Peace Project Water Use Plan

Peace River Baseline TDG and Temperature

Implementation Year 6

Reference: GMSWORKS-2

Interim Report

Study Period: January 2014 to December 2014

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PEACE RIVER WATER USE PLAN
IMPLEMENTATION PROGRAM

PEACE RIVER BASELINE TDGP/TEMPERATURE
GMSWorks-2
YEAR 6 MONITORING PROGRAM - INTERIM REPORT
January 2014 to December 2014

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EXECUTIVE SUMMARY

Long-term monitoring of baseline water temperature and total dissolved gas pressure (TDGP) in the vicinity of the WAC Bennett and Peace Canyon dams is an essential component of the Peace Spill Protocol and the Peace River Flood Pulse Plan as set out by the Peace Water Use Plan Committee and the Peace Water Use Plan (WUP; BC Hydro 2010). Data collected through the monitoring of these parameters will be used to help assess and quantify the environmental effects of spills, as well as to provide information on the temperature regime of the Peace River under normal operating conditions and the influence of reservoir operations on downstream temperature. Long-term baseline temperature data will also be available for use in other projects and monitoring programs within and outside of the Peace WUP. This report summarizes data collection and maintenance activities conducted at 18 monitoring sites located between the WAC Bennett Dam forebay (Williston Reservoir) and a point approximately 6.5 km downstream of the confluence of the Pine and Peace rivers during Year 6 (Jan 01, 2014 to Dec 31, 2014).

In situ reference temperatures were recorded at the time of each field download event using a certified laboratory-grade mercury thermometer calibrated in increments of 0.1°C, for comparison to the corresponding hourly logger readings. With the exception of 1 site (halfUP2), mean calibration errors for all temperature loggers were ≤ 0.4°C.

Results of Year 6 water temperature monitoring over the 132 km length of the study area indicate a moderating effect of hypolimnetic withdrawal from Williston Reservoir and seasonal effects associated with ambient air temperature. Minimum winter temperatures decrease and maximum summer temperatures increase with distance downstream from the facilities.

No significant logistical problems were encountered in Year 6. Short-term data gaps were observed at some stations immediately downstream of tributary mouths due to loggers becoming temporarily stranded near the waterline due to out-flowing ice, large woody debris, and tampering by curious persons. Data gaps were generally covered by functioning back-up loggers at these locations. One logger (pcnDN2) could not be downloaded due to battery failure. A second logger (pineUP2) could not be downloaded in the field due to a damaged optical lens which prevented communication between the logger and the shuttle. Data from pineUP2 was subsequently recovered in a lab by the manufacturer. Both loggers were replaced.

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1.0   INTRODUCTION

Long-term monitoring of baseline water temperature and total dissolved gas pressure (TDGP) in the vicinity of the WAC Bennett and Peace Canyon dams has been identified as an essential component of the Peace Spill Protocol (PSP) and the Peace River Flood Pulse Plan as set out by the Peace Water Use Plan Committee and the Peace Water Use Plan (WUP; BC Hydro 2010). Data collected through the monitoring of these parameters will be used to help assess and quantify the environmental effects of spills, as well as to provide information on the temperature regime of the Peace River under normal operating conditions and the influence of reservoir operations on downstream temperature. Long-term baseline temperature data will also be available for use by other projects and monitoring programs within and outside the Peace WUP.

The objectives of this program are to collect data on spatial and temporal variations in water temperature between the WAC Bennett Dam forebay (Williston Reservoir) and a point 6.5 km downstream of the Pine River confluence for up to 10 years, and to maintain TDGP data loggers and related equipment for immediate deployment in the event of a spill at either the Gordon M. Shrum (GMS) or Peace Canyon (PCN) generating stations that is likely to meet the PSP criteria (2 days at 1,500cms spill, or 500cms for 7+ days at PCN; 205cms for 2 days or more at GMS). This report summarizes data collection activities completed during Year 6 of the monitoring program (January 01, 2014 to December 31, 2014).

2.0   METHODS

Temperature data presented in this summary were recorded between January 01, 2014 and December 31, 2014.

2.1   Temperature Monitoring

Upon commencement of the Peace River baseline temperature monitoring program in September 2008 (Year 1), 20 Tidbit v2 Model #UTBI-001 temperature sensor/logger units (0.2°C accuracy over 0°C to 50°C; 0.02°C resolution @ 25°C; Onset Corp., Bourne, MA) were deployed at 18 locations between the WAC Bennett Dam forebay and a site approximately 6.5 km downstream of the confluence of the Pine and Peace rivers (Fig. 1). During Years 2 and 3, revisions were made to monitoring site positioning and configuration to account for changes in bank conditions, to reduce the potential for
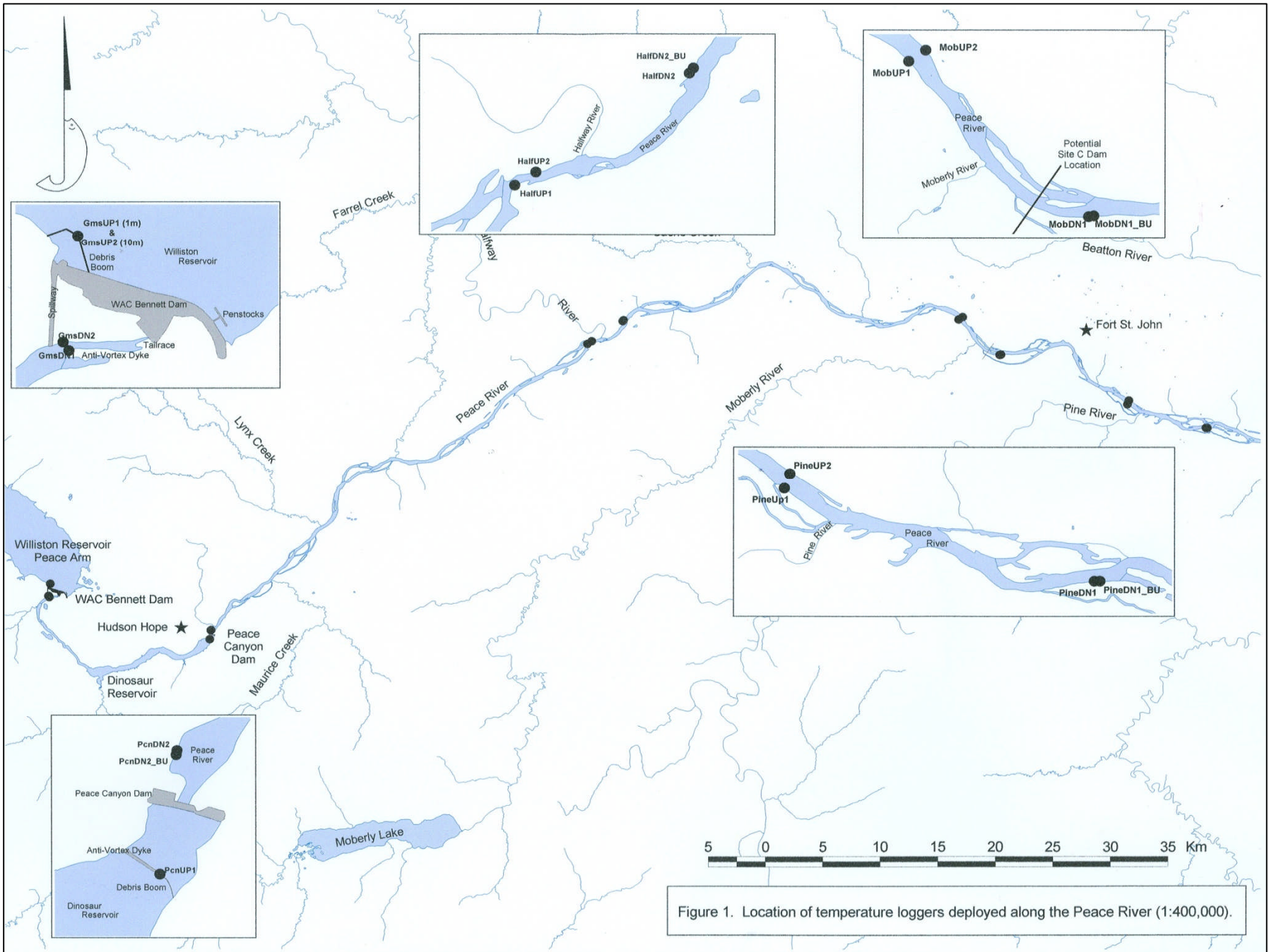
Figure 1. Location of temperature loggers deployed along the Peace River (1:400,000).

logger stranding due to debris and flow level extremes, to increase redundancy in case of logger failure or loss, and to improve accessibility during high flow stage.

Monitoring stations are typically maintained in pairs at each general location in order to minimize the risk of data gaps in the event of logger stranding, failure, or loss. At Peace River locations upstream of major tributaries (Halfway, Moberly, and Pine rivers), monitoring stations are maintained on opposing banks of the river in order to provide redundancy and confirm temperature consistency across the channel. At Peace River locations downstream of major tributaries, paired station configuration was revised in 2011 (Year 3) from opposing banks to common banks in order to provide better redundancy in tributary outflow paths prone to stranding by passing ice and debris.

By late in Year 3, monitoring site configuration had been revised to include 21 data loggers at 18 monitoring sites. This configuration was maintained throughout Years 4 to 6. A summary of temperature monitoring station location information as of the end of Year 6 appears in Appendix I. A description of site configuration changes prior to Year 3 can be found in DES 2013.

Temperature loggers were programmed to record water temperature (°C) at 1 hour intervals throughout Year 6. Loggers continued to be housed in 38 mm x 100 mm steel nipples with threaded steel end caps, weighted with 5 kg steel anchors, and tethered to rooted trees or large bedrock fragments using either 6.35 mm galvanized steel cable or 3.18 mm stainless steel cable.

Temperature data recorded and stored on each logger during 2014 were downloaded at approximately 3 month intervals by field transfer to a Model U-DTW-1 Hobo® waterproof shuttle (Onset Corp., Bourne, MA). Data from the shuttle were then downloaded to a desktop computer after each field session. Logger sites at the WAC Bennett Dam and Peace Canyon Dam forebay and tailrace locations were accessed by vehicle, while all Peace River mainstem sites were accessed by riverboat. Conditions and observations at the time of each download event were documented in the field on hardcopy Download Information Forms and subsequently entered into digital format. *In situ* reference temperatures were recorded at the time of each field download event using a YSI® Professional Plus handheld multi-parameter instrument (Model No. E-528-ProPlus) or certified laboratory-grade mercury thermometer calibrated in increments of 0.1°C for comparison to the corresponding hourly logger readings (within 30 minutes of reference temperature).

In addition to scheduled download events, temperature loggers at some Peace River mainstem locations were visually checked and re-positioned by DES staff during the course of activities unrelated to the temperature monitoring program.

Data files were exported as MS Office Excel and Access compatible text files using Onset® Hoboware Pro software (Ver. 2.3.0), amalgamated into single Excel worksheets for each data logger, and plotted relative to time.

2.1.1 Year 6 Site Logistics

Few logistical problems were encountered during Year 6, partially due to refinements in station location and configuration made in Years 2 and 3. Occasional stranding of loggers above the waterline during Year 6 was largely associated with extremely low water levels during parts of May and June and the dislodging of logger anchors due to the accumulation of debris on tether cables during tributary freshet and flood events. Loggers located downstream of the Pine and Moberly river confluences were also occasionally pulled to shore and left above the highwater mark by persons unknown.

Several tether cables were replaced during Year 6 due to ongoing corrosion of the 6.35 mm galvanized cable originally deployed in Years 1 to 3. Corroded galvanized tether cables were replaced with 3.18 mm stainless steel cable, which appears to have a longer lifespan.

Data could not be downloaded from two loggers due to technical failures. On July 9, 2014, pcnDN2 could not be downloaded due to a battery failure while on January 22, 2015, pineUP2 could not be downloaded due to a damaged optical transfer lens on the logger housing. The damaged logger was returned to Onset® for an attempted data recovery which was successfully completed in late February 2015.

Due to thin ice conditions in the GMS forebay on January 26, 2015, gmsUP1 (1m) and gmsUP2 (10m) could not be accessed either on foot or by boat. Successful downloads were completed later on February 6, 2015 once ice conditions had improved.

2.2 Total Dissolved Gas Pressure (TDGP)

Six Model TBO-DL6(F) TDGP monitors (Common Sensing Inc., Clark Fork, ID) were purchased by BC Hydro in Year 1, and stored at the office of Diversified Environmental Services (DES) in Fort St. John, BC. Appendix II contains an inventory of dissolved gas pressure meters and probes. Meters and probes were checked for functionality on a quarterly basis when not in use and battery charge was

maintained. Initialization check routines were repeated and the condition of each probe oxygen sensor membrane was examined for evidence of ZnO precipitate build-up. In addition to routine quarterly maintenance records, calibration statements were obtained for meters that were returned to the manufacturer for repair or factory re-calibration.

No spill events or TDGP meter deployments occurred during Year 6.

3.0   RESULTS AND DISCUSSION

Figures 2 to 10 are presented following Section 4.0.

3.1   Temperature Monitoring

Reference temperatures recorded during download events are presented in Appendix III along with corresponding logger temperatures and indicated error values. With the exception of logger halfUP2 (serial# 2038572), which exhibits a consistent, correctable zero error of approximately 0.8 degrees C, calibration errors for all temperature loggers were typically within the range of 0.4°C. On May 22, 2014, the original halfUP2 logger was replaced as it was exhibiting a low voltage and approaching the end of its useful lifespan. The replacement logger (serial# 10156319) exhibits a calibration error consistent with the remaining loggers. Corrected values for logger halfUP2, for the January 1 to May 22, 2014 period, are provided in the accompanying 2014 dataset.

A summary of temperature data collection results and related conditions and limitations are discussed in the following 5 sections, which correspond to the 5 major generating station and tributary features. Download Information Forms completed during each download are provided in Appendix IV.

3.1.1   WAC Bennett Dam Forebay and Tailrace

The WAC Bennett Dam forebay temperature monitoring station is located at the GMS spillway log boom and consists of a vertical cable suspended from the northernmost log boom steel buoy. Temperature is recorded with 2 loggers, the first located at 1 m depth and the second suspended at a depth of 10 m. Continuous hourly data for Year 6 were recorded at both the 1 m and 10 m depths (gmsUP1 and gmsUP2). Temperature data recovered from both units for Year 6 is presented in Figure 2. Although seasonal thermal stratification of Williston Reservoir is evident, the relatively small temperature differential (mean=0.3°C) suggests the primary thermocline may lie deeper than 10 m. Maximum temperature differentials of 4-5°C were recorded during a period of significant daytime surface warming during the first 2 weeks of July 2014, when annual ambient temperatures

peaked. Temperature profiles recorded further up the Peace Reach during unrelated work in August 2012 indicated a thermocline at approximately 26 m depth (B. Culling, pers. obs.).

The GMS tailrace monitoring sites are located on opposite banks, approximately 700 m downstream of the outflow manifolds. Logger gmsDN1 records the temperature of water flowing from the south tailrace manifold, which originates from the shallowest penstock depth. Logger gmsDN2 measures water from the north tailrace manifold, which originates from a deeper withdrawal point. The tethered steel capsule at both stations contains a back-up logger in addition to the primary unit (gmsDN1BU and gmsDN2BU). All 4 loggers collected seamless data through Year 6.

As in previous years, water temperatures at gmsDN2 showed the lowest annual variation and are consistently cooler in the summer and warmer in the winter than gmsDN1 flow, which originates closer to the surface of Williston Reservoir. Temperatures recorded at gmsUP1 (forebay surface) exhibit greater annual variation than tailrace values (Fig. 3).

3.1.2   Peace Canyon Dam Forebay and Tailrace

The data logger recording temperature at the Peace Canyon Dam forebay (pcnUP1) is attached to the anti-vortex dam log boom, approximately 450 m upstream of the dam face. Forebay water temperature at 1 m depth was recorded seamlessly through Year 6.

Both Peace Canyon Tailrace loggers (pcnDN2 and pcnDN2BU) recorded continuous data throughout Year 6, with the exception of the May 22 to July 7, 2014 period during which the battery of pcnDN2 expired. On July 7, 2014 data logged by pcnDN2 could not be downloaded. Data for this period appearing in Figure 4 are from pcnDN2-BU. A comparison of PCN tailrace temperature (pcnDN2) and GMS tailrace temperature (mean of gmsDN1 and gmsDN2) indicates a relatively small temperature change through Dinosaur Reservoir during all seasons (Fig. 4). For example, mean differentials of 0.1°C were recorded in winter (December through February) and 0.5°C in summer (June through August). Figure 4 also illustrates slight thermal stratification of the Peace Canyon forebay during peak ambient temperatures in July 2014 (i.e., forebay temperatures at 1 m depth (pcnUP1) were an average of 3.5 °C and as much as 8.8 °C warmer than water exiting the Peace Canyon powerhouse (pcnDN2) in July 2014).

3.1.3   Halfway River Confluence

Peace River water temperature was monitored at points approximately 1 km upstream and 2.5 km downstream of the Halfway River confluence. Upstream stations were maintained on opposing

banks throughout Year 6 (halfUP1 and halfUP2). Logger halfUP1 recorded continuous data while logger halfUP2 frequently became stranded early in March 2014 until the May 22, 2014 download due to ice and debris accumulation on the anchor cable. In addition, a second period of occasional stranding resulting from debris accumulated on the anchor cable, occurred in early July, immediately prior to the July 12, 2014 download. As in previous years, no cross-channel differential was recorded between the opposing upstream stations.

Both loggers downstream of the Halfway (halfDN2 and halfDN2-BU) were swung to shore by debris and periodically exposed above the high water mark from early March until May 22, 2014 when both loggers were downloaded. Data from this period are excluded in Figure 5 as temperatures ranged from -13.3 to 34.9 °C. During the same period in 2013, typical water temperatures ranged from 0.0 to 11.2 °C (DES 2014). After the May 22, 2014 download, both loggers recorded continuous data.

As in previous years, Peace River temperature values recorded at stations upstream and downstream of the Halfway confluence differed markedly. Temperatures collected downstream of the confluence exhibited a greater degree of daily and annual variability (Fig. 5). Halfway River inputs typically have a cooling effect during the winter period (October through April) and a warming effect during the summer (May through September). Temperatures within the Halfway River upstream of its confluence with the Peace are not recorded as part of this project.

3.1.4   Moberly River Confluence

Peace River water temperature was monitored at points approximately 2.6 km upstream and 2.5 km downstream of the Moberly River confluence. Upstream stations were maintained on opposing banks throughout Year 6 (mobUP1 and mobUP2).   Both loggers were stranded periodically between early March and the May 23, 2014 download with mobUP1 being exposed most frequently. Data from these exposure events are not included in the plotted data in Figure 6. No cross-channel differential was recorded during July and August, with the mean temperature differing by only 0.2 °C.

The Moberly downstream logger and downstream back-up logger were both located on the south river bank, within the influence of outfall from the Moberly River.   The primary Moberly downstream logger (mobDN1) recorded continuous data through Year 6, while the nearby back-up logger (mobDN21-BU) became periodically stranded above the waterline between Sept 21, 2014

and the November 2, 2014 download, after being partially pulled to shore by persons unknown (as evidenced by fresh boot prints).

As in previous years, Peace River temperatures recorded within the influence of the Moberly River (downstream of confluence), were warmer than upstream stations from May through July and cooler than upstream stations from October through December (Fig. 6). The influence of the Moberly River is significantly less than that of the Halfway River and appears to correspond to the difference in relative contributed volumes. Temperatures within the Moberly River upstream of its confluence with the Peace are not recorded as part of this project.

3.1.5   Pine River Confluence

Peace River water temperature was monitored at points approximately 2.0 km upstream and 6.5 km downstream of the Pine River confluence. During Year 6, upstream stations were maintained on opposing banks (pineUP1 and pineUP2) and both downstream loggers (pnDN1 and pnDN1BU) were located on the south river bank, within the influence of inputs from the Pine River.

Both pineUP1 and pineUP2 recorded continuous hourly data throughout Year 6. Attempts to download data from pineUP2 failed on January 22, 2015 due to a damaged optical lens on the logger face. The data was successfully recovered in late February 2015 after the damaged unit was returned to Onset® for data recovery. No cross-channel differential was noted.

Between early March and the November 2, 2014 download, logger pineDN1 collected very little data of value due to repeated tampering which left the logger completely stranded well above the waterline or in shallow water where it was occasionally submerged. Logger pineDN1-BU recorded continuous hourly data throughout Year 6 with the exception of a brief period of time immediately prior to the July 7, 2014 download when it was partially pulled to shore by accumulated debris on the anchor cable.

Temperature values recorded within the downstream influence of the Pine River (pineDN1) were typically cooler than the Pine River upstream stations from late September through December and slightly warmer from July through mid September (Fig. 7). Maximum temperature values were recorded around July 14, slightly earlier than normal.

Figure 8 presents comparative seasonal temperature changes over the 132 km length of the study area between the WAC Bennett Dam tailrace (gmsDN2) and the Pine River confluence (pineUP1) during 2014 and Figure 9 compares ambient air temperature at the Fort St. John airport with Peace River water temperature at the Pine river confluence. Data appearing in these figures includes Halfway and Pine confluence stations not directly influenced by their respective tributary inputs. The graphs illustrates the moderating effect of hypolimnetic withdrawal from Williston Reservoir on downstream temperatures in the Peace River and the seasonal impact of ambient air temperature on downstream water temperatures, i.e., winter temperatures decrease and summer temperatures increase with distance downstream. Brief periods of homogeneity occurred in early April and mid October, with gradients inverting on either side of these dates to form the typical annual pattern.

Figures 10 and 11 represent temporal comparisons of water temperatures over the 6 calendar years encompassed by the current monitoring program for WAC Bennett Dam tailrace and Pine River confluence sites, respectively. Year to year temperature differences in output from the north manifold of the GMS tailrace suggest corresponding inter-annual variation in Williston Reservoir hypolimnion temperature, with 2014 being the coolest year recorded and 2010 being the warmest (Fig. 10). Temperatures during 2014 lie within the ranges established over the previous 5 years. Possible factors for this variation may include the proportion of reservoir input contributed by snow melt versus precipitation and annual variations in storage level and drawdown rate and timing. Year to year variations in Peace River water temperature immediately above the Pine River confluence (pnUP1) appear to follow a pattern similar to that observed at the GMS tailrace, with 2012 being the coolest and 2010 the warmest (Fig. 11). Temperatures recorded in 2014 generally lie within the established range.

4.0   RECOMMENDATIONS

The 6.35 mm galvanized cable used during the initial years of the program has proven to have low resistance to corrosion and should continue to be replaced by the smaller diameter stainless steel cable.

The battery life of the Tidbit v2 Model #UTBI-001 temperature sensors is estimated at approximately 5 years and a number of loggers were replaced in 2014. Scheduled replacement of units should continue in 2015 as per the table presented in Appendix V.
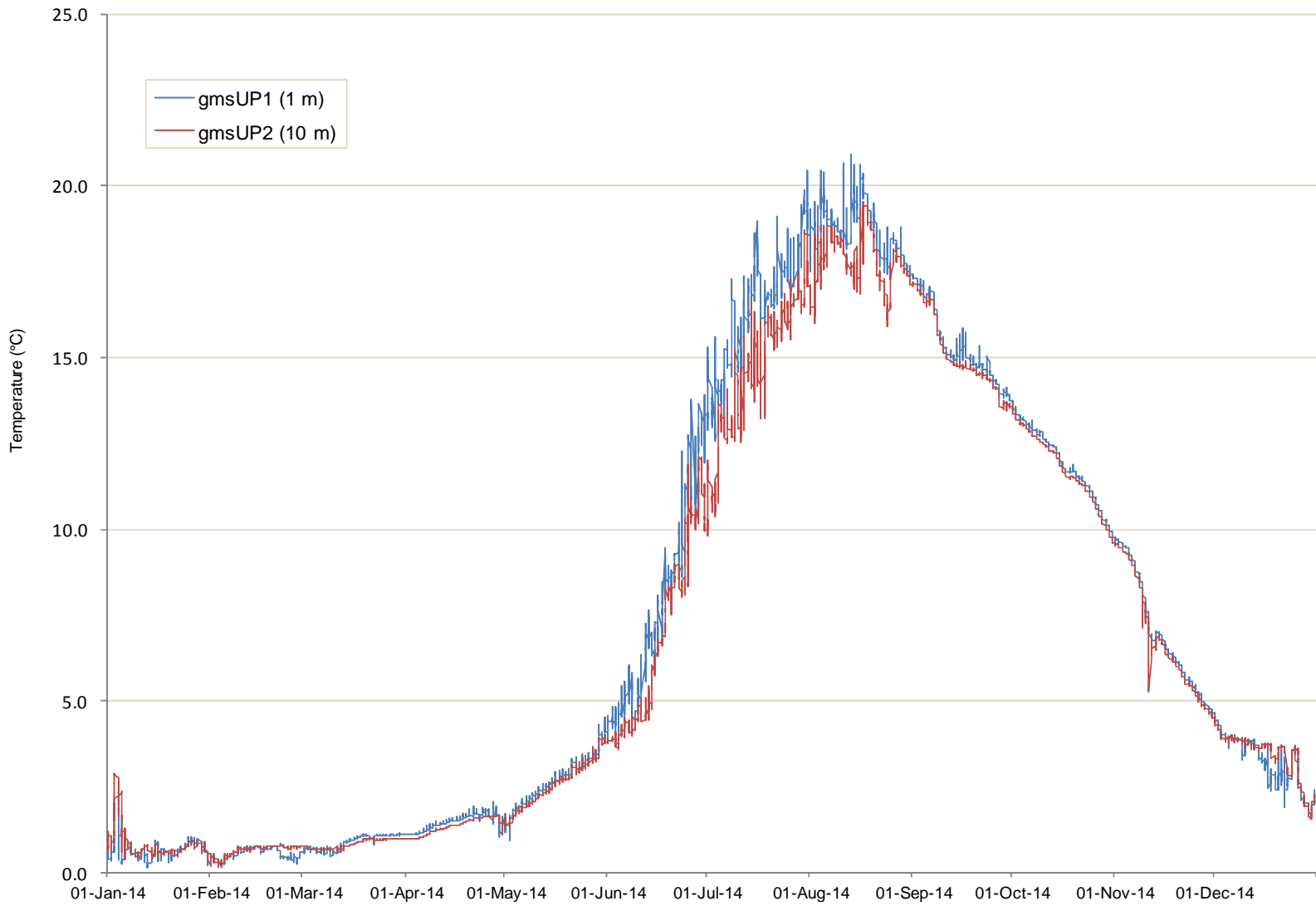
Figure 2. Comparison of water temperature at WAC Bennett Dam forebay station from 1 m depth (gmsUP1) and 10 m depth (gmsUP2) during Year 6, January 01, 2014 – December 31, 2014.
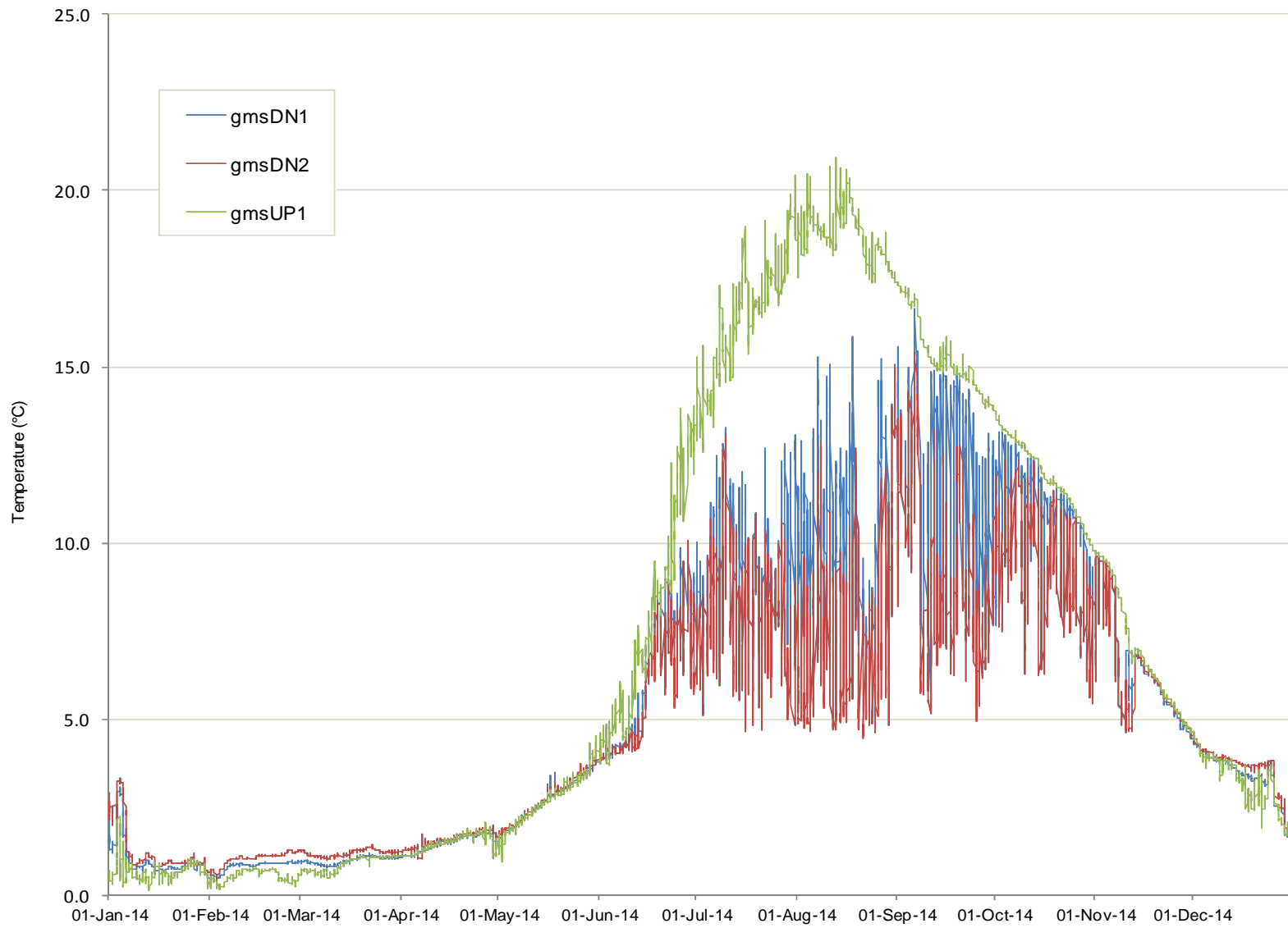
Figure 3. Comparison of water temperature at WAC Bennett Dam forebay surface (gmsUP1), and WAC Bennett Dam tailrace (gmsDN1 and gmsDN2) during Year 6, January 01, 2014 – December 31, 2014.
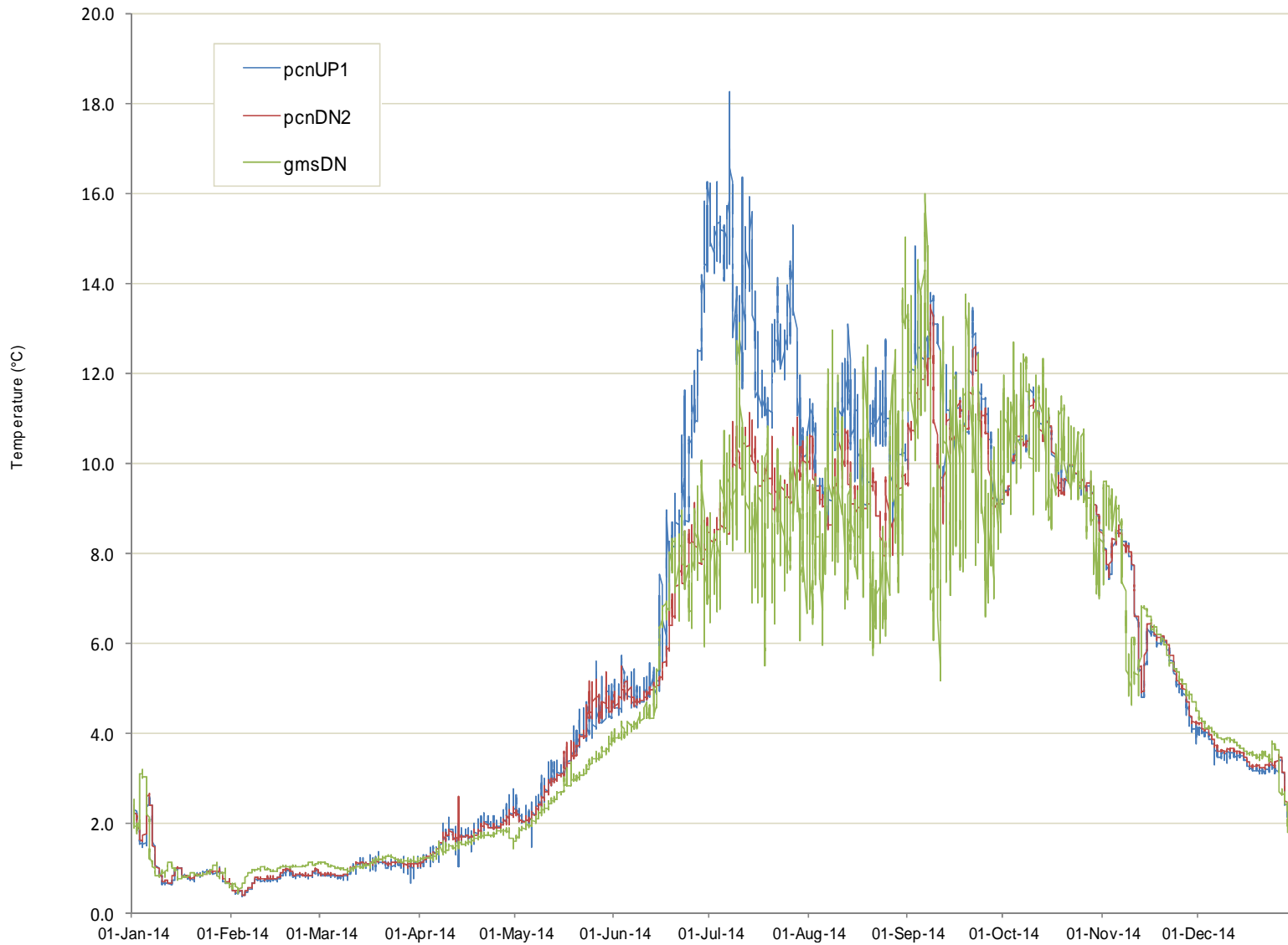
Figure 4. Comparison of water temperature at Peace Canyon forebay surface (pcnUP1), Peace Canyon tailrace (pcnDN2), and WAC Bennett Dam tailrace (gmsDN) during Year 6, January 01, 2014 – December 31, 2014.
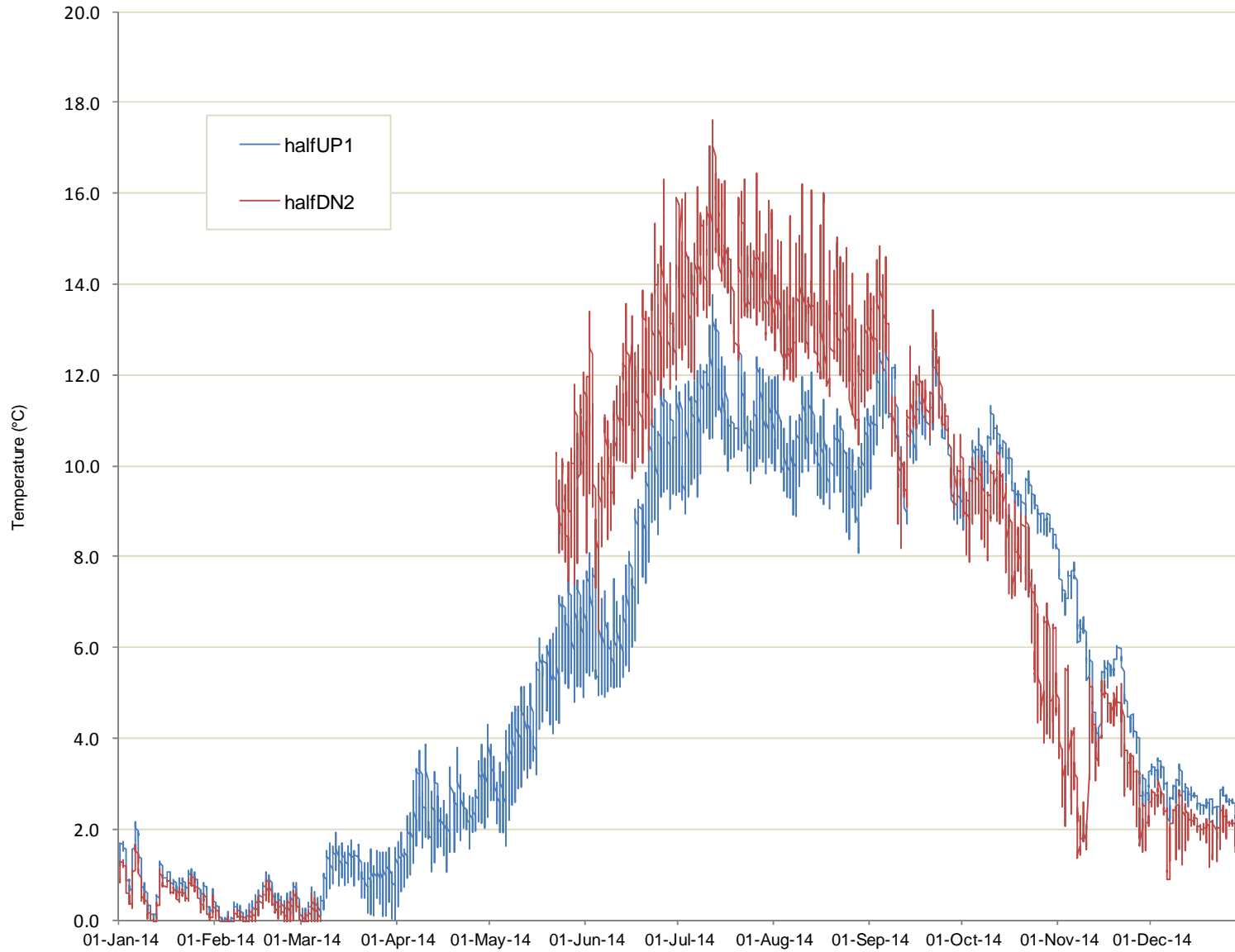
Figure 5. Comparison of Peace River water temperature upstream of Halfway River confluence (halfUP1) and downstream of Halfway River confluence (halfDN2) during Year 6, January 01, 2014 – December 31, 2014.
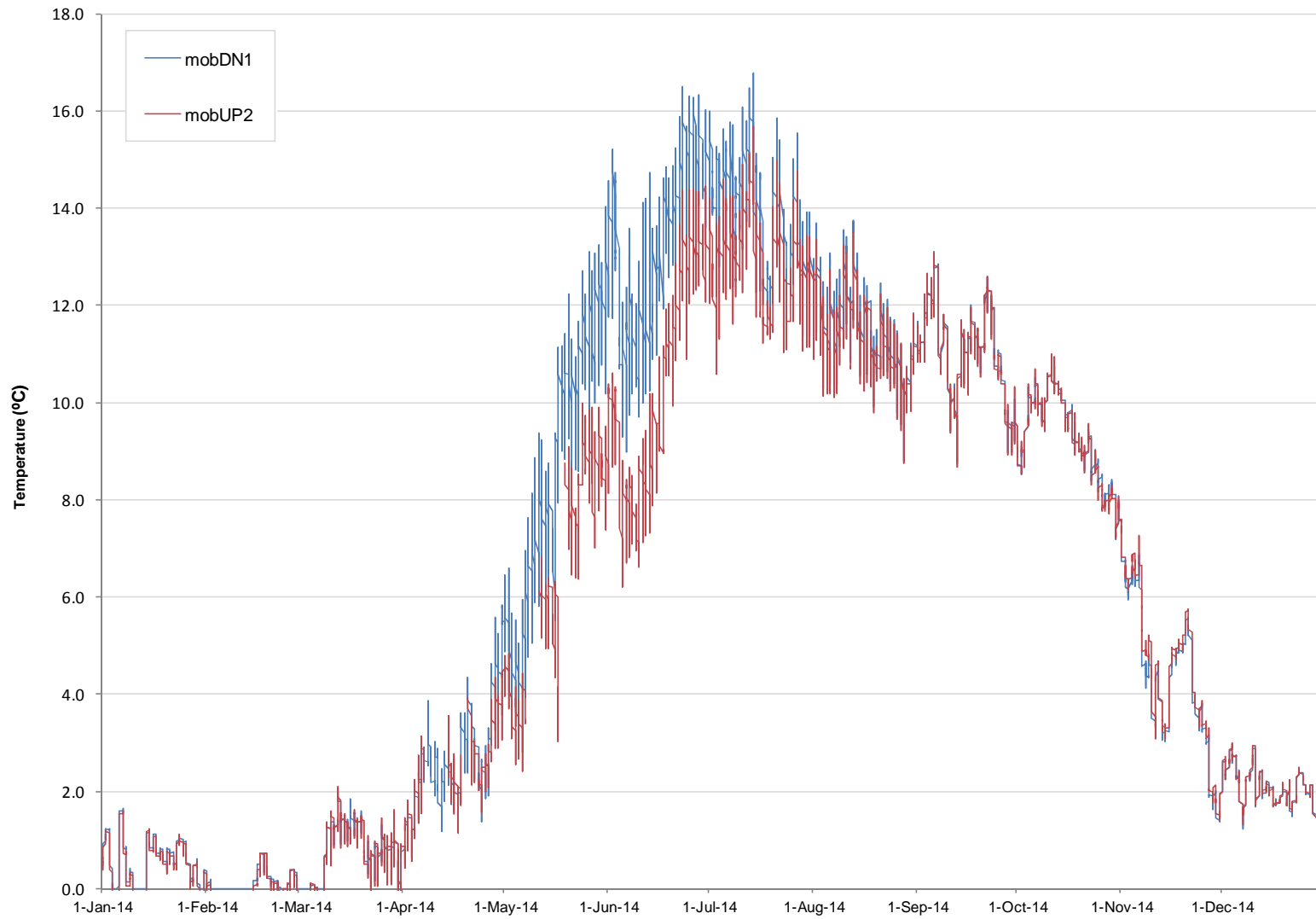
Figure 6. Comparison of Peace River water temperature upstream of Moberly River confluence (mobUP1) and downstream of Moberly River confluence (mobDN1) during Year 6, January 01, 2014 – December 31, 2014.
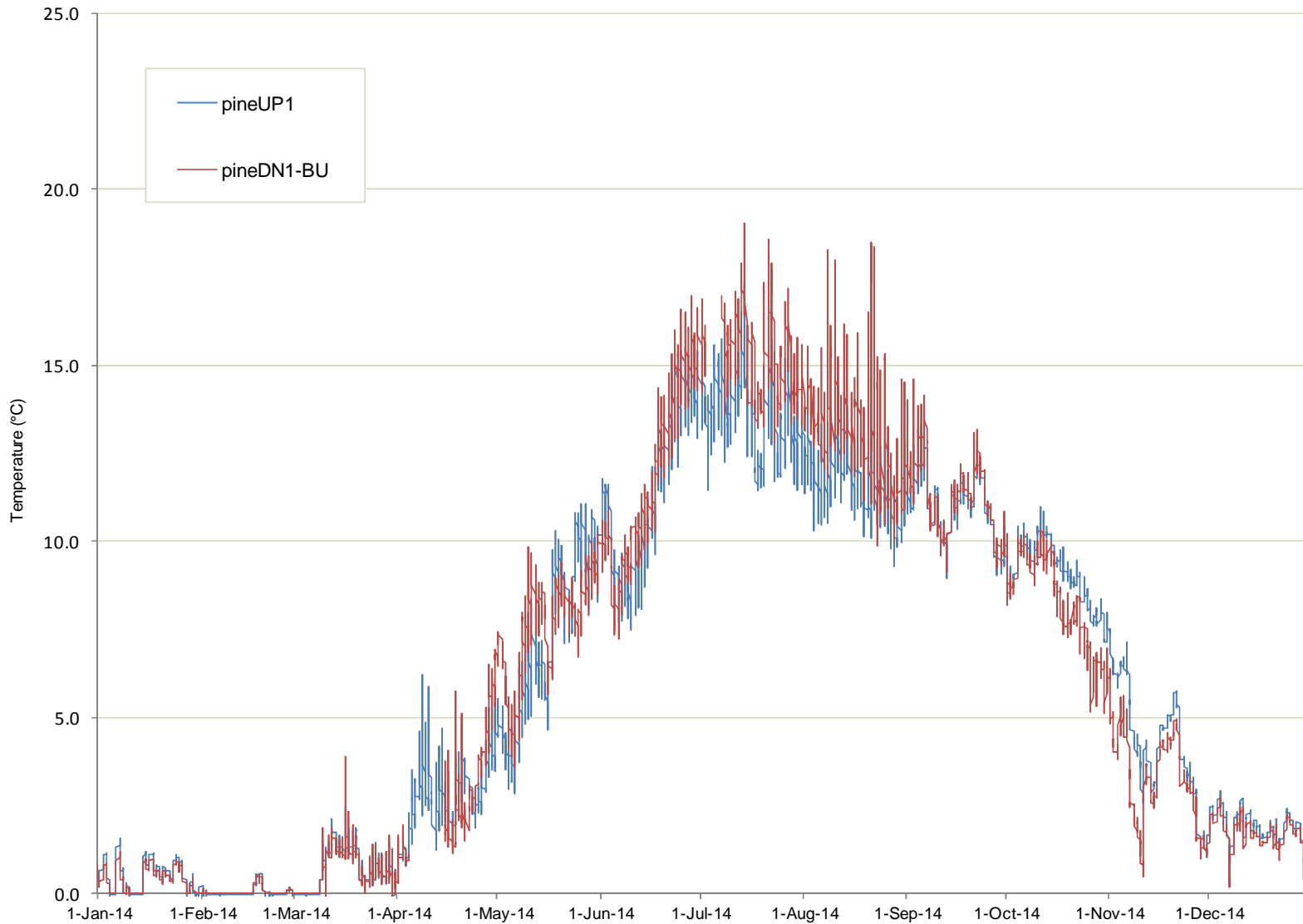
Figure 7. Comparison of Peace River water temperature upstream of Pine River confluence (pineUP1) and downstream of Pine River confluence (pineDN1) during Year 6, January 01, 2014 – December 31, 2014.
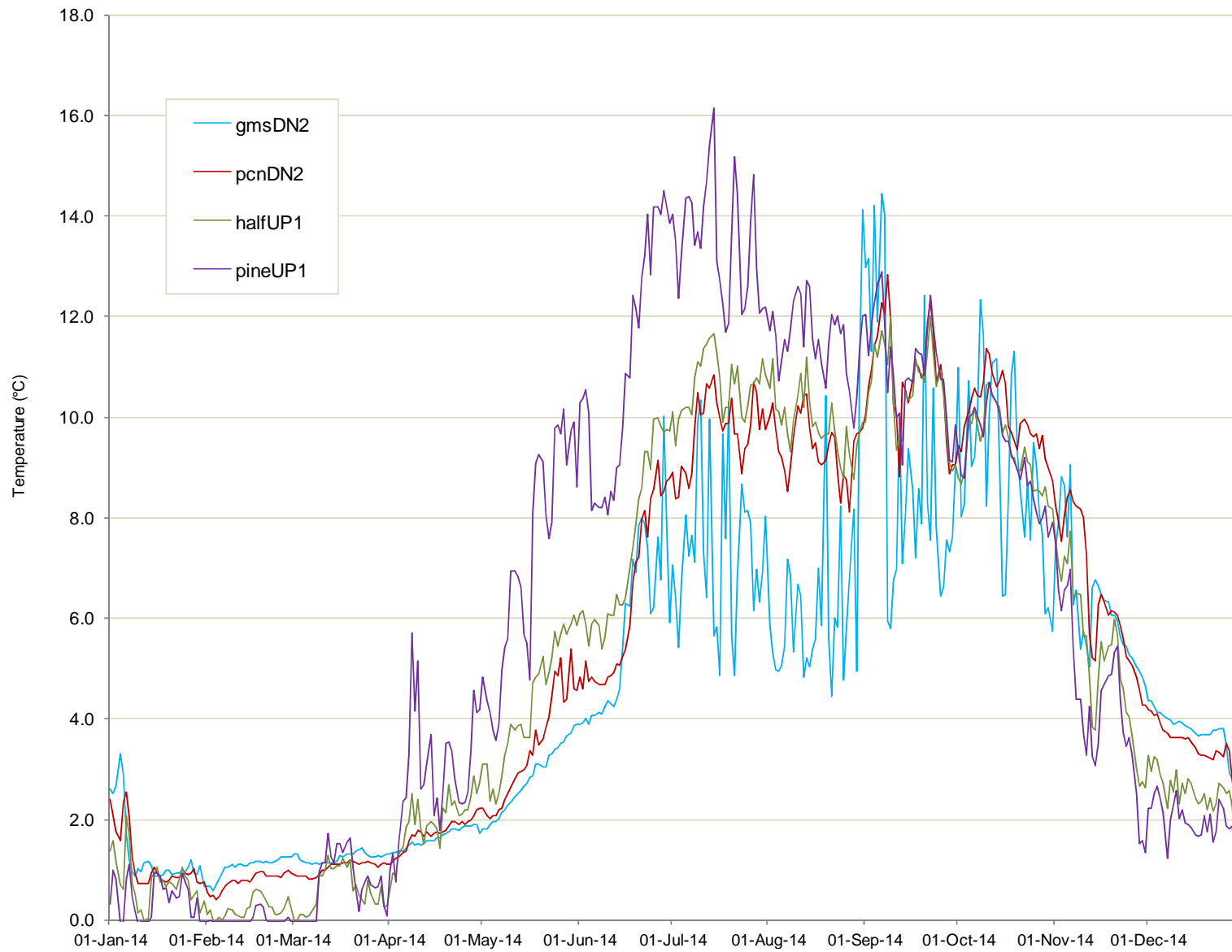
Figure 8. Peace River water temperature gradient from WAC Bennett Dam tailrace, downstream to Pine River confluence, during Year 6, January 01, 2014 – December 31, 2014.

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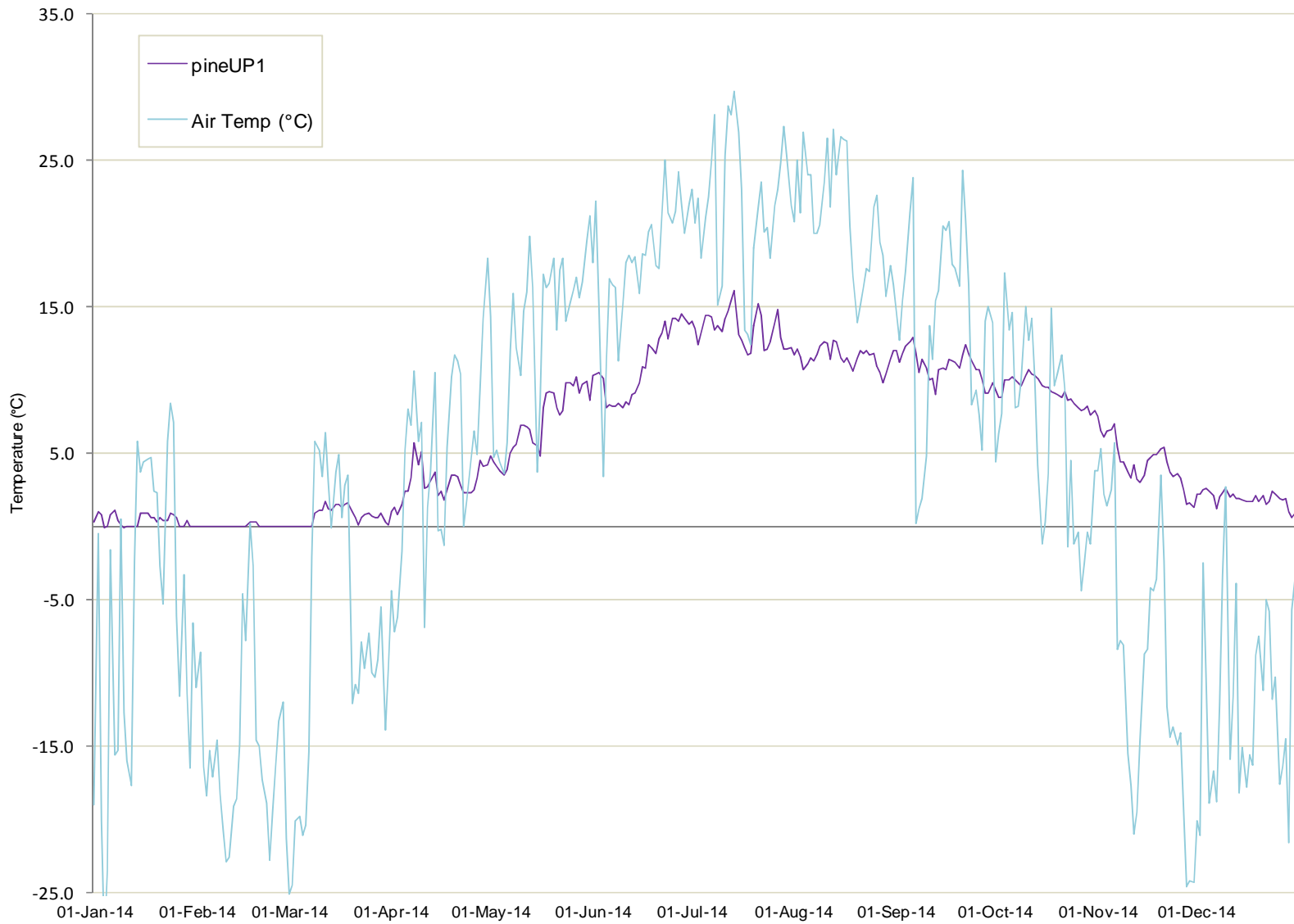
Figure 9. Comparison of Peace River water temperature upstream of the Pine River confluence (pnUP1) and ambient air temperature at the Fort St. John airport during Year 6, January 01, 2014 to December 31, 2014.
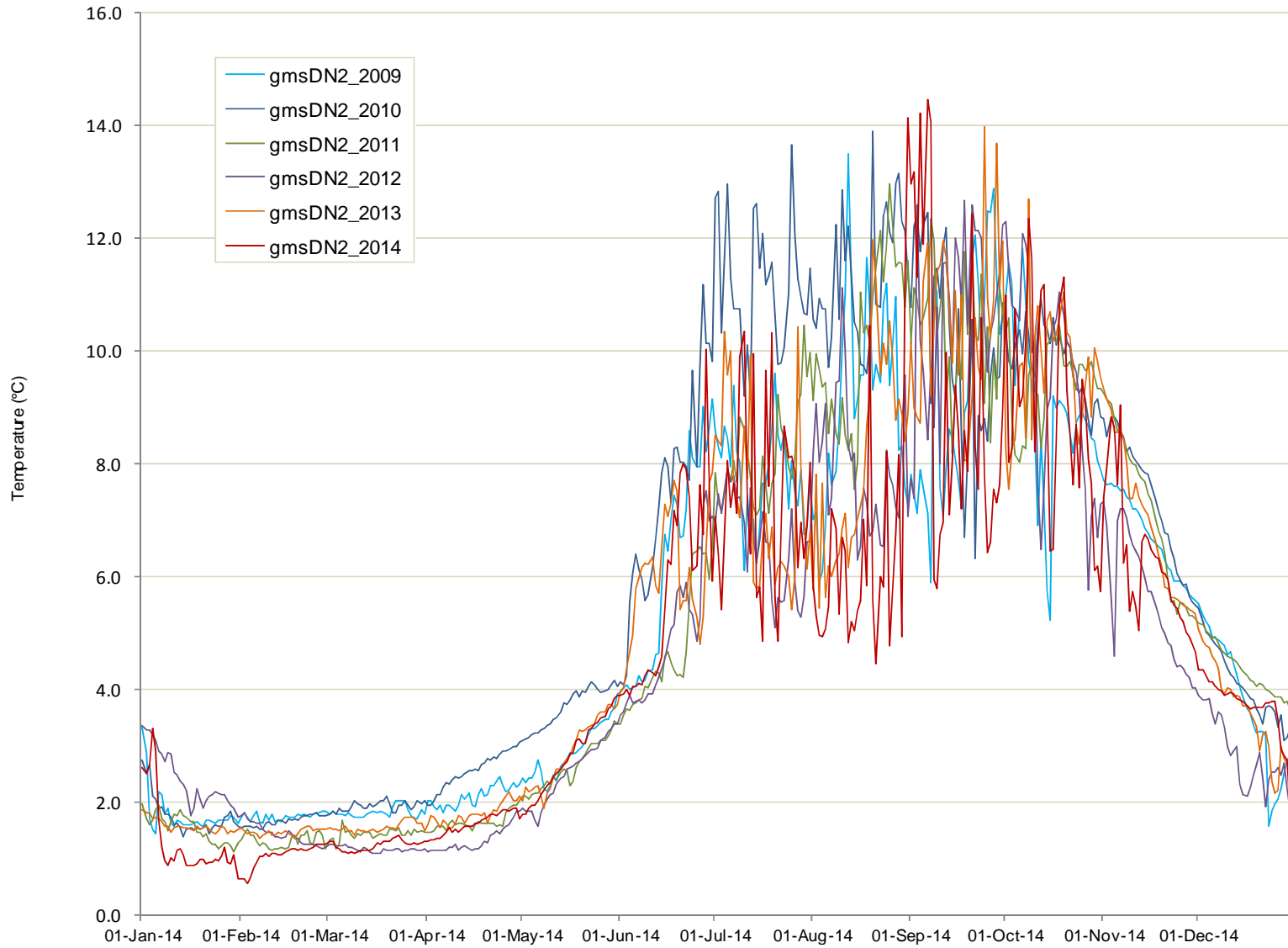
Figure 10. Comparison of water temperature at WAC Bennett Dam tailrace north manifold (gmsDN2) from January 2009 to December 2014.
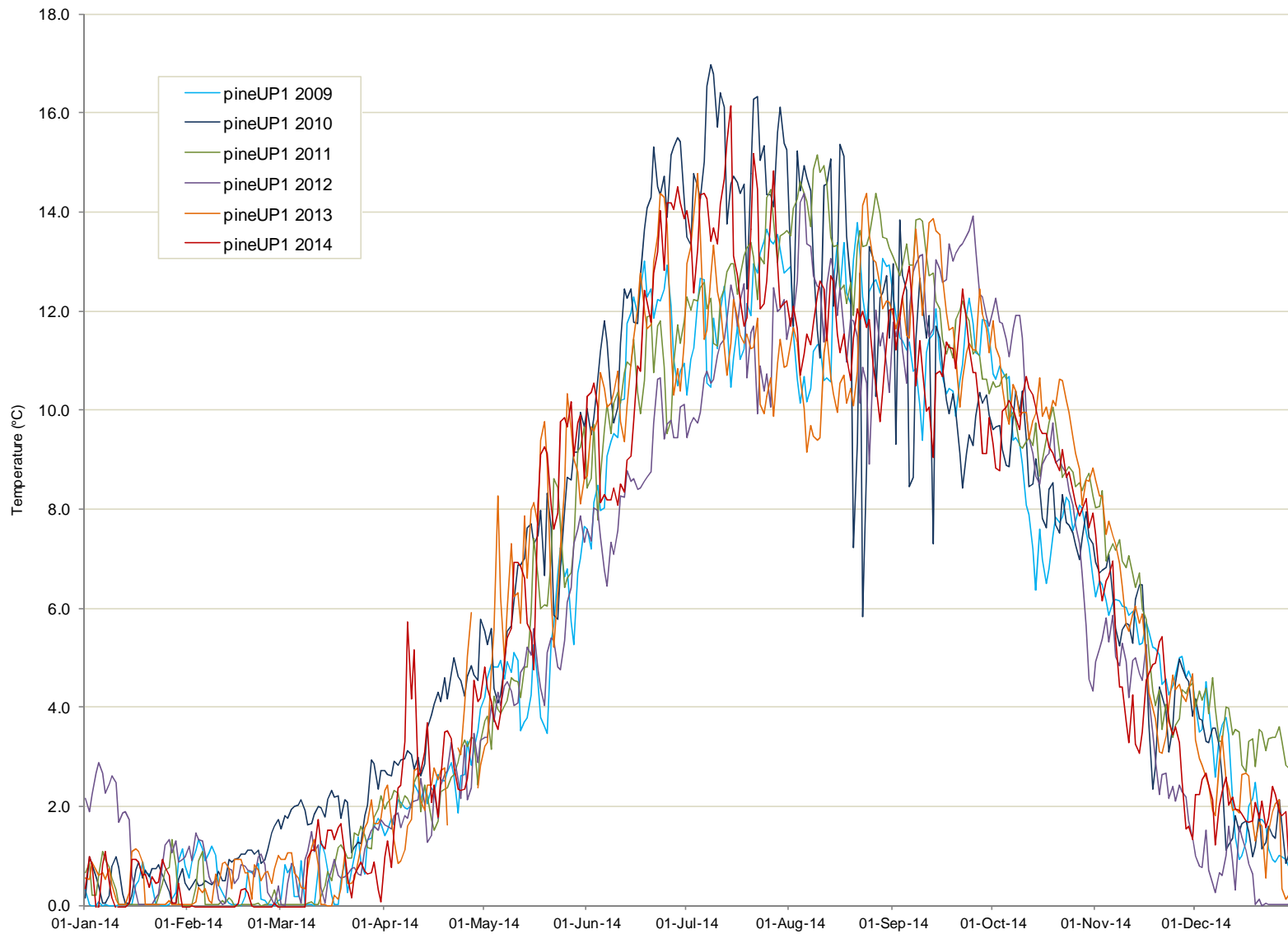
Figure 11. Comparison of water temperature upstream of the Pine River confluence (pnUP1) from January 2009 to December 2014.

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BC Hydro. 2010. Peace River Water Use Plan; monitoring program terms of reference – Peace River Baseline TGP/Temp. BC Hydro, Vancouver, BC. 7pp.

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DES (Diversified Environmental Services). 2014. Peace River Water Use Plan Peace River Baseline TDGP/Temperature GMSWorks-2 - Year 5 Monitoring Program - Interim Report January 2013 to December 2013. Prepare for BC Hydro, Vancouver, BC. 20pp + appendices.

Appendix I. Temperature monitoring station location information for Year 6, January 01, 2014 to December 31, 2014.

Site ID	Serial #	Location	UTM East	UTM North	Comment
gmsUP1	2038617	WAC Bennett Forebay	548841	6209022	steel buoy; 1 m depth
gmsUP2	10156318	WAC Bennett Forebay	548841	6209022	steel buoy; 10 m depth
gmsDN1	2038619	GMS Tailrace	548881	6207761	southbank; deflection wier riprap
gmsDN1BU	2038613	GMS Tailrace	548881	6207761	southbank; deflection wier riprap
gmsDN2	2038620	GMS Tailrace	548828	6207836	north bank; riprap below Tunnel portal #3
gmsDN2BU	2038614	GMS Tailrace	548828	6207836	north bank; riprap below Tunnel portal #3
pcnUP1	2225325	Peace Canyon Forebay	562684	6204075	anti-vortex log boom; 1 m depth
pcnDN2	2038621	Peace Canyon Tailrace	562803	6204854	north bank; rock slab
pcnDN2BU	2038568	Peace Canyon Tailrace	562803	6204854	north bank; rock slab
HalfUP1	9767573	Halfway Confluence - upstream	595204	6230148	south bank; spruce tree
HalfUP2	2038572	Halfway Confluence - upstream	595578	6230542	north bank; spruce tree
HalfDN2	2038574	Halfway Confluence - downstream	598198	6232169	north bank; balsam poplar
HalfDN2BU	2038623	Halfway Confluence - downstream	598179	6232144	north bank; balsam poplar
MobUP1	2038612	Moberly Confluence - upstream	627158	6232349	south bank; alder
MobUP2	2038616	Moberly Confluence - upstream	627501	6232563	north bank; spruce tree
MobDN1	2038622	Moberly Confluence - downstream	630583	6229281	south bank; alder
MobDN1BU	2038576	Moberly Confluence - downstream	630403	6229275	south bank; alder
PineUP1	2038624	Pine Confluence - upstream	641034	6225375	south bank; alder
PineUP2	9767572	Pine Confluence - upstream	641653	6225304	north bank; balsam poplar
PineDN1	2225322	Pine Confluence - downstream	648408	6222831	south bank; alder
PineDN1BU	9762095	Pine Confluence - downstream	648362	6222823	south bank; alder

Appendix II. Inventory of dissolved gas pressure meters and probes.

Meter Number	Serial Number	Probe Number	Cable Length (ft)
1	231	1	50
2	228	2	100
3	230	3	100
4	227	4	100
5	226	5	100
6	229	6	100

Appendix III. Reference temperature values and corresponding logger fix values recorded during download events in Year 6, January 01, 204 to December 31, 2014.

Logger ID	Date	Fix Temp	Ref Temp	Error
gmsUP1	31-Jan-14	0.6	0.3	0.3
	22-May-14	3.1	3.2	-0.1
	9-Jul-14	16.2	16.0	0.2
	5-Nov-14	9.3	9.2	0.1
gmsUP2	31-Jan-14	0.5	0.3	0.2
	22-May-14	3.0	3.0	0.0
	9-Jul-14	12.8	12.6	0.2
	5-Nov-14	9.2	9.2	0.0
gmsDN1	31-Jan-14	0.6	0.4	0.2
	22-May-14	3.1	3.3	-0.2
	9-Jul-14	10.0	10.2	-0.2
	5-Nov-14	9.2	9.2	0.0
gmsDN1_BU	22-May-14	3.2	3.3	-0.1
	9-Jul-14	10.1	10.2	-0.1
	5-Nov-14	9.3	9.2	0.1
gmsDN2	20-Jan-14	1.0	0.7	0.3
	22-May-14	3.3	3.3	0.0
	9-Jul-14	9.9	10.1	-0.2
	5-Nov-14	7.6	7.5	0.1
gmsDN2_BU	22-May-14	3.3	3.3	0.0
	9-Jul-14	9.9	10.1	-0.2
	5-Nov-14	7.6	7.5	0.1
pcnUP1	20-Jan-14	0.8	0.6	0.2
	22-May-14	4.2	4.2	0.0
	9-Jul-14	13.1	13.0	0.1
	5-Nov-14	8.3	8.1	0.2
pcnDN2	20-Jan-14	0.8	0.5	0.3
(SN 2038621)	22-May-14	4.0	3.8	0.2
pcnDN2	5-Nov-14	8.4	8.3	0.1
(SN 10156317)				

Appendix III. Reference temperature values and corresponding logger fix values recorded during download events in Year 6, January 01, 2014 to December 31, 2014, cont.

Logger ID	Date	Fix Temp	Ref Temp	Error
pcnDN2_BU	20-Jan-14	0.9	0.5	0.4
	22-May-14	4.0	3.8	0.2
	9-Jul-14	10.2	10.4	-0.2
	5-Nov-14	8.4	8.3	0.1
halfUP1	31-Jan-14	0.5	0.4	0.1
	22-May-14	5.7	5.8	-0.1
	12-Jul-14	13.5	13.6	-0.1
	2-Nov-14	7.2	7.1	0.1
halfUP2	31-Jan-14	-0.4	0.4	-0.8
(SN 2038572)				
halfUP2	12-Jul-14	13.6	13.8	-0.2
(SN 10156319)	2-Nov-14	7.1	7	0.1
halfDN2	31-Jan-14	0.2	0.4	-0.2
	12-Jul-14	17.5	17.6	-0.1
	2-Nov-14	3.2	3.1	0.1
halfDN2_BU	31-Jan-14	0.5	0.2	0.3
	22-May-14	9.6	9.8	-0.2
	12-Jul-14	17.5	17.6	-0.1
	2-Nov-14	3.2	3.1	0.1
mobUP1	18-Jan-14	0.9	0.5	0.4
	7-Jul-14	13.9	13.7	0.2
	2-Nov-14	6.6	6.4	0.2
mobUP2	18-Jan-14	0.6	0.5	0.1
	23-May-14	7.2	7.3	-0.1
	7-Jul-14	14.2	14.2	0.0
	2-Nov-14	6.4	6.4	0.0
mobDN1	18-Jan-14	0.7	0.4	0.3
	23-May-14	10.9	11.2	-0.3
	7-Jul-14	15.7	15.7	0.0
	2-Nov-14	6.3	6.2	0.1

Appendix III. Reference temperature values and corresponding logger fix values recorded during download events in Year 6, January 01, 2014 to December 31, 2014, cont.

Logger ID	Date	Fix Temp	Ref Temp	Error
mobDN1_BU	18-Jan-14	0.4	0.1	0.3
	23-May-14	11.2	11.1	0.1
	7-Jul-14	15.9	15.7	0.2
pineUP1	18-Jan-14	0.6	0.3	0.3
	23-May-14	8.5	8.6	-0.1
	7-Jul-14	15.7	16.0	-0.3
	2-Nov-14	6.3	6.2	0.1
pineUP2	18-Jan-14	0.4	0.7	-0.3
	23-May-14	7.2	7.4	-0.2
	7-Jul-14	14.7	14.7	0.0
	2-Nov-14	6.7	6.6	0.1
pineDN1	18-Jan-14	0.6	0.3	0.3
	23-May-14	8.7	8.8	-0.1
pineDN1_BU	18-Jan-14	0.6	0.3	0.3
	23-May-14	8.7	8.8	-0.1
	2-Nov-14	4.2	4.3	-0.1

Appendix IV. Year 6 download information forms, January 01, 2014 to December 31, 2014.

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM							
SITE ID	gmsUP1	**LOCATION**	GMS Forebay		**BANK**		
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**	2038617		**UTM**	548841	6209022
DOWNLOAD DATE	22 May 2014	**DOWNLOAD TIME**	13:14		**CREW**	BC TE	
TEST RECORDER TYPE	YSI	**WATER TEMP**	3.1	**AIR TEMP** 17	**ICE CONDITIONS**	free	
LOGGER CONDITIONS							
WATER DEPTH	1 m	**DISLODGED** no	**REASON**				
BURIED no	**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER**		cm	**TETHER TYPE**	steel buoy	
COMMENTS							
dow nload OK							

SITE ID	gmsUP2	**LOCATION**	GMS Forebay		**BANK**		
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**	10156318		**UTM**	548841	6209022
DOWNLOAD DATE	22 May 2014	**DOWNLOAD TIME**	13:15		**CREW**	BC TE	
TEST RECORDER TYPE	YSI	**WATER TEMP**	3	**AIR TEMP** 17	**ICE CONDITIONS**	none	
LOGGER CONDITIONS							
WATER DEPTH	10 m	**DISLODGED** no	**REASON**				
BURIED no	**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER**		cm	**TETHER TYPE**	steel buoy	
COMMENTS							
Dow nload OK							

SITE ID	gmsDN1	**LOCATION**	GMS Tailrace LDB		**BANK**	south	
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**	2038619		**UTM**	548881	6207761
DOWNLOAD DATE	22 May 2014	**DOWNLOAD TIME**	12:29		**CREW**	BC TE	
TEST RECORDER TYPE	YSI	**WATER TEMP**	3.3	**AIR TEMP** 17	**ICE CONDITIONS**	free	
LOGGER CONDITIONS							
WATER DEPTH	1 m	**DISLODGED** no	**REASON**				
BURIED no	**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER**		cm	**TETHER TYPE**	rock	
COMMENTS							
Back-up logger 2038613 in same capsule (gmsDN2BU)							
both dow nloads OK							

SITE ID	gmsDN2	**LOCATION**	GMS Tailrace RDB		**BANK**	north	
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**	2038620		**UTM**	548828	6207836
DOWNLOAD DATE	22 May 2014	**DOWNLOAD TIME**	12:11		**CREW**	BC TE	
TEST RECORDER TYPE	YSI	**WATER TEMP**	3.3	**AIR TEMP** 17	**ICE CONDITIONS**	free	
LOGGER CONDITIONS							
WATER DEPTH	150 cm	**DISLODGED** no	**REASON**				
BURIED no	**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER**		cm	**TETHER TYPE**	rock	
COMMENTS							
Back-up logger 2038614 in same capsule (gmsDN2BU)							
both dow nloads OK							

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	pcnUP1	**LOCATION**		PCN Forebay		**BANK**		north
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**		2225325		**UTM**	562684	6204075
DOWNLOAD DATE	22	5	2014	**DOWNLOAD TIME**	10:44	**CREW**	BC TE	
TEST RECORDER TYPE	YSI	**WATER TEMP**	4.2	**AIR TEMP**	17	**ICE CONDITIONS**	free	

LOGGER CONDITIONS

WATER DEPTH	1 m		**DISLODGED**	no	**REASON**			
BURIED	no	**FUNCTIONAL**	wet	**IF DRY, HEIGHT ABOVE WATER**		cm	**TETHER TYPE**	log boom

COMMENTS

download OK

SITE ID	pcnDN2	**LOCATION**		PCN Tailrace		**BANK**		north
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**		2038621		**UTM**	562803	6204854
DOWNLOAD DATE	22	May	2014	**DOWNLOAD TIME**	11:02	**CREW**	BC TE	
TEST RECORDER TYPE	merc	**WATER TEMP**	3.8	**AIR TEMP**	17	**ICE CONDITIONS**	free	

LOGGER CONDITIONS

WATER DEPTH	150	cm	**DISLODGED**	no	**REASON**			
BURIED	no	**FUNCTIONAL**	wet	**IF DRY, HEIGHT ABOVE WATER**		cm	**TETHER TYPE**	rock

COMMENTS

download OK

SITE ID	pcnDN2_BU	**LOCATION**		PCN Tailrace		**BANK**		north
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**		2038568		**UTM**	562803	6204854
DOWNLOAD DATE	22	May	2014	**DOWNLOAD TIME**	11:05	**CREW**	BC TE	
TEST RECORDER TYPE	merc	**WATER TEMP**	3.2	**AIR TEMP**	17	**ICE CONDITIONS**	free	

LOGGER CONDITIONS

WATER DEPTH	130	cm	**DISLODGED**	no	**REASON**			
BURIED	no	**FUNCTIONAL**	wet	**IF DRY, HEIGHT ABOVE WATER**		cm	**TETHER TYPE**	rock

COMMENTS

download OK
Anchored to same rock as pcnDN2

SITE ID		**LOCATION**				**BANK**		
LOGGER TYPE		**LOGGER SERIAL #**				**UTM**		
DOWNLOAD DATE				**DOWNLOAD TIME**		**CREW**		
TEST RECORDER TYPE		**WATER TEMP**		**AIR TEMP**		**ICE CONDITIONS**		

LOGGER CONDITIONS

WATER DEPTH		cm	**DISLODGED**		**REASON**			
BURIED		**FUNCTIONAL**		**IF DRY, HEIGHT ABOVE WATER**		cm	**TETHER TYPE**	

COMMENTS

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	halfUP1	LOCATION		u/s of Halfway River		BANK		south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		9767573		UTM		595165	6230094
DOWNLOAD DATE	22 May 2014	DOWNLOAD TIME		14:55		CREW		BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	5.8	AIR TEMP	18	ICE CONDITIONS		free	

LOGGER CONDITIONS

WATER DEPTH	220	cm	DISLODGED	no	REASON				
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	spruce tree

COMMENTS

download OK
replaced cable with stainless steel

SITE ID	halfUP2	LOCATION		u/s of Halfway River		BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038572		UTM	595569	6230541
DOWNLOAD DATE	22 May 2014	DOWNLOAD TIME		15:15		CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	6.2	AIR TEMP	18	ICE CONDITIONS		free

LOGGER CONDITIONS

WATER DEPTH	180	cm	DISLODGED	yes	REASON	debris			
BURIED	no		FUNCTIONAL	dry	IF DRY, HEIGHT ABOVE WATER	50	cm	TETHER TYPE	spruce

COMMENTS

download OK
stranded on shore due to debris
logger replaced with 10156319 due to low voltage

SITE ID	halfDN2	LOCATION		d/s of Halfway River		BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038574		UTM	598198	6232169
DOWNLOAD DATE	22 May 2014	DOWNLOAD TIME		15:43		CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	9.8	AIR TEMP	18	ICE CONDITIONS		free

LOGGER CONDITIONS

WATER DEPTH		cm	DISLODGED	yes	REASON	ice	debris			
BURIED	no		FUNCTIONAL	dry	IF DRY, HEIGHT ABOVE WATER	50	cm	TETHER TYPE	balsam pop

COMMENTS

download OK
stranded on shore due to ice and debris

SITE ID	halfDN2_BU	LOCATION		d/s of Halfway River		BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		10156314		UTM	598179	6263144
DOWNLOAD DATE	22 May 2014	DOWNLOAD TIME		15:36		CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	9.8	AIR TEMP	18	ICE CONDITIONS		free

LOGGER CONDITIONS

WATER DEPTH	30	cm	DISLODGED	yes	REASON	ice	debris			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	n/a	cm	TETHER TYPE	balsam pop

COMMENTS

download ok
swung to shore by ice and debris but still submerged in shallow water when downloaded

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	mobUP2	LOCATION		u/s of Moberly River	BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038616	UTM	627501	6232563
DOWNLOAD DATE	23 May 2014	DOWNLOAD TIME		13:30	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	7.3	AIR TEMP	21	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	20	cm	DISLODGED	yes	REASON	debris		
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	spruce

COMMENTS

download Ok

cable embedded in silt but logger was swung to shore and lying in shallow water. Possibly exposed at lower water.

SITE ID	mobUP1	LOCATION		u/s of Moberly River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038612	UTM	627158	6232349
DOWNLOAD DATE	23 May 2013	DOWNLOAD TIME		13:51	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	6.9	AIR TEMP	21	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH		cm	DISLODGED	yes	REASON	debris		
BURIED	no	FUNCTIONAL	dry	IF DRY, HEIGHT ABOVE WATER	50	cm	TETHER TYPE	alder

COMMENTS

download OK

swung to shore and stranded on shore by debris

SITE ID	mobDN1_BU	LOCATION		d/s of Moberly River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038576	UTM	630403	6229275
DOWNLOAD DATE	23 May 2014	DOWNLOAD TIME		14:22	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	11.2	AIR TEMP	21	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	80	cm	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder

COMMENTS

download OK
cable replaced with stainless steel cable

SITE ID	mobDN1	LOCATION		d/s of Moberly River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038622	UTM	630583	6229281
DOWNLOAD DATE	23 May 2014	DOWNLOAD TIME		14:42	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	11.2	AIR TEMP	21	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	100	cm	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder

COMMENTS

download OK

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	pineUP1	LOCATION	u/s of Pine River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #	2038624	UTM	641034	6225372
DOWNLOAD DATE	23 May 2014	DOWNLOAD TIME	15:13	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP 8.6	AIR TEMP 21	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	150 cm	DISLODGED	no	REASON		
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm TETHER TYPE	alder

COMMENTS

download OK

replaced all cable with stainless steel cable

SITE ID	pineUP2	LOCATION	u/s of Pine River	BANK	north	
LOGGER TYPE	Tidbit	LOGGER SERIAL #	9767572	UTM	641653	6225304
DOWNLOAD DATE	23 May 2014	DOWNLOAD TIME	15:34	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP 7.4	AIR TEMP 21	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	150 cm	DISLODGED	no	REASON		
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm TETHER TYPE	balsam pop

COMMENTS

download OK

replaced all cable with stainless steel cable

SITE ID	pineDN1_BU	LOCATION	d/s of Pine River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #	9762095	UTM	648362	6222823
DOWNLOAD DATE	23 May 2014	DOWNLOAD TIME	16:13	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP 8.8	AIR TEMP 21	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	150 cm	DISLODGED	no	REASON		
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm TETHER TYPE	alder

COMMENTS

download OK

SITE ID	pineDN1	LOCATION	d/s of Pine River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #	2225322	UTM	648426	6222837
DOWNLOAD DATE	23 May 2014	DOWNLOAD TIME	16:19	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP 8.8	AIR TEMP 21	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	100 cm	DISLODGED	no	REASON		
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm TETHER TYPE	alder

COMMENTS

download OK

cable replaced with stainless steel cable

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	gmsUP1	LOCATION		GMS Forebay		BANK		
LOGGER TYPE	Tidbit		LOGGER SERIAL #		2038617	UTM	548841	6209022
DOWNLOAD DATE	9	Jul	2014	DOWNLOAD TIME	13:00	CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	14.4	AIR TEMP	22	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	1 m		DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	steel buoy

COMMENTS

dow nload OK

SITE ID	gmsUP2	LOCATION		GMS Forebay		BANK		
LOGGER TYPE	Tidbit		LOGGER SERIAL #		10156318	UTM	548841	6209022
DOWNLOAD DATE	9	Jul	2014	DOWNLOAD TIME	12:56	CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	12.6	AIR TEMP	22	ICE CONDITIONS	none

LOGGER CONDITIONS

WATER DEPTH	10 m		DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	steel buoy

COMMENTS

Dow nload OK

SITE ID	gmsDN1	LOCATION		GMS Tailrace LDB		BANK	south	
LOGGER TYPE	Tidbit		LOGGER SERIAL #		2038619	UTM	548881	6207761
DOWNLOAD DATE	9	Jul	2014	DOWNLOAD TIME	12:21	CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	10.2	AIR TEMP	20	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	80	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	rock

COMMENTS

Back-up logger 2038613 in same capsule (gmsDN2BU)
both dow nloads OK

SITE ID	gmsDN2	LOCATION		GMS Tailrace RDB		BANK	north	
LOGGER TYPE	Tidbit		LOGGER SERIAL #		2038620	UTM	548828	6207836
DOWNLOAD DATE	9	Jul	2014	DOWNLOAD TIME	12:09	CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	10.1	AIR TEMP	20	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	100	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	rock

COMMENTS

Back-up logger 2038614 in same capsule (gmsDN2BU)
both dow nloads OK

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	pcnUP1	LOCATION		PCN Forebay	BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2225325	UTM	562684	6204075
DOWNLOAD DATE	9 Jul 2014	DOWNLOAD TIME		10:55	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	13.0	AIR TEMP 20	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	1 m	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	log boom

COMMENTS

dow nload OK

SITE ID	pcnDN2	LOCATION		PCN Tailrace	BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038621	UTM	562803	6204854
DOWNLOAD DATE	9 Jul 2014	DOWNLOAD TIME		10:40	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	10.4	AIR TEMP 20	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	50	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	rock

COMMENTS

dow nload failed - battery dead
logger replaced w ith 10156317

SITE ID	pcnDN2_BU	LOCATION		PCN Tailrace	BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038568	UTM	562803	6204854
DOWNLOAD DATE	9 Jul 2014	DOWNLOAD TIME		10:46	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	10.4	AIR TEMP 20	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	50	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	rock

COMMENTS

dow nload OK
Anchored to same rock as pcnDN2

SITE ID		LOCATION			BANK		
LOGGER TYPE		LOGGER SERIAL #			UTM		
DOWNLOAD DATE		DOWNLOAD TIME			CREW		
TEST RECORDER TYPE		WATER TEMP		AIR TEMP	ICE CONDITIONS		

LOGGER CONDITIONS

WATER DEPTH	cm	DISLODGED		REASON			
BURIED		FUNCTIONAL		IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	

COMMENTS

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM					
SITE ID	half UP1	**LOCATION**	u/s of Halfway River	**BANK**	south
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**	9767573	**UTM**	595165 · 6230094
DOWNLOAD DATE	12 Jul 2014	**DOWNLOAD TIME**	17:55	**CREW**	BC TE
TEST RECORDER TYPE	merc	**WATER TEMP** 13.6	**AIR TEMP** 22	**ICE CONDITIONS**	free

LOGGER CONDITIONS					
WATER DEPTH	200 cm	**DISLODGED** no	**REASON**		
BURIED no		**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER** cm	**TETHER TYPE**	spruce tree

COMMENTS

dow nload OK

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM					
SITE ID	half UP2	**LOCATION**	u/s of Halfway River	**BANK**	north
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**	10156319	**UTM**	595569 · 6230541
DOWNLOAD DATE	12 Jul 2014	**DOWNLOAD TIME**	17:48	**CREW**	BC TE
TEST RECORDER TYPE	YSI	**WATER TEMP** 13.8	**AIR TEMP** 27	**ICE CONDITIONS**	free

LOGGER CONDITIONS					
WATER DEPTH	120 cm	**DISLODGED** no	**REASON**		
BURIED no		**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER** cm	**TETHER TYPE**	spruce tree

COMMENTS

dow nload OK

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM					
SITE ID	half DN2	**LOCATION**	d/s of Halfway River	**BANK**	north
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**	2038574	**UTM**	598198 · 6232169
DOWNLOAD DATE	12 Jul 2014	**DOWNLOAD TIME**	17:34	**CREW**	BC TE
TEST RECORDER TYPE	YSI	**WATER TEMP** 17.6	**AIR TEMP** 27	**ICE CONDITIONS**	free

LOGGER CONDITIONS					
WATER DEPTH	100 cm	**DISLODGED** no	**REASON**		
BURIED no		**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER** cm	**TETHER TYPE**	balsam pop

COMMENTS

dow nload OK

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM					
SITE ID	half DN2_BU	**LOCATION**	d/s of Halfway River	**BANK**	north
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**	10156314	**UTM**	598179 · 6263144
DOWNLOAD DATE	12 Jul 2014	**DOWNLOAD TIME**	17:25	**CREW**	BC TE
TEST RECORDER TYPE	YSI	**WATER TEMP** 17.6	**AIR TEMP** 27	**ICE CONDITIONS**	free

LOGGER CONDITIONS					
WATER DEPTH	100 cm	**DISLODGED** no	**REASON**		
BURIED no		**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER** n/a cm	**TETHER TYPE**	balsam pop

COMMENTS

dow nload ok

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	mobUP2	LOCATION		u/s of Moberly River	BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038616	UTM	627501	6232563
DOWNLOAD DATE	7 Jul 2014	DOWNLOAD TIME		17:00	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	14.2	AIR TEMP 27	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	30	cm	DISLODGED	no	REASON			
BURIED	yes	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	spruce

COMMENTS

dow nload Ok

added 4.0m of stainless steel cable

SITE ID	mobUP1	LOCATION		u/s of Moberly River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038612	UTM	627158	6232349
DOWNLOAD DATE	7 Jul 2014	DOWNLOAD TIME		17:13	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	13.7	AIR TEMP 27	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	50	cm	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder

COMMENTS

dow nload OK

SITE ID	mobDN1_BU	LOCATION		d/s of Moberly River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038576	UTM	630403	6229275
DOWNLOAD DATE	7 Jul 2014	DOWNLOAD TIME		17:27	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	15.7	AIR TEMP 27	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	90	cm	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder

COMMENTS

dow nload OK

SITE ID	mobDN1	LOCATION		d/s of Moberly River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038622	UTM	630583	6229281
DOWNLOAD DATE	7 Jul 2014	DOWNLOAD TIME		17:34	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	15.7	AIR TEMP 27	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	60	cm	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder

COMMENTS

dow nload OK

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	pineUP1	LOCATION	u/s of Pine River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #	2038624	UTM	641034	6225375
DOWNLOAD DATE	7 Jul 2014	DOWNLOAD TIME	17:56	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	16.0 AIR TEMP 27	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	60 cm	DISLODGED	no	REASON		
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm TETHER TYPE	alder

COMMENTS

download OK

SITE ID	pineUP2	LOCATION	u/s of Pine River	BANK	north
LOGGER TYPE	Tidbit	LOGGER SERIAL #	9767572	UTM	641653 6225304
DOWNLOAD DATE	7 Jul 2014	DOWNLOAD TIME	18:01	CREW	BC TE
TEST RECORDER TYPE	YSI	WATER TEMP	14.7 AIR TEMP 27	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	90 cm	DISLODGED	no	REASON	
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm TETHER TYPE balsam pop

COMMENTS

download OK

SITE ID	pineDN1_BU	LOCATION	d/s of Pine River	BANK	south
LOGGER TYPE	Tidbit	LOGGER SERIAL #	9762095	UTM	648362 6222823
DOWNLOAD DATE	7 Jul 2014	DOWNLOAD TIME	18:19	CREW	BC TE
TEST RECORDER TYPE	YSI	WATER TEMP	17.9 AIR TEMP 27	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	cm	DISLODGED	yes	REASON	debris
BURIED		FUNCTIONAL	dry	IF DRY, HEIGHT ABOVE WATER 20 cm	TETHER TYPE alder

COMMENTS

download OK

swung into shore by debris and lying above wetted edge of river

replaced remaining galvanized cable with stainless steel

SITE ID	pineDN1	LOCATION	d/s of Pine River	BANK	south
LOGGER TYPE	Tidbit	LOGGER SERIAL #	2225322	UTM	648427 6222837
DOWNLOAD DATE	7 Jul 2014	DOWNLOAD TIME	18:25	CREW	BC TE
TEST RECORDER TYPE	YSI	WATER TEMP	17.9 AIR TEMP 27	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	cm	DISLODGED	yes	REASON	tampered
BURIED		FUNCTIONAL	dry	IF DRY, HEIGHT ABOVE WATER 200 cm	TETHER TYPE alder

COMMENTS

download OK

pulled to shore and thrown into bushes above highwater mark

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	gmsUP1	LOCATION		GMS Forebay	BANK		
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038617	UTM	548841	6209022
DOWNLOAD DATE	5 Nov 2014	DOWNLOAD TIME		13:20	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	9.2	AIR TEMP 2	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	1 m	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	steel buoy

COMMENTS

download OK

SITE ID	gmsUP2	LOCATION		GMS Forebay	BANK		
LOGGER TYPE	Tidbit	LOGGER SERIAL #		10156318	UTM	548841	6209022
DOWNLOAD DATE	5 Nov 2014	DOWNLOAD TIME		13:22	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	9.2	AIR TEMP 2	ICE CONDITIONS	none	

LOGGER CONDITIONS

WATER DEPTH	10 m	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	steel buoy

COMMENTS

download OK

SITE ID	gmsDN1	LOCATION		GMS Tailrace LDB	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038619	UTM	548881	6207761
DOWNLOAD DATE	5 Nov 2014	DOWNLOAD TIME		12:43	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	9.2	AIR TEMP 2	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	150 cm	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	rock

COMMENTS

Back-up logger 2038613 in same capsule (gmsDN2BU)
both downloads OK

SITE ID	gmsDN2	LOCATION		GMS Tailrace RDB	BANK	north	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038620	UTM	548828	6207836
DOWNLOAD DATE	5 Nov 2014	DOWNLOAD TIME		12:15	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	7.5	AIR TEMP 2	ICE CONDITIONS	free	

LOGGER CONDITIONS

WATER DEPTH	180 cm	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	rock

COMMENTS

Back-up logger 2038614 in same capsule (gmsDN2BU), replaced cable with stainless steel
both downloads OK

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	pcnUP1	LOCATION		PCN Forebay		BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2225325		UTM	562684	6204075
DOWNLOAD DATE	5 Nov 2014	DOWNLOAD TIME		9:36		CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	8.1	AIR TEMP	-3	ICE CONDITIONS		free

LOGGER CONDITIONS

WATER DEPTH	100	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	log boom

COMMENTS

dow nload OK

SITE ID	pcnDN2	LOCATION		PCN Tailrace		BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		10156317		UTM	562803	6204854
DOWNLOAD DATE	5 Nov 2014	DOWNLOAD TIME		9:13		CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	8.3	AIR TEMP	-3	ICE CONDITIONS		free

LOGGER CONDITIONS

WATER DEPTH	150	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	rock

COMMENTS

dow nload OK

SITE ID	pcnDN2_BU	LOCATION		PCN Tailrace		BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038568		UTM	562803	6204854
DOWNLOAD DATE	5 Nov 2014	DOWNLOAD TIME		9:20		CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	8.3	AIR TEMP	-3	ICE CONDITIONS		free

LOGGER CONDITIONS

WATER DEPTH	150	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	rock

COMMENTS

dow nload OK

Anchored to same rock as pcnDN2

SITE ID		LOCATION				BANK		
LOGGER TYPE		LOGGER SERIAL #				UTM		
DOWNLOAD DATE		DOWNLOAD TIME				CREW		
TEST RECORDER TYPE		WATER TEMP		AIR TEMP		ICE CONDITIONS		

LOGGER CONDITIONS

WATER DEPTH		cm	DISLODGED		REASON			
BURIED			FUNCTIONAL		IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	

COMMENTS

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID half DN2_BU	**LOCATION** d/s of Halfway River	**BANK** north
LOGGER TYPE Tidbit	**LOGGER SERIAL #** 10156314	**UTM** 598179 6263144
DOWNLOAD DATE 2 Nov 2014	**DOWNLOAD TIME** 14:29	**CREW** BC DC
TEST RECORDER TYPE YSI	**WATER TEMP** 3.1 **AIR TEMP** 5	**ICE CONDITIONS** free

LOGGER CONDITIONS

WATER DEPTH 120 cm	**DISLODGED** no	**REASON**	
BURIED no	**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER** cm	**TETHER TYPE** balsam pop

COMMENTS

dow nload OK

cable ok

SITE ID half DN2	**LOCATION** d/s of Halfw ay River	**BANK** north
LOGGER TYPE Tidbit	**LOGGER SERIAL #** 2038574	**UTM** 598198 6232169
DOWNLOAD DATE 2 Nov 2014	**DOWNLOAD TIME** 14:33	**CREW** BC DC
TEST RECORDER TYPE YSI	**WATER TEMP** 3.1 **AIR TEMP** 5	**ICE CONDITIONS** free

LOGGER CONDITIONS

WATER DEPTH 120 cm	**DISLODGED** no	**REASON**	
BURIED no	**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER** cm	**TETHER TYPE** balsam pop

COMMENTS

dow nload OK

cable ok

SITE ID half UP2	**LOCATION** u/s of Halfw ay River	**BANK** north
LOGGER TYPE Tidbit	**LOGGER SERIAL #** 10156319	**UTM** 595569 6230541
DOWNLOAD DATE 2 Nov 2014	**DOWNLOAD TIME** 13:56	**CREW** BC DC
TEST RECORDER TYPE YSI	**WATER TEMP** 7.0 **AIR TEMP** 5	**ICE CONDITIONS** free

LOGGER CONDITIONS

WATER DEPTH 200 cm	**DISLODGED** no	**REASON**	
BURIED no	**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER** cm	**TETHER TYPE** spruce

COMMENTS

dow nload OK

replaced cable w ith stainless steel

SITE ID half UP1	**LOCATION** u/s of Halfw ay River	**BANK** south
LOGGER TYPE Tidbit	**LOGGER SERIAL #** 9767573	**UTM** 595165 6230094
DOWNLOAD DATE 2 Nov 2014	**DOWNLOAD TIME** 14:18	**CREW** BC DC
TEST RECORDER TYPE YSI	**WATER TEMP** 7.1 **AIR TEMP** 5	**ICE CONDITIONS** free

LOGGER CONDITIONS

WATER DEPTH 200 cm	**DISLODGED** no	**REASON**	
BURIED no	**FUNCTIONAL** wet	**IF DRY, HEIGHT ABOVE WATER** cm	**TETHER TYPE** spruce tree

COMMENTS

dow nload OK

cable ok

w ater very low

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	mobUP2	LOCATION		u/s of Moberly River		BANK		north
LOGGER TYPE	Tidbit		LOGGER SERIAL #	2038616		UTM	627501	6232563
DOWNLOAD DATE	2 Nov 2014	DOWNLOAD TIME		10:49		CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	6.4	AIR TEMP	0	ICE CONDITIONS		free

LOGGER CONDITIONS

WATER DEPTH	200	cm	DISLODGED	no		REASON			
BURIED	no		FUNCTIONAL	wet		IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	spruce

COMMENTS

download Ok
cable ok
water very low

SITE ID	mobUP1	LOCATION		u/s of Moberly River		BANK		south
LOGGER TYPE	Tidbit		LOGGER SERIAL #	2038612		UTM	627158	6232349
DOWNLOAD DATE	2 Nov 2014	DOWNLOAD TIME		11:10		CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	6.4	AIR TEMP	0	ICE CONDITIONS		free

LOGGER CONDITIONS

WATER DEPTH	60	cm	DISLODGED	no		REASON			
BURIED	no		FUNCTIONAL	wet		IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	alder

COMMENTS

download Ok
cable ok
water very low

SITE ID	mobDN1_BU	LOCATION		d/s of Moberly River		BANK		south
LOGGER TYPE	Tidbit		LOGGER SERIAL #	2038576		UTM	630402	6229275
DOWNLOAD DATE	2 Nov 2014	DOWNLOAD TIME		11:26		CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	6.2	AIR TEMP	0	ICE CONDITIONS		free

LOGGER CONDITIONS

WATER DEPTH	0	cm	DISLODGED	yes	REASON	tampered			
BURIED	no		FUNCTIONAL	dry	IF DRY, HEIGHT ABOVE WATER	30	cm TETHER TYPE	alder	

COMMENTS

download OK

pulled to shore by curious persons working in the area

water very low

SITE ID	mobDN1	LOCATION		d/s of Moberly River		BANK		south
LOGGER TYPE	Tidbit		LOGGER SERIAL #	2038622		UTM	630583	6229281
DOWNLOAD DATE	2 Nov 2014	DOWNLOAD TIME		11:37		CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	6.2	AIR TEMP	0	ICE CONDITIONS		free

LOGGER CONDITIONS

WATER DEPTH	90	cm	DISLODGED	no		REASON			
BURIED	no		FUNCTIONAL	wet		IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	alder

COMMENTS

download OK

water very low

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	pineUP1	LOCATION		u/s of Pine River		BANK	south	
LOGGER TYPE	Tidbit		LOGGER SERIAL #		2038624	UTM	641034	6225375
DOWNLOAD DATE	2	Nov	2014	DOWNLOAD TIME	11:59	CREW	BC TE	
TEST RECORDER TYPE		YSI	WATER TEMP	6.2	AIR TEMP	0	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	120	cm	DISLODGED	no		REASON			
BURIED	no		FUNCTIONAL	wet		IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder

COMMENTS

download OK

stainless cable OK

water very low

SITE ID	pineUP2	LOCATION		u/s of Pine River		BANK		north
LOGGER TYPE	Tidbit		LOGGER SERIAL #		9767572	UTM	641653	6225304
DOWNLOAD DATE	2	Nov	2014	DOWNLOAD TIME	12:06	CREW	BC TE	
TEST RECORDER TYPE		YSI	WATER TEMP	6.6	AIR TEMP	0	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	180	cm	DISLODGED	no		REASON			
BURIED	no		FUNCTIONAL	wet		IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	balsam pop

COMMENTS

download OK

cable OK

water very low

SITE ID	pineDN1_BU	LOCATION		d/s of Pine River		BANK	south	
LOGGER TYPE	Tidbit		LOGGER SERIAL #		9762095	UTM	648362	6222823
DOWNLOAD DATE	2	Nov	2014	DOWNLOAD TIME	12:32	CREW	BC TE	
TEST RECORDER TYPE		YSI	WATER TEMP	4.3	AIR TEMP	0	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	65	cm	DISLODGED	no		REASON			
BURIED	no		FUNCTIONAL	wet		IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder

COMMENTS

download OK

cable ok

water very low

SITE ID	pineDN1	LOCATION		d/s of Pine River		BANK	south	
LOGGER TYPE	Tidbit		LOGGER SERIAL #		2225322	UTM	648427	6222837
DOWNLOAD DATE	2	Nov	2014	DOWNLOAD TIME	12:36	CREW	BC TE	
TEST RECORDER TYPE		YSI	WATER TEMP	4.3	AIR TEMP	0	ICE CONDITIONS	free

LOGGER CONDITIONS

WATER DEPTH	120	cm	DISLODGED		yes	REASON	tampered		
BURIED	no		FUNCTIONAL		dry	IF DRY, HEIGHT ABOVE WATER	60	cm	TETHER TYPE	alder

COMMENTS

download OK

pulled to shore by curious person and found lying above wetted perimeter of river

stainless cable ok

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	gmsUP1	LOCATION		GMS Forebay		BANK			
LOGGER TYPE	Tidbit		LOGGER SERIAL #		2038617	UTM		548841	6209022
DOWNLOAD DATE	6	Feb	2015	DOWNLOAD TIME		11:14	CREW	BC TE	
TEST RECORDER TYPE		YSI	WATER TEMP	1.3	AIR TEMP	-22	ICE CONDITIONS		none

LOGGER CONDITIONS

WATER DEPTH	100	cm	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	steel buoy

COMMENTS

Download OK
Logger replaced with 10635066

SITE ID	gmsUP2	LOCATION		GMS Forebay		BANK			
LOGGER TYPE	Tidbit		LOGGER SERIAL #		10156318	UTM		548841	6209022
DOWNLOAD DATE	6	Feb	2015	DOWNLOAD TIME		11:12	CREW	BC TE	
TEST RECORDER TYPE		YSI	WATER TEMP	1.2	AIR TEMP	-22	ICE CONDITIONS		none

LOGGER CONDITIONS

WATER DEPTH	10 m		DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	steel buoy

COMMENTS

Download OK

SITE ID	gmsDN2	LOCATION		GMS Tailrace RDB		BANK			north
LOGGER TYPE	Tidbit		LOGGER SERIAL #		2038620	UTM		548828	6207836
DOWNLOAD DATE	26	Jan	2015	DOWNLOAD TIME		10:18	CREW	BC TE	
TEST RECORDER TYPE		YSI	WATER TEMP	1.6	AIR TEMP	-1	ICE CONDITIONS		none

LOGGER CONDITIONS

WATER DEPTH	180	cm	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	rock

COMMENTS

Back-up logger 2038614 in same capsule
both downloads OK

SITE ID	gmsDN1	LOCATION		GMS Tailrace LDB		BANK		south	
LOGGER TYPE	Tidbit		LOGGER SERIAL #		2038619	UTM		548881	6207761
DOWNLOAD DATE	26	Jan	2015	DOWNLOAD TIME		10:35	CREW	BC TE	
TEST RECORDER TYPE		merc	WATER TEMP	0.4	AIR TEMP	-10	ICE CONDITIONS		light shore ice

LOGGER CONDITIONS

WATER DEPTH	180	cm	DISLODGED	no	REASON			
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	rock

COMMENTS

Back-up logger 2038613 in same capsule
both downloads OK
Logger replaced with 10635063

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	pcnUP1	LOCATION		PCN Forebay		BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2225325		UTM	562684	6204075
DOWNLOAD DATE	26	Jan	2015	DOWNLOAD TIME	12:12	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	1.6	AIR TEMP	2.0	ICE CONDITIONS	none	

LOGGER CONDITIONS

WATER DEPTH	100	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	log boom

COMMENTS

download OK

SITE ID	pcnDN2	LOCATION		PCN Tailrace		BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038621		UTM	562803	6204854
DOWNLOAD DATE	26	Jan	2015	DOWNLOAD TIME	12:34	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	1.6	AIR TEMP	2.0	ICE CONDITIONS	none	

LOGGER CONDITIONS

WATER DEPTH	200	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	rock

COMMENTS

download OK

SITE ID	pcnDN2_BU	LOCATION		PCN Tailrace		BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038568		UTM	562803	6204854
DOWNLOAD DATE	26	Jan	2015	DOWNLOAD TIME	12:37	CREW	BC TE	
TEST RECORDER TYPE	YSI	WATER TEMP	1.6	AIR TEMP	2.0	ICE CONDITIONS	none	

LOGGER CONDITIONS

WATER DEPTH	200	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	rock

COMMENTS

download OK

Anchored to same rock as pcnDN2

SITE ID		LOCATION				BANK		
LOGGER TYPE		LOGGER SERIAL #				UTM		
DOWNLOAD DATE				DOWNLOAD TIME		CREW		
TEST RECORDER TYPE		WATER TEMP		AIR TEMP		ICE CONDITIONS		

LOGGER CONDITIONS

WATER DEPTH		cm	DISLODGED		REASON			
BURIED			FUNCTIONAL		IF DRY, HEIGHT ABOVE WATER		cm TETHER TYPE	

COMMENTS

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	half UP2	**LOCATION**		u/s of Halfway River		**BANK**		north
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**		10156319		**UTM**	595569	6230541
DOWNLOAD DATE	23 Jan 2015	**DOWNLOAD TIME**		11:44		**CREW**		BC TE
TEST RECORDER TYPE	merc	**WATER TEMP**	1.5	**AIR TEMP**	4	**ICE CONDITIONS**		none

LOGGER CONDITIONS

WATER DEPTH	200	cm	**DISLODGED**	no	**REASON**			
BURIED	no		**FUNCTIONAL**	wet	**IF DRY, HEIGHT ABOVE WATER**	cm	**TETHER TYPE**	spruce

COMMENTS

download OK

SITE ID	half UP1	**LOCATION**		u/s of Halfway River		**BANK**		south
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**		9767573		**UTM**	595165	6230094
DOWNLOAD DATE	23 Jan 2015	**DOWNLOAD TIME**		11:37		**CREW**		BC TE
TEST RECORDER TYPE	merc	**WATER TEMP**	1.5	**AIR TEMP**	4	**ICE CONDITIONS**		none

LOGGER CONDITIONS

WATER DEPTH	200	cm	**DISLODGED**	no	**REASON**			
BURIED	no		**FUNCTIONAL**	wet	**IF DRY, HEIGHT ABOVE WATER**	cm	**TETHER TYPE**	spruce tree

COMMENTS

download OK

SITE ID	half DN2	**LOCATION**		d/s of Halfway River		**BANK**		north
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**		2038574		**UTM**	598198	6232169
DOWNLOAD DATE	23 Jan 2015	**DOWNLOAD TIME**		12:02		**CREW**		BC TE
TEST RECORDER TYPE	merc	**WATER TEMP**	1.2	**AIR TEMP**	4	**ICE CONDITIONS**		none

LOGGER CONDITIONS

WATER DEPTH	100	cm	**DISLODGED**	yes	**REASON**		debris	
BURIED	no		**FUNCTIONAL**	wet	**IF DRY, HEIGHT ABOVE WATER**	cm	**TETHER TYPE**	balsam pop

COMMENTS

download OK

partially swung to shore by debris and shallow

SITE ID	half DN2_BU	**LOCATION**		d/s of Halfway River		**BANK**		north
LOGGER TYPE	Tidbit	**LOGGER SERIAL #**		10156314		**UTM**	598179	6263144
DOWNLOAD DATE	23 Jan 2015	**DOWNLOAD TIME**		11:59		**CREW**		BC TE
TEST RECORDER TYPE	merc	**WATER TEMP**	1.2	**AIR TEMP**	4	**ICE CONDITIONS**		

LOGGER CONDITIONS

WATER DEPTH	50	cm	**DISLODGED**	yes	**REASON**	debris		
BURIED	no		**FUNCTIONAL**	wet	**IF DRY, HEIGHT ABOVE WATER**	cm	**TETHER TYPE**	balsam pop

COMMENTS

download OK

swung to shore by debris and shallow

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	mobUP2	LOCATION	u/s of Moberly River	BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #	2038616	UTM	627501	6232563
DOWNLOAD DATE	22 Jan 2015	DOWNLOAD TIME	13:38	CREW	BC TE	
TEST RECORDER TYPE	merc	WATER TEMP 1.4	AIR TEMP 6.0	ICE CONDITIONS	none	

LOGGER CONDITIONS

WATER DEPTH	200 cm	DISLODGED	no	REASON		
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm TETHER TYPE	spruce

COMMENTS

dow nload Ok

SITE ID	mobUP1	LOCATION	u/s of Moberly River	BANK		south
LOGGER TYPE	Tidbit	LOGGER SERIAL #	2038612	UTM	627158	6232349
DOWNLOAD DATE	22 Jan 2015	DOWNLOAD TIME	13:45	CREW	BC TE	
TEST RECORDER TYPE	merc	WATER TEMP 1.4	AIR TEMP 6.0	ICE CONDITIONS	none	

LOGGER CONDITIONS

WATER DEPTH	200 cm	DISLODGED	no	REASON		
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm TETHER TYPE	alder

COMMENTS

dow nload OK

replace cable w ith stainless steel cable next time

SITE ID	mobDN1_BU	LOCATION	d/s of Moberly River	BANK		south
LOGGER TYPE	Tidbit	LOGGER SERIAL #	2038576	UTM	630403	6229275
DOWNLOAD DATE	22 Jan 2015	DOWNLOAD TIME	13:36	CREW	BC TE	
TEST RECORDER TYPE	merc	WATER TEMP 1.3	AIR TEMP 6.0	ICE CONDITIONS	light shore ice	

LOGGER CONDITIONS

WATER DEPTH	160 cm	DISLODGED	no	REASON		
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm TETHER TYPE	alder

COMMENTS

dow nload OK

logger replaced w ith 10635065

SITE ID	mobDN1	LOCATION	d/s of Moberly River	BANK		south
LOGGER TYPE	Tidbit	LOGGER SERIAL #	2038622	UTM	630583	6229281
DOWNLOAD DATE	22 Jan 2015	DOWNLOAD TIME	14:06	CREW	BC TE	
TEST RECORDER TYPE	merc	WATER TEMP 1.3	AIR TEMP 6.0	ICE CONDITIONS	none	

LOGGER CONDITIONS

WATER DEPTH	160 cm	DISLODGED	no	REASON		
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm TETHER TYPE	alder

COMMENTS

dow nload OK

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM

SITE ID	pineUP2	LOCATION		u/s of Pine River	BANK		north
LOGGER TYPE	Tidbit	LOGGER SERIAL #		9767572	UTM	641653	6225304
DOWNLOAD DATE	22 Jan 2015	DOWNLOAD TIME		14:26	CREW	BC TE	
TEST RECORDER TYPE	merc	WATER TEMP	1.5	AIR TEMP 6.0	ICE CONDITIONS	light shore ice	

LOGGER CONDITIONS

WATER DEPTH	250	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	balsam pop

COMMENTS

download failed due to damaged optical tranfer lense
unit sent to Onset, data recovery performed successfully in Feb 2015.
logger replaced with new logger 10635062

SITE ID	pineUP1	LOCATION		u/s of Pine River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2038624	UTM	641034	6225372
DOWNLOAD DATE	22 Jan 2015	DOWNLOAD TIME		12:55	CREW	BC TE	
TEST RECORDER TYPE	merc	WATER TEMP	1.4	AIR TEMP 6.0	ICE CONDITIONS	none	

LOGGER CONDITIONS

WATER DEPTH	60	cm	DISLODGED	yes	REASON	ice		
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	alder

COMMENTS

download OK

partially swung in to shore but still submerged

SITE ID	pineDN1_BU	LOCATION		d/s of Pine River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		9762095	UTM	648362	6222823
DOWNLOAD DATE	22 Jan 2015	DOWNLOAD TIME		14:44	CREW	BC TE	
TEST RECORDER TYPE	merc	WATER TEMP	1.3	AIR TEMP 6.0	ICE CONDITIONS	none	

LOGGER CONDITIONS

WATER DEPTH	160	cm	DISLODGED	no	REASON			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	alder

COMMENTS

download OK

SITE ID	pineDN1	LOCATION		d/s of Pine River	BANK	south	
LOGGER TYPE	Tidbit	LOGGER SERIAL #		2225322	UTM	648427	6222837
DOWNLOAD DATE	22 Jan 2015	DOWNLOAD TIME		14:50	CREW	BC TE	
TEST RECORDER TYPE	merc	WATER TEMP	1.3	AIR TEMP 6.0	ICE CONDITIONS	none	

LOGGER CONDITIONS

WATER DEPTH	80	cm	DISLODGED	yes	REASON	ice		
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	alder

COMMENTS

download OK

partially swung to shore but submerged

Appendix V. Summary of temperature logger deployment dates and anticipated replacement dates.

Site ID	Serial #	Location	Date Deployed	Replace Date
gmsUP1	10635066	WAC Bennett Forebay	Feb 2015	2021
gmsUP2	10156318	WAC Bennett Forebay	June 2012	2018
gmsDN1	10635063	GMS Tailrace	Jan 2015	2021
gmsDN1backup	2038613	GMS Tailrace	Nov 2009	2015
gmsDN2	2038620	GMS Tailrace	Sep 2008	2015
gmsDN2backup	2038614	GMS Tailrace	Nov 2009	2015
pcnUP1	2225325	Peace Canyon Forebay	Sep 2008	2015
pcnDN2	10156317	Peace Canyon Tailrace	July 2014	2020
pcnDN2BU	2038568	Peace Canyon Tailrace	Sep 2008	2015
HalfUP1	9767573	Halfway Confluence - upstream	May 2011	2017
HalfUP2	10156319	Halfway Confluence - upstream	May 2014	2020
HalfDN2	2038574	Halfway Confluence - downstream	Sep 2008	2015
HalfDN2BU	10156314	Halfway Confluence - downstream	Jul 2013	2018
MobUP1	2038612	Moberly Confluence - upstream	Sep 2008	2015
MobUP2	2038616	Moberly Confluence - upstream	Sep 2008	2015
MobDN1	2038622	Moberly Confluence - downstream	Sep 2008	2015
MobDN1BU	10635065	Moberly Confluence - downstream	Jan 2015	2021
PineUP1	2038624	Pine Confluence - upstream	Sep 2008	2015
PineUP2	10635062	Pine Confluence - upstream	Jan 2015	2021
PineDN1	2225322	Pine Confluence - downstream	Sep 2008	2015
PineDN1BU	9762095	Pine Confluence - downstream	July 2011	2017