13	10/17/2006	21:53	Anomalous reading, possibly exposed to air temps.
	780971	10/18/2006	20:13	10/18/2006	21:53	Anomalous reading, possibly exposed to air temps.

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
	899305	5/25/2006	10:56	6/6/2006	6:56	Tangled line at site. DataLogger Retrieved at 5:50/ Redeployed 6:30
	899305	7/11/2006	5:36	7/11/2006	5:56	Logger Retrieved 6:10
	899305	7/11/2006	5:36	7/11/2006	7:16	Logger Retrieved approx 5:36/ Redeployed 7:20
	899305	8/1/2006	15:36	8/1/2006	15:36	Logger Retrieved 15:33/ Redeployed 15:43
	899305	9/6/2006	5:36	9/6/2006	5:56	Logger Retrieved 5:50/ Redeployed 6:43
	899305	9/6/2006	6:16	9/6/2006	6:36	Downloaded approx. 6:00, Deployed approx. 6:15 9/6/2006
	899305	10/4/2006	6:16	10/4/2006	6:16	Anomalous reading, possibly exposed to air temps.
	980085	5/2/2006	10:58	5/2/2006	11:38	DataLogger Retrieved 10:45/Redeployed 12:00
	980085	5/25/2006	10:38	6/6/2006	5:36	Tangled line at site. DataLogger Retrieved at 5:50/ Redeployed 6:30
	980086	4/21/2006	23:22	4/21/2006	23:22	anomalous readings
	980086	5/2/2006	11:02	5/2/2006	11:42	DataLogger Retrieved 10:45/Redeployed 12:00
	980086	5/25/2006	11:42	6/6/2006	7:02	Tangled line at site. DataLogger Retrieved at 5:50/ Redeployed 6:30
	980086	7/11/2006	5:42	7/11/2006	6:22	Logger Retrieved 6:10
	980086	7/11/2006	5:42	7/11/2006	7:22	Logger Retrieved approx 5:36/ Redeployed 7:20
	980086	8/1/2006	15:42	8/1/2006	15:42	Logger Retrieved 15:33/ Redeployed 15:43
	980086	9/6/2006	6:02	9/6/2006	6:43	Logger Retrieved 5:50/ Redeployed 6:43
	980086	9/6/2006	7:02	9/6/2006	7:02	Downloaded approx. 6:40, Deployed approx. 7:00 9/6/2006
	780970	7/11/2006	5:58	7/11/2006	6:18	Logger Retrieved 6:10
	780970	7/11/2006	5:58	7/11/2006	7:18	Logger Retrieved approx 5:36/ Redeployed 7:20 7/11/2006
	780970	8/1/2006	15:38	8/1/2006	15:38	Logger Retrieved 15:33/ Redeployed 15:43
	780970	9/6/2006	6:18	9/6/2006	6:38	Logger Retrieved 5:50/ Redeployed 6:43
	780970	9/6/2006	6:58	9/6/2006	6:58	Downloaded approx. 6:40, Deployed approx. 7:00 9/6/2006
	780970	10/4/2006	6:38	10/4/2006	6:38	Anomalous reading, possibly exposed to air temps.
	980082	7/11/2006	5:41	7/11/2006	7:01	Logger Retrieved approx 5:36/ Redeployed 7:20
	980082	8/1/2006	15:41	8/1/2006	15:41	Logger Retrieved 15:33/ Redeployed 15:43
	980082	9/6/2006	6:01	9/6/2006	6:29	Logger Retrieved 5:50/ Redeployed 6:43
	980082	9/6/2006	6:41	9/6/2006	7:01	Downloaded approx. 6:40, Deployed approx. 7:00 9/6/2006
T8	780970	2/10/2006	5:20	2/10/2006	5:40	Logger likely exposed to air temps.
	780970	2/16/2006	3:20	2/16/2006	6:00	Logger likely exposed to air temps.
	779148	5/1/2006	13:15	6/7/2006	14:35	Prior to Install
	779148	6/27/2006	4:15	9/6/2006	13:55	Probe found out of water, wedged in rock wall on 09/0606
	779148	9/6/2006	14:15	9/6/2006	14:35	Downloaded approx. 14:00, Deployed approx. 14:30 9/6/06.
	779148	10/4/2006	8:35	10/4/2006	8:35	Logger likely exposed to air temps.

Station	Serial Number of DataLogger	Flagged Data Range Start Date	Start Time*	End Date	End Time*	Notes About Flagged Data
T8 Dup	780971	2/10/2006	5:20	2/10/2006	5:40	Logger likely exposed to air temps.
	780971	2/16/2006	3:20	2/16/2006	6:00	Logger likely exposed to air temps.
	1021148	7/3/2006	14:59	8/1/2006	14:59	Prior to Install
	1021148	9/6/2006	13:37	9/6/2006	13:37	Logger Retrieved 13:35/ Redeployed 13:50
	1021148	9/6/2006	13:39	9/6/2006	13:39	Downloaded approx. 13:20, Deployed approx. 13:40 9/6/06.
	1021148	10/7/2006	3:39	10/7/2006	5:59	Logger likely exposed to air temps.
	1021148	10/10/2006	1:59	10/10/2006	4:39	Logger likely exposed to air temps.
	1021148	10/11/2006	2:59	10/11/2006	5:19	Logger likely exposed to air temps.
	1021148	10/12/2006	1:59	10/12/2006	4:59	Logger likely exposed to air temps.
	1021148	10/13/2006	2:19	10/13/2006	5:19	Logger likely exposed to air temps.
	1021148	10/14/2006	4:39	10/14/2006	4:59	Logger likely exposed to air temps.

* All times are Pacific Standard

Note: An event occurred on the morning of 10/4/2006 that affected many of the sites. Likely water levels dropped enough to expose upper loggers.

A.3. Maximum Daily Temperature Graphics

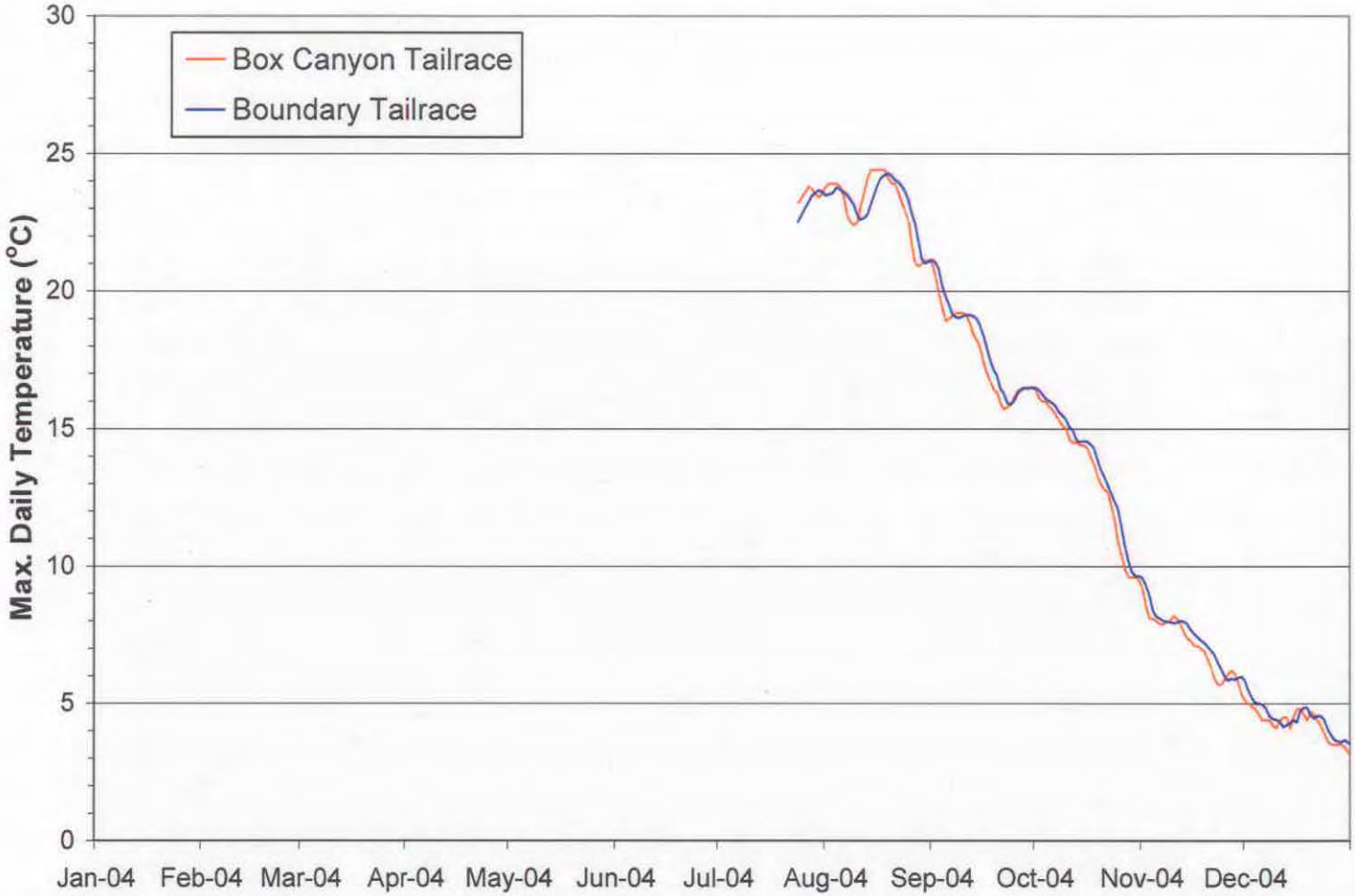


Figure A.3-1. Maximum daily temperatures of the Pend Oreille River at Box Canyon Dam tailrace (Station T1) and Boundary Dam tailrace (Station T8) in 2004.

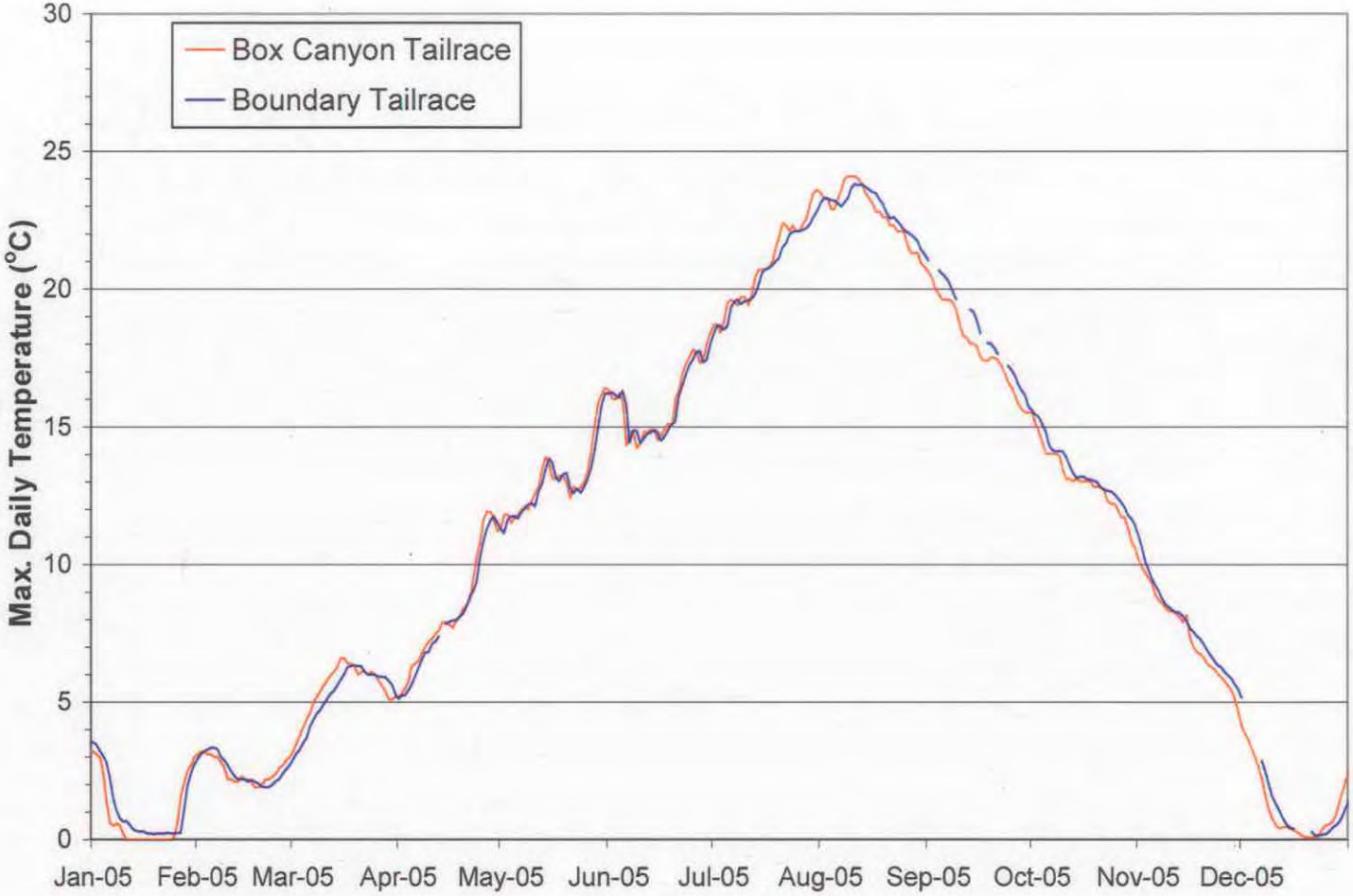


Figure A.3-2. Maximum daily temperatures of the Pend Oreille River at Box Canyon Dam tailrace (Station T1) and Boundary Dam tailrace (Station T8) in 2005.

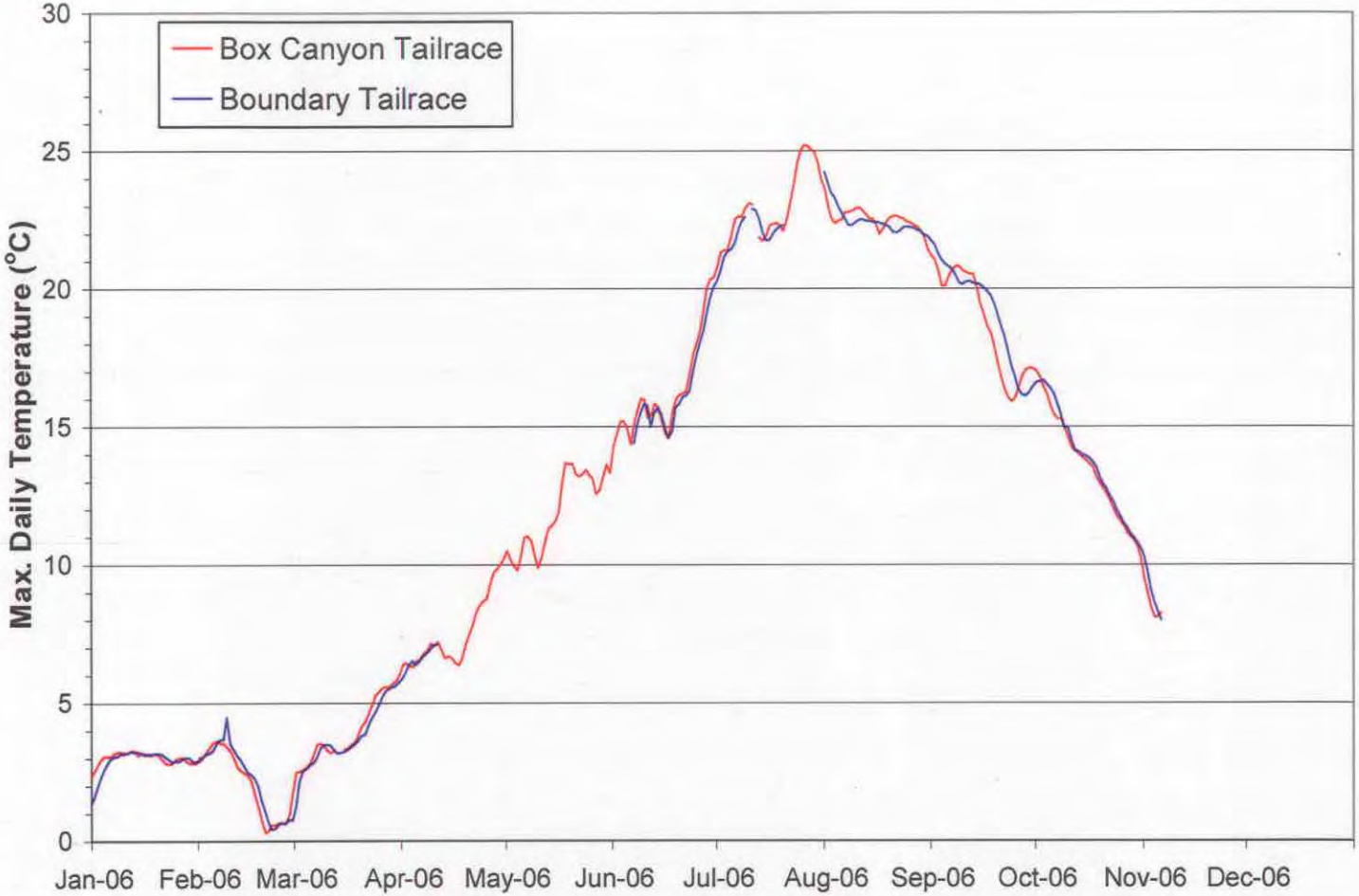


Figure A.3-3. Maximum daily temperatures of the Pend Oreille River at Box Canyon Dam tailrace (Station T1) and Boundary Dam tailrace (Station T8) in 2006.

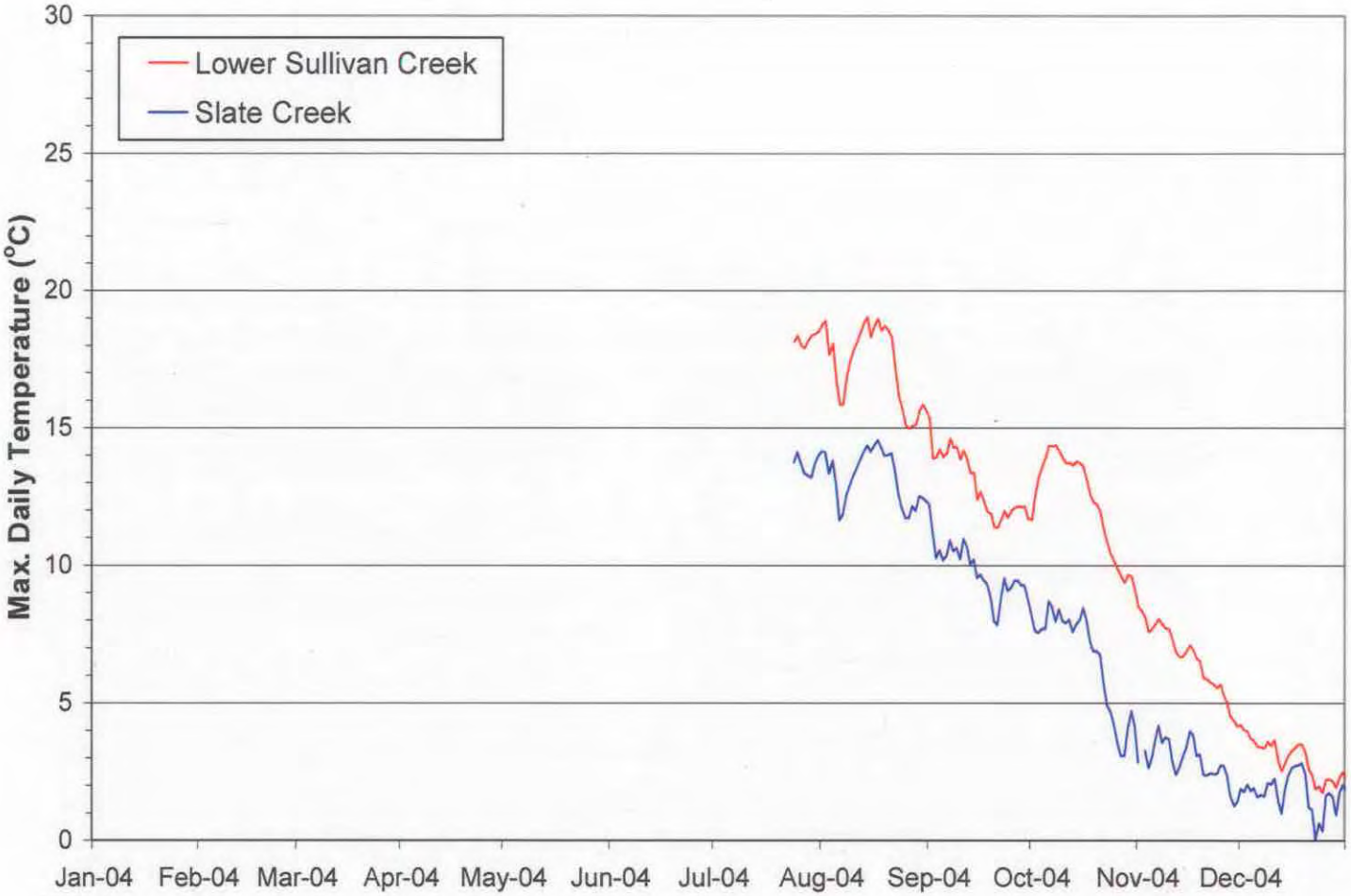


Figure A.3-4. Maximum daily temperatures of lower Sullivan Creek (Station T3) and Slate Creek (Station T5) in 2004.

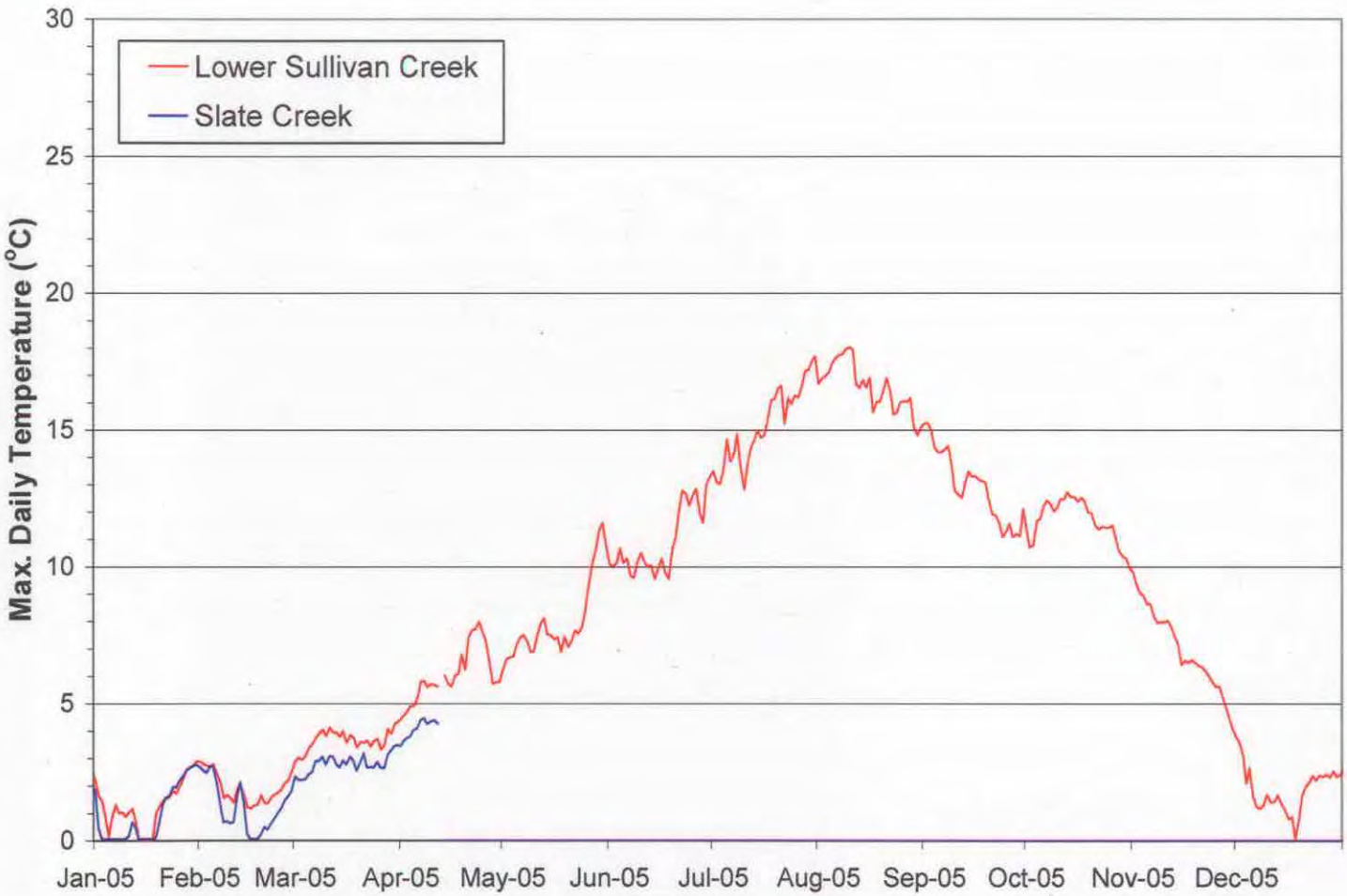


Figure A.3-5. Maximum daily temperatures of lower Sullivan Creek (Station T3) and Slate Creek (Station T5) in 2005.

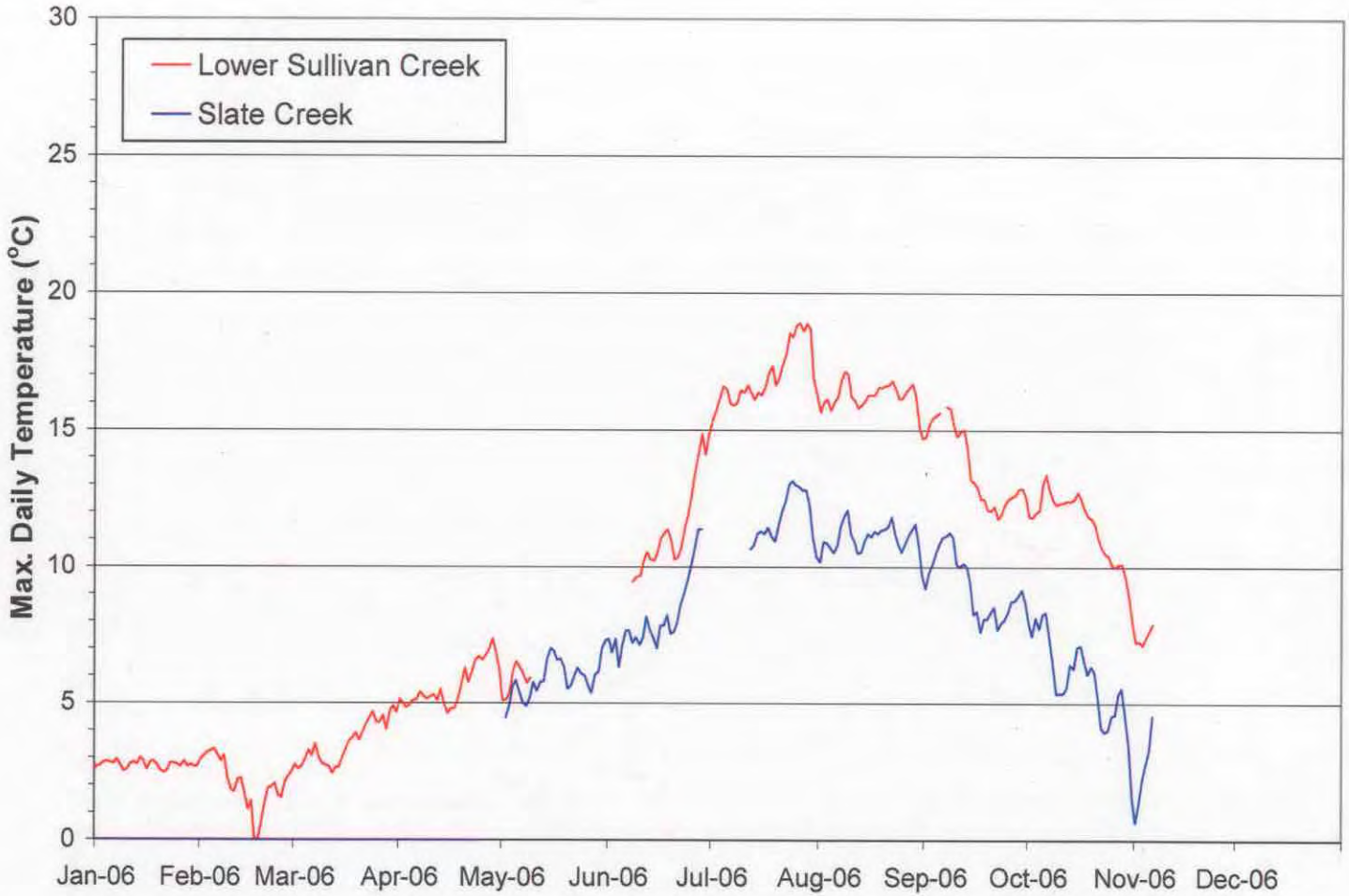


Figure A.3-6. Maximum daily temperatures of lower Sullivan Creek (Station T3) and Slate Creek (Station T5) in 2006.

APPENDIX B –VERTICAL PROFILING - WATER SAMPLING DATA 2004-2006 SUMMARY DATA

B.1. Vertical Profiling – Water Quality Data

Table 1. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V1. Wolf Creek

Depth (meters)	Parameter / Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
0.0	n	5	4	NA	5	4	NA	5	4	NA	5	4	NA
	mean	8.80	8.45	NA	9.78	10.80	NA	152	141	NA	20.56	20.33	NA
	SD	8.47, N/A	8.20, 9.10	NA	2.83	3.49	NA	5	10	NA	3.45	2.61	NA
	min	8.36	8.12	NA	8.16	8.86	NA	145	129	NA	16.19	17.20	NA
	max	9.62	8.85	NA	14.82	16.03	NA	157	154	NA	24.07	22.99	NA
0.5	n	NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean	NA	8.85	NA	NA	8.87	NA	NA	139	NA	NA	23.00	NA
	SD	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min	NA	8.85	NA	NA	8.87	NA	NA	139	NA	NA	23.00	NA
	max	NA	8.85	NA	NA	8.87	NA	NA	139	NA	NA	23.00	NA
1.0	n	5	4	7	5	4	7	5	4	7	5	4	7
	mean	8.84	8.43	8.50	9.86	10.94	10.70	152	141	148	20.56	20.33	16.10
	SD	8.54, 10.44	8.16, 9.29	8.32, 8.81	2.86	3.77	1.56	5	10	27	3.46	2.60	5.77
	min	8.43	8.07	8.25	8.38	8.89	8.76	145	129	110	16.19	17.22	8.43
	max	9.49	8.89	8.78	14.98	16.59	13.01	157	154	186	24.08	23.01	22.55
1.5	n	NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean	NA	8.88	NA	NA	8.90	NA	NA	139	NA	NA	23.01	NA
	SD	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min	NA	8.88	NA	NA	8.90	NA	NA	139	NA	NA	23.01	NA
	max	NA	8.88	NA	NA	8.90	NA	NA	139	NA	NA	23.01	NA
2.0	n	5	4	7	5	4	7	5	4	7	5	4	7
	mean	8.82	8.49	8.49	9.97	10.71	10.65	152	141	148	20.57	20.33	16.10
	SD	8.55, 9.63	8.26, 8.99	8.32, 8.78	2.87	3.28	1.58	5	10	27	3.46	2.60	5.77
	min	8.44	8.19	8.25	8.47	8.90	8.73	145	129	110	16.20	17.22	8.43
	max	9.34	8.86	8.74	15.09	15.61	13.00	157	154	187	24.09	23.01	22.56
2.5	n	NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean	NA	8.87	NA	NA	8.90	NA	NA	139	NA	NA	23.01	NA
	SD	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min	NA	8.87	NA	NA	8.90	NA	NA	139	NA	NA	23.01	NA
	max	NA	8.87	NA	NA	8.90	NA	NA	139	NA	NA	23.01	NA
3.0	n	5	4	7	5	4	7	5	4	7	5	4	7
	mean	8.80	8.50	8.49	10.05	10.40	10.61	152	141	148	20.57	20.34	16.11
	SD	8.56, 9.44	8.29, 8.96	8.32, 8.78	2.85	2.69	1.60	5	10	27	3.46	2.60	5.77
	min	8.45	8.22	8.26	8.52	8.90	8.68	145	129	110	16.20	17.22	8.43
	max	9.25	8.89	8.76	15.13	14.42	13.08	157	154	187	24.08	23.01	22.56
3.5	n	NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean	NA	8.88	NA	NA	8.91	NA	NA	139	NA	NA	23.01	NA
	SD	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min	NA	8.88	NA	NA	8.91	NA	NA	139	NA	NA	23.01	NA
	max	NA	8.88	NA	NA	8.91	NA	NA	139	NA	NA	23.01	NA
4.0	n	5	4	7	5	4	7	5	4	7	5	4	7
	mean	8.77	8.51	8.49	10.06	10.04	10.56	152	141	148	20.57	20.34	16.10
	SD	8.53, 9.31	8.30, 8.92	8.32, 8.76	2.85	1.96	1.60	5	10	27	3.45	2.61	5.77
	min	8.43	8.24	8.27	8.53	8.91	8.65	145	129	110	16.20	17.22	8.42
	max	9.17	8.88	8.74	15.14	12.97	13.16	157	154	188	24.08	23.01	22.56

Table 1. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V1. Wolf Creek

Depth (meters)	Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
	n	NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean	NA	8.87	NA	NA	8.91	NA	NA	139	NA	NA	23.01	NA
4.5	SD	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min	NA	8.87	NA	NA	8.91	NA	NA	139	NA	NA	23.01	NA
	max	NA	8.87	NA	NA	8.91	NA	NA	139	NA	NA	23.01	NA
	n	5	4	7	5	4	7	5	4	7	5	4	7
	mean	8.76	8.53	8.49	10.07	9.68	10.54	152	141	148	20.57	20.34	16.11
5.0	SD	8.55, 9.19	8.32, 8.92	8.32, 8.76	2.86	1.23	1.59	5	10	27	3.46	2.61	5.77
	min	8.45	8.26	8.27	8.53	8.91	8.64	145	129	110	16.20	17.22	8.43
	max	9.11	8.87	8.75	15.16	11.51	13.14	157	154	188	24.09	23.01	22.57
	n	NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean	NA	8.87	NA	NA	8.92	NA	NA	139	NA	NA	23.01	NA
5.5	SD	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min	NA	8.87	NA	NA	8.92	NA	NA	139	NA	NA	23.01	NA
	max	NA	8.87	NA	NA	8.92	NA	NA	139	NA	NA	23.01	NA
	n	5	4	7	5	4	7	5	4	7	5	4	7
	mean	8.74	8.53	8.48	10.08	9.44	10.52	152	141	148	20.57	20.34	16.11
6.0	SD	8.54, 9.15	8.33, 8.89	8.32, 8.74	2.85	0.76	1.61	5	10	27	3.46	2.61	5.77
	min	8.44	8.27	8.28	8.55	8.92	8.63	145	129	110	16.19	17.22	8.43
	max	9.06	8.87	8.75	15.15	10.56	13.22	157	154	188	24.08	23.01	22.57
	n	NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean	NA	8.87	NA	NA	8.92	NA	NA	139	NA	NA	23.01	NA
6.5	SD	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min	NA	8.87	NA	NA	8.92	NA	NA	139	NA	NA	23.01	NA
	max	NA	8.87	NA	NA	8.92	NA	NA	139	NA	NA	23.01	NA
	n	5	4	7	5	4	7	5	4	7	5	4	7
	mean	8.72	8.53	8.48	10.08	9.29	10.52	152	141	148	20.57	20.34	16.11
7.0	SD	8.53, 9.09	8.34, 8.88	8.32, 8.74	2.83	0.47	1.63	5	10	27	3.45	2.61	5.77
	min	8.43	8.28	8.28	8.55	8.92	8.61	145	129	110	16.20	17.22	8.43
	max	9.01	8.86	8.75	15.13	9.94	13.24	157	154	188	24.08	23.01	22.56
	n	4	3	7	4	3	7	4	3	7	4	3	7
	mean	8.83	8.47	8.47	10.30	8.99	10.47	150	141	148	21.22	19.44	16.10
8.0	SD	8.72, 8.96	8.32, 8.70	8.31, 8.73	3.22	0.31	1.61	5	13	27	3.63	2.33	5.77
	min	8.70	8.30	8.28	8.55	8.69	8.54	145	129	110	16.20	17.22	8.42
	max	8.97	8.60	8.74	15.13	9.30	13.18	156	154	188	24.09	21.86	22.55
	n	4	3	7	4	2	7	4	3	7	4	3	7
	mean	8.81	8.46	8.47	10.30	9.15	10.48	151	141	148	21.22	19.45	16.10
9.0	SD	8.71, 8.93	8.32, 8.69	8.31, 8.73	3.21	0.21	1.65	5	13	27	3.63	2.33	5.77
	min	8.70	8.30	8.28	8.55	9.00	8.53	145	129	110	16.20	17.22	8.42
	max	8.93	8.61	8.74	15.11	9.30	13.26	156	154	188	24.09	21.87	22.56
	n	NA	1	1	NA	1	1	NA	1	1	NA	1	1
	mean	NA	8.55	8.46	NA	8.99	9.08	NA	129	162	NA	21.87	15.49
9.5	SD	NA	0	0	NA	0.00	0.00	NA	0	0	NA	0.00	0.00
	min	NA	8.55	8.46	NA	8.99	9.08	NA	129	162	NA	21.87	15.49
	max	NA	8.55	8.46	NA	8.99	9.08	NA	129	162	NA	21.87	15.49

Table 1. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V1. Wolf Creek

Depth (meters)	Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
10.0	n	4	2	5	4	1	5	4	2	5	4	2	5
	mean	8.79	8.43	8.43	10.29	9.28	11.13	150	148	143	21.22	18.24	14.94
	SD	8.71, 8.89	8.26, 8.73	8.27, 8.70	3.20	0.00	1.48	5	9	31	3.63	1.44	6.15
	min	8.71	8.30	8.28	8.55	9.28	9.69	145	141	110	16.20	17.22	8.42
	max	8.90	8.62	8.75	15.09	9.28	13.27	156	154	188	24.09	19.25	22.18
10.2	n	1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean	8.70	NA	NA	8.79	NA	NA	152	NA	NA	23.66	NA	NA
	SD	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min	8.70	NA	NA	8.79	NA	NA	152	NA	NA	23.66	NA	NA
	max	8.70	NA	NA	8.79	NA	NA	152	NA	NA	23.66	NA	NA
11.0	n	3	NA	4	3	NA	4	3	NA	4	3	NA	4
	mean	8.81	NA	8.37	10.77	NA	11.27	150	NA	140	20.40	NA	13.64
	SD	8.73, 8.89	NA	8.24, 8.56	3.72	NA	1.69	6	NA	35	3.97	NA	6.26
	min	8.73	NA	8.28	8.54	NA	9.69	145	NA	110	16.20	NA	8.42
	max	8.89	NA	8.68	15.06	NA	13.35	156	NA	188	24.08	NA	22.18
11.5	n	1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean	8.81	NA	NA	8.52	NA	NA	145	NA	NA	24.08	NA	NA
	SD	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min	8.81	NA	NA	8.52	NA	NA	145	NA	NA	24.08	NA	NA
	max	8.81	NA	NA	8.52	NA	NA	145	NA	NA	24.08	NA	NA
12.0	n	2	NA	4	2	NA	4	2	NA	4	2	NA	4
	mean	8.77	NA	8.37	11.89	NA	11.27	153	NA	140	18.57	NA	13.64
	SD	8.69, 8.89	NA	8.23, 8.56	4.48	NA	1.68	5	NA	36	3.34	NA	6.26
	min	8.71	NA	8.28	8.72	NA	9.70	149	NA	110	16.20	NA	8.42
	max	8.85	NA	8.68	15.05	NA	13.31	156	NA	189	20.93	NA	22.18
13.0	n	2	NA	3	2	NA	3	2	NA	3	2	NA	3
	mean	8.76	NA	8.38	11.88	NA	11.63	153	NA	124	18.57	NA	15.38
	SD	8.68, 8.86	NA	8.23, 8.62	4.48	NA	1.78	5	NA	18	3.34	NA	6.37
	min	8.70	NA	8.27	8.71	NA	9.72	149	NA	110	16.20	NA	9.55
	max	8.83	NA	8.67	15.04	NA	13.23	156	NA	144	20.93	NA	22.18
14.0	n	2	NA	2	2	NA	2	2	NA	2	2	NA	2
	mean	8.74	NA	8.28	11.87	NA	12.64	153	NA	114	18.57	NA	11.98
	SD	8.67, 8.81	NA	8.26, 8.31	4.45	NA	0.88	5	NA	5	3.35	NA	3.44
	min	8.69	NA	8.27	8.72	NA	12.01	149	NA	110	16.20	NA	9.55
	max	8.79	NA	8.30	15.01	NA	13.26	156	NA	117	20.94	NA	14.41
15.0	n	1	NA	1	1	NA	1	1	NA	1	1	NA	1
	mean	8.78	NA	8.29	8.72	NA	13.29	149	NA	117	20.94	NA	9.55
	SD	0	NA	0	0.00	NA	0.00	0	NA	0	0.00	NA	0.00
	min	8.78	NA	8.29	8.72	NA	13.29	149	NA	117	20.94	NA	9.55
	max	8.78	NA	8.29	8.72	NA	13.29	149	NA	117	20.94	NA	9.55

*Note: The pH mean is calculated as the mean of the hydrogen ion concentration and then converted back to the pH scale. Becase of the log scale, the standard deviation is presented as upper and lower bounds of the hydrogen ion concentration and then coverted back to the pH scale.

Table 2. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V2. Metaline Pool

Depth (meters)		Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
	n		5	4	NA	5	4	NA	5	4	NA	5	4	NA
	mean		8.59	8.47	NA	9.95	9.83	NA	152	141	NA	20.52	20.29	NA
0.0	SD		8.43, 8.85	8.18, 9.62	NA	2.95	2.25	NA	5	10	NA	3.46	2.64	NA
	min		8.77	8.86	NA	8.25	8.36	NA	145	130	NA	16.14	17.08	NA
	max		8.34	8.09	NA	15.20	13.15	NA	157	154	NA	24.04	22.99	NA
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.61	8.44	8.34	10.01	9.47	10.73	152	141	148	20.54	20.32	16.19
1.0	SD		8.51, 8.74	8.14, 10.06	8.81, 8.90	2.88	1.18	1.71	5	10	26	3.46	2.67	5.67
	min		8.75	8.86	8.72	8.51	8.62	8.71	145	130	111	16.16	17.09	8.26
	max		8.47	8.05	7.95	15.14	11.19	13.01	157	154	187	24.05	23.09	22.51
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.62	8.50	8.39	10.05	9.13	10.65	152	141	148	20.54	20.31	16.11
2.0	SD		8.51, 8.75	8.24, 9.21	8.18, 8.83	2.82	0.43	1.75	5	10	27	3.45	2.66	5.74
	min		8.76	8.85	8.76	8.51	8.76	8.67	145	130	110	16.16	17.09	8.27
	max		8.47	8.16	8.05	15.08	9.67	13.07	157	154	188	24.04	23.05	22.51
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.61	8.53	8.40	10.04	8.96	10.67	152	141	148	20.54	20.31	16.09
3.0	SD		8.52, 8.72	8.29, 9.10	8.21, 8.77	2.80	0.18	1.84	5	10	27	3.45	2.68	5.74
	min		8.73	8.86	8.74	8.49	8.83	8.55	145	130	111	16.16	17.08	8.29
	max		8.47	8.21	8.11	15.03	9.22	13.06	157	154	189	24.04	23.08	22.52
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.61	8.55	8.41	10.04	8.71	10.63	152	141	148	20.53	20.30	16.08
4.0	SD		8.52, 8.73	8.34, 8.97	8.22, 8.75	2.76	0.54	1.85	5	10	27	3.45	2.68	5.74
	min		8.74	8.85	8.75	8.51	7.94	8.54	145	130	111	16.15	17.07	8.31
	max		8.47	8.27	8.14	14.96	9.22	13.05	157	154	189	24.04	23.05	22.51
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.60	8.54	8.41	10.00	8.32	10.60	152	141	149	20.53	20.30	16.09
5.0	SD		8.51, 8.72	8.35, 8.92	8.23, 8.74	2.75	1.25	1.84	5	10	27	3.46	2.67	5.74
	min		8.72	8.84	8.74	8.49	6.46	8.53	145	130	111	16.14	17.08	8.31
	max		8.46	8.28	8.16	14.91	9.18	13.01	157	154	189	24.04	23.05	22.51
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.60	8.55	8.42	10.00	8.13	10.59	152	141	149	20.53	20.30	16.08
6.0	SD		8.50, 8.72	8.36, 8.90	8.24, 8.75	2.74	1.58	1.83	5	10	27	3.46	2.67	5.73
	min		8.72	8.84	8.74	8.49	5.78	8.53	145	130	111	16.14	17.07	8.30
	max		8.45	8.30	8.17	14.88	9.19	13.02	157	154	189	24.04	23.03	22.48
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.59	8.55	8.42	9.97	7.93	10.56	152	141	148	20.53	20.26	16.08
7.0	SD		8.50, 8.71	8.37, 8.88	8.24, 8.74	2.71	1.92	1.83	5	10	27.	3.46	2.65	5.74
	min		8.72	8.83	8.73	8.50	5.06	8.51	145	130	111	16.15	17.05	8.30
	max		8.45	8.31	8.18	14.80	9.17	13.02	157	154	189	24.05	22.96	22.50
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.60	8.56	8.42	9.97	7.80	10.54	152	141	148	20.52	20.25	16.08
8.0	SD		8.51, 8.71	8.38, 8.88	8.24, 8.73	2.74	2.16	1.83	5	10	27	3.45	2.66	5.73
	min		8.73	8.83	8.73	8.47	4.57	8.50	145	130	111	16.15	17.03	8.31
	max		8.46	8.32	8.18	14.84	9.16	13.03	157	154	189	24.04	22.95	22.48

Table 2. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V2. Metaline Pool

Depth (meters)		Parameter	pH*			DO (mg/L)			SpCond (uS/cm)			Temperature (C)		
		Year	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.60	8.55	8.42	9.94	7.71	10.53	152	141	148	20.52	20.25	16.06
9.0	SD		8.51, 8.71	8.37, 8.85	8.24, 8.74	2.73	2.28	1.84	5	10	27	3.45	2.65	5.73
	min		8.71	8.81	8.75	8.46	4.30	8.51	145	130	111	16.14	17.03	8.28
	max		8.46	8.31	8.18	14.81	9.15	13.03	157	154	189	24.04	22.95	22.41
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.59	8.56	8.42	9.92	7.60	10.52	152	141	148	20.51	20.25	16.06
10.0	SD		8.49, 8.71	8.38, 8.86	8.24, 8.73	2.69	2.51	1.83	5	10	27	3.45	2.66	5.69
	min		8.72	8.81	8.72	8.44	3.84	8.57	145	130	111	16.14	17.04	8.37
	max		8.44	8.32	8.18	14.72	9.14	13.04	157	154	189	24.02	22.96	22.27
	n		4	4	4	4	4	4	4	4	4	4	4	4
	mean		8.62	8.55	8.31	10.11	7.56	11.40	151	141	141	21.15	20.25	13.65
11.0	SD		8.57, 8.68	8.38, 8.84	8.17, 8.54	3.05	2.62	1.86	5	10	35	3.63	2.66	6.27
	min		8.70	8.81	8.69	8.43	3.64	9.51	145	130	111	16.14	17.03	8.30
	max		8.58	8.32	8.18	14.68	9.14	13.04	156	154	189	24.02	22.97	22.19
	n		4	4	3	4	4	3	4	4	3	4	4	3
	mean		8.62	8.56	8.32	10.11	7.46	11.83	151	141	124	21.15	20.25	15.43
12.0	SD		8.56, 8.70	8.39, 8.84	8.14, 8.63	3.07	2.74	2.01	5	10	17	3.63	2.66	6.32
	min		8.71	8.81	8.69	8.48	3.36	9.51	145	130	111	16.15	17.02	9.68
	max		8.56	8.34	8.17	14.71	9.12	13.03	156	154	144	24.05	22.95	22.19
	n		4	3	1	4	3	1	4	3	1	4	3	1
	mean		8.62	8.52	8.69	10.10	6.81	9.51	151	141	144	21.15	21.32	22.18
13.0	SD		8.56, 8.70	8.36, 8.80	0	3.08	3.19	0.00	5	12	0	3.63	1.91	0.00
	min		8.72	8.72	8.69	8.41	3.12	9.51	145	130	144	16.15	19.22	22.18
	max		8.56	8.34	8.69	14.71	8.75	9.51	156	154	144	24.03	22.95	22.18
	n		1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean		8.70	NA	NA	8.42	NA	NA	145	NA	NA	24.03	NA	NA
13.3	SD		0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min		8.70	NA	NA	8.42	NA	NA	145	NA	NA	24.03	NA	NA
	max		8.70	NA	NA	8.42	NA	NA	145	NA	NA	24.03	NA	NA
	n		2	NA	NA	2	NA	NA	2	NA	NA	2	NA	NA
	mean		8.56	NA	NA	11.59	NA	NA	153	NA	NA	18.47	NA	NA
14.0	SD		0	NA	NA	4.33	NA	NA	4	NA	NA	3.29	NA	NA
	min		8.56	NA	NA	8.52	NA	NA	150	NA	NA	16.14	NA	NA
	max		8.56	NA	NA	14.65	NA	NA	156	NA	NA	20.79	NA	NA
	n		1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean		8.55	NA	NA	8.50	NA	NA	150	NA	NA	20.79	NA	NA
15.0	SD		0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min		8.55	NA	NA	8.50	NA	NA	150	NA	NA	20.79	NA	NA
	max		8.55	NA	NA	8.50	NA	NA	150	NA	NA	20.79	NA	NA

*Note: The pH mean is calculated as the mean of the hydrogen ion concentration and then converted back to the pH scale. Becase of the log scale, the standard deviation is presented as upper and lower bounds of the hydrogen ion concentration and then coverted back to the pH scale.

Table 3. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V3. PO Mine

Depth (meters)		Parameter	pH*			DO (mg/L)			SpCond (uS/cm)			Temperature (C)		
		Year	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.47	8.32	8.40	10.06	9.16	10.20	152	141	150	20.51	20.27	16.21
0.0	SD		8.38, 8.60	7.99, N/A	8.23, 8.71	2.86	0.65	1.62	5	10	29	3.44	2.56	5.94
	min		8.57	8.82	8.70	8.55	8.56	8.57	145	130	107	16.13	17.26	8.32
	max		8.32	7.89	8.15	15.15	9.94	13.17	157	154	192	24.09	22.94	23.06
	n		NA	ND	NA	NA	1	NA	NA	ND	NA	NA	1	NA
	mean		NA	ND	NA	NA	8.69	NA	NA	ND	NA	NA	23.00	NA
1.0	SD		NA	ND	NA	NA	0.00	NA	NA	ND	NA	NA	0.00	NA
	min		NA	ND	NA	NA	8.69	NA	NA	ND	NA	NA	23.00	NA
	max		NA	ND	NA	NA	8.69	NA	NA	ND	NA	NA	23.00	NA
	n		5	ND	NA	5	1	NA	5	ND	NA	5	1	NA
	mean		8.54	ND	NA	10.02	8.61	NA	152	ND	NA	20.51	22.96	NA
2.0	SD		8.49, 8.61	ND	NA	2.81	0.00	NA	5	ND	NA	3.44	0.00	NA
	min		8.62	ND	NA	8.58	8.61	NA	145	ND	NA	16.14	22.96	NA
	max		8.47	ND	NA	15.03	8.61	NA	157	ND	NA	24.07	22.96	NA
	n		NA	4	7	NA	4	7	NA	4	7	NA	4	7
	mean		NA	8.32	8.41	NA	8.97	10.16	NA	141	150	NA	20.25	16.21
3.0	SD		NA	7.99, N/A	8.24, 8.71	NA	0.36	1.62	NA	10	29	NA	2.58	5.95
	min		NA	8.83	8.71	NA	8.65	8.59	NA	130	107	NA	17.21	8.31
	max		NA	7.89	8.18	NA	9.44	13.15	NA	154	191	NA	22.94	23.07
	n		5	NA	NA	5	NA	NA	5	NA	NA	5	NA	NA
	mean		8.56	NA	NA	10.03	NA	NA	152	NA	NA	20.51	NA	NA
4.0	SD		8.51, 8.62	NA	NA	2.80	NA	NA	5	NA	NA	3.44	NA	NA
	min		8.66	NA	NA	8.58	NA	NA	145	NA	NA	16.14	NA	NA
	max		8.51	NA	NA	15.01	NA	NA	158	NA	NA	24.08	NA	NA
	n		NA	ND	NA	NA	1	NA	NA	ND	NA	NA	1	NA
	mean		NA	ND	NA	NA	8.64	NA	NA	ND	NA	NA	22.94	NA
5.0	SD		NA	ND	NA	NA	0.00	NA	NA	ND	NA	NA	0.00	NA
	min		NA	ND	NA	NA	8.64	NA	NA	ND	NA	NA	22.94	NA
	max		NA	ND	NA	NA	8.64	NA	NA	ND	NA	NA	22.94	NA
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.55	8.42	8.41	10.00	7.56	10.10	152	141	149	20.50	20.24	16.22
6.0	SD		8.51, 8.61	8.13, 9.54	8.24, 8.71	2.76	2.72	1.62	5	10	29	3.44	2.59	5.96
	min		8.65	8.83	8.73	8.54	3.51	8.57	145	130	107	16.14	17.16	8.31
	max		8.52	8.04	8.19	14.92	9.41	13.13	157	154	190	24.04	22.93	23.15
	n		5	NA	NA	5	NA	NA	5	NA	NA	5	NA	NA
	mean		8.54	NA	NA	9.98	NA	NA	152	NA	NA	20.50	NA	NA
8.0	SD		8.48, 8.62	NA	NA	2.75	NA	NA	5	NA	NA	3.44	NA	NA
	min		8.67	NA	NA	8.52	NA	NA	145	NA	NA	16.14	NA	NA
	max		8.48	NA	NA	14.87	NA	NA	158	NA	NA	24.05	NA	NA
	n		NA	4	7	NA	4	7	NA	4	7	NA	4	7
	mean		NA	8.49	8.41	NA	7.35	10.05	NA	141	150	NA	20.23	16.21
9.0	SD		NA	8.26, 9.04	8.24, 8.71	NA	3.13	1.62	NA	10	29	NA	2.59	5.96
	min		NA	8.82	8.73	NA	2.68	8.56	NA	129	108	NA	17.15	8.31
	max		NA	8.18	8.19	NA	9.40	13.12	NA	154	190	NA	22.93	23.16

Table 3. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V3. PO Mine

Depth (meters)		Parameter	pH*			DO (mg/L)			SpCond (uS/cm)			Temperature (C)		
		Year	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
	n		5	NA	NA	5	NA	NA	5	NA	NA	5	NA	NA
	mean		8.55	NA	NA	9.97	NA	NA	152	NA	NA	20.50	NA	NA
10.0	SD		8.48, 8.62	NA	NA	2.72	NA	NA	5	NA	NA	3.44	NA	NA
	min		8.67	NA	NA	8.53	NA	NA	145	NA	NA	16.14	NA	NA
	max		8.48	NA	NA	14.81	NA	NA	158	NA	NA	24.05	NA	NA
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.55	8.51	8.41	9.96	7.23	9.99	152	141	149	20.50	20.23	16.20
12.0	SD		8.48, 8.63	8.29, 8.96	8.24, 8.70	2.70	3.34	1.63	5	10	29	3.44	2.60	5.94
	min		8.67	8.83	8.72	8.54	2.24	8.50	145	130	107	16.14	17.15	8.31
	max		8.48	8.22	8.19	14.76	9.37	13.12	157	154	190	24.05	22.94	23.07
	n		5	NA	NA	5	NA	NA	5	NA	NA	5	NA	NA
	mean		8.54	NA	NA	9.94	NA	NA	152	NA	NA	20.50	NA	NA
14.0	SD		8.48, 8.62	NA	NA	2.67	NA	NA	5	NA	NA	3.44	NA	NA
	min		8.66	NA	NA	8.52	NA	NA	145	NA	NA	16.14	NA	NA
	max		8.47	NA	NA	14.70	NA	NA	157	NA	NA	24.04	NA	NA
	n		NA	4	7	NA	4	7	NA	4	7	NA	4	7
	mean		NA	8.53	8.41	NA	7.15	9.93	NA	141	150	NA	20.22	16.19
15.0	SD		NA	8.33, 8.94	8.24, 8.71	NA	3.46	1.64	NA	10	29	NA	2.59	5.94
	min		NA	8.84	8.72	NA	1.99	8.43	NA	129	108	NA	17.15	8.30
	max		NA	8.26	8.19	NA	9.34	13.10	NA	154	190	NA	22.92	23.04
	n		5	NA	NA	5	NA	NA	5	NA	NA	5	NA	NA
	mean		8.55	NA	NA	9.92	NA	NA	152	NA	NA	20.50	NA	NA
16.0	SD		8.49, 8.62	NA	NA	2.66	NA	NA	5	NA	NA	3.44	NA	NA
	min		8.65	NA	NA	8.49	NA	NA	145	NA	NA	16.14	NA	NA
	max		8.50	NA	NA	14.65	NA	NA	158	NA	NA	24.04	NA	NA
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.54	8.52	8.41	9.91	7.09	9.91	152	141	150	20.50	20.22	16.20
18.0	SD		8.47, 8.62	8.33, 8.90	8.23, 8.70	2.64	3.55	1.64	5	10	29	3.44	2.59	5.94
	min		8.65	8.83	8.71	8.50	1.78	8.42	145	130	108	16.14	17.14	8.30
	max		8.48	8.26	8.18	14.61	9.30	13.10	157	154	190	24.05	22.92	23.05
	n		5	NA	NA	5	NA	NA	5	NA	NA	5	NA	NA
	mean		8.54	NA	NA	9.91	NA	NA	152	NA	NA	20.50	NA	NA
20.0	SD		8.46, 8.64	NA	NA	2.63	NA	NA	5	NA	NA	3.44	NA	NA
	min		8.66	NA	NA	8.51	NA	NA	145	NA	NA	16.14	NA	NA
	max		8.47	NA	NA	14.58	NA	NA	158	NA	NA	24.04	NA	NA
	n		NA	4	7	NA	4	7	NA	4	7	NA	4	7
	mean		NA	8.54	8.41	NA	7.02	9.88	NA	141	149	NA	20.23	16.20
21.0	SD		NA	8.35, 8.89	8.24, 8.70	NA	3.67	1.65	NA	10	29	NA	2.59	5.94
	min		NA	8.84	8.70	NA	1.54	8.35	NA	130	108	NA	17.14	8.30
	max		NA	8.29	8.19	NA	9.29	13.09	NA	154	189	NA	22.91	23.04
	n		5	NA	1	5	NA	1	5	NA	1	5	NA	1
	mean		8.54	NA	8.75	9.90	NA	8.60	152	NA	159	20.50	NA	23.04
22.0	SD		8.46, 8.64	NA	0	2.63	NA	0.00	5	NA	0	3.44	NA	0.00
	min		8.67	NA	8.75	8.48	NA	8.60	145	NA	159	16.14	NA	23.04
	max		8.47	NA	8.75	14.57	NA	8.60	158	NA	159	24.04	NA	23.04

Table 3. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V3. PO Mine

Depth (meters)		Parameter	pH*			DO (mg/L)			SpCond (uS/cm)			Temperature (C)		
		Year	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
23.0	n		1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean		8.48	NA	NA	9.18	NA	NA	158	NA	NA	17.99	NA	NA
	SD		0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min		8.48	NA	NA	9.18	NA	NA	158	NA	NA	17.99	NA	NA
	max		8.48	NA	NA	9.18	NA	NA	158	NA	NA	17.99	NA	NA
24.0	n		4	4	6	4	4	6	4	4	6	4	4	6
	mean		8.56	8.56	8.37	10.06	7.01	10.06	151	141	148	21.13	20.23	15.06
	SD		8.47, 8.67	8.38, 8.86	8.21, 8.63	2.96	3.68	1.72	5	10	31	3.62	2.59	5.60
	min		8.67	8.84	8.70	8.48	1.51	8.33	145	129	108	16.14	17.14	8.31
	max		8.47	8.32	8.19	14.50	9.28	13.10	156	154	189	24.04	22.91	22.65
26.0	n		2	1	1	2	1	1	2	1	1	2	1	1
	mean		8.47	8.26	8.28	11.51	1.18	10.18	153	154	189	18.46	19.15	8.30
	SD		8.47, 8.48	0	0	4.20	0.00	0.00	4	0	0	3.27	0.00	0.00
	min		8.48	8.26	8.28	8.54	1.18	10.18	150	154	189	16.14	19.15	8.30
	max		8.47	8.26	8.28	14.48	1.18	10.18	156	154	189	20.77	19.15	8.30
27.0	n		NA	3	5	NA	3	5	NA	3	5	NA	3	5
	mean		NA	8.66	8.40	NA	8.84	10.01	NA	136	140	NA	20.58	16.41
	SD		NA	8.55, 8.81	8.22, 8.70	NA	0.37	1.93	NA	6	26	NA	3.04	5.06
	min		NA	8.83	8.69	NA	8.59	8.28	NA	130	108	NA	17.14	9.68
	max		NA	8.57	8.19	NA	9.26	13.08	NA	140	171	NA	22.91	22.67
28.0	n		2	NA	NA	2	NA	NA	2	NA	NA	2	NA	NA
	mean		8.47	NA	NA	11.47	NA	NA	153	NA	NA	18.46	NA	NA
	SD		8.45, 8.50	NA	NA	4.14	NA	NA	4	NA	NA	3.28	NA	NA
	min		8.49	NA	NA	8.54	NA	NA	150	NA	NA	16.14	NA	NA
	max		8.46	NA	NA	14.39	NA	NA	156	NA	NA	20.78	NA	NA
29.0	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.59	NA	NA	8.64	NA	NA	130	NA	NA	21.69	NA
	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.59	NA	NA	8.64	NA	NA	130	NA	NA	21.69	NA
	max		NA	8.59	NA	NA	8.64	NA	NA	130	NA	NA	21.69	NA
30.0	n		NA	2	3	NA	2	3	NA	2	3	NA	2	3
	mean		NA	8.71	8.32	NA	8.92	10.73	NA	140	124	NA	20.03	15.47
	SD		NA	8.59, 8.89	8.15, 8.60	NA	0.45	2.25	NA	1	19	NA	4.08	6.60
	min		NA	8.83	8.66	NA	8.60	8.59	NA	139	108	NA	17.14	9.68
	max		NA	8.62	8.19	NA	9.24	13.08	NA	140	145	NA	22.91	22.66
33.0	n		NA	NA	3	NA	NA	3	NA	NA	3	NA	NA	3
	mean		NA	NA	8.32	NA	NA	10.74	NA	NA	124	NA	NA	15.47
	SD		NA	NA	8.15, 8.60	NA	NA	2.25	NA	NA	19	NA	NA	6.60
	min		NA	NA	8.65	NA	NA	8.60	NA	NA	108	NA	NA	9.68
	max		NA	NA	8.19	NA	NA	13.09	NA	NA	145	NA	NA	22.66
34.0	n		NA	NA	1	NA	NA	1	NA	NA	1	NA	NA	1
	mean		NA	NA	8.66	NA	NA	8.60	NA	NA	145	NA	NA	22.66
	SD		NA	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00
	min		NA	NA	8.66	NA	NA	8.60	NA	NA	145	NA	NA	22.66
	max		NA	NA	8.66	NA	NA	8.60	NA	NA	145	NA	NA	22.66

Table 3. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V3. PO Mine

Depth (meters)		Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
	n		NA	NA	2	NA	NA	2	NA	NA	2	NA	NA	2
	mean		NA	NA	8.21	NA	NA	11.80	NA	NA	113	NA	NA	11.88
36.0	SD		NA	NA	8.18, 8.25	NA	NA	1.81	NA	NA	7	NA	NA	3.10
	min		NA	NA	8.24	NA	NA	10.52	NA	NA	108	NA	NA	9.68
	max		NA	NA	8.19	NA	NA	13.08	NA	NA	118	NA	NA	14.07
	n		NA	NA	1	NA	NA	1	NA	NA	1	NA	NA	1
	mean		NA	NA	8.19	NA	NA	10.52	NA	NA	108	NA	NA	14.07
39.0	SD		NA	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00
	min		NA	NA	8.19	NA	NA	10.52	NA	NA	108	NA	NA	14.07
	max		NA	NA	8.19	NA	NA	10.52	NA	NA	108	NA	NA	14.07
	n		NA	NA	1	NA	NA	1	NA	NA	1	NA	NA	1
	mean		NA	NA	8.19	NA	NA	10.52	NA	NA	108	NA	NA	14.07
42.0	SD		NA	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00
	min		NA	NA	8.19	NA	NA	10.52	NA	NA	108	NA	NA	14.07
	max		NA	NA	8.19	NA	NA	10.52	NA	NA	108	NA	NA	14.07

*Note: The pH mean is calculated as the mean of the hydrogen ion concentration and then converted back to the pH scale. Becase of the log scale, the standard deviation is presented as upper and lower bounds of the hydrogen ion concentration and then coverted back to the pH scale.

Table 4. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V4. Slate Pool

Depth (meters)		Parameter	pH*			DO (mg/L)			SpCond (uS/cm)			Temperature (C)		
		Year	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.45	7.85	8.31	10.21	9.36	10.18	152	142	150	20.69	20.49	16.35
0.0	SD		8.34, 8.59	7.42, N/A	8.16, 8.53	2.80	0.72	1.47	5	10	28	3.54	2.85	6.06
	min		8.65	8.87	8.66	8.60	8.83	8.59	145	130	108	16.21	17.06	8.35
	max		8.31	7.30	8.12	15.19	10.38	12.87	158	154	190	24.35	23.47	23.54
	n		NA	ND	NA	NA	1	NA	NA	ND	NA	NA	1	NA
	mean		NA	ND	NA	NA	9.10	NA	NA	ND	NA	NA	23.50	NA
1.0	SD		NA	ND	NA	NA	0.00	NA	NA	ND	NA	NA	0.00	NA
	min		NA	ND	NA	NA	9.10	NA	NA	ND	NA	NA	23.50	NA
	max		NA	ND	NA	NA	9.10	NA	NA	ND	NA	NA	23.50	NA
	n		NA	ND	NA	NA	1	NA	NA	ND	NA	NA	1	NA
	mean		NA	ND	NA	NA	8.96	NA	NA	ND	NA	NA	23.45	NA
2.0	SD		NA	ND	NA	NA	0.00	NA	NA	ND	NA	NA	0.00	NA
	min		NA	ND	NA	NA	8.96	NA	NA	ND	NA	NA	23.45	NA
	max		NA	ND	NA	NA	8.96	NA	NA	ND	NA	NA	23.45	NA
	n		5	NA	7	5	1	7	5	1	7	5	1	7
	mean		8.54	8.86	8.34	10.15	8.89	10.12	152	140	150	20.70	23.37	16.32
3.0	SD		8.46, 8.65	0	8.21, 8.54	2.69	0.00	1.54	5	0	28	3.54	0.00	6.04
	min		8.75	8.86	8.69	8.60	8.89	8.54	145	140	108	16.21	23.37	8.34
	max		8.50	8.86	8.22	14.94	8.89	13.05	158	140	190	24.35	23.37	23.51
	n		NA	3	NA	NA	3	NA	NA	3	NA	NA	3	NA
	mean		NA	7.55	NA	NA	7.09	NA	NA	141	NA	NA	19.44	NA
4.0	SD		NA	7.14, N/A	NA	NA	3.52	NA	NA	12	NA	NA	2.52	NA
	min		NA	8.62	NA	NA	3.03	NA	NA	130	NA	NA	17.01	NA
	max		NA	7.10	NA	NA	9.34	NA	NA	154	NA	NA	22.04	NA
	n		NA	ND	NA	NA	1	NA	NA	ND	NA	NA	1	NA
	mean		NA	ND	NA	NA	8.90	NA	NA	ND	NA	NA	23.26	NA
5.0	SD		NA	ND	NA	NA	0.00	NA	NA	ND	NA	NA	0.00	NA
	min		NA	ND	NA	NA	8.90	NA	NA	ND	NA	NA	23.26	NA
	max		NA	ND	NA	NA	8.90	NA	NA	ND	NA	NA	23.26	NA
	n		5	1	7	5	1	7	5	1	7	5	1	7
	mean		8.56	8.85	8.37	10.14	8.81	10.10	152	140	150	20.69	23.24	16.32
6.0	SD		8.47, 8.66	0	8.22, 8.58	2.67	0.00	1.54	5	0	28	3.53	0.00	6.03
	min		8.76	8.85	8.69	8.61	8.81	8.50	145	140	108	16.21	23.24	8.33
	max		8.50	8.85	8.20	14.89	8.81	13.06	158	140	189	24.32	23.24	23.47
	n		NA	3	NA	NA	3	NA	NA	3	NA	NA	3	NA
	mean		NA	7.62	NA	NA	6.75	NA	NA	141	NA	NA	19.40	NA
8.0	SD		NA	7.21, N/A	NA	NA	4.08	NA	NA	12	NA	NA	2.51	NA
	min		NA	8.61	NA	NA	2.04	NA	NA	130	NA	NA	17.01	NA
	max		NA	7.17	NA	NA	9.31	NA	NA	154	NA	NA	22.01	NA
	n		5	1	7	5	1	7	5	1	7	5	1	7
	mean		8.55	8.84	8.37	10.11	8.79	10.06	152	140	150	20.69	23.24	16.32
9.0	SD		8.46, 8.66	0	8.22, 8.59	2.61	0.00	1.55	5	0	29	3.54	0.00	6.03
	min		8.76	8.84	8.67	8.61	8.79	8.46	145	140	108	16.20	23.24	8.33
	max		8.48	8.84	8.19	14.76	8.79	13.04	158	140	189	24.32	23.24	23.47

Table 4. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V4. Slate Pool

Depth (meters)		Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.54	7.98	8.37	10.09	7.11	10.03	152	141	149	20.69	20.37	16.31
12.0	SD		8.45, 8.65	7.57, N/A	8.22, 8.59	2.59	3.74	1.55	5	10	28	3.53	2.81	6.01
	min		8.76	8.84	8.67	8.59	1.51	8.43	145	130	108	16.21	17.00	8.33
	max		8.48	7.45	8.19	14.68	9.28	13.01	158	154	189	24.31	23.24	23.47
	n		5	1	7	5	1	7	5	1	7	5	1	7
	mean		8.54	8.85	8.37	10.06	8.78	10.01	152	140	150	20.69	23.24	16.32
15.0	SD		8.46, 8.65	0	8.22, 8.60	2.55	0.00	1.54	5	0	29	3.53	0.00	6.02
	min		8.75	8.85	8.68	8.57	8.78	8.42	145	140	108	16.21	23.24	8.33
	max		8.48	8.85	8.19	14.59	8.78	13.00	158	140	189	24.32	23.24	23.47
	n		NA	3	NA	NA	3	NA	NA	3	NA	NA	3	NA
	mean		NA	8.00	NA	NA	6.45	NA	NA	141	NA	NA	19.40	NA
16.0	SD		NA	7.64, N/A	NA	NA	4.52	NA	NA	12	NA	NA	2.51	NA
	min		NA	8.60	NA	NA	1.23	NA	NA	130	NA	NA	17.00	NA
	max		NA	7.60	NA	NA	9.25	NA	NA	154	NA	NA	22.01	NA
	n		5	1	7	5	1	7	5	1	7	5	1	7
	mean		8.53	8.84	8.38	10.04	8.77	9.98	152	140	150	20.69	23.24	16.31
18.0	SD		8.44, 8.64	0	8.23, 8.59	2.53	0.00	1.54	5	0	29	3.53	0.00	6.02
	min		8.75	8.84	8.65	8.59	8.77	8.41	145	140	108	16.21	23.24	8.33
	max		8.47	8.84	8.20	14.53	8.77	12.98	158	140	189	24.32	23.24	23.46
	n		NA	3	NA	NA	3	NA	NA	3	NA	NA	3	NA
	mean		NA	8.07	NA	NA	6.36	NA	NA	141	NA	NA	19.37	NA
20.0	SD		NA	7.73, N/A	NA	NA	4.63	NA	NA	12	NA	NA	2.51	NA
	min		NA	8.61	NA	NA	1.02	NA	NA	130	NA	NA	16.99	NA
	max		NA	7.69	NA	NA	9.22	NA	NA	154	NA	NA	21.99	NA
	n		5	1	7	5	1	7	5	1	7	5	1	7
	mean		8.53	8.85	8.37	10.03	8.77	9.95	152	140	150	20.69	23.24	16.29
21.0	SD		8.44, 8.64	0	8.23, 8.59	2.52	0.00	1.53	5	0	28	3.53	0.00	6.02
	min		8.76	8.85	8.67	8.57	8.77	8.40	145	140	108	16.21	23.24	8.33
	max		8.46	8.85	8.20	14.50	8.77	12.96	158	140	189	24.32	23.24	23.47
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.52	8.23	8.37	10.01	6.90	9.94	152	141	149	20.68	20.34	16.27
24.0	SD		8.43, 8.64	7.88, N/A	8.22, 8.60	2.49	4.04	1.54	5	10	28	3.52	2.82	6.00
	min		8.74	8.84	8.67	8.55	0.85	8.38	145	130	108	16.21	16.98	8.33
	max		8.44	7.77	8.19	14.44	9.19	12.98	158	154	189	24.29	23.24	23.47
	n		1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean		8.53	NA	NA	9.28	NA	NA	158	NA	NA	18.16	NA	NA
24.5	SD		0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min		8.53	NA	NA	9.28	NA	NA	158	NA	NA	18.16	NA	NA
	max		8.53	NA	NA	9.28	NA	NA	158	NA	NA	18.16	NA	NA
	n		4	1	7	4	1	7	4	1	7	4	1	7
	mean		8.54	8.85	8.38	10.16	8.76	9.90	151	140	150	21.31	23.24	16.25
27.0	SD		8.44, 8.67	0	8.23, 8.60	2.80	0.00	1.53	4	0	28	3.72	0.00	6.06
	min		8.74	8.85	8.68	8.55	8.76	8.36	146	140	108	16.21	23.24	8.33
	max		8.46	8.85	8.20	14.35	8.76	12.94	156	140	189	24.27	23.24	23.46

Table 4. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V4. Slate Pool

Depth (meters)		Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
	n		NA	3	NA	NA	3	NA	NA	3	NA	NA	3	NA
	mean		NA	8.20	NA	NA	6.26	NA	NA	141	NA	NA	19.37	NA
28.0	SD		NA	7.88, N/A	NA	NA	4.75	NA	NA	12	NA	NA	2.50	NA
	min		NA	8.62	NA	NA	0.78	NA	NA	130	NA	NA	16.98	NA
	max		NA	7.85	NA	NA	9.18	NA	NA	154	NA	NA	21.97	NA
	n		NA	NA	1	NA	NA	1	NA	NA	1	NA	NA	1
	mean		NA	NA	8.19	NA	NA	10.43	NA	NA	108	NA	NA	13.40
29.0	SD		NA	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00
	min		NA	NA	8.19	NA	NA	10.43	NA	NA	108	NA	NA	13.40
	max		NA	NA	8.19	NA	NA	10.43	NA	NA	108	NA	NA	13.40
	n		4	1	6	4	1	6	4	1	6	4	1	6
	mean		8.53	8.84	8.42	10.16	8.75	9.82	151	140	158	21.30	23.24	16.57
30.0	SD		8.43, 8.66	0	8.27, 8.64	2.82	#DIV/0!	1.65	4	0	23	3.71	0.00	6.50
	min		8.73	8.84	8.68	8.56	8.75	8.36	146	140	122	16.21	23.24	8.33
	max		8.45	8.84	8.24	14.38	8.75	12.94	156	140	189	24.25	23.24	23.21
	n		NA	NA	1	NA	NA	1	NA	NA	1	NA	NA	1
	mean		NA	NA	8.65	NA	NA	9.20	NA	NA	168	NA	NA	22.70
31.0	SD		NA	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00
	min		NA	NA	8.65	NA	NA	9.20	NA	NA	168	NA	NA	22.70
	max		NA	NA	8.65	NA	NA	9.20	NA	NA	168	NA	NA	22.70
	n		NA	3	NA	NA	3	NA	NA	3	NA	NA	3	NA
	mean		NA	8.22	NA	NA	6.19	NA	NA	142	NA	NA	19.34	NA
32.0	SD		NA	7.92, 10.75	NA	NA	4.81	NA	NA	12	NA	NA	2.51	NA
	min		NA	8.60	NA	NA	0.64	NA	NA	131	NA	NA	16.93	NA
	max		NA	7.89	NA	NA	9.14	NA	NA	154	NA	NA	21.93	NA
	n		4	1	3	4	1	3	4	1	3	4	1	3
	mean		8.52	8.85	8.47	10.13	8.75	8.89	151	140	161	21.29	23.25	19.25
33.0	SD		8.42, 8.67	0	8.36, 8.61	2.80	0.00	0.63	4	0	10	3.70	0.00	2.91
	min		8.74	8.85	8.60	8.55	8.75	8.32	146	140	152	16.21	23.25	16.21
	max		8.43	8.85	8.36	14.32	8.75	9.57	156	140	171	24.23	23.25	22.02
	n		1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean		8.50	NA	NA	8.58	NA	NA	146	NA	NA	24.23	NA	NA
34.5	SD		0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min		8.50	NA	NA	8.58	NA	NA	146	NA	NA	24.23	NA	NA
	max		8.50	NA	NA	8.58	NA	NA	146	NA	NA	24.23	NA	NA
	n		1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean		8.72	NA	NA	8.93	NA	NA	153	NA	NA	23.80	NA	NA
35.0	SD		0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min		8.72	NA	NA	8.93	NA	NA	153	NA	NA	23.80	NA	NA
	max		8.72	NA	NA	8.93	NA	NA	153	NA	NA	23.80	NA	NA
	n		2	4	NA	2	4	NA	2	4	NA	2	4	NA
	mean		8.43	8.37	NA	11.39	6.82	NA	154	142	NA	18.54	20.31	NA
36.0	SD		8.40, 8.46	8.07, N/A	NA	4.03	4.15	NA	4	9	NA	3.30	2.83	NA
	min		8.45	8.85	NA	8.54	0.59	NA	151	131	NA	16.21	16.92	NA
	max		8.41	7.97	NA	14.24	9.13	NA	156	154	NA	20.87	23.25	NA

Table 4. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V4. Slate Pool

Depth (meters)		Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
	n		2	1	NA	2	1	NA	2	1	NA	2	1	NA
	mean		8.44	8.85	NA	11.39	8.79	NA	154	142	NA	18.54	23.05	NA
39.0	SD		8.39, 8.50	0	NA	4.01	0.00	NA	4	0	NA	3.30	0.00	NA
	min		8.48	8.85	NA	8.55	8.79	NA	151	142	NA	16.21	23.05	NA
	max		8.40	8.85	NA	14.22	8.79	NA	156	142	NA	20.87	23.05	NA
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.59	NA	NA	8.67	NA	NA	131	NA	NA	21.77	NA
40.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.59	NA	NA	8.67	NA	NA	131	NA	NA	21.77	NA
	max		NA	8.59	NA	NA	8.67	NA	NA	131	NA	NA	21.77	NA
	n		2	1	NA	2	1	NA	2	1	NA	2	1	NA
	mean		8.42	8.84	NA	11.37	8.78	NA	154	141	NA	18.54	23.01	NA
42.0	SD		8.36, 8.49	0	NA	3.97	0.00	NA	4	0	NA	3.30	0.00	NA
	min		8.47	8.84	NA	8.56	8.78	NA	151	141	NA	16.21	23.01	NA
	max		8.38	8.84	NA	14.17	8.78	NA	156	141	NA	20.87	23.01	NA
	n		1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean		8.48	NA	NA	8.57	NA	NA	151	NA	NA	20.88	NA	NA
45.0	SD		0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min		8.48	NA	NA	8.57	NA	NA	151	NA	NA	20.88	NA	NA
	max		8.48	NA	NA	8.57	NA	NA	151	NA	NA	20.88	NA	NA
	n		1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean		8.45	NA	NA	8.52	NA	NA	151	NA	NA	20.89	NA	NA
48.0	SD		0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min		8.45	NA	NA	8.52	NA	NA	151	NA	NA	20.89	NA	NA
	max		8.45	NA	NA	8.52	NA	NA	151	NA	NA	20.89	NA	NA

*Note: The pH mean is calculated as the mean of the hydrogen ion concentration and then converted back to the pH scale. Becase of the log scale, the standard deviation is presented as upper and lower bounds of the hydrogen ion concentration and then coverted back to the pH scale.

Table 5. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V5. Everett Creek

Depth (meters)		Parameter	pH*			DO (mg/L)			SpCond (uS/cm)			Temperature (C)		
		Year	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.47	8.04	8.34	10.11	21.31	10.38	153	142	150	20.69	20.62	16.50
0.0	SD		8.37, 8.59	7.64, N/A	8.20, 8.55	2.81	24.69	1.63	5	9	29	3.40	2.83	6.14
	min		8.69	8.73	8.60	8.66	8.70	8.47	145	132	108	16.28	17.20	8.35
	max		8.37	7.53	8.12	15.12	58.35	12.84	158	154	189	24.36	23.39	23.59
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.87	NA	NA	8.91	NA	NA	141	NA	NA	23.36	NA
5.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.87	NA	NA	8.91	NA	NA	141	NA	NA	23.36	NA
	max		NA	8.87	NA	NA	8.91	NA	NA	141	NA	NA	23.36	NA
	n		5	2	7	5	2	7	5	2	7	5	2	7
	mean		8.49	7.76	8.36	10.08	5.00	10.32	152	143	150	20.67	20.83	16.41
6.0	SD		8.42, 8.59	7.41, N/A	8.21, 8.59	2.72	5.35	1.72	5	16	29	3.36	2.00	6.07
	min		8.61	8.58	8.61	8.70	1.21	8.27	145	131	108	16.27	19.41	8.34
	max		8.39	7.49	8.15	14.92	8.78	12.92	157	154	189	24.20	22.24	23.42
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.61	NA	NA	9.10	NA	NA	140	NA	NA	17.06	NA
7.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.61	NA	NA	9.10	NA	NA	140	NA	NA	17.06	NA
	max		NA	8.61	NA	NA	9.10	NA	NA	140	NA	NA	17.06	NA
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.84	NA	NA	8.89	NA	NA	140	NA	NA	23.33	NA
10.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.84	NA	NA	8.89	NA	NA	140	NA	NA	23.33	NA
	max		NA	8.84	NA	NA	8.89	NA	NA	140	NA	NA	23.33	NA
	n		5	2	7	5	2	7	5	2	7	5	2	7
	mean		8.50	7.83	8.37	10.02	4.64	10.29	152	143	150	20.64	20.84	16.27
12.0	SD		8.42, 8.60	7.50, N/A	8.22, 8.60	2.68	5.78	1.74	5	16	29	3.35	1.90	5.92
	min		8.63	8.60	8.62	8.60	0.55	8.20	145	131	108	16.27	19.49	8.34
	max		8.39	7.57	8.18	14.80	8.72	12.94	157	154	189	24.13	22.18	23.39
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.62	NA	NA	9.05	NA	NA	140	NA	NA	17.04	NA
14.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.62	NA	NA	9.05	NA	NA	140	NA	NA	17.04	NA
	max		NA	8.62	NA	NA	9.05	NA	NA	140	NA	NA	17.04	NA
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.86	NA	NA	8.89	NA	NA	141	NA	NA	23.34	NA
15.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.86	NA	NA	8.89	NA	NA	141	NA	NA	23.34	NA
	max		NA	8.86	NA	NA	8.89	NA	NA	141	NA	NA	23.34	NA
	n		5	2	7	5	2	7	5	2	7	5	2	7
	mean		8.49	8.08	8.37	10.00	4.54	10.22	153	143	150	20.63	20.79	16.37
18.0	SD		8.40, 8.60	7.78, 9.60	8.22, 8.61	2.68	5.84	1.75	5	16	29	3.35	1.89	6.04
	min		8.64	8.58	8.64	8.54	0.41	8.14	145	131	108	16.27	19.45	8.34
	max		8.37	7.85	8.18	14.78	8.67	12.93	158	154	189	24.09	22.12	23.32

Table 5. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V5. Everett Creek

Depth (meters)		Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.87	NA	NA	8.86	NA	NA	140	NA	NA	23.33	NA
20.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.87	NA	NA	8.86	NA	NA	140	NA	NA	23.33	NA
	max		NA	8.87	NA	NA	8.86	NA	NA	140	NA	NA	23.33	NA
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.60	NA	NA	9.02	NA	NA	140	NA	NA	17.00	NA
21.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.60	NA	NA	9.02	NA	NA	140	NA	NA	17.00	NA
	max		NA	8.60	NA	NA	9.02	NA	NA	140	NA	NA	17.00	NA
	n		5	2	7	5	2	7	5	2	7	5	2	7
	mean		8.48	8.13	8.38	9.96	4.48	10.19	153	143	150	20.63	20.78	16.37
24.0	SD		8.39, 8.59	7.84, 9.15	8.23, 8.61	2.63	5.88	1.76	5	16	29	3.35	1.88	6.04
	min		8.64	8.57	8.64	8.52	0.32	8.11	145	131	108	16.27	19.45	8.34
	max		8.38	7.91	8.19	14.65	8.64	12.92	158	154	189	24.09	22.11	23.32
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.87	NA	NA	8.83	NA	NA	140	NA	NA	23.33	NA
25.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.87	NA	NA	8.83	NA	NA	140	NA	NA	23.33	NA
	max		NA	8.87	NA	NA	8.83	NA	NA	140	NA	NA	23.33	NA
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.59	NA	NA	8.98	NA	NA	140	NA	NA	16.99	NA
28.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.59	NA	NA	8.98	NA	NA	140	NA	NA	16.99	NA
	max		NA	8.59	NA	NA	8.98	NA	NA	140	NA	NA	16.99	NA
	n		5	3	7	5	3	7	5	3	7	5	3	7
	mean		8.47	8.31	8.38	9.92	5.91	10.16	153	142	150	20.62	21.59	16.36
30.0	SD		8.39, 8.58	8.01, 10.41	8.23, 8.61	2.56	4.80	1.77	5	12	29	3.36	1.96	6.03
	min		8.64	8.86	8.64	8.51	0.36	8.08	145	131	108	16.27	19.45	8.34
	max		8.38	7.98	8.19	14.48	8.78	12.91	158	154	189	24.08	23.30	23.29
	n		NA	2	NA	NA	2	NA	NA	2	NA	NA	2	NA
	mean		NA	8.71	NA	NA	8.84	NA	NA	140	NA	NA	20.11	NA
35.0	SD		NA	8.56, 8.94	NA	NA	0.18	NA	NA	0	NA	NA	4.44	NA
	min		NA	8.86	NA	NA	8.71	NA	NA	140	NA	NA	16.97	NA
	max		NA	8.60	NA	NA	8.96	NA	NA	140	NA	NA	23.25	NA
	n		5	2	7	5	2	7	5	2	7	5	2	7
	mean		8.47	8.21	8.38	9.90	4.41	10.14	153	142	150	20.62	20.70	16.36
36.0	SD		8.38, 8.58	7.96, 8.82	8.23, 8.62	2.55	5.88	1.78	5	17	29	3.35	1.84	6.03
	min		8.64	8.54	8.66	8.49	0.25	8.07	145	130	108	16.28	19.40	8.34
	max		8.37	8.02	8.20	14.45	8.57	12.92	158	154	189	24.08	22.00	23.28
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.85	NA	NA	8.63	NA	NA	140	NA	NA	23.19	NA
40.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.85	NA	NA	8.63	NA	NA	140	NA	NA	23.19	NA
	max		NA	8.85	NA	NA	8.63	NA	NA	140	NA	NA	23.19	NA

Table 5. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V5. Everett Creek

Depth (meters)		Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
	n		5	3	7	5	3	7	5	3	7	5	3	7
	mean		8.46	8.33	8.38	9.88	5.91	10.10	153	142	150	20.60	19.46	16.34
42.0	SD		8.37, 8.58	8.09, 8.91	8.23, 8.61	2.53	4.94	1.78	5	12	29	3.36	2.52	6.02
	min		8.64	8.60	8.65	8.49	0.21	8.08	145	131	108	16.28	16.98	8.34
	max		8.34	8.06	8.20	14.39	8.94	12.89	158	154	189	24.08	22.02	23.25
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.84	NA	NA	8.59	NA	NA	140	NA	NA	23.17	NA
45.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.84	NA	NA	8.59	NA	NA	140	NA	NA	23.17	NA
	max		NA	8.84	NA	NA	8.59	NA	NA	140	NA	NA	23.17	NA
	n		5	2	7	5	2	7	5	2	7	5	2	7
	mean		8.43	8.17	8.38	9.83	4.38	10.08	153	142	150	20.60	20.69	16.32
48.0	SD		8.31, 8.61	7.92, 8.83	8.23, 8.61	2.45	5.90	1.80	5	17	29	3.35	1.80	6.00
	min		8.62	8.52	8.66	8.48	0.21	8.04	145	130	108	16.29	19.41	8.34
	max		8.24	7.98	8.21	14.20	8.55	12.89	158	154	189	24.08	21.96	23.19
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.59	NA	NA	8.91	NA	NA	140	NA	NA	16.97	NA
49.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.59	NA	NA	8.91	NA	NA	140	NA	NA	16.97	NA
	max		NA	8.59	NA	NA	8.91	NA	NA	140	NA	NA	16.97	NA
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.83	NA	NA	8.57	NA	NA	140	NA	NA	23.17	NA
50.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.83	NA	NA	8.57	NA	NA	140	NA	NA	23.17	NA
	max		NA	8.83	NA	NA	8.57	NA	NA	140	NA	NA	23.17	NA
	n		4	2	7	4	2	7	4	2	7	4	2	7
	mean		8.50	8.22	8.38	8.72	4.31	10.05	152	142	150	21.67	20.67	16.32
54.0	SD		8.43, 8.59	7.98. 8.80	8.23, 8.61	0.28	6.00	1.81	5	17	29	2.69	1.82	6.00
	min		8.63	8.54	8.65	8.42	0.06	8.00	145	130	108	18.14	19.38	8.34
	max		8.44	8.04	8.21	9.09	8.55	12.89	158	154	189	24.04	21.96	23.20
	n		1	1	NA	1	1	NA	1	1	NA	1	1	NA
	mean		7.92	8.83	NA	9.12	8.57	NA	156	140	NA	16.31	23.17	NA
55.0	SD		0	0	NA	0.00	0.00	NA	0	0	NA	0.00	0.00	NA
	min		7.92	8.83	NA	9.12	8.57	NA	156	140	NA	16.31	23.17	NA
	max		7.92	8.83	NA	9.12	8.57	NA	156	140	NA	16.31	23.17	NA
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.57	NA	NA	8.88	NA	NA	140	NA	NA	16.96	NA
56.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.57	NA	NA	8.88	NA	NA	140	NA	NA	16.96	NA
	max		NA	8.57	NA	NA	8.88	NA	NA	140	NA	NA	16.96	NA
	n		2	NA	1	2	NA	1	2	NA	1	2	NA	1
	mean		8.04	NA	8.44	6.63	NA	9.17	158	NA	146	18.16	NA	22.77
58.0	SD		7.97, 8.11	NA	0	2.00	NA	0.00	0	NA	0	0.01	NA	0.00
	min		8.09	NA	8.44	5.21	NA	9.17	158	NA	146	18.15	NA	22.77
	max		7.99	NA	8.44	8.04	NA	9.17	158	NA	146	18.16	NA	22.77

Table 5. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V5. Everett Creek

Depth (meters)		Parameter	pH*			DO (mg/L)			SpCond (uS/cm)			Temperature (C)		
		Year	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
	n		3	NA	5	3	NA	5	3	NA	5	3	NA	5
	mean		7.75	NA	8.33	6.02	NA	10.61	153	NA	148	22.44	NA	13.66
60.0	SD		7.47, 8.65	NA	8.20, 8.53	2.54	NA	1.82	1	NA	34	1.25	NA	4.78
	min		8.60	NA	8.66	3.67	NA	8.78	152	NA	108	21.04	NA	8.34
	max		7.47	NA	8.21	8.71	NA	12.89	153	NA	188	23.45	NA	20.03
	n		1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean		7.62	NA	NA	1.22	NA	NA	195	NA	NA	23.15	NA	NA
61.0	SD		0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min		7.62	NA	NA	1.22	NA	NA	195	NA	NA	23.15	NA	NA
	max		7.62	NA	NA	1.22	NA	NA	195	NA	NA	23.15	NA	NA
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	7.78	NA	NA	7.78	NA	NA	140	NA	NA	16.96	NA
62.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	7.78	NA	NA	7.78	NA	NA	140	NA	NA	16.96	NA
	max		NA	7.78	NA	NA	7.78	NA	NA	140	NA	NA	16.96	NA
	n		NA	NA	1	NA	NA	1	NA	NA	1	NA	NA	1
	mean		NA	NA	8.18	NA	NA	12.12	NA	NA	108	NA	NA	14.12
65.0	SD		NA	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00
	min		NA	NA	8.18	NA	NA	12.12	NA	NA	108	NA	NA	14.12
	max		NA	NA	8.18	NA	NA	12.12	NA	NA	108	NA	NA	14.12
	n		NA	NA	1	NA	NA	1	NA	NA	1	NA	NA	1
	mean		NA	NA	8.26	NA	NA	10.03	NA	NA	188	NA	NA	8.34
66.0	SD		NA	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00
	min		NA	NA	8.26	NA	NA	10.03	NA	NA	188	NA	NA	8.34
	max		NA	NA	8.26	NA	NA	10.03	NA	NA	188	NA	NA	8.34

*Note: The pH mean is calculated as the mean of the hydrogen ion concentration and then converted back to the pH scale. Becase of the log scale, the standard deviation is presented as upper and lower bounds of the hydrogen ion concentration and then coverted back to the pH scale.

Table 6. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V6. Boundary Lake

Depth (meters)		Parameter	pH*			DO (mg/L)			SpCond (uS/cm)			Temperature (C)		
		Year	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
0.0	n		5	4	7	5	4	7	5	4	7	5	4	7
	mean		8.02	7.63	8.34	9.85	25.27	10.13	153	143	150	20.72	20.84	16.82
	SD		7.67, N/A	7.18, N/A	8.22, 8.52	2.66	33.20	1.64	4	9	28	3.27	2.50	6.23
	min		8.61	8.78	8.54	8.48	8.49	8.30	146	132	109	16.30	17.99	8.19
	max		7.51	7.06	8.17	14.58	75.06	12.76	158	154	190	24.24	23.32	24.32
5.0	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.78	NA	NA	8.66	NA	NA	141	NA	NA	23.31	NA
	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.78	NA	NA	8.66	NA	NA	141	NA	NA	23.31	NA
	max		NA	8.78	NA	NA	8.66	NA	NA	141	NA	NA	23.31	NA
6.0	n		2	NA	NA	2	NA	NA	2	NA	NA	2	NA	NA
	mean		8.48	NA	NA	8.63	NA	NA	149	NA	NA	23.66	NA	NA
	SD		8.34, 8.69	NA	NA	0.21	NA	NA	4	NA	NA	0.29	NA	NA
	min		8.62	NA	NA	8.48	NA	NA	146	NA	NA	23.45	NA	NA
	max		8.38	NA	NA	8.77	NA	NA	152	NA	NA	23.86	NA	NA
7.0	n		NA	3	2	NA	3	2	NA	3	2	NA	3	2
	mean		NA	7.45	8.19	NA	6.50	12.45	NA	142	114	NA	19.83	12.13
	SD		NA	7.03, N/A	8.18, 8.20	NA	3.80	0.54	NA	12	8	NA	2.32	3.22
	min		NA	8.64	8.20	NA	2.11	12.07	NA	131	108	NA	17.70	9.85
	max		NA	6.99	8.18	NA	8.88	12.83	NA	154	119	NA	22.31	14.40
8.0	n		3	NA	5	3	NA	5	3	NA	5	3	NA	5
	mean		8.00	NA	8.44	10.63	NA	9.09	155	NA	164	18.62	NA	18.47
	SD		7.71, 9.54	NA	8.33, 8.58	3.29	NA	0.72	4	NA	16	2.26	NA	6.43
	min		8.50	NA	8.58	8.43	NA	8.14	151	NA	146	16.28	NA	8.17
	max		7.68	NA	8.28	14.41	NA	10.15	158	NA	189	20.78	NA	24.10
10.0	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.79	NA	NA	8.65	NA	NA	141	NA	NA	23.30	NA
	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.79	NA	NA	8.65	NA	NA	141	NA	NA	23.30	NA
	max		NA	8.79	NA	NA	8.65	NA	NA	141	NA	NA	23.30	NA
12.0	n		2	NA	NA	2	NA	NA	2	NA	NA	2	NA	NA
	mean		8.46	NA	NA	8.62	NA	NA	149	NA	NA	23.65	NA	NA
	SD		8.30, 8.74	NA	NA	0.23	NA	NA	4	NA	NA	0.28	NA	NA
	min		8.64	NA	NA	8.46	NA	NA	146	NA	NA	23.45	NA	NA
	max		8.34	NA	NA	8.78	NA	NA	152	NA	NA	23.84	NA	NA
14.0	n		NA	3	2	NA	3	2	NA	3	2	NA	3	2
	mean		NA	7.46	8.19	NA	6.02	12.43	NA	142	114	NA	19.80	12.11
	SD		NA	7.04, N/A	8.17, 8.22	NA	4.57	0.53	NA	12	8	NA	2.35	3.20
	min		NA	8.63	8.21	NA	0.75	12.05	NA	131	108	NA	17.66	9.85
	max		NA	7.00	8.18	NA	8.83	12.80	NA	154	120	NA	22.31	14.37
15.0	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.79	NA	NA	8.65	NA	NA	141	NA	NA	23.22	NA
	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.79	NA	NA	8.65	NA	NA	141	NA	NA	23.22	NA
	max		NA	8.79	NA	NA	8.65	NA	NA	141	NA	NA	23.22	NA

Table 6. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V6. Boundary Lake

Depth (meters)		Parameter	pH*			DO (mg/L)			SpCond (uS/cm)			Temperature (C)	
		Year	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
	n		3	NA	5	3	NA	5	3	NA	5	3	NA	5
	mean		8.16	NA	8.45	10.56	NA	9.00	155	NA	165	18.62	NA	18.45
16.0	SD		7.94, 8.63	NA	8.33, 8.60	3.17	NA	0.73	4	NA	16	2.27	NA	6.43
	min		8.51	NA	8.63	8.42	NA	8.08	151	NA	146	16.26	NA	8.16
	max		7.92	NA	8.28	14.21	NA	10.10	158	NA	189	20.79	NA	24.08
	n		2	NA	NA	2	NA	NA	2	NA	NA	2	NA	NA
	mean		8.49	NA	NA	8.62	NA	NA	149	NA	NA	23.63	NA	NA
18.0	SD		8.33, 8.76	NA	NA	0.25	NA	NA	5	NA	NA	0.28	NA	NA
	min		8.66	NA	NA	8.44	NA	NA	145	NA	NA	23.43	NA	NA
	max		8.37	NA	NA	8.79	NA	NA	152	NA	NA	23.83	NA	NA
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.79	NA	NA	8.64	NA	NA	140	NA	NA	23.16	NA
20.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.79	NA	NA	8.64	NA	NA	140	NA	NA	23.16	NA
	max		NA	8.79	NA	NA	8.64	NA	NA	140	NA	NA	23.16	NA
	n		NA	3	2	NA	3	2	NA	3	2	NA	3	2
	mean		NA	7.86	8.19	NA	5.85	12.42	NA	142	114	NA	19.77	12.09
21.0	SD		NA	7.48, N/A	8.17, 8.22	NA	4.77	0.54	NA	12	8	NA	2.36	3.23
	min		NA	8.62	8.21	NA	0.35	12.03	NA	131	108	NA	17.62	9.80
	max		NA	7.44	8.18	NA	8.79	12.80	NA	154	119	NA	22.30	14.37
	n		5	NA	5	5	NA	5	5	NA	5	5	NA	5
	mean		8.30	NA	8.45	9.73	NA	8.95	152	NA	165	20.61	NA	18.41
24.0	SD		8.12, 8.64	NA	8.33, 8.61	2.42	NA	0.75	4	NA	16	3.18	NA	6.40
	min		8.65	NA	8.63	8.39	NA	8.00	146	NA	146	16.24	NA	8.16
	max		8.04	NA	8.28	14.03	NA	10.08	158	NA	189	23.80	NA	24.01
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.79	NA	NA	8.63	NA	NA	140	NA	NA	23.13	NA
25.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.79	NA	NA	8.63	NA	NA	140	NA	NA	23.13	NA
	max		NA	8.79	NA	NA	8.63	NA	NA	140	NA	NA	23.13	NA
	n		NA	3	2	NA	3	2	NA	3	2	NA	3	2
	mean		NA	8.18	8.19	NA	5.81	12.41	NA	142	114	NA	19.75	12.07
28.0	SD		NA	7.87, N/A	8.18, 8.20	NA	4.83	0.54	NA	12	8	NA	2.38	3.22
	min		NA	8.60	8.20	NA	0.24	12.02	NA	131	108	NA	17.58	9.79
	max		NA	7.84	8.18	NA	8.76	12.79	NA	154	119	NA	22.30	14.35
	n		2	1	NA	2	1	NA	2	1	NA	2	1	NA
	mean		8.47	8.79	NA	8.55	8.60	NA	149	140	NA	23.53	23.05	NA
30.0	SD		8.30, 8.76	0	NA	0.30	0.00	NA	4	0	NA	0.19	0.00	NA
	min		8.65	8.79	NA	8.34	8.60	NA	146	140	NA	23.39	23.05	NA
	max		8.34	8.79	NA	8.76	8.60	NA	152	140	NA	23.66	23.05	NA
	n		3	NA	5	3	NA	5	3	NA	5	3	NA	5
	mean		8.23	NA	8.45	10.42	NA	8.92	155	NA	165	18.60	NA	18.39
32.0	SD		8.07, 8.50	NA	8.33, 8.62	2.99	NA	0.76	3	NA	16	2.27	NA	6.39
	min		8.51	NA	8.64	8.36	NA	7.98	152	NA	146	16.25	NA	8.15
	max		8.07	NA	8.28	13.85	NA	10.08	158	NA	189	20.77	NA	23.93

Table 6. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V6. Boundary Lake

Depth (meters)		Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
	n		NA	4	2	NA	4	2	NA	4	2	NA	4	2
	mean		NA	8.30	8.20	NA	6.48	12.41	NA	142	114	NA	20.56	12.05
35.0	SD		NA	7.97, N/A	8.18, 8.23	NA	4.23	0.54	NA	10	8	NA	2.56	3.22
	min		NA	8.78	8.22	NA	0.14	12.02	NA	131	108	NA	17.56	9.77
	max		NA	7.87	8.19	NA	8.77	12.79	NA	155	119	NA	23.03	14.33
	n		2	NA	NA	2	NA	NA	2	NA	NA	2	NA	NA
	mean		8.44	NA	NA	8.49	NA	NA	149	NA	NA	23.42	NA	NA
36.0	SD		8.26, 8.76	NA	NA	0.27	NA	NA	4	NA	NA	0.11	NA	NA
	min		8.64	NA	NA	8.30	NA	NA	146	NA	NA	23.34	NA	NA
	max		8.31	NA	NA	8.68	NA	NA	152	NA	NA	23.49	NA	NA
	n		3	1	5	3	1	5	3	1	5	3	1	5
	mean		8.25	8.78	8.45	10.43	8.57	8.88	155	140	165	18.60	23.01	18.36
40.0	SD		8.09, 8.50	0	8.32, 8.62	3.01	0.00	0.78	3	0	16	2.28	0.00	6.37
	min		8.50	8.78	8.65	8.37	8.57	7.92	152	140	146	16.23	23.01	8.14
	max		8.09	8.78	8.27	13.89	8.57	10.07	158	140	189	20.77	23.01	23.90
	n		2	3	2	2	3	2	2	3	2	2	3	2
	mean		8.36	8.29	8.19	8.40	5.78	12.39	149	142	114	23.01	19.71	12.05
42.0	SD		8.15, 8.76	8.01, 9.24	8.19, 8.20	0.41	4.88	0.54	4	12	8	0.39	2.42	3.20
	min		8.60	8.63	8.20	8.11	0.14	12.00	146	131	108	22.73	17.50	9.79
	max		8.20	7.98	8.19	8.69	8.77	12.77	152	155	119	23.28	22.29	14.31
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.78	NA	NA	8.54	NA	NA	140	NA	NA	22.95	NA
45.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.78	NA	NA	8.54	NA	NA	140	NA	NA	22.95	NA
	max		NA	8.78	NA	NA	8.54	NA	NA	140	NA	NA	22.95	NA
	n		5	NA	5	5	NA	5	5	NA	5	5	NA	5
	mean		8.29	NA	8.44	9.54	NA	8.81	152	NA	165	20.34	NA	18.32
48.0	SD		8.13, 8.54	NA	8.32, 8.61	2.39	NA	0.82	4	NA	16	2.90	NA	6.36
	min		8.59	NA	8.65	8.01	NA	7.83	146	NA	146	16.23	NA	8.14
	max		8.09	NA	8.27	13.76	NA	10.07	158	NA	189	23.24	NA	23.85
	n		NA	3	2	NA	3	2	NA	3	2	NA	3	2
	mean		NA	8.30	8.19	NA	5.73	12.37	NA	142	114	NA	19.70	12.07
49.0	SD		NA	8.03, 9.14	8.18, 8.20	NA	4.88	0.57	NA	12	8	NA	2.43	3.22
	min		NA	8.62	8.20	NA	0.10	11.97	NA	131	108	NA	17.48	9.79
	max		NA	8.00	8.18	NA	8.76	12.77	NA	155	119	NA	22.29	14.34
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.75	NA	NA	8.40	NA	NA	139	NA	NA	22.57	NA
50.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.75	NA	NA	8.40	NA	NA	139	NA	NA	22.57	NA
	max		NA	8.75	NA	NA	8.40	NA	NA	139	NA	NA	22.57	NA
	n		2	NA	NA	2	NA	NA	2	NA	NA	2	NA	NA
	mean		8.30	NA	NA	8.14	NA	NA	149	NA	NA	22.92	NA	NA
54.0	SD		8.09, 8.76	NA	NA	0.30	NA	NA	4	NA	NA	0.42	NA	NA
	min		8.57	NA	NA	7.93	NA	NA	146	NA	NA	22.62	NA	NA
	max		8.14	NA	NA	8.35	NA	NA	152	NA	NA	23.22	NA	NA

Table 6. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V6. Boundary Lake

Depth (meters)		Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
	n		NA	1	NA	NA	1	NA	NA	1	NA	NA	1	NA
	mean		NA	8.69	NA	NA	8.16	NA	NA	139	NA	NA	22.35	NA
55.0	SD		NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA
	min		NA	8.69	NA	NA	8.16	NA	NA	139	NA	NA	22.35	NA
	max		NA	8.69	NA	NA	8.16	NA	NA	139	NA	NA	22.35	NA
	n		3	3	7	3	3	7	3	3	7	3	3	7
	mean		8.23	8.35	8.34	10.36	5.75	9.75	155	142	150	18.56	19.67	16.49
56.0	SD		8.10, 8.42	8.12, 8.92	8.21, 8.51	2.95	4.89	1.94	3	12	28	2.26	2.45	6.11
	min		8.41	8.61	8.62	8.32	0.10	7.61	152	131	108	16.24	17.42	8.15
	max		8.10	8.09	8.19	13.75	8.75	12.76	158	155	189	20.76	22.28	23.64
	n		2	1	NA	2	1	NA	2	1	NA	2	1	NA
	mean		8.31	8.65	NA	8.05	8.01	NA	149	138	NA	22.85	22.23	NA
60.0	SD		8.10, 8.71	0	NA	0.37	0.00	NA	4	0	NA	0.51	0.00	NA
	min		8.55	8.65	NA	7.79	8.01	NA	146	138	NA	22.49	22.23	NA
	max		8.15	8.65	NA	8.31	8.01	NA	152	138	NA	23.21	22.23	NA
	n		1	NA	NA	1	NA	NA	1	NA	NA	1	NA	NA
	mean		8.02	NA	NA	7.33	NA	NA	146	NA	NA	22.45	NA	NA
62.0	SD		0	NA	NA	0.00	NA	NA	0	NA	NA	0.00	NA	NA
	min		8.02	NA	NA	7.33	NA	NA	146	NA	NA	22.45	NA	NA
	max		8.02	NA	NA	7.33	NA	NA	146	NA	NA	22.45	NA	NA
	n		NA	3	2	NA	3	2	NA	3	2	NA	3	2
	mean		NA	8.35	8.20	NA	5.69	12.36	NA	142	114	NA	19.67	12.07
63.0	SD		NA	8.11, 8.92	8.19, 8.21	NA	4.86	0.56	NA	12	8	NA	2.45	3.22
	min		NA	8.61	8.21	NA	0.09	11.96	NA	131	108	NA	17.41	9.79
	max		NA	8.08	8.19	NA	8.71	12.75	NA	155	119	NA	22.28	14.34
	n		1	NA	5	2	NA	5	2	NA	5	2	NA	5
	mean		8.03	NA	8.30	11.25	NA	8.18	155	NA	164	18.53	NA	18.00
64.0	SD		0	NA	8.13, 8.56	3.91	NA	1.50	0	NA	16	3.29	NA	6.09
	min		8.03	NA	8.65	8.48	NA	5.84	155	NA	146	16.20	NA	8.12
	max		8.03	NA	8.07	14.01	NA	10.05	155	NA	189	20.85	NA	22.52
	n		1	1	NA	1	1	NA	NA	1	NA	1	1	NA
	mean		8.39	8.37	NA	9.00	7.52	NA	NA	138	NA	18.65	22.23	NA
65.0	SD		0	0	NA	0.00	0.00	NA	NA	0	NA	0.00	0.00	NA
	min		8.39	8.37	NA	9.00	7.52	NA	NA	138	NA	18.65	22.23	NA
	max		8.39	8.37	NA	9.00	7.52	NA	NA	138	NA	18.65	22.23	NA
	n		NA	2	2	NA	2	2	NA	2	2	NA	2	2
	mean		NA	8.26	8.20	NA	4.40	12.36	NA	148	114	NA	18.34	12.05
70.0	SD		NA	8.00, 8.96	8.19, 8.21	NA	6.07	0.56	NA	10	8	NA	1.36	3.21
	min		NA	8.62	8.21	NA	0.10	11.96	NA	141	108	NA	17.37	9.78
	max		NA	8.06	8.19	NA	8.69	12.75	NA	155	119	NA	19.30	14.32
	n		1	NA	4	1	NA	4	1	NA	4	1	NA	4
	mean		8.03	NA	8.26	7.81	NA	8.46	154	NA	166	20.70	NA	16.79
72.0	SD		0	NA	8.07, 8.58	0.00	NA	1.13	0	NA	19	0.00	NA	6.38
	min		8.03	NA	8.65	7.81	NA	7.33	154	NA	145	20.70	NA	8.09
	max		8.03	NA	8.03	7.81	NA	10.03	154	NA	189	20.70	NA	22.37

Table 6. 2004-2006 Summary of Vertical Profiling and Water Quality Sampling Results for Station V6. Boundary Lake

Depth (meters)		Parameter Year	pH* 2004	pH* 2005	pH* 2006	DO (mg/L) 2004	DO (mg/L) 2005	DO (mg/L) 2006	SpCond (uS/cm) 2004	SpCond (uS/cm) 2005	SpCond (uS/cm) 2006	Temperature (C) 2004	Temperature (C) 2005	Temperature (C) 2006
	n		NA	1	NA	NA	ND	NA	NA	1	NA	NA	1	NA
	mean		NA	6.76	NA	NA	ND	NA	NA	178	NA	NA	19.18	NA
76.0	SD		NA	0	NA	NA	ND	NA	NA	0	NA	NA	0.00	NA
	min		NA	6.76	NA	NA	ND	NA	NA	178	NA	NA	19.18	NA
	max		NA	6.76	NA	NA	ND	NA	NA	178	NA	NA	19.18	NA
	n		NA	NA	1	NA	NA	1	NA	NA	1	NA	NA	1
	mean		NA	NA	8.18	NA	NA	11.95	NA	NA	108	NA	NA	14.30
77.0	SD		NA	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00
	min		NA	NA	8.18	NA	NA	11.95	NA	NA	108	NA	NA	14.30
	max		NA	NA	8.18	NA	NA	11.95	NA	NA	108	NA	NA	14.30
	n		NA	NA	1	NA	NA	1	NA	NA	1	NA	NA	1
	mean		NA	NA	7.95	NA	NA	7.03	NA	NA	147	NA	NA	22.23
78.0	SD		NA	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00
	min		NA	NA	7.95	NA	NA	7.03	NA	NA	147	NA	NA	22.23
	max		NA	NA	7.95	NA	NA	7.03	NA	NA	147	NA	NA	22.23
	n		NA	NA	1	NA	NA	1	NA	NA	1	NA	NA	1
	mean		NA	NA	8.59	NA	NA	8.03	NA	NA	158	NA	NA	20.62
79.0	SD		NA	NA	0	NA	NA	0.00	NA	NA	0	NA	NA	0.00
	min		NA	NA	8.59	NA	NA	8.03	NA	NA	158	NA	NA	20.62
	max		NA	NA	8.59	NA	NA	8.03	NA	NA	158	NA	NA	20.62

*Note: The pH mean is calculated as the mean of the hydrogen ion concentration and then converted back to the pH scale. Becase of the log scale, the standard deviation is presented as upper and lower bounds of the hydrogen ion concentration and then coverted back to the pH scale.

B.2. pH Exceedences

Table 1. 2004-2006 Summary of pH Exceedances for Station V1. Wolf Creek

Depth (meters)		Year 2004	2005	2006
0.0	# of Exceedences	4	3	na
	max	9.62	8.85	na
0.5	# of Exceedences	na	1	na
	max	na	8.85	na
1.0	# of Exceedences	4	3	4
	max	9.49	8.89	8.78
1.5	# of Exceedences	na	1	na
	max	na	8.88	na
2.0	# of Exceedences	4	3	4
	max	9.34	8.86	8.74
2.5	# of Exceedences	na	1	na
	max	na	8.87	na
3.0	# of Exceedences	4	3	4
	max	9.25	8.89	8.76
3.5	# of Exceedences	na	1	na
	max	na	8.88	na
4.0	# of Exceedences	4	3	4
	max	9.17	8.88	8.74
4.5	# of Exceedences	na	1	na
	max	na	8.87	na
5.0	# of Exceedences	4	3	3
	max	9.11	8.87	8.75
5.5	# of Exceedences	na	1	na
	max	na	8.87	na
6.0	# of Exceedences	4	3	3
	max	9.06	8.87	8.75
6.5	# of Exceedences	na	1	na
	max	na	8.87	na
7.0	# of Exceedences	4	3	3
	max	9.01	8.86	8.75
8.0	# of Exceedences	4	2	3
	max	8.91	8.60	8.74
9.0	# of Exceedences	4	2	3
	max	8.93	8.61	8.74
9.5	# of Exceedences	na	1	ne
	max	na	8.55	ne
10.0	# of Exceedences	4	1	2
	max	8.90	8.62	8.75
10.2	# of Exceedences	1	na	na
	max	8.70	na	na
11.0	# of Exceedences	3	na	1
	max	8.89	na	8.68
11.5	# of Exceedences	1	na	na
	max	8.81	na	na
12.0	# of Exceedences	2	na	1
	max	8.85	na	8.69

Table 1. 2004-2006 Summary of pH Exceedances for Station V1. Wolf Creek

Depth (meters)		Year 2004	2005	2006
13.0	# of Exceedences	2	na	1
	max	8.83	na	8.67
14.0	# of Exceedences	2	na	ne
	max	8.79	na	ne
15.0	# of Exceedences	1	na	ne
	max	8.78	na	ne

Table 2. 2004-2006 Summary of pH Exceedances for Station V2. Metaline Pool

Depth (meters)		Year 2004	2005	2006
0.0	# of Exceedences	4	3	na
	max	8.77	8.86	na
1.0	# of Exceedences	4	3	3
	max	8.75	8.86	8.72
2.0	# of Exceedences	4	3	3
	max	8.76	8.85	8.76
3.0	# of Exceedences	4	3	3
	max	8.73	8.86	8.74
4.0	# of Exceedences	4	3	3
	max	8.74	8.85	8.75
5.0	# of Exceedences	4	3	3
	max	8.72	8.84	8.74
6.0	# of Exceedences	4	3	3
	max	8.72	8.84	8.74
7.0	# of Exceedences	4	3	3
	max	8.72	8.83	8.73
8.0	# of Exceedences	4	3	3
	max	8.73	8.83	8.73
9.0	# of Exceedences	4	3	3
	max	8.71	8.81	8.75
10.0	# of Exceedences	4	3	3
	max	8.72	8.81	8.72
11.0	# of Exceedences	4	3	1
	max	8.70	8.81	8.69
12.0	# of Exceedences	4	3	1
	max	8.71	8.81	8.69
13.0	# of Exceedences	4	2	1
	max	8.72	8.72	8.69
13.3	# of Exceedences	1	na	na
	max	8.70	na	na
14.0	# of Exceedences	2	na	na
	max	8.56	na	na
15.0	# of Exceedences	1	na	na
	max	8.55	na	na

Table 3. 2004-2006 Summary of pH Exceedances for Station V3. PO Mine

Depth (meters)		Year 2004	2005	2006
0.0	# of Exceedences	2	3	3
	max	8.57	8.82	8.70
1.0	# of Exceedences	na	nd	na
	max	na	nd	na
2.0	# of Exceedences	4	nd	na
	max	8.62	nd	na
3.0	# of Exceedences	na	3	3
	max	na	8.83	8.71
4.0	# of Exceedences	5	na	na
	max	8.66	na	na
5.0	# of Exceedences	na	nd	na
	max	na	nd	na
6.0	# of Exceedences	5	3	3
	max	8.65	8.83	8.73
8.0	# of Exceedences	3	na	na
	max	8.52	na	na
9.0	# of Exceedences	na	3	3
	max	na	8.82	8.73
10.0	# of Exceedences	2	na	na
	max	8.52	na	na
12.0	# of Exceedences	1	3	3
	max	8.53	8.83	8.72
14.0	# of Exceedences	1	na	na
	max	8.52	na	na
15.0	# of Exceedences	na	3	3
	max	na	8.84	8.72
16.0	# of Exceedences	1	na	na
	max	8.53	na	na
18.0	# of Exceedences	2	3	3
	max	8.65	8.83	8.71
20.0	# of Exceedences	2	na	na
	max	8.66	na	na
21.0	# of Exceedences	na	3	3
	max	na	8.84	8.70
22.0	# of Exceedences	2	na	1
	max	8.67	na	8.75
23.0	# of Exceedences	ne	na	na
	max	ne	na	na
24.0	# of Exceedences	2	3	2
	max	8.67	8.84	8.70
26.0	# of Exceedences	ne	ne	ne
	max	ne	ne	ne
27.0	# of Exceedences	na	3	2
	max	na	8.83	8.69
28.0	# of Exceedences	ne	na	na
	max	ne	na	na

Table 3. 2004-2006 Summary of pH Exceedances for Station V3. PO Mine

Depth (meters)		Year 2004	2005	2006
29.0	# of Exceedences	na	1	na
	max	na	8.59	na
30.0	# of Exceedences	na	2	1
	max	na	8.83	8.66
33.0	# of Exceedences	na	na	1
	max	na	na	8.65
34.0	# of Exceedences	na	na	1
	max	na	na	8.66
36.0	# of Exceedences	na	na	ne
	max	na	na	ne
39.0	# of Exceedences	na	na	ne
	max	na	na	ne
42.0	# of Exceedences	na	na	ne
	max	na	na	ne

Table 4. 2004-2006 Summary of pH Exceedances for Station V4. Slate Pool

Depth (meters)		Year 2004	2005	2006
0.0	# of Exceedences	ne	3	2
	max	ne	8.87	8.66
1.0	# of Exceedences	na	nd	na
	max	na	nd	na
2.0	# of Exceedences	na	nd	na
	max	na	nd	na
3.0	# of Exceedences	2	1	1
	max	8.51	8.86	8.69
4.0	# of Exceedences	na	2	na
	max	na	8.62	na
5.0	# of Exceedences	na	nd	na
	max	na	nd	na
6.0	# of Exceedences	3	1	2
	max	8.56	8.85	8.69
8.0	# of Exceedences	na	2	na
	max	na	8.61	na
9.0	# of Exceedences	3	1	2
	max	8.76	8.84	8.67
12.0	# of Exceedences	2	3	2
	max	8.76	8.84	8.67
15.0	# of Exceedences	3	1	2
	max	8.75	8.85	8.68
16.0	# of Exceedences	na	2	na
	max	na	8.60	na
18.0	# of Exceedences	2	1	2
	max	8.75	8.84	8.65
20.0	# of Exceedences	na	2	na
	max	na	8.61	na
21.0	# of Exceedences	2	1	2
	max	8.76	8.85	8.67
24.0	# of Exceedences	2	3	2
	max	8.74	8.84	8.67
24.5	# of Exceedences	1	na	na
	max	8.53	na	na
27.0	# of Exceedences	2	1	2
	max	8.74	8.85	8.68
28.0	# of Exceedences	na	2	na
	max	na	8.62	na
29.0	# of Exceedences	na	na	ne
	max	na	na	ne
30.0	# of Exceedences	2	1	2
	max	8.73	8.84	8.68
31.0	# of Exceedences	na	na	1
	max	na	na	8.65
32.0	# of Exceedences	na	2	na
	max	na	8.60	na

Table 4. 2004-2006 Summary of pH Exceedances for Station V4. Slate Pool

Depth (meters)		Year 2004	2005	2006
33.0	# of Exceedences	2	1	1
	max	8.74	8.85	8.60
34.5	# of Exceedences	ne	na	na
	max	ne	na	na
35.0	# of Exceedences	1	na	na
	max	8.72	na	na
36.0	# of Exceedences	ne	3	na
	max	ne	8.85	na
39.0	# of Exceedences	ne	1	na
	max	ne	8.85	na
40.0	# of Exceedences	na	1	na
	max	na	8.59	na
42.0	# of Exceedences	ne	1	na
	max	ne	8.84	na
45.0	# of Exceedences	ne	na	na
	max	ne	na	na
48.0	# of Exceedences	ne	na	na
	max	ne	na	na

Table 5. 2004-2006 Summary of pH Exceedances for Station V5. Everett Creek

Depth (meters)		Year 2004	2005	2006
0.0	# of Exceedences	1	3	1
	max	8.69	8.73	8.60
5.0	# of Exceedences	na	1	na
	max	na	8.87	na
6.0	# of Exceedences	2	1	2
	max	8.61	8.58	8.61
7.0	# of Exceedences	na	1	na
	max	na	8.61	na
10.0	# of Exceedences	na	1	na
	max	na	8.84	na
12.0	# of Exceedences	2	1	2
	max	8.63	8.60	8.62
14.0	# of Exceedences	na	1	na
	max	na	8.62	na
15.0	# of Exceedences	na	1	na
	max	na	8.86	na
18.0	# of Exceedences	3	1	2
	max	8.64	8.58	8.64
20.0	# of Exceedences	na	1	na
	max	na	8.87	na
21.0	# of Exceedences	na	1	na
	max	na	8.60	na
24.0	# of Exceedences	2	1	2
	max	8.64	8.57	8.64
25.0	# of Exceedences	na	1	na
	max	na	8.87	na
28.0	# of Exceedences	na	1	na
	max	na	8.59	na
30.0	# of Exceedences	1	2	2
	max	8.64	8.86	8.64
35.0	# of Exceedences	na	2	na
	max	na	8.86	na
36.0	# of Exceedences	1	1	3
	max	8.64	8.54	8.66
40.0	# of Exceedences	na	1	na
	max	na	8.85	na
42.0	# of Exceedences	1	2	2
	max	8.64	8.60	8.65
45.0	# of Exceedences	na	1	na
	max	na	8.84	na
48.0	# of Exceedences	1	1	2
	max	8.62	8.52	8.66
49.0	# of Exceedences	na	1	na
	max	na	8.59	na
50.0	# of Exceedences	na	1	na
	max	na	8.83	na

Table 5. 2004-2006 Summary of pH Exceedances for Station V5. Everett Creek

Depth (meters)		Year 2004	2005	2006
54.0	# of Exceedences	1	1	2
	max	8.63	8.54	8.65
55.0	# of Exceedences	ne	1	na
	max	ne	8.83	na
56.0	# of Exceedences	na	1	na
	max	na	8.57	na
58.0	# of Exceedences	ne	na	ne
	max	ne	na	ne
60.0	# of Exceedences	1	na	1
	max	8.60	na	8.66
61.0	# of Exceedences	ne	na	na
	max	ne	na	na
62.0	# of Exceedences	na	ne	na
	max	na	ne	na
65.0	# of Exceedences	na	na	ne
	max	na	na	ne
66.0	# of Exceedences	na	na	ne
	max	na	na	ne

Table 6. 2004-2006 Summary of pH Exceedances for Station V6. Boundary Lake

Depth (meters)		Year 2004	2005	2006
0.0	# of Exceedences	1	3	2
	max	8.61	8.78	8.54
5.0	# of Exceedences	na	1	na
	max	na	8.78	na
6.0	# of Exceedences	1	na	na
	max	8.62	na	na
7.0	# of Exceedences	na	2	ne
	max	na	8.64	ne
8.0	# of Exceedences	ne	na	2
	max	ne	na	8.58
10.0	# of Exceedences	na	1	na
	max	na	8.79	na
12.0	# of Exceedences	1	na	na
	max	8.64	na	na
14.0	# of Exceedences	na	2	ne
	max	na	8.63	ne
15.0	# of Exceedences	na	1	na
	max	na	8.79	na
16.0	# of Exceedences	1	na	2
	max	8.51	na	8.63
18.0	# of Exceedences	1	na	na
	max	8.66	na	na
20.0	# of Exceedences	na	1	na
	max	na	8.79	na
21.0	# of Exceedences	na	2	ne
	max	na	8.62	ne
24.0	# of Exceedences	2	na	2
	max	8.65	na	8.63
25.0	# of Exceedences	na	1	na
	max	na	8.79	na
28.0	# of Exceedences	na	2	ne
	max	na	8.60	ne
30.0	# of Exceedences	1	1	na
	max	8.65	8.79	na
32.0	# of Exceedences	1	na	2
	max	8.51	na	8.64
35.0	# of Exceedences	na	3	ne
	max	na	8.78	ne
36.0	# of Exceedences	1	na	na
	max	8.64	na	na
40.0	# of Exceedences	ne	1	2
	max	ne	8.78	8.65
42.0	# of Exceedences	1	2	ne
	max	8.60	8.63	ne
45.0	# of Exceedences	na	1	na
	max	na	8.78	na

Table 6. 2004-2006 Summary of pH Exceedances for Station V6. Boundary Lake

Depth (meters)		Year 2004	2005	2006
48.0	# of Exceedences	1	na	2
	max	8.59	na	8.65
49.0	# of Exceedences	na	2	ne
	max	na	8.62	ne
50.0	# of Exceedences	na	1	na
	max	na	8.75	na
54.0	# of Exceedences	1	na	na
	max	8.57	na	na
55.0	# of Exceedences	na	1	na
	max	na	8.69	na
56.0	# of Exceedences	ne	2	1
	max	ne	8.61	8.62
60.0	# of Exceedences	1	1	na
	max	8.55	8.65	na
62.0	# of Exceedences	ne	na	na
	max	ne	na	na
63.0	# of Exceedences	na	2	ne
	max	na	8.61	ne
64.0	# of Exceedences	ne	na	1
	max	ne	na	8.65
65.0	# of Exceedences	ne	ne	na
	max	ne	ne	na
70.0	# of Exceedences	na	1	ne
	max	na	8.62	ne
72.0	# of Exceedences	ne	na	1
	max	ne	na	8.65
76.0	# of Exceedences	na	ne	na
	max	na	ne	na
77.0	# of Exceedences	na	na	ne
	max	na	na	ne
78.0	# of Exceedences	na	na	ne
	max	na	na	ne
79.0	# of Exceedences	na	na	1
	max	na	na	8.59

B.3. Temperature and pH Profile Graphics

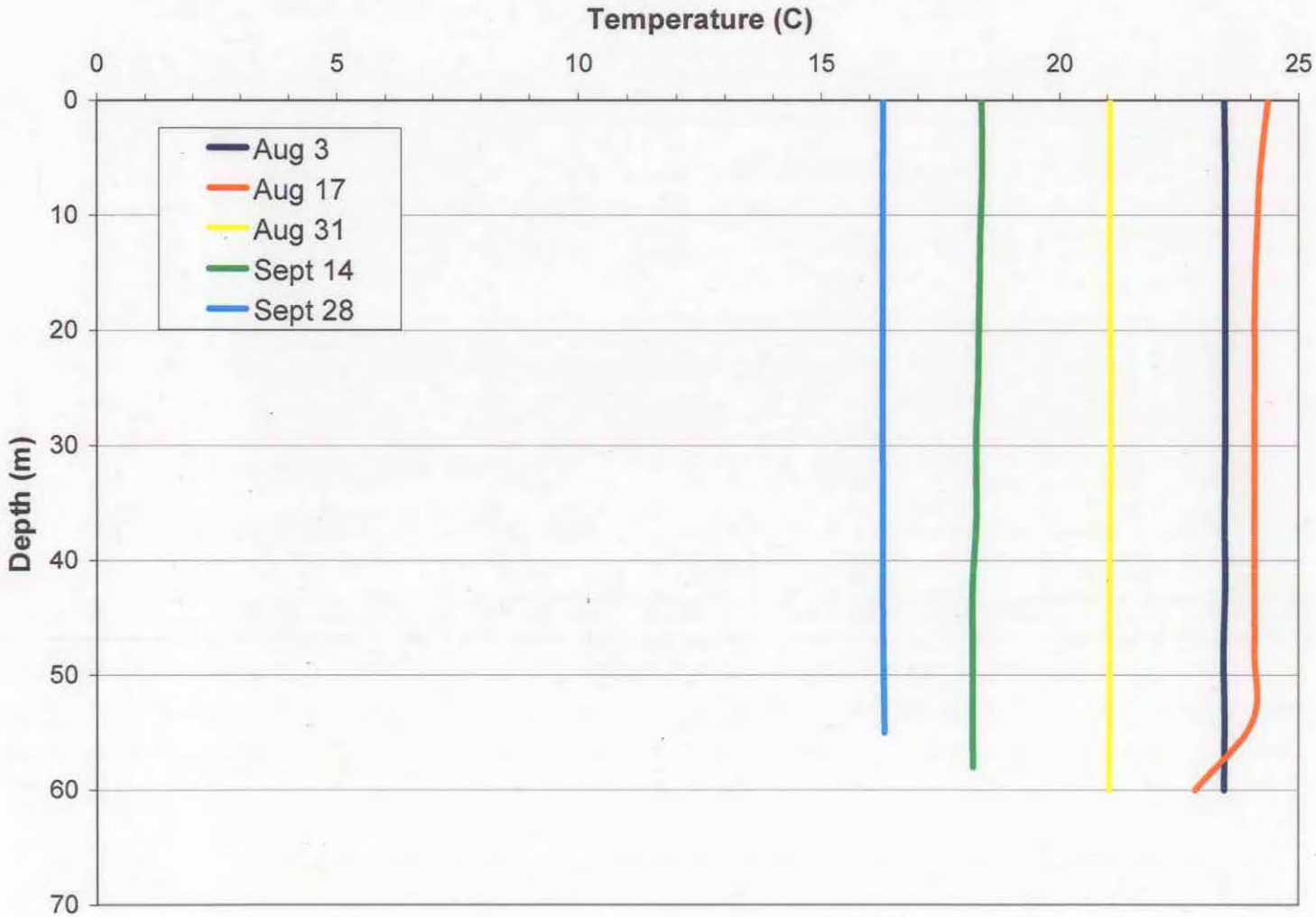


Figure B.3-1. Temperature profiles of Boundary Reservoir at Everett Creek (Station V5) in 2004.

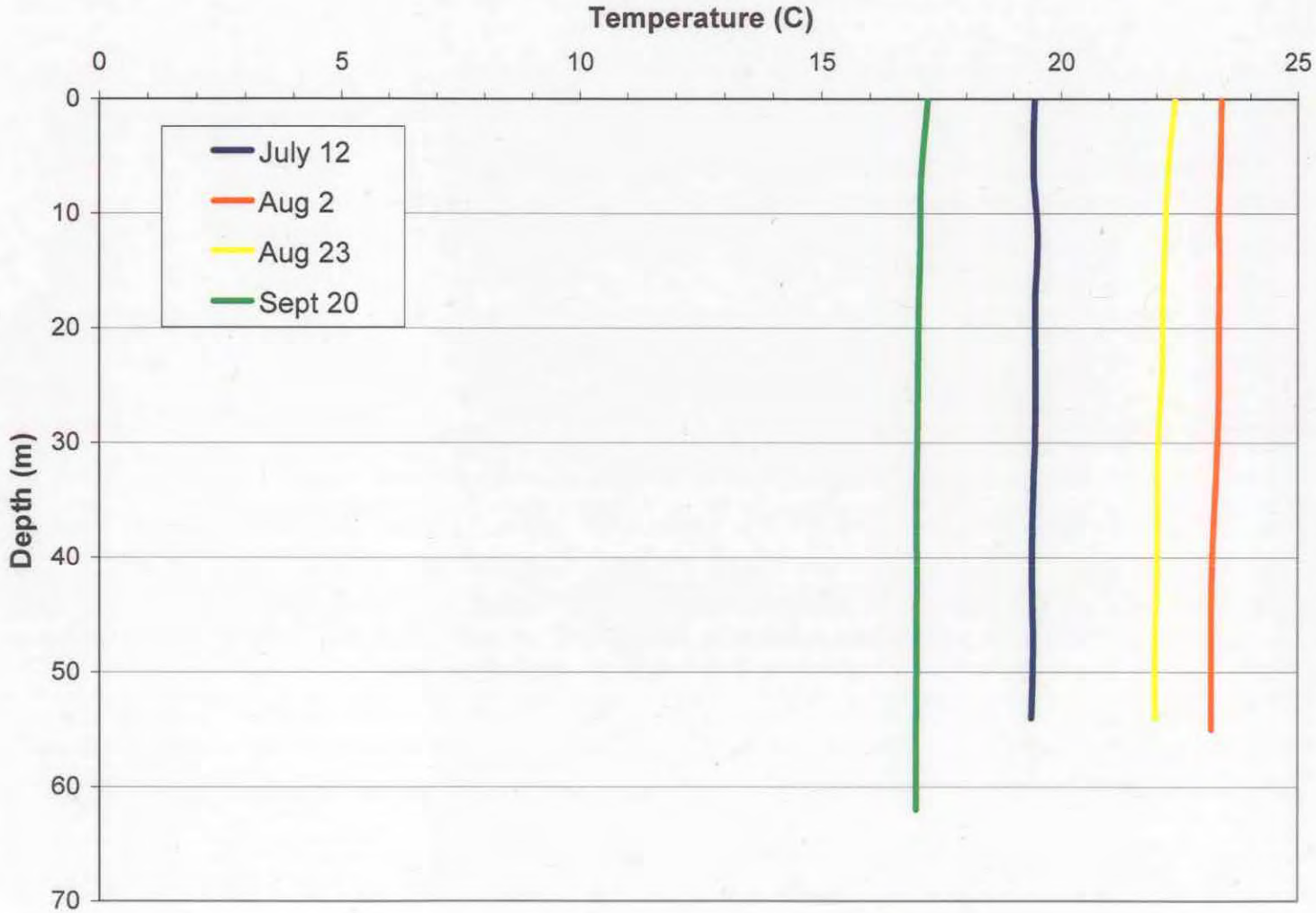


Figure B.3-2. Temperature profiles of Boundary Reservoir at Everett Creek (Station V5) in 2005.

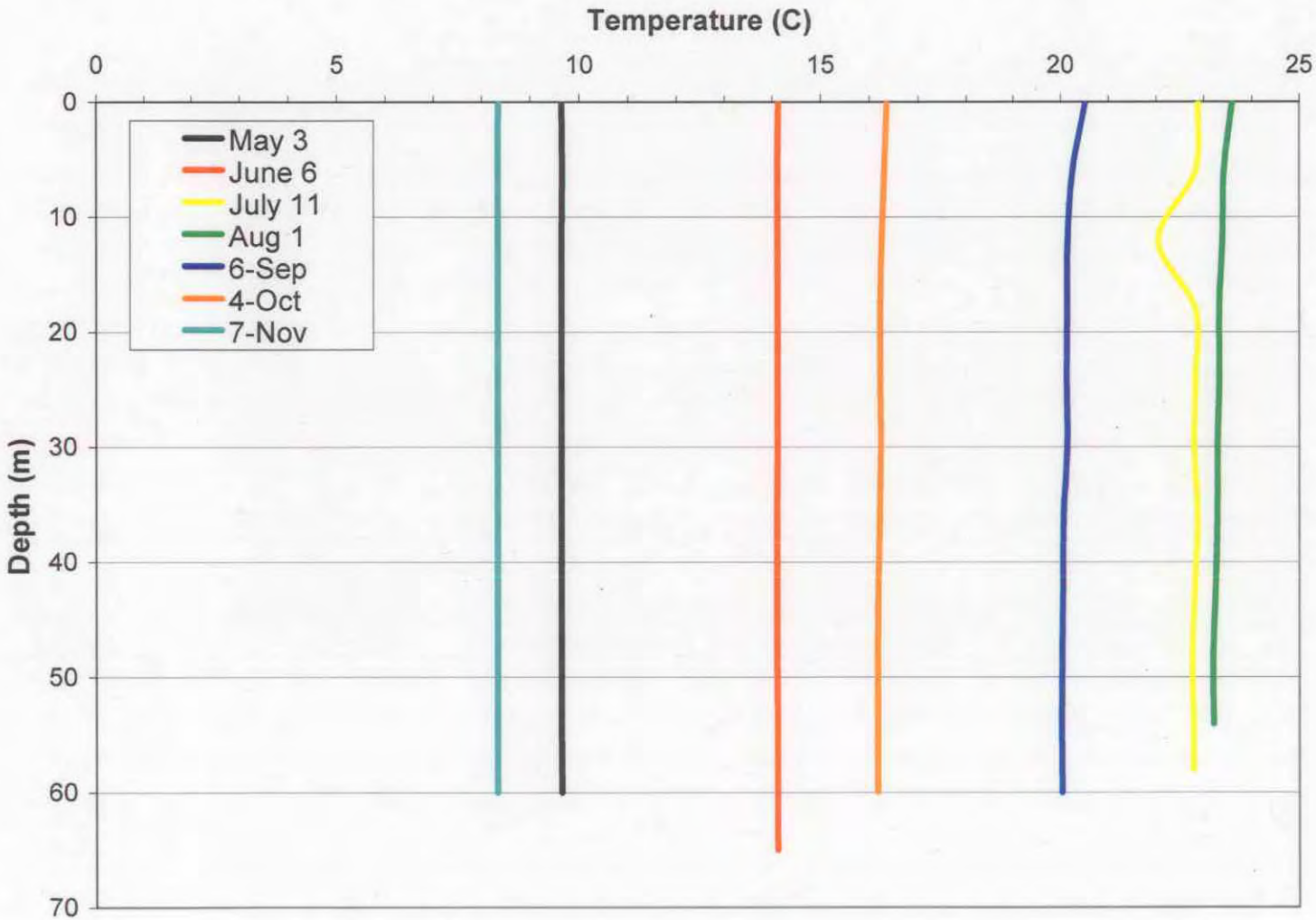


Figure B.3-3. Temperature profiles of Boundary Reservoir at Everett Creek (Station V5) in 2006.

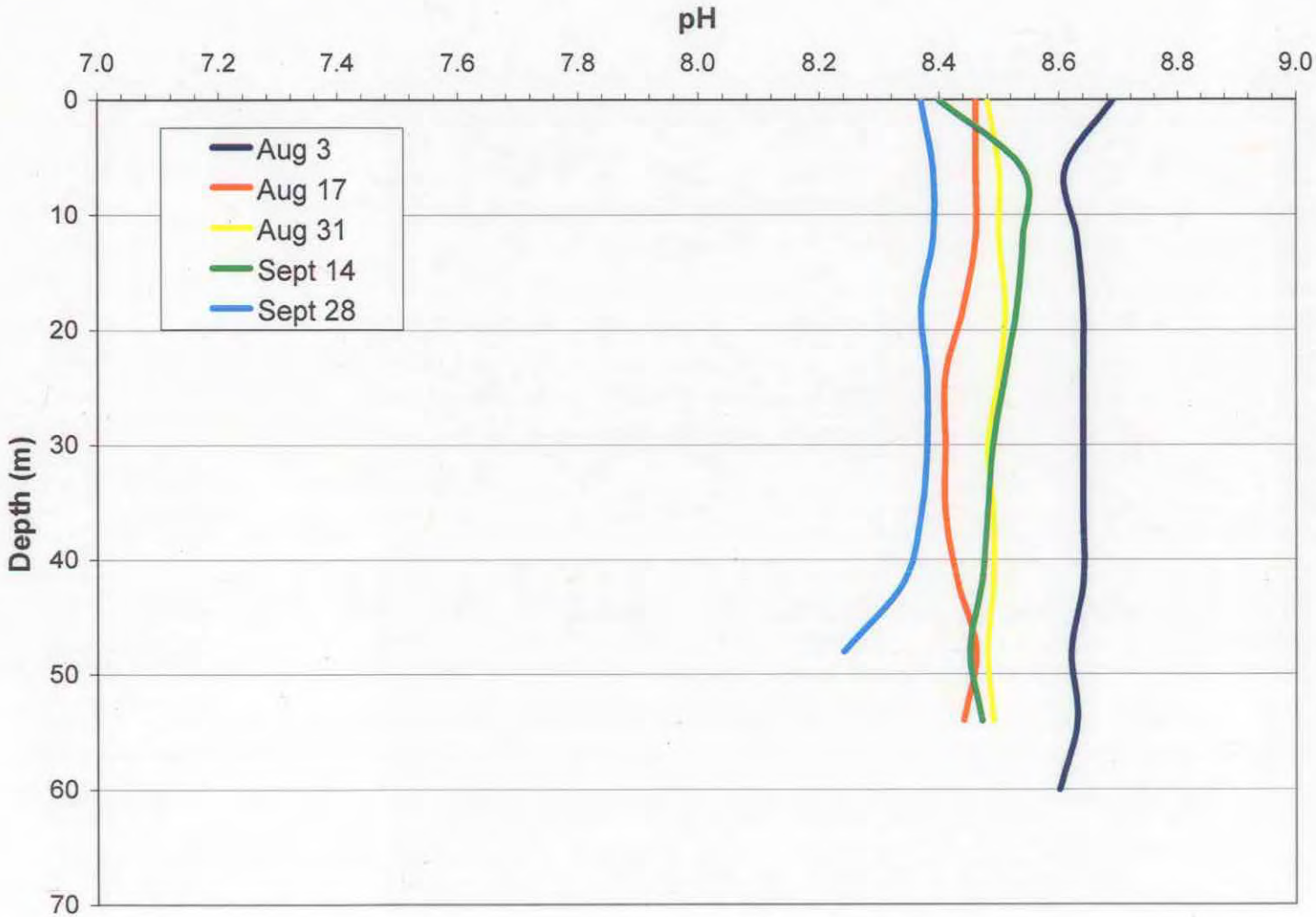


Figure B.3-4. pH profiles of Boundary Reservoir at Everett Creek (Station V5) in 2004.

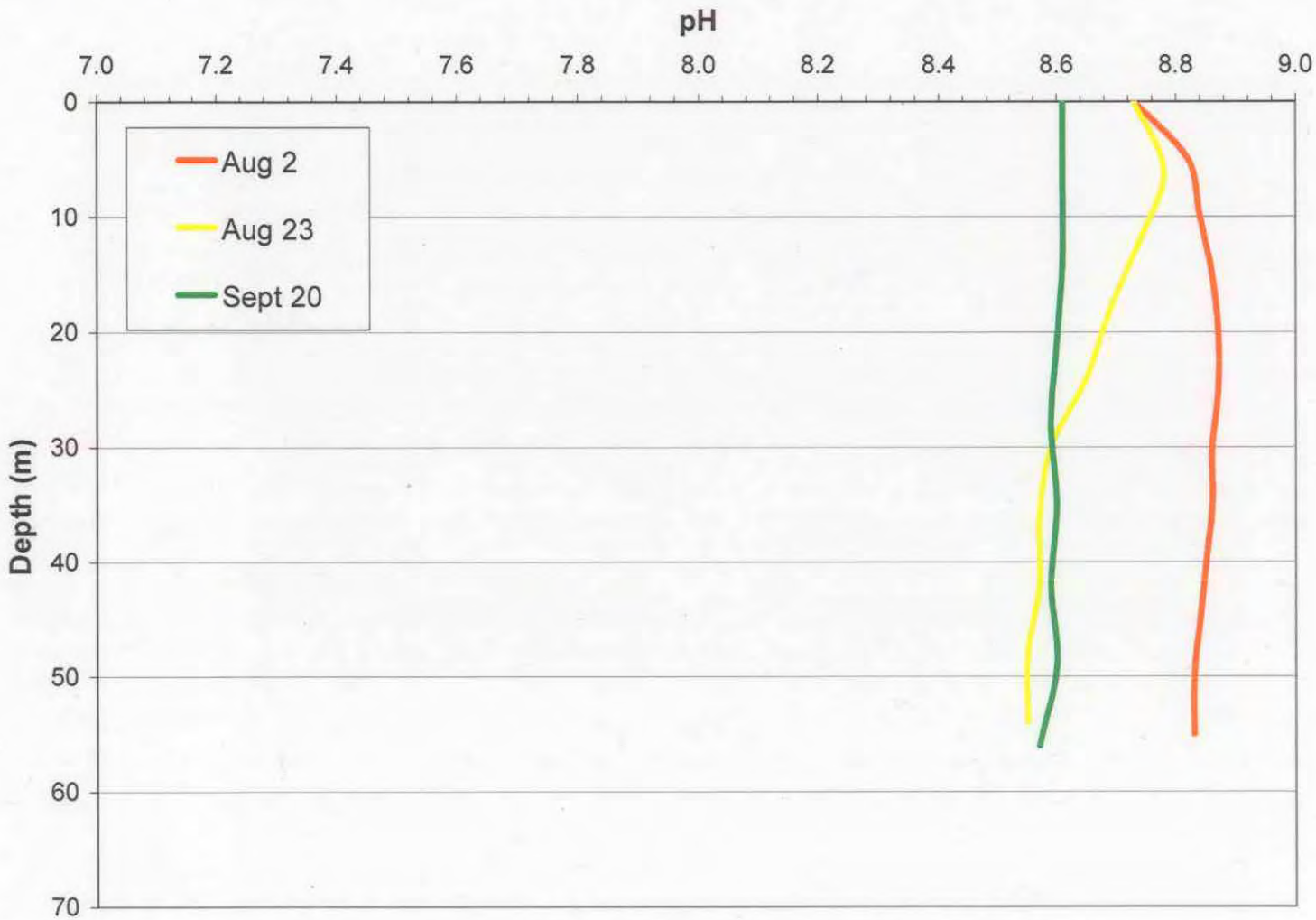


Figure B.3-5. pH profiles of Boundary Reservoir at Everett Creek (Station V5) in 2005.

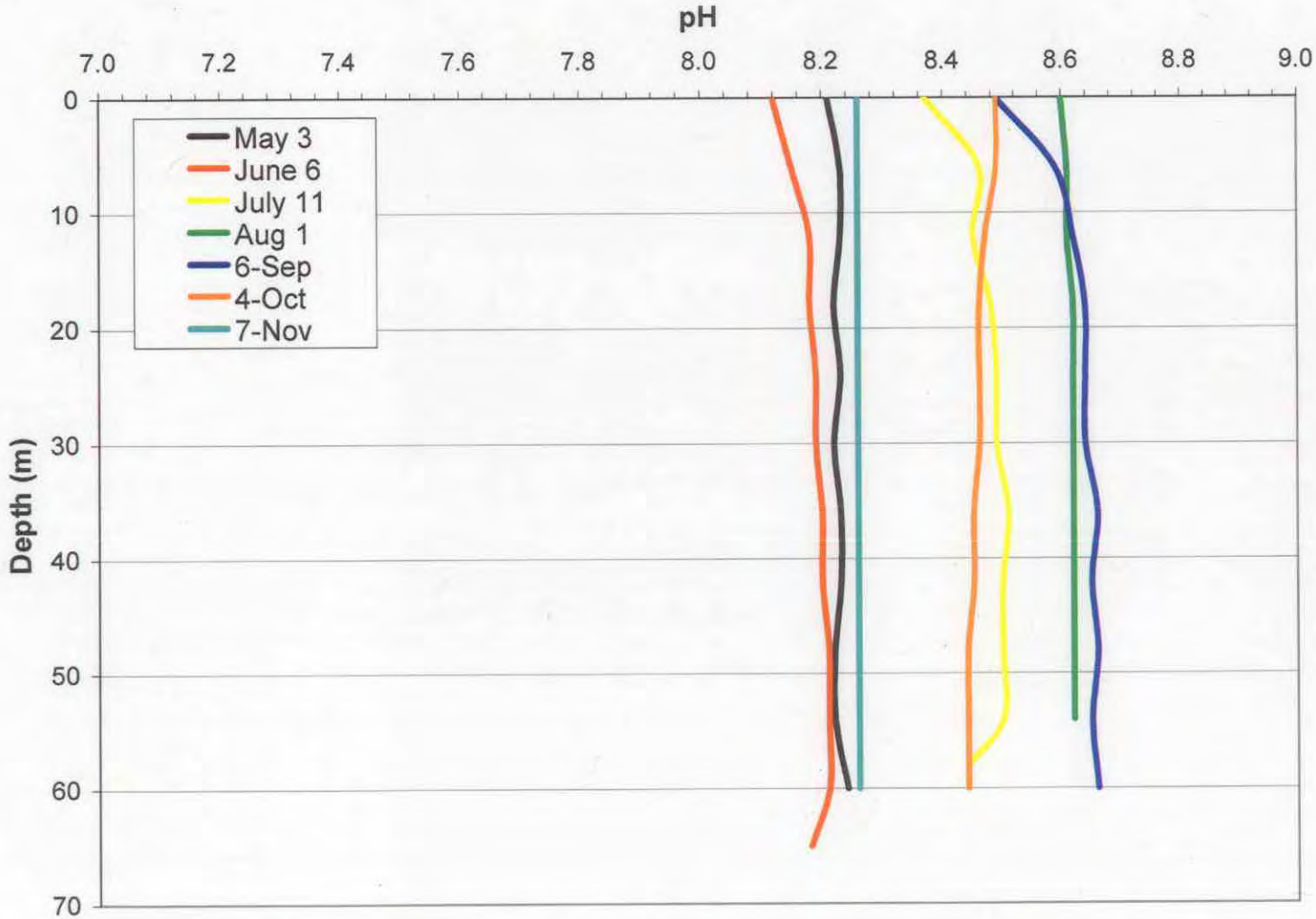


Figure B.3-6. pH profiles of Boundary Reservoir at Everett Creek (Station V5) in 2006.

APPENDIX C –MACROPHYTE STATION 2006 SUMMARY DATA

2006 Macrophyte Station (VV1 and VV1-Ref) Data Table - YSI Measurements

		pH		DO (mg/L)		SpCond (uS/cm)		Temperature (C)		Comments
	Depth (m)	VV1 Within	VV1-Ref Upstream	VV1 Within	VV1-Ref Upstream	VV1 Within	VV1-Ref Upstream	VV1 Within	VV1-Ref Upstream	
6/7/2006	0.0	8.04	8.13	12.64	13.11	112	111	14.58	14.60	
	1.0	8.10	8.16	12.93	13.12	111	111	14.49	14.60	
	2.0	8.12	8.16	12.97	13.10	111	111	14.47	14.60	
	3.0	8.15	8.17	13.01	13.05	111	111	14.44	14.61	
	4.0	8.13	8.18	12.76	13.07	111	111	14.42	14.60	
	5.0		8.18		13.07		111		14.61	
	6.0		8.20		13.06		111		14.61	
	7.0		8.21		13.03		111		14.60	
	8.0		8.20		12.98		111		14.60	
	9.0		8.20		13.05		111		14.62	
	9.5		8.20		13.03		111		14.63	
Mean		**8.11**	**8.18**	**12.86**	**13.06**	**111**	**111**	**14.48**	**14.61**	
StdDev		**8.06, 8.15**	**8.16, 8.21**	**0.16**	**0.04**	**0**	**0**	**0.06**	**0.01**	
7/12/2006	0.5	8.73		9.73		144		22.01		
	1.0	8.73	8.68	9.74	10.05	144	144	22.03	22.18	
	1.3	8.73		9.73		144		22.04		
	2.0		8.70		10.11		144		22.17	
	3.0		8.69		10.12		144		22.17	
	4.0		8.71		10.12		144		22.17	
	5.0		8.71		10.12		144		22.17	
	6.0		8.71		10.11		144		22.17	
	7.0		8.71		10.07		144		22.17	
	8.0		8.72		10.04		144		22.18	
	9.0		8.72		10.02		144		22.18	
	10.0		8.72		10.01		144		22.17	
Mean		**8.73**	**8.71**	**9.73**	**10.08**	**144**	**144**	**22.03**	**22.17**	
StdDev		**0.00**	**8.69, 8.72**	**0.01**	**0.04**	**0**	**0**	**0.02**	**0.00**	
8/2/2006	0.0	8.64		8.75		159		21.82		
	0.5	8.71		9.65		159		20.85		
	1.0	8.70	8.71	9.32	8.74	160	158	20.80	22.55	
	1.5	8.73		9.47		160		20.90		
	2.0		8.74		8.60		158		22.56	
	3.0		8.73		8.56		158		22.56	
	4.0		8.71		8.54		158		22.56	
	5.0		8.68		8.52		159		22.55	
	6.0		8.70		8.50		159		22.54	
	7.0		8.71		8.49		158		22.56	
	8.0		8.72		8.48		158		22.56	
	9.0		8.71		8.47		158		22.56	
	10.0		8.71		8.46		158		22.56	
	11.0		8.65		8.44		158		22.56	
	1.0	8.87		10.58		156		20.68		spot measurement
	1.0	8.82		10.89		160		20.30		spot measurement
	1.0	8.90		10.64		154		20.55		spot measurement
	1.0	8.82		9.76		155		20.54		spot measurement
Mean		**8.77**	**8.71**	**9.88**	**8.53**	**158**	**158**	**20.81**	**22.56**	
StdDev		**8.73, 8.80**	**8.68, 8.73**	**0.75**	**0.08**	**2**	**0**	**0.45**	**0.01**	

2006 Macrophyte Station (VV1 and VV1-Ref) Data Table - YSI Measurements

		pH		DO (mg/L)		SpCond (uS/cm)		Temperature (C)		Comments
	Depth (m)	VV1 Within	VV1-Ref Upstream	VV1 Within	VV1-Ref Upstream	VV1 Within	VV1-Ref Upstream	VV1 Within	VV1-Ref Upstream	
9/7/2006	0.0	8.65		11.22		157		19.55		
	0.5	8.68		11.02		156		19.50		
	1.0	8.43	8.68	9.66	10.72	161	156	19.33	20.12	
	1.5	8.34		8.96		160		19.31		
	2.0		8.73		10.51		156		20.12	
	3.0		8.74		10.29		156		20.12	
	4.0		8.73		10.20		156		20.11	
	5.0		8.73		10.01		156		20.11	
	6.0		8.74		9.88		156		20.11	
	7.0		8.73		9.78		156		20.11	
	8.0		8.73		9.62		156		20.12	
	9.0		8.73		9.55		156		20.12	
	10.0		8.74		9.47		156		20.12	
	11.0		8.68		9.41		156		20.11	
	0.5	8.63		10.66		157		19.39		spot measurement
	0.5	8.66		10.64		157		19.35		spot measurement
	0.5	8.65		10.37		158		19.32		spot measurement
Mean		**8.56**	**8.72**	**10.36**	**9.95**	**158**	**156**	**19.39**	**20.12**	
StdDev		**8.55, 8.57**	**8.70, 8.74**	**0.80**	**0.44**	**2**	**0**	**0.09**	**0.01**	
10/5/2006	0.0	8.16		8.41		168		14.41		
	0.5	8.14		8.32		169		14.34		
	1.0	8.15	8.42	8.21	9.15	169	162	14.36	15.49	
	2.0		8.42		9.13		162		15.50	
	3.0		8.43		9.12		162		15.50	
	4.0		8.42		9.11		162		15.50	
	5.0		8.42		9.11		163		15.50	
	6.0		8.42		9.11		162		15.50	
	7.0		8.42		9.10		163		15.51	
	8.0		8.42		9.10		162		15.51	
	9.0		8.42		9.10		162		15.51	
	10.0		8.43		9.09		162		15.51	
	0.5	8.40		8.95		164		14.43		spot measurement
	0.5	8.47		9.19		164		14.74		spot measurement
	0.5	8.38		8.64		165		14.88		spot measurement
Mean		**8.26**	**8.42**	**8.62**	**9.11**	**167**	**162**	**14.53**	**15.50**	
StdDev		**8.23, 8.30**	**8.42, 8.43**	**0.38**	**0.02**	**2**	**0**	**0.23**	**0.01**	

2006 Macrophyte Station (VV1 and VV1-Ref) Data Table - YSI Measurements

		pH		DO (mg/L)		SpCond (uS/cm)		Temperature (C)		Comments
	Depth (m)	VV1 Within	VV1-Ref Upstream	VV1 Within	VV1-Ref Upstream	VV1 Within	VV1-Ref Upstream	VV1 Within	VV1-Ref Upstream	
11/8/2006	0.0	8.30		10.19		189		8.00		
	0.5	8.27		10.16		189		8.03		
	1.0	8.28	8.30	10.09	10.21	189	188	8.03	8.45	
	2.0		8.29		10.12		188		8.44	
	3.0		8.29		10.10		188		8.45	
	4.0		8.29		10.09		188		8.44	
	5.0		8.28		10.09		188		8.45	
	6.0		8.28		10.08		188		8.45	
	7.0		8.28		10.08		188		8.44	
	8.0		8.28		10.08		188		8.44	
	9.0		8.28		10.08		188		8.45	
	10.0		8.29		10.08		188		8.46	
	1.0	8.31		10.29		189		8.04		spot measurement
	1.0	8.29		10.13		190		8.01		spot measurement
	1.0	8.29		10.20		190		7.99		spot measurement
Mean		**8.29**	**8.29**	**10.18**	**10.10**	**189**	**188**	**8.02**	**8.45**	
StdDev		**8.28, 8.30**	**8.28, 8.29**	**0.07**	**0.04**	**1**	**0**	**0.02**	**0.01**	

Notes: "Within" refers to within the macrophyte bed at station VV1
"Upstream" refers to upstream of the macrophyte bed at station VV1-Ref
Spot measurements were taken after the vertical profile to reflect the variability of water quality in the macrophyte bed.

2006 Macrophyte Station Data Table - Box Canyon Dam (T1) and Boundary Dam (T7) AM/PM YSI Measurements

		pH				DO (mg/L)				SpCond (uS/cm)				Temperature			
	Depth (m)	T1 Box Canyon Upstream		T7 Boundary Downstream		T1 Box Canyon Upstream		T7 Boundary Downstream		T1 Box Canyon Upstream		T7 Boundary Downstream		T1 Box Canyon Upstream		T7 Boundary Downstream	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
6/6/2006	1.0			8.40	7.75			10.16	12.32			108	109			14.64	14.45
	3.0			8.34	7.96			10.29	12.31			108	108			14.65	14.38
	5.0			8.29	8.02			10.28	12.31			108	108			14.65	14.39
	7.0			8.25	8.05			10.28	12.32			108	108			14.65	14.38
	9.0			8.22	8.09			10.28	12.26			108	108			14.65	14.37
	11.0			8.20	8.11			10.27	12.26			108	108			14.65	14.37
	13.0			8.18	8.13			10.29	12.25			108	108			14.65	14.38
	15.0			8.16	8.14			10.29	12.24			108	108			14.65	14.38
	17.0			8.15	8.15			10.29	12.24			108	108			14.65	14.39
	19.0			8.15	8.15			10.28	12.23			108	108			14.65	14.43
	21.0			8.14	8.16			10.28	12.23			108	108			14.65	14.40
	23.0			8.14	8.16			10.27	12.23			108	108			14.65	14.41
	25.0			8.13	8.17			10.28	12.23			108	108			14.65	14.43
	27.0			8.13	8.17			10.28	12.23			108	108			14.64	14.40
	29.0			8.13	8.18			10.27	12.23			108	108			14.64	14.39
Mean				**8.19**	**8.08**			**10.27**	**12.26**			**108**	**108**			**14.65**	**14.40**
StdDev				**8.12, 8.28**	**7.95, 8.26**			**0.03**	**0.04**			**0**	**0**			**0.00**	**0.02**
6/7/2006	1.0	8.15	7.96			10.67	10.99			110	111			14.33	14.87		
	3.0	8.17	7.99			10.69	10.98			110	111			14.33	14.85		
	5.0	8.19	8.06			10.68	10.93			110	111			14.33	14.83		
	7.0	8.20	8.10			10.67	10.92			110	111			14.33	14.83		
	9.0	8.21	8.13			10.68	10.91			110	111			14.34	14.83		
	11.0	8.21	8.16			10.67	10.89			110	111			14.34	14.83		
	13.0	8.22	8.18			10.67	10.90			110	111			14.34	14.83		
	15.0	8.21	8.19			10.64	10.89			110	111			14.34	14.83		
	17.0	8.22	8.19			10.64	10.87			110	111			14.34	14.83		
	19.0	8.22	8.20			10.64	10.86			110	111			14.34	14.83		
	21.0	8.23	8.20			10.63	10.86			110	111			14.34	14.83		
Mean		**8.20**	**8.12**			**10.66**	**10.91**			**110**	**111**			**14.34**	**14.84**		
StdDev		**8.18, 8.23**	**8.03, 8.22**			**0.02**	**0.04**			**0**	**0**			**0.01**	**0.01**		
7/11/2006	1.0			8.98	8.31			8.41	9.10			145	146			22.51	22.88
	3.0			8.83	8.41			8.42	9.01			145	146			22.52	22.80
	5.0			8.78	8.43			8.40	8.99			145	146			22.52	22.79
	7.0			8.74	8.45			8.40	8.98			145	146			22.52	22.79
	9.0			8.70	8.47			8.42	9.00			145	146			22.53	22.81
	11.0			8.67	8.49			8.40	8.99			146	147			22.53	22.80
	13.0			8.65	8.50			8.42	9.00			146	146			22.53	22.80
	15.0			8.64	8.49			8.42	9.03			146	146			22.53	22.82
	17.0			8.62	8.50			8.45	9.02			146	147			22.54	22.81
	19.0			8.59	8.50			8.45	9.01			146	147			22.54	22.81
	21.0			8.57	8.51			8.48	9.01			146	146			22.53	22.82
	23.0			8.57	8.51			8.45	9.01			146	147			22.53	22.81
	25.0			8.57	8.52			8.40	9.01			146	147			22.54	22.82
	27.0			8.55	8.51			8.31	9.00			146	146			22.53	22.81
	28.0			8.54	8.51			8.26	9.00			146	146			22.53	22.81
Mean				**8.65**	**8.47**			**8.41**	**9.01**			**146**	**146**			**22.53**	**22.81**
StdDev				**8.56, 8.77**	**8.41, 8.54**			**0.06**	**0.03**			**0**	**0**			**0.01**	**0.02**

2006 Macrophyte Station Data Table - Box Canyon Dam (T1) and Boundary Dam (T7) AM/PM YSI Measurements

		pH				DO (mg/L)				SpCond (uS/cm)				Temperature			
	Depth (m)	T1 Box Canyon Upstream		T7 Boundary Downstream		T1 Box Canyon Upstream		T7 Boundary Downstream		T1 Box Canyon Upstream		T7 Boundary Downstream		T1 Box Canyon Upstream		T7 Boundary Downstream	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
7/12/2006	1.0	8.77	8.72			9.25	9.90			144	143			22.28	21.95		
	3.0	8.75	8.73			9.26	9.90			144	144			22.28	21.95		
	5.0	8.74	8.74			9.26	9.88			144	143			22.28	21.95		
	7.0	8.73	8.74			9.26	9.86			144	143			22.28	21.95		
	9.0	8.73	8.75			9.25	9.86			144	143			22.28	21.95		
	11.0	8.72	8.74			9.27	9.85			144	143			22.28	21.95		
	13.0	8.71	8.75			9.32	9.86			144	143			22.28	21.94		
	15.0	8.71	8.74			9.31	9.85			144	143			22.28	21.94		
	17.0	8.70	8.74			9.28	9.85			144	143			22.28	21.94		
	19.0	8.70	8.74			9.26	9.84			144	143			22.28	21.94		
	21.0	8.69	8.74			9.25	9.84			144	143			22.27	21.94		
	23.0	8.69				9.27				144				22.27			
Mean		**8.72**	**8.74**			**9.27**	**9.86**			**144**	**143**			**22.28**	**21.95**		
StdDev		**8.70, 8.74**	**8.73, 8.75**			**0.02**	**0.02**			**0**	**0**			**0.00**	**0.01**		
8/1/2006	1.0	8.35	8.59	8.62	8.42	9.01	8.84	8.42	8.53	158	148	158	160	23.31	23.09	24.08	24.30
	3.0	8.55	8.65	8.62	8.46	9.00	8.80	8.53	8.45	157	158	159	159	23.29	23.08	24.12	24.21
	5.0	8.64	8.67	8.61	8.45	8.99	8.77	8.50	8.21	158	158	159	160	23.31	23.09	24.12	24.08
	7.0	8.68	8.69	8.61	8.45	8.99	8.69	8.40	8.16	158	158	159	160	23.30	23.09	24.12	24.04
	9.0	8.70	8.70	8.61	8.47	9.01	8.69	8.38	8.14	158	158	159	160	23.30	23.09	24.11	24.05
	11.0	8.70	8.67	8.61	8.48	8.98	8.69	8.41	8.13	158	158	159	160	23.31	23.09	24.12	24.02
	13.0	8.70	8.65	8.60	8.47	8.94	8.65	8.42	8.10	158	158	159	160	23.31	23.08	24.12	24.01
	15.0	8.69	8.65	8.61	8.47	8.89	8.61	8.46	8.13	158	158	159	160	23.31	23.09	24.12	23.99
	17.0	8.69	8.55	8.60	8.48	8.84	8.57	8.46	8.14	158	158	159	160	23.31	23.08	24.11	23.92
	19.0	8.66	8.61	8.59	8.48	8.87	8.57	8.45	8.12	158	158	159	160	23.30	23.09	24.10	23.92
	21.0	8.67	8.65	8.60	8.49	8.85	8.79	8.44	8.10	158	158	160	160	23.30	23.08	24.06	23.92
	23.0		8.66	8.58	8.48		8.71	8.31	7.99		158	160	160		23.08	24.04	23.86
	25.0			8.58				8.26				160				24.03	
	27.0			8.56				8.02				160				24.04	
Mean		**8.63**	**8.64**	**8.60**	**8.47**	**8.94**	**8.70**	**8.39**	**8.18**	**158**	**157**	**159**	**160**	**23.30**	**23.09**	**24.09**	**24.03**
StdDev		**8.51, 8.79**	**8.60, 8.69**	**8.58, 8.62**	**8.45, 8.49**	**0.07**	**0.09**	**0.13**	**0.15**	**0**	**3**	**1**	**0**	**0.01**	**0.01**	**0.03**	**0.13**
9/6/2006	1.0	12.65	10.28	8.27	8.38	7.99	9.31	10.60	9.41	155	154	155	158	19.99	20.28	20.65	21.35
	3.0	12.45	10.23	8.38	8.43	8.01	9.35	10.53	9.28	154	154	156	157	20.00	20.27	20.76	20.79
	5.0	12.25	10.15	8.46	8.48	8.03	9.32	10.46	9.19	154	154	157	157	20.00	20.27	20.77	20.72
	7.0	12.03	10.09	8.49	8.50	8.02	9.32	10.34	9.11	154	154	157	158	20.00	20.27	20.78	20.72
	9.0	11.84	10.03	8.53	8.51	8.02	9.31	10.26	9.07	154	154	157	158	20.00	20.27	20.77	20.72
	11.0	11.61	9.95	8.54	8.51	8.05	9.33	10.17	9.05	154	154	157	158	20.02	20.27	20.78	20.71
	13.0	11.48	9.91	8.56	8.53	8.06	9.33	10.07	8.95	154	154	157	157	20.02	20.27	20.78	20.72
	15.0	11.33	9.86	8.57	8.53	8.06	9.33	10.06	8.92	154	154	157	157	20.02	20.27	20.78	20.72
	17.0	11.18	9.81	8.57	8.51	8.07	9.31	10.00	8.87	154	154	157	157	20.02	20.27	20.77	20.70
	19.0	10.96		8.59	8.52	7.99		9.90	8.83	154		157	157	20.02		20.77	20.67
	21.0	10.86		8.59	8.54	8.04		9.89	8.78	154		157	157	20.02		20.77	20.68
	23.0			8.60	8.53			9.80	8.73			157	157			20.77	20.66
	25.0			8.60	8.54			9.70	8.68			157	157			20.76	20.65
	27.0			8.56	8.53			9.39	8.56			158	157			20.76	20.65
	29.0				8.54				8.51				157				20.68
Mean		**11.38**	**10.01**	**8.51**	**8.50**	**8.03**	**9.32**	**10.08**	**8.93**	**154**	**154**	**157**	**157**	**20.01**	**20.27**	**20.76**	**20.74**
StdDev		**11.06, N/A**	**9.87, 10.20**	**8.41, 8.64**	**8.46, 8.56**	**0.03**	**0.01**	**0.34**	**0.26**	**0**	**0**	**1**	**0**	**0.01**	**0.00**	**0.03**	**0.17**

2006 Macrophyte Station Data Table - Box Canyon Dam (T1) and Boundary Dam (T7) AM/PM YSI Measurements

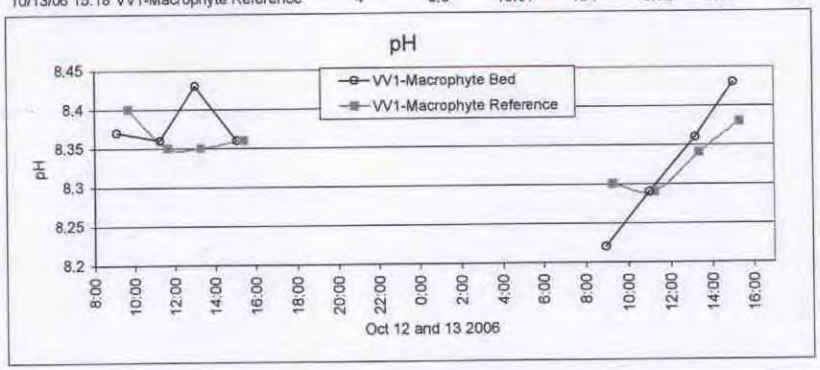
		pH				DO (mg/L)				SpCond (uS/cm)				Temperature			
	Depth (m)	T1 Box Canyon Upstream		T7 Boundary Downstream		T1 Box Canyon Upstream		T7 Boundary Downstream		T1 Box Canyon Upstream		T7 Boundary Downstream		T1 Box Canyon Upstream		T7 Boundary Downstream	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
10/4/2006	1.0	8.50	8.42	8.53	8.52	9.15	9.32	9.37	9.05	170	171	162	162	15.93	15.87	16.47	16.57
	3.0	8.51	8.47	8.54	8.57	9.17	9.29	9.16	9.04	170	171	162	162	15.98	15.84	16.49	16.63
	5.0	8.50	8.48	8.56	8.60	9.16	9.24	9.10	9.06	170	171	162	162	15.98	15.84	16.49	16.53
	7.0	8.51	8.47	8.54	8.58	9.16	9.20	9.07	9.06	170	171	162	162	15.98	15.84	16.49	16.51
	9.0	8.51	8.46	8.53	8.56	9.15	9.18	9.05	9.06	170	171	162	162	15.98	15.84	16.49	16.51
	11.0	8.49	8.45	8.54	8.57	9.15	9.16	9.03	9.07	170	171	162	162	15.98	15.83	16.48	16.50
	13.0	8.49	8.45	8.54	8.56	9.16	9.14	8.99	9.07	170	171	162	162	15.98	15.84	16.48	16.47
	15.0	8.47	8.43	8.55	8.56	9.17	9.13	8.95	9.07	170	171	162	162	15.97	15.84	16.48	16.47
	17.0	8.47	8.43	8.52	8.56	9.16	9.11	8.87	9.08	170	171	162	162	15.98	15.83	16.48	16.45
	19.0	8.45	8.44	8.54	8.56	9.17	9.09	8.84	9.08	170	171	162	162	15.98	15.83	16.48	16.44
	21.0	8.46		8.55	8.56	9.18		8.83	9.08	170		162	162	15.98		16.48	16.42
	23.0	8.46				9.17				170				15.98			
Mean		**8.48**	**8.45**	**8.54**	**8.56**	**9.16**	**9.19**	**9.02**	**9.07**	**170**	**171**	**162**	**162**	**15.98**	**15.84**	**16.48**	**16.50**
StdDev		**8.46, 8.51**	**8.43, 8.47**	**8.53, 8.55**	**8.54, 8.58**	**0.01**	**0.08**	**0.16**	**0.01**	**0**	**0**	**0**	**0**	**0.01**	**0.01**	**0.01**	**0.06**
11/7/2006	1.0	8.21	8.31	8.55	7.97	10.24	10.62	12.30	10.64	189	191	163	166	8.26	8.26	8.00	8.15
	3.0	8.21	8.30	8.34	7.83	10.25	10.56	12.28	10.56	189	190	163	162	8.26	8.26	7.99	8.11
	5.0	8.21	8.30	8.17	7.77	10.24	10.52	12.03	10.54	189	190	163	162	8.27	8.26	7.99	8.10
	7.0	8.21	8.29	8.06	7.75	10.24	10.51	12.11	10.51	189	190	163	163	8.26	8.26	7.99	8.10
	9.0	8.20	8.29	8.01	7.73	10.25	10.49	12.06	10.49	189	189	163	162	8.27	8.26	7.99	8.10
	11.0	8.20	8.29	7.96	7.71	10.25	10.49	12.02	10.48	189	189	163	162	8.27	8.26	7.99	8.10
	13.0	8.19	8.29	7.93	7.71	10.25	10.50	11.97	10.47	189	189	163	162	8.26	8.26	7.99	8.09
	15.0	8.19	8.28	7.89	7.69	10.25	10.50	11.93	10.46	189	189	163	162	8.26	8.25	7.99	8.09
	17.0	8.18	8.28	7.88	7.69	10.25	10.50	11.88	10.43	189	189	163	162	8.26	8.25	7.99	8.09
	19.0	8.19	8.28	7.87	7.68	10.26	10.49	11.83	10.43	188	189	163	163	8.26	8.25	7.99	8.09
	21.0	8.17	8.27	7.87	7.68	10.26	10.49	11.78	10.42	189	189	163	163	8.26	8.25	7.99	8.09
Mean		**8.20**	**8.29**	**8.01**	**7.74**	**10.25**	**10.52**	**12.02**	**10.49**	**189**	**189**	**163**	**163**	**8.26**	**8.26**	**7.99**	**8.10**
StdDev		**8.18, 8.21**	**8.28, 8.30**	**7.87, 8.21**	**7.67, 7.82**	**0.01**	**0.04**	**0.17**	**0.07**	**0**	**1**	**0**	**1**	**0.00**	**0.01**	**0.00**	**0.02**

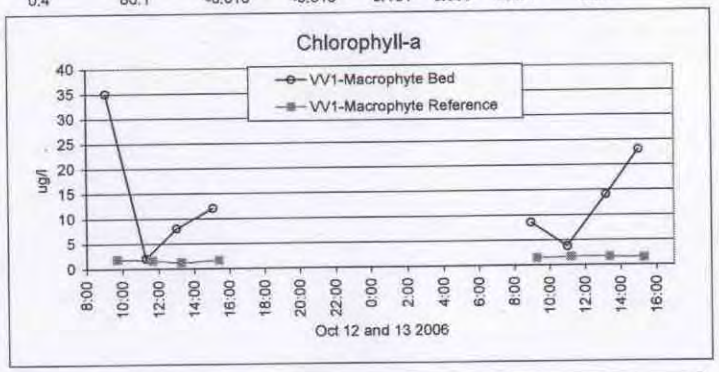
2006 Macrophyte Stations Analytical Data Table

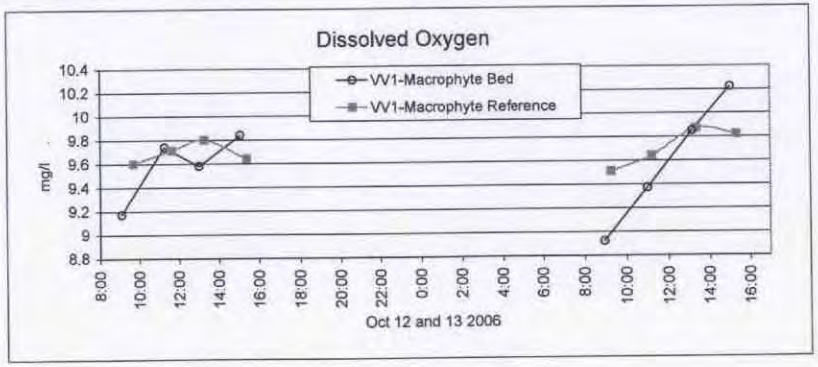
Station	DateTime	Surface CHLOR_a (ug/L)	Surface PHAEO_a (ug/L)	Depth CHLOR_a (ug/L)	Depth PHAEO_a (ug/L)	Total-P (mg/L)	SRP (mg/L)	Ammonia (mg/L)	N03+N02 (mg/L)	Total-N (mg/L)	Hardness (mgCaCO3/L)
VV1. Macrophyte	11/8/06 10:15	1.8	1.2	2.0	1.5	0.019	<0.001	<0.010	<0.010	<0.100	79.7
VV1. Macrophyte Ref	11/8/06 10:35	1.8	1.5	1.4	1.8	0.008	<0.001	<0.010	<0.010	<0.100	79.2

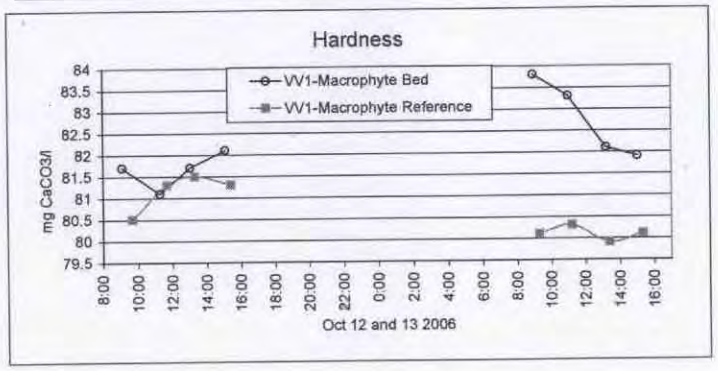
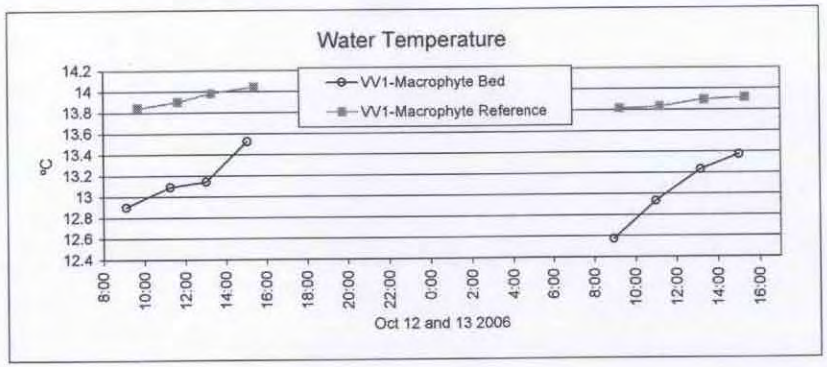
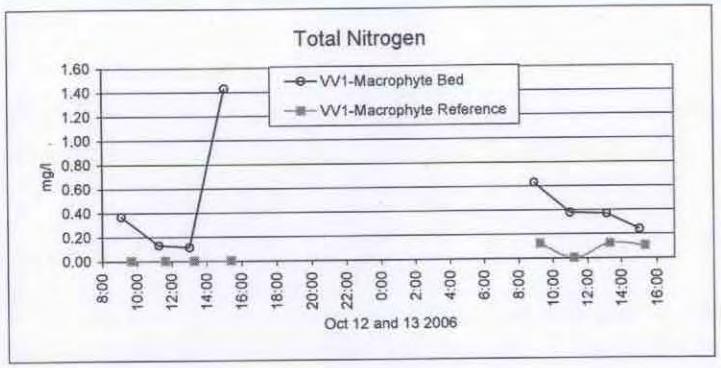
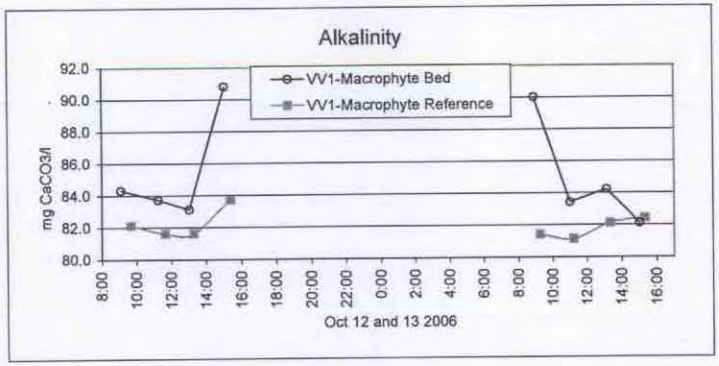
Special Macrophyte Study Oct 12-13 2006

DateTime	Station	Measurement No.	Depth (m)	Temp C	SpCond (uS/cm)	DO Conc (mg/L)	pH	chlorophyll-a (ug/l)	PHAEO_a (ug/L)	hardness (mgCaCO3/l)	no2+no3 (mg/l)	ammonia-N (mg/l)	total N (mg/l)	total P (mg/l)	SRP (mg/l)	Alkalinity (mgCaCO3/l)
10/12/06 9:05	VV1-Macrophyte Bed	1	0.5	12.9	166	9.17	8.37	35	14	81.7	<0.010	<0.010	0.367	0.053	<0.001	84.3
10/12/06 11:15	VV1-Macrophyte Bed	2	0.5	13.09	166	9.74	8.36	2	0.5	81.1	<0.010	<0.010	0.130	0.020	<0.001	83.7
10/12/06 13:00	VV1-Macrophyte Bed	3	0.5	13.14	167	9.58	8.43	8	4	81.7	<0.010	<0.010	0.114	0.019	<0.001	83.1
10/12/06 15:03	VV1-Macrophyte Bed	4	0.5	13.52	166	9.84	8.36	12	4	82.1	<0.010	<0.010	1.430	0.553	<0.001	90.8
10/12/06 9:40	VV1-Macrophyte Reference	1	0.5	13.84	164	9.6	8.4	1.8	0.3	80.5	<0.010	<0.010	<0.100	0.007	<0.001	82.1
10/12/06 11:38	VV1-Macrophyte Reference	2	0.5	13.9	164	9.71	8.35	1.6	0.4	81.3	<0.010	<0.010	<0.100	0.011	<0.001	81.6
10/12/06 13:16	VV1-Macrophyte Reference	3	0.5	13.98	164	9.8	8.35	1.2	1	81.5	<0.010	<0.010	<0.100	0.008	<0.001	81.6
10/12/06 15:23	VV1-Macrophyte Reference	4	0.5	14.04	164	9.64	8.36	1.6	<0.1	81.3	<0.010	<0.010	<0.100	0.008	<0.001	83.7
10/13/06 8:55	VV1-Macrophyte Bed	1	0.5	12.57	170	8.92	8.22	8.5	5.3	83.8	<0.010	<0.010	0.628	0.187	<0.001	90.0
10/13/06 10:59	VV1-Macrophyte Bed	2	0.5	12.93	167	9.37	8.29	3.7	0.4	83.3	<0.010	<0.010	0.376	0.122	<0.001	83.4
10/13/06 13:09	VV1-Macrophyte Bed	3	0.5	13.23	169	9.85	8.36	14	6.7	82.1	<0.010	<0.010	0.366	0.096	<0.001	84.2
10/13/06 15:00	VV1-Macrophyte Bed	4	0.5	13.37	168	10.22	8.43	23	9.6	81.9	<0.010	<0.010	0.238	0.052	<0.001	82.1
10/13/06 9:15	VV1-Macrophyte Reference	1	0.5	13.81	164	9.51	8.30	1.4	0.8	80.1	<0.010	<0.010	0.121	0.010	<0.001	81.4
10/13/06 11:12	VV1-Macrophyte Reference	2	0.5	13.83	164	9.64	8.29	1.6	0.4	80.3	<0.010	<0.010	<0.100	0.008	<0.001	81.1
10/13/06 13:20	VV1-Macrophyte Reference	3	0.5	13.89	164	9.87	8.34	1.6	0.3	79.9	<0.010	<0.010	0.120	0.008	<0.001	82.1
10/13/06 15:18	VV1-Macrophyte Reference	4	0.5	13.91	164	9.82	8.38	1.4	0.4	80.1	<0.010	<0.010	0.101	0.009	<0.001	82.4









Special Macrophyte Study Oct 12-13 2006