2014 SURFACE WATER AND HYDROLOGY SUPPLEMENTAL BASELINE REPORT FOR THE JAY PROJECT

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Abbreviations

Abbreviation	Definition
Aurora	Aurora Geosciences Ltd.
BSA	baseline study area
DAR	Developer's Assessment Report
Dominion Diamond	Dominion Diamond Ekati Corporation
e.g.,	for example
Ekati Mine	Ekati Diamond Mine
GPS	Global Positioning System
i.e.,	that is
LiDAR	Light Detection and Ranging
NE	northeast
NWT	Northwest Territories
Project	Jay Project
QA	quality assurance
QC	quality control
RTK	Real Time Kinematic

Units of Measure

Unit	Definition
%	percent
±	plus or equal to
km	kilometre
km^2	square kilometre
m	metre
m/s	metres per second
m^3	cubic metre
m^3/s	cubic metres per second
mm	millimetre

1 INTRODUCTION

1.1 Background

Dominion Diamond Corporation (Dominion Diamond) is a Canadian-owned and Northwest Territories (NWT) based mining company that mines, processes, and markets Canadian diamonds from the Ekati Diamond Mine (Ekati Mine). Dominion Diamond also markets Canadian diamonds from its 40% ownership of the Diavik Diamond Mine. The existing Ekati Mine is located approximately 200 kilometres (km) south of the Arctic Circle and 300 km northeast of Yellowknife, NWT (Map 1.1-1).

Dominion Diamond is proposing to develop the Jay kimberlite pipe (Jay pipe) located beneath Lac du Sauvage. The proposed Jay Project (Project) will be an extension of the Ekati Mine, which is a large, stable, and successful mining operation that has been operating for 16 years. Most of the infrastructure required to support the development of the Jay pipe and to process the kimberlite currently exist at the Ekati Mine. The Project is located in the southeastern portion of the Ekati claim block approximately 25 km from the main facilities and approximately 7 km to the northeast of the Misery Pit, in the Lac de Gras watershed (Map 1.1-2).

Baseline field programs were completed in 2013 to document the natural and socio-economic environments near the Project, and ultimately support an environmental assessment. The Hydrology Baseline Report provided a summary of the data collected during open-water conditions in 2013, as well as historical data, to characterize surface water hydrology and climate within the hydrology baseline study area (BSA), (Annex X of the Developer's Assessment Report [DAR]; Dominion Diamond 2014).

To supplement the 2013 baseline program, a 2014 hydrology field program, to collect additional baseline data, was completed. The 2014 field programs were completed between April and September, and included a winter season field program and four open water season field programs to characterize the hydrological conditions during winter, and through freshet and the open-water season until late September. This report summarizes the supplemental baseline data collected from lakes and streams within the study area in 2014.

The specific objectives of the 2014 hydrology baseline program were to:

- collect ice thickness data at lakes and lake outlets within the study area;
- determine the presence of ice-covered or open-water discharge during winter season;
- collect continuous hydrometric data through freshet and the open-water season; and,
- collect additional hydrometric data at key sites within the Lac de Gras and Lac du Sauvage watersheds with limited historical data.

LEGEND

- JAY PROJECT
- EXISTING MINE OR PROJECT
- TERRITORIAL CAPITAL
- POPULATED PLACE
- HIGHWAY
- ALL-SEASON ROAD
- WINTER ROAD
- TIBBITT TO CONTWOYTO WINTER ROAD
- NORTHERN PORTION OF TIBBITT TO CONTWOYTO WINTER ROAD
- TERRITORIAL/PROVINCIAL BOUNDARY
- TREELINE
- WATERCOURSE
- WATERBODY

150 0 150

SCALE 1:6,000,000 KILOMETRES

REFERENCE

WATER OBTAINED FROM ATLAS OF CANADA
NATURAL RESOURCES CANADA, CENTRE FOR TOPOGRAPHIC INFORMATION, 2012
PROJECTION: CANADA LAMBERT CONFORMAL CONIC

DOCUMENT

2014 SURFACE WATER AND HYDROLOGY SUPPLEMENTAL BASELINE REPORT FOR THE JAY PROJECT

PROJECT

DOMINION DIAMOND

JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

LOCATION OF THE JAY PROJECT

Golder Associates

PROJECT		1419751	FILE No. SB_Hydrol_002_GIS	
DESIGN	CV	06/02/15	SCALE AS SHOWN	REV. 0
GIS	LMS	07/04/15	MAP 1.1-1	
CHECK	CV	07/04/15		
REVIEW	NS	07/04/15		

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LEGEND

- EKATI MINE FOOTPRINT
- DIAVIK MINE FOOTPRINT
- PROPOSED JAY FOOTPRINT
- KIMBERLITE PIPE
- WINTER ROAD
- TIBBITT TO CONTWOYTO WINTER ROAD
- NORTHERN PORTION OF TIBBITT TO CONTWOYTO WINTER ROAD
- ELEVATION CONTOUR (10 m INTERVAL)
- ESKER
- WATERCOURSE
- WATERBODY

REFERENCE

CANVEC © NATURAL RESOURCES CANADA, 2012
NATURAL RESOURCES CANADA, CENTRE FOR TOPOGRAPHIC INFORMATION, 2012
DATUM: NAD83 PROJECTION: UTM ZONE 12N

DOCUMENT

2014 SURFACE WATER AND HYDROLOGY SUPPLEMENTAL BASELINE REPORT
FOR THE JAY PROJECT

3 0 3
SCALE 1:150,000 KILOMETRES

PROJECT
DOMINION DIAMOND

JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

JAY PROJECT SETTING

Golder Associates

PROJECT		1419751	FILE No. SB_Hydrol_003_GIS	
DESIGN	SM	12/08/14	SCALE AS SHOWN	REV 0
GIS	ANK	07/04/15	MAP 1.1-2	
CHECK	CV	07/04/15		
REVIEW	NS	07/04/15		

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1.2 Study Area

The study area for the 2014 hydrology programs is located within the headwaters of the Coppermine River basin, upstream of the Lac de Gras outlet (also including the Lac de Gras outlet) and consists of sub-basins that flow directly into Lac du Sauvage or Lac de Gras. This study area is located within the baseline study area defined in Section 1.3 of the Hydrology Baseline Report (Annex X of the DAR). The scope of the winter program was limited to key sites including tributary sub-basin terminal lakes and the Lac du Sauvage Narrows (channel connecting Lac du Sauvage and Lac de Gras), and did not include the Lac de Gras outlet. The open-water season program scope was refined from the 2013 baseline program to characterize the hydrological regime within the upper watershed and at the larger waterbodies (including Lac du Sauvage and Lac de Gras), and characterize baseline conditions at potentially affected lake and outlet channels.

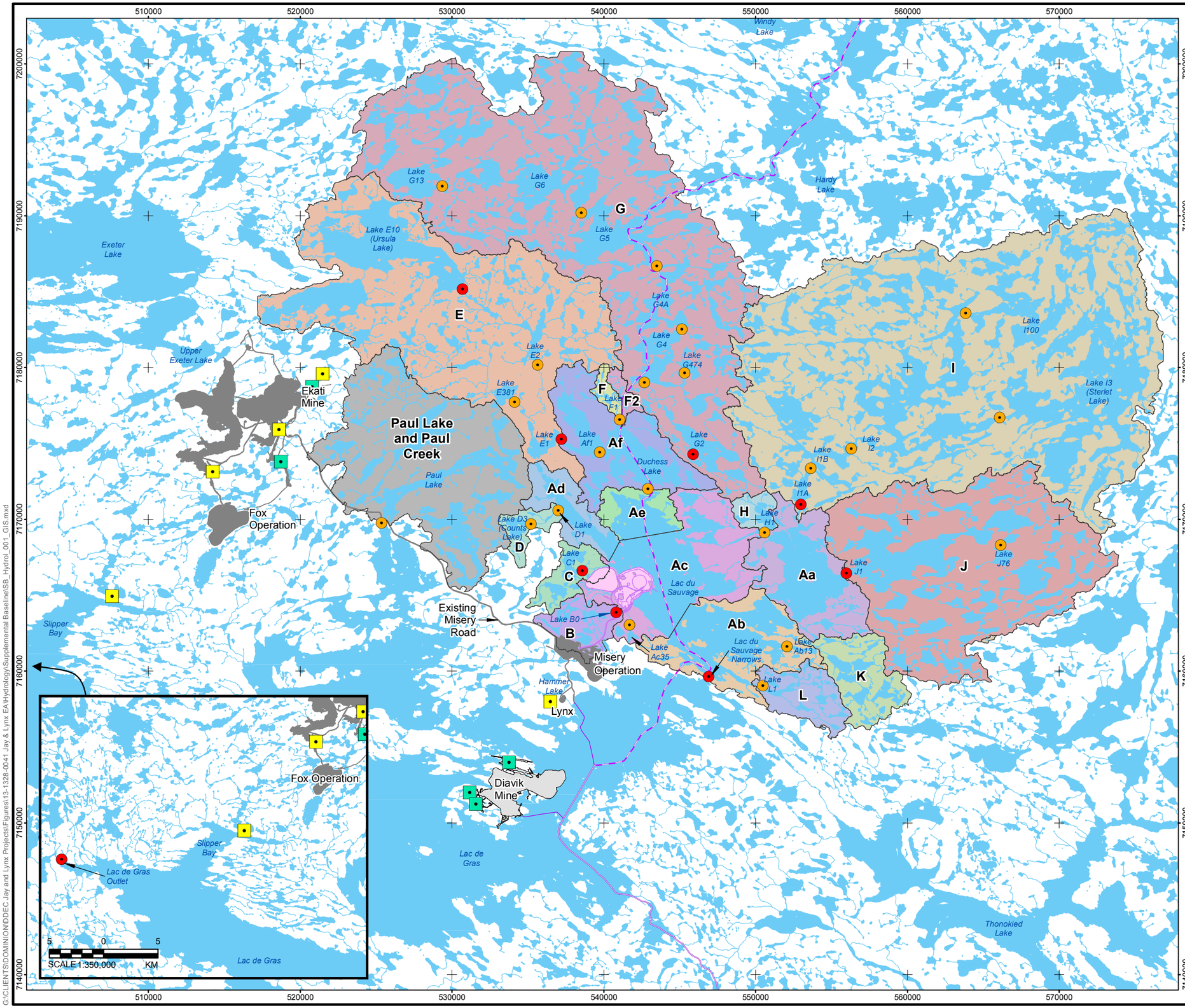
The study area for the winter program included:

- the Af sub-basin containing Lake Af1 and Duchess Lake;
- lakes and outlet streams within Lac du Sauvage tributary sub-basins, including sub-basins B, C, D, E, F, G, H, I, J, and L;
- Paul Lake within the Lac de Gras basin; and,
- the Lac du Sauvage Narrows.

The study area for the open-water program included:

- the Af sub-basin containing Lake Af1 and Duchess Lake;
- lakes and outlet streams within Lac du Sauvage tributary sub-basins, including sub-basins Ac, B, C, D, E, F, G, H, I, J, and L; and,
- the Lac du Sauvage Narrows and Lac de Gras outlet.

The locations of the survey sites within the 2014 hydrology field program study area are shown on Map 1.2-1. Further information regarding the physical setting of the Project is available in the 2013 Hydrology Baseline Report (Annex X of the DAR).



LEGEND

- EKATI MINE FOOTPRINT
- DIAVIK MINE FOOTPRINT
- PROPOSED JAY FOOTPRINT
- WINTER ROAD
- TIBBITT TO CONTWOYTO WINTER ROAD
- NORTHERN PORTION OF TIBBITT TO CONTWOYTO WINTER ROAD
- WATERCOURSE
- WATERBODY
- HYDROLOGY SURVEY SITE
- HYDROMETRIC STATION
- EKATI/DIAVIK LOCAL METEOROLOGICAL STATION
- LOCAL HISTORICAL HYDROMETRIC STATION

BASIN

- Aa
- Ab
- Ac
- Ad
- Ae
- Af
- B
- C
- D
- E
- F
- F2
- G
- H
- I
- J
- K
- L
- PAUL LAKE AND PAUL CREEK

REFERENCE

CANVEC © NATURAL RESOURCES CANADA, 2012
NATURAL RESOURCES CANADA, CENTRE FOR TOPOGRAPHIC INFORMATION, 2012
DATUM: NAD83 PROJECTION: UTM ZONE 12N

DOCUMENT

2014 SURFACE WATER AND HYDROLOGY SUPPLEMENTAL BASELINE REPORT
FOR THE JAY PROJECT

5 0 5
SCALE 1:250,000 KILOMETRES

PROJECT
DOMINION DIAMOND
JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE
2014 FIELD PROGRAM HYDROLOGY MONITORING SITES

Golder Associates

PROJECT		1419751	FILE No. SB_Hydrol_001_GIS	
DESIGN	CV	22/01/15	SCALE AS SHOWN	REV 0
GIS	ANK	07/04/15		
CHECK	CV	07/04/15	MAP 1.2-1	
REVIEW	NS	07/04/15		

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2 METHODS

2.1 Introduction

The 2014 surface water hydrology baseline program consisted of five site visits that occurred in ice-covered (winter) and open-water conditions. The objectives for the winter trip were to measure and document snow, ice thickness, ice-covered or winter open-water discharges at sites that may convey flow to and from Lac du Sauvage, and water and ice surface elevations relative to the established benchmarks. The objectives of the subsequent site visits during open-water conditions were to measure and document discharges and water surface elevations relative to the established benchmarks, and to survey geodetic elevations at benchmarks with no existing data.

The 2014 field program had two components: hydrology surveys, and continuous hydrometric stations; these components are described in Section 2.2.

The basin naming convention used for the 2014 baseline program remains unchanged from 2013, as described in Section D1.1 of Appendix D (Annex X of the DAR). The naming convention was developed for use by all technical disciplines, including the other aquatic components (i.e., water quality, aquatics).

2.2 Field Program Methods

2.2.1 Hydrology Surveys

Hydrology surveys were completed at 23 sites within the Lac du Sauvage watershed and at Paul Lake outlet within the Lac de Gras watershed, as shown on Map 1.2-1. The lakes and outlet channels selected for discrete hydrology surveys were primarily terminal sub-basin lakes and mainstem lakes with larger storage capacities. Additional smaller or upper-watershed lakes and outlet channels were selected to provide spatial coverage and information for outlet channels over the entire range of drainage basin sizes, and baseline information for lakes and outlet channels potentially affected by the Project.

Information collected included general observations, channel surveys (referenced to a local benchmark), discharge, water surface elevations and lake and outlet ice thicknesses (where applicable). These data provide a basis for developing lake stage-discharge rating curves based on measured geometry and water levels and discharge measurements. When possible, site benchmarks with assumed elevations were referenced to geodetic base stations installed by Aurora Geosciences Ltd. (Aurora; 2013).

Activities and data collected at each site included:

- oblique aerial and land-based geo-referenced photographs;
- installation of a permanent or temporary benchmark (typically an anchor bolt installed into overburden rock or into bedrock where available);
- detailed channel surveys including cross-sections sufficient to characterize the control section of the outlet channel, stream and lake water levels (and top of ice when applicable), and local water surface slopes, using either an automatic level and stadia with spatial coordinates measured using a handheld global positioning system (GPS) unit, or a GPS with Real Time Kinematic (RTK) satellite navigation system;

- stream discharge measurements performed according to Water Survey of Canada methods, using a top-setting wading rod and a SonTek Flow Tracker or a Marsh-McBirney FLO-MATE current velocity meter. A Sontek M9 Acoustic Doppler Profiler, connected to a differential GPS unit, was used for streams where wading was not possible; and,
- observations of channel geomorphology and hydrological conditions, including bed and bank material types, vegetation, sinuosity, high-water marks, snow and ice conditions (when applicable), and bankfull locations.

2.2.2 Hydrometric Stations

Hydrometric stations with continuous water level measurements were installed at eight lake outlets within the Lac du Sauvage watershed (Lake B0, Lake C1, Ursula Lake (Lake E10), Lake E1, Lake G2, Lake I1A, Lake J1, Lac du Sauvage) and at the outlet of Lac de Gras, as shown on Map 1.2-1. The lakes and outlet channels selected for continuous hydrometric stations were primarily terminal sub-basin lakes and mainstem lakes with larger storage capacities.

In addition to the information collected as part of the hydrology survey program activities, a Solinst Levelogger® Edge 3001 self-contained datalogger instrument was installed and set up to measure and record water levels on 10 minute intervals. The Levelogger measured absolute pressure (water pressure and atmospheric pressure) expressed in metres.

To obtain changes in water levels, a Barometric Pressure datalogger (Barologger) with the same sampling interval was installed to compensate for atmospheric pressure fluctuations. One Barologger can be used to compensate all Leveloggers within a radius of less than 30 km for accurate compensation (Solinst 2013). The study area spanned greater than 30 km, and based on experience in northern climates, barometric pressure records can contain inconsistencies or errors; therefore, Barologgers were installed at the following lake outlets: Lake B0, Lake E1, and Lac de Gras.

During each field visit, the Leveloggers and Barologgers were downloaded, and if required, maintenance work was done. All instruments were removed from the field during the last field trip in mid-September, except one Levelogger and one Barologger at each of the Lac du Sauvage and Lac de Gras outlets. Instrumentation remained deployed at those stations to collect winter data.

Discharge hydrographs were estimated for each hydrometric station using the derived stage-discharge rating curve, which included historical data (where applicable) and 2013 and 2014 water levels and discharges. For specific sites where another approach was used, the approach is discussed along with the presentation of data in Appendix A.

2.3 Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) practices determine data integrity and are relevant to all aspects of a study, from data collection to data analysis and reporting. Quality assurance (QA) encompasses management and technical practices designed to ensure that the data generated are of consistent high quality. Quality control (QC) is an aspect of QA and includes the procedures used to measure and evaluate data quality, and the corrective actions to be taken when data quality objectives are not met.

2.3.1 Quality Assurance

Quality assurance encompasses management and technical practices designed so that the data generated are of consistent high quality, including appropriate training of field personnel, use of standard technical procedures for field measurements, use of appropriate instrumentation, and data management systems.

The field programs used the following QA procedures:

- following appropriate technical procedures for field measurements;
- using and maintaining the field equipment according to the manufacturer specifications;
- using appropriately trained staff to collect data; and,
- completing all paperwork including field data sheets.

The field equipment was maintained by regular servicing and calibration. The main technical specifications for instruments used in the field are:

a) Sokkia GSR2700 ISX, GPS RTK unit has a position accuracy of plus or equal to (±) 0.020 metres (m) for horizontal measurements and ± 0.010 m for vertical measurements.

b) Handheld GPS Garmin Map 60 unit has a typical accuracy of 3 to 5 m.

c) Sontek Flowtracker unit has an internal data quality control system that warns the user if the main measured values exceed expected criteria for a velocity measurement. The user needs to review the warnings, if any, and choose the adjustments needed. At the end of each discharge measurement, the Flowtracker software provides a QC summary and potential warning that will need to be considered during further in the discharge analysis.

d) Marsh McBirney unit has a velocity measurement accuracy of ± 2 percent (%) of reading plus ± 0.015 metres per second (m/s).

e) Sontek Acoustic Doppler Profiler unit is a hydroacoustic current meter that measures water depth and velocity profile using the Doppler effect. The water velocity measurements have an accuracy of ± 0.2% of measured velocity.

f) Automatic level measures elevation differences with a minimum accuracy of 0.01 m.

2.3.2 Quality Control

Quality control includes the procedures used to measure and evaluate data quality, and the corrective actions to be taken when data quality objectives are not met. The QC processes in this program included:

- following procedures during the field programs such as temporary control points for surveys, and re-surveying the main points using a second tripod setup;
- checking the field measurements for evidence of unacceptable data and/or variation (e.g., vegetation interference when using the Flowtracker, GPS RTK checks for control points);
- checking the field forms and notes for missing data; and,
- checking the calculation tables in the office for possible data entry errors.

2.3.3 Quality Assurance/Quality Control Results

The Project QA/QC program included: a review of field data; assessment of field data sheets completeness, review of calculation tables for surveys and discharges, a comparison of all Barologger records and selection of appropriate records for compensation, a comparison of all Levelogger compensated recorded water levels, and a review of discharge measurement summary sheets as produced by the Flowtracker software or recorded in the field when using the Marsh-McBirney instrument.

The review of the calculation tables for surveys and discharge indicated that the majority of the data were correctly measured and entered. The errors found were corrected with the proper value from the field notes. For some GPS RTK measurements, local topography around some sites prevented the collection of high accuracy data by disturbing the radio signal. These data required further analysis and comparison with other sites and local information such as site photographs. Where this was not possible, the data were not considered in the analysis.

The discharge measurements in ice-covered conditions during the first winter trip and the second freshet trip were flagged and not considered for the construction of the rating curve. The discharge summary sheets produced by the Flowtracker software were reviewed and minor corrections were done for errors in entered data not plausible for the site (e.g., depth entered as 2.6 m instead of 0.26 m in a shallow stream was corrected to 0.26 m). These corrections took into account site-specific information such as field notes and photographs.

3 2014 SURFACE WATER PROGRAM RESULTS

This section of the report presents the results of the surface water and hydrology field program for the 2014 season, and includes one winter trip during ice-covered conditions and four trips under open-water conditions (Table 3-1). Additional information collected during the 2014 baseline field program, including supplemental data, details for discharge surveys and measured ice thicknesses, is provided in Appendix A.

Table 3-1 Field Trip Activity Summary, 2014

Site	Winter Trip 24 - 29 Apr	Freshet Trip 26 May - 9 Jun	Spring Trip 19 Jun - 2 Jul	Summer Trip 28 Jul - 6 Aug	Fall Trip 16 - 24 Sep
Lake Ab13	--	31 May - Q, WL; 3 Jun - WL; 7 Jun - WL	26 Jun - Q, WL	4 Aug - Q, WL	--
Lake Ac35	--	--	28 Jun - Q, WL	5 Aug - Q, WL	--
Lake Af1	26 Apr - FB	30 May - Q, WL; 4 Jun - WL, XS	21 Jun - Q, WL	3 Aug - Q, WL	--
Duchess Lake	28 Apr - Q	4 Jun - WL, XS;	27 Jun - Q, WL	1 Aug - WL	--
Lac du Sauvage	28 Apr - Q, WL	29 May - Q, WL, LLi; 6 Jun - WL	26 Jun - Q, WL	31 Jul - Q, WL	23 Sep - Q, WL, LLr, LLiw
Lac de Gras	--	29 May - LLi; 4 Jun - BM, WL; 5 Jun - Q, WL, XS	25 Jun - Q, WL	1 Aug - WL	23 Sep - Q, WL, LLr, LLiw
Lake B0	25 Apr - FB	30 May - Q, WL, LLi; 3 Jun - WL, BM; 7 Jun - WL	20 Jun - Q, WL	30 Jul - Q, WL	18 Sep - Q, WL, LLr
Lake C1	26 Apr - FB	30 May - Q, WL, LLi; 3 Jun - WL, XS	20 Jun - Q, WL	30 Jul - Q, WL	18 Sep - Q, WL, LLr
Lake D1	--	31 May - Q, WL; 3 Jun – WL, BM, XS	21 Jun - Q, WL	3 Aug - Q, WL	--
Counts Lake (Lake D3)	26 Apr - FB	30 May - Q, WL; 3 Jun – WL, BM, XS	21 Jun - Q, WL	2 Aug - Q, WL	21 Sep - Q, WL
Lake E1	26 Apr - FB	31 May – WL, LLi; 3 Jun - WL; 6 Jun - Q, WL	21 Jun - Q, WL; 27 Jun - Q, WL	1 Aug - Q, WL	18 Sep - Q, WL, LLr
Lake E2	--	7 Jun - Q, WL	29 Jun - Q, WL	5 Aug - Q, WL	--
Ursula Lake (Lake E10)	--	30 May - Q, WL, LLi; 7 Jun - Q, WL	26 Jun - Q, WL	1 Aug - Q, WL	19 Sep - Q, WL, LLr
Lake E381	--	--	28 Jun - Q, WL	3 Aug - Q, WL	--
Lake F1	26 Apr - FB	31 May - Q, WL	24 Jun - Q, WL	5 Aug - Q, WL	--
Lake G2	26 Apr - FB	28 May - LLi; 29 May - Q, WL; 5 Jun - Q, WL	22 Jun - Q, WL	1 Aug - Q, WL	19 Sep - Q, WL, LLr
Lake G4	--	--	28 Jun - Q, WL	--	--
Lake G4A	--	1 Jun - Q, WL, BM	22 Jun - Q, WL	4 Aug - Q, WL	--
Lake G5	--	1 Jun - Q, WL 6 Jun - WL	22 Jun - Q, WL	4 Aug - Q, WL	24 Sep - Q, WL
Lake G6	--	30 May - Q, WL	22 Jun - Q, WL	3 Aug - Q, WL	--

Table 3-1 Field Trip Activity Summary, 2014

Site	Winter Trip 24 - 29 Apr	Freshet Trip 26 May - 9 Jun	Spring Trip 19 Jun - 2 Jul	Summer Trip 28 Jul - 6 Aug	Fall Trip 16 - 24 Sep
Lake G13	--	30 May - Q, WL 6 Jun - WL	26 Jun - Q, WL	3 Aug - Q, WL	24 Sep - Q, WL
Lake G474	--	--	28 Jun - Q, WL, BM	--	--
Lake H1	28 Apr - FB	31 May - Q, WL, BM; 2 Jun - Q, WL; 7 Jun - Q, WL	24 Jun - Q, WL	30 Jul - Q, WL	19 Sep - Q, WL
Lake I1A	--	29 May - LLi; 1 Jun - Q, WL; 7 Jun – Q, WL	23 Jun - Q, WL	31 Jul - Q, WL	19 Sep - Q, WL, LLr
Lake I1B	--	--	24 Jun - Q, WL	4 Aug - Q, WL	--
Lake I2	--	1 Jun - Q, WL; 3 Jun - WL, BM, XS	23 Jun - Q, WL	2 Aug - Q, WL	--
Sterlet Lake (Lake I3)	--	1 Jun - Q, WL, BM; 6 Jun - WL	23 Jun - Q, WL	2 Aug - Q, WL	--
Lake I100	--	1 Jun - Q, WL	23 Jun - Q, WL	2 Aug - Q, WL	24 Sep - Q, WL
Lake J1	28 Apr - FB	29 May - LLi; 2 Jun - Q, WL, BM	24 Jun - Q, WL	31 Jul - Q, WL	19 Sep - Q, WL, LLr
Lake J76	--	3 Jun - WL; 7 Jun - Q, WL, BM, XS	28 Jun - Q, WL	4 Aug - Q, WL	24 Sep - Q, WL
Lake L1	28 Apr - FB	31 May - Q, WL; 7 Jun - WL	28 Jun - Q, WL	5 Aug - Q, WL	--
Paul Lake	29 Apr - Q	--	--	--	--

FB = Frozen to Bottom; Q = Measured Discharge; WL = Measured WL (Level or GPS-RTK); LLi = Installed Leveloggers; LLr = Removed Leveloggers; LLiw = Re-installed Leveloggers for 2014-2015 winter season; BM = Benchmark Surveys (Level or GPS-RTK); XS = Channel Profile Surveys (Level or GPS-RTK); -- = No Site Visit.

3.1 Hydrology Surveys

The lakes visited for hydrology surveys were within Lac du Sauvage watershed. Activity details of each site visit at the lakes visited are provided in Table 3.1-1. This table does not include lakes with continuous hydrometric monitoring, which are discussed in Section 3.2.

Table 3.1-1 Hydrology Survey Site Visits, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
Lake Ab13			
31 May	Measured discharge and water surface elevation. Surveyed benchmark geodetic elevations.	416.324	1.268
3 Jun	Measured water surface elevation.	416.351	--
7 Jun	Measured water surface elevation.	416.276	--
26 Jun	Measured discharge and water surface elevation.	416.160	0.306
4 Aug	Measured discharge and water surface elevation.	416.080	0.036
Lake Ac35			
28 Jun	Measured discharge and water surface elevation.	451.618[(a)]	0.021
5 Aug	Measured discharge and water surface elevation.	451.494[(a)]	0.003
Lake Af1			
26 Apr	Attempted to measure water surface elevation and discharge.	Frozen to bottom.	
30 May	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	417.148	10.380
4 Jun	Measured water surface elevation.	417.181	--
21 Jun	Measured discharge and water surface elevation.	417.122	2.359
3 Aug	Measured discharge and water surface elevation.	416.870	1.004
Duchess Lake			
28 Apr	Measured discharge and water surface elevation.	N/A	0.089
4 Jun	Measured water surface elevation and surveyed transect.	415.944	--
27 Jun	Measured discharge and water surface elevation.	416.125	8.326
1 Aug	Measured water surface elevation.	416.230	--
Lake D1			
31 May	Measured discharge and water surface elevation.	416.822	0.117
3 Jun	Measured water surface elevation. Surveyed new benchmark geodetic elevation.	416.839	--
21 Jun	Measured discharge and water surface elevation.	416.756	0.087
3 Aug	Measured discharge and water surface elevation.	416.640	0.043

Table 3.1-1 Hydrology Survey Site Visits, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
Counts Lake (Lake D3)			
26 Apr	Attempted to measure water level and discharge.	Frozen to bottom.	
30 May	Measured discharge and water surface elevation.	440.309	0.003
3 Jun	Measured water surface elevation and surveyed geodetic elevation for site benchmarks.	440.691	--
21 Jun	Measured discharge and water surface elevation.	440.702	0.087
2 Aug	Measured discharge and water surface elevation.	440.663	0.044
21 Sep	Measured discharge and water surface elevation.	440.441	0.008
Stream E2			
7 Jun	Measured discharge and stream water level.	421.270[b]	2.437
29 Jun	Measured discharge and stream water level.	421.277[b]	3.324
5 Aug	Measured discharge and stream water level.	421.060[b]	0.955
Lake E381			
28 June	Measured discharge and water surface elevation.	419.572	0.213
3 Aug	Measured discharge and water surface elevation.	419.465	0.165
Lake F1			
26 Apr	Attempted to measure water level and discharge.	Frozen to bottom.	
31 May	Measured discharge and water surface elevation.	417.589[b]	0.158
24 Jun	Measured discharge and water surface elevation.	417.425[b]	0.012
5 Aug	Measured discharge and water surface elevation.	417.490[b]	0.028
Lake G4			
28 Jun	Measured discharge and water surface elevation.	436.201	4.928
Lake G4A			
1 Jun	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	437.945	2.268
22 Jun	Measured discharge and water surface elevation.	438.034	3.137
4 Aug	Measured discharge and water surface elevation.	437.889	2.233
Lake G5			
1 Jun	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	443.293	3.706
6 June	Measured water surface elevation.	443.468	--
22 Jun	Measured discharge and water surface elevation.	443.328	3.996
4 Aug	Measured discharge and water surface elevation.	443.173	2.527
24 Sep	Measured discharge and water surface elevation.	443.046	0.707
Lake G6			
30 May	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	443.805[a]	3.598
22 Jun	Measured discharge and water surface elevation.	443.785[a]	2.525
3 Aug	Measured discharge and water surface elevation.	443.723[a]	1.725

Table 3.1-1 Hydrology Survey Site Visits, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
Lake G13			
30 May	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	467.907[(a)]	1.090
6 June	Measured water surface elevation.	467.893[(a)]	--
26 Jun	Measured discharge and water surface elevation.	467.835[(a)]	0.716
3 Aug	Measured discharge and water surface elevation.	467.821[(a)]	0.678
24 Sep	Measured discharge and water surface elevation.	467.708[(a)]	0.188
Lake G474			
28 June	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	438.246	0.118
Lake H1			
28 Apr	Attempted to measure water level and discharge.	Frozen to bottom.	
31 May	Measured water surface elevation. No discharge, outlet covered with ice and snow. Surveyed secondary benchmark geodetic elevation.	419.171	0.000
2 Jun	Measured discharge and water surface elevation.	419.188	0.120
7 Jun	Measured discharge and water surface elevation.	419.192	0.125
24 Jun	Measured discharge and water surface elevation.	419.088	0.094
30 Jul	Measured discharge and water surface elevation.	418.919	0.008
19 Sep	Measured discharge and water surface elevation.	418.844	0.0003
Lake I1B			
24 Jun	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	426.388	5.417
4 Aug	Measured discharge and water surface elevation.	426.157	1.931
Lake I2			
1 Jun	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	433.394	1.584
3 Jun	Measured water surface elevation.	433.429	--
23 Jun	Measured discharge and water surface elevation.	433.496	4.924
2 Aug	Measured discharge and water surface elevation.	433.420	1.991
Sterlet Lake (Lake I3)			
1 Jun	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	440.690[(a)]	1.301
6 Jun	Measured water surface elevation.	440.720[(a)]	--
23 Jun	Measured discharge and water surface elevation.	440.674[(a)]	1.938
2 Aug	Measured discharge and water surface elevation.	440.565[(a)]	0.736

Table 3.1-1 Hydrology Survey Site Visits, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
Lake I100			
1 Jun	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	437.434[(a)]	0.238
23 Jun	Measured discharge and water surface elevation.	437.499[(a)]	0.527
2 Aug	Measured discharge and water surface elevation.	437.386[(a)]	0.553
24 Sep	Measured discharge and water surface elevation.	437.199[(a)]	0.182
Lake J76			
3 Jun	Measured water surface elevation.	418.722	--
7 Jun	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	418.715	1.287
28 Jun	Measured discharge and water surface elevation.	418.556	0.444
4 Aug	Measured discharge and water surface elevation.	418.304	0.158
24 Sep	Measured discharge and water surface elevation.	418.191	0.036
Lake L1			
28 Apr	Attempted to measure water level and discharge.	Frozen to bottom.	
31 May	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	419.294	2.184
7 Jun	Measured water surface elevation.	418.965	--
28 Jun	Measured discharge and water surface elevation.	418.714	0.143
5 Aug	Measured discharge and water surface elevation.	417.591	0.006
Paul Lake			
29 Apr	Measured discharge	N/A	0.025

a) Geodetic elevations estimated from adjusting non-geodetic August 2013 manually surveyed water levels to water surface elevations derived from Light Detection and Ranging (LiDAR) data dated 23 July to 1 Aug, 2013. At sites with geodetic elevations referenced to Aurora base stations (Aurora 2013), LiDAR water surface elevations were within 0.20 m agreement with geodetic water surface elevations originally taken in August 2013.

b) Water surface elevations located at these sites are stream water levels, not lake water surface elevations (referenced to the centre stream transect).

m = metre; m^3/s = cubic metres per second.

3.2 Hydrometric Stations

Lakes with hydrometric stations installed in 2014 included Lakes B0, C1, E1, E10, G2, I1A, and J1 and Lac du Sauvage and Lac de Gras. Continuous water level hydrographs were derived based on the Levelogger data. The discharge hydrographs were derived from the Levelogger data using stage-discharge rating curves considering 2013 and 2014 data in addition to historical data, if available.

3.2.1 Lake B0 Outlet

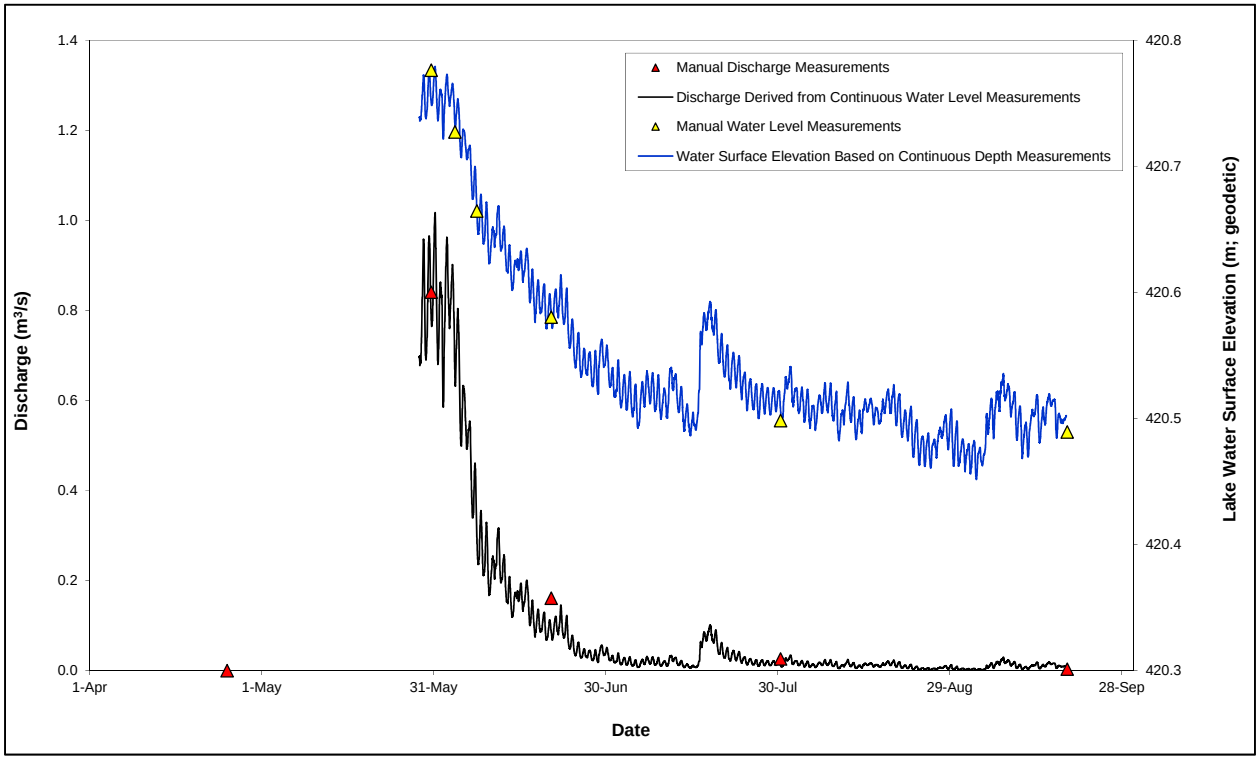
Lake B0 Outlet was visited seven times in 2014, and a continuous hydrograph was derived for the period of May 28 to September 18, 2014, based on continuous logger data. Details of each site visit are provided in Table 3.2-1. The hydrographs for Lake B0 Outlet are presented in Figure 3.2-1.

Table 3.2-1 Site Visits to Lake B0 Outlet, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
25 Apr	Attempted to measure water level and discharge.	Frozen to bottom	
30 May	Measured discharge and water surface elevation. Installed Levelogger sensor.	420.776	0.841
3 Jun	Measured water surface elevation. Surveyed new benchmark geodetic elevation.	420.727	--
7 Jun	Measured water surface elevation.	420.665	--
20 Jun	Measured discharge and water surface elevation.	420.580	0.161
30 Jul	Measured discharge and water surface elevation.	420.498	0.026
18 Sep	Measured discharge and water surface elevation. Removed Levelogger sensor.	420.489	0.003

m = metre; m^3/s = cubic metres per second; "--" = not measured.

Figure 3.2-1 Hydrograph for Lake B0 Outlet, 2014



m = metre; m^3/s = cubic metres per second.

3.2.2 Lake C1 Outlet

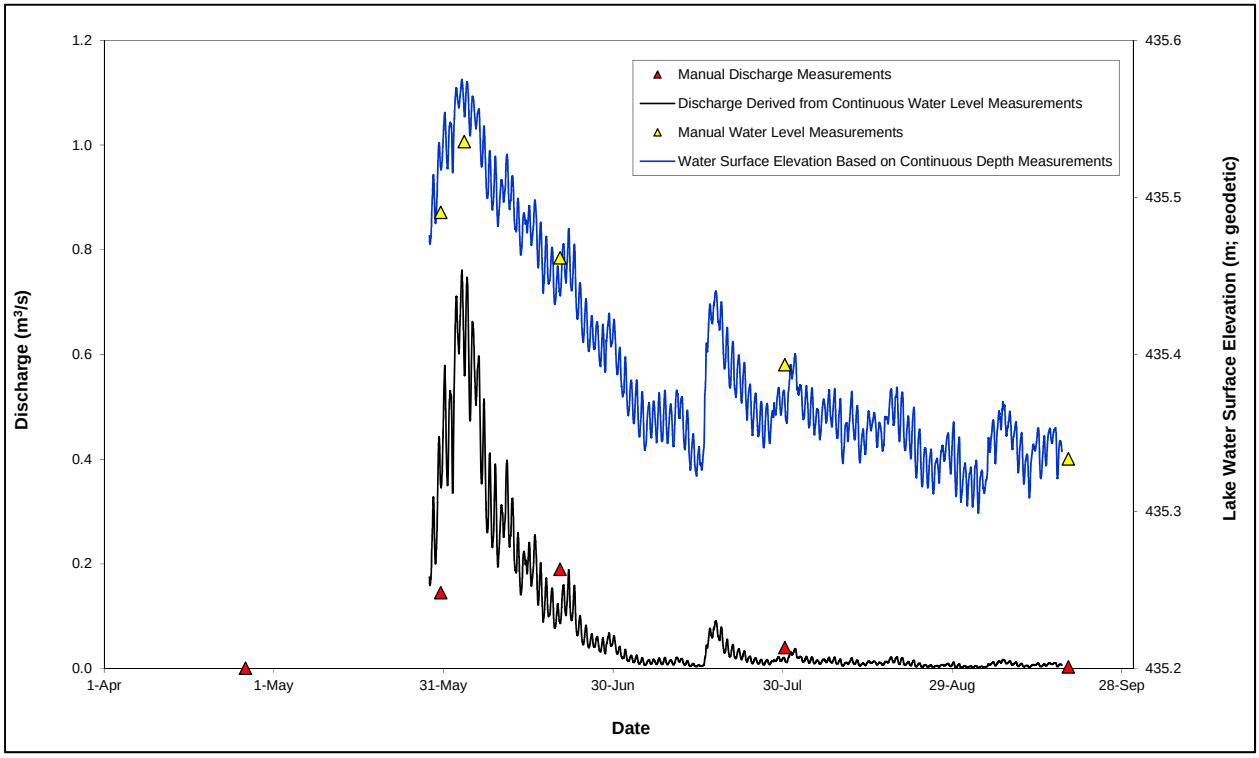
Lake C1 Outlet was visited six times in 2014, and a continuous hydrograph was derived for the period of May 28 to September 18, 2014, based on continuous logger data. Details of each site visit are provided in Table 3.2-2. The hydrographs for Lake C1 Outlet are presented in Figure 3.2-2.

Table 3.2-2 Site Visits to Lake C1 Outlet, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
26 Apr	Attempted to measure water level and discharge.	Frozen to bottom	
30 May	Measured discharge and water surface elevation. Installed Levelogger sensor.	435.490	0.144
3 Jun	Measured water surface elevation and outlet channel profile. Surveyed new benchmark geodetic elevation.	435.535	--
20 Jun	Measured discharge and water surface elevation.	435.461	0.189
30 Jul	Measured discharge and water surface elevation.	435.393	0.040
18 Sep	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevations. Removed Levelogger sensor.	435.333	0.002

m = metre; m^3/s = cubic metres per second; "--" = not measured.

Figure 3.2-2 Hydrograph for Lake C1 Outlet, 2014



m = metre; m^3/s = cubic metres per second.

3.2.3 Lake E1 Outlet

Lake E1 Outlet was visited eight times in 2014, and a continuous hydrograph was derived for the period of May 28 to September 18, 2014, based on continuous logger data. Details of each site visit are provided in Table 3.2-3. The hydrographs for Lake E1 Outlet are presented in Figure 3.2-3.

Table 3.2-3 Site Visits to Lake E1 Outlet, 2014

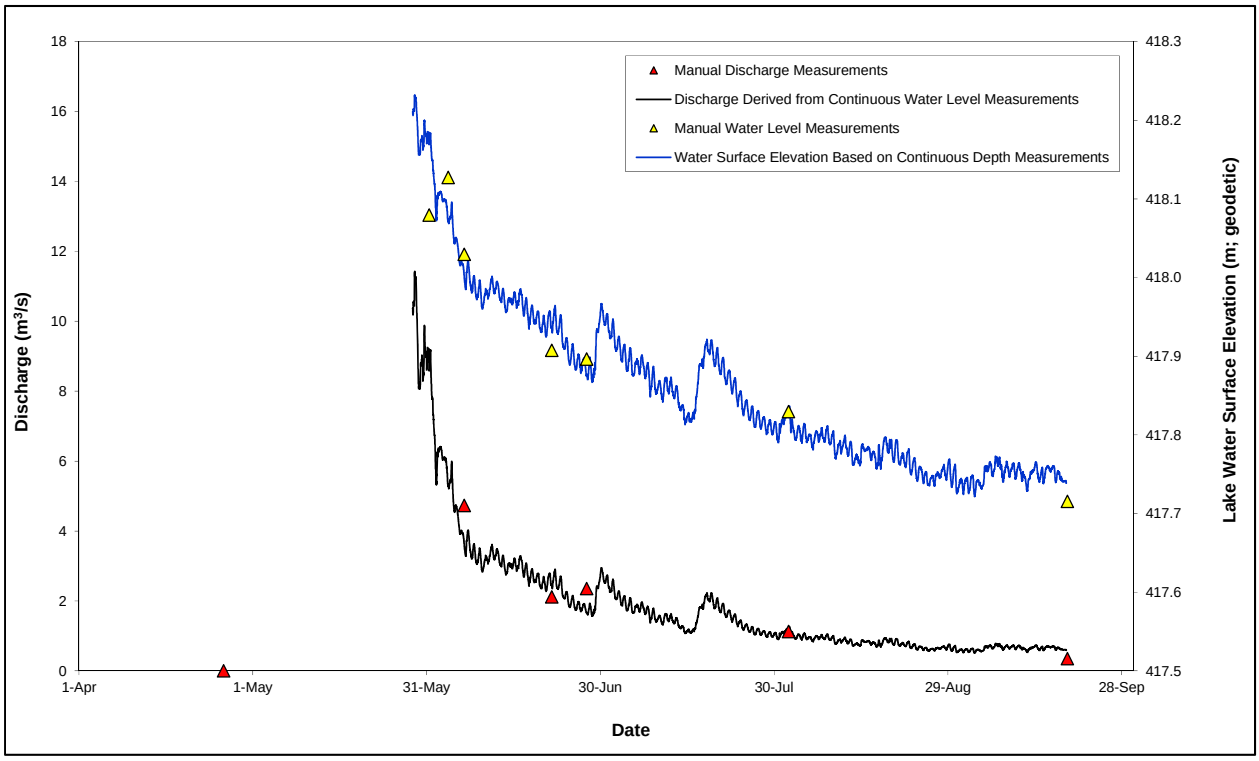
Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
26 Apr	Attempted to measure water level and discharge.	Frozen to bottom.	
31 May	Measured water surface elevation. Installed Levelogger sensor. Surveyed new benchmark.	418.079	--
3 Jun	Measured water surface elevation.	418.127	--
6 Jun	Measured discharge and water surface elevation. Surveyed new benchmark.	418.029	4.728
21 Jun	Measured discharge and water surface elevation.	417.907	2.112
27 Jun	Measured discharge and water surface elevation.	417.896	2.350

Table 3.2-3 Site Visits to Lake E1 Outlet, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
1 Aug	Measured discharge and water surface elevation.	417.829	1.122
18 Sep	Measured discharge and water surface elevation. Removed Levelogger sensor.	417.715	0.346

m = metre; m^3/s = cubic metres per second; "--" = not measured.

Figure 3.2-3 Hydrograph for Lake E1 Outlet, 2014



m = metre; m^3/s = cubic metres per second.

3.2.4 Ursula Lake (Lake E10) Outlet

Ursula Lake (Lake E10) Outlet was visited five times in 2014, and a continuous hydrograph was derived for the period of May 28 to September 18, 2014, based on continuous logger data. Details of each site visit are provided in Table 3.2-4. The hydrographs for Ursula Lake (Lake E10) Outlet are presented in Figure 3.2-4.

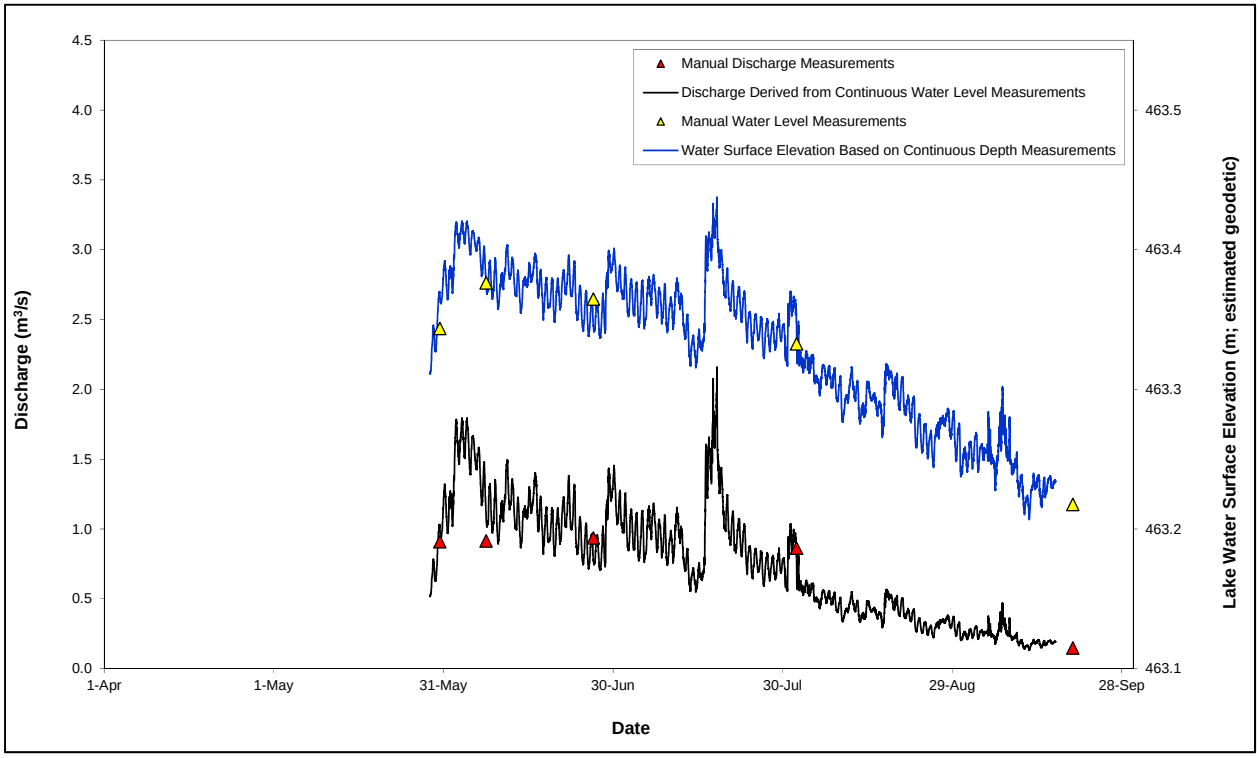
Table 3.2-4 Site Visits to Ursula Lake (Lake E10) Outlet, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
30 May	Measured discharge and water surface elevation. Installed Levelogger sensor.	463.344[(a)]	0.907
7 Jun	Measured discharge and water surface elevation.	463.376[(a)]	0.914
26 Jun	Measured discharge and water surface elevation.	463.365[(a)]	0.935
1 Aug	Measured discharge and water surface elevation.	463.333[(a)]	0.862
19 Sep	Measured discharge and water surface elevation. Removed Levelogger sensor.	463.218[(a)]	0.147

a) Geodetic elevations estimated from adjusting non-geodetic August 2013 manually surveyed water levels to water surface elevations derived from LiDAR data dated 23 July to 1 August, 2013. At sites with geodetic elevations referenced to Aurora base stations (Aurora 2013), LiDAR water surface elevations were in within 0.20 m agreement with geodetic water surface elevations originally taken in August 2013.

m = metre; m^3/s = cubic metres per second.

Figure 3.2-4 Hydrograph for Ursula Lake (Lake E10) Outlet, 2014



m = metre; m^3/s = cubic metres per second.

3.2.5 Lake G2 Outlet

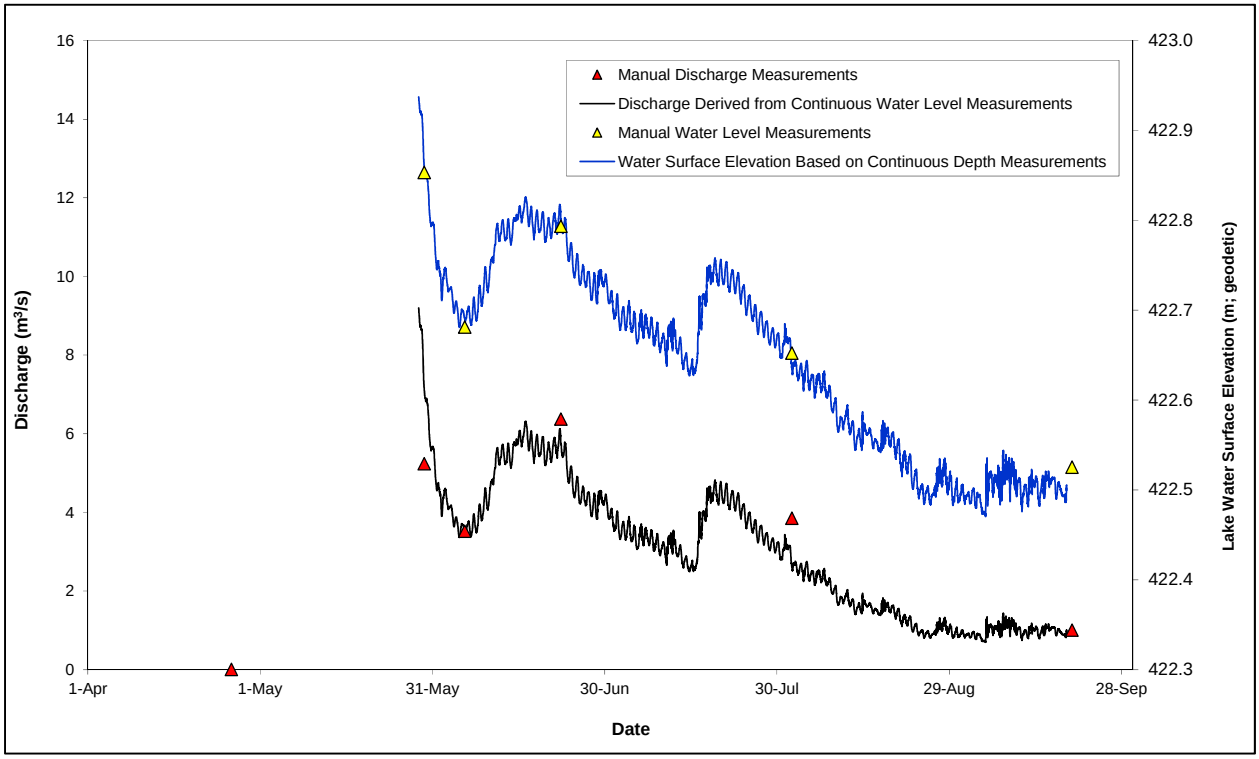
Lake G2 Outlet was visited seven times in 2014, and a continuous hydrograph was derived for the period of May 28 to September 18, 2014, based on continuous logger data. Details of each site visit are provided in Table 3.2-5. The hydrographs for Lake G2 Outlet are presented in Figure 3.2-5.

Table 3.2-5 Site Visits to Lake G2 Outlet, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
26 Apr	Attempted to measure water level and discharge.	Frozen to bottom.	
28 May	Installed Levelogger sensor.	--	--
29 May	Measured discharge and water surface elevation. Surveyed new benchmark geodetic elevation.	422.853	5.228
5 Jun	Measured discharge and water surface elevation.	422.681	3.514
22 Jun	Measured discharge and water surface elevation.	422.793	6.367
1 Aug	Measured discharge and water surface elevation.	422.652	3.847
19 Sep	Measured discharge and water surface elevation. Removed Levelogger sensor.	422.525	1.000

m = metre; m^3/s = cubic metres per second; "--" = not measured.

Figure 3.2-5 Hydrograph for Lake G2 Outlet, 2014



m = metre; m^3/s = cubic metres per second.

3.2.6 Lake I1A Outlet

Lake I1A Outlet was visited six times in 2014, and a continuous hydrograph was derived for the period of May 29 to September 18, 2014, based on continuous logger data. Details of each site visit are provided in Table 3.2-6. The hydrographs for Lake I1A Outlet are presented in Figure 3.2-6.

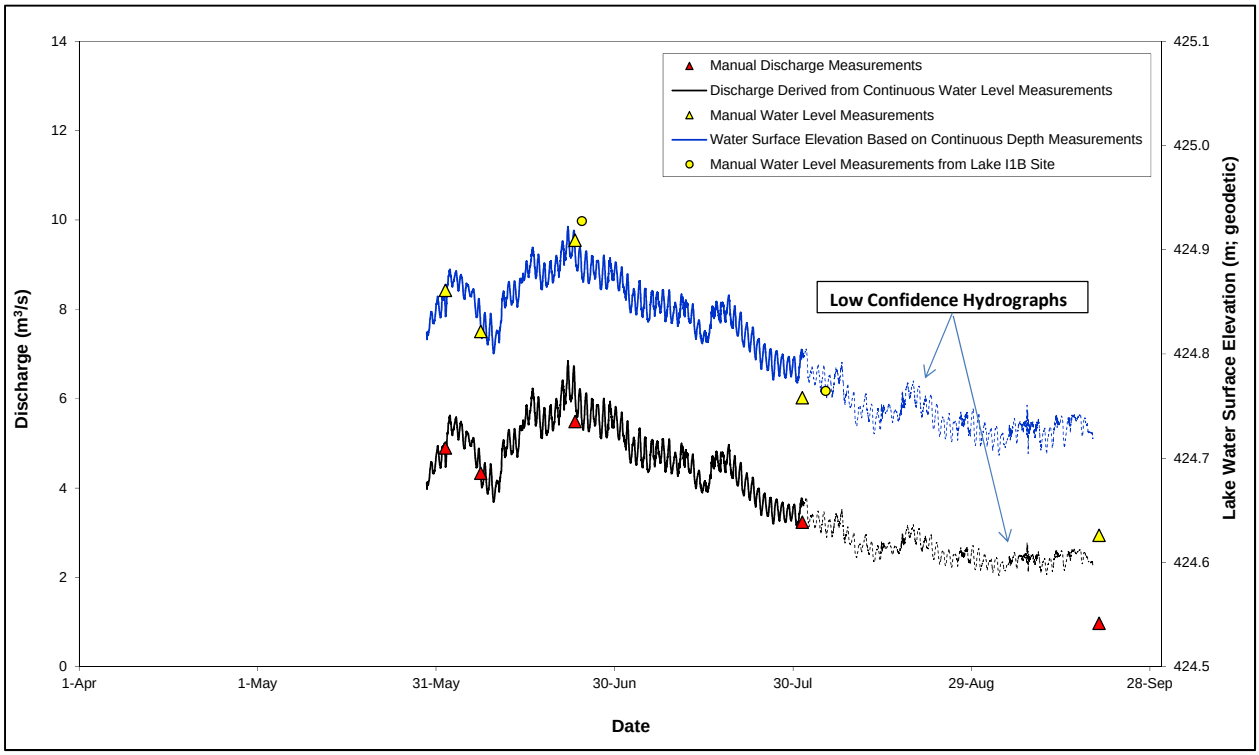
Local outlet conditions (i.e., large boulders with predominant interstitial flow) make for difficult discharge measurements at low water elevations. A low level of confidence was assigned to the September discharge measurement and the September water level surveys. The hydrograph for the period of the season between the July 31 deployment and the retrieval on September 19 was highlighted and marked as having a low confidence level. Additional site visits and investigation into the local outlet conditions may help provide more information into the site specifics and outflow characteristics at low water levels.

Table 3.2-6 Site Visits to Lake I1A Outlet, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
29 May	Installed Levelogger sensor.	--	--
1 Jun	Measured discharge and water surface elevation.	424.861	4.893
7 Jun	Measured discharge and water surface elevation. Surveyed benchmark geodetic elevation.	424.836	4.331
23 Jun	Measured discharge and water surface elevation.	424.909	5.487
31 Jul	Measured discharge and water surface elevation.	424.758	3.236
19 Sep	Measured discharge and water surface elevation. Removed Levelogger sensor.	424.626[a]	0.971

a) Reported lake water surface elevation is the surveyed water surface elevation at the outlet of Lake I1A.
m = metre; m^3/s = cubic metres per second; "--" = not measured.

Figure 3.2-6 Hydrograph for Lake I1A Outlet, 2014



m = metre; m^3/s = cubic metres per second.

3.2.7 Lake J1 Outlet

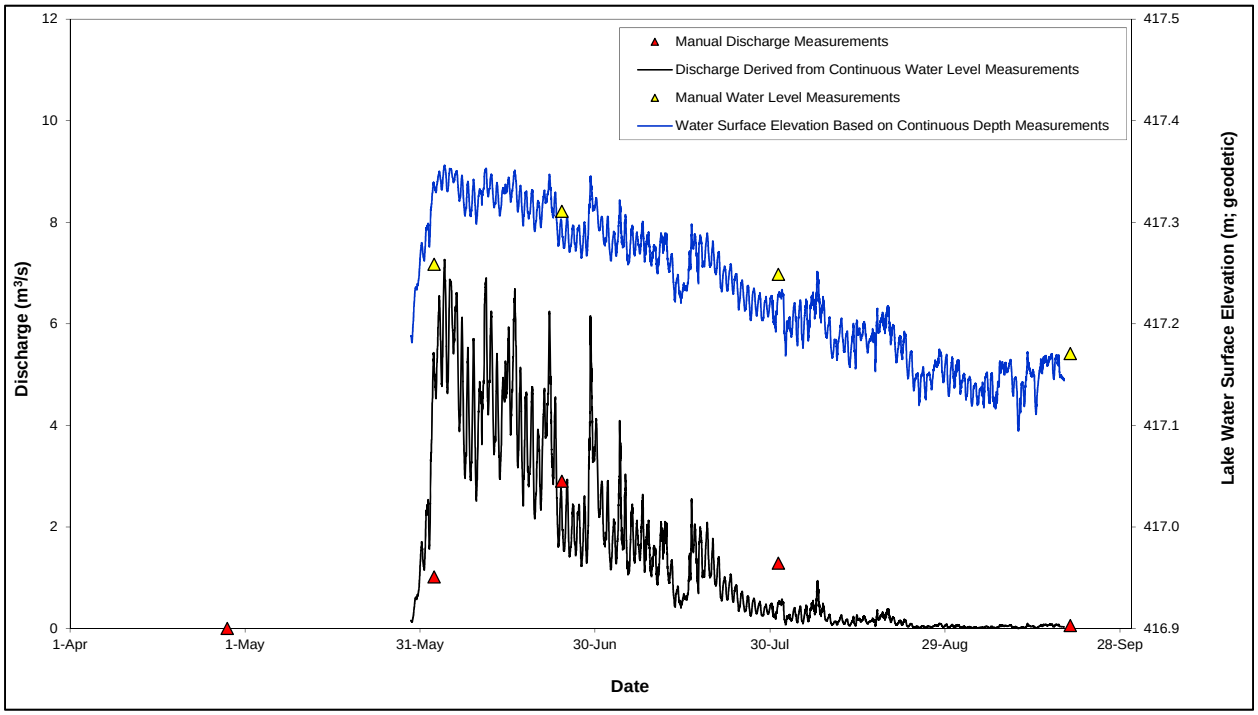
Lake J1 Outlet was visited six times in 2014, and a continuous hydrograph was derived for the period of May 29 to September 19, 2014, based on continuous logger data. Details of each site visit are provided in Table 3.2-7. The hydrographs for Lake J1 Outlet are presented in Figure 3.2-7. The outlet channel at Lake J1 is a wide boulder garden, which is difficult to gauge with a high level of confidence. There is therefore higher uncertainty in the discharge hydrograph produced at this site.

Table 3.2-7 Site Visits to Lake J1 Outlet, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
28 Apr	Attempted to measure water level and discharge.	Frozen to bottom	
29 May	Installed Levelogger sensor.	--	--
2 Jun	Measured discharge and water surface elevation. Surveyed benchmark geodetic elevations.	417.259	1.014
24 Jun	Measured discharge and water surface elevation.	417.311	2.896
31 Jul	Measured discharge and water surface elevation.	417.249	1.287
19 Sep	Measured discharge and water surface elevation. Removed Levelogger sensor.	417.171	0.055

m = metre; m^3/s = cubic metres per second; "--" = not measured.

Figure 3.2-7 Hydrograph for Lake J1 Outlet, 2014



m = metre; m^3/s = cubic metres per second.

3.2.8 Lac du Sauvage Outlet

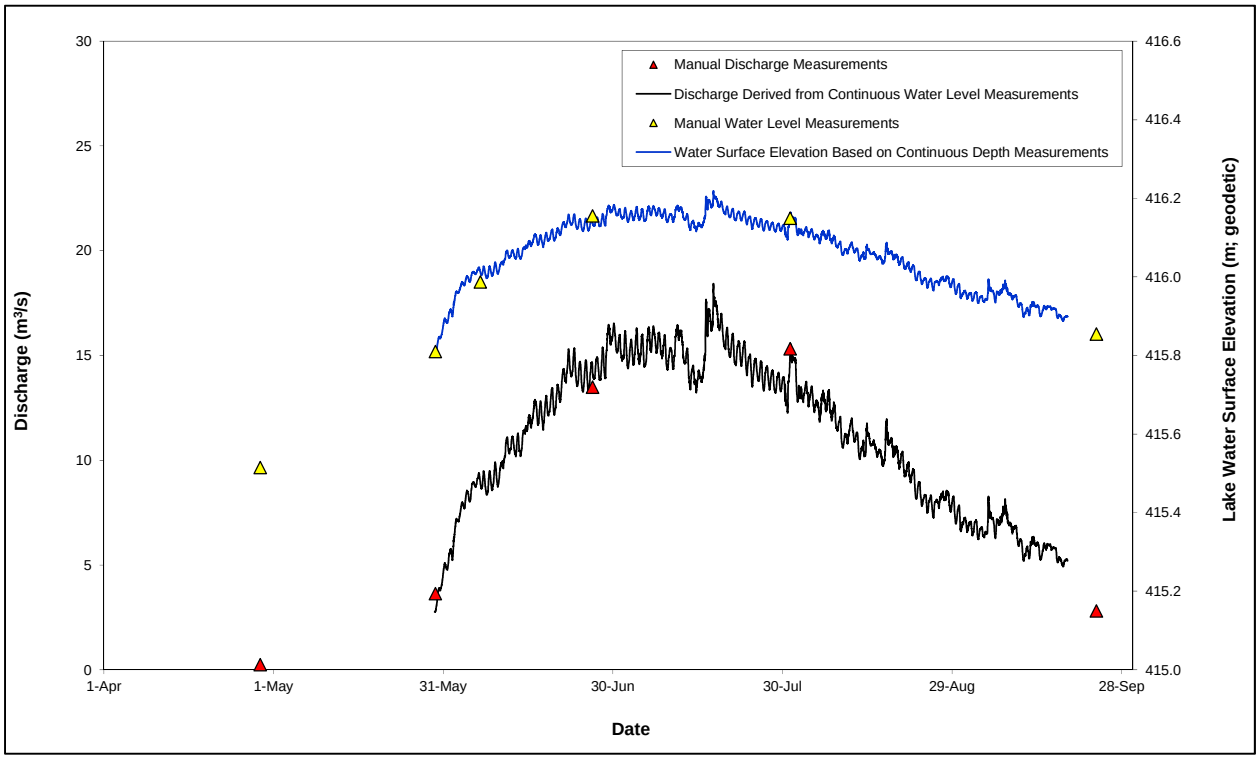
Lac du Sauvage Outlet was visited six times in 2014, and a continuous hydrograph was derived for the period of May 29 to September 18, 2014, based on continuous logger data. Details of each site visit are provided in Table 3.2-8. The hydrographs for Lac du Sauvage Outlet are presented in Figure 3.2-8.

Table 3.2-8 Site Visits to Lac du Sauvage Outlet, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
28 Apr	Measured discharge and water surface elevation.	415.515[(a)]	0.231
29 May	Measured discharge and water surface elevation. Installed Levelogger sensor.	415.810	3.628
6 Jun	Measured water surface elevation	415.987	--
26 Jun	Measured discharge and water surface elevation.	416.155	13.484
31 Jul	Measured discharge and water surface elevation.	416.149	15.313
23 Sep	Measured discharge and water surface elevation. Removed Levelogger sensor and surveyed secondary benchmark.	415.855	2.801

a) Measured at the centre of Lac du Sauvage Narrows, downstream of the lake outlet.
m = metre; m^3/s = cubic metres per second; "--" = not measured.

Figure 3.2-8 Hydrograph for Lac du Sauvage Outlet, 2014



m = metre; m^3/s = cubic metres per second.

3.2.9 Lac de Gras

The Lac de Gras Outlet was visited six times during the 2014 field season and a continuous hydrograph was derived for the period of May 29 to September 23, 2014, based on continuous logger data. Details of each site visit are provided in Table 3.2-9. The hydrographs for the Lac de Gras Outlet are presented in Figure 3.2-9.

Water levels at the Lac de Gras Outlet were observed to be affected by seiching due to extreme westerly winds in late September. The seiches are typically caused by strong winds causing surface friction that pushes the water from one end of the lake to the other, in the direction of the wind. Field measurements such as those on September 23, 2014 are likely to be affected by seiching and appear with an offset from the hydrograph. Future data collected as part of continuing baseline studies, including water level data loggers installed from September 2014 over the 2014/2015 winter season, are expected to provide additional water level data from late September 2014 to confirm the presented results.

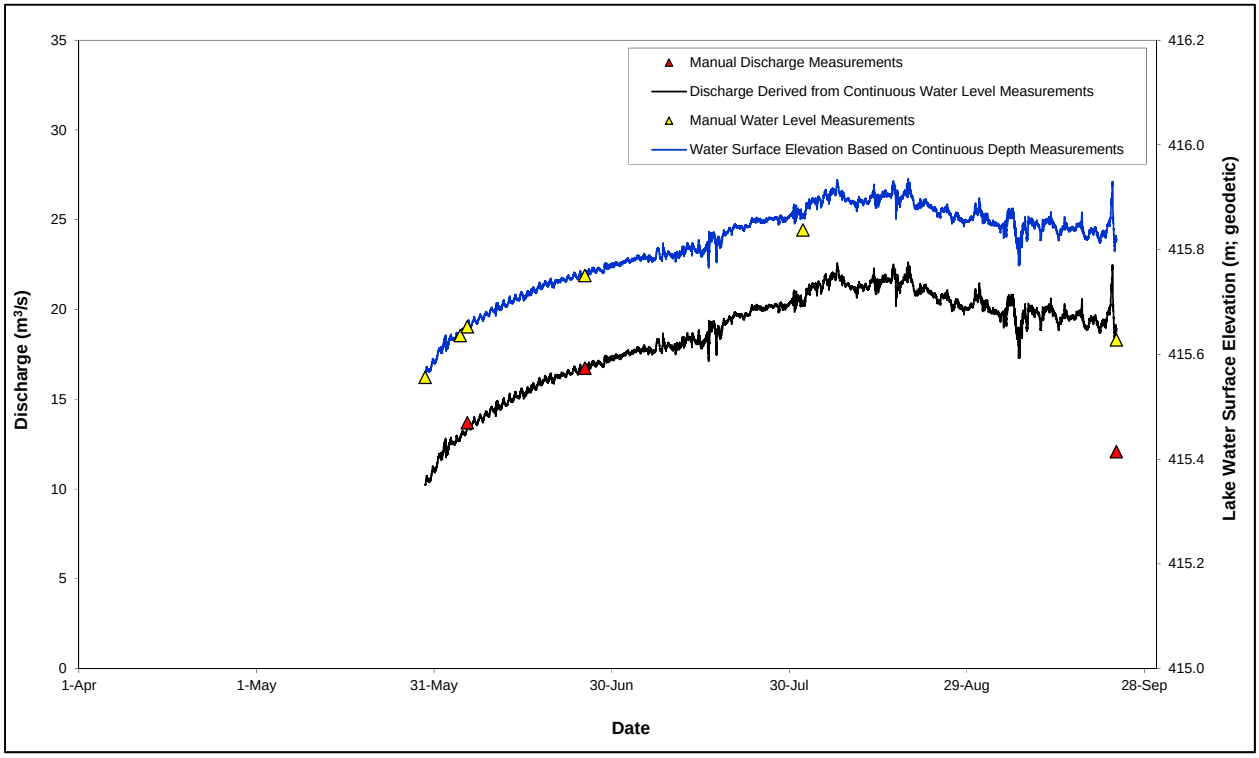
Table 3.2-9 Site Visits to Lac de Gras Outlet, 2014

Date	Activities	Lake Water Surface Elevation (m; geodetic)	Discharge (m^3/s)
29 May	Installed Levelogger sensor.	415.556	--
4 Jun	Measured water surface elevation. Surveyed geodetic elevations of site benchmarks.	415.598	--
5 Jun	Measured discharge and water surface elevation.	415.653	13.682
25 Jun	Measured discharge and water surface elevation.	415.751	16.727
1 Aug	Measured discharge and water surface elevation.	415.838	--
23 Sep	Measured discharge and water surface elevation. Removed Levelogger sensor.	415.628[(a)]	12.067

a) Reported lake water surface elevation is the surveyed water surface elevation (confirmed by installed staff gauge) at the outlet of Lac de Gras.

m = metre; m^3/s = cubic metres per second; "--" = not measured.

Figure 3.2-9 Hydrograph for Lac de Gras Outlet, 2014



m = metre; m^3/s = cubic metres per second.

3.2.10 Water Yields

The hydrometric stations with continuous lake water levels monitoring have estimated discharge hydrographs produced with the rating curves. For these stations, water yields were calculated for the open water season from June 1 to August 31, based on derived daily values and are presented in Table 3.2-10.

Table 3.2-10 Water Yields Values for the Automated Stations in the Project Area, from June 1 to August 31, 2014

Watershed Name	Watershed Area (km^2)	Runoff Volume (million m^3)	Water Yield (mm)
Lac de Gras Watershed	4,130	145.045	35.1[a]
Lac du Sauvage Watershed	1,461	97.899	67.0
B0 Watershed	14.24	0.721	50.6
C1 Watershed	9.15	0.714	78.1
E1 Watershed	208.08	14.849	71.4
E10 Watershed	94.25	6.631	70.4
G2 Watershed	333.89	26.204	78.5
I1A Watershed	423.99	32.654	77.0
J1 Watershed	170.57	13.774	80.8

a) Low value water yield over this period is indicative of the storage and attenuation in Lac de Gras, and greater sustained flows outside of the June to August period.

km^2 = square kilometres; m^3 = cubic metres; mm = millimetres.

4 SUMMARY

To supplement the 2013 baseline program (Annex X of the DAR), a 2014 hydrology field program was completed to collect additional baseline data. Data collected in 2013 were limited to late summer surveys (August and September) and did not include winter hydrology data.

New monitoring sites in 2014 included outlets at Lac de Gras (visited in 2013, but no data collected), Lakes Ac35, B0, C1, D1, and Af1, and Duchess Lake. A total of five site visits were completed between April and September 2014, representing conditions both during winter, and the open-water season from freshet until late September.

During the April site visit, lake ice thicknesses, lake outlet conditions (open, ice-covered, or frozen to bottom) and discharges were measured or observed. During the four visits during and after break-up, (late May to late September), water levels and discharges were measured, lake outlet transects were surveyed at new sites, and photos and observations were taken.

This report and its appendix provide the supplemental baseline data collected from lakes and streams within the study area in 2014 at a total of 32 sites, including 9 sites with continuous hydrometric monitoring. At the hydrometric stations, continuous water level measurements and lake outlet stage-discharge rating curves (see Appendix A) were used to derive discharge hydrographs over the period of water level measurements and to estimate the basin water yield. This report is intended to supplement the field data collected as part of the 2013 hydrology baseline report (Annex X of the DAR).

5 REFERENCES

Aurora (Aurora Geosciences Ltd.). 2013. Lac du Sauvage – Northwest Territories, Canada. Technical Report. Yellowknife, NWT, Canada.

Dominion Diamond (Dominion Diamond Ekati Corporation). 2014. Developer's Assessment Report for the Jay Project. Prepared by Golder Associates Ltd., October 2014. Yellowknife, NWT, Canada.

Solinst (Solinst Canada Ltd.). 2013. Levelogger Series user Guide: Levelogger Series – Software Version 4. November 5, 2013.

APPENDIX A

HYDROMETRIC DATA FROM THE 2014 FIELD SEASON

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Abbreviations

Abbreviation	Definition
--	no available data
Apr	April
Aug	August
BM	benchmark
BM_Read	survey reading on top of benchmark
CorrFact	correction factor
COV	coefficient of variation
DMG	distance made good
Disch.	discharge
GPS	global positioning system
ID	identification
Int.	interval
ISO	International Organization for Standardization
Jun	June
Jul	July
LDB	left downstream bank
LEW	left edge water
LiDAR	Light Detection and Ranging
Loc	location
MeasD	measurement depth
MAX	maximum
MBTotal	moving bed test total
MeanV	mean velocity
MIN	minimum
ppt	Salinity – parts per thousand
Q or TotalQ	total discharge
Qi	partial discharge
RTK	Real Time Kinematic
Sep	September
SNR	signal to noise ratio
Stats	Statistics
StdDev	standard deviation
Temp	temperature
UTM	Universal Transverse Mercator
Vel	velocity
Ver	version
WL_Elev	water level elevation calculated after survey
WL_Read	survey reading for water level

Units of Measure

Unit	Definition
#	number
%	percent
%Dep	percent depth
%Q	percent of total discharge
<	less than
°C or degC	degrees Celsius
dB	decibel
deg	degree
m	metre
m/s	metres per second
m^2 or m^2	square metre
m^3/s or m^3/s	cubic metres per second

A1 INTRODUCTION

This appendix presents the hydrometric data collected during the 2014 field season.

Section A2 presents the ice thickness measured during the late winter program, between April 25 and 29, 2014. Additional information, including discharge measurements, water level surveys, and outlet conditions at visited lake outlets, is provided in Sections A3 and A4.

Section A3 presents the water level surveys and discharge measurements taken at the locations with no continuous water level monitoring instruments. Additional information for each site includes the benchmark coordinates, stage datum, and site photographs for sites only visited in 2014 (i.e., Lake Ac35 Outlet, Lake D1 Outlet, and Lake C1 Outlet).

Section A4 presents the water level surveys and discharge measurements performed at each hydrometric station with a continuous water level monitoring instrument. Additional information for each site includes the benchmark coordinates, stage datum, and site photographs, for sites only surveyed in detail in 2014 (i.e., Lac de Gras Outlet). For each site, the updated 2014 rating curve, using available 2013 and 2014 hydrometric data and derived daily lake water levels and outlet discharges, are provided. These stations have water level and discharge hydrographs presented in the main body of the report.

A2 WINTER SURVEYS – ICE THICKNESS

Table A2-1 presents the summary of the ice thickness measurements program, part of the 2014 winter survey program in the Baseline Study Area (BSA).

Table A2-1 Winter Surveys, Ice Thickness April 2014

Date	Lake Name	Station	Easting UTM 12N (m)	Northing UTM 12N (m)	Ice Thickness (m)	Total Water Depth (m)
25-Apr-14	Duchess Lake	Af-1 Bottom	542155	7173731	1.7	12.0
25-Apr-14	Duchess Lake	Af-7-Bottom	541367	7174902	2.0	11.0
26-Apr-14	Lake Af1	Af-10-Mid	538299	7176361	1.8	4.0
25-Apr-14	Christine Lake (Lake B1)	Christine-1-Mid	539626	7163705	2.0	5.0
25-Apr-14	Lake C1	C-L1-Bottom	537612	7167085	1.6	18.0
26-Apr-14	Counts Lake (Lake D3)	Counts-1-Bottom	534303	7169862	2.0	9.0
26-Apr-14	Lake E1	E-L1-1-Bottom	535065	7174657	1.8	9.0
29-Apr-14	Paul Lake	PL-1-Bottom	533179	7173835	1.9	7.0
29-Apr-14	Paul Lake	PL-3-Bottom	528681	7172550	1.9	11
29-Apr-14	Paul Lake	PL-5-Mid	525859	7171047	1.9	4.0

A3 HYDROLOGY SURVEYS

A3.1 Lake Ab13 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	552078.436 m
Northing	7161601.860 m
Elevation	417.899 m (geodetic)
Datum Elevation	415.568 m (geodetic)

Table A3.1-1 2014 Hydrometric Data at Lake Ab13 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
31-May-2014 12:30	416.324	1.268
3-Jun-2014 17:20	416.351	--
7-Jun-2014 11:10	416.270	--
26-Jun-2014 11:30	416.160	0.306
4-Aug-2014 15:30	416.080	0.036

Table A3.1-2 Discharge Sheet – Lake Ab13 Outlet, 31 May 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	AB13_May31.WAD
Start Date and Time	2014/05/31 12:34:46

Site Details	
Site Name	
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	5.3%
Velocity	1.5%	7.0%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	2.5%	-
Overall	**3.7%**	**8.9%**

Summary			
Averaging Int.	15	# Stations	20
Start Edge	LEW	Total Width	29.000
Mean SNR	18.1 dB	Total Area	8.835
Mean Temp	3.47 °C	Mean Depth	0.305
Disch. Equation	Mid-Section	Mean Velocity	0.1435
		Total Discharge	**1.2680**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:34	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	12:34	1.50	0.6	0.300	0.6	0.120	0.0419	1.00	0.0419	0.450	0.0189	1.5
2	12:35	3.00	0.6	0.320	0.6	0.128	0.1603	1.00	0.1603	0.480	0.0769	6.1
3	12:36	4.50	0.6	0.420	0.6	0.168	0.2425	1.00	0.2425	0.630	0.1528	12.0
4	12:37	6.00	0.6	0.480	0.6	0.192	0.1540	1.00	0.1540	0.720	0.1109	8.7
5	*12:39*	*7.50*	*0.6*	*0.360*	*0.6*	*0.144*	*0.1522*	*1.00*	*0.1522*	*0.540*	*0.0822*	*6.5*
6	12:40	9.00	0.6	0.360	0.6	0.144	0.2541	1.00	0.2541	0.540	0.1372	10.8
7	*12:41*	*10.50*	*0.6*	*0.320*	*0.6*	*0.128*	*0.2146*	*1.00*	*0.2146*	*0.480*	*0.1030*	*8.1*
8	*12:43*	*12.00*	*0.6*	*0.320*	*0.6*	*0.128*	*0.2493*	*1.00*	*0.2493*	*0.480*	*0.1197*	*9.4*
9	*12:45*	*13.50*	*0.6*	*0.360*	*0.6*	*0.144*	*0.1232*	*1.00*	*0.1232*	*0.540*	*0.0665*	*5.2*
10	*12:47*	*15.00*	*0.6*	*0.340*	*0.6*	*0.136*	*0.1410*	*1.00*	*0.1410*	*0.510*	*0.0719*	*5.7*
11	*12:48*	*16.50*	*0.6*	*0.340*	*0.6*	*0.136*	*0.1161*	*1.00*	*0.1161*	*0.510*	*0.0592*	*4.7*
12	*12:49*	*18.00*	*0.6*	*0.340*	*0.6*	*0.136*	*0.1133*	*1.00*	*0.1133*	*0.510*	*0.0578*	*4.6*
13	12:50	19.50	0.6	0.460	0.6	0.184	0.0813	1.00	0.0813	0.690	0.0561	4.4
14	12:51	21.00	0.6	0.200	0.6	0.080	0.1128	1.00	0.1128	0.300	0.0338	2.7
15	12:52	22.50	0.6	0.320	0.6	0.128	0.1037	1.00	0.1037	0.480	0.0498	3.9
16	12:53	24.00	0.6	0.200	0.6	0.080	0.0885	1.00	0.0885	0.300	0.0266	2.1
17	12:54	25.50	0.6	0.240	0.6	0.096	0.0168	1.00	0.0168	0.360	0.0060	0.5
18	*12:55*	*27.00*	*0.6*	*0.180*	*0.6*	*0.072*	*0.1229*	*1.00*	*0.1229*	*0.315*	*0.0387*	*3.1*
19	12:55	29.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.1-3 Discharge Sheet – Lake Ab13 Outlet, 26 June 2014

Discharge Measurement Summary

Date Generated: Wed Jul 9 2014

File Information

File Name	AB13JUN2.WAD
Start Date and Time	2014/06/26 11:05:54

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	4.7%
Velocity	1.0%	7.3%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	1.8%	-
Overall	**2.9%**	**8.7%**

Summary

Averaging Int.	20	# Stations	28
Start Edge	LEW	Total Width	25.500
Mean SNR	13.9 dB	Total Area	5.170
Mean Temp	15.83 °C	Mean Depth	0.203
Disch. Equation	Mid-Section	Mean Velocity	0.0593
		Total Discharge	**0.3064**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:05	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*11:05*	*1.00*	*0.6*	*0.160*	*0.6*	*0.064*	*0.0084*	*1.00*	*0.0084*	*0.160*	*0.0013*	*0.4*
2	*11:06*	*2.00*	*0.6*	*0.160*	*0.6*	*0.064*	*0.0840*	*1.00*	*0.0840*	*0.160*	*0.0134*	*4.4*
3	11:07	3.00	0.6	0.200	0.6	0.080	0.0709	1.00	0.0709	0.200	0.0142	4.6
4	11:08	4.00	0.6	0.200	0.6	0.080	0.0813	1.00	0.0813	0.200	0.0163	5.3
5	11:09	5.00	0.6	0.300	0.6	0.120	0.0898	1.00	0.0898	0.300	0.0269	8.8
6	11:11	6.00	0.6	0.260	0.6	0.104	0.0372	1.00	0.0372	0.260	0.0097	3.2
7	*11:12*	*7.00*	*0.6*	*0.260*	*0.6*	*0.104*	*0.0440*	*1.00*	*0.0440*	*0.260*	*0.0114*	*3.7*
8	11:14	8.00	0.6	0.200	0.6	0.080	0.1218	1.00	0.1218	0.200	0.0244	8.0
9	11:15	9.00	0.6	0.180	0.6	0.072	0.1483	1.00	0.1483	0.180	0.0267	8.7
10	*11:17*	*10.00*	*0.6*	*0.120*	*0.6*	*0.048*	*0.0699*	*1.00*	*0.0699*	*0.135*	*0.0094*	*3.1*
11	11:18	11.25	0.6	0.120	0.6	0.048	0.0989	1.00	0.0989	0.120	0.0119	3.9
12	11:20	12.00	0.6	0.220	0.6	0.088	0.0961	1.00	0.0961	0.165	0.0159	5.2
13	*11:23*	*12.75*	*0.6*	*0.220*	*0.6*	*0.088*	*0.0789*	*1.00*	*0.0789*	*0.165*	*0.0130*	*4.2*
14	11:24	13.50	0.6	0.260	0.6	0.104	0.0719	1.00	0.0719	0.195	0.0140	4.6
15	11:24	14.25	0.6	0.300	0.6	0.120	0.0616	1.00	0.0616	0.225	0.0139	4.5
16	11:25	15.00	0.6	0.320	0.6	0.128	0.0586	1.00	0.0586	0.240	0.0141	4.6
17	*11:26*	*15.75*	*0.6*	*0.320*	*0.6*	*0.128*	*0.0038*	*1.00*	*0.0038*	*0.240*	*0.0009*	*0.3*
18	11:27	16.50	0.6	0.240	0.6	0.096	0.0448	1.00	0.0448	0.180	0.0081	2.6
19	11:28	17.25	0.6	0.340	0.6	0.136	0.0472	1.00	0.0472	0.255	0.0120	3.9
20	11:29	18.00	0.6	0.220	0.6	0.088	0.0446	1.00	0.0446	0.165	0.0074	2.4
21	11:30	18.75	0.6	0.320	0.6	0.128	0.0383	1.00	0.0383	0.280	0.0107	3.5
22	11:31	19.75	0.6	0.260	0.6	0.104	0.0459	1.00	0.0459	0.260	0.0119	3.9
23	11:33	20.75	0.6	0.140	0.6	0.056	0.0162	1.00	0.0162	0.140	0.0023	0.7
24	*11:35*	*21.75*	*0.6*	*0.140*	*0.6*	*0.056*	*0.0339*	*1.00*	*0.0339*	*0.140*	*0.0047*	*1.5*
25	11:36	22.75	0.6	0.180	0.6	0.072	0.0308	1.00	0.0308	0.180	0.0055	1.8
26	11:37	23.75	0.6	0.120	0.6	0.048	0.0383	1.00	0.0383	0.165	0.0063	2.1
27	11:37	25.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.1-4 Discharge Sheet – Lake Ab13 Outlet, 4 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	AB13AUG4.WAD
Start Date and Time	2014/08/04 15:34:48

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.6%	11.7%
Velocity	2.5%	16.3%
Width	0.2%	0.2%
Method	2.8%	-
# Stations	2.6%	-
Overall	**4.7%**	**20.2%**

Summary			
Averaging Int.	20	# Stations	19
Start Edge	LEW	Total Width	10.000
Mean SNR	18.8 dB	Total Area	1.105
Mean Temp	18.20 °C	Mean Depth	0.111
Disch. Equation	Mid-Section	Mean Velocity	0.0328
		Total Discharge	**0.0363**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:34	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*15:34*	*1.00*	*0.6*	*0.160*	*0.6*	*0.064*	*0.0490*	*1.00*	*0.0490*	*0.160*	*0.0078*	*21.6*
2	15:35	2.00	0.6	0.120	0.6	0.048	0.0993	1.00	0.0993	0.090	0.0089	24.6
3	15:37	2.50	0.6	0.100	0.6	0.040	0.0593	1.00	0.0593	0.050	0.0030	8.2
4	15:37	3.00	0.6	0.120	0.6	0.048	0.0557	1.00	0.0557	0.060	0.0033	9.2
5	15:39	3.50	0.6	0.040	0.6	0.016	0.0969	1.00	0.0969	0.020	0.0019	5.3
6	*15:39*	*4.00*	*0.6*	*0.020*	*0.6*	*0.008*	*0.0261*	*1.00*	*0.0261*	*0.010*	*0.0003*	*0.7*
7	15:41	4.50	0.6	0.100	0.6	0.040	0.0326	1.00	0.0326	0.050	0.0016	4.5
8	*15:42*	*5.00*	*0.6*	*0.120*	*0.6*	*0.048*	*0.0399*	*1.00*	*0.0399*	*0.060*	*0.0024*	*6.6*
9	*15:44*	*5.50*	*0.6*	*0.220*	*0.6*	*0.088*	*0.0096*	*1.00*	*0.0096*	*0.110*	*0.0011*	*2.9*
10	15:46	6.00	0.6	0.210	0.6	0.084	0.0214	1.00	0.0214	0.105	0.0022	6.2
11	*15:47*	*6.50*	*0.6*	*0.060*	*0.6*	*0.024*	*0.0337*	*1.00*	*0.0337*	*0.030*	*0.0010*	*2.8*
12	15:47	7.00	0.6	0.110	0.6	0.044	0.0317	1.00	0.0317	0.055	0.0017	4.8
13	*15:48*	*7.50*	*0.6*	*0.110*	*0.6*	*0.044*	*0.0149*	*1.00*	*0.0149*	*0.055*	*0.0008*	*2.3*
14	15:49	8.00	0.6	0.140	0.6	0.056	0.0056	1.00	0.0056	0.070	0.0004	1.1
15	*15:50*	*8.50*	*0.6*	*0.160*	*0.6*	*0.064*	*0.0071*	*1.00*	*0.0071*	*0.080*	*0.0006*	*1.6*
16	*15:51*	*9.00*	*0.6*	*0.100*	*0.6*	*0.040*	*-0.0113*	*1.00*	*-0.0113*	*0.050*	*-0.0006*	*-1.6*
17	*15:51*	*9.50*	*0.6*	*0.100*	*0.6*	*0.040*	*-0.0058*	*1.00*	*-0.0058*	*0.050*	*-0.0003*	*-0.8*
18	15:51	10.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.2 Lake Ac35 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	541707 m (approximated)[a]
Northing	7163024 m (approximated)[a]
Elevation	454.748 m (geodetic, approximated)[b]
Datum Elevation	451.300 m (geodetic, approximated)[b]

a) UTMs are approximated using a hand-held global positioning system (GPS) unit or a GPS with Real Time Kinematic (RTK) satellite navigation system not referenced to Aurora base stations; therefore, precision to the nearest metre is reported.

b) Geodetic elevations estimated from adjusting non-geodetic August 2013 manually surveyed water levels to water surface elevations derived from Light Detection and Ranging (LiDAR) data dated 23 July to 1 August, 2013. At sites with geodetic elevations referenced to Aurora base stations (Aurora 2013), LiDAR water surface elevations were within 0.20 m agreement with geodetic water surface elevations originally taken in August 2013.

Figure A3.2-1 Lake Ac35 Outlet Station – Aerial View of Lake Ac35 and its outlet channel, 28 June 2014

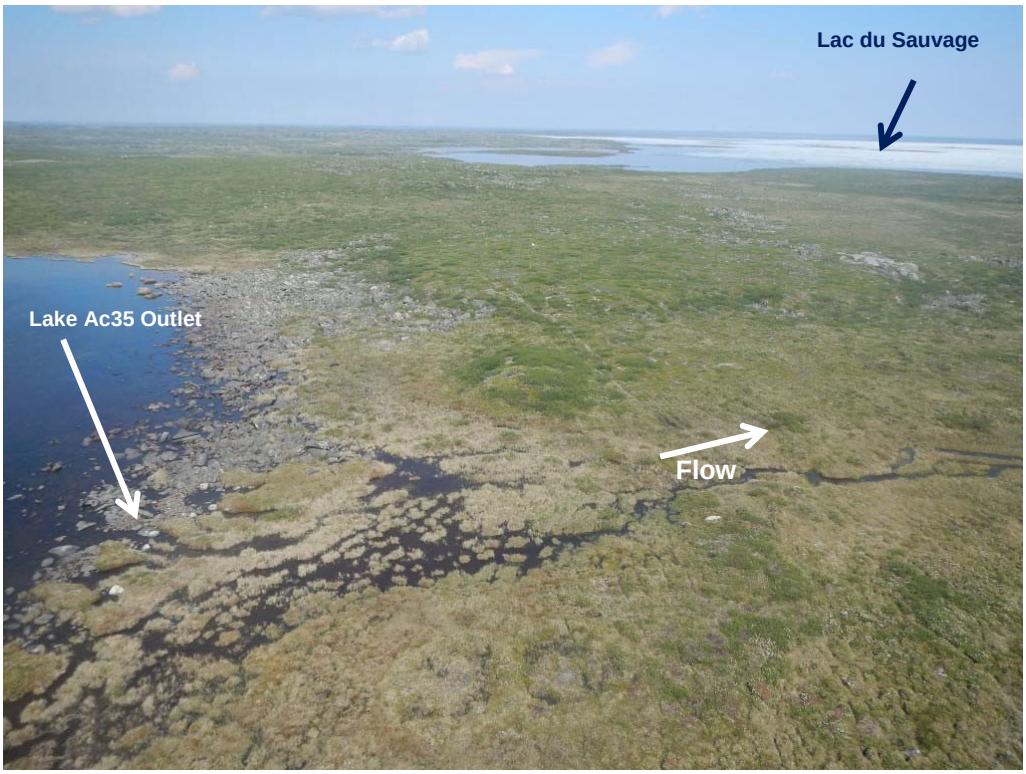


Figure A3.2-2 Lake Ac35 Outlet channel detail (view downstream), 28 June 2014

Table A3.2-1 2014 Hydrometric Data at Lake Ac35 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
28-Jun-2014 12:15	451.618	0.021
5-Aug-2014 15:30	451.494	0.003

Table A3.2-2 Discharge Sheet – Lake Ac35 Outlet, 28 June 2014

Discharge Measurement Summary

Date Generated: Mon Jul 14 2014

File Information

File Name	AB35.WAD
Start Date and Time	2014/06/28 12:07:37

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	1.5%
Velocity	0.9%	1.2%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	2.4%	-
Overall	**3.3%**	**2.2%**

Summary

Averaging Int.	20	# Stations	21
Start Edge	LEW	Total Width	1.150
Mean SNR	15.0 dB	Total Area	0.246
Mean Temp	20.37 °C	Mean Depth	0.214
Disch. Equation	Mid-Section	Mean Velocity	0.0858
		Total Discharge	**0.0211**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	ConFact	MeanV	Area	Flow	%Q
0	12:07	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*12:08*	*0.05*	*0.6*	*0.100*	*0.6*	*0.040*	*0.0662*	*1.00*	*0.0662*	*0.008*	*0.0005*	*2.3*
2	12:11	0.15	0.6	0.240	0.6	0.096	0.0882	1.00	0.0882	0.024	0.0021	10.0
3	12:13	0.25	0.6	0.250	0.6	0.100	0.0822	1.00	0.0822	0.025	0.0021	9.7
4	12:13	0.35	0.6	0.250	0.6	0.100	0.0838	1.00	0.0838	0.019	0.0016	7.4
5	12:14	0.40	0.6	0.220	0.6	0.088	0.0872	1.00	0.0872	0.011	0.0010	4.5
6	12:15	0.45	0.6	0.220	0.6	0.088	0.0918	1.00	0.0918	0.011	0.0010	4.8
7	12:15	0.50	0.6	0.220	0.6	0.088	0.0927	1.00	0.0927	0.011	0.0010	4.8
8	12:16	0.55	0.6	0.220	0.6	0.088	0.0917	1.00	0.0917	0.011	0.0010	4.8
9	12:16	0.60	0.6	0.220	0.6	0.088	0.0978	1.00	0.0978	0.011	0.0011	5.1
10	12:17	0.65	0.6	0.240	0.6	0.096	0.0984	1.00	0.0984	0.012	0.0012	5.6
11	*12:18*	*0.70*	*0.6*	*0.240*	*0.6*	*0.096*	*0.1051*	*1.00*	*0.1051*	*0.012*	*0.0013*	*6.0*
12	12:18	0.75	0.6	0.240	0.6	0.096	0.1085	1.00	0.1085	0.012	0.0013	6.2
13	12:20	0.80	0.6	0.240	0.6	0.096	0.1133	1.00	0.1133	0.012	0.0014	6.4
14	12:20	0.85	0.6	0.240	0.6	0.096	0.1057	1.00	0.1057	0.012	0.0013	6.0
15	12:21	0.90	0.6	0.240	0.6	0.096	0.0935	1.00	0.0935	0.012	0.0011	5.3
16	12:21	0.95	0.6	0.240	0.6	0.096	0.0750	1.00	0.0750	0.012	0.0009	4.3
17	*12:22*	*1.00*	*0.6*	*0.240*	*0.6*	*0.096*	*0.0566*	*1.00*	*0.0566*	*0.012*	*0.0007*	*3.2*
18	12:25	1.05	0.6	0.220	0.6	0.088	0.0504	1.00	0.0504	0.011	0.0006	2.6
19	*12:26*	*1.10*	*0.6*	*0.180*	*0.6*	*0.072*	*0.0215*	*1.00*	*0.0215*	*0.009*	*0.0002*	*0.9*
20	12:26	1.15	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.2-3 Discharge Sheet – Lake Ac35 Outlet, 5 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	AC35AUG5.WAD
Start Date and Time	2014/08/05 09:45:40

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.5%	3.8%
Velocity	4.9%	7.0%
Width	0.2%	0.2%
Method	2.4%	-
# Stations	2.3%	-
Overall	**6.0%**	**8.0%**

Summary			
Averaging Int.	20	# Stations	22
Start Edge	LEW	Total Width	1.150
Mean SNR	15.4 dB	Total Area	0.124
Mean Temp	13.76 °C	Mean Depth	0.108
Disch. Equation	Mid-Section	Mean Velocity	0.0214
		Total Discharge	**0.0027**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:45	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	09:45	0.05	0.6	0.000	0.6	0.000	-0.0042	1.00	0.0000	0.000	0.0000	0.0
2	09:46	0.10	0.6	0.000	0.6	0.000	0.0004	1.00	0.0000	0.000	0.0000	0.0
3	09:46	0.15	0.6	0.110	0.6	0.044	-0.0010	1.00	-0.0010	0.006	0.0000	-0.2
4	09:47	0.20	0.6	0.110	0.6	0.044	-0.0067	1.00	-0.0067	0.006	0.0000	-1.4
5	09:48	0.25	0.6	0.120	0.6	0.048	0.0210	1.00	0.0210	0.006	0.0001	4.7
6	09:50	0.30	0.6	0.120	0.6	0.048	0.0288	1.00	0.0288	0.006	0.0002	6.5
7	09:51	0.35	0.6	0.130	0.6	0.052	0.0387	1.00	0.0387	0.007	0.0003	9.5
8	09:51	0.40	0.6	0.130	0.6	0.052	0.0520	1.00	0.0520	0.007	0.0003	12.7
9	09:52	0.45	0.6	0.130	0.6	0.052	0.0620	1.00	0.0620	0.007	0.0004	15.2
10	09:53	0.50	0.6	0.130	0.6	0.052	0.0506	1.00	0.0506	0.007	0.0003	12.4
11	09:53	0.55	0.6	0.130	0.6	0.052	0.0429	1.00	0.0429	0.007	0.0003	10.5
12	09:54	0.60	0.6	0.130	0.6	0.052	0.0360	1.00	0.0360	0.007	0.0002	8.8
13	09:54	0.65	0.6	0.130	0.6	0.052	0.0176	1.00	0.0176	0.007	0.0001	4.3
14	09:55	0.70	0.6	0.130	0.6	0.052	0.0243	1.00	0.0243	0.007	0.0002	5.9
15	09:56	0.75	0.6	0.130	0.6	0.052	0.0234	1.00	0.0234	0.007	0.0002	5.7
16	09:56	0.80	0.6	0.140	0.6	0.056	0.0121	1.00	0.0121	0.007	0.0001	3.2
17	09:57	0.85	0.6	0.130	0.6	0.052	0.0153	1.00	0.0153	0.007	0.0001	3.7
18	09:57	0.90	0.6	0.130	0.6	0.052	0.0069	1.00	0.0069	0.007	0.0000	1.7
19	09:58	0.95	0.6	0.150	0.6	0.060	-0.0095	1.00	-0.0095	0.008	-0.0001	-2.7
20	09:59	1.00	0.6	0.150	0.6	0.060	-0.0012	1.00	-0.0012	0.015	0.0000	-0.7
21	09:59	1.15	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.3 Lake Af1 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	539744.188 m
Northing	7174391.714 m
Elevation	418.587 m (geodetic)
Datum Elevation	416.527 m (geodetic)

Table A3.3-1 2014 Hydrometric Data at Lake Af1 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
26-Apr-2014 09:00	--	Frozen to bottom
30-May-2014 15:15	417.148	10.38
4-Jun-2014 13:05	417.181	--
21-Jun-2014 12:50	417.122	2.359
3-Aug-2014 09:30	416.870	1.004

Table A3.3-2 Discharge Sheet – Lake Af1 Outlet, 30 May 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	AF1_May30.WAD
Start Date and Time	2014/05/30 15:04:36

Site Details	
Site Name	
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	3.4%
Velocity	1.7%	4.2%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	2.4%	-
Overall	**3.6%**	**5.5%**

Summary			
Averaging Int.	15	# Stations	21
Start Edge	LEW	Total Width	30.000
Mean SNR	22.8 dB	Total Area	13.170
Mean Temp	0.57 °C	Mean Depth	0.439
Disch. Equation	Mid-Section	Mean Velocity	0.7881
		Total Discharge	**10.3798**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:04	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	15:05	1.50	0.6	0.300	0.6	0.120	0.2457	1.00	0.2457	0.450	0.1106	1.1
2	*15:06*	*3.00*	*0.6*	*0.400*	*0.6*	*0.160*	*0.2932*	*1.00*	*0.2932*	*0.600*	*0.1759*	*1.7*
3	15:07	4.50	0.6	0.400	0.6	0.160	0.3847	1.00	0.3847	0.600	0.2308	2.2
4	15:08	6.00	0.6	0.480	0.6	0.192	0.7420	1.00	0.7420	0.720	0.5342	5.1
5	15:09	7.50	0.6	0.480	0.6	0.192	0.9180	1.00	0.9180	0.720	0.6610	6.4
6	15:10	9.00	0.6	0.660	0.6	0.264	0.9097	1.00	0.9097	0.990	0.9006	8.7
7	15:11	10.50	0.6	0.560	0.6	0.224	0.9289	1.00	0.9289	0.840	0.7803	7.5
8	15:11	12.00	0.6	0.580	0.6	0.232	0.7658	1.00	0.7658	0.870	0.6662	6.4
9	15:12	13.50	0.6	0.540	0.6	0.216	1.1562	1.00	1.1562	0.810	0.9365	9.0
10	15:14	15.00	0.6	0.660	0.6	0.264	0.8346	1.00	0.8346	0.990	0.8263	8.0
11	15:15	16.50	0.6	0.660	0.6	0.264	0.9823	1.00	0.9823	0.990	0.9725	9.4
12	15:16	18.00	0.6	0.460	0.6	0.184	0.7547	1.00	0.7547	0.690	0.5207	5.0
13	15:17	19.50	0.6	0.400	0.6	0.160	0.6445	1.00	0.6445	0.600	0.3867	3.7
14	15:18	21.00	0.6	0.360	0.6	0.144	1.0745	1.00	1.0745	0.540	0.5802	5.6
15	15:19	22.50	0.6	0.400	0.6	0.160	1.0446	1.00	1.0446	0.600	0.6268	6.0
16	15:20	24.00	0.6	0.240	0.6	0.096	0.8424	1.00	0.8424	0.360	0.3033	2.9
17	15:21	25.50	0.6	0.300	0.6	0.120	0.8568	1.00	0.8568	0.450	0.3856	3.7
18	15:22	27.00	0.6	0.500	0.6	0.200	0.6428	1.00	0.6428	0.750	0.4821	4.6
19	*15:24*	*28.50*	*0.6*	*0.400*	*0.6*	*0.160*	*0.4993*	*1.00*	*0.4993*	*0.600*	*0.2996*	*2.9*
20	15:24	30.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.3-3 Discharge Sheet – Lake Af1 Outlet, 21 June 2014

Discharge Measurement Summary

Date Generated: Mon Jul 14 2014

File Information

File Name	AF1JUN21.WAD
Start Date and Time	2014/06/21 13:02:53

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	3.7%
Velocity	0.8%	4.3%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	1.5%	-
Overall	**2.5%**	**5.8%**

Summary

Averaging Int.	20	# Stations	34
Start Edge	LEW	Total Width	33.000
Mean SNR	14.7 dB	Total Area	6.580
Mean Temp	5.29 °C	Mean Depth	0.199
Disch. Equation	Mid-Section	Mean Velocity	0.3585
		Total Discharge	**2.3588**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	ConFact	MeanV	Area	Flow	%Q
0	13:02	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*13:02*	*1.00*	*0.6*	*0.150*	*0.6*	*0.060*	*0.0579*	*1.00*	*0.0579*	*0.150*	*0.0087*	*0.4*
2	13:04	2.00	0.6	0.140	0.6	0.056	0.1553	1.00	0.1553	0.140	0.0217	0.9
3	*13:05*	*3.00*	*0.6*	*0.170*	*0.6*	*0.068*	*0.2894*	*1.00*	*0.2894*	*0.170*	*0.0492*	*2.1*
4	13:06	4.00	0.6	0.130	0.6	0.052	0.3432	1.00	0.3432	0.130	0.0446	1.9
5	13:09	5.00	0.6	0.130	0.6	0.052	0.3684	1.00	0.3684	0.130	0.0479	2.0
6	13:10	6.00	0.6	0.130	0.6	0.052	0.1722	1.00	0.1722	0.130	0.0224	0.9
7	13:11	7.00	0.6	0.100	0.6	0.040	0.2808	1.00	0.2808	0.100	0.0281	1.2
8	13:11	8.00	0.6	0.100	0.6	0.040	0.2202	1.00	0.2202	0.100	0.0220	0.9
9	13:12	9.00	0.6	0.130	0.6	0.052	0.3382	1.00	0.3382	0.130	0.0440	1.9
10	13:13	10.00	0.6	0.130	0.6	0.052	0.3186	1.00	0.3186	0.130	0.0414	1.8
11	13:14	11.00	0.6	0.130	0.6	0.052	0.3784	1.00	0.3784	0.130	0.0492	2.1
12	13:15	12.00	0.6	0.220	0.6	0.088	0.2431	1.00	0.2431	0.220	0.0535	2.3
13	13:16	13.00	0.6	0.150	0.6	0.060	0.6015	1.00	0.6015	0.150	0.0902	3.8
14	13:19	14.00	0.6	0.180	0.6	0.072	0.4862	1.00	0.4862	0.180	0.0875	3.7
15	13:19	15.00	0.6	0.220	0.6	0.088	0.4680	1.00	0.4680	0.220	0.1030	4.4
16	13:21	16.00	0.6	0.180	0.6	0.072	0.3618	1.00	0.3618	0.180	0.0651	2.8
17	13:22	17.00	0.6	0.240	0.6	0.096	0.2972	1.00	0.2972	0.240	0.0713	3.0
18	13:23	18.00	0.6	0.200	0.6	0.080	0.5440	1.00	0.5440	0.200	0.1088	4.6
19	13:23	19.00	0.6	0.280	0.6	0.112	0.6260	1.00	0.6260	0.280	0.1753	7.4
20	13:24	20.00	0.6	0.280	0.6	0.112	0.5213	1.00	0.5213	0.280	0.1460	6.2
21	13:25	21.00	0.6	0.260	0.6	0.104	0.5192	1.00	0.5192	0.260	0.1350	5.7
22	13:26	22.00	0.6	0.400	0.6	0.160	0.3770	1.00	0.3770	0.400	0.1508	6.4
23	13:28	23.00	0.6	0.420	0.6	0.168	0.3616	1.00	0.3616	0.420	0.1519	6.4
24	*13:29*	*24.00*	*0.6*	*0.380*	*0.6*	*0.152*	*0.4341*	*1.00*	*0.4341*	*0.380*	*0.1650*	*7.0*
25	13:30	25.00	0.6	0.260	0.6	0.104	0.4838	1.00	0.4838	0.260	0.1258	5.3
26	13:31	26.00	0.6	0.320	0.6	0.128	0.3629	1.00	0.3629	0.320	0.1161	4.9
27	13:32	27.00	0.6	0.160	0.6	0.064	0.3859	1.00	0.3859	0.160	0.0617	2.6
28	13:33	28.00	0.6	0.230	0.6	0.092	0.2971	1.00	0.2971	0.230	0.0683	2.9
29	13:34	29.00	0.6	0.280	0.6	0.112	0.1418	1.00	0.1418	0.280	0.0397	1.7
30	13:35	30.00	0.6	0.200	0.6	0.080	0.0790	1.00	0.0790	0.200	0.0158	0.7
31	13:36	31.00	0.6	0.140	0.6	0.056	0.2368	1.00	0.2368	0.140	0.0332	1.4
32	13:37	32.00	0.6	0.140	0.6	0.056	0.1116	1.00	0.1116	0.140	0.0156	0.7
33	13:37	33.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.3-4 Discharge Sheet – Lake Af1 Outlet, 3 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	AF1AU3.WAD
Start Date and Time	2014/08/03 09:47:48

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.5%	10.9%
Velocity	2.0%	8.8%
Width	0.2%	0.2%
Method	2.6%	-
# Stations	2.5%	-
Overall	**4.3%**	**14.0%**

Summary

Averaging Int.	20	# Stations	20
Start Edge	LEW	Total Width	26.500
Mean SNR	22.5 dB	Total Area	2.525
Mean Temp	14.04 °C	Mean Depth	0.095
Disch. Equation	Mid-Section	Mean Velocity	0.3976
		Total Discharge	**1.0039**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:47	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*09:47*	*1.50*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0028*	*1.00*	*0.0028*	*0.120*	*0.0003*	*0.0*
2	*09:50*	*3.00*	*0.6*	*0.100*	*0.6*	*0.040*	*0.0918*	*1.00*	*0.0918*	*0.150*	*0.0138*	*1.4*
3	*09:51*	*4.50*	*0.6*	*0.040*	*0.6*	*0.016*	*0.1971*	*1.00*	*0.1971*	*0.060*	*0.0118*	*1.2*
4	*09:53*	*6.00*	*0.6*	*0.040*	*0.6*	*0.016*	*0.2049*	*1.00*	*0.2049*	*0.060*	*0.0123*	*1.2*
5	*09:57*	*7.50*	*0.6*	*0.100*	*0.6*	*0.040*	*0.3131*	*1.00*	*0.3131*	*0.175*	*0.0548*	*5.5*
6	09:58	9.50	0.6	0.080	0.6	0.032	0.1746	1.00	0.1746	0.120	0.0210	2.1
7	09:59	10.50	0.6	0.100	0.6	0.040	0.1678	1.00	0.1678	0.125	0.0210	2.1
8	10:00	12.00	0.6	0.100	0.6	0.040	0.7178	1.00	0.7178	0.150	0.1077	10.7
9	10:01	13.50	0.6	0.160	0.6	0.064	0.5131	1.00	0.5131	0.240	0.1231	12.3
10	*10:02*	*15.00*	*0.6*	*0.220*	*0.6*	*0.088*	*0.6773*	*1.00*	*0.6773*	*0.330*	*0.2235*	*22.3*
11	10:03	16.50	0.6	0.220	0.6	0.088	0.4894	1.00	0.4894	0.330	0.1615	16.1
12	10:04	18.00	0.6	0.060	0.6	0.024	0.5166	1.00	0.5166	0.075	0.0387	3.9
13	*10:05*	*19.00*	*0.6*	*0.200*	*0.6*	*0.080*	*0.5986*	*1.00*	*0.5986*	*0.200*	*0.1197*	*11.9*
14	10:06	20.00	0.6	0.090	0.6	0.036	0.2697	1.00	0.2697	0.090	0.0243	2.4
15	10:07	21.00	0.6	0.090	0.6	0.036	0.2347	1.00	0.2347	0.090	0.0211	2.1
16	10:08	22.00	0.6	0.060	0.6	0.024	0.2353	1.00	0.2353	0.075	0.0176	1.8
17	10:12	23.50	0.6	0.060	0.6	0.024	0.1373	1.00	0.1373	0.075	0.0103	1.0
18	10:13	24.50	0.6	0.040	0.6	0.016	0.3562	1.00	0.3562	0.060	0.0214	2.1
19	10:13	26.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.4 Duchess Lake Outlet

Benchmark Coordinates	UTM Zone 12
Easting	542882.746 m
Northing	7171863.272 m
Elevation	418.495 m (geodetic)
Datum Elevation	415.000 m (geodetic)

Table A3.4-1 2014 Hydrometric Data at Duchess Lake Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
28-Apr-2014 08:40	--	0.089
4-Jun-2014 13:50	415.944	--
27-Jun-2014 08:00	416.125	8.326
1-Aug-2014 15:00	416.230	--

Table A3.4-2 Discharge Sheet – Duchess Lake Outlet, 28 April 2014

Waterbody:	Duchess Lake				**Date**	28-Apr-14		
Crossing ID:	Duchess Lake Outlet				**Start Time**	8:10		
					End Time	8:50		
BM UTM12 Location		**Survey**						
East	542883	BM_read	1.052		**Meter Type: FlowTracker**			
North	7171863	WL_read	2.261		**Total Discharge**	**0.089**	**(m^3/s)**	
Elevation	418.495	WL_Elev	417.287		**Crew:**	DC, TE		
Station Start LDB	**Distance from LDB (m)**	**Total Depth (m)**	**Ice Thickness (m)**	**Active Depth (m)**	**VELOCITY**			
					0.2 Depth (m/s)	**0.6 Depth (m/s)**	**Qi (m^3/s)**	
1	0	0	2.00	0.00				
2	1.00	2.50	2.00	0.50		0.00	0.000	
3	3.80	2.60	2.00	0.60		0.00	0.000	
4	5.60	2.65	2.00	0.65		0.00	0.000	
5	6.90	2.70	2.10	0.60		0.00	0.000	
6	8.35	2.70	2.10	0.60		0.01	0.007	
7	9.60	2.75	2.10	0.65		0.00	0.000	
8	10.95	2.75	2.00	0.75		0.00	0.000	

Table A3.4-2 Discharge Sheet – Duchess Lake Outlet, 28 April 2014

Waterbody:	Duchess Lake				**Date**	28-Apr-14		
Crossing ID:	Duchess Lake Outlet				**Start Time**	8:10		
					End Time	8:50		
BM UTM12 Location		**Survey**						
East	542883	BM_read	1.052		**Meter Type: FlowTracker**			
North	7171863	WL_read	2.261		**Total Discharge**	**0.089**	**(m^3/s)**	
Elevation	418.495	WL_Elev	417.287		**Crew:**	DC, TE		
Station Start LDB	**Distance from LDB (m)**	**Total Depth (m)**	**Ice Thickness (m)**	**Active Depth (m)**	**VELOCITY**			
					0.2 Depth (m/s)	**0.6 Depth (m/s)**	**Qi (m^3/s)**	
9	12.15	2.75	2.00	0.75		0.00	0.000	
10	13.15	2.75	2.00	0.75		0.01	0.012	
11	15.65	2.80	2.00	0.80		0.00	0.000	
12	17.05	2.80	2.05	0.75		0.00	0.000	
13	18.85	2.80	2.05	0.75		0.00	0.000	
14	19.90	2.80	2.05	0.75		0.00	0.000	
15	21.60	2.75	2.00	0.75		0.01	0.009	
16	22.60	2.75	2.00	0.75		0.01	0.007	
17	23.60	2.70	2.00	0.70		0.01	0.007	
18	24.75	2.65	2.00	0.65		0.02	0.017	
19	26.50	2.60	2.05	0.55		0.01	0.007	
20	27.40	2.50	2.00	0.50		0.02	0.010	
21	28.70	2.40	2.00	0.40		0.00	0.000	
22	31.65	2.40	2.05	0.35		0.00	0.000	
23	33.00	2.40	2.05	0.35		0.00	0.000	
24	34.80	2.35	2.00	0.35		0.00	0.000	
25	36.00	2.35	2.00	0.35		0.00	0.000	
26	38.10	2.35	2.05	0.30		0.01	0.004	
27	39.10	2.35	2.05	0.30		0.01	0.003	
28	40.15	2.35	2.00	0.35		0.01	0.003	
29	41.10	2.30	2.00	0.30		0.00	0.000	
30	41.95	2.30	2.00	0.30		0.00	0.000	
31	42.95	2.30	2.05	0.25		0.00	0.000	
32	43.70	2.30	2.05	0.25		0.01	0.002	
33	44.80	2.30	2.00	0.30		0.00	0.000	
34	45.90	2.30	2.05	0.25		0.00	0.000	
35	47.10	2.25	2.05	0.20		0.00	0.000	
36	48.80	2.20	2.05	0.15		0.00	0.000	
37	51.35	2.10	2.00	0.10		0.00	0.000	
38	51.95	2.05	2.05	0.00				

Table A3.4-3 Discharge Sheet – Duchess Lake Outlet, 27 June 2014

Discharge Measurement Summary

Date Measured: Friday, 27 June, 2014

Site Information		Measurement Information	
Site Name	duchess	Party	dc kb
Station Number		Boat/Motor	
Location		Meas. Number	

System Information		System Setup		Units	
System Type	RS-M9	Transducer Depth (m)	0.06	Distance	m
Serial Number	2625	Salinity (ppt)	0.0	Velocity	m/s
Firmware Version	3.00	Magnetic Declination (deg)	15.2	Area	m2
Software Version	3.8			Discharge	m3/s
				Temperature	degC

Discharge Calculation Settings				Discharge Results	
Track Reference	GPS-GGA	Left Method	Sloped Bank	Width (m)	127.676
Depth Reference	Vertical Beam	Right Method	Sloped Bank	Area (m2)	160.601
Coordinate System	ENU	Top Fit Type	Power Fit	Mean Speed (m/s)	0.052
		Bottom Fit Type	Power Fit	Total Q (m3/s)	8.326
				Maximum Measured Depth	2.838
				Maximum Measured Speed	1.126

Measurement Results

Tr		Time			Distance				Mean Vel		Discharge							%
#		Time	Duration	Temp.	Track	DMG	Width	Area	Boat	Water	Left	Right	Top	Middle	Bottom	Total	MBTotal	Measured
1	R	11:27:30 AM	0:10:02	11.0	107.35	104.47	127.468	159.455	0.178	0.052	0.01	0.09	1.20	6.16	0.90	8.365	--	73.7
2	L	11:38:39 AM	0:08:41	7.1	107.13	104.82	127.816	160.886	0.206	0.052	0.02	0.02	1.31	6.11	0.92	8.380	--	72.9
3	R	12:12:49 PM	0:09:23	11.4	107.63	104.74	127.744	161.462	0.191	0.051	0.04	0.09	1.14	6.09	0.87	8.234	--	74.0
			Mean	9.8	107.37	104.68	127.676	160.601	0.192	0.052	0.02	0.07	1.22	6.12	0.90	8.326	0.000	73.5
			Std Dev	1.9	0.21	0.15	0.150	0.844	0.011	0.001	0.01	0.03	0.07	0.03	0.02	0.066	0.000	0.5
			COV	0.2	0.002	0.001	0.001	0.005	0.058	0.012	0.543	0.450	0.058	0.005	0.020	0.008	0.000	0.006

Exposure Time: 0:28:06

Tr1=20030101143605.riv ; Tr2=20030101144717.riv ; Tr3=20030101152139.riv ;

Comments

Tr1=20030101143605.riv - ; Tr2=20030101144717.riv - ; Tr3=20030101152139.riv - ;

A3.5 Lake D1 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	537011.823 m
Northing	7170594.685 m
Elevation	421.226 m (geodetic)
Datum Elevation	416.159 m (geodetic)

Figure A3.5-1 Lake D1 Outlet Station – Aerial View of lake outlet channel (view upstream), 31 May 2014

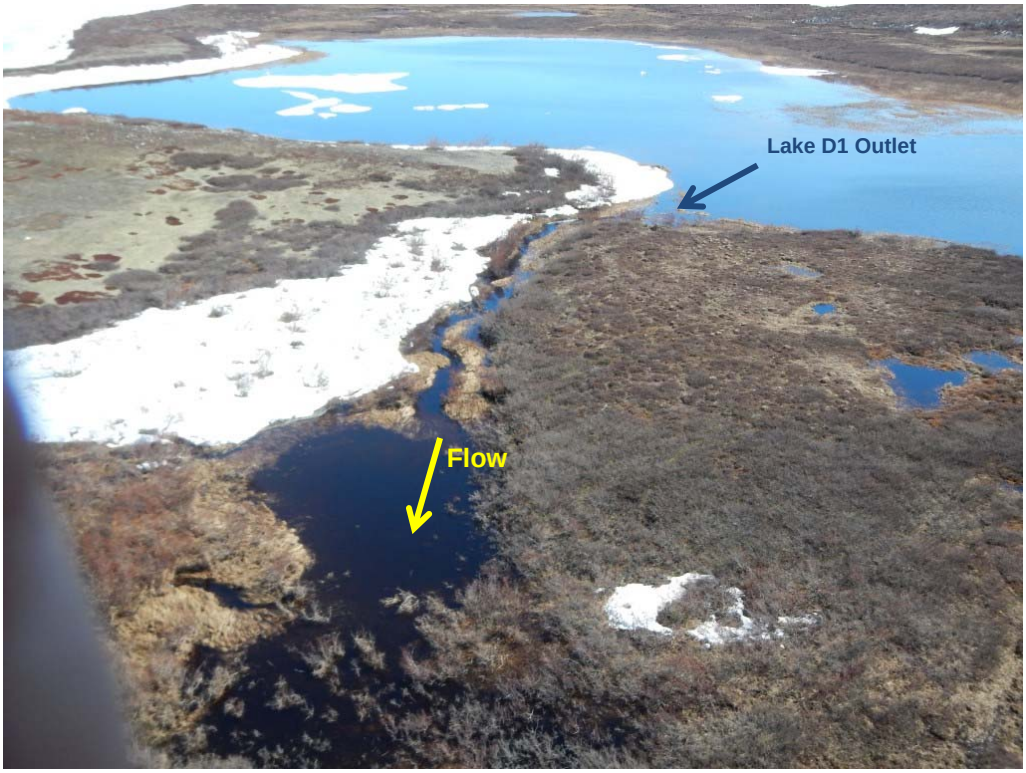


Figure A3.5-2 Lake D1 Outlet Channel – Lake outlet channel detail, discharge measurement location (view upstream), 3 August 2014

Table A3.5-1 2014 Hydrometric Data at Lake D1 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
31-May-2014 15:30	416.822	0.117
3-Jun-2014 15:30	416.839	--
21-Jun-2014 09:00	416.756	0.087
3-Aug-2014 10:30	416.640	0.043

Table A3.5-2 Discharge Sheet – Lake D1 Outlet, 31 May 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	D1_May31.WAD
Start Date and Time	2014/05/31 15:22:04

Site Details	
Site Name	D1 OUTLET
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	1.1%
Velocity	2.2%	6.0%
Width	0.1%	0.1%
Method	1.5%	-
# Stations	3.0%	-
Overall	**4.1%**	**6.2%**

Summary			
Averaging Int.	15	# Stations	17
Start Edge	LEW	Total Width	2.300
Mean SNR	27.9 dB	Total Area	0.978
Mean Temp	7.38 °C	Mean Depth	0.425
Disch. Equation	Mid-Section	Mean Velocity	0.1191
		Total Discharge	**0.1165**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:22	3.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*15:22*	*2.60*	*0.6*	*0.240*	*0.6*	*0.096*	*0.0772*	*1.00*	*0.0772*	*0.084*	*0.0065*	*5.6*
2	15:23	2.30	0.6	0.360	0.6	0.144	0.1078	1.00	0.1078	0.090	0.0097	8.3
3	*15:24*	*2.10*	*0.6*	*0.500*	*0.6*	*0.200*	*0.0415*	*1.00*	*0.0415*	*0.075*	*0.0031*	*2.7*
4	15:25	2.00	0.6	0.640	0.6	0.256	0.0803	1.00	0.0803	0.064	0.0051	4.4
5	15:25	1.90	0.6	0.680	0.6	0.272	0.1633	1.00	0.1633	0.068	0.0111	9.5
6	15:26	1.80	0.2/0.8	0.700	0.2	0.560	0.2078	1.00	0.1733	0.070	0.0121	10.4
6	15:27	1.80	0.2/0.8	0.700	0.8	0.140	0.1389					
7	15:28	1.70	0.8/0.2	0.700	0.2	0.560	0.2251	1.00	0.2040	0.070	0.0143	12.3
7	15:27	1.70	0.8/0.2	0.700	0.8	0.140	0.1830					
8	15:28	1.60	0.2/0.8	0.700	0.2	0.560	0.1941	1.00	0.1871	0.070	0.0131	11.2
8	15:28	1.60	0.2/0.8	0.700	0.8	0.140	0.1802					
9	15:30	1.50	0.8/0.2	0.680	0.2	0.544	0.2027	1.00	0.1940	0.068	0.0132	11.3
9	15:29	1.50	0.8/0.2	0.680	0.8	0.136	0.1854					
10	15:30	1.40	0.2/0.6/0.8	0.630	0.2	0.504	0.1046	1.00	0.1296	0.063	0.0082	7.0
10	15:32	1.40	0.2/0.6/0.8	0.630	0.6	0.252	0.1322					
10	15:31	1.40	0.2/0.6/0.8	0.630	0.8	0.126	0.1495					
11	15:33	1.30	0.8/0.2	0.630	0.2	0.504	0.0997	1.00	0.1323	0.063	0.0083	7.2
11	15:32	1.30	0.8/0.2	0.630	0.8	0.126	0.1650					
12	15:33	1.20	0.6	0.580	0.6	0.232	0.1159	1.00	0.1159	0.058	0.0067	5.8
13	15:34	1.10	0.6	0.500	0.6	0.200	0.0218	1.00	0.0218	0.050	0.0011	0.9
14	15:34	1.00	0.6	0.400	0.6	0.160	0.0351	1.00	0.0351	0.040	0.0014	1.2
15	15:36	0.90	0.6	0.300	0.6	0.120	0.0561	1.00	0.0561	0.045	0.0025	2.2
16	15:36	0.70	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.5-3 Discharge Sheet – Lake D1 Outlet, 21 June 2014

Discharge Measurement Summary

Date Generated: Mon Jul 14 2014

File Information

File Name	D1JUN21.WAD
Start Date and Time	2014/06/21 09:06:16

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	1.1%
Velocity	1.2%	5.1%
Width	0.1%	0.1%
Method	2.2%	-
# Stations	2.6%	-
Overall	**3.8%**	**5.3%**

Summary

Averaging Int.	20	# Stations	19
Start Edge	LEW	Total Width	1.800
Mean SNR	13.8 dB	Total Area	0.819
Mean Temp	12.23 °C	Mean Depth	0.455
Disch. Equation	Mid-Section	Mean Velocity	0.1057
		Total Discharge	**0.0865**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	ConFact	MeanV	Area	Flow	%Q
0	09:06	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*09:06*	*0.10*	*0.6*	*0.150*	*0.6*	*0.060*	*0.0002*	*1.00*	*0.0002*	*0.015*	*0.0000*	*0.0*
2	*09:08*	*0.20*	*0.6*	*0.200*	*0.6*	*0.080*	*0.1344*	*1.00*	*0.1344*	*0.020*	*0.0027*	*3.1*
3	09:10	0.30	0.6	0.360	0.6	0.144	0.1384	1.00	0.1384	0.036	0.0050	5.8
4	09:13	0.40	0.6	0.500	0.6	0.200	0.1544	1.00	0.1544	0.050	0.0077	8.9
5	*09:15*	*0.50*	*0.6*	*0.660*	*0.6*	*0.264*	*0.1167*	*1.00*	*0.1167*	*0.066*	*0.0077*	*8.9*
6	09:16	0.60	0.6	0.680	0.6	0.272	0.1612	1.00	0.1612	0.068	0.0110	12.7
7	09:16	0.70	0.6	0.680	0.6	0.272	0.1542	1.00	0.1542	0.068	0.0105	12.1
8	09:17	0.80	0.6	0.640	0.6	0.256	0.1364	1.00	0.1364	0.064	0.0087	10.1
9	09:18	0.90	0.6	0.620	0.6	0.248	0.1300	1.00	0.1300	0.062	0.0081	9.3
10	09:19	1.00	0.6	0.580	0.6	0.232	0.1062	1.00	0.1062	0.058	0.0062	7.1
11	09:21	1.10	0.6	0.560	0.6	0.224	0.0864	1.00	0.0864	0.056	0.0048	5.6
12	09:22	1.20	0.6	0.540	0.6	0.216	0.1000	1.00	0.1000	0.054	0.0054	6.2
13	09:23	1.30	0.6	0.520	0.6	0.208	0.0784	1.00	0.0784	0.052	0.0041	4.7
14	*09:24*	*1.40*	*0.6*	*0.460*	*0.6*	*0.184*	*0.0251*	*1.00*	*0.0251*	*0.046*	*0.0012*	*1.3*
15	*09:25*	*1.50*	*0.6*	*0.400*	*0.6*	*0.160*	*0.0408*	*1.00*	*0.0408*	*0.040*	*0.0016*	*1.9*
16	*09:27*	*1.60*	*0.6*	*0.340*	*0.6*	*0.136*	*0.0241*	*1.00*	*0.0241*	*0.034*	*0.0008*	*0.9*
17	09:28	1.70	0.6	0.300	0.6	0.120	0.0376	1.00	0.0376	0.030	0.0011	1.3
18	09:28	1.80	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.5-4 Discharge Sheet – Lake D1 Outlet, 3 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	D1AUG3.WAD
Start Date and Time	2014/08/03 10:55:57

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	1.1%
Velocity	1.6%	5.8%
Width	0.2%	0.2%
Method	2.4%	-
# Stations	2.8%	-
Overall	**4.2%**	**6.0%**

Summary			
Averaging Int.	20	# Stations	18
Start Edge	LEW	Total Width	1.800
Mean SNR	20.6 dB	Total Area	0.804
Mean Temp	12.77 °C	Mean Depth	0.447
Disch. Equation	Mid-Section	Mean Velocity	0.0538
		Total Discharge	**0.0432**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:55	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*10:57*	*0.10*	*0.6*	*0.380*	*0.6*	*0.152*	*0.0004*	*1.00*	*0.0004*	*0.038*	*0.0000*	*0.0*
2	*10:58*	*0.20*	*0.6*	*0.420*	*0.6*	*0.168*	*0.0031*	*1.00*	*0.0031*	*0.042*	*0.0001*	*0.3*
3	*10:59*	*0.30*	*0.6*	*0.500*	*0.6*	*0.200*	*0.0000*	*1.00*	*0.0000*	*0.050*	*0.0000*	*0.0*
4	11:00	0.40	0.6	0.540	0.6	0.216	0.0001	1.00	0.0001	0.054	0.0000	0.0
5	11:01	0.50	0.6	0.580	0.6	0.232	0.0611	1.00	0.0611	0.058	0.0035	8.2
6	11:02	0.60	0.6	0.620	0.6	0.248	0.1098	1.00	0.1098	0.062	0.0068	15.8
7	11:03	0.70	0.6	0.610	0.6	0.244	0.0915	1.00	0.0915	0.061	0.0056	12.9
8	11:04	0.80	0.6	0.640	0.6	0.256	0.1005	1.00	0.1005	0.064	0.0064	14.9
9	11:06	0.90	0.6	0.550	0.6	0.220	0.0701	1.00	0.0701	0.055	0.0039	8.9
10	11:06	1.00	0.6	0.540	0.6	0.216	0.0690	1.00	0.0690	0.054	0.0037	8.6
11	11:07	1.10	0.6	0.510	0.6	0.204	0.0773	1.00	0.0773	0.051	0.0039	9.1
12	11:07	1.20	0.6	0.480	0.6	0.192	0.0776	1.00	0.0776	0.048	0.0037	8.6
13	11:08	1.30	0.6	0.450	0.6	0.180	0.0467	1.00	0.0467	0.045	0.0021	4.9
14	11:09	1.40	0.6	0.420	0.6	0.168	0.0383	1.00	0.0383	0.042	0.0016	3.7
15	11:10	1.50	0.6	0.380	0.6	0.152	0.0336	1.00	0.0336	0.038	0.0013	3.0
16	*11:11*	*1.60*	*0.6*	*0.280*	*0.6*	*0.112*	*0.0111*	*1.00*	*0.0111*	*0.042*	*0.0005*	*1.1*
17	11:11	1.80	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.6 Counts Lake (Lake D3) Outlet

Benchmark Coordinates	UTM Zone 12
Easting	535199.679 m
Northing	7169715.710 m
Elevation	441.948 m (geodetic)
Datum Elevation	440.400 m (geodetic)

Table A3.6-1 2014 Hydrometric Data at Counts Lake (Lake D3) Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
26-Apr-2014 10:00	--	Frozen to bottom
30-May-2014 12:00	440.309	0.003
3-Jun2014 16:30	440.691	--
21-Jun-2014 11:30	440.702	0.087
2-Aug-2014 08:30	440.663	0.044
21-Sep-2014 15:20	440.441	0.008

Table A3.6-2 Discharge Sheet – Lake D3 (Counts Lake) Outlet, 30 May 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	D3_May30.WAD
Start Date and Time	2014/05/30 12:09:28

Site Details	
Site Name	D3 OUTLET
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.6%	2.7%
Velocity	2.0%	5.3%
Width	0.2%	0.2%
Method	3.1%	-
# Stations	6.6%	-
Overall	**7.6%**	**6.1%**

Summary			
Averaging Int.	15	# Stations	8
Start Edge	LEW	Total Width	0.700
Mean SNR	28.3 dB	Total Area	0.043
Mean Temp	8.23 °C	Mean Depth	0.061
Disch. Equation	Mid-Section	Mean Velocity	0.0644
		Total Discharge	**0.0028**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:09	0.20	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	12:09	0.30	0.6	0.050	0.6	0.020	0.0848	1.00	0.0848	0.005	0.0004	15.3
2	12:09	0.40	0.6	0.060	0.6	0.024	0.0796	1.00	0.0796	0.006	0.0005	17.3
3	12:10	0.50	0.6	0.080	0.6	0.032	0.0562	1.00	0.0562	0.008	0.0004	16.2
4	12:11	0.60	0.6	0.080	0.6	0.032	0.0649	1.00	0.0649	0.008	0.0005	18.8
5	12:11	0.70	0.6	0.080	0.6	0.032	0.0637	1.00	0.0637	0.008	0.0005	18.4
6	12:12	0.80	0.6	0.080	0.6	0.032	0.0484	1.00	0.0484	0.008	0.0004	14.0
7	12:12	0.90	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.6-3 Discharge Sheet – Counts Lake (Lake D3) Outlet, 21 June 2014

Discharge Measurement Summary

Date Generated: Wed Jul 9 2014

File Information

File Name	D3JUN212.WAD
Start Date and Time	2014/06/21 11:37:48

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.5%	2.0%
Velocity	2.5%	5.0%
Width	0.2%	0.2%
Method	2.4%	-
# Stations	3.3%	-
Overall	**4.9%**	**5.5%**

Summary

Averaging Int.	20	# Stations	15
Start Edge	LEW	Total Width	1.600
Mean SNR	23.0 dB	Total Area	0.336
Mean Temp	9.26 °C	Mean Depth	0.210
Disch. Equation	Mid-Section	Mean Velocity	0.1995
		Total Discharge	**0.0670**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:37	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*11:39*	*0.20*	*0.6*	*0.260*	*0.6*	*0.104*	*0.0625*	*1.00*	*0.0625*	*0.039*	*0.0024*	*3.6*
2	11:40	0.30	0.6	0.260	0.6	0.104	0.1459	1.00	0.1459	0.026	0.0038	5.7
3	11:41	0.40	0.6	0.260	0.6	0.104	0.2617	1.00	0.2617	0.026	0.0068	10.2
4	11:42	0.50	0.6	0.260	0.6	0.104	0.3903	1.00	0.3903	0.026	0.0101	15.1
5	11:42	0.60	0.6	0.200	0.6	0.080	0.3455	1.00	0.3455	0.020	0.0069	10.3
6	*11:45*	*0.70*	*0.6*	*0.240*	*0.6*	*0.096*	*0.2659*	*1.00*	*0.2659*	*0.024*	*0.0064*	*9.5*
7	11:45	0.80	0.6	0.240	0.6	0.096	0.3417	1.00	0.3417	0.024	0.0082	12.2
8	*11:46*	*0.90*	*0.6*	*0.240*	*0.6*	*0.096*	*0.3047*	*1.00*	*0.3047*	*0.024*	*0.0073*	*10.9*
9	11:46	1.00	0.6	0.240	0.6	0.096	0.2867	1.00	0.2867	0.024	0.0069	10.3
10	11:47	1.10	0.6	0.240	0.6	0.096	0.1807	1.00	0.1807	0.024	0.0043	6.5
11	11:48	1.20	0.6	0.240	0.6	0.096	0.0973	1.00	0.0973	0.024	0.0023	3.5
12	11:49	1.30	0.6	0.220	0.6	0.088	0.0309	1.00	0.0309	0.022	0.0007	1.0
13	*11:50*	*1.40*	*0.6*	*0.220*	*0.6*	*0.088*	*0.0245*	*1.00*	*0.0245*	*0.033*	*0.0008*	*1.2*
14	11:50	1.60	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.6-4 Discharge Sheet – Counts Lake (Lake D3) Outlet, 3 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	D3AUG3.WAD
Start Date and Time	2014/08/03 08:38:05

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	0.6%
Velocity	0.7%	2.1%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	2.1%	-
Overall	**3.0%**	**2.4%**

Summary			
Averaging Int.	20	# Stations	24
Start Edge	LEW	Total Width	2.400
Mean SNR	34.4 dB	Total Area	0.614
Mean Temp	13.03 °C	Mean Depth	0.256
Disch. Equation	Mid-Section	Mean Velocity	0.0715
		Total Discharge	**0.0439**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:38	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	08:38	0.10	0.6	0.300	0.6	0.120	0.0158	1.00	0.0158	0.030	0.0005	1.1
2	*08:39*	*0.20*	*0.6*	*0.320*	*0.6*	*0.128*	*0.0480*	*1.00*	*0.0480*	*0.032*	*0.0015*	*3.5*
3	*08:40*	*0.30*	*0.6*	*0.340*	*0.6*	*0.136*	*0.0501*	*1.00*	*0.0501*	*0.034*	*0.0017*	*3.9*
4	*08:41*	*0.40*	*0.6*	*0.380*	*0.6*	*0.152*	*0.0567*	*1.00*	*0.0567*	*0.038*	*0.0022*	*4.9*
5	08:42	0.50	0.6	0.360	0.6	0.144	0.0661	1.00	0.0661	0.036	0.0024	5.4
6	08:43	0.60	0.6	0.340	0.6	0.136	0.0606	1.00	0.0606	0.034	0.0021	4.7
7	08:44	0.70	0.6	0.320	0.6	0.128	0.0673	1.00	0.0673	0.032	0.0022	4.9
8	08:45	0.80	0.6	0.320	0.6	0.128	0.0732	1.00	0.0732	0.032	0.0023	5.3
9	08:45	0.90	0.6	0.320	0.6	0.128	0.0899	1.00	0.0899	0.032	0.0029	6.6
10	08:46	1.00	0.6	0.320	0.6	0.128	0.0953	1.00	0.0953	0.032	0.0030	6.9
11	08:47	1.10	0.6	0.300	0.6	0.120	0.0901	1.00	0.0901	0.030	0.0027	6.2
12	08:48	1.20	0.6	0.280	0.6	0.112	0.0957	1.00	0.0957	0.028	0.0027	6.1
13	08:48	1.30	0.6	0.280	0.6	0.112	0.0991	1.00	0.0991	0.028	0.0028	6.3
14	08:49	1.40	0.6	0.260	0.6	0.104	0.1000	1.00	0.1000	0.026	0.0026	5.9
15	08:49	1.50	0.6	0.260	0.6	0.104	0.0880	1.00	0.0880	0.026	0.0023	5.2
16	08:50	1.60	0.6	0.240	0.6	0.096	0.1019	1.00	0.1019	0.024	0.0024	5.6
17	08:51	1.70	0.6	0.220	0.6	0.088	0.0759	1.00	0.0759	0.022	0.0017	3.8
18	08:51	1.80	0.6	0.210	0.6	0.084	0.0602	1.00	0.0602	0.021	0.0013	2.9
19	08:52	1.90	0.6	0.200	0.6	0.080	0.0654	1.00	0.0654	0.020	0.0013	3.0
20	08:53	2.00	0.6	0.180	0.6	0.072	0.0673	1.00	0.0673	0.018	0.0012	2.8
21	08:54	2.10	0.6	0.160	0.6	0.064	0.0506	1.00	0.0506	0.016	0.0008	1.8
22	08:54	2.20	0.6	0.150	0.6	0.060	0.0621	1.00	0.0621	0.023	0.0014	3.2
23	08:54	2.40	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.6-5 Discharge Sheet – Counts Lake (Lake D3) Outlet, 21 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	D3SEP21.WAD
Start Date and Time	2014/09/21 15:17:25

Site Details	
Site Name	
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.5%	2.1%
Velocity	1.8%	17.2%
Width	0.2%	0.2%
Method	2.5%	-
# Stations	3.0%	-
Overall	**4.4%**	**17.3%**

Summary			
Averaging Int.	20	# Stations	17
Start Edge	LEW	Total Width	1.900
Mean SNR	26.8 dB	Total Area	0.219
Mean Temp	6.37 °C	Mean Depth	0.115
Disch. Equation	Mid-Section	Mean Velocity	0.0346
		Total Discharge	**0.0076**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:17	0.40	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*15:18*	*0.65*	*0.6*	*0.120*	*0.6*	*0.048*	*-0.0017*	*1.00*	*-0.0017*	*0.021*	*0.0000*	*-0.5*
2	15:19	0.75	0.6	0.130	0.6	0.052	0.0084	1.00	0.0084	0.013	0.0001	1.4
3	15:20	0.85	0.6	0.140	0.6	0.056	0.0466	1.00	0.0466	0.014	0.0007	8.6
4	15:20	0.95	0.6	0.130	0.6	0.052	0.0476	1.00	0.0476	0.013	0.0006	8.2
5	*15:21*	*1.05*	*0.6*	*0.130*	*0.6*	*0.052*	*0.0616*	*1.00*	*0.0616*	*0.013*	*0.0008*	*10.6*
6	15:22	1.15	0.6	0.130	0.6	0.052	0.0859	1.00	0.0859	0.013	0.0011	14.7
7	15:23	1.25	0.6	0.120	0.6	0.048	0.0787	1.00	0.0787	0.012	0.0009	12.5
8	15:23	1.35	0.6	0.120	0.6	0.048	0.0705	1.00	0.0705	0.012	0.0008	11.2
9	*15:24*	*1.45*	*0.6*	*0.140*	*0.6*	*0.056*	*0.0031*	*1.00*	*0.0031*	*0.014*	*0.0000*	*0.6*
10	15:25	1.55	0.6	0.140	0.6	0.056	0.0540	1.00	0.0540	0.014	0.0008	10.0
11	15:26	1.65	0.6	0.130	0.6	0.052	0.0862	1.00	0.0862	0.013	0.0011	14.8
12	*15:27*	*1.75*	*0.6*	*0.140*	*0.6*	*0.056*	*0.0083*	*1.00*	*0.0083*	*0.014*	*0.0001*	*1.5*
13	15:28	1.85	0.6	0.160	0.6	0.064	0.0099	1.00	0.0099	0.016	0.0002	2.1
14	15:29	1.95	0.6	0.130	0.6	0.052	0.0139	1.00	0.0139	0.020	0.0003	3.6
15	*15:30*	*2.15*	*0.6*	*0.100*	*0.6*	*0.040*	*0.0032*	*1.00*	*0.0032*	*0.018*	*0.0001*	*0.7*
16	15:30	2.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.7 Lake E2 Stream

Benchmark Coordinates	UTM Zone 12
Easting	535654.096 m
Northing	7180172.603 m
Elevation	422.579 m (geodetic)
Datum Elevation	420.534 m (geodetic)

Table A3.7-1 2014 Hydrometric Data at Lake E2 Stream Station

Date and Time	Measured Water Surface Elevation[(a)] (m)	Measured Discharge (m^3/s)
7-Jun-2014 17:10	421.270	2.437
29-Jun-2014 08:45	421.277	3.324
5-Aug-2014 10:30	421.060	0.955

a) Water surface elevations stream water levels, not lake water surface elevations (referenced to the centre stream transect).

Table A3.7-2 Discharge Sheet – Lake E2 Stream, 7 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	E2_June7.WAD
Start Date and Time	2014/06/07 15:25:02

Site Details	
Site Name	E2 OUTLET DS
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	2.7%
Velocity	1.9%	7.6%
Width	0.1%	0.1%
Method	1.8%	-
# Stations	2.1%	-
Overall	**3.6%**	**8.1%**

Summary			
Averaging Int.	15	# Stations	24
Start Edge	LEW	Total Width	11.500
Mean SNR	35.9 dB	Total Area	4.585
Mean Temp	8.11 °C	Mean Depth	0.399
Disch. Equation	Mid-Section	Mean Velocity	0.5315
		Total Discharge	**2.4367**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:25	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	15:25	0.50	0.6	0.580	0.6	0.232	0.0376	1.00	0.0376	0.290	0.0109	0.4
2	15:26	1.00	0.6	0.580	0.6	0.232	0.2319	1.00	0.2319	0.290	0.0673	2.8
3	15:26	1.50	0.6	0.600	0.6	0.240	0.4901	1.00	0.4901	0.300	0.1470	6.0
4	15:27	2.00	0.6	0.620	0.6	0.248	0.5108	1.00	0.5108	0.310	0.1583	6.5
5	15:28	2.50	0.6	0.440	0.6	0.176	0.7801	1.00	0.7801	0.220	0.1716	7.0
6	15:29	3.00	0.6	0.600	0.6	0.240	0.5433	1.00	0.5433	0.300	0.1630	6.7
7	*15:30*	*3.50*	*0.6*	*0.600*	*0.6*	*0.240*	*0.1431*	*1.00*	*0.1431*	*0.300*	*0.0429*	*1.8*
8	15:31	4.00	0.6	0.580	0.6	0.232	0.6846	1.00	0.6846	0.290	0.1985	8.1
9	15:32	4.50	0.6	0.520	0.6	0.208	0.7479	1.00	0.7479	0.260	0.1945	8.0
10	15:32	5.00	0.6	0.440	0.6	0.176	1.0359	1.00	1.0359	0.220	0.2279	9.4
11	15:33	5.50	0.6	0.440	0.6	0.176	0.7076	1.00	0.7076	0.220	0.1557	6.4
12	15:34	6.00	0.6	0.400	0.6	0.160	0.2893	1.00	0.2893	0.200	0.0579	2.4
13	15:35	6.50	0.6	0.400	0.6	0.160	0.7462	1.00	0.7462	0.200	0.1492	6.1
14	15:35	7.00	0.6	0.340	0.6	0.136	0.7947	1.00	0.7947	0.170	0.1351	5.5
15	15:36	7.50	0.6	0.400	0.6	0.160	0.5495	1.00	0.5495	0.200	0.1099	4.5
16	15:37	8.00	0.6	0.290	0.6	0.116	0.7658	1.00	0.7658	0.145	0.1110	4.6
17	15:38	8.50	0.6	0.290	0.6	0.116	0.6548	1.00	0.6548	0.145	0.0949	3.9
18	15:38	9.00	0.6	0.280	0.6	0.112	0.6666	1.00	0.6666	0.140	0.0933	3.8
19	15:39	9.50	0.6	0.250	0.6	0.100	0.6150	1.00	0.6150	0.125	0.0769	3.2
20	15:40	10.00	0.6	0.250	0.6	0.100	0.1777	1.00	0.1777	0.125	0.0222	0.9
21	15:40	10.50	0.6	0.170	0.6	0.068	0.2523	1.00	0.2523	0.085	0.0214	0.9
22	15:41	11.00	0.6	0.100	0.6	0.040	0.5434	1.00	0.5434	0.050	0.0272	1.1
23	15:41	11.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.7-3 Discharge Sheet – Lake E2 Stream, 29 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	E2JUN29.WAD
Start Date and Time	2014/06/29 09:21:17

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	2.8%
Velocity	1.3%	4.6%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	2.1%	-
Overall	**3.2%**	**5.4%**

Summary

Averaging Int.	20	# Stations	24
Start Edge	LEW	Total Width	11.500
Mean SNR	48.1 dB	Total Area	4.980
Mean Temp	13.23 °C	Mean Depth	0.433
Disch. Equation	Mid-Section	Mean Velocity	0.6675
		Total Discharge	**3.3241**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	Corr Fact	MeanV	Area	Flow	%Q
0	09:21	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	09:21	0.50	0.6	0.560	0.6	0.224	0.2609	1.00	0.2609	0.280	0.0731	2.2
2	09:22	1.00	0.6	0.560	0.6	0.224	0.4460	1.00	0.4460	0.280	0.1249	3.8
3	09:24	1.50	0.6	0.620	0.6	0.248	0.4736	1.00	0.4736	0.310	0.1468	4.4
4	09:25	2.00	0.6	0.640	0.6	0.256	0.7713	1.00	0.7713	0.320	0.2468	7.4
5	09:26	2.50	0.6	0.560	0.6	0.224	0.7592	1.00	0.7592	0.280	0.2126	6.4
6	09:26	3.00	0.6	0.340	0.6	0.136	0.8318	1.00	0.8318	0.170	0.1414	4.3
7	09:27	3.50	0.6	0.400	0.6	0.160	0.8013	1.00	0.8013	0.200	0.1603	4.8
8	09:28	4.00	0.6	0.560	0.6	0.224	0.6000	1.00	0.6000	0.280	0.1680	5.1
9	09:29	4.50	0.6	0.600	0.6	0.240	0.8844	1.00	0.8844	0.300	0.2653	8.0
10	09:31	5.00	0.6	0.560	0.6	0.224	0.9584	1.00	0.9584	0.280	0.2684	8.1
11	09:33	5.50	0.6	0.600	0.6	0.240	0.6253	1.00	0.6253	0.300	0.1876	5.6
12	09:34	6.00	0.6	0.600	0.6	0.240	0.3297	1.00	0.3297	0.300	0.0989	3.0
13	09:35	6.50	0.6	0.520	0.6	0.208	0.9025	1.00	0.9025	0.260	0.2347	7.1
14	09:35	7.00	0.6	0.420	0.6	0.168	0.7056	1.00	0.7056	0.210	0.1482	4.5
15	*09:36*	*7.50*	*0.6*	*0.500*	*0.6*	*0.200*	*0.6452*	*1.00*	*0.6452*	*0.250*	*0.1613*	*4.9*
16	09:37	8.00	0.6	0.500	0.6	0.200	0.7444	1.00	0.7444	0.250	0.1861	5.6
17	09:38	8.50	0.6	0.300	0.6	0.120	0.7758	1.00	0.7758	0.150	0.1164	3.5
18	09:39	9.00	0.6	0.360	0.6	0.144	0.7008	1.00	0.7008	0.180	0.1261	3.8
19	09:40	9.50	0.6	0.340	0.6	0.136	0.7948	1.00	0.7948	0.170	0.1351	4.1
20	09:40	10.00	0.6	0.140	0.6	0.056	0.7077	1.00	0.7077	0.070	0.0495	1.5
21	09:41	10.50	0.6	0.140	0.6	0.056	0.5348	1.00	0.5348	0.070	0.0374	1.1
22	09:42	11.00	0.6	0.140	0.6	0.056	0.5036	1.00	0.5036	0.070	0.0353	1.1
23	09:42	11.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.7-4 Discharge Sheet – Lake E2 Stream, 5 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	E2AUG5.WAD
Start Date and Time	2014/08/05 10:34:44

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	10.4%
Velocity	2.3%	7.7%
Width	0.2%	0.2%
Method	2.4%	-
# Stations	2.6%	-
Overall	**4.3%**	**13.0%**

Summary			
Averaging Int.	20	# Stations	19
Start Edge	LEW	Total Width	8.600
Mean SNR	25.5 dB	Total Area	2.327
Mean Temp	14.04 °C	Mean Depth	0.271
Disch. Equation	Mid-Section	Mean Velocity	0.4104
		Total Discharge	**0.9550**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:34	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*10:34*	*0.10*	*0.6*	*0.140*	*0.6*	*0.056*	*0.0016*	*1.00*	*0.0016*	*0.042*	*0.0001*	*0.0*
2	*10:35*	*0.60*	*0.6*	*0.140*	*0.6*	*0.056*	*0.1761*	*1.00*	*0.1761*	*0.070*	*0.0123*	*1.3*
3	10:37	1.10	0.6	0.060	0.6	0.024	0.4804	1.00	0.4804	0.030	0.0144	1.5
4	10:38	1.60	0.6	0.160	0.6	0.064	0.3838	1.00	0.3838	0.080	0.0307	3.2
5	10:39	2.10	0.6	0.060	0.6	0.024	0.1358	1.00	0.1358	0.030	0.0041	0.4
6	10:39	2.60	0.6	0.200	0.6	0.080	0.4240	1.00	0.4240	0.100	0.0424	4.4
7	10:40	3.10	0.6	0.160	0.6	0.064	0.5080	1.00	0.5080	0.080	0.0406	4.3
8	10:42	3.60	0.6	0.340	0.6	0.136	0.6246	1.00	0.6246	0.170	0.1062	11.1
9	10:43	4.10	0.6	0.500	0.6	0.200	0.5524	1.00	0.5524	0.250	0.1381	14.5
10	10:44	4.60	0.6	0.590	0.6	0.236	0.6384	1.00	0.6384	0.295	0.1883	19.7
11	10:46	5.10	0.6	0.100	0.6	0.040	0.6025	1.00	0.6025	0.050	0.0301	3.2
12	10:46	5.60	0.6	0.220	0.6	0.088	0.6039	1.00	0.6039	0.110	0.0664	7.0
13	*10:48*	*6.10*	*0.6*	*0.400*	*0.6*	*0.160*	*0.3635*	*1.00*	*0.3635*	*0.200*	*0.0727*	*7.6*
14	*10:50*	*6.60*	*0.6*	*0.520*	*0.6*	*0.208*	*0.0901*	*1.00*	*0.0901*	*0.260*	*0.0234*	*2.5*
15	10:50	7.10	0.6	0.320	0.6	0.128	0.3911	1.00	0.3911	0.160	0.0626	6.6
16	10:52	7.60	0.6	0.320	0.6	0.128	0.3962	1.00	0.3962	0.160	0.0634	6.6
17	*10:53*	*8.10*	*0.6*	*0.480*	*0.6*	*0.192*	*0.2463*	*1.00*	*0.2463*	*0.240*	*0.0591*	*6.2*
18	10:53	8.60	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.8 Lake E381 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	533998.380 m
Northing	7177806.901 m
Elevation	420.166 m (geodetic)
Datum Elevation	419.070 m (geodetic)

Table A3.8-1 2014 Hydrometric Data at Lake E381 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
28-Jun-2014 13:0	419.572	0.213
3-Aug-2014 12:00	419.465	0.165

Table A3.8-2 Discharge Sheet – Lake E381 Outlet, 28 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	E381JN28.WAD
Start Date and Time	2014/06/28 13:10:47

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	1.2%
Velocity	0.9%	3.0%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	1.9%	-
Overall	**2.8%**	**3.4%**

Summary

Averaging Int.	20	# Stations	27
Start Edge	LEW	Total Width	5.200
Mean SNR	25.2 dB	Total Area	1.588
Mean Temp	20.75 °C	Mean Depth	0.305
Disch. Equation	Mid-Section	Mean Velocity	0.1340
		Total Discharge	**0.2128**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:10	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*13:10*	*0.20*	*0.6*	*0.400*	*0.6*	*0.160*	*0.1059*	*1.00*	*0.1059*	*0.080*	*0.0085*	*4.0*
2	*13:12*	*0.40*	*0.6*	*0.460*	*0.6*	*0.184*	*0.1044*	*1.00*	*0.1044*	*0.092*	*0.0096*	*4.5*
3	*13:12*	*0.60*	*0.6*	*0.440*	*0.6*	*0.176*	*0.1052*	*1.00*	*0.1052*	*0.088*	*0.0093*	*4.4*
4	*13:14*	*0.80*	*0.6*	*0.420*	*0.6*	*0.168*	*0.1283*	*1.00*	*0.1283*	*0.084*	*0.0108*	*5.1*
5	13:14	1.00	0.6	0.400	0.6	0.160	0.1591	1.00	0.1591	0.080	0.0127	6.0
6	13:15	1.20	0.6	0.340	0.6	0.136	0.1361	1.00	0.1361	0.068	0.0093	4.3
7	13:16	1.40	0.6	0.320	0.6	0.128	0.1540	1.00	0.1540	0.064	0.0099	4.6
8	13:17	1.60	0.6	0.300	0.6	0.120	0.0923	1.00	0.0923	0.060	0.0055	2.6
9	13:18	1.80	0.6	0.300	0.6	0.120	0.1380	1.00	0.1380	0.060	0.0083	3.9
10	13:19	2.00	0.6	0.300	0.6	0.120	0.1101	1.00	0.1101	0.060	0.0066	3.1
11	13:20	2.20	0.6	0.300	0.6	0.120	0.1297	1.00	0.1297	0.060	0.0078	3.7
12	13:21	2.40	0.6	0.300	0.6	0.120	0.1724	1.00	0.1724	0.060	0.0103	4.9
13	13:22	2.60	0.6	0.340	0.6	0.136	0.2096	1.00	0.2096	0.068	0.0143	6.7
14	13:23	2.80	0.6	0.400	0.6	0.160	0.1953	1.00	0.1953	0.080	0.0156	7.3
15	13:24	3.00	0.6	0.340	0.6	0.136	0.1984	1.00	0.1984	0.068	0.0135	6.3
16	13:24	3.20	0.6	0.340	0.6	0.136	0.1918	1.00	0.1918	0.068	0.0130	6.1
17	13:25	3.40	0.6	0.340	0.6	0.136	0.1725	1.00	0.1725	0.068	0.0117	5.5
18	13:26	3.60	0.6	0.300	0.6	0.120	0.1585	1.00	0.1585	0.060	0.0095	4.5
19	13:26	3.80	0.6	0.320	0.6	0.128	0.1271	1.00	0.1271	0.064	0.0081	3.8
20	13:27	4.00	0.6	0.240	0.6	0.096	0.1324	1.00	0.1324	0.048	0.0064	3.0
21	13:28	4.20	0.6	0.200	0.6	0.080	0.0605	1.00	0.0605	0.040	0.0024	1.1
22	13:30	4.40	0.6	0.200	0.6	0.080	0.0814	1.00	0.0814	0.040	0.0033	1.5
23	13:30	4.60	0.6	0.200	0.6	0.080	0.0610	1.00	0.0610	0.040	0.0024	1.1
24	*13:31*	*4.80*	*0.6*	*0.200*	*0.6*	*0.080*	*0.0612*	*1.00*	*0.0612*	*0.040*	*0.0024*	*1.2*
25	13:33	5.00	0.6	0.240	0.6	0.096	0.0333	1.00	0.0333	0.048	0.0016	0.8
26	13:33	5.20	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

Table A3.8-3 Discharge Sheet – Lake E381 Outlet, 3 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	E381AU3.WAD
Start Date and Time	2014/08/03 12:17:48

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	0.4%
Velocity	0.6%	3.9%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	2.3%	-
Overall	**3.2%**	**4.0%**

Summary			
Averaging Int.	20	# Stations	22
Start Edge	LEW	Total Width	5.000
Mean SNR	22.7 dB	Total Area	1.253
Mean Temp	14.14 °C	Mean Depth	0.251
Disch. Equation	Mid-Section	Mean Velocity	0.1466
		Total Discharge	**0.1836**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:17	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*12:17*	*0.15*	*0.6*	*0.300*	*0.6*	*0.120*	*0.0014*	*1.00*	*0.0014*	*0.045*	*0.0001*	*0.0*
2	*12:18*	*0.30*	*0.6*	*0.320*	*0.6*	*0.128*	*0.0518*	*1.00*	*0.0518*	*0.048*	*0.0025*	*1.4*
3	12:19	0.45	0.6	0.320	0.6	0.128	0.1457	1.00	0.1457	0.048	0.0070	3.8
4	12:19	0.60	0.6	0.320	0.6	0.128	0.1725	1.00	0.1725	0.048	0.0083	4.5
5	12:20	0.75	0.6	0.310	0.6	0.124	0.1998	1.00	0.1998	0.047	0.0093	5.1
6	12:21	0.90	0.6	0.310	0.6	0.124	0.1955	1.00	0.1955	0.047	0.0091	5.0
7	12:22	1.05	0.6	0.320	0.6	0.128	0.2264	1.00	0.2264	0.048	0.0109	5.9
8	12:22	1.20	0.6	0.340	0.6	0.136	0.2399	1.00	0.2399	0.051	0.0122	6.7
9	12:23	1.35	0.6	0.350	0.6	0.140	0.2427	1.00	0.2427	0.053	0.0127	6.9
10	12:24	1.50	0.6	0.360	0.6	0.144	0.2650	1.00	0.2650	0.054	0.0143	7.8
11	12:24	1.65	0.6	0.340	0.6	0.136	0.2745	1.00	0.2745	0.051	0.0140	7.6
12	12:25	1.80	0.6	0.340	0.6	0.136	0.2887	1.00	0.2887	0.051	0.0147	8.0
13	12:26	1.95	0.6	0.340	0.6	0.136	0.2700	1.00	0.2700	0.051	0.0138	7.5
14	12:26	2.10	0.6	0.340	0.6	0.136	0.2158	1.00	0.2158	0.051	0.0110	6.0
15	12:27	2.25	0.6	0.320	0.6	0.128	0.1641	1.00	0.1641	0.048	0.0079	4.3
16	12:28	2.40	0.6	0.320	0.6	0.128	0.0931	1.00	0.0931	0.048	0.0045	2.4
17	12:28	2.55	0.6	0.320	0.6	0.128	0.1120	1.00	0.1120	0.048	0.0054	2.9
18	12:29	2.70	0.6	0.320	0.6	0.128	0.0392	1.00	0.0392	0.048	0.0019	1.0
19	12:29	2.85	0.6	0.310	0.6	0.124	0.0550	1.00	0.0550	0.047	0.0026	1.4
20	12:30	3.00	0.6	0.300	0.6	0.120	0.0670	1.00	0.0670	0.323	0.0216	11.8
21	12:30	5.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

A3.9 Lake F1 Stream

Benchmark Coordinates	UTM Zone 12
Easting	541042.312 m
Northing	7176546.769 m
Elevation	418.124 m (geodetic)
Datum Elevation	417.000 m (geodetic)

Table A3.9-1 2014 Hydrometric Data at Lake F1 Stream Station

Date and Time	Measured Water Surface Elevation[(a)] (m)	Measured Discharge (m^3/s)
26-Apr-2014 11:00	--	Frozen to bottom
31-May-2014 14:00	417.589	0.158
24-Jun-2014 13:00	417.425	0.012
5-Aug-2014 11:50	417.490	0.028

a) Water surface elevations located at these sites are stream water levels, not lake water surface elevations (referenced to the centre stream transect).

Table A3.9-2 Discharge Sheet – Lake F1 Stream, 31 May 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	F1_May31.WAD
Start Date and Time	2014/05/31 13:42:50

Site Details	
Site Name	
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	0.8%
Velocity	1.3%	1.7%
Width	0.1%	0.1%
Method	2.1%	-
# Stations	3.1%	-
Overall	**4.1%**	**2.1%**

Summary			
Averaging Int.	15	# Stations	16
Start Edge	LEW	Total Width	2.200
Mean SNR	34.0 dB	Total Area	0.889
Mean Temp	9.13 °C	Mean Depth	0.404
Disch. Equation	Mid-Section	Mean Velocity	0.1775
		Total Discharge	**0.1578**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:42	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*13:42*	*0.10*	*0.6*	*0.440*	*0.6*	*0.176*	*0.1054*	*1.00*	*0.1054*	*0.055*	*0.0058*	*3.7*
2	13:43	0.25	0.6	0.440	0.6	0.176	0.1169	1.00	0.1169	0.066	0.0077	4.9
3	13:44	0.40	0.6	0.500	0.6	0.200	0.1601	1.00	0.1601	0.075	0.0120	7.6
4	13:44	0.55	0.6	0.500	0.6	0.200	0.2076	1.00	0.2076	0.075	0.0156	9.9
5	13:45	0.70	0.6	0.500	0.6	0.200	0.2065	1.00	0.2065	0.075	0.0155	9.8
6	13:45	0.85	0.6	0.480	0.6	0.192	0.2283	1.00	0.2283	0.072	0.0164	10.4
7	13:46	1.00	0.6	0.480	0.6	0.192	0.2408	1.00	0.2408	0.072	0.0173	11.0
8	13:47	1.15	0.6	0.440	0.6	0.176	0.2265	1.00	0.2265	0.066	0.0149	9.5
9	13:47	1.30	0.6	0.400	0.6	0.160	0.2307	1.00	0.2307	0.060	0.0138	8.8
10	13:48	1.45	0.6	0.400	0.6	0.160	0.1880	1.00	0.1880	0.060	0.0113	7.1
11	13:49	1.60	0.6	0.380	0.6	0.152	0.1736	1.00	0.1736	0.057	0.0099	6.3
12	13:50	1.75	0.6	0.360	0.6	0.144	0.1514	1.00	0.1514	0.054	0.0082	5.2
13	13:50	1.90	0.6	0.340	0.6	0.136	0.1099	1.00	0.1099	0.051	0.0056	3.6
14	13:51	2.05	0.6	0.340	0.6	0.136	0.0729	1.00	0.0729	0.051	0.0037	2.4
15	13:51	2.20	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.9-3 Discharge Sheet – Lake F1 Stream, 24 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	F1JUN24.WAD
Start Date and Time	2014/06/24 14:33:13

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	1.4%
Velocity	2.2%	8.2%
Width	0.1%	0.1%
Method	2.1%	-
# Stations	2.6%	-
Overall	**4.2%**	**8.4%**

Summary

Averaging Int.	20	# Stations	19
Start Edge	LEW	Total Width	2.000
Mean SNR	35.0 dB	Total Area	0.595
Mean Temp	18.66 °C	Mean Depth	0.298
Disch. Equation	Mid-Section	Mean Velocity	0.0197
		Total Discharge	**0.0117**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:33	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	14:33	0.10	0.6	0.380	0.6	0.152	0.0002	1.00	0.0002	0.038	0.0000	0.1
2	14:35	0.20	0.6	0.380	0.6	0.152	0.0109	1.00	0.0109	0.038	0.0004	3.5
3	14:35	0.30	0.6	0.400	0.6	0.160	0.0078	1.00	0.0078	0.040	0.0003	2.7
4	14:37	0.40	0.6	0.360	0.6	0.144	0.0289	1.00	0.0289	0.036	0.0010	8.9
5	14:37	0.50	0.6	0.360	0.6	0.144	0.0189	1.00	0.0189	0.036	0.0007	5.8
6	14:38	0.60	0.6	0.400	0.6	0.160	0.0289	1.00	0.0289	0.040	0.0012	9.9
7	14:39	0.70	0.6	0.380	0.6	0.152	0.0326	1.00	0.0326	0.038	0.0012	10.6
8	14:40	0.80	0.6	0.360	0.6	0.144	0.0317	1.00	0.0317	0.036	0.0011	9.7
9	14:41	0.90	0.6	0.350	0.6	0.140	0.0463	1.00	0.0463	0.035	0.0016	13.8
10	14:42	1.00	0.6	0.380	0.6	0.152	0.0283	1.00	0.0283	0.038	0.0011	9.2
11	14:43	1.10	0.6	0.360	0.6	0.144	0.0188	1.00	0.0188	0.036	0.0007	5.8
12	14:44	1.20	0.6	0.360	0.6	0.144	0.0148	1.00	0.0148	0.036	0.0005	4.6
13	14:45	1.30	0.6	0.310	0.6	0.124	0.0143	1.00	0.0143	0.031	0.0004	3.8
14	14:46	1.40	0.6	0.310	0.6	0.124	0.0074	1.00	0.0074	0.031	0.0002	2.0
15	14:47	1.50	0.6	0.240	0.6	0.096	0.0143	1.00	0.0143	0.024	0.0003	2.9
16	14:48	1.60	0.6	0.220	0.6	0.088	0.0126	1.00	0.0126	0.022	0.0003	2.4
17	*14:50*	*1.70*	*0.6*	*0.200*	*0.6*	*0.080*	*0.0130*	*1.00*	*0.0130*	*0.040*	*0.0005*	*4.4*
18	14:50	2.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.9-4 Discharge Sheet – Lake F1 Stream, 5 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	F1AUG5.WAD
Start Date and Time	2014/08/05 11:48:42

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	1.7%
Velocity	1.7%	5.1%
Width	0.1%	0.1%
Method	2.1%	-
# Stations	2.2%	-
Overall	**3.6%**	**5.4%**

Summary			
Averaging Int.	20	# Stations	23
Start Edge	LEW	Total Width	2.400
Mean SNR	34.7 dB	Total Area	0.582
Mean Temp	14.30 °C	Mean Depth	0.243
Disch. Equation	Mid-Section	Mean Velocity	0.0484
		Total Discharge	**0.0282**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:48	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*11:48*	*0.10*	*0.6*	*0.220*	*0.6*	*0.088*	*-0.0067*	*1.00*	*-0.0067*	*0.022*	*-0.0001*	*-0.5*
2	*11:49*	*0.20*	*0.6*	*0.200*	*0.6*	*0.080*	*0.0006*	*1.00*	*0.0006*	*0.020*	*0.0000*	*0.0*
3	11:49	0.30	0.6	0.200	0.6	0.080	-0.0019	1.00	-0.0019	0.020	0.0000	-0.1
4	11:50	0.40	0.6	0.240	0.6	0.096	0.0143	1.00	0.0143	0.024	0.0003	1.2
5	11:51	0.50	0.6	0.240	0.6	0.096	0.0365	1.00	0.0365	0.024	0.0009	3.1
6	11:51	0.60	0.6	0.300	0.6	0.120	0.0515	1.00	0.0515	0.030	0.0015	5.5
7	11:52	0.70	0.6	0.320	0.6	0.128	0.0370	1.00	0.0370	0.032	0.0012	4.2
8	11:52	0.80	0.6	0.300	0.6	0.120	0.0297	1.00	0.0297	0.030	0.0009	3.2
9	11:53	0.90	0.6	0.300	0.6	0.120	0.0316	1.00	0.0316	0.030	0.0009	3.4
10	11:53	1.00	0.6	0.300	0.6	0.120	0.0444	1.00	0.0444	0.030	0.0013	4.7
11	11:54	1.10	0.6	0.310	0.6	0.124	0.0426	1.00	0.0426	0.031	0.0013	4.7
12	11:54	1.20	0.6	0.260	0.6	0.104	0.0403	1.00	0.0403	0.039	0.0016	5.6
13	*11:57*	*1.40*	*0.6*	*0.260*	*0.6*	*0.104*	*0.0346*	*1.00*	*0.0346*	*0.052*	*0.0018*	*6.4*
14	11:58	1.60	0.6	0.240	0.6	0.096	0.1091	1.00	0.1091	0.036	0.0039	13.9
15	11:59	1.70	0.6	0.240	0.6	0.096	0.1209	1.00	0.1209	0.024	0.0029	10.3
16	11:59	1.80	0.6	0.220	0.6	0.088	0.1032	1.00	0.1032	0.022	0.0023	8.1
17	12:00	1.90	0.6	0.220	0.6	0.088	0.1185	1.00	0.1185	0.022	0.0026	9.3
18	12:00	2.00	0.6	0.220	0.6	0.088	0.1006	1.00	0.1006	0.022	0.0022	7.9
19	12:01	2.10	0.6	0.220	0.6	0.088	0.0735	1.00	0.0735	0.022	0.0016	5.7
20	12:01	2.20	0.6	0.220	0.6	0.088	0.0491	1.00	0.0491	0.022	0.0011	3.8
21	*12:02*	*2.30*	*0.6*	*0.280*	*0.6*	*0.112*	*-0.0033*	*1.00*	*-0.0033*	*0.028*	*-0.0001*	*-0.3*
22	12:02	2.40	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.10 Lake G4 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	542685.444 m
Northing	7179013.074 m
Elevation	436.470 m (geodetic)
Datum Elevation	435.300 m (geodetic)

Table A3.10-1 2014 Hydrometric Data at Lake G4 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
28-Jun-2014 14:45	436.201	4.928

Table A3.10-2 Discharge Sheet – Lake G4 Outlet, 28 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	G4JUN28.WAD
Start Date and Time	2014/06/28 14:45:04

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	4.5%
Velocity	0.6%	4.0%
Width	0.1%	0.1%
Method	1.4%	-
# Stations	1.4%	-
Overall	**2.3%**	**6.1%**

Summary

Averaging Int.	20	# Stations	36
Start Edge	LEW	Total Width	60.000
Mean SNR	11.9 dB	Total Area	27.075
Mean Temp	16.46 °C	Mean Depth	0.451
Disch. Equation	Mid-Section	Mean Velocity	0.1820
		Total Discharge	**4.9278**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	Corr Fact	MeanV	Area	Flow	%Q
0	14:45	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	14:45	2.00	0.6	0.340	0.6	0.136	0.1853	1.00	0.1853	0.680	0.1260	2.6
2	14:46	4.00	0.6	0.250	0.6	0.100	0.1695	1.00	0.1695	0.500	0.0848	1.7
3	14:48	6.00	0.6	0.340	0.6	0.136	0.1928	1.00	0.1928	0.595	0.1147	2.3
4	14:49	7.50	0.6	0.340	0.6	0.136	0.2705	1.00	0.2705	0.510	0.1380	2.8
5	14:50	9.00	0.6	0.560	0.6	0.224	0.2476	1.00	0.2476	0.840	0.2080	4.2
6	14:51	10.50	0.6	0.600	0.6	0.240	0.2375	1.00	0.2375	0.900	0.2138	4.3
7	14:52	12.00	0.6	0.360	0.6	0.144	0.2180	1.00	0.2180	0.540	0.1177	2.4
8	14:53	13.50	0.6	0.280	0.6	0.112	0.2177	1.00	0.2177	0.420	0.0914	1.9
9	14:53	15.00	0.6	0.300	0.6	0.120	0.1591	1.00	0.1591	0.450	0.0716	1.5
10	14:55	16.50	0.6	0.620	0.6	0.248	0.2302	1.00	0.2302	0.930	0.2141	4.3
11	14:57	18.00	0.6	0.570	0.6	0.228	0.0998	1.00	0.0998	0.855	0.0853	1.7
12	*14:58*	*19.50*	*0.6*	*0.360*	*0.6*	*0.144*	*0.0109*	*1.00*	*0.0109*	*0.540*	*0.0059*	*0.1*
13	15:00	21.00	0.6	0.190	0.6	0.076	0.2576	1.00	0.2576	0.285	0.0734	1.5
14	15:01	22.50	0.6	0.480	0.6	0.192	0.2124	1.00	0.2124	0.720	0.1529	3.1
15	15:02	24.00	0.6	0.420	0.6	0.168	0.2126	1.00	0.2126	0.630	0.1339	2.7
16	15:03	25.50	0.6	0.740	0.6	0.296	0.1911	1.00	0.1911	1.110	0.2121	4.3
17	15:04	27.00	0.6	0.460	0.6	0.184	0.1664	1.00	0.1664	0.690	0.1148	2.3
18	15:08	28.50	0.6	0.680	0.6	0.272	0.2160	1.00	0.2160	1.020	0.2203	4.5
19	15:09	30.00	0.6	0.500	0.6	0.200	0.2102	1.00	0.2102	0.750	0.1577	3.2
20	15:10	31.50	0.6	0.540	0.6	0.216	0.1687	1.00	0.1687	0.810	0.1366	2.8
21	15:11	33.00	0.6	0.640	0.6	0.256	0.1774	1.00	0.1774	0.960	0.1703	3.5
22	15:13	34.50	0.6	0.640	0.6	0.256	0.1799	1.00	0.1799	1.120	0.2015	4.1
23	15:14	36.50	0.6	0.640	0.6	0.256	0.2136	1.00	0.2136	1.120	0.2392	4.9
24	15:16	38.00	0.6	0.400	0.6	0.160	0.1988	1.00	0.1988	0.700	0.1392	2.8
25	15:17	40.00	0.6	0.300	0.6	0.120	0.2257	1.00	0.2257	0.600	0.1354	2.7
26	15:18	42.00	0.6	0.400	0.6	0.160	0.2221	1.00	0.2221	0.800	0.1777	3.6
27	15:19	44.00	0.6	0.440	0.6	0.176	0.1939	1.00	0.1939	0.880	0.1706	3.5
28	15:21	46.00	0.6	0.500	0.6	0.200	0.2182	1.00	0.2182	1.000	0.2182	4.4
29	15:22	48.00	0.6	0.500	0.6	0.200	0.2118	1.00	0.2118	1.000	0.2118	4.3
30	15:22	50.00	0.6	0.500	0.6	0.200	0.1853	1.00	0.1853	1.000	0.1853	3.8
31	15:23	52.00	0.6	0.580	0.6	0.232	0.1352	1.00	0.1352	1.160	0.1568	3.2
32	15:24	54.00	0.6	0.440	0.6	0.176	0.1438	1.00	0.1438	0.880	0.1265	2.6
33	15:26	56.00	0.6	0.700	0.6	0.280	0.0836	1.00	0.0836	1.400	0.1170	2.4
34	*15:27*	*58.00*	*0.6*	*0.340*	*0.6*	*0.136*	*0.0075*	*1.00*	*0.0075*	*0.680*	*0.0051*	*0.1*
35	15:27	60.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.11 Lake G4A Outlet

Benchmark Coordinates	UTM Zone 12
Easting	545165.520 m
Northing	7182516.723 m
Elevation	439.174 m (geodetic)
Datum Elevation	437.100 m (geodetic)

Table A3.11-1 2014 Hydrometric Data at Lake G4A Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
1-Jun-2014 10:20	437.945	2.268
22-Jun-2014 12:00	438.034	3.137
4-Aug-2014 10:45	437.889	2.233

Table A3.11-2 Discharge Sheet – Lake G4A Outlet, 1 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	G4_June1.WAD
Start Date and Time	2014/06/01 10:20:54

Site Details	
Site Name	G4 OUTLET
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	6.5%
Velocity	1.9%	7.0%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	2.0%	-
Overall	**3.5%**	**9.6%**

Summary			
Averaging Int.	15	# Stations	25
Start Edge	LEW	Total Width	47.200
Mean SNR	23.3 dB	Total Area	16.375
Mean Temp	2.88 °C	Mean Depth	0.347
Disch. Equation	Mid-Section	Mean Velocity	0.1385
		Total Discharge	**2.2684**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:20	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	10:20	1.50	0.6	0.300	0.6	0.120	0.2205	1.00	0.2205	0.450	0.0992	4.4
2	10:22	3.00	0.6	0.350	0.6	0.140	0.1189	1.00	0.1189	0.350	0.0416	1.8
3	10:23	3.50	0.6	0.500	0.6	0.200	0.0928	1.00	0.0928	0.500	0.0464	2.0
4	10:25	5.00	0.6	0.100	0.6	0.040	0.1458	1.00	0.1458	0.135	0.0197	0.9
5	10:26	6.20	0.6	0.400	0.6	0.160	0.1537	1.00	0.1537	0.540	0.0830	3.7
6	10:28	7.70	0.6	0.200	0.6	0.080	0.2492	1.00	0.2492	0.250	0.0623	2.7
7	10:28	8.70	0.6	0.200	0.6	0.080	0.2306	1.00	0.2306	0.250	0.0577	2.5
8	10:33	10.20	0.6	0.300	0.6	0.120	0.3102	1.00	0.3102	0.525	0.1629	7.2
9	*10:35*	*12.20*	*0.6*	*0.300*	*0.6*	*0.120*	*0.1436*	*1.00*	*0.1436*	*0.600*	*0.0862*	*3.8*
10	*10:37*	*14.20*	*0.6*	*0.300*	*0.6*	*0.120*	*0.1347*	*1.00*	*0.1347*	*0.600*	*0.0808*	*3.6*
11	10:39	16.20	0.6	0.600	0.6	0.240	0.1609	1.00	0.1609	1.200	0.1931	8.5
12	10:41	18.20	0.6	0.600	0.6	0.240	0.1696	1.00	0.1696	1.200	0.2035	9.0
13	10:44	20.20	0.6	0.700	0.6	0.280	0.1862	1.00	0.1862	1.400	0.2607	11.5
14	10:46	22.20	0.6	0.700	0.6	0.280	0.1646	1.00	0.1646	1.400	0.2304	10.2
15	*10:48*	*24.20*	*0.6*	*0.700*	*0.6*	*0.280*	*0.0769*	*1.00*	*0.0769*	*1.400*	*0.1077*	*4.7*
16	10:51	26.20	0.6	0.400	0.6	0.160	0.0895	1.00	0.0895	0.800	0.0716	3.2
17	*10:53*	*28.20*	*0.6*	*0.400*	*0.6*	*0.160*	*0.0154*	*1.00*	*0.0154*	*0.800*	*0.0123*	*0.5*
18	*10:54*	*30.20*	*0.6*	*0.400*	*0.6*	*0.160*	*0.0843*	*1.00*	*0.0843*	*0.800*	*0.0674*	*3.0*
19	10:55	32.20	0.6	0.400	0.6	0.160	0.1366	1.00	0.1366	0.800	0.1093	4.8
20	10:57	34.20	0.6	0.300	0.6	0.120	0.2104	1.00	0.2104	0.600	0.1262	5.6
21	*10:59*	*36.20*	*0.6*	*0.350*	*0.6*	*0.140*	*0.0799*	*1.00*	*0.0799*	*0.700*	*0.0559*	*2.5*
22	11:00	38.20	0.6	0.200	0.6	0.080	0.0592	1.00	0.0592	0.400	0.0237	1.0
23	11:01	40.20	0.6	0.150	0.6	0.060	0.0990	1.00	0.0990	0.675	0.0668	2.9
24	11:01	47.20	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.11-3 Discharge Sheet – Lake G4A Outlet, 22 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	G4AJUN22.WAD
Start Date and Time	2014/06/22 11:45:01

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	9.3%
Velocity	1.5%	6.4%
Width	0.1%	0.1%
Method	1.8%	-
# Stations	1.7%	-
Overall	**3.1%**	**11.3%**

Summary

Averaging Int.	20	# Stations	31
Start Edge	LEW	Total Width	41.500
Mean SNR	17.8 dB	Total Area	9.213
Mean Temp	5.85 °C	Mean Depth	0.222
Disch. Equation	Mid-Section	Mean Velocity	0.3405
		Total Discharge	**3.1366**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:45	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	11:45	1.00	0.6	0.240	0.6	0.096	0.0777	1.00	0.0777	0.240	0.0186	0.6
2	11:46	2.00	0.6	0.030	0.6	0.012	0.1363	1.00	0.1363	0.038	0.0051	0.2
3	11:47	3.50	0.6	0.220	0.6	0.088	0.1971	1.00	0.1971	0.385	0.0759	2.4
4	11:49	5.50	0.6	0.250	0.6	0.100	0.1422	1.00	0.1422	0.500	0.0711	2.3
5	11:50	7.50	0.6	0.160	0.6	0.064	0.2850	1.00	0.2850	0.280	0.0798	2.5
6	11:51	9.00	0.6	0.200	0.6	0.080	0.2554	1.00	0.2554	0.300	0.0766	2.4
7	11:53	10.50	0.6	0.350	0.6	0.140	0.2202	1.00	0.2202	0.525	0.1156	3.7
8	11:56	12.00	0.6	0.220	0.6	0.088	0.1250	1.00	0.1250	0.330	0.0413	1.3
9	11:57	13.50	0.6	0.220	0.6	0.088	0.2258	1.00	0.2258	0.330	0.0745	2.4
10	11:58	15.00	0.6	0.300	0.6	0.120	0.2187	1.00	0.2187	0.375	0.0820	2.6
11	12:00	16.00	0.6	0.260	0.6	0.104	0.2073	1.00	0.2073	0.260	0.0539	1.7
12	12:02	17.00	0.6	0.300	0.6	0.120	0.0953	1.00	0.0953	0.375	0.0357	1.1
13	12:03	18.50	0.6	0.180	0.6	0.072	0.3039	1.00	0.3039	0.270	0.0821	2.6
14	12:05	20.00	0.6	0.320	0.6	0.128	0.3953	1.00	0.3953	0.560	0.2214	7.1
15	12:07	22.00	0.6	0.140	0.6	0.056	0.4466	1.00	0.4466	0.245	0.1094	3.5
16	*12:13*	*23.50*	*0.6*	*0.380*	*0.6*	*0.152*	*0.3699*	*1.00*	*0.3699*	*0.570*	*0.2108*	*6.7*
17	*12:16*	*25.00*	*0.6*	*0.320*	*0.6*	*0.128*	*0.2648*	*1.00*	*0.2648*	*0.480*	*0.1271*	*4.1*
18	12:17	26.50	0.6	0.160	0.6	0.064	0.3251	1.00	0.3251	0.240	0.0780	2.5
19	12:18	28.00	0.6	0.240	0.6	0.096	0.9175	1.00	0.9175	0.300	0.2753	8.8
20	12:20	29.00	0.6	0.160	0.6	0.064	0.9518	1.00	0.9518	0.200	0.1904	6.1
21	12:22	30.50	0.6	0.300	0.6	0.120	0.7213	1.00	0.7213	0.600	0.4328	13.8
22	*12:24*	*33.00*	*0.6*	*0.200*	*0.6*	*0.080*	*0.3375*	*1.00*	*0.3375*	*0.350*	*0.1181*	*3.8*
23	12:26	34.00	0.6	0.340	0.6	0.136	0.3852	1.00	0.3852	0.425	0.1637	5.2
24	12:28	35.50	0.6	0.140	0.6	0.056	0.3061	1.00	0.3061	0.175	0.0536	1.7
25	*12:30*	*36.50*	*0.6*	*0.320*	*0.6*	*0.128*	*0.6293*	*1.00*	*0.6293*	*0.320*	*0.2014*	*6.4*
26	12:32	37.50	0.6	0.230	0.6	0.092	0.3022	1.00	0.3022	0.230	0.0695	2.2
27	12:33	38.50	0.6	0.090	0.6	0.036	0.4258	1.00	0.4258	0.090	0.0383	1.2
28	12:35	39.50	0.6	0.160	0.6	0.064	0.2124	1.00	0.2124	0.160	0.0340	1.1
29	12:37	40.50	0.6	0.060	0.6	0.024	0.0097	1.00	0.0097	0.060	0.0006	0.0
30	12:37	41.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.11-4 Discharge Sheet – Lake G4A Outlet, 4 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	G4AAU4.WAD
Start Date and Time	2014/08/04 10:43:01

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	17.0%
Velocity	2.2%	14.1%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	2.0%	-
Overall	**3.7%**	**22.1%**

Summary			
Averaging Int.	20	# Stations	26
Start Edge	LEW	Total Width	50.000
Mean SNR	13.2 dB	Total Area	15.560
Mean Temp	14.65 °C	Mean Depth	0.311
Disch. Equation	Mid-Section	Mean Velocity	0.1435
		Total Discharge	**2.2330**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:43	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*10:43*	*2.00*	*0.6*	*0.360*	*0.6*	*0.144*	*0.0184*	*1.00*	*0.0184*	*0.720*	*0.0132*	*0.6*
2	10:43	4.00	0.6	0.380	0.6	0.152	0.1070	1.00	0.1070	0.760	0.0813	3.6
3	10:46	6.00	0.6	0.120	0.6	0.048	0.1451	1.00	0.1451	0.240	0.0348	1.6
4	*10:48*	*8.00*	*0.6*	*0.240*	*0.6*	*0.096*	*0.0736*	*1.00*	*0.0736*	*0.480*	*0.0353*	*1.6*
5	10:50	10.00	0.6	0.460	0.6	0.184	0.1795	1.00	0.1795	0.920	0.1651	7.4
6	*10:52*	*12.00*	*0.6*	*0.140*	*0.6*	*0.056*	*0.1715*	*1.00*	*0.1715*	*0.280*	*0.0480*	*2.2*
7	10:53	14.00	0.6	0.420	0.6	0.168	0.0959	1.00	0.0959	0.840	0.0806	3.6
8	10:56	16.00	0.6	0.300	0.6	0.120	0.0101	1.00	0.0101	0.600	0.0061	0.3
9	10:57	18.00	0.6	0.250	0.6	0.100	0.0736	1.00	0.0736	0.500	0.0368	1.6
10	10:58	20.00	0.6	0.340	0.6	0.136	0.1039	1.00	0.1039	0.680	0.0707	3.2
11	10:59	22.00	0.6	0.340	0.6	0.136	0.0528	1.00	0.0528	0.680	0.0359	1.6
12	11:00	24.00	0.6	0.750	0.6	0.300	0.1391	1.00	0.1391	1.500	0.2087	9.3
13	11:02	26.00	0.6	0.600	0.6	0.240	0.1037	1.00	0.1037	1.200	0.1244	5.6
14	11:03	28.00	0.6	0.220	0.6	0.088	0.0957	1.00	0.0957	0.440	0.0421	1.9
15	*11:05*	*30.00*	*0.6*	*0.740*	*0.6*	*0.296*	*0.1059*	*1.00*	*0.1059*	*1.480*	*0.1567*	*7.0*
16	*11:06*	*32.00*	*0.6*	*0.380*	*0.6*	*0.152*	*0.1449*	*1.00*	*0.1449*	*0.760*	*0.1101*	*4.9*
17	11:08	34.00	0.6	0.460	0.6	0.184	0.1518	1.00	0.1518	0.920	0.1397	6.3
18	*11:09*	*36.00*	*0.6*	*0.100*	*0.6*	*0.040*	*0.4674*	*1.00*	*0.4674*	*0.200*	*0.0935*	*4.2*
19	11:11	38.00	0.6	0.060	0.6	0.024	0.4335	1.00	0.4335	0.120	0.0520	2.3
20	*11:12*	*40.00*	*0.6*	*0.280*	*0.6*	*0.112*	*0.4957*	*1.00*	*0.4957*	*0.560*	*0.2776*	*12.4*
21	11:15	42.00	0.6	0.180	0.6	0.072	0.1111	1.00	0.1111	0.360	0.0400	1.8
22	11:16	44.00	0.6	0.360	0.6	0.144	0.2301	1.00	0.2301	0.720	0.1657	7.4
23	11:16	46.00	0.6	0.200	0.6	0.080	0.4286	1.00	0.4286	0.400	0.1714	7.7
24	11:17	48.00	0.6	0.100	0.6	0.040	0.2163	1.00	0.2163	0.200	0.0433	1.9
25	11:17	50.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.12 Lake G5 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	543495.278 m
Northing	7186695.067 m
Elevation	445.584 m (geodetic)
Datum Elevation	442.150 m (geodetic)

Table A3.12-1 2014 Hydrometric Data at Lake G5 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
1-Jun-2014 08:50	443.297	3.706
6-Jun-2014 17:20	443.468	--
22-Jun-2014 13:40	443.328	3.996
4-Aug-2014 08:45	443.173	2.527
24-Sep-2014 09:45	443.046	0.707

Table A3.12-2 Discharge Sheet – Lake G5 Outlet, 1 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	G5_June1.WAD
Start Date and Time	2014/06/01 08:57:54

Site Details	
Site Name	
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	2.4%
Velocity	1.2%	3.2%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	1.9%	-
Overall	**3.0%**	**4.1%**

Summary			
Averaging Int.	15	# Stations	27
Start Edge	LEW	Total Width	18.400
Mean SNR	18.6 dB	Total Area	8.156
Mean Temp	1.63 °C	Mean Depth	0.443
Disch. Equation	Mid-Section	Mean Velocity	0.4544
		Total Discharge	**3.7062**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:57	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*08:57*	*0.60*	*0.6*	*0.140*	*0.6*	*0.056*	*0.1979*	*1.00*	*0.1979*	*0.084*	*0.0166*	*0.4*
2	*08:58*	*1.20*	*0.6*	*0.260*	*0.6*	*0.104*	*0.5874*	*1.00*	*0.5874*	*0.208*	*0.1222*	*3.3*
3	*09:04*	*2.20*	*0.6*	*0.460*	*0.6*	*0.184*	*0.7881*	*1.00*	*0.7881*	*0.391*	*0.3081*	*8.3*
4	*09:05*	*2.90*	*0.6*	*0.440*	*0.6*	*0.176*	*0.6485*	*1.00*	*0.6485*	*0.308*	*0.1997*	*5.4*
5	*09:07*	*3.60*	*0.6*	*0.440*	*0.6*	*0.176*	*0.6026*	*1.00*	*0.6026*	*0.308*	*0.1856*	*5.0*
6	*09:08*	*4.30*	*0.6*	*0.500*	*0.6*	*0.200*	*0.5814*	*1.00*	*0.5814*	*0.350*	*0.2035*	*5.5*
7	09:09	5.00	0.6	0.480	0.6	0.192	0.4068	1.00	0.4068	0.336	0.1367	3.7
8	*09:11*	*5.70*	*0.6*	*0.300*	*0.6*	*0.120*	*0.5243*	*1.00*	*0.5243*	*0.210*	*0.1101*	*3.0*
9	09:12	6.40	0.6	0.480	0.6	0.192	0.5253	1.00	0.5253	0.336	0.1765	4.8
10	*09:13*	*7.10*	*0.6*	*0.540*	*0.6*	*0.216*	*0.3882*	*1.00*	*0.3882*	*0.378*	*0.1467*	*4.0*
11	09:14	7.80	0.6	0.540	0.6	0.216	0.6068	1.00	0.6068	0.378	0.2294	6.2
12	09:15	8.50	0.6	0.540	0.6	0.216	0.5398	1.00	0.5398	0.378	0.2040	5.5
13	09:16	9.20	0.6	0.580	0.6	0.232	0.5127	1.00	0.5127	0.406	0.2082	5.6
14	*09:17*	*9.90*	*0.6*	*0.500*	*0.6*	*0.200*	*0.4868*	*1.00*	*0.4868*	*0.350*	*0.1704*	*4.6*
15	09:18	10.60	0.6	0.580	0.6	0.232	0.4451	1.00	0.4451	0.406	0.1807	4.9
16	*09:19*	*11.30*	*0.6*	*0.560*	*0.6*	*0.224*	*0.4363*	*1.00*	*0.4363*	*0.392*	*0.1710*	*4.6*
17	09:21	12.00	0.6	0.560	0.6	0.224	0.4991	1.00	0.4991	0.392	0.1956	5.3
18	09:22	12.70	0.6	0.500	0.6	0.200	0.5249	1.00	0.5249	0.450	0.2362	6.4
19	09:24	13.80	0.6	0.500	0.6	0.200	0.3157	1.00	0.3157	0.475	0.1500	4.0
20	09:26	14.60	0.6	0.600	0.6	0.240	0.2898	1.00	0.2898	0.480	0.1391	3.8
21	09:28	15.40	0.6	0.480	0.6	0.192	0.2348	1.00	0.2348	0.336	0.0789	2.1
22	09:29	16.00	0.6	0.400	0.6	0.160	0.2238	1.00	0.2238	0.240	0.0537	1.4
23	09:30	16.60	0.6	0.350	0.6	0.140	0.1743	1.00	0.1743	0.210	0.0366	1.0
24	09:31	17.20	0.6	0.350	0.6	0.140	0.1486	1.00	0.1486	0.210	0.0312	0.8
25	09:32	17.80	0.6	0.240	0.6	0.096	0.1069	1.00	0.1069	0.144	0.0154	0.4
26	09:32	18.40	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.12-3 Discharge Sheet – Lake G5 Outlet, 22 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	G5JUN22.WAD
Start Date and Time	2014/06/22 13:39:26

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	3.1%
Velocity	1.3%	7.1%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	2.0%	-
Overall	**3.1%**	**7.8%**

Summary

Averaging Int.	20	# Stations	25
Start Edge	LEW	Total Width	19.500
Mean SNR	12.3 dB	Total Area	8.370
Mean Temp	7.19 °C	Mean Depth	0.429
Disch. Equation	Mid-Section	Mean Velocity	0.4774
		Total Discharge	**3.9959**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:39	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	13:39	1.50	0.6	0.380	0.6	0.152	0.1707	1.00	0.1707	0.428	0.0730	1.8
2	13:41	2.25	0.6	0.460	0.6	0.184	0.1607	1.00	0.1607	0.403	0.0647	1.6
3	13:42	3.25	0.6	0.460	0.6	0.184	0.4887	1.00	0.4887	0.460	0.2248	5.6
4	13:43	4.25	0.6	0.540	0.6	0.216	0.5692	1.00	0.5692	0.540	0.3074	7.7
5	*13:44*	*5.25*	*0.6*	*0.480*	*0.6*	*0.192*	*0.1567*	*1.00*	*0.1567*	*0.420*	*0.0658*	*1.6*
6	*13:45*	*6.00*	*0.6*	*0.480*	*0.6*	*0.192*	*0.6124*	*1.00*	*0.6124*	*0.360*	*0.2205*	*5.5*
7	13:46	6.75	0.6	0.300	0.6	0.120	0.7715	1.00	0.7715	0.225	0.1736	4.3
8	13:47	7.50	0.6	0.260	0.6	0.104	0.7264	1.00	0.7264	0.195	0.1416	3.5
9	13:49	8.25	0.6	0.420	0.6	0.168	0.7552	1.00	0.7552	0.315	0.2379	6.0
10	13:49	9.00	0.6	0.480	0.6	0.192	0.6207	1.00	0.6207	0.360	0.2235	5.6
11	13:50	9.75	0.6	0.580	0.6	0.232	0.6472	1.00	0.6472	0.435	0.2815	7.0
12	13:51	10.50	0.6	0.600	0.6	0.240	0.6451	1.00	0.6451	0.450	0.2903	7.3
13	*13:53*	*11.25*	*0.6*	*0.560*	*0.6*	*0.224*	*0.4198*	*1.00*	*0.4198*	*0.420*	*0.1763*	*4.4*
14	13:54	12.00	0.6	0.520	0.6	0.208	0.6738	1.00	0.6738	0.390	0.2628	6.6
15	13:55	12.75	0.6	0.520	0.6	0.208	0.5242	1.00	0.5242	0.390	0.2044	5.1
16	*13:57*	*13.50*	*0.6*	*0.280*	*0.6*	*0.112*	*0.6613*	*1.00*	*0.6613*	*0.210*	*0.1389*	*3.5*
17	13:58	14.25	0.6	0.260	0.6	0.104	0.6710	1.00	0.6710	0.195	0.1308	3.3
18	*13:59*	*15.00*	*0.6*	*0.480*	*0.6*	*0.192*	*0.5744*	*1.00*	*0.5744*	*0.360*	*0.2068*	*5.2*
19	14:01	15.75	0.6	0.400	0.6	0.160	0.6899	1.00	0.6899	0.300	0.2070	5.2
20	*14:03*	*16.50*	*0.6*	*0.500*	*0.6*	*0.200*	*0.2352*	*1.00*	*0.2352*	*0.375*	*0.0882*	*2.2*
21	14:05	17.25	0.6	0.520	0.6	0.208	0.4649	1.00	0.4649	0.390	0.1813	4.5
22	*14:06*	*18.00*	*0.6*	*0.540*	*0.6*	*0.216*	*0.1273*	*1.00*	*0.1273*	*0.405*	*0.0516*	*1.3*
23	14:07	18.75	0.6	0.460	0.6	0.184	0.1255	1.00	0.1255	0.345	0.0433	1.1
24	14:07	19.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.12-4 Discharge Sheet – Lake G5 Outlet, 4 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	G5AUG4.WAD
Start Date and Time	2014/08/04 08:55:15

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	8.6%
Velocity	1.3%	7.6%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	2.3%	-
Overall	**3.5%**	**11.6%**

Summary			
Averaging Int.	20	# Stations	22
Start Edge	LEW	Total Width	18.800
Mean SNR	12.8 dB	Total Area	6.045
Mean Temp	13.90 °C	Mean Depth	0.322
Disch. Equation	Mid-Section	Mean Velocity	0.4180
		Total Discharge	**2.5268**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:55	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*08:55*	*1.00*	*0.6*	*0.290*	*0.6*	*0.116*	*0.5208*	*1.00*	*0.5208*	*0.290*	*0.1510*	*6.0*
2	08:56	2.00	0.6	0.420	0.6	0.168	0.7498	1.00	0.7498	0.420	0.3149	12.5
3	*08:58*	*3.00*	*0.6*	*0.420*	*0.6*	*0.168*	*0.2697*	*1.00*	*0.2697*	*0.420*	*0.1133*	*4.5*
4	*09:00*	*4.00*	*0.6*	*0.520*	*0.6*	*0.208*	*0.5350*	*1.00*	*0.5350*	*0.520*	*0.2782*	*11.0*
5	09:01	5.00	0.6	0.240	0.6	0.096	0.5819	1.00	0.5819	0.240	0.1397	5.5
6	09:02	6.00	0.6	0.210	0.6	0.084	0.4474	1.00	0.4474	0.210	0.0940	3.7
7	09:02	7.00	0.6	0.500	0.6	0.200	0.5850	1.00	0.5850	0.500	0.2925	11.6
8	09:03	8.00	0.6	0.450	0.6	0.180	0.5497	1.00	0.5497	0.394	0.2164	8.6
9	09:04	8.75	0.6	0.400	0.6	0.160	0.3296	1.00	0.3296	0.300	0.0989	3.9
10	09:05	9.50	0.6	0.310	0.6	0.124	0.5120	1.00	0.5120	0.233	0.1190	4.7
11	09:06	10.25	0.6	0.310	0.6	0.124	0.4414	1.00	0.4414	0.233	0.1026	4.1
12	09:07	11.00	0.6	0.330	0.6	0.132	0.4501	1.00	0.4501	0.248	0.1114	4.4
13	09:08	11.75	0.6	0.290	0.6	0.116	0.5765	1.00	0.5765	0.218	0.1254	5.0
14	09:09	12.50	0.6	0.060	0.6	0.024	0.3105	1.00	0.3105	0.045	0.0140	0.6
15	09:10	13.25	0.6	0.210	0.6	0.084	0.3899	1.00	0.3899	0.158	0.0614	2.4
16	09:12	14.00	0.6	0.680	0.6	0.272	0.2798	1.00	0.2798	0.510	0.1427	5.6
17	09:14	14.75	0.6	0.400	0.6	0.160	0.1905	1.00	0.1905	0.300	0.0572	2.3
18	09:15	15.50	0.6	0.380	0.6	0.152	0.1257	1.00	0.1257	0.333	0.0418	1.7
19	09:16	16.50	0.6	0.120	0.6	0.048	0.1413	1.00	0.1413	0.108	0.0153	0.6
20	09:17	17.30	0.6	0.320	0.6	0.128	0.1012	1.00	0.1012	0.368	0.0372	1.5
21	09:17	18.80	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.12-5 Discharge Sheet – Lake G5 Outlet, 24 Sep 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	G524SEPT.WAD
Start Date and Time	2014/09/24 09:52:04

Site Details	
Site Name	G5
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	3.7%
Velocity	1.7%	6.3%
Width	0.2%	0.2%
Method	2.3%	-
# Stations	2.4%	-
Overall	**3.9%**	**7.4%**

Summary			
Averaging Int.	20	# Stations	21
Start Edge	LEW	Total Width	6.400
Mean SNR	36.7 dB	Total Area	1.444
Mean Temp	1.76 °C	Mean Depth	0.226
Disch. Equation	Mid-Section	Mean Velocity	0.4889
		Total Discharge	**0.7060**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:52	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	09:52	0.20	0.6	0.120	0.6	0.048	0.5873	1.00	0.5873	0.024	0.0141	2.0
2	09:53	0.40	0.6	0.220	0.6	0.088	0.6017	1.00	0.6017	0.044	0.0265	3.8
3	09:53	0.60	0.6	0.350	0.6	0.140	0.6338	1.00	0.6338	0.070	0.0444	6.3
4	09:54	0.80	0.6	0.350	0.6	0.140	0.7625	1.00	0.7625	0.070	0.0534	7.6
5	09:57	1.00	0.6	0.400	0.6	0.160	0.7287	1.00	0.7287	0.080	0.0583	8.3
6	09:58	1.20	0.6	0.400	0.6	0.160	1.2161	1.00	1.2161	0.080	0.0973	13.8
7	09:59	1.40	0.6	0.400	0.6	0.160	1.2279	1.00	1.2279	0.080	0.0982	13.9
8	10:00	1.60	0.6	0.350	0.6	0.140	1.2981	1.00	1.2981	0.070	0.0909	12.9
9	*10:01*	*1.80*	*0.6*	*0.500*	*0.6*	*0.200*	*0.7702*	*1.00*	*0.7702*	*0.100*	*0.0770*	*10.9*
10	*10:03*	*2.00*	*0.6*	*0.480*	*0.6*	*0.192*	*0.4638*	*1.00*	*0.4638*	*0.096*	*0.0445*	*6.3*
11	*10:05*	*2.20*	*0.6*	*0.500*	*0.6*	*0.200*	*0.3694*	*1.00*	*0.3694*	*0.100*	*0.0369*	*5.2*
12	*10:06*	*2.40*	*0.6*	*0.300*	*0.6*	*0.120*	*0.2630*	*1.00*	*0.2630*	*0.060*	*0.0158*	*2.2*
13	*10:07*	*2.60*	*0.6*	*0.250*	*0.6*	*0.100*	*0.4014*	*1.00*	*0.4014*	*0.050*	*0.0201*	*2.8*
14	10:08	2.80	0.6	0.280	0.6	0.112	-0.0034	1.00	-0.0034	0.056	-0.0002	0.0
15	*10:10*	*3.00*	*0.6*	*0.240*	*0.6*	*0.096*	*0.0433*	*1.00*	*0.0433*	*0.096*	*0.0042*	*0.6*
16	10:11	3.60	0.6	0.240	0.6	0.096	0.0862	1.00	0.0862	0.144	0.0124	1.8
17	*10:13*	*4.20*	*0.6*	*0.120*	*0.6*	*0.048*	*-0.0078*	*1.00*	*-0.0078*	*0.072*	*-0.0006*	*-0.1*
18	10:14	4.80	0.6	0.120	0.6	0.048	0.1345	1.00	0.1345	0.072	0.0097	1.4
19	*10:15*	*5.40*	*0.6*	*0.100*	*0.6*	*0.040*	*0.0390*	*1.00*	*0.0390*	*0.080*	*0.0031*	*0.4*
20	10:15	6.40	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.13 Lake G6 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	538529 m (approximated)[a]
Northing	7190180 m (approximated)[a]
Elevation	444.638 m (geodetic, approximated)[b]
Datum Elevation	443.160 m (geodetic, approximated)[b]

a) UTMs are approximated using a hand-held GPS unit or a GPS with RTK satellite navigation system not referenced to Aurora base stations; therefore, precision to the nearest metre is reported.

b) Geodetic elevations estimated from adjusting non-geodetic August 2013 manually surveyed water levels to water surface elevations derived from LiDAR data dated 23 July to 1 August, 2013. At sites with geodetic elevations referenced to Aurora base stations (Aurora 2013), LiDAR water surface elevations were within 0.20 m agreement with geodetic water surface elevations originally taken in August 2013.

Table A3.13-1 2014 Hydrometric Data at Lake G6 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
30-May-2014 10:40	443.805	3.598
22-Jun-2014 15:15	443.785	2.525
3-Aug-2014 14:45	443.723	1.725

Table A3.13-2 Discharge Sheet – Lake G6 Outlet, 30 May 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	G6_May30.WAD
Start Date and Time	2014/05/30 10:43:08

Site Details	
Site Name	
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	6.4%
Velocity	2.0%	10.3%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	2.0%	-
Overall	**3.5%**	**12.2%**

Summary			
Averaging Int.	15	# Stations	25
Start Edge	LEW	Total Width	41.000
Mean SNR	20.0 dB	Total Area	10.700
Mean Temp	1.02 °C	Mean Depth	0.261
Disch. Equation	Mid-Section	Mean Velocity	0.3362
		Total Discharge	**3.5975**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:43	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	10:43	1.50	0.6	0.220	0.6	0.088	0.0525	1.00	0.0525	0.330	0.0173	0.5
2	10:43	3.00	0.6	0.300	0.6	0.120	0.2814	1.00	0.2814	0.450	0.1266	3.5
3	*10:44*	*4.50*	*0.6*	*0.320*	*0.6*	*0.128*	*0.2296*	*1.00*	*0.2296*	*0.480*	*0.1102*	*3.1*
4	10:45	6.00	0.6	0.140	0.6	0.056	0.5122	1.00	0.5122	0.210	0.1076	3.0
5	10:47	7.50	0.6	0.280	0.6	0.112	0.2179	1.00	0.2179	0.420	0.0915	2.5
6	10:48	9.00	0.6	0.380	0.6	0.152	0.3443	1.00	0.3443	0.570	0.1963	5.5
7	10:50	10.50	0.6	0.380	0.6	0.152	0.2838	1.00	0.2838	0.570	0.1618	4.5
8	10:51	12.00	0.6	0.360	0.6	0.144	0.4682	1.00	0.4682	0.540	0.2528	7.0
9	10:52	13.50	0.6	0.420	0.6	0.168	0.0454	1.00	0.0454	0.630	0.0286	0.8
10	10:53	15.00	0.6	0.180	0.6	0.072	0.2500	1.00	0.2500	0.270	0.0675	1.9
11	10:54	16.50	0.6	0.300	0.6	0.120	0.3915	1.00	0.3915	0.675	0.2643	7.3
12	*10:56*	*19.50*	*0.6*	*0.320*	*0.6*	*0.128*	*0.2811*	*1.00*	*0.2811*	*0.720*	*0.2024*	*5.6*
13	*10:58*	*21.00*	*0.6*	*0.260*	*0.6*	*0.104*	*0.3371*	*1.00*	*0.3371*	*0.390*	*0.1315*	*3.7*
14	10:59	22.50	0.6	0.300	0.6	0.120	0.4714	1.00	0.4714	0.450	0.2121	5.9
15	*11:01*	*24.00*	*0.6*	*0.460*	*0.6*	*0.184*	*0.2058*	*1.00*	*0.2058*	*0.690*	*0.1420*	*3.9*
16	11:02	25.50	0.6	0.400	0.6	0.160	0.4008	1.00	0.4008	0.600	0.2405	6.7
17	11:04	27.00	0.6	0.200	0.6	0.080	0.6848	1.00	0.6848	0.300	0.2054	5.7
18	*11:05*	*28.50*	*0.6*	*0.280*	*0.6*	*0.112*	*0.3960*	*1.00*	*0.3960*	*0.420*	*0.1663*	*4.6*
19	*11:06*	*30.00*	*0.6*	*0.340*	*0.6*	*0.136*	*0.5961*	*1.00*	*0.5961*	*0.510*	*0.3040*	*8.5*
20	*11:06*	*31.50*	*0.6*	*0.380*	*0.6*	*0.152*	*0.4435*	*1.00*	*0.4435*	*0.570*	*0.2528*	*7.0*
21	*11:07*	*33.00*	*0.6*	*0.140*	*0.6*	*0.056*	*0.1817*	*1.00*	*0.1817*	*0.210*	*0.0382*	*1.1*
22	*11:08*	*34.50*	*0.6*	*0.160*	*0.6*	*0.064*	*0.4565*	*1.00*	*0.4565*	*0.240*	*0.1096*	*3.0*
23	*11:10*	*36.00*	*0.6*	*0.140*	*0.6*	*0.056*	*0.3699*	*1.00*	*0.3699*	*0.455*	*0.1683*	*4.7*
24	11:10	41.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.13-3 Discharge Sheet – Lake G6 Outlet, 22 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	G6JUN22.WAD
Start Date and Time	2014/06/22 15:15:10

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	6.1%
Velocity	1.0%	5.3%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	2.0%	-
Overall	**3.0%**	**8.2%**

Summary

Averaging Int.	20	# Stations	26
Start Edge	LEW	Total Width	32.000
Mean SNR	17.3 dB	Total Area	7.562
Mean Temp	7.56 °C	Mean Depth	0.236
Disch. Equation	Mid-Section	Mean Velocity	0.3338
		Total Discharge	**2.5245**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:15	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	15:17	1.50	0.6	0.160	0.6	0.064	0.1446	1.00	0.1446	0.240	0.0347	1.4
2	15:21	3.00	0.6	0.260	0.6	0.104	0.3731	1.00	0.3731	0.455	0.1698	6.7
3	15:25	5.00	0.6	0.170	0.6	0.068	0.3327	1.00	0.3327	0.255	0.0848	3.4
4	15:27	6.00	0.6	0.160	0.6	0.064	0.2995	1.00	0.2995	0.180	0.0539	2.1
5	*15:29*	*7.25*	*0.6*	*0.100*	*0.6*	*0.040*	*0.3999*	*1.00*	*0.3999*	*0.088*	*0.0350*	*1.4*
6	15:30	7.75	0.6	0.100	0.6	0.040	0.5513	1.00	0.5513	0.075	0.0413	1.6
7	*15:33*	*8.75*	*0.6*	*0.250*	*0.6*	*0.100*	*0.5000*	*1.00*	*0.5000*	*0.313*	*0.1563*	*6.2*
8	15:34	10.25	0.6	0.260	0.6	0.104	0.5170	1.00	0.5170	0.325	0.1680	6.7
9	15:36	11.25	0.6	0.260	0.6	0.104	0.7614	1.00	0.7614	0.325	0.2475	9.8
10	15:39	12.75	0.6	0.260	0.6	0.104	0.5555	1.00	0.5555	0.351	0.1950	7.7
11	15:40	13.95	0.6	0.280	0.6	0.112	0.3321	1.00	0.3321	0.315	0.1046	4.1
12	15:43	15.00	0.6	0.240	0.6	0.096	0.5027	1.00	0.5027	0.366	0.1840	7.3
13	15:44	17.00	0.6	0.220	0.6	0.088	0.4205	1.00	0.4205	0.330	0.1388	5.5
14	*15:46*	*18.00*	*0.6*	*0.350*	*0.6*	*0.140*	*0.3395*	*1.00*	*0.3395*	*0.350*	*0.1188*	*4.7*
15	15:47	19.00	0.6	0.380	0.6	0.152	0.2155	1.00	0.2155	0.380	0.0819	3.2
16	15:49	20.00	0.6	0.190	0.6	0.076	0.2544	1.00	0.2544	0.190	0.0483	1.9
17	15:50	21.00	0.6	0.200	0.6	0.080	0.4525	1.00	0.4525	0.200	0.0905	3.6
18	15:51	22.00	0.6	0.200	0.6	0.080	0.4095	1.00	0.4095	0.200	0.0819	3.2
19	15:53	23.00	0.6	0.260	0.6	0.104	0.3254	1.00	0.3254	0.260	0.0846	3.4
20	15:54	24.00	0.6	0.360	0.6	0.144	0.2319	1.00	0.2319	0.360	0.0835	3.3
21	15:55	25.00	0.6	0.400	0.6	0.160	0.2210	1.00	0.2210	0.500	0.1105	4.4
22	15:58	26.50	0.6	0.220	0.6	0.088	0.1931	1.00	0.1931	0.330	0.0637	2.5
23	*16:00*	*28.00*	*0.6*	*0.420*	*0.6*	*0.168*	*0.1253*	*1.00*	*0.1253*	*0.735*	*0.0921*	*3.6*
24	16:02	30.00	0.6	0.220	0.6	0.088	0.1250	1.00	0.1250	0.440	0.0550	2.2
25	16:02	32.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.13-4 Discharge Sheet – Lake G6 Outlet, 3 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	G6AUG3.WAD
Start Date and Time	2014/08/03 14:59:41

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	12.1%
Velocity	2.4%	13.3%
Width	0.1%	0.1%
Method	2.1%	-
# Stations	2.3%	-
Overall	**4.0%**	**18.0%**

Summary			
Averaging Int.	20	# Stations	22
Start Edge	LEW	Total Width	19.500
Mean SNR	13.1 dB	Total Area	5.850
Mean Temp	15.27 °C	Mean Depth	0.300
Disch. Equation	Mid-Section	Mean Velocity	0.2949
		Total Discharge	**1.7253**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:59	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	14:59	1.00	0.6	0.300	0.6	0.120	0.1912	1.00	0.1912	0.300	0.0574	3.3
2	15:00	2.00	0.6	0.480	0.6	0.192	0.1460	1.00	0.1460	0.480	0.0701	4.1
3	15:01	3.00	0.6	0.380	0.6	0.152	0.0685	1.00	0.0685	0.380	0.0260	1.5
4	15:02	4.00	0.6	0.410	0.6	0.164	0.1986	1.00	0.1986	0.410	0.0814	4.7
5	*15:05*	*5.00*	*0.6*	*0.500*	*0.6*	*0.200*	*0.3348*	*1.00*	*0.3348*	*0.375*	*0.1256*	*7.3*
6	*15:08*	*5.50*	*0.6*	*0.220*	*0.6*	*0.088*	*0.1314*	*1.00*	*0.1314*	*0.110*	*0.0145*	*0.8*
7	*15:12*	*6.00*	*0.6*	*0.380*	*0.6*	*0.152*	*0.6027*	*1.00*	*0.6027*	*0.285*	*0.1718*	*10.0*
8	*15:13*	*7.00*	*0.6*	*0.240*	*0.6*	*0.096*	*0.4399*	*1.00*	*0.4399*	*0.240*	*0.1056*	*6.1*
9	15:14	8.00	0.6	0.320	0.6	0.128	0.1961	1.00	0.1961	0.320	0.0628	3.6
10	*15:15*	*9.00*	*0.6*	*0.260*	*0.6*	*0.104*	*0.0911*	*1.00*	*0.0911*	*0.260*	*0.0237*	*1.4*
11	*15:17*	*10.00*	*0.6*	*0.400*	*0.6*	*0.160*	*0.5390*	*1.00*	*0.5390*	*0.400*	*0.2156*	*12.5*
12	15:18	11.00	0.6	0.250	0.6	0.100	0.7988	1.00	0.7988	0.250	0.1997	11.6
13	15:19	12.00	0.6	0.600	0.6	0.240	0.2861	1.00	0.2861	0.600	0.1717	9.9
14	15:21	13.00	0.6	0.250	0.6	0.100	0.0802	1.00	0.0802	0.250	0.0201	1.2
15	15:22	14.00	0.6	0.180	0.6	0.072	0.3036	1.00	0.3036	0.180	0.0546	3.2
16	*15:23*	*15.00*	*0.6*	*0.100*	*0.6*	*0.040*	*0.2574*	*1.00*	*0.2574*	*0.100*	*0.0257*	*1.5*
17	*15:24*	*16.00*	*0.6*	*0.320*	*0.6*	*0.128*	*0.4387*	*1.00*	*0.4387*	*0.320*	*0.1404*	*8.1*
18	*15:25*	*17.00*	*0.6*	*0.460*	*0.6*	*0.184*	*0.2912*	*1.00*	*0.2912*	*0.460*	*0.1340*	*7.8*
19	15:26	18.00	0.6	0.040	0.6	0.016	0.1433	1.00	0.1433	0.040	0.0057	0.3
20	15:27	19.00	0.6	0.120	0.6	0.048	0.2129	1.00	0.2129	0.090	0.0192	1.1
21	15:27	19.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.14 Lake G13 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	529354 m (approximated)[a]
Northing	7191953 m (approximated)[a]
Elevation	468.940 m (geodetic, approximated)[b]
Datum Elevation	467.297 m (geodetic, approximated)[b]

a) UTMs are approximated using a hand-held GPS unit or a GPS with RTK satellite navigation system not referenced to Aurora base stations, therefore precision to the nearest metre is reported.

b) Geodetic elevations estimated from adjusting non-geodetic August 2013 manually surveyed water levels to water surface elevations derived from LiDAR data dated 23 July to 1 August, 2013. At sites with geodetic elevations referenced to Aurora base stations (Aurora 2013), LiDAR water surface elevations were within 0.20 m agreement with geodetic water surface elevations originally taken in August 2013.

Table A3.14-1 2014 Hydrometric Data at Lake G13 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
30-May-2014 09:30	467.907	1.090
6-Jun-2014 17:40	467.893	--
26-Jun-2014 14:15	467.835	0.716
3-Aug-2014 13:20	467.821	0.678
24-Sep-2014 14:45	467.708	0.188

Table A3.14-2 Discharge Sheet – Lake G13 Outlet, 30 May 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	G13_May30.WAD
Start Date and Time	2014/05/30 09:30:19

Site Details	
Site Name	
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	3.2%
Velocity	1.5%	5.2%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	1.9%	-
Overall	**3.1%**	**6.2%**

Summary			
Averaging Int.	15	# Stations	27
Start Edge	LEW	Total Width	15.000
Mean SNR	14.3 dB	Total Area	4.055
Mean Temp	1.88 °C	Mean Depth	0.270
Disch. Equation	Mid-Section	Mean Velocity	0.2688
		Total Discharge	**1.0901**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:30	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	09:30	1.50	0.6	0.180	0.6	0.072	0.1715	1.00	0.1715	0.180	0.0309	2.8
2	*09:31*	*2.00*	*0.6*	*0.140*	*0.6*	*0.056*	*0.1427*	*1.00*	*0.1427*	*0.070*	*0.0100*	*0.9*
3	09:31	2.50	0.6	0.140	0.6	0.056	0.2449	1.00	0.2449	0.070	0.0171	1.6
4	09:33	3.00	0.6	0.120	0.6	0.048	0.3377	1.00	0.3377	0.060	0.0203	1.9
5	09:34	3.50	0.6	0.320	0.6	0.128	0.1907	1.00	0.1907	0.160	0.0305	2.8
6	*09:35*	*4.00*	*0.6*	*0.260*	*0.6*	*0.104*	*0.3161*	*1.00*	*0.3161*	*0.130*	*0.0411*	*3.8*
7	09:36	4.50	0.6	0.200	0.6	0.080	0.2820	1.00	0.2820	0.100	0.0282	2.6
8	09:37	5.00	0.6	0.300	0.6	0.120	0.2585	1.00	0.2585	0.150	0.0388	3.6
9	*09:38*	*5.50*	*0.6*	*0.300*	*0.6*	*0.120*	*0.2573*	*1.00*	*0.2573*	*0.150*	*0.0386*	*3.5*
10	09:38	6.00	0.6	0.300	0.6	0.120	0.3653	1.00	0.3653	0.150	0.0548	5.0
11	09:39	6.50	0.6	0.340	0.6	0.136	0.4280	1.00	0.4280	0.170	0.0728	6.7
12	*09:40*	*7.00*	*0.6*	*0.320*	*0.6*	*0.128*	*0.2370*	*1.00*	*0.2370*	*0.160*	*0.0379*	*3.5*
13	09:41	7.50	0.6	0.420	0.6	0.168	0.1692	1.00	0.1692	0.210	0.0355	3.3
14	09:42	8.00	0.6	0.260	0.6	0.104	0.3453	1.00	0.3453	0.130	0.0449	4.1
15	*09:43*	*8.50*	*0.6*	*0.300*	*0.6*	*0.120*	*0.3644*	*1.00*	*0.3644*	*0.150*	*0.0547*	*5.0*
16	09:43	9.00	0.6	0.300	0.6	0.120	0.4711	1.00	0.4711	0.150	0.0707	6.5
17	09:44	9.50	0.6	0.330	0.6	0.132	0.2576	1.00	0.2576	0.165	0.0425	3.9
18	*09:45*	*10.00*	*0.6*	*0.360*	*0.6*	*0.144*	*0.3887*	*1.00*	*0.3887*	*0.180*	*0.0700*	*6.4*
19	09:46	10.50	0.6	0.440	0.6	0.176	0.3894	1.00	0.3894	0.220	0.0857	7.9
20	09:47	11.00	0.6	0.440	0.6	0.176	0.3456	1.00	0.3456	0.220	0.0760	7.0
21	09:47	11.50	0.6	0.400	0.6	0.160	0.3284	1.00	0.3284	0.200	0.0657	6.0
22	09:48	12.00	0.6	0.360	0.6	0.144	0.2798	1.00	0.2798	0.180	0.0504	4.6
23	09:50	12.50	0.6	0.340	0.6	0.136	0.1584	1.00	0.1584	0.255	0.0404	3.7
24	*09:52*	*13.50*	*0.6*	*0.280*	*0.6*	*0.112*	*0.0957*	*1.00*	*0.0957*	*0.280*	*0.0268*	*2.5*
25	*09:53*	*14.50*	*0.6*	*0.220*	*0.6*	*0.088*	*0.0368*	*1.00*	*0.0368*	*0.165*	*0.0061*	*0.6*
26	09:53	15.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.14-3 Discharge Sheet – Lake G13 Outlet, 26 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	G13JUN26.WAD
Start Date and Time	2014/06/26 14:32:33

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	4.8%
Velocity	1.1%	3.2%
Width	0.1%	0.1%
Method	1.8%	-
# Stations	1.9%	-
Overall	**3.0%**	**5.9%**

Summary

Averaging Int.	20	# Stations	27
Start Edge	LEW	Total Width	11.000
Mean SNR	25.3 dB	Total Area	2.662
Mean Temp	12.00 °C	Mean Depth	0.242
Disch. Equation	Mid-Section	Mean Velocity	0.2690
		Total Discharge	**0.7158**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:32	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	14:32	0.15	0.6	0.100	0.6	0.040	0.0195	1.00	0.0195	0.015	0.0003	0.0
2	14:34	0.30	0.6	0.140	0.6	0.056	0.0620	1.00	0.0620	0.021	0.0013	0.2
3	14:35	0.45	0.6	0.140	0.6	0.056	0.2647	1.00	0.2647	0.021	0.0056	0.8
4	14:36	0.60	0.6	0.120	0.6	0.048	0.2895	1.00	0.2895	0.018	0.0052	0.7
5	14:37	0.75	0.6	0.120	0.6	0.048	0.2344	1.00	0.2344	0.024	0.0056	0.8
6	14:42	1.00	0.6	0.140	0.6	0.056	0.1494	1.00	0.1494	0.053	0.0078	1.1
7	14:44	1.50	0.6	0.200	0.6	0.080	0.1866	1.00	0.1866	0.100	0.0187	2.6
8	14:45	2.00	0.6	0.200	0.6	0.080	0.2493	1.00	0.2493	0.100	0.0249	3.5
9	14:49	2.50	0.6	0.300	0.6	0.120	0.2518	1.00	0.2518	0.150	0.0378	5.3
10	14:51	3.00	0.6	0.200	0.6	0.080	0.3145	1.00	0.3145	0.100	0.0315	4.4
11	14:52	3.50	0.6	0.160	0.6	0.064	0.3713	1.00	0.3713	0.080	0.0297	4.1
12	14:53	4.00	0.6	0.220	0.6	0.088	0.3531	1.00	0.3531	0.110	0.0388	5.4
13	14:54	4.50	0.6	0.360	0.6	0.144	0.3066	1.00	0.3066	0.180	0.0552	7.7
14	14:54	5.00	0.6	0.400	0.6	0.160	0.2569	1.00	0.2569	0.200	0.0514	7.2
15	14:57	5.50	0.6	0.440	0.6	0.176	0.1903	1.00	0.1903	0.220	0.0419	5.8
16	15:01	6.00	0.6	0.140	0.6	0.056	0.3403	1.00	0.3403	0.070	0.0238	3.3
17	15:02	6.50	0.6	0.180	0.6	0.072	0.4269	1.00	0.4269	0.090	0.0384	5.4
18	15:03	7.00	0.6	0.220	0.6	0.088	0.3309	1.00	0.3309	0.110	0.0364	5.1
19	15:03	7.50	0.6	0.300	0.6	0.120	0.3456	1.00	0.3456	0.150	0.0518	7.2
20	15:04	8.00	0.6	0.320	0.6	0.128	0.3322	1.00	0.3322	0.160	0.0532	7.4
21	15:06	8.50	0.6	0.400	0.6	0.160	0.2734	1.00	0.2734	0.200	0.0547	7.6
22	15:07	9.00	0.6	0.260	0.6	0.104	0.2575	1.00	0.2575	0.130	0.0335	4.7
23	15:08	9.50	0.6	0.260	0.6	0.104	0.2291	1.00	0.2291	0.130	0.0298	4.2
24	15:09	10.00	0.6	0.260	0.6	0.104	0.1806	1.00	0.1806	0.130	0.0235	3.3
25	15:10	10.50	0.6	0.200	0.6	0.080	0.1515	1.00	0.1515	0.100	0.0152	2.1
26	15:10	11.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.14-4 Discharge Sheet – Lake G13 Outlet, 3 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	G13AUG3.WAD
Start Date and Time	2014/08/03 13:28:37

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	5.4%
Velocity	1.1%	8.5%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	2.0%	-
Overall	**3.2%**	**10.1%**

Summary			
Averaging Int.	20	# Stations	26
Start Edge	LEW	Total Width	15.000
Mean SNR	17.2 dB	Total Area	2.980
Mean Temp	15.09 °C	Mean Depth	0.199
Disch. Equation	Mid-Section	Mean Velocity	0.2275
		Total Discharge	**0.6780**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:28	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*13:29*	*0.50*	*0.6*	*0.120*	*0.6*	*0.048*	*0.1389*	*1.00*	*0.1389*	*0.060*	*0.0083*	*1.2*
2	*13:30*	*1.00*	*0.6*	*0.160*	*0.6*	*0.064*	*0.0002*	*1.00*	*0.0002*	*0.080*	*0.0000*	*0.0*
3	13:32	1.50	0.6	0.150	0.6	0.060	0.1528	1.00	0.1528	0.075	0.0115	1.7
4	13:33	2.00	0.6	0.130	0.6	0.052	0.1769	1.00	0.1769	0.065	0.0115	1.7
5	13:35	2.50	0.6	0.100	0.6	0.040	0.1511	1.00	0.1511	0.050	0.0076	1.1
6	13:37	3.00	0.6	0.190	0.6	0.076	0.0594	1.00	0.0594	0.095	0.0056	0.8
7	13:38	3.50	0.6	0.200	0.6	0.080	0.2120	1.00	0.2120	0.100	0.0212	3.1
8	13:39	4.00	0.6	0.220	0.6	0.088	0.1237	1.00	0.1237	0.110	0.0136	2.0
9	13:40	4.50	0.6	0.240	0.6	0.096	0.2992	1.00	0.2992	0.120	0.0359	5.3
10	13:41	5.00	0.6	0.200	0.6	0.080	0.2107	1.00	0.2107	0.100	0.0211	3.1
11	13:41	5.50	0.6	0.180	0.6	0.072	0.3923	1.00	0.3923	0.090	0.0353	5.2
12	13:42	6.00	0.6	0.180	0.6	0.072	0.3834	1.00	0.3834	0.090	0.0345	5.1
13	13:43	6.50	0.6	0.160	0.6	0.064	0.3899	1.00	0.3899	0.080	0.0312	4.6
14	13:44	7.00	0.6	0.200	0.6	0.080	0.1990	1.00	0.1990	0.100	0.0199	2.9
15	13:45	7.50	0.6	0.420	0.6	0.168	0.1376	1.00	0.1376	0.210	0.0289	4.3
16	13:47	8.00	0.6	0.380	0.6	0.152	0.1504	1.00	0.1504	0.190	0.0286	4.2
17	13:47	8.50	0.6	0.380	0.6	0.152	0.1396	1.00	0.1396	0.190	0.0265	3.9
18	13:48	9.00	0.6	0.330	0.6	0.132	0.2427	1.00	0.2427	0.165	0.0400	5.9
19	13:49	9.50	0.6	0.320	0.6	0.128	0.3613	1.00	0.3613	0.160	0.0578	8.5
20	13:50	10.00	0.6	0.340	0.6	0.136	0.1532	1.00	0.1532	0.170	0.0260	3.8
21	13:50	10.50	0.6	0.340	0.6	0.136	0.3579	1.00	0.3579	0.170	0.0608	9.0
22	13:51	11.00	0.6	0.320	0.6	0.128	0.4868	1.00	0.4868	0.240	0.1168	17.2
23	13:53	12.00	0.6	0.060	0.6	0.024	0.2308	1.00	0.2308	0.090	0.0208	3.1
24	13:55	14.00	0.6	0.120	0.6	0.048	0.0801	1.00	0.0801	0.180	0.0144	2.1
25	13:55	15.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.14-5 Discharge Sheet – Lake G13 Outlet, 24 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	G1324SEP.WAD
Start Date and Time	2014/09/24 15:16:12

Site Details	
Site Name	G13
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.5%	9.7%
Velocity	1.7%	10.1%
Width	0.2%	0.2%
Method	2.3%	-
# Stations	2.6%	-
Overall	**4.0%**	**14.0%**

Summary			
Averaging Int.	20	# Stations	19
Start Edge	LEW	Total Width	17.200
Mean SNR	17.1 dB	Total Area	2.279
Mean Temp	3.24 °C	Mean Depth	0.133
Disch. Equation	Mid-Section	Mean Velocity	0.0825
		Total Discharge	**0.1881**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:16	4.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	15:16	5.20	0.6	0.040	0.6	0.016	0.0202	1.00	0.0202	0.034	0.0007	0.4
2	*15:17*	*6.00*	*0.6*	*0.050*	*0.6*	*0.020*	*-0.0012*	*1.00*	*-0.0012*	*0.045*	*-0.0001*	*0.0*
3	*15:18*	*7.00*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0177*	*1.00*	*0.0177*	*0.080*	*0.0014*	*0.8*
4	15:19	8.00	0.6	0.090	0.6	0.036	0.0357	1.00	0.0357	0.090	0.0032	1.7
5	15:20	9.00	0.6	0.110	0.6	0.044	0.0450	1.00	0.0450	0.110	0.0050	2.6
6	*15:28*	*10.00*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0209*	*1.00*	*0.0209*	*0.080*	*0.0017*	*0.9*
7	*15:29*	*11.00*	*0.6*	*0.110*	*0.6*	*0.044*	*0.0553*	*1.00*	*0.0553*	*0.110*	*0.0061*	*3.2*
8	15:30	12.00	0.6	0.200	0.6	0.080	0.1224	1.00	0.1224	0.200	0.0245	13.0
9	15:31	13.00	0.6	0.180	0.6	0.072	0.0917	1.00	0.0917	0.180	0.0165	8.8
10	15:32	14.00	0.6	0.080	0.6	0.032	0.1927	1.00	0.1927	0.080	0.0154	8.2
11	15:33	15.00	0.6	0.200	0.6	0.080	0.1022	1.00	0.1022	0.200	0.0204	10.9
12	*15:34*	*16.00*	*0.6*	*0.260*	*0.6*	*0.104*	*0.0997*	*1.00*	*0.0997*	*0.260*	*0.0259*	*13.8*
13	*15:35*	*17.00*	*0.6*	*0.100*	*0.6*	*0.040*	*0.0899*	*1.00*	*0.0899*	*0.075*	*0.0067*	*3.6*
14	*15:36*	*17.50*	*0.6*	*0.260*	*0.6*	*0.104*	*0.1272*	*1.00*	*0.1272*	*0.130*	*0.0165*	*8.8*
15	*15:38*	*18.00*	*0.6*	*0.240*	*0.6*	*0.096*	*0.1174*	*1.00*	*0.1174*	*0.180*	*0.0211*	*11.2*
16	15:40	19.00	0.6	0.200	0.6	0.080	0.0877	1.00	0.0877	0.200	0.0175	9.3
17	*15:41*	*20.00*	*0.6*	*0.180*	*0.6*	*0.072*	*0.0239*	*1.00*	*0.0239*	*0.225*	*0.0054*	*2.9*
18	15:41	21.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.15 Lake G474 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	545337.247 m
Northing	7179638.813 m
Elevation	439.567 m (geodetic)
Datum Elevation	437.568 m (geodetic)

Table A3.15-1 2014 Hydrometric Data at Lake G474 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
29-Jun-2014 10:30	438.246	0.118

Table A3.15-2 Discharge Sheet – Lake G474 Outlet, 29 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	G474JN29.WAD
Start Date and Time	2014/06/29 10:29:10

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	1.1%
Velocity	1.2%	2.3%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	2.4%	-
Overall	**3.5%**	**2.8%**

Summary

Averaging Int.	20	# Stations	21
Start Edge	LEW	Total Width	1.000
Mean SNR	29.8 dB	Total Area	0.546
Mean Temp	12.64 °C	Mean Depth	0.546
Disch. Equation	Mid-Section	Mean Velocity	0.2153
		Total Discharge	**0.1176**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:29	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*10:30*	*0.05*	*0.6*	*0.500*	*0.6*	*0.200*	*0.0006*	*1.00*	*0.0006*	*0.025*	*0.0000*	*0.0*
2	*10:32*	*0.10*	*0.6*	*0.480*	*0.6*	*0.192*	*0.1146*	*1.00*	*0.1146*	*0.024*	*0.0028*	*2.3*
3	10:33	0.15	0.6	0.500	0.6	0.200	0.1241	1.00	0.1241	0.025	0.0031	2.6
4	10:33	0.20	0.6	0.500	0.6	0.200	0.1254	1.00	0.1254	0.025	0.0031	2.7
5	10:35	0.25	0.6	0.520	0.6	0.208	0.1256	1.00	0.1256	0.026	0.0033	2.8
6	10:36	0.30	0.6	0.620	0.6	0.248	0.1676	1.00	0.1676	0.031	0.0052	4.4
7	10:38	0.35	0.6	0.750	0.6	0.300	0.0987	1.00	0.0987	0.038	0.0037	3.1
8	10:38	0.40	0.6	0.740	0.6	0.296	0.1514	1.00	0.1514	0.037	0.0056	4.8
9	10:39	0.45	0.6	0.740	0.6	0.296	0.1825	1.00	0.1825	0.037	0.0068	5.7
10	10:40	0.50	0.6	0.710	0.6	0.284	0.2216	1.00	0.2216	0.036	0.0079	6.7
11	10:41	0.55	0.6	0.680	0.6	0.272	0.2743	1.00	0.2743	0.034	0.0093	7.9
12	10:42	0.60	0.6	0.680	0.6	0.272	0.3032	1.00	0.3032	0.034	0.0103	8.8
13	10:43	0.65	0.6	0.670	0.6	0.268	0.3459	1.00	0.3459	0.034	0.0116	9.9
14	10:44	0.70	0.6	0.540	0.6	0.216	0.3335	1.00	0.3335	0.027	0.0090	7.7
15	10:45	0.75	0.6	0.500	0.6	0.200	0.3301	1.00	0.3301	0.025	0.0083	7.0
16	10:46	0.80	0.6	0.490	0.6	0.196	0.3486	1.00	0.3486	0.025	0.0085	7.3
17	10:46	0.85	0.6	0.440	0.6	0.176	0.3286	1.00	0.3286	0.022	0.0072	6.1
18	10:47	0.90	0.6	0.440	0.6	0.176	0.3031	1.00	0.3031	0.022	0.0067	5.7
19	10:48	0.95	0.6	0.420	0.6	0.168	0.2501	1.00	0.2501	0.021	0.0053	4.5
20	10:48	1.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.16 Lake H1 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	550606.458 m
Northing	7169133.981 m
Elevation	419.638 m (geodetic)
Datum Elevation	418.810 m (geodetic)

Table A3.16-1 2014 Hydrometric Data at Lake H1 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
28-Apr-2014 10:00	--	Frozen to bottom
31-May-2014 16:00	419.171	--
2-Jun-2014 12:30	419.188	0.120
7-Jun-2014 12:10	419.192	0.125
24-Jun-2014 13:15	419.088	0.094
30-Jul-2014 15:10	418.919	0.008
19-Sep-2014 15:15	418.844	0.0003

Table A3.16-2 Discharge Sheet – Lake H1 Outlet, 2 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	H1_June2.WAD
Start Date and Time	2014/06/02 12:39:34

Site Details	
Site Name	H1 OUTLET
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	2.1%
Velocity	1.7%	6.1%
Width	0.1%	0.1%
Method	2.2%	-
# Stations	3.0%	-
Overall	**4.2%**	**6.5%**

Summary			
Averaging Int.	15	# Stations	17
Start Edge	LEW	Total Width	1.800
Mean SNR	17.5 dB	Total Area	0.352
Mean Temp	2.12 °C	Mean Depth	0.196
Disch. Equation	Mid-Section	Mean Velocity	0.3414
		Total Discharge	**0.1202**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:39	0.90	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	12:40	1.00	0.6	0.160	0.6	0.064	0.0027	1.00	0.0027	0.016	0.0000	0.0
2	12:40	1.10	0.6	0.240	0.6	0.096	0.2063	1.00	0.2063	0.024	0.0050	4.1
3	12:41	1.20	0.6	0.240	0.6	0.096	0.3050	1.00	0.3050	0.024	0.0073	6.1
4	*12:41*	*1.30*	*0.6*	*0.240*	*0.6*	*0.096*	*0.3851*	*1.00*	*0.3851*	*0.024*	*0.0092*	*7.7*
5	12:42	1.40	0.6	0.230	0.6	0.092	0.5416	1.00	0.5416	0.023	0.0125	10.4
6	12:42	1.50	0.6	0.230	0.6	0.092	0.6320	1.00	0.6320	0.023	0.0145	12.1
7	12:43	1.60	0.6	0.220	0.6	0.088	0.6150	1.00	0.6150	0.022	0.0135	11.3
8	12:43	1.70	0.6	0.240	0.6	0.096	0.6019	1.00	0.6019	0.024	0.0144	12.0
9	12:45	1.80	0.6	0.200	0.6	0.080	0.3568	1.00	0.3568	0.020	0.0071	5.9
10	12:45	1.90	0.6	0.240	0.6	0.096	0.2049	1.00	0.2049	0.024	0.0049	4.1
11	*12:46*	*2.00*	*0.6*	*0.220*	*0.6*	*0.088*	*0.2527*	*1.00*	*0.2527*	*0.022*	*0.0056*	*4.6*
12	12:46	2.10	0.6	0.220	0.6	0.088	0.3760	1.00	0.3760	0.022	0.0083	6.9
13	*12:47*	*2.20*	*0.6*	*0.220*	*0.6*	*0.088*	*0.2400*	*1.00*	*0.2400*	*0.022*	*0.0053*	*4.4*
14	12:48	2.30	0.6	0.220	0.6	0.088	0.3886	1.00	0.3886	0.022	0.0085	7.1
15	*12:48*	*2.40*	*0.6*	*0.200*	*0.6*	*0.080*	*0.0987*	*1.00*	*0.0987*	*0.040*	*0.0039*	*3.3*
16	12:48	2.70	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.16-3 Discharge Sheet – Lake H1 Outlet, 7 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	H1_June7.WAD
Start Date and Time	2014/06/07 11:54:15

Site Details	
Site Name	H1 OUTLET
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	0.9%
Velocity	1.3%	2.4%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	2.8%	-
Overall	**3.8%**	**2.7%**

Summary			
Averaging Int.	15	# Stations	18
Start Edge	LEW	Total Width	1.800
Mean SNR	16.6 dB	Total Area	0.344
Mean Temp	5.44 °C	Mean Depth	0.191
Disch. Equation	Mid-Section	Mean Velocity	0.3632
		Total Discharge	**0.1248**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:54	1.10	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	11:54	1.20	0.6	0.200	0.6	0.080	0.1641	1.00	0.1641	0.020	0.0033	2.6
2	*11:55*	*1.30*	*0.6*	*0.220*	*0.6*	*0.088*	*0.1964*	*1.00*	*0.1964*	*0.022*	*0.0043*	*3.5*
3	11:56	1.40	0.6	0.230	0.6	0.092	0.2387	1.00	0.2387	0.023	0.0055	4.4
4	11:56	1.50	0.6	0.220	0.6	0.088	0.3831	1.00	0.3831	0.022	0.0084	6.8
5	11:57	1.60	0.6	0.220	0.6	0.088	0.5273	1.00	0.5273	0.022	0.0116	9.3
6	11:57	1.70	0.6	0.220	0.6	0.088	0.5725	1.00	0.5725	0.022	0.0126	10.1
7	11:58	1.80	0.6	0.220	0.6	0.088	0.5952	1.00	0.5952	0.022	0.0131	10.5
8	*11:58*	*1.90*	*0.6*	*0.220*	*0.6*	*0.088*	*0.5794*	*1.00*	*0.5794*	*0.022*	*0.0127*	*10.2*
9	11:59	2.00	0.6	0.200	0.6	0.080	0.4397	1.00	0.4397	0.020	0.0088	7.0
10	11:59	2.10	0.6	0.200	0.6	0.080	0.2949	1.00	0.2949	0.020	0.0059	4.7
11	12:00	2.20	0.6	0.200	0.6	0.080	0.3419	1.00	0.3419	0.020	0.0068	5.5
12	12:01	2.30	0.6	0.220	0.6	0.088	0.3906	1.00	0.3906	0.022	0.0086	6.9
13	12:01	2.40	0.6	0.230	0.6	0.092	0.2999	1.00	0.2999	0.023	0.0069	5.5
14	12:02	2.50	0.6	0.210	0.6	0.084	0.2807	1.00	0.2807	0.021	0.0059	4.7
15	12:02	2.60	0.6	0.200	0.6	0.080	0.2571	1.00	0.2571	0.020	0.0051	4.1
16	12:03	2.70	0.6	0.150	0.6	0.060	0.2292	1.00	0.2292	0.023	0.0052	4.1
17	12:03	2.90	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.16-4 Discharge Sheet – Lake H1 Outlet, 24 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	H1JUN24.WAD
Start Date and Time	2014/06/24 13:33:36

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	2.5%
Velocity	1.6%	6.5%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	2.8%	-
Overall	**4.0%**	**7.0%**

Summary

Averaging Int.	20	# Stations	18
Start Edge	LEW	Total Width	1.700
Mean SNR	18.9 dB	Total Area	0.268
Mean Temp	14.02 °C	Mean Depth	0.158
Disch. Equation	Mid-Section	Mean Velocity	0.3494
		Total Discharge	**0.0937**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:33	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	13:35	0.10	0.6	0.160	0.6	0.064	0.3632	1.00	0.3632	0.016	0.0058	6.2
2	13:37	0.20	0.6	0.160	0.6	0.064	0.4558	1.00	0.4558	0.016	0.0073	7.8
3	13:38	0.30	0.6	0.160	0.6	0.064	0.4885	1.00	0.4885	0.016	0.0078	8.3
4	13:38	0.40	0.6	0.160	0.6	0.064	0.5322	1.00	0.5322	0.016	0.0085	9.1
5	*13:39*	*0.50*	*0.6*	*0.160*	*0.6*	*0.064*	*0.5790*	*1.00*	*0.5790*	*0.016*	*0.0093*	*9.9*
6	*13:40*	*0.60*	*0.6*	*0.160*	*0.6*	*0.064*	*0.2605*	*1.00*	*0.2605*	*0.016*	*0.0042*	*4.5*
7	*13:41*	*0.70*	*0.6*	*0.180*	*0.6*	*0.072*	*0.4775*	*1.00*	*0.4775*	*0.018*	*0.0086*	*9.2*
8	13:42	0.80	0.6	0.140	0.6	0.056	0.4389	1.00	0.4389	0.014	0.0061	6.6
9	13:42	0.90	0.6	0.180	0.6	0.072	0.2509	1.00	0.2509	0.018	0.0045	4.8
10	13:43	1.00	0.6	0.180	0.6	0.072	0.3406	1.00	0.3406	0.018	0.0061	6.5
11	13:43	1.10	0.6	0.180	0.6	0.072	0.3857	1.00	0.3857	0.018	0.0069	7.4
12	*13:44*	*1.20*	*0.6*	*0.180*	*0.6*	*0.072*	*0.2777*	*1.00*	*0.2777*	*0.018*	*0.0050*	*5.3*
13	13:44	1.30	0.6	0.200	0.6	0.080	0.3001	1.00	0.3001	0.020	0.0060	6.4
14	13:46	1.40	0.6	0.200	0.6	0.080	0.2927	1.00	0.2927	0.020	0.0059	6.3
15	*13:47*	*1.50*	*0.6*	*0.140*	*0.6*	*0.056*	*0.0979*	*1.00*	*0.0979*	*0.014*	*0.0014*	*1.5*
16	*13:48*	*1.60*	*0.6*	*0.140*	*0.6*	*0.056*	*0.0164*	*1.00*	*0.0164*	*0.014*	*0.0002*	*0.2*
17	13:48	1.70	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.16-5 Discharge Sheet – Lake H1 Outlet, 30 July 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	H1JUL30.WAD
Start Date and Time	2014/07/30 15:00:21

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	7.6%
Velocity	2.1%	21.6%
Width	0.1%	0.1%
Method	2.1%	-
# Stations	2.5%	-
Overall	**4.0%**	**22.9%**

Summary			
Averaging Int.	20	# Stations	20
Start Edge	LEW	Total Width	1.650
Mean SNR	22.3 dB	Total Area	0.089
Mean Temp	20.76 °C	Mean Depth	0.054
Disch. Equation	Mid-Section	Mean Velocity	0.0853
		Total Discharge	**0.0076**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:00	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*15:00*	*0.40*	*0.6*	*0.060*	*0.6*	*0.024*	*0.0027*	*1.00*	*0.0027*	*0.015*	*0.0000*	*0.5*
2	*15:02*	*0.50*	*0.6*	*0.060*	*0.6*	*0.024*	*0.0475*	*1.00*	*0.0475*	*0.005*	*0.0002*	*2.8*
3	*15:03*	*0.55*	*0.6*	*0.080*	*0.6*	*0.032*	*0.1690*	*1.00*	*0.1690*	*0.004*	*0.0007*	*8.9*
4	*15:04*	*0.60*	*0.6*	*0.090*	*0.6*	*0.036*	*0.0009*	*1.00*	*0.0009*	*0.005*	*0.0000*	*0.1*
5	*15:05*	*0.65*	*0.6*	*0.080*	*0.6*	*0.032*	*0.1341*	*1.00*	*0.1341*	*0.004*	*0.0005*	*7.1*
6	*15:05*	*0.70*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0029*	*1.00*	*0.0029*	*0.004*	*0.0000*	*0.2*
7	15:06	0.75	0.6	0.080	0.6	0.032	0.1652	1.00	0.1652	0.004	0.0007	8.7
8	15:07	0.80	0.6	0.060	0.6	0.024	0.1670	1.00	0.1670	0.003	0.0005	6.6
9	15:08	0.85	0.6	0.070	0.6	0.028	0.1037	1.00	0.1037	0.004	0.0004	4.8
10	15:08	0.90	0.6	0.070	0.6	0.028	0.1476	1.00	0.1476	0.004	0.0005	6.8
11	15:09	0.95	0.6	0.050	0.6	0.020	0.1640	1.00	0.1640	0.003	0.0004	5.4
12	15:10	1.00	0.6	0.050	0.6	0.020	0.1737	1.00	0.1737	0.005	0.0009	11.4
13	15:11	1.15	0.6	0.040	0.6	0.016	0.2013	1.00	0.2013	0.004	0.0008	10.6
14	15:12	1.20	0.6	0.080	0.6	0.032	0.1568	1.00	0.1568	0.004	0.0006	8.3
15	*15:13*	*1.25*	*0.6*	*0.050*	*0.6*	*0.020*	*0.1362*	*1.00*	*0.1362*	*0.003*	*0.0003*	*4.5*
16	15:14	1.30	0.6	0.100	0.6	0.040	0.1562	1.00	0.1562	0.005	0.0008	10.3
17	*15:15*	*1.35*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0550*	*1.00*	*0.0550*	*0.004*	*0.0002*	*2.9*
18	*15:16*	*1.40*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0012*	*1.00*	*0.0012*	*0.012*	*0.0000*	*0.2*
19	15:16	1.65	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.16-6 Discharge Sheet – Lake H1 Outlet, 19 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	H1SEP19.WAD
Start Date and Time	2014/09/19 15:12:27

Site Details	
Site Name	
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.8%	1.4%
Velocity	19.3%	77.7%
Width	0.3%	0.3%
Method	4.1%	-
# Stations	6.6%	-
Overall	**20.8%**	**77.7%**

Summary			
Averaging Int.	20	# Stations	8
Start Edge	LEW	Total Width	1.300
Mean SNR	29.5 dB	Total Area	0.155
Mean Temp	6.07 °C	Mean Depth	0.119
Disch. Equation	Mid-Section	Mean Velocity	0.0022
		Total Discharge	**0.0003**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:12	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*15:12*	*0.10*	*0.6*	*0.200*	*0.6*	*0.080*	*0.0006*	*1.00*	*0.0006*	*0.020*	*0.0000*	*3.6*
2	15:13	0.20	0.6	0.200	0.6	0.080	0.0074	1.00	0.0074	0.020	0.0001	44.0
3	15:13	0.30	0.6	0.190	0.6	0.076	0.0009	1.00	0.0009	0.019	0.0000	5.1
4	15:15	0.40	0.6	0.190	0.6	0.076	0.0031	1.00	0.0031	0.019	0.0001	17.5
5	*15:16*	*0.50*	*0.6*	*0.170*	*0.6*	*0.068*	*0.0052*	*1.00*	*0.0052*	*0.017*	*0.0001*	*26.3*
6	15:17	0.60	0.6	0.150	0.6	0.060	0.0002	1.00	0.0002	0.060	0.0000	3.6
7	15:17	1.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.17 Lake I100 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	563839 m (approximated)[a]
Northing	7183592 m (approximated)[a]
Elevation	440.419 m (geodetic, approximated)[b]
Datum Elevation	436.206 m (geodetic, approximated)[b]

a) UTMs are approximated using a hand-held GPS unit or a GPS with RTK satellite navigation system not referenced to Aurora base stations; therefore, precision to the nearest metre is reported.

b) Geodetic elevations estimated from adjusting non-geodetic August 2013 manually surveyed water levels to water surface elevations derived from LiDAR data dated 23 July to 1 August, 2013. At sites with geodetic elevations referenced to Aurora base stations (Aurora 2013), LiDAR water surface elevations were within 0.20 m agreement with geodetic water surface elevations originally taken in August 2013.

Table A3.17-1 2014 Hydrometric Data at Lake I100 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
1-Jun-2014 16:10	437.434	0.238
23-Jun-2014 15:10	437.499	0.527
2-Aug-2014 08:30	437.386	0.553
24-Sep-2014 11:00	437.199	0.182

Table A3.17-2 Discharge Sheet – Lake I100 Outlet, 1 June 2014

Discharge Measurement Summary

Date Generated: Tue Jan 20 2015

File Information	
File Name	I100_June1.WAD
Start Date and Time	2014/06/01 16:09:43

Site Details	
Site Name	I100 OUTLET
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	7.5%
Velocity	6.3%	17.6%
Width	0.2%	0.2%
Method	3.3%	-
# Stations	3.0%	-
Overall	**7.7%**	**19.2%**

Summary			
Averaging Int.	15	# Stations	17
Start Edge	LEW	Total Width	8.500
Mean SNR	22.6 dB	Total Area	2.360
Mean Temp	0.70 °C	Mean Depth	0.278
Disch. Equation	Mid-Section	Mean Velocity	0.0960
		Total Discharge	**0.2266**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	16:09	1.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	16:09	1.50	0.6	0.140	0.6	0.056	0.0106	1.00	0.0106	0.070	0.0007	0.3
2	*16:10*	*2.00*	*0.6*	*0.220*	*0.6*	*0.088*	*0.2754*	*1.00*	*0.2754*	*0.110*	*0.0303*	*13.4*
3	*16:11*	*2.50*	*0.6*	*0.580*	*0.6*	*0.232*	*0.2869*	*1.00*	*0.2869*	*0.290*	*0.0832*	*36.7*
4	16:11	3.00	0.6	0.460	0.6	0.184	-0.0105	1.00	-0.0105	0.230	-0.0024	-1.1
5	16:13	3.50	0.6	0.400	0.6	0.160	-0.0143	1.00	-0.0143	0.200	-0.0029	-1.3
6	16:13	4.00	0.6	0.460	0.6	0.184	0.0135	1.00	0.0135	0.230	0.0031	1.4
7	*16:14*	*4.50*	*0.6*	*0.400*	*0.6*	*0.160*	*0.0894*	*1.00*	*0.0894*	*0.200*	*0.0179*	*7.9*
8	*16:15*	*5.00*	*0.6*	*0.420*	*0.6*	*0.168*	*0.0955*	*1.00*	*0.0955*	*0.210*	*0.0201*	*8.9*
9	16:16	5.50	0.6	0.340	0.6	0.136	0.1146	1.00	0.1146	0.170	0.0195	8.6
10	16:17	6.00	0.6	0.280	0.6	0.112	0.1254	1.00	0.1254	0.140	0.0176	7.7
11	16:18	6.50	0.6	0.220	0.6	0.088	0.0957	1.00	0.0957	0.110	0.0105	4.6
12	*16:19*	*7.00*	*0.6*	*0.220*	*0.6*	*0.088*	*0.0671*	*1.00*	*0.0671*	*0.110*	*0.0074*	*3.3*
13	*16:20*	*7.50*	*0.6*	*0.200*	*0.6*	*0.080*	*0.1067*	*1.00*	*0.1067*	*0.100*	*0.0107*	*4.7*
14	*16:20*	*8.00*	*0.6*	*0.170*	*0.6*	*0.068*	*0.1336*	*1.00*	*0.1336*	*0.085*	*0.0114*	*5.0*
15	16:21	8.50	0.6	0.140	0.6	0.056	-0.0040	1.00	-0.0040	0.105	-0.0004	-0.2
16	16:21	9.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.17-3 Discharge Sheet – Lake I100 Outlet, 23 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	I100JU23.WAD
Start Date and Time	2014/06/23 15:29:12

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	5.9%
Velocity	2.7%	14.7%
Width	0.2%	0.2%
Method	2.3%	-
# Stations	2.6%	-
Overall	**4.5%**	**15.9%**

Summary

Averaging Int.	20	# Stations	19
Start Edge	LEW	Total Width	9.500
Mean SNR	24.0 dB	Total Area	3.153
Mean Temp	8.19 °C	Mean Depth	0.332
Disch. Equation	Mid-Section	Mean Velocity	0.1670
		Total Discharge	**0.5265**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:29	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	15:29	0.50	0.6	0.620	0.6	0.248	0.0607	1.00	0.0607	0.310	0.0188	3.6
2	15:31	1.00	0.6	0.560	0.6	0.224	0.1336	1.00	0.1336	0.280	0.0374	7.1
3	15:32	1.50	0.6	0.460	0.6	0.184	0.1805	1.00	0.1805	0.230	0.0415	7.9
4	*15:34*	*2.00*	*0.6*	*0.680*	*0.6*	*0.272*	*0.1469*	*1.00*	*0.1469*	*0.340*	*0.0499*	*9.5*
5	15:35	2.50	0.6	0.520	0.6	0.208	0.3214	1.00	0.3214	0.260	0.0836	15.9
6	15:37	3.00	0.6	0.660	0.6	0.264	0.1650	1.00	0.1650	0.330	0.0545	10.3
7	*15:40*	*3.50*	*0.6*	*0.560*	*0.6*	*0.224*	*0.2658*	*1.00*	*0.2658*	*0.280*	*0.0744*	*14.1*
8	15:43	4.00	0.6	0.300	0.6	0.120	0.1740	1.00	0.1740	0.150	0.0261	5.0
9	*15:45*	*4.50*	*0.6*	*0.280*	*0.6*	*0.112*	*0.1020*	*1.00*	*0.1020*	*0.140*	*0.0143*	*2.7*
10	15:51	5.00	0.6	0.200	0.6	0.080	0.0264	1.00	0.0264	0.100	0.0026	0.5
11	15:54	5.50	0.6	0.200	0.6	0.080	0.3694	1.00	0.3694	0.100	0.0369	7.0
12	15:57	6.00	0.6	0.200	0.6	0.080	0.2107	1.00	0.2107	0.125	0.0263	5.0
13	15:59	6.75	0.6	0.180	0.6	0.072	0.1344	1.00	0.1344	0.135	0.0181	3.4
14	16:00	7.50	0.6	0.180	0.6	0.072	0.0702	1.00	0.0702	0.113	0.0079	1.5
15	16:02	8.00	0.6	0.180	0.6	0.072	0.1516	1.00	0.1516	0.090	0.0136	2.6
16	16:03	8.50	0.6	0.100	0.6	0.040	0.1568	1.00	0.1568	0.050	0.0078	1.5
17	16:07	9.00	0.6	0.240	0.6	0.096	0.1048	1.00	0.1048	0.120	0.0126	2.4
18	16:07	9.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.17-4 Discharge Sheet – Lake I100 Outlet, 2 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	I100AU2.WAD
Start Date and Time	2014/08/02 08:40:27

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	6.4%
Velocity	1.4%	10.4%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	1.9%	-
Overall	**3.2%**	**12.2%**

Summary			
Averaging Int.	20	# Stations	27
Start Edge	LEW	Total Width	16.000
Mean SNR	13.9 dB	Total Area	3.063
Mean Temp	13.32 °C	Mean Depth	0.191
Disch. Equation	Mid-Section	Mean Velocity	0.1804
		Total Discharge	**0.5525**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:40	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	08:41	0.50	0.6	0.400	0.6	0.160	0.3423	1.00	0.3423	0.200	0.0685	12.4
2	08:42	1.00	0.6	0.220	0.6	0.088	0.3425	1.00	0.3425	0.110	0.0377	6.8
3	08:43	1.50	0.6	0.360	0.6	0.144	0.2799	1.00	0.2799	0.180	0.0504	9.1
4	08:44	2.00	0.6	0.360	0.6	0.144	0.2871	1.00	0.2871	0.180	0.0517	9.4
5	08:46	2.50	0.6	0.340	0.6	0.136	0.1218	1.00	0.1218	0.170	0.0207	3.7
6	08:46	3.00	0.6	0.240	0.6	0.096	0.2952	1.00	0.2952	0.120	0.0354	6.4
7	08:47	3.50	0.6	0.140	0.6	0.056	0.1889	1.00	0.1889	0.070	0.0132	2.4
8	08:48	4.00	0.6	0.200	0.6	0.080	0.2291	1.00	0.2291	0.100	0.0229	4.1
9	08:49	4.50	0.6	0.200	0.6	0.080	0.2577	1.00	0.2577	0.100	0.0258	4.7
10	08:50	5.00	0.6	0.300	0.6	0.120	0.3209	1.00	0.3209	0.150	0.0481	8.7
11	08:51	5.50	0.6	0.080	0.6	0.032	0.2218	1.00	0.2218	0.040	0.0089	1.6
12	08:52	6.00	0.6	0.200	0.6	0.080	0.1207	1.00	0.1207	0.100	0.0121	2.2
13	08:53	6.50	0.6	0.200	0.6	0.080	0.1608	1.00	0.1608	0.100	0.0161	2.9
14	08:54	7.00	0.6	0.100	0.6	0.040	0.1028	1.00	0.1028	0.050	0.0051	0.9
15	*08:55*	*7.50*	*0.6*	*0.250*	*0.6*	*0.100*	*0.2007*	*1.00*	*0.2007*	*0.125*	*0.0251*	*4.5*
16	08:57	8.00	0.6	0.220	0.6	0.088	0.0845	1.00	0.0845	0.110	0.0093	1.7
17	08:58	8.50	0.6	0.150	0.6	0.060	0.2299	1.00	0.2299	0.075	0.0172	3.1
18	*08:59*	*9.00*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0001*	*1.00*	*0.0001*	*0.040*	*0.0000*	*0.0*
19	*09:01*	*9.50*	*0.6*	*0.080*	*0.6*	*0.032*	*0.1916*	*1.00*	*0.1916*	*0.040*	*0.0077*	*1.4*
20	*09:02*	*10.00*	*0.6*	*0.150*	*0.6*	*0.060*	*0.0477*	*1.00*	*0.0477*	*0.075*	*0.0036*	*0.6*
21	09:03	10.50	0.6	0.150	0.6	0.060	0.0376	1.00	0.0376	0.075	0.0028	0.5
22	09:04	11.00	0.6	0.150	0.6	0.060	0.0452	1.00	0.0452	0.113	0.0051	0.9
23	*09:08*	*12.00*	*0.6*	*0.300*	*0.6*	*0.120*	*0.1091*	*1.00*	*0.1091*	*0.300*	*0.0327*	*5.9*
24	*09:10*	*13.00*	*0.6*	*0.200*	*0.6*	*0.080*	*0.1619*	*1.00*	*0.1619*	*0.200*	*0.0324*	*5.9*
25	*09:13*	*14.00*	*0.6*	*0.160*	*0.6*	*0.064*	*0.0003*	*1.00*	*0.0003*	*0.240*	*0.0001*	*0.0*
26	09:13	16.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.17-5 Discharge Sheet – Lake I100 Outlet, 24 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	I10024SE.WAD
Start Date and Time	2014/09/24 11:36:11

Site Details	
Site Name	I100
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	6.3%
Velocity	1.8%	11.0%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	2.2%	-
Overall	**3.6%**	**12.7%**

Summary			
Averaging Int.	20	# Stations	23
Start Edge	LEW	Total Width	12.300
Mean SNR	9.9 dB	Total Area	2.938
Mean Temp	3.29 °C	Mean Depth	0.239
Disch. Equation	Mid-Section	Mean Velocity	0.0620
		Total Discharge	**0.1821**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:36	5.40	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	11:36	6.00	0.6	0.510	0.6	0.204	0.0550	1.00	0.0550	0.281	0.0154	8.5
2	11:37	6.50	0.6	0.400	0.6	0.160	0.0354	1.00	0.0354	0.200	0.0071	3.9
3	11:38	7.00	0.6	0.330	0.6	0.132	0.0826	1.00	0.0826	0.165	0.0136	7.5
4	11:40	7.50	0.6	0.280	0.6	0.112	0.0705	1.00	0.0705	0.140	0.0099	5.4
5	11:41	8.00	0.6	0.280	0.6	0.112	0.0839	1.00	0.0839	0.140	0.0117	6.4
6	11:42	8.50	0.6	0.200	0.6	0.080	0.0789	1.00	0.0789	0.100	0.0079	4.3
7	11:43	9.00	0.6	0.290	0.6	0.116	0.1005	1.00	0.1005	0.145	0.0146	8.0
8	11:44	9.50	0.6	0.220	0.6	0.088	0.0842	1.00	0.0842	0.110	0.0093	5.1
9	11:45	10.00	0.6	0.140	0.6	0.056	0.1736	1.00	0.1736	0.070	0.0122	6.7
10	11:47	10.50	0.6	0.100	0.6	0.040	0.0599	1.00	0.0599	0.050	0.0030	1.6
11	11:48	11.00	0.6	0.330	0.6	0.132	0.0462	1.00	0.0462	0.165	0.0076	4.2
12	11:50	11.50	0.6	0.260	0.6	0.104	0.0234	1.00	0.0234	0.130	0.0030	1.7
13	11:51	12.00	0.6	0.130	0.6	0.052	0.0678	1.00	0.0678	0.065	0.0044	2.4
14	11:52	12.50	0.6	0.140	0.6	0.056	0.0631	1.00	0.0631	0.070	0.0044	2.4
15	11:53	13.00	0.6	0.220	0.6	0.088	0.0615	1.00	0.0615	0.110	0.0068	3.7
16	11:55	13.50	0.6	0.260	0.6	0.104	0.0394	1.00	0.0394	0.130	0.0051	2.8
17	11:57	14.00	0.6	0.210	0.6	0.084	0.0028	1.00	0.0028	0.105	0.0003	0.2
18	11:59	14.50	0.6	0.100	0.6	0.040	0.0357	1.00	0.0357	0.075	0.0027	1.5
19	12:01	15.50	0.6	0.320	0.6	0.128	0.0620	1.00	0.0620	0.320	0.0198	10.9
20	12:03	16.50	0.6	0.260	0.6	0.104	0.0759	1.00	0.0759	0.247	0.0187	10.3
21	12:04	17.40	0.6	0.200	0.6	0.080	0.0382	1.00	0.0382	0.120	0.0046	2.5
22	12:04	17.70	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.18 Lake I1B Outlet

Benchmark Coordinates	UTM Zone 12
Easting	553630.163 m
Northing	7173341.612 m
Elevation	427.091 m (geodetic)
Datum Elevation	425.290 m (geodetic)

Table A3.18-1 2014 Hydrometric Data at Lake I1B Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
24-Jun-2014 12:10	426.388	5.417
4-Aug-2014 12:00	426.157	1.931

Table A3.18-2 Discharge Sheet – Lake I1B Outlet, 24 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	I1BJUN24.WAD
Start Date and Time	2014/06/24 12:00:27

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	5.9%
Velocity	1.2%	6.4%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	1.8%	-
Overall	**2.8%**	**8.7%**

Summary

Averaging Int.	20	# Stations	29
Start Edge	LEW	Total Width	56.000
Mean SNR	14.8 dB	Total Area	23.713
Mean Temp	9.40 °C	Mean Depth	0.423
Disch. Equation	Mid-Section	Mean Velocity	0.2285
		Total Discharge	**5.4173**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:00	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*12:00*	*1.25*	*0.6*	*0.560*	*0.6*	*0.224*	*0.3523*	*1.00*	*0.3523*	*0.700*	*0.2466*	*4.6*
2	12:02	2.50	0.6	0.380	0.6	0.152	0.3794	1.00	0.3794	0.713	0.2703	5.0
3	12:03	5.00	0.6	0.300	0.6	0.120	0.3424	1.00	0.3424	0.750	0.2568	4.7
4	12:05	7.50	0.6	0.320	0.6	0.128	0.3600	1.00	0.3600	0.800	0.2880	5.3
5	12:06	10.00	0.6	0.380	0.6	0.152	0.2023	1.00	0.2023	0.760	0.1537	2.8
6	12:07	11.50	0.6	0.380	0.6	0.152	0.2500	1.00	0.2500	0.760	0.1900	3.5
7	12:08	14.00	0.6	0.300	0.6	0.120	0.1562	1.00	0.1562	0.675	0.1054	1.9
8	12:10	16.00	0.6	0.220	0.6	0.088	0.1899	1.00	0.1899	0.495	0.0940	1.7
9	12:11	18.50	0.6	0.360	0.6	0.144	0.2680	1.00	0.2680	0.900	0.2412	4.5
10	12:13	21.00	0.6	0.500	0.6	0.200	0.2845	1.00	0.2845	1.250	0.3556	6.6
11	12:14	23.50	0.6	0.500	0.6	0.200	0.2787	1.00	0.2787	1.250	0.3484	6.4
12	12:15	26.00	0.6	0.540	0.6	0.216	0.2260	1.00	0.2260	1.350	0.3051	5.6
13	12:16	28.50	0.2/0.6/0.8	0.860	0.2	0.688	0.3089	1.00	0.1967	2.150	0.4229	7.8
13	12:18	28.50	0.2/0.6/0.8	0.860	0.6	0.344	0.1809					
13	12:17	28.50	0.2/0.6/0.8	0.860	0.8	0.172	0.1161					
14	12:19	31.00	0.6	0.400	0.6	0.160	0.3353	1.00	0.3353	0.900	0.3018	5.6
15	12:21	33.00	0.6	0.680	0.6	0.272	0.3109	1.00	0.3109	1.360	0.4228	7.8
16	12:22	35.00	0.6	0.540	0.6	0.216	0.2565	1.00	0.2565	1.080	0.2770	5.1
17	12:23	37.00	0.6	0.280	0.6	0.112	0.1345	1.00	0.1345	0.560	0.0753	1.4
18	12:25	39.00	0.6	0.200	0.6	0.080	0.0666	1.00	0.0666	0.400	0.0266	0.5
19	12:28	41.00	0.6	0.320	0.6	0.128	0.1148	1.00	0.1148	0.480	0.0551	1.0
20	12:29	42.00	0.6	0.260	0.6	0.104	0.2589	1.00	0.2589	0.325	0.0841	1.6
21	12:32	43.50	0.6	0.380	0.6	0.152	0.0941	1.00	0.0941	0.665	0.0626	1.2
22	12:33	45.50	0.6	0.680	0.6	0.272	0.0677	1.00	0.0677	1.360	0.0921	1.7
23	12:35	47.50	0.6	0.380	0.6	0.152	0.2834	1.00	0.2834	0.760	0.2154	4.0
24	12:38	49.50	0.6	0.380	0.6	0.152	0.0884	1.00	0.0884	0.760	0.0672	1.2
25	12:39	51.50	0.6	0.440	0.6	0.176	0.2602	1.00	0.2602	0.770	0.2004	3.7
26	12:41	53.00	0.6	0.500	0.6	0.200	0.2090	1.00	0.2090	0.750	0.1568	2.9
27	12:42	54.50	0.6	0.660	0.6	0.264	0.1031	1.00	0.1031	0.990	0.1021	1.9
28	12:42	56.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.18-3 Discharge Sheet – Lake I1B Outlet, 4 Aug 2014

Waterbody:	Lake I1B				**Date**	4-Aug-14		
Crossing ID:	Lake I1B Outlet				**Start Time**	12:09		
					End Time	12:45		
BM UTM12 Location		**Survey**						
East	553630.163	WL_Elev	426.157		**Meter Type: FlowTracker**			
North	7173341.612				**Total Discharge**		**1.931**	**(m^3/s)**
Elevation	427.091				**Crew:**	TE/KB		
Station Start LDB	**Distance from LDB (m)**	**Total Depth (m)**	**Ice Thickness (m)**	**Active Depth (m)**	**VELOCITY**			
					0.2 Depth (m/s)	**0.6/0.8 Depth (m/s)**	**Qi (m^3/s)**	
1	0.0	0.00						
2	2.0	0.22				0.325	0.143	
3	4.0	0.22				0.382	0.168	
4	6.0	0.04				0.286	0.017	
5	7.0	0.10				0.287	0.036	
6	8.5	0.16				0.173	0.041	
7	10.0	0.14				0.256	0.054	
8	11.5	0.14				0.329	0.081	
9	13.5	0.15				0.289	0.087	
10	15.5	0.09				0.185	0.033	
11	17.5	0.22				0.245	0.108	
12	19.5	0.34				0.231	0.138	
13	21.0	0.80			0.176	0.136	0.187	
14	22.5	0.66				0.131	0.130	
15	24.0	0.75				0.217	0.244	
16	25.5	0.39			0.026	0.047	0.021	
17	27.0	0.16				0.001	0.000	
18	28.5	0.24				0.096	0.035	
19	30.0	0.35				0.100	0.053	
20	31.5	0.30				0.184	0.083	
21	33.0	0.32				0.391	0.187	
22	34.5	0.16				0.273	0.087	
23	37.0	0.00						

A3.19 Lake I2 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	556310.206 m
Northing	7174641.492 m
Elevation	434.849 m (geodetic)
Datum Elevation	432.920 m (geodetic)

Table A3.19-1 2014 Hydrometric Data at Lake I3 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
1-Jun-2014 11:30	433.394	1.584
3-Jun-2014 13:30	433.429	--
23-Jun-2014 10:15	433.496	4.924
2-Aug-2014 12:20	433.420	1.991

Table A3.19-2 Discharge Sheet – Lake I2 Outlet, 1 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	I2_June1.WAD
Start Date and Time	2014/06/01 11:40:41

Site Details	
Site Name	
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	13.5%
Velocity	2.2%	9.5%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	1.6%	-
Overall	**3.5%**	**16.6%**

Summary			
Averaging Int.	15	# Stations	32
Start Edge	LEW	Total Width	43.000
Mean SNR	13.3 dB	Total Area	5.917
Mean Temp	1.90 °C	Mean Depth	0.138
Disch. Equation	Mid-Section	Mean Velocity	0.2677
		Total Discharge	**1.5841**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:40	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	11:40	0.50	0.6	0.140	0.6	0.056	0.1879	1.00	0.1879	0.056	0.0105	0.7
2	11:42	0.80	0.6	0.240	0.6	0.096	0.0942	1.00	0.0942	0.072	0.0068	0.4
3	11:43	1.10	0.6	0.180	0.6	0.072	0.0917	1.00	0.0917	0.099	0.0091	0.6
4	*11:46*	*1.90*	*0.6*	*0.120*	*0.6*	*0.048*	*0.1620*	*1.00*	*0.1620*	*0.090*	*0.0146*	*0.9*
5	11:47	2.60	0.6	0.200	0.6	0.080	0.0864	1.00	0.0864	0.170	0.0147	0.9
6	11:49	3.60	0.6	0.150	0.6	0.060	0.4155	1.00	0.4155	0.218	0.0904	5.7
7	11:51	5.50	0.6	0.200	0.6	0.080	0.2900	1.00	0.2900	0.380	0.1102	7.0
8	*11:52*	*7.40*	*0.6*	*0.150*	*0.6*	*0.060*	*0.0896*	*1.00*	*0.0896*	*0.285*	*0.0255*	*1.6*
9	11:54	9.30	0.6	0.100	0.6	0.040	0.0710	1.00	0.0710	0.190	0.0135	0.9
10	11:55	11.20	0.6	0.100	0.6	0.040	0.1693	1.00	0.1693	0.190	0.0322	2.0
11	11:56	13.10	0.6	0.280	0.6	0.112	0.2508	1.00	0.2508	0.546	0.1369	8.6
12	11:57	15.10	0.6	0.100	0.6	0.040	0.2628	1.00	0.2628	0.200	0.0526	3.3
13	11:58	17.10	0.6	0.180	0.6	0.072	0.1843	1.00	0.1843	0.360	0.0663	4.2
14	12:00	19.10	0.6	0.180	0.6	0.072	0.1360	1.00	0.1360	0.315	0.0428	2.7
15	*12:03*	*20.60*	*0.6*	*0.100*	*0.6*	*0.040*	*0.5042*	*1.00*	*0.5042*	*0.125*	*0.0630*	*4.0*
16	12:04	21.60	0.6	0.160	0.6	0.064	0.6406	1.00	0.6406	0.240	0.1537	9.7
17	12:06	23.60	0.6	0.220	0.6	0.088	0.4392	1.00	0.4392	0.330	0.1449	9.1
18	*12:08*	*24.60*	*0.6*	*0.020*	*0.6*	*0.008*	*0.1624*	*1.00*	*0.1624*	*0.025*	*0.0041*	*0.3*
19	*12:10*	*26.10*	*0.6*	*0.020*	*0.6*	*0.008*	*0.3859*	*1.00*	*0.3859*	*0.030*	*0.0116*	*0.7*
20	12:14	27.60	0.6	0.240	0.6	0.096	0.2457	1.00	0.2457	0.360	0.0885	5.6
21	*12:15*	*29.10*	*0.6*	*0.280*	*0.6*	*0.112*	*0.3588*	*1.00*	*0.3588*	*0.476*	*0.1708*	*10.8*
22	12:17	31.00	0.6	0.000	0.6	0.000	0.3668	1.00	0.0000	0.000	0.0000	0.0
23	*12:18*	*32.50*	*0.6*	*0.280*	*0.6*	*0.112*	*0.3930*	*1.00*	*0.3930*	*0.420*	*0.1651*	*10.4*
24	*12:19*	*34.00*	*0.6*	*0.000*	*0.6*	*0.000*	*0.3398*	*1.00*	*0.0000*	*0.000*	*0.0000*	*0.0*
25	12:22	36.50	0.6	0.100	0.6	0.040	0.0477	1.00	0.0477	0.200	0.0095	0.6
26	12:24	38.00	0.6	0.020	0.6	0.008	0.1670	1.00	0.1670	0.020	0.0033	0.2
27	12:27	38.50	0.6	0.100	0.6	0.040	0.4187	1.00	0.4187	0.075	0.0314	2.0
28	12:28	39.50	0.6	0.100	0.6	0.040	0.1227	1.00	0.1227	0.125	0.0153	1.0
29	12:30	41.00	0.6	0.160	0.6	0.064	0.2475	1.00	0.2475	0.200	0.0495	3.1
30	12:31	42.00	0.6	0.120	0.6	0.048	0.3937	1.00	0.3937	0.120	0.0472	3.0
31	12:31	43.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.19-3 Discharge Sheet – Lake I2 Outlet, 23 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	I2JUN23.WAD
Start Date and Time	2014/06/23 11:17:41

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	4.9%
Velocity	0.8%	5.6%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	1.7%	-
Overall	**2.6%**	**7.5%**

Summary

Averaging Int.	20	# Stations	30
Start Edge	LEW	Total Width	52.000
Mean SNR	12.8 dB	Total Area	13.805
Mean Temp	9.40 °C	Mean Depth	0.265
Disch. Equation	Mid-Section	Mean Velocity	0.3567
		Total Discharge	**4.9243**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:17	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	11:18	1.00	0.6	0.200	0.6	0.080	0.2342	1.00	0.2342	0.200	0.0468	1.0
2	11:21	2.00	0.6	0.220	0.6	0.088	0.3506	1.00	0.3506	0.330	0.1157	2.3
3	11:22	4.00	0.6	0.260	0.6	0.104	0.3137	1.00	0.3137	0.390	0.1223	2.5
4	11:23	5.00	0.6	0.160	0.6	0.064	0.1751	1.00	0.1751	0.240	0.0420	0.9
5	11:25	7.00	0.6	0.230	0.6	0.092	0.3261	1.00	0.3261	0.460	0.1500	3.0
6	11:28	9.00	0.6	0.190	0.6	0.076	0.1957	1.00	0.1957	0.380	0.0744	1.5
7	11:29	11.00	0.6	0.270	0.6	0.108	0.3175	1.00	0.3175	0.405	0.1286	2.6
8	11:30	12.00	0.6	0.270	0.6	0.108	0.3106	1.00	0.3106	0.270	0.0839	1.7
9	11:32	13.00	0.6	0.270	0.6	0.108	0.4558	1.00	0.4558	0.270	0.1231	2.5
10	11:33	14.00	0.6	0.300	0.6	0.120	0.3669	1.00	0.3669	0.450	0.1651	3.4
11	11:35	16.00	0.6	0.250	0.6	0.100	0.3852	1.00	0.3852	0.500	0.1926	3.9
12	11:37	18.00	0.6	0.250	0.6	0.100	0.3883	1.00	0.3883	0.500	0.1942	3.9
13	11:38	20.00	0.6	0.220	0.6	0.088	0.3737	1.00	0.3737	0.440	0.1644	3.3
14	11:40	22.00	0.6	0.320	0.6	0.128	0.4010	1.00	0.4010	0.640	0.2566	5.2
15	11:42	24.00	0.6	0.300	0.6	0.120	0.2794	1.00	0.2794	0.600	0.1676	3.4
16	11:43	26.00	0.6	0.380	0.6	0.152	0.4644	1.00	0.4644	0.760	0.3529	7.2
17	11:45	28.00	0.6	0.300	0.6	0.120	0.4852	1.00	0.4852	0.600	0.2911	5.9
18	11:46	30.00	0.6	0.240	0.6	0.096	0.5087	1.00	0.5087	0.480	0.2442	5.0
19	11:47	32.00	0.6	0.380	0.6	0.152	0.3907	1.00	0.3907	0.760	0.2969	6.0
20	11:48	34.00	0.6	0.260	0.6	0.104	0.3930	1.00	0.3930	0.520	0.2044	4.2
21	11:49	36.00	0.6	0.260	0.6	0.104	0.4357	1.00	0.4357	0.520	0.2266	4.6
22	11:51	38.00	0.6	0.400	0.6	0.160	0.3890	1.00	0.3890	0.800	0.3112	6.3
23	11:52	40.00	0.6	0.180	0.6	0.072	0.4108	1.00	0.4108	0.360	0.1479	3.0
24	11:53	42.00	0.6	0.240	0.6	0.096	0.3119	1.00	0.3119	0.480	0.1497	3.0
25	11:54	44.00	0.6	0.240	0.6	0.096	0.5802	1.00	0.5802	0.480	0.2785	5.7
26	11:55	46.00	0.6	0.240	0.6	0.096	0.1292	1.00	0.1292	0.480	0.0620	1.3
27	11:57	48.00	0.6	0.420	0.6	0.168	0.2173	1.00	0.2173	1.050	0.2282	4.6
28	11:58	51.00	0.6	0.220	0.6	0.088	0.2350	1.00	0.2350	0.440	0.1034	2.1
29	11:58	52.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.19-4 Discharge Sheet – Lake I2 Outlet, 2 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	I2AUG2.WAD
Start Date and Time	2014/08/02 12:40:55

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	10.5%
Velocity	1.3%	11.4%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	1.8%	-
Overall	**3.1%**	**15.5%**

Summary			
Averaging Int.	20	# Stations	29
Start Edge	LEW	Total Width	41.000
Mean SNR	13.8 dB	Total Area	5.575
Mean Temp	13.95 °C	Mean Depth	0.136
Disch. Equation	Mid-Section	Mean Velocity	0.3571
		Total Discharge	**1.9908**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:40	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*12:40*	*0.50*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0012*	*1.00*	*0.0012*	*0.060*	*0.0001*	*0.0*
2	12:44	1.50	0.6	0.110	0.6	0.044	0.1329	1.00	0.1329	0.110	0.0146	0.7
3	*12:45*	*2.50*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0913*	*1.00*	*0.0913*	*0.080*	*0.0073*	*0.4*
4	12:47	3.50	0.6	0.080	0.6	0.032	0.2107	1.00	0.2107	0.080	0.0169	0.8
5	*12:49*	*4.50*	*0.6*	*0.040*	*0.6*	*0.016*	*0.1050*	*1.00*	*0.1050*	*0.040*	*0.0042*	*0.2*
6	12:51	5.50	0.6	0.280	0.6	0.112	0.4719	1.00	0.4719	0.280	0.1321	6.6
7	12:52	6.50	0.6	0.120	0.6	0.048	0.4618	1.00	0.4618	0.120	0.0554	2.8
8	*12:53*	*7.50*	*0.6*	*0.140*	*0.6*	*0.056*	*0.0049*	*1.00*	*0.0049*	*0.140*	*0.0007*	*0.0*
9	12:54	8.50	0.6	0.180	0.6	0.072	0.4005	1.00	0.4005	0.180	0.0721	3.6
10	12:56	9.50	0.6	0.240	0.6	0.096	0.2201	1.00	0.2201	0.300	0.0660	3.3
11	*12:58*	*11.00*	*0.6*	*0.100*	*0.6*	*0.040*	*0.4862*	*1.00*	*0.4862*	*0.150*	*0.0729*	*3.7*
12	12:59	12.50	0.6	0.100	0.6	0.040	0.2506	1.00	0.2506	0.150	0.0376	1.9
13	13:00	14.00	0.6	0.200	0.6	0.080	0.6945	1.00	0.6945	0.300	0.2084	10.5
14	13:01	15.50	0.6	0.240	0.6	0.096	0.5811	1.00	0.5811	0.420	0.2441	12.3
15	*13:02*	*17.50*	*0.6*	*0.100*	*0.6*	*0.040*	*0.3347*	*1.00*	*0.3347*	*0.200*	*0.0669*	*3.4*
16	13:04	19.50	0.6	0.100	0.6	0.040	0.5988	1.00	0.5988	0.225	0.1347	6.8
17	13:05	22.00	0.6	0.180	0.6	0.072	0.3171	1.00	0.3171	0.405	0.1284	6.5
18	13:07	24.00	0.6	0.160	0.6	0.064	0.4823	1.00	0.4823	0.320	0.1543	7.8
19	13:08	26.00	0.6	0.060	0.6	0.024	0.2538	1.00	0.2538	0.120	0.0305	1.5
20	13:10	28.00	0.6	0.240	0.6	0.096	0.4798	1.00	0.4798	0.480	0.2303	11.6
21	13:11	30.00	0.6	0.150	0.6	0.060	0.1987	1.00	0.1987	0.300	0.0596	3.0
22	13:13	32.00	0.6	0.080	0.6	0.032	0.2336	1.00	0.2336	0.160	0.0374	1.9
23	*13:14*	*34.00*	*0.6*	*0.100*	*0.6*	*0.040*	*0.2046*	*1.00*	*0.2046*	*0.200*	*0.0409*	*2.1*
24	13:16	36.00	0.6	0.220	0.6	0.088	0.2284	1.00	0.2284	0.385	0.0879	4.4
25	13:17	37.50	0.6	0.080	0.6	0.032	0.4564	1.00	0.4564	0.120	0.0548	2.8
26	13:18	39.00	0.6	0.100	0.6	0.040	0.0923	1.00	0.0923	0.150	0.0138	0.7
27	*13:19*	*40.50*	*0.6*	*0.100*	*0.6*	*0.040*	*0.1886*	*1.00*	*0.1886*	*0.100*	*0.0189*	*0.9*
28	13:19	41.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.20 Sterlet Lake (Lake I3) Outlet

Benchmark Coordinates	UTM Zone 12
Easting	566086 m (approximated)[a]
Northing	7176673 m (approximated)[a]
Elevation	441.511 m (geodetic, approximated)[b]
Datum Elevation	439.453 m (geodetic, approximated)[b]

a) UTMs are approximated using a hand-held GPS unit or a GPS with RTK satellite navigation system not referenced to Aurora base stations; therefore, precision to the nearest metre is reported.

b) Geodetic elevations estimated from adjusting non-geodetic August 2013 manually surveyed water levels to water surface elevations derived from LiDAR data dated 23 July to 1 August, 2013. At sites with geodetic elevations referenced to Aurora base stations (Aurora 2013), LiDAR water surface elevations were within 0.20 m agreement with geodetic water surface elevations originally taken in August 2013.

Table A3.20-1 2014 Hydrometric Data at Sterlet Lake (Lake I3) Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
1-Jun-2014 15:40	440.690	1.301
6-Jun-2014 14:30	440.720	--
23-Jun-2014 13:15	440.674	1.938
2-Aug-2014 10:20	440.565	0.736

Table A3.20-2 Discharge Sheet – Sterlet Lake (Lake I3) Outlet, 1 Jun 2014

Discharge Measurement Summary

Date Generated: Tue Jan 20 2015

File Information	
File Name	I3_June1.WAD
Start Date and Time	2014/06/01 15:14:38

Site Details	
Site Name	
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	8.7%
Velocity	2.5%	13.8%
Width	0.1%	0.1%
Method	2.1%	-
# Stations	2.0%	-
Overall	**3.9%**	**16.4%**

Summary			
Averaging Int.	15	# Stations	26
Start Edge	LEW	Total Width	52.300
Mean SNR	17.7 dB	Total Area	6.320
Mean Temp	2.82 °C	Mean Depth	0.121
Disch. Equation	Mid-Section	Mean Velocity	0.2058
		Total Discharge	**1.3006**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:14	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	15:15	1.50	0.6	0.080	0.6	0.032	0.0427	1.00	0.0427	0.160	0.0068	0.5
2	15:16	4.00	0.6	0.160	0.6	0.064	0.1468	1.00	0.1468	0.520	0.0763	5.9
3	15:17	8.00	0.6	0.080	0.6	0.032	0.3087	1.00	0.3087	0.320	0.0988	7.6
4	15:18	12.00	0.6	0.100	0.6	0.040	0.1503	1.00	0.1503	0.280	0.0421	3.2
5	15:20	13.60	0.6	0.100	0.6	0.040	0.3367	1.00	0.3367	0.150	0.0505	3.9
6	15:22	15.00	0.6	0.080	0.6	0.032	0.4873	1.00	0.4873	0.156	0.0760	5.8
7	*15:24*	*17.50*	*0.6*	*0.100*	*0.6*	*0.040*	*0.1730*	*1.00*	*0.1730*	*0.185*	*0.0320*	*2.5*
8	*15:25*	*18.70*	*0.6*	*0.060*	*0.6*	*0.024*	*0.0190*	*1.00*	*0.0190*	*0.096*	*0.0018*	*0.1*
9	15:27	20.70	0.6	0.060	0.6	0.024	0.0204	1.00	0.0204	0.120	0.0024	0.2
10	*15:29*	*22.70*	*0.6*	*0.200*	*0.6*	*0.080*	*0.1005*	*1.00*	*0.1005*	*0.400*	*0.0402*	*3.1*
11	15:30	24.70	0.6	0.180	0.6	0.072	0.3063	1.00	0.3063	0.360	0.1103	8.5
12	*15:31*	*26.70*	*0.6*	*0.260*	*0.6*	*0.104*	*0.3207*	*1.00*	*0.3207*	*0.520*	*0.1668*	*12.8*
13	15:32	28.70	0.6	0.280	0.6	0.112	0.3327	1.00	0.3327	0.560	0.1863	14.3
14	*15:34*	*30.70*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0729*	*1.00*	*0.0729*	*0.160*	*0.0117*	*0.9*
15	15:35	32.70	0.6	0.180	0.6	0.072	0.1254	1.00	0.1254	0.360	0.0451	3.5
16	15:38	34.70	0.6	0.180	0.6	0.072	0.3833	1.00	0.3833	0.324	0.1242	9.5
17	*15:39*	*36.30*	*0.6*	*0.180*	*0.6*	*0.072*	*0.0692*	*1.00*	*0.0692*	*0.369*	*0.0255*	*2.0*
18	*15:40*	*38.80*	*0.6*	*0.100*	*0.6*	*0.040*	*0.1684*	*1.00*	*0.1684*	*0.215*	*0.0362*	*2.8*
19	15:41	40.60	0.6	0.100	0.6	0.040	0.0175	1.00	0.0175	0.165	0.0029	0.2
20	15:43	42.10	0.6	0.160	0.6	0.064	0.2748	1.00	0.2748	0.296	0.0813	6.3
21	15:44	44.30	0.6	0.100	0.6	0.040	0.0553	1.00	0.0553	0.220	0.0122	0.9
22	15:45	46.50	0.6	0.060	0.6	0.024	0.2589	1.00	0.2589	0.150	0.0388	3.0
23	15:46	49.30	0.6	0.060	0.6	0.024	0.1744	1.00	0.1744	0.144	0.0251	1.9
24	15:47	51.30	0.6	0.060	0.6	0.024	0.0791	1.00	0.0791	0.090	0.0071	0.5
25	15:47	52.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.20-3 Discharge Sheet – Sterlet Lake (Lake I3) Outlet, 23 June 2014

Discharge Measurement Summary

Date Generated: Mon Jul 14 2014

File Information

File Name	I3JUN23.WAD
Start Date and Time	2014/06/23 13:08:48

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	5.0%
Velocity	1.3%	9.4%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	1.5%	-
Overall	**2.7%**	**10.7%**

Summary

Averaging Int.	20	# Stations	34
Start Edge	LEW	Total Width	53.250
Mean SNR	11.7 dB	Total Area	7.129
Mean Temp	8.01 °C	Mean Depth	0.134
Disch. Equation	Mid-Section	Mean Velocity	0.2718
		Total Discharge	**1.9377**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	ConFact	MeanV	Area	Flow	%Q
0	13:08	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	13:09	1.00	0.6	0.140	0.6	0.056	0.2142	1.00	0.2142	0.140	0.0300	1.5
2	13:10	2.00	0.6	0.110	0.6	0.044	0.3632	1.00	0.3632	0.165	0.0599	3.1
3	13:11	4.00	0.6	0.110	0.6	0.044	0.2638	1.00	0.2638	0.220	0.0580	3.0
4	13:11	6.00	0.6	0.110	0.6	0.044	0.3557	1.00	0.3557	0.165	0.0587	3.0
5	13:14	7.00	0.6	0.080	0.6	0.032	0.1888	1.00	0.1888	0.120	0.0227	1.2
6	13:15	9.00	0.6	0.120	0.6	0.048	0.1965	1.00	0.1965	0.240	0.0472	2.4
7	13:18	11.00	0.6	0.200	0.6	0.080	0.2074	1.00	0.2074	0.400	0.0830	4.3
8	13:19	13.00	0.6	0.260	0.6	0.104	0.1638	1.00	0.1638	0.520	0.0852	4.4
9	13:20	15.00	0.6	0.180	0.6	0.072	0.3385	1.00	0.3385	0.360	0.1219	6.3
10	13:21	17.00	0.6	0.160	0.6	0.064	0.6598	1.00	0.6598	0.320	0.2111	10.9
11	13:22	19.00	0.6	0.160	0.6	0.064	0.1807	1.00	0.1807	0.320	0.0578	3.0
12	13:23	21.00	0.6	0.160	0.6	0.064	0.3019	1.00	0.3019	0.320	0.0966	5.0
13	13:24	23.00	0.6	0.260	0.6	0.104	0.2495	1.00	0.2495	0.520	0.1297	6.7
14	13:26	25.00	0.6	0.090	0.6	0.036	0.2203	1.00	0.2203	0.180	0.0397	2.0
15	13:27	27.00	0.6	0.090	0.6	0.036	0.3295	1.00	0.3295	0.180	0.0593	3.1
16	13:28	29.00	0.6	0.120	0.6	0.048	0.1602	1.00	0.1602	0.240	0.0384	2.0
17	13:29	31.00	0.6	0.200	0.6	0.080	0.2175	1.00	0.2175	0.350	0.0761	3.9
18	13:30	32.50	0.6	0.140	0.6	0.056	0.3124	1.00	0.3124	0.245	0.0765	3.9
19	13:33	34.50	0.6	0.060	0.6	0.024	0.4024	1.00	0.4024	0.090	0.0362	1.9
20	13:35	35.50	0.6	0.090	0.6	0.036	0.4762	1.00	0.4762	0.079	0.0375	1.9
21	13:38	36.25	0.6	0.120	0.6	0.048	0.2971	1.00	0.2971	0.135	0.0401	2.1
22	13:40	37.75	0.6	0.180	0.6	0.072	0.0962	1.00	0.0962	0.225	0.0216	1.1
23	*13:44*	*38.75*	*0.6*	*0.140*	*0.6*	*0.056*	*0.3235*	*1.00*	*0.3235*	*0.140*	*0.0453*	*2.3*
24	*13:47*	*39.75*	*0.6*	*0.180*	*0.6*	*0.072*	*0.2920*	*1.00*	*0.2920*	*0.180*	*0.0526*	*2.7*
25	13:49	40.75	0.6	0.120	0.6	0.048	0.6750	1.00	0.6750	0.120	0.0810	4.2
26	13:50	41.75	0.6	0.130	0.6	0.052	0.2770	1.00	0.2770	0.195	0.0540	2.8
27	13:51	43.75	0.6	0.140	0.6	0.056	0.2801	1.00	0.2801	0.245	0.0686	3.5
28	13:53	45.25	0.6	0.100	0.6	0.040	0.2579	1.00	0.2579	0.175	0.0451	2.3
29	13:54	47.25	0.6	0.100	0.6	0.040	0.2298	1.00	0.2298	0.200	0.0460	2.4
30	13:56	49.25	0.6	0.110	0.6	0.044	0.2431	1.00	0.2431	0.165	0.0401	2.1
31	13:57	50.25	0.6	0.070	0.6	0.028	0.1031	1.00	0.1031	0.070	0.0072	0.4
32	*13:58*	*51.25*	*0.6*	*0.070*	*0.6*	*0.028*	*0.0998*	*1.00*	*0.0998*	*0.105*	*0.0105*	*0.5*
33	13:58	53.25	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.20-4 Discharge Sheet – Sterlet Lake (Lake I3) Outlet, 2 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	I3AUG2.WAD
Start Date and Time	2014/08/02 10:52:37

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	8.2%
Velocity	1.5%	10.7%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	1.7%	-
Overall	**3.0%**	**13.5%**

Summary			
Averaging Int.	20	# Stations	30
Start Edge	LEW	Total Width	43.500
Mean SNR	10.0 dB	Total Area	6.475
Mean Temp	12.61 °C	Mean Depth	0.149
Disch. Equation	Mid-Section	Mean Velocity	0.1137
		Total Discharge	**0.7362**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:52	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	10:53	3.00	0.6	0.200	0.6	0.080	0.0497	1.00	0.0497	0.500	0.0249	3.4
2	*10:55*	*5.00*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0629*	*1.00*	*0.0629*	*0.120*	*0.0075*	*1.0*
3	10:57	6.00	0.6	0.180	0.6	0.072	0.0417	1.00	0.0417	0.180	0.0075	1.0
4	*10:59*	*7.00*	*0.6*	*0.150*	*0.6*	*0.060*	*0.0400*	*1.00*	*0.0400*	*0.150*	*0.0060*	*0.8*
5	11:00	8.00	0.6	0.180	0.6	0.072	0.0839	1.00	0.0839	0.180	0.0151	2.1
6	11:01	9.00	0.6	0.160	0.6	0.064	0.1558	1.00	0.1558	0.160	0.0249	3.4
7	*11:02*	*10.00*	*0.6*	*0.170*	*0.6*	*0.068*	*0.0932*	*1.00*	*0.0932*	*0.170*	*0.0158*	*2.2*
8	11:03	11.00	0.6	0.180	0.6	0.072	0.1611	1.00	0.1611	0.180	0.0290	3.9
9	*11:04*	*12.00*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0343*	*1.00*	*0.0343*	*0.080*	*0.0027*	*0.4*
10	*11:05*	*13.00*	*0.6*	*0.200*	*0.6*	*0.080*	*0.0798*	*1.00*	*0.0798*	*0.200*	*0.0160*	*2.2*
11	11:06	14.00	0.6	0.370	0.6	0.148	0.0779	1.00	0.0779	0.370	0.0288	3.9
12	11:07	15.00	0.6	0.300	0.6	0.120	0.1641	1.00	0.1641	0.450	0.0738	10.0
13	*11:09*	*17.00*	*0.6*	*0.250*	*0.6*	*0.100*	*0.1743*	*1.00*	*0.1743*	*0.375*	*0.0654*	*8.9*
14	11:10	18.00	0.6	0.180	0.6	0.072	0.1526	1.00	0.1526	0.180	0.0275	3.7
15	11:11	19.00	0.6	0.200	0.6	0.080	0.1237	1.00	0.1237	0.200	0.0247	3.4
16	11:12	20.00	0.6	0.190	0.6	0.076	0.0939	1.00	0.0939	0.190	0.0178	2.4
17	11:12	21.00	0.6	0.100	0.6	0.040	0.2130	1.00	0.2130	0.100	0.0213	2.9
18	11:14	22.00	0.6	0.180	0.6	0.072	0.1665	1.00	0.1665	0.180	0.0300	4.1
19	11:21	23.00	0.6	0.220	0.6	0.088	0.1154	1.00	0.1154	0.220	0.0254	3.4
20	*11:22*	*24.00*	*0.6*	*0.180*	*0.6*	*0.072*	*0.1375*	*1.00*	*0.1375*	*0.180*	*0.0248*	*3.4*
21	*11:23*	*25.00*	*0.6*	*0.300*	*0.6*	*0.120*	*0.0401*	*1.00*	*0.0401*	*0.300*	*0.0120*	*1.6*
22	11:24	26.00	0.6	0.110	0.6	0.044	0.1880	1.00	0.1880	0.165	0.0310	4.2
23	11:26	28.00	0.6	0.170	0.6	0.068	0.0470	1.00	0.0470	0.340	0.0160	2.2
24	11:27	30.00	0.6	0.150	0.6	0.060	0.2314	1.00	0.2314	0.300	0.0694	9.4
25	11:28	32.00	0.6	0.080	0.6	0.032	0.1696	1.00	0.1696	0.160	0.0271	3.7
26	*11:30*	*34.00*	*0.6*	*0.080*	*0.6*	*0.032*	*0.2140*	*1.00*	*0.2140*	*0.160*	*0.0342*	*4.7*
27	11:32	36.00	0.6	0.140	0.6	0.056	0.1500	1.00	0.1500	0.385	0.0578	7.8
28	*11:33*	*39.50*	*0.6*	*0.080*	*0.6*	*0.032*	*-0.0012*	*1.00*	*-0.0012*	*0.300*	*-0.0004*	*0.0*
29	11:33	43.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.21 Lake J76 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	566196.686 m
Northing	7168285.354 m
Elevation	419.218 m (geodetic)
Datum Elevation	417.826 m (geodetic)

Table A3.21-1 2014 Hydrometric Data at Lake J76 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
3-Jun-2014 12:40	418.722	--
7-Jun-2014 08:40	418.715	1.287
28-Jun-2014 10:40	418.556	0.444
4-Aug-2014 14:40	418.304	0.158
24-Sep-2014 13:50	418.191	0.036

Table A3.21-2 Discharge Sheet – Lake J76 Outlet, 7 June 2014

Discharge Measurement Summary

Date Generated: Tue Jan 20 2015

File Information	
File Name	J76_June7.WAD
Start Date and Time	2014/06/07 08:30:07

Site Details	
Site Name	J76 OUTLET
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	4.0%
Velocity	1.6%	14.2%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	1.6%	-
Overall	**2.9%**	**14.8%**

Summary			
Averaging Int.	15	# Stations	33
Start Edge	REW	Total Width	43.900
Mean SNR	20.8 dB	Total Area	15.068
Mean Temp	1.96 °C	Mean Depth	0.343
Disch. Equation	Mid-Section	Mean Velocity	0.0854
		Total Discharge	**1.2873**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:30	1.20	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	08:30	1.70	0.6	0.050	0.6	0.020	0.0274	1.00	0.0274	0.135	0.0037	0.3
2	*08:32*	*6.60*	*0.6*	*0.100*	*0.6*	*0.040*	*0.0114*	*1.00*	*0.0114*	*0.490*	*0.0056*	*0.4*
3	08:33	11.50	0.6	0.500	0.6	0.200	0.0487	0.50	0.0243	1.925	0.0469	3.6
4	08:35	14.30	0.6	0.360	0.6	0.144	0.0721	0.70	0.0505	1.008	0.0509	4.0
5	*08:36*	*17.10*	*0.6*	*0.540*	*0.6*	*0.216*	*0.0910*	*0.70*	*0.0637*	*1.080*	*0.0688*	*5.3*
6	*08:38*	*18.30*	*0.6*	*0.340*	*0.6*	*0.136*	*0.0210*	*0.70*	*0.0147*	*0.527*	*0.0077*	*0.6*
7	08:40	20.20	0.6	0.460	0.6	0.184	0.2723	0.80	0.2178	0.529	0.1152	9.0
8	08:41	20.60	0.2/0.8	0.720	0.2	0.576	0.3092	1.00	0.3052	0.324	0.0989	7.7
8	08:41	20.60	0.2/0.8	0.720	0.8	0.144	0.3012					
9	08:43	21.10	0.8/0.2	0.700	0.2	0.560	0.1582	1.00	0.1269	0.350	0.0444	3.5
9	08:42	21.10	0.8/0.2	0.700	0.8	0.140	0.0956					
10	08:44	21.60	0.6	0.640	0.6	0.256	0.2394	1.00	0.2394	0.320	0.0766	6.0
11	*08:45*	*22.10*	*0.6*	*0.640*	*0.6*	*0.256*	*0.2870*	*1.00*	*0.2870*	*0.320*	*0.0918*	*7.1*
12	*08:46*	*22.60*	*0.6*	*0.660*	*0.6*	*0.264*	*0.2166*	*1.00*	*0.2166*	*0.330*	*0.0715*	*5.6*
13	*08:46*	*23.10*	*0.6*	*0.660*	*0.6*	*0.264*	*0.1153*	*1.00*	*0.1153*	*0.330*	*0.0380*	*3.0*
14	08:47	23.60	0.6	0.620	0.6	0.248	0.1088	1.00	0.1088	0.310	0.0337	2.6
15	08:48	24.10	0.6	0.580	0.6	0.232	0.1828	1.00	0.1828	0.290	0.0530	4.1
16	08:49	24.60	0.6	0.560	0.6	0.224	0.1348	1.00	0.1348	0.280	0.0377	2.9
17	*08:50*	*25.10*	*0.6*	*0.400*	*0.6*	*0.160*	*0.2228*	*1.00*	*0.2228*	*0.200*	*0.0446*	*3.5*
18	08:51	25.60	0.6	0.480	0.6	0.192	0.1700	1.00	0.1700	0.240	0.0408	3.2
19	08:53	26.10	0.6	0.460	0.6	0.184	0.2094	1.00	0.2094	0.230	0.0482	3.7
20	08:54	26.60	0.6	0.580	0.6	0.232	0.0362	1.00	0.0362	0.290	0.0105	0.8
21	08:55	27.10	0.6	0.380	0.6	0.152	0.0983	1.00	0.0983	0.190	0.0187	1.5
22	08:57	27.60	0.6	0.460	0.6	0.184	0.0620	1.00	0.0620	0.230	0.0143	1.1
23	08:59	28.10	0.6	0.340	0.6	0.136	0.0592	1.00	0.0592	0.170	0.0101	0.8
24	09:00	28.60	0.6	0.300	0.6	0.120	0.0628	1.00	0.0628	0.150	0.0094	0.7
25	09:01	29.10	0.6	0.300	0.6	0.120	0.0496	1.00	0.0496	0.150	0.0074	0.6
26	*09:01*	*29.60*	*0.6*	*0.300*	*0.6*	*0.120*	*0.0232*	*1.00*	*0.0232*	*0.225*	*0.0052*	*0.4*
27	09:03	30.60	0.6	0.420	0.6	0.168	0.1173	0.75	0.0880	0.420	0.0369	2.9
28	*09:04*	*31.60*	*0.6*	*0.420*	*0.6*	*0.168*	*0.1135*	*1.00*	*0.1135*	*0.420*	*0.0477*	*3.7*
29	09:05	32.60	0.6	0.360	0.6	0.144	0.1241	1.00	0.1241	0.630	0.0782	6.1
30	09:07	35.10	0.6	0.340	0.6	0.136	0.0585	0.75	0.0439	1.275	0.0559	4.3
31	*09:10*	*40.10*	*0.6*	*0.340*	*0.6*	*0.136*	*0.0219*	*0.40*	*0.0088*	*1.700*	*0.0149*	*1.2*
32	09:10	45.10	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.21-3 Discharge Sheet – Lake J76 Outlet, 28 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	J76JUN28.WAD
Start Date and Time	2014/06/28 10:39:06

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	3.4%
Velocity	0.9%	3.3%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	2.0%	-
Overall	**2.9%**	**4.9%**

Summary

Averaging Int.	20	# Stations	26
Start Edge	LEW	Total Width	4.900
Mean SNR	16.3 dB	Total Area	2.360
Mean Temp	15.60 °C	Mean Depth	0.482
Disch. Equation	Mid-Section	Mean Velocity	0.1880
		Total Discharge	**0.4437**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:39	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	10:39	0.20	0.6	0.620	0.6	0.248	0.0227	1.00	0.0227	0.124	0.0028	0.6
2	10:39	0.40	0.6	0.640	0.6	0.256	0.0867	1.00	0.0867	0.128	0.0111	2.5
3	10:40	0.60	0.6	0.560	0.6	0.224	0.1426	1.00	0.1426	0.112	0.0160	3.6
4	10:41	0.80	0.6	0.600	0.6	0.240	0.1132	1.00	0.1132	0.120	0.0136	3.1
5	10:42	1.00	0.6	0.400	0.6	0.160	0.1287	1.00	0.1287	0.080	0.0103	2.3
6	10:43	1.20	0.6	0.360	0.6	0.144	0.1671	1.00	0.1671	0.072	0.0120	2.7
7	10:43	1.40	0.6	0.460	0.6	0.184	0.1538	1.00	0.1538	0.092	0.0141	3.2
8	10:44	1.60	0.6	0.440	0.6	0.176	0.1863	1.00	0.1863	0.088	0.0164	3.7
9	10:46	1.80	0.6	0.410	0.6	0.164	0.2199	1.00	0.2199	0.082	0.0180	4.1
10	10:47	2.00	0.6	0.420	0.6	0.168	0.2763	1.00	0.2763	0.084	0.0232	5.2
11	10:49	2.20	0.6	0.440	0.6	0.176	0.2659	1.00	0.2659	0.088	0.0234	5.3
12	10:50	2.40	0.6	0.480	0.6	0.192	0.2711	1.00	0.2711	0.096	0.0260	5.9
13	10:51	2.60	0.6	0.260	0.6	0.104	0.2818	1.00	0.2818	0.052	0.0147	3.3
14	10:52	2.80	0.6	0.250	0.6	0.100	0.2709	1.00	0.2709	0.050	0.0135	3.1
15	10:53	3.00	0.6	0.220	0.6	0.088	0.2439	1.00	0.2439	0.044	0.0107	2.4
16	10:55	3.20	0.6	0.640	0.6	0.256	0.1287	1.00	0.1287	0.128	0.0165	3.7
17	10:55	3.40	0.6	0.600	0.6	0.240	0.2612	1.00	0.2612	0.120	0.0313	7.1
18	10:56	3.60	0.6	0.550	0.6	0.220	0.2565	1.00	0.2565	0.110	0.0282	6.4
19	10:57	3.80	0.6	0.600	0.6	0.240	0.2710	1.00	0.2710	0.120	0.0325	7.3
20	10:58	4.00	0.6	0.580	0.6	0.232	0.2405	1.00	0.2405	0.116	0.0279	6.3
21	10:59	4.20	0.6	0.540	0.6	0.216	0.2358	1.00	0.2358	0.108	0.0255	5.7
22	11:00	4.40	0.6	0.660	0.6	0.264	0.1840	1.00	0.1840	0.132	0.0243	5.5
23	11:00	4.60	0.6	0.620	0.6	0.248	0.1584	1.00	0.1584	0.124	0.0196	4.4
24	11:01	4.80	0.6	0.600	0.6	0.240	0.1328	1.00	0.1328	0.090	0.0120	2.7
25	11:01	4.90	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.21-4 Discharge Sheet – Lake J76 Outlet, 4 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	J76AU4.WAD
Start Date and Time	2014/08/04 14:24:46

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	0.2%
Velocity	1.0%	2.1%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	2.5%	-
Overall	**3.4%**	**2.3%**

Summary			
Averaging Int.	20	# Stations	20
Start Edge	LEW	Total Width	3.000
Mean SNR	17.9 dB	Total Area	1.497
Mean Temp	16.55 °C	Mean Depth	0.499
Disch. Equation	Mid-Section	Mean Velocity	0.1056
		Total Discharge	**0.1581**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:24	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	14:24	0.15	0.6	0.520	0.6	0.208	0.0339	1.00	0.0339	0.078	0.0026	1.7
2	14:25	0.30	0.6	0.540	0.6	0.216	0.0502	1.00	0.0502	0.081	0.0041	2.6
3	14:26	0.45	0.6	0.540	0.6	0.216	0.0646	1.00	0.0646	0.081	0.0052	3.3
4	14:26	0.60	0.6	0.540	0.6	0.216	0.1059	1.00	0.1059	0.081	0.0086	5.4
5	14:27	0.75	0.6	0.540	0.6	0.216	0.1334	1.00	0.1334	0.081	0.0108	6.8
6	14:28	0.90	0.6	0.540	0.6	0.216	0.1260	1.00	0.1260	0.081	0.0102	6.5
7	14:28	1.05	0.6	0.540	0.6	0.216	0.1258	1.00	0.1258	0.081	0.0102	6.4
8	14:29	1.20	0.6	0.540	0.6	0.216	0.1506	1.00	0.1506	0.081	0.0122	7.7
9	14:30	1.35	0.6	0.550	0.6	0.220	0.1504	1.00	0.1504	0.083	0.0124	7.8
10	14:30	1.50	0.6	0.550	0.6	0.220	0.1582	1.00	0.1582	0.083	0.0131	8.3
11	14:31	1.65	0.6	0.540	0.6	0.216	0.1468	1.00	0.1468	0.081	0.0119	7.5
12	14:32	1.80	0.6	0.540	0.6	0.216	0.1616	1.00	0.1616	0.081	0.0131	8.3
13	14:32	1.95	0.6	0.540	0.6	0.216	0.1261	1.00	0.1261	0.081	0.0102	6.5
14	14:33	2.10	0.6	0.540	0.6	0.216	0.1050	1.00	0.1050	0.081	0.0085	5.4
15	14:34	2.25	0.6	0.530	0.6	0.212	0.0992	1.00	0.0992	0.080	0.0079	5.0
16	14:34	2.40	0.6	0.540	0.6	0.216	0.0855	1.00	0.0855	0.081	0.0069	4.4
17	14:35	2.55	0.6	0.540	0.6	0.216	0.0716	1.00	0.0716	0.081	0.0058	3.7
18	14:36	2.70	0.6	0.540	0.6	0.216	0.0361	1.00	0.0361	0.122	0.0044	2.8
19	14:36	3.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.21-5 Discharge Sheet – Lake J76 Outlet, 24 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	J76SEP24.WAD
Start Date and Time	2014/09/24 13:30:45

Site Details	
Site Name	
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	1.5%
Velocity	1.0%	4.7%
Width	0.1%	0.1%
Method	2.1%	-
# Stations	2.3%	-
Overall	**3.4%**	**5.1%**

Summary			
Averaging Int.	20	# Stations	22
Start Edge	LEW	Total Width	3.100
Mean SNR	40.1 dB	Total Area	1.126
Mean Temp	3.18 °C	Mean Depth	0.363
Disch. Equation	Mid-Section	Mean Velocity	0.0310
		Total Discharge	**0.0349**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:30	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*13:31*	*0.10*	*0.6*	*0.380*	*0.6*	*0.152*	*-0.0007*	*1.00*	*-0.0007*	*0.038*	*0.0000*	*-0.1*
2	13:31	0.20	0.6	0.380	0.6	0.152	0.0001	1.00	0.0001	0.038	0.0000	0.0
3	13:33	0.30	0.6	0.380	0.6	0.152	0.0092	1.00	0.0092	0.038	0.0003	1.0
4	13:34	0.40	0.6	0.390	0.6	0.156	0.0137	1.00	0.0137	0.049	0.0007	1.9
5	13:34	0.55	0.6	0.390	0.6	0.156	0.0239	1.00	0.0239	0.059	0.0014	4.0
6	13:35	0.70	0.6	0.390	0.6	0.156	0.0298	1.00	0.0298	0.059	0.0017	5.0
7	13:36	0.85	0.6	0.390	0.6	0.156	0.0259	1.00	0.0259	0.059	0.0015	4.3
8	13:36	1.00	0.6	0.390	0.6	0.156	0.0425	1.00	0.0425	0.059	0.0025	7.1
9	13:37	1.15	0.6	0.410	0.6	0.164	0.0454	1.00	0.0454	0.062	0.0028	8.0
10	13:38	1.30	0.6	0.430	0.6	0.172	0.0474	1.00	0.0474	0.065	0.0031	8.8
11	13:38	1.45	0.6	0.430	0.6	0.172	0.0416	1.00	0.0416	0.065	0.0027	7.7
12	13:39	1.60	0.6	0.430	0.6	0.172	0.0526	1.00	0.0526	0.065	0.0034	9.7
13	13:39	1.75	0.6	0.430	0.6	0.172	0.0486	1.00	0.0486	0.065	0.0031	9.0
14	13:40	1.90	0.6	0.430	0.6	0.172	0.0594	1.00	0.0594	0.065	0.0038	11.0
15	13:41	2.05	0.6	0.410	0.6	0.164	0.0487	1.00	0.0487	0.062	0.0030	8.6
16	13:41	2.20	0.6	0.400	0.6	0.160	0.0319	1.00	0.0319	0.060	0.0019	5.5
17	13:42	2.35	0.6	0.400	0.6	0.160	0.0360	1.00	0.0360	0.060	0.0022	6.2
18	13:43	2.50	0.6	0.410	0.6	0.164	0.0099	1.00	0.0099	0.062	0.0006	1.7
19	13:44	2.65	0.6	0.260	0.6	0.104	0.0113	1.00	0.0113	0.039	0.0004	1.3
20	13:44	2.80	0.6	0.280	0.6	0.112	-0.0045	1.00	-0.0045	0.063	-0.0003	-0.8
21	13:44	3.10	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A3.22 Lake L1 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	550488.732 m
Northing	7159043.460 m
Elevation	420.623 m (geodetic)
Datum Elevation	418.500 m (geodetic)

Table A3.22-1 2014 Hydrometric Data at Lake L1 Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
28-Apr-2014 11:10	--	Frozen to bottom
31-May-2014 12:00	419.294	2.184
7-Jun-2014 11:15	418.965	--
28-Jun-2014 09:30	418.714	0.143
5-Aug-2014 08:30	418.591	0.006

Table A3.22-2 Discharge Sheet – Lake L1 Outlet, 31 May 2014

Discharge Measurement Summary

Date Generated: Tue Jan 20 2015

File Information	
File Name	L1_May31.WAD
Start Date and Time	2014/05/31 11:33:36

Site Details	
Site Name	L1 OUTLET
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	1.7%
Velocity	0.5%	3.7%
Width	0.2%	0.2%
Method	1.0%	-
# Stations	2.6%	-
Overall	**3.0%**	**4.2%**

Summary			
Averaging Int.	15	# Stations	19
Start Edge	REW	Total Width	12.000
Mean SNR	27.8 dB	Total Area	8.640
Mean Temp	3.79 °C	Mean Depth	0.720
Disch. Equation	Mid-Section	Mean Velocity	0.2528
		Total Discharge	**2.1839**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:33	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	11:33	1.50	0.6	0.360	0.6	0.144	0.0768	1.00	0.0768	0.360	0.0276	1.3
2	11:34	2.00	0.6	0.720	0.6	0.288	0.0682	1.00	0.0682	0.360	0.0246	1.1
3	*11:35*	*2.50*	*0.6*	*0.680*	*0.6*	*0.272*	*-0.0039*	*1.00*	*-0.0039*	*0.340*	*-0.0013*	*-0.1*
4	11:36	3.00	0.6	0.680	0.6	0.272	0.0466	1.00	0.0466	0.340	0.0158	0.7
5	11:37	3.50	0.2/0.8	0.780	0.2	0.624	0.1516	1.00	0.1469	0.390	0.0573	2.6
5	11:37	3.50	0.2/0.8	0.780	0.8	0.156	0.1422					
6	11:39	4.00	0.8/0.2	0.840	0.2	0.672	0.1413	1.00	0.1012	0.420	0.0425	1.9
6	11:38	4.00	0.8/0.2	0.840	0.8	0.168	0.0611					
7	*11:39*	*4.50*	*0.2/0.6/0.8*	*1.040*	*0.2*	*0.832*	*0.1405*	*1.00*	*0.1151*	*0.520*	*0.0599*	*2.7*
7	*11:41*	*4.50*	*0.2/0.6/0.8*	*1.040*	*0.6*	*0.416*	*0.1257*					
7	*11:40*	*4.50*	*0.2/0.6/0.8*	*1.040*	*0.8*	*0.208*	*0.0685*					
8	*11:43*	*5.00*	*0.8/0.6/0.2*	*1.040*	*0.2*	*0.832*	*0.3029*	*1.00*	*0.3052*	*0.520*	*0.1587*	*7.3*
8	*11:42*	*5.00*	*0.8/0.6/0.2*	*1.040*	*0.6*	*0.416*	*0.3131*					
8	*11:41*	*5.00*	*0.8/0.6/0.2*	*1.040*	*0.8*	*0.208*	*0.2917*					
9	11:44	5.50	0.2/0.6/0.8	1.180	0.2	0.944	0.3647	1.00	0.3833	0.590	0.2262	10.4
9	11:44	5.50	0.2/0.6/0.8	1.180	0.6	0.472	0.4129					
9	11:45	5.50	0.2/0.6/0.8	1.180	0.8	0.236	0.3428					
10	11:48	6.00	0.8/0.6/0.2	1.350	0.2	1.080	0.3748	1.00	0.3821	0.675	0.2579	11.8
10	11:47	6.00	0.8/0.6/0.2	1.350	0.6	0.540	0.4048					
10	11:46	6.00	0.8/0.6/0.2	1.350	0.8	0.270	0.3440					
11	11:49	6.50	0.2/0.6/0.8	1.400	0.2	1.120	0.3799	1.00	0.3998	0.700	0.2799	12.8
11	11:49	6.50	0.2/0.6/0.8	1.400	0.6	0.560	0.4157					
11	11:50	6.50	0.2/0.6/0.8	1.400	0.8	0.280	0.3880					
12	11:51	7.00	0.8/0.6/0.2	1.400	0.2	1.120	0.3465	1.00	0.4030	0.700	0.2821	12.9
12	11:51	7.00	0.8/0.6/0.2	1.400	0.6	0.560	0.4284					
12	11:50	7.00	0.8/0.6/0.2	1.400	0.8	0.280	0.4086					
13	11:51	7.50	0.2/0.6/0.8	1.400	0.2	1.120	0.3218	1.00	0.3860	0.700	0.2702	12.4
13	11:52	7.50	0.2/0.6/0.8	1.400	0.6	0.560	0.4063					
13	11:52	7.50	0.2/0.6/0.8	1.400	0.8	0.280	0.4095					
14	11:54	8.00	0.8/0.6/0.2	1.100	0.2	0.880	0.3517	1.00	0.4032	0.550	0.2217	10.2
14	11:53	8.00	0.8/0.6/0.2	1.100	0.6	0.440	0.4174					
14	11:53	8.00	0.8/0.6/0.2	1.100	0.8	0.220	0.4262					
15	11:55	8.50	0.8/0.2	0.800	0.2	0.640	0.3559	1.00	0.3847	0.400	0.1539	7.0
15	11:55	8.50	0.8/0.2	0.800	0.8	0.160	0.4135					
16	11:56	9.00	0.6	0.650	0.6	0.260	0.2543	1.00	0.2543	0.325	0.0826	3.8
17	*11:58*	*9.50*	*0.6*	*0.500*	*0.6*	*0.200*	*0.0324*	*1.00*	*0.0324*	*0.750*	*0.0243*	*1.1*
18	11:58	12.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.22-3 Discharge Sheet – Lake L1 Outlet, 28 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	L1JUN28.WAD
Start Date and Time	2014/06/28 09:15:33

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	0.9%
Velocity	1.2%	3.9%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	2.0%	-
Overall	**3.3%**	**4.1%**

Summary

Averaging Int.	20	# Stations	25
Start Edge	LEW	Total Width	2.800
Mean SNR	28.4 dB	Total Area	1.321
Mean Temp	16.30 °C	Mean Depth	0.472
Disch. Equation	Mid-Section	Mean Velocity	0.1084
		Total Discharge	**0.1431**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:15	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	09:15	0.10	0.6	0.270	0.6	0.108	-0.0029	1.00	-0.0029	0.027	-0.0001	-0.1
2	09:16	0.20	0.6	0.280	0.6	0.112	-0.0066	1.00	-0.0066	0.028	-0.0002	-0.1
3	09:17	0.30	0.6	0.320	0.6	0.128	-0.0101	1.00	-0.0101	0.032	-0.0003	-0.2
4	09:19	0.40	0.6	0.380	0.6	0.152	0.0055	1.00	0.0055	0.038	0.0002	0.1
5	09:20	0.50	0.6	0.480	0.6	0.192	0.0097	1.00	0.0097	0.048	0.0005	0.3
6	09:21	0.60	0.6	0.500	0.6	0.200	0.0146	1.00	0.0146	0.050	0.0007	0.5
7	09:23	0.70	0.6	0.580	0.6	0.232	0.0271	1.00	0.0271	0.058	0.0016	1.1
8	09:25	0.80	0.6	0.580	0.6	0.232	0.0543	1.00	0.0543	0.058	0.0031	2.2
9	09:27	0.90	0.6	0.560	0.6	0.224	0.0472	1.00	0.0472	0.056	0.0026	1.8
10	09:29	1.00	0.6	0.620	0.6	0.248	0.0564	1.00	0.0564	0.062	0.0035	2.4
11	09:30	1.10	0.6	0.680	0.6	0.272	0.0933	1.00	0.0933	0.068	0.0063	4.4
12	09:31	1.20	0.6	0.700	0.6	0.280	0.1041	1.00	0.1041	0.070	0.0073	5.1
13	09:32	1.30	0.6	0.710	0.6	0.284	0.1505	1.00	0.1505	0.071	0.0107	7.5
14	09:33	1.40	0.6	0.750	0.6	0.300	0.1905	1.00	0.1905	0.075	0.0143	10.0
15	09:34	1.50	0.6	0.740	0.6	0.296	0.1674	1.00	0.1674	0.074	0.0124	8.7
16	09:35	1.60	0.6	0.680	0.6	0.272	0.2127	1.00	0.2127	0.068	0.0145	10.1
17	09:36	1.70	0.6	0.620	0.6	0.248	0.1852	1.00	0.1852	0.062	0.0115	8.0
18	09:37	1.80	0.6	0.600	0.6	0.240	0.2163	1.00	0.2163	0.060	0.0130	9.1
19	09:37	1.90	0.6	0.540	0.6	0.216	0.1347	1.00	0.1347	0.054	0.0073	5.1
20	09:39	2.00	0.6	0.540	0.6	0.216	0.1449	1.00	0.1449	0.054	0.0078	5.5
21	09:39	2.10	0.6	0.460	0.6	0.184	0.1591	1.00	0.1591	0.046	0.0073	5.1
22	09:40	2.20	0.6	0.420	0.6	0.168	0.1310	1.00	0.1310	0.042	0.0055	3.8
23	09:42	2.30	0.6	0.400	0.6	0.160	0.1135	1.00	0.1135	0.120	0.0136	9.5
24	09:42	2.80	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A3.22-4 Discharge Sheet – Lake L1 Outlet, 5 August 2014

Waterbody:	Lake L1				**Date**	5-Aug-14		
Crossing ID:	Lake L1 Outlet				**Start Time**	8:38		
					End Time	8:55		
BM UTM12 Location		**Survey**						
East	550488.732	BM_read	1.928		**Meter Type: FlowTracker**			
North	7159043.460	WL_read	3.960		**Total Discharge**	**0.006**	**(m^3/s)**	
Elevation	420.623	WL_Elev	418.591		**Crew:**	KB, TE		
Station Start LDB	**Distance from LDB (m)**	**Total Depth (m)**	**Ice Thickness (m)**	**Active Depth (m)**	**VELOCITY**			
					0.2 Depth (m/s)	**0.6/0.8 Depth (m/s)**	**Qi (m^3/s)**	
1	0.00	0.00		0.00				
2	0.10	0.06		0.06		-0.0015	0.0000	
3	0.20	0.14		0.14		0.0022	0.0000	
4	0.30	0.31		0.31		0.0040	0.0001	
5	0.40	0.40		0.40		0.0042	0.0002	
6	0.50	0.48		0.48		0.0027	0.0001	
7	0.60	0.60		0.60		0.0055	0.0003	
8	0.70	0.75		0.75		0.0055	0.0004	
9	0.80	0.80		0.80	0.0013	0.0090	0.0004	
10	0.90	0.80		0.80	0.0055	0.0071	0.0005	
11	1.00	0.73		0.73		0.0108	0.0008	
12	1.10	0.73		0.73		0.0091	0.0007	
13	1.20	0.72		0.72		0.0138	0.0010	
14	1.30	0.72		0.72		0.0079	0.0006	
15	1.40	0.72		0.72		0.0063	0.0005	
16	1.50	0.69		0.69		0.0043	0.0003	
17	1.60	0.74		0.74		0.0074	0.0005	
18	1.70	0.73		0.73		0.0000	0.0000	
19	1.80	0.67		0.67		0.0000	0.0000	
20	2.10	0.60		0.60		0.0000	0.0000	
21	2.60	0.00		0.00				

A3.23 Paul Lake Outlet

Table A3.23-1 2014 Hydrometric Data at Paul Lake Outlet Station

Date and Time	Measured Water Surface Elevation (m)	Measured Discharge (m^3/s)
29-Apr-2014 13:30	--	0.025

Table A3.23-2 Discharge Sheet – Paul Lake Outlet, 29 April 2014

Waterbody:	Paul Lake				**Date**	29-Apr-14		
Crossing ID:	Paul Lake Outlet				**Start Time**	13:30		
					End Time	14:30		
		Survey No survey			**Meter Type: FlowTracker**			
					Total Discharge		**0.025**	**(m^3/s)**
					Crew:	JM/DS/MW		
Station Start LDB	**Distance From LDB (m)**	**Total Depth (m)**	**Ice Thickness (m)**	**Active Depth (m)**	**VELOCITY**			
					0.2 Depth (m/s)	**0.6 Depth (m/s)**	**Qi (m^3/s)**	
1	1.35	0.00						
2	1.40	0.20				0.00	0.000	
3	1.80	0.30				0.00	0.000	
4	2.20	0.25				0.00	0.000	
5	2.60	0.36				0.00	0.000	
6	3.00	0.32				0.00	0.000	
7	3.40	0.30				0.00	0.000	
8	3.80	0.46				0.01	0.002	
9	4.20	0.38				0.01	0.002	
10	4.60	0.40				0.02	0.003	
11	5.00	0.34				0.01	0.001	
12	5.40	0.12				0.00	0.000	
13	5.80	0.20				0.01	0.001	
14	6.20	0.32				0.00	0.000	
15	6.60	0.46				0.02	0.004	
16	7.00	0.32				0.01	0.001	
17	7.40	0.38				0.00	0.000	
18	7.80	0.32				0.01	0.001	
19	8.20	0.12				0.01	0.000	
20	8.60	0.32				0.00	0.000	
21	9.00	0.20				0.00	0.000	
22	9.40	0.28				0.02	0.002	
23	9.80	0.40				0.00	0.000	
24	10.20	0.30				0.02	0.002	
25	10.60	0.60				0.02	0.005	
26	11.00	0.50				0.00	0.000	
27	11.20	0.00						

A4 HYDROMETRIC STATIONS

A4.1 Lake B0 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	540811.813 m
Northing	7163842.593 m
Elevation	422.082 m (geodetic)
Datum Elevation	420.410 m (geodetic)

Table A4.1-1 2014 Hydrometric Data at Lake B0 Outlet Station

Date and Time	Water Surface Elevation (m)	Transducer Reading (m)	Transducer Elevation (m)	Mean Transducer Elevation (m)	Stage (m)	Measured Discharge (m^3/s)
25-Apr-2014 10:00	--	--	--	--	--	Frozen to bottom
30-May-2014 14:20	420.776	0.425	420.352	420.325	0.366	0.841
3-Jun-2014 17:10	420.727	0.412	420.315		0.317	--
7-Jun-2014 12:20	420.665	0.339	420.326		0.255	--
20-Jun-2014 13:20	420.580	0.258	420.322		0.170	0.161
30-Jul-2014 12:10	420.498	0.181	420.318		0.088	0.026
18-Sep-2014 11:50	420.489	0.172	420.317		0.079	0.003

Figure A4.1-1 Open-Water 2014 Stage-Discharge Rating Curve at Lake B0 Outlet Station

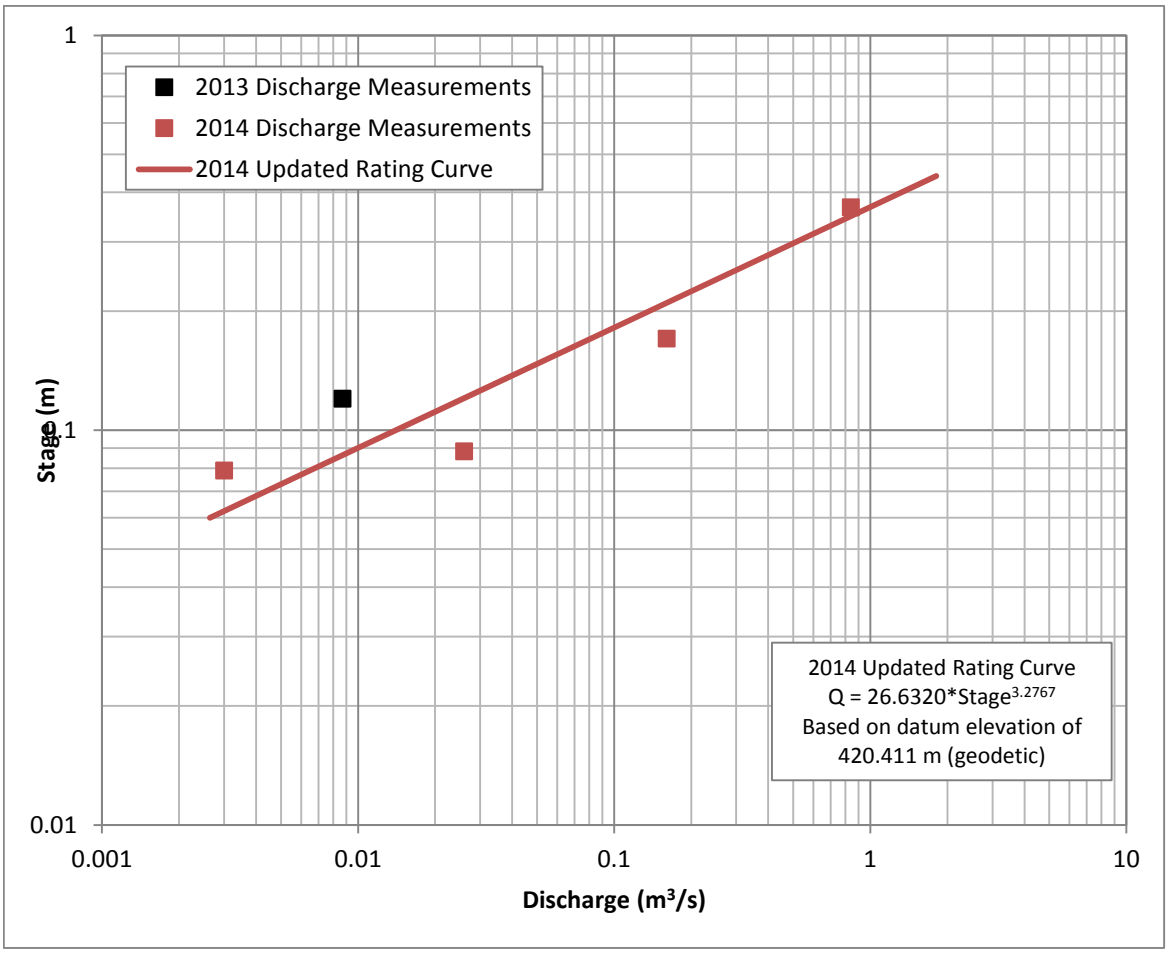


Table A4.1-2 Lake B0 Outlet, 2014 Mean Daily Discharge and Water Surface Elevation

	Discharge (m^3/s)					Water Surface Elevation (m, geodetic)				
Date	May	Jun	Jul	Aug	Sep	May	Jun	Jul	Aug	Sep
1		0.760	0.024	0.023	0.003	--	420.747	420.526	420.525	420.470
2		0.856	0.023	0.017	0.003	--	420.760	420.524	420.515	420.469
3		0.781	0.020	0.015	0.003	--	420.750	420.521	420.511	420.470
4		0.650	0.018	0.013	0.007	--	420.731	420.516	420.507	420.490
5		0.567	0.014	0.011	0.012	--	420.719	420.507	420.503	420.504
6		0.451	0.019	0.015	0.018	--	420.697	420.519	420.512	420.517
7		0.335	0.023	0.017	0.022	--	420.671	420.525	420.515	420.524
8		0.273	0.020	0.015	0.017	--	420.656	420.520	420.511	420.515
9		0.235	0.017	0.011	0.012	--	420.645	420.515	420.499	420.503
10		0.233	0.016	0.012	0.008	--	420.645	420.513	420.505	420.491
11		0.252	0.027	0.016	0.006	--	420.650	420.532	420.512	420.486
12		0.199	0.019	0.011	0.011	--	420.633	420.519	420.500	420.503
13		0.157	0.013	0.010	0.011	--	420.618	420.507	420.499	420.500
14		0.166	0.010	0.014	0.011	--	420.622	420.498	420.510	420.503
15		0.163	0.009	0.013	0.016	--	420.621	420.497	420.507	420.514
16		0.153	0.042	0.011	0.011	--	420.616	420.544	420.503	420.502
17		0.113	0.078	0.014	0.010	--	420.598	420.578	420.509	420.499
18		0.106	0.080	0.016	0.010P	--	420.595	420.579	420.514	420.500P
19		0.095	0.059	0.015		--	420.588	420.563	420.510	
20		0.090	0.042	0.011		--	420.586	420.548	420.501	
21		0.101	0.034	0.009		--	420.592	420.540	420.495	
22		0.100	0.033	0.007		--	420.590	420.539	420.489	
23		0.077	0.029	0.005		--	420.576	420.533	420.481	
24		0.052	0.021	0.004		--	420.558	420.523	420.476	
25		0.043	0.019	0.004		--	420.549	420.519	420.475	
26		0.037	0.017	0.004		--	420.544	420.514	420.479	
27		0.033	0.017	0.007		--	420.539	420.516	420.489	
28	0.719P	0.033	0.016	0.007		420.742P	420.538	420.514	420.490	
29	0.809	0.044	0.017	0.006		420.754	420.551	420.515	420.485	
30	0.859	0.034	0.014	0.005		420.760	420.540	420.509	420.478	
31	0.845		0.023	0.003		420.758		420.526	420.474	
MIN	0.719	0.033	0.009	0.003	0.003	420.742	420.538	420.497	420.474	420.469
MEAN	0.808	0.240	0.026	0.011	0.011	420.754	420.624	420.526	420.499	420.498
MAX	0.859	0.856	0.080	0.023	0.022	420.760	420.760	420.579	420.525	420.524

Table A4.1-3 Discharge Sheet – Lake B0 Outlet, 30 May 2014

Discharge Measurement Summary

Date Generated: Mon Jan 12 2015

File Information

File Name	B0.WAD
Start Date and Time	2014/05/30 14:06:05

Site Details

Site Name	B0 OUTLET
Operator(s)	DC CD

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	4.5%
Velocity	1.0%	2.5%
Width	0.1%	0.1%
Method	1.9%	-
# Stations	2.4%	-
Overall	**3.4%**	**5.3%**

Summary

Averaging Int.	15	# Stations	21
Start Edge	LEW	Total Width	6.500
Mean SNR	20.9 dB	Total Area	1.680
Mean Temp	5.27 °C	Mean Depth	0.258
Disch. Equation	Mid-Section	Mean Velocity	0.5003
		Total Discharge	**0.8406**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:06	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*14:06*	*0.50*	*0.6*	*0.150*	*0.6*	*0.060*	*0.1687*	*1.00*	*0.1687*	*0.075*	*0.0127*	*1.5*
2	*14:06*	*1.00*	*0.6*	*0.180*	*0.6*	*0.072*	*0.2710*	*1.00*	*0.2710*	*0.090*	*0.0244*	*2.9*
3	*14:07*	*1.50*	*0.6*	*0.220*	*0.6*	*0.088*	*0.3156*	*1.00*	*0.3156*	*0.077*	*0.0243*	*2.9*
4	*14:08*	*1.70*	*0.6*	*0.260*	*0.6*	*0.104*	*0.4598*	*1.00*	*0.4598*	*0.052*	*0.0239*	*2.8*
5	14:09	1.90	0.6	0.200	0.6	0.080	0.4811	1.00	0.4811	0.040	0.0192	2.3
6	14:09	2.10	0.6	0.200	0.6	0.080	0.5873	1.00	0.5873	0.040	0.0235	2.8
7	14:10	2.30	0.6	0.400	0.6	0.160	0.6560	1.00	0.6560	0.080	0.0525	6.2
8	14:10	2.50	0.6	0.320	0.6	0.128	0.7037	1.00	0.7037	0.064	0.0450	5.4
9	14:12	2.70	0.6	0.400	0.6	0.160	0.6463	1.00	0.6463	0.080	0.0517	6.2
10	14:13	2.90	0.6	0.400	0.6	0.160	0.6216	1.00	0.6216	0.080	0.0497	5.9
11	14:14	3.10	0.6	0.440	0.6	0.176	0.6611	1.00	0.6611	0.088	0.0582	6.9
12	14:15	3.30	0.6	0.580	0.6	0.232	0.6991	1.00	0.6991	0.116	0.0811	9.6
13	14:16	3.50	0.6	0.580	0.6	0.232	0.7177	1.00	0.7177	0.116	0.0833	9.9
14	14:16	3.70	0.6	0.590	0.6	0.236	0.7133	1.00	0.7133	0.118	0.0842	10.0
15	14:17	3.90	0.6	0.480	0.6	0.192	0.4129	1.00	0.4129	0.096	0.0396	4.7
16	*14:19*	*4.10*	*0.6*	*0.500*	*0.6*	*0.200*	*0.3728*	*1.00*	*0.3728*	*0.100*	*0.0373*	*4.4*
17	*14:20*	*4.30*	*0.6*	*0.240*	*0.6*	*0.096*	*0.3078*	*1.00*	*0.3078*	*0.048*	*0.0148*	*1.8*
18	*14:21*	*4.50*	*0.6*	*0.200*	*0.6*	*0.080*	*0.3756*	*1.00*	*0.3756*	*0.120*	*0.0451*	*5.4*
19	14:22	5.50	0.6	0.200	0.6	0.080	0.3509	1.00	0.3509	0.200	0.0702	8.3
20	14:22	6.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.1-4 Discharge Sheet – Lake B0 Outlet, 20 June 2014

Discharge Measurement Summary

Date Generated: Wed Jul 9 2014

File Information

File Name	B0JUN20.WAD
Start Date and Time	2014/06/20 13:42:16

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	1.5%
Velocity	1.4%	3.4%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	2.8%	-
Overall	**3.8%**	**3.8%**

Summary

Averaging Int.	15	# Stations	18
Start Edge	LEW	Total Width	1.900
Mean SNR	16.8 dB	Total Area	0.530
Mean Temp	15.47 °C	Mean Depth	0.279
Disch. Equation	Mid-Section	Mean Velocity	0.3028
		Total Discharge	**0.1605**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:42	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*13:42*	*0.10*	*0.6*	*0.380*	*0.6*	*0.152*	*0.1012*	*1.00*	*0.1012*	*0.038*	*0.0038*	*2.4*
2	13:44	0.20	0.6	0.400	0.6	0.160	0.1796	1.00	0.1796	0.040	0.0072	4.5
3	13:44	0.30	0.6	0.400	0.6	0.160	0.3785	1.00	0.3785	0.040	0.0151	9.4
4	13:45	0.40	0.6	0.380	0.6	0.152	0.4186	1.00	0.4186	0.038	0.0159	9.9
5	13:45	0.50	0.6	0.360	0.6	0.144	0.3813	1.00	0.3813	0.036	0.0137	8.6
6	13:46	0.60	0.6	0.300	0.6	0.120	0.4384	1.00	0.4384	0.030	0.0132	8.2
7	13:47	0.70	0.6	0.300	0.6	0.120	0.4475	1.00	0.4475	0.030	0.0134	8.4
8	13:47	0.80	0.6	0.300	0.6	0.120	0.4460	1.00	0.4460	0.030	0.0134	8.3
9	13:48	0.90	0.6	0.340	0.6	0.136	0.3987	1.00	0.3987	0.034	0.0136	8.4
10	*13:49*	*1.00*	*0.6*	*0.340*	*0.6*	*0.136*	*0.2946*	*1.00*	*0.2946*	*0.034*	*0.0100*	*6.2*
11	13:50	1.10	0.6	0.300	0.6	0.120	0.2405	1.00	0.2405	0.030	0.0072	4.5
12	13:51	1.20	0.6	0.340	0.6	0.136	0.2394	1.00	0.2394	0.034	0.0081	5.1
13	13:51	1.30	0.6	0.300	0.6	0.120	0.3411	1.00	0.3411	0.030	0.0102	6.4
14	13:52	1.40	0.6	0.260	0.6	0.104	0.2817	1.00	0.2817	0.026	0.0073	4.6
15	13:53	1.50	0.6	0.200	0.6	0.080	0.2665	1.00	0.2665	0.020	0.0053	3.3
16	13:54	1.60	0.6	0.200	0.6	0.080	0.0724	1.00	0.0724	0.040	0.0029	1.8
17	13:54	1.90	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.1-5 Discharge Sheet – Lake B0 Outlet, 30 July 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	B0JUL30.WAD
Start Date and Time	2014/07/30 12:22:44

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	1.9%
Velocity	1.8%	4.6%
Width	0.1%	0.1%
Method	2.1%	-
# Stations	2.1%	-
Overall	**3.6%**	**5.0%**

Summary			
Averaging Int.	20	# Stations	24
Start Edge	LEW	Total Width	3.600
Mean SNR	29.8 dB	Total Area	1.762
Mean Temp	19.06 °C	Mean Depth	0.489
Disch. Equation	Mid-Section	Mean Velocity	0.0145
		Total Discharge	**0.0255**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:22	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	12:23	0.10	0.6	0.190	0.6	0.076	-0.0008	1.00	-0.0008	0.019	0.0000	-0.1
2	12:27	0.20	0.6	0.220	0.6	0.088	0.0005	1.00	0.0005	0.022	0.0000	0.0
3	12:29	0.30	0.6	0.300	0.6	0.120	0.0001	1.00	0.0001	0.030	0.0000	0.0
4	12:30	0.40	0.6	0.370	0.6	0.148	0.0090	1.00	0.0090	0.037	0.0003	1.3
5	12:32	0.50	0.6	0.440	0.6	0.176	0.0112	1.00	0.0112	0.044	0.0005	1.9
6	12:33	0.60	0.6	0.470	0.6	0.188	0.0194	1.00	0.0194	0.047	0.0009	3.6
7	12:34	0.70	0.6	0.500	0.6	0.200	0.0103	1.00	0.0103	0.050	0.0005	2.0
8	12:35	0.80	0.6	0.500	0.6	0.200	0.0131	1.00	0.0131	0.050	0.0007	2.6
9	12:35	0.90	0.6	0.550	0.6	0.220	0.0131	1.00	0.0131	0.055	0.0007	2.8
10	12:37	1.00	0.6	0.600	0.6	0.240	0.0109	1.00	0.0109	0.060	0.0007	2.6
11	12:37	1.10	0.6	0.650	0.6	0.260	0.0095	1.00	0.0095	0.065	0.0006	2.4
12	12:40	1.20	0.6	0.690	0.6	0.276	0.0142	1.00	0.0142	0.104	0.0015	5.8
13	12:42	1.40	0.6	0.710	0.6	0.284	0.0118	1.00	0.0118	0.142	0.0017	6.6
14	12:43	1.60	0.6	0.710	0.6	0.284	0.0137	1.00	0.0137	0.142	0.0019	7.6
15	12:44	1.80	0.6	0.750	0.6	0.300	0.0141	1.00	0.0141	0.150	0.0021	8.3
16	12:46	2.00	0.6	0.750	0.6	0.300	0.0177	1.00	0.0177	0.150	0.0027	10.4
17	12:47	2.20	0.6	0.710	0.6	0.284	0.0197	1.00	0.0197	0.142	0.0028	11.0
18	12:48	2.40	0.6	0.660	0.6	0.264	0.0243	1.00	0.0243	0.132	0.0032	12.6
19	12:49	2.60	0.6	0.610	0.6	0.244	0.0200	1.00	0.0200	0.122	0.0024	9.6
20	12:50	2.80	0.6	0.570	0.6	0.228	0.0163	1.00	0.0163	0.114	0.0019	7.3
21	12:51	3.00	0.6	0.200	0.6	0.080	0.0085	1.00	0.0085	0.040	0.0003	1.3
22	12:52	3.20	0.6	0.150	0.6	0.060	0.0024	1.00	0.0024	0.045	0.0001	0.4
23	12:52	3.60	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.1-6 Discharge Sheet – Lake B0 Outlet, 18 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	B0SEPT18.WAD
Start Date and Time	2014/09/18 12:02:24

Site Details	
Site Name	
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.7%	7.3%
Velocity	2.8%	16.4%
Width	0.2%	0.2%
Method	3.3%	-
# Stations	3.6%	-
Overall	**5.8%**	**18.0%**

Summary			
Averaging Int.	20	# Stations	14
Start Edge	LEW	Total Width	1.600
Mean SNR	28.5 dB	Total Area	0.270
Mean Temp	2.77 °C	Mean Depth	0.168
Disch. Equation	Mid-Section	Mean Velocity	0.0101
		Total Discharge	**0.0027**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:02	0.20	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*12:02*	*0.50*	*0.6*	*0.130*	*0.6*	*0.052*	*0.0000*	*1.00*	*0.0000*	*0.026*	*0.0000*	*0.0*
2	*12:04*	*0.60*	*0.6*	*0.220*	*0.6*	*0.088*	*-0.0043*	*1.00*	*-0.0043*	*0.022*	*-0.0001*	*-3.5*
3	*12:07*	*0.70*	*0.6*	*0.260*	*0.6*	*0.104*	*-0.0047*	*1.00*	*-0.0047*	*0.026*	*-0.0001*	*-4.5*
4	*12:11*	*0.80*	*0.6*	*0.320*	*0.6*	*0.128*	*-0.0004*	*1.00*	*-0.0004*	*0.032*	*0.0000*	*-0.5*
5	12:12	0.90	0.6	0.250	0.6	0.100	0.0064	1.00	0.0064	0.025	0.0002	5.9
6	*12:13*	*1.00*	*0.6*	*0.260*	*0.6*	*0.104*	*0.0040*	*1.00*	*0.0040*	*0.026*	*0.0001*	*3.8*
7	12:14	1.10	0.6	0.280	0.6	0.112	0.0061	1.00	0.0061	0.028	0.0002	6.3
8	12:16	1.20	0.6	0.280	0.6	0.112	0.0235	1.00	0.0235	0.028	0.0007	24.3
9	*12:17*	*1.30*	*0.6*	*0.230*	*0.6*	*0.092*	*0.0269*	*1.00*	*0.0269*	*0.023*	*0.0006*	*22.8*
10	*12:18*	*1.40*	*0.6*	*0.130*	*0.6*	*0.052*	*0.0376*	*1.00*	*0.0376*	*0.013*	*0.0005*	*18.0*
11	12:20	1.50	0.6	0.100	0.6	0.040	0.0490	1.00	0.0490	0.010	0.0005	18.1
12	*12:23*	*1.60*	*0.6*	*0.070*	*0.6*	*0.028*	*0.0236*	*1.00*	*0.0236*	*0.011*	*0.0002*	*9.1*
13	12:23	1.80	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A4.2 Lake C1 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	538599.493 m
Northing	7166609.545 m
Elevation	436.466 m (geodetic)
Datum Elevation	435.200 m (geodetic)

Figure A4.2-1 Lake C1 Outlet Station – Outlet Channel and Discharge Measurement during Freshet (view downstream), 30 May 2014

Figure A4.2-2 Lake C1 Outlet Channel (view upstream), 30 July 2014

Table A4.2-1 2014 Hydrometric Data at Lake C1 Outlet Station

Date and Time	Water Surface Elevation (m)	Transducer Reading (m)	Transducer Elevation (m)	Mean Transducer Elevation (m)	Stage (m)	Measured Discharge (m^3/s)
26-Apr-2014 10:00	--	--	--	--	--	Frozen to bottom
30-May-2014 13:20	435.490	0.238	435.252	435.280	0.290	0.144
3-Jun-2014 16:50	435.535	0.272	435.264		0.335	--
20-Jun-2014 15:30	435.461	0.156	435.305		0.261	0.189
30-Jul-2014 09:10	435.393	0.091	435.302		0.193	0.040
18-Sep-2014 13:30	435.333	0.057	435.277		0.133	0.002

Figure A4.2-3 Open-Water 2014 Stage-Discharge Rating Curve at Lake C1 Outlet Station

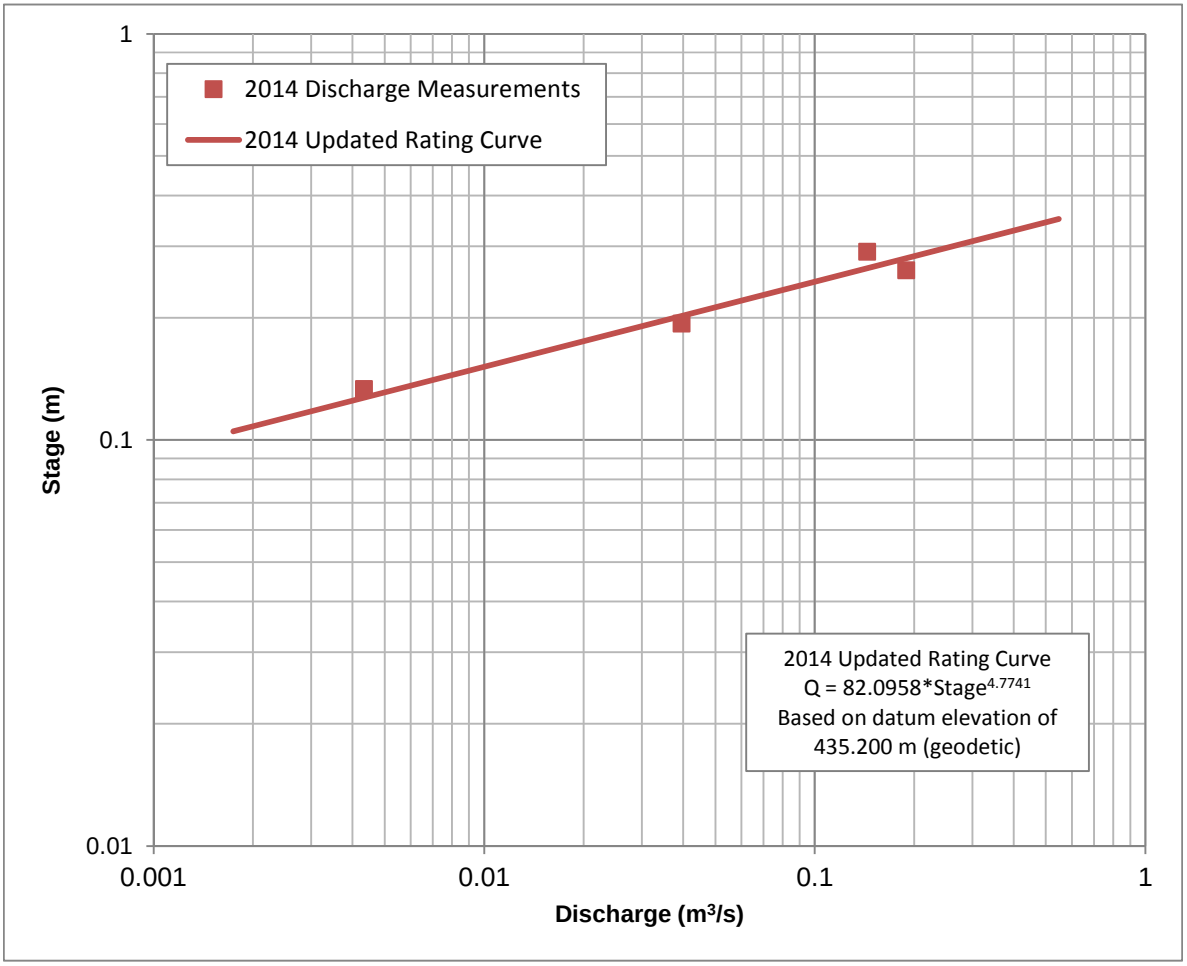


Table A4.2-2 Lake C1 Outlet, 2014 Mean Daily Discharge and Water Surface Elevation

	Discharge (m^3/s)					Water Surface Elevation (m, geodetic)				
Date	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
1	--	0.474	0.028	0.028	0.003	--	435.539	435.386	435.386	435.318
2	--	0.653	0.022	0.017	0.003	--	435.563	435.377	435.369	435.318
3	--	0.666	0.018	0.016	0.003	--	435.564	435.370	435.366	435.319
4	--	0.612	0.015	0.015	0.007	--	435.557	435.364	435.363	435.338
5	--	0.585	0.012	0.012	0.009	--	435.555	435.355	435.357	435.347
6	--	0.476	0.013	0.015	0.013	--	435.539	435.358	435.365	435.360
7	--	0.367	0.013	0.015	0.013	--	435.520	435.359	435.365	435.358
8	--	0.309	0.013	0.014	0.010	--	435.509	435.359	435.360	435.351
9	--	0.277	0.013	0.010	0.008	--	435.502	435.359	435.349	435.342
10	--	0.283	0.012	0.011	0.006	--	435.505	435.356	435.354	435.334
11	--	0.308	0.017	0.013	0.004	--	435.509	435.369	435.359	435.326
12	--	0.246	0.012	0.010	0.007	--	435.495	435.355	435.348	435.341
13	--	0.192	0.009	0.009	0.007	--	435.480	435.344	435.346	435.337
14	--	0.205	0.006	0.012	0.007	--	435.485	435.335	435.358	435.340
15	--	0.196	0.006	0.011	0.009	--	435.482	435.333	435.353	435.349
16	--	0.189	0.034	0.009	0.007	--	435.478	435.389	435.348	435.340
17	--	0.141	0.070	0.013	0.007	--	435.462	435.427	435.361	435.340
18	--	0.128	0.072	0.017	0.006P	--	435.457	435.428	435.367	435.333P
19	--	0.111	0.050	0.015	--	--	435.449	435.410	435.362	--
20	--	0.105	0.036	0.012	--	--	435.447	435.396	435.355	--
21	--	0.132	0.030	0.009	--	--	435.459	435.389	435.349	--
22	--	0.128	0.027	0.009	--	--	435.457	435.385	435.343	--
23	--	0.100	0.022	0.006	--	--	435.442	435.377	435.334	--
24	--	0.069	0.016	0.005	--	--	435.425	435.366	435.330	--
25	--	0.058	0.014	0.004	--	--	435.417	435.361	435.326	--
26	--	0.052	0.012	0.005	--	--	435.413	435.355	435.329	--
27	--	0.045	0.012	0.007	--	--	435.406	435.357	435.338	--
28	0.182P	0.044	0.015	0.007	--	435.477P	435.405	435.364	435.338	--
29	0.262	0.054	0.018	0.006	--	435.499	435.415	435.371	435.333	--
30	0.394	0.043	0.016	0.005	--	435.527	435.404	435.367	435.325	--
31	0.459	--	0.028	0.003	--	435.537	--	435.387	435.320	--
MIN	0.182	0.043	0.006	0.003	0.003	435.477	435.404	435.333	435.320	435.318
MEAN	0.324	0.241	0.022	0.011	0.007	435.510	435.478	435.371	435.350	435.338
MAX	0.459	0.666	0.072	0.028	0.013	435.537	435.564	435.428	435.386	435.360

Table A4.2-3 Discharge Sheet – Lake C1 Outlet, 30 May 2014

Discharge Measurement Summary

Date Generated: Wed Jan 14 2015

File Information

File Name	C1.MAY.WAD
Start Date and Time	2014/05/30 13:20:05

Site Details

Site Name	C1 OUTLET
Operator(s)	DC CD

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	8.6%
Velocity	1.1%	10.1%
Width	0.1%	0.1%
Method	1.8%	-
# Stations	1.7%	-
Overall	**2.9%**	**13.3%**

Summary

Averaging Int.	15	# Stations	31
Start Edge	REW	Total Width	9.100
Mean SNR	22.0 dB	Total Area	2.013
Mean Temp	2.91 °C	Mean Depth	0.221
Disch. Equation	Mid-Section	Mean Velocity	0.0715
		Total Discharge	**0.1440**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:20	0.60	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	13:20	1.30	0.6	0.320	0.6	0.128	0.1172	1.00	0.1172	0.144	0.0169	11.7
2	*13:20*	*1.50*	*0.6*	*0.340*	*0.6*	*0.136*	*0.1096*	*1.00*	*0.1096*	*0.068*	*0.0075*	*5.2*
3	*13:22*	*1.70*	*0.6*	*0.360*	*0.6*	*0.144*	*0.1159*	*1.00*	*0.1159*	*0.072*	*0.0083*	*5.8*
4	13:23	1.90	0.6	0.380	0.6	0.152	0.1232	1.00	0.1232	0.076	0.0094	6.5
5	13:23	2.10	0.6	0.380	0.6	0.152	0.1182	1.00	0.1182	0.076	0.0090	6.2
6	13:24	2.30	0.6	0.380	0.6	0.152	0.0845	1.00	0.0845	0.076	0.0064	4.5
7	13:24	2.50	0.6	0.360	0.6	0.144	0.0645	1.00	0.0645	0.072	0.0046	3.2
8	*13:25*	*2.70*	*0.6*	*0.360*	*0.6*	*0.144*	*0.0665*	*1.00*	*0.0665*	*0.090*	*0.0060*	*4.2*
9	*13:26*	*3.00*	*0.6*	*0.000*	*0.6*	*0.000*	*0.0710*	*1.00*	*0.0000*	*0.000*	*0.0000*	*0.0*
10	13:28	3.40	0.6	0.300	0.6	0.120	0.0872	1.00	0.0872	0.135	0.0118	8.2
11	*13:31*	*3.90*	*0.6*	*0.340*	*0.6*	*0.136*	*0.0339*	*1.00*	*0.0339*	*0.170*	*0.0058*	*4.0*
12	*13:31*	*4.40*	*0.6*	*0.280*	*0.6*	*0.112*	*0.0127*	*1.00*	*0.0127*	*0.140*	*0.0018*	*1.2*
13	13:33	4.90	0.6	0.280	0.6	0.112	0.0221	1.00	0.0221	0.182	0.0040	2.8
14	*13:33*	*5.70*	*0.6*	*0.000*	*0.6*	*0.000*	*0.0136*	*1.00*	*0.0000*	*0.000*	*0.0000*	*0.0*
15	*13:36*	*6.00*	*0.6*	*0.180*	*0.6*	*0.072*	*0.0164*	*1.00*	*0.0164*	*0.054*	*0.0009*	*0.6*
16	*13:37*	*6.30*	*0.6*	*0.000*	*0.6*	*0.000*	*0.0109*	*1.00*	*0.0000*	*0.000*	*0.0000*	*0.0*
17	13:38	6.60	0.6	0.180	0.6	0.072	0.2545	1.00	0.2545	0.045	0.0115	8.0
18	13:38	6.80	0.6	0.180	0.6	0.072	0.2251	1.00	0.2251	0.036	0.0081	5.6
19	13:39	7.00	0.6	0.180	0.6	0.072	0.0831	1.00	0.0831	0.036	0.0030	2.1
20	13:40	7.20	0.6	0.180	0.6	0.072	0.0898	1.00	0.0898	0.036	0.0032	2.2
21	13:40	7.40	0.6	0.180	0.6	0.072	0.0809	1.00	0.0809	0.045	0.0036	2.5
22	*13:41*	*7.70*	*0.6*	*0.000*	*0.6*	*0.000*	*0.0755*	*1.00*	*0.0000*	*0.000*	*0.0000*	*0.0*
23	13:44	7.90	0.6	0.300	0.6	0.120	0.0389	1.00	0.0389	0.060	0.0023	1.6
24	13:44	8.10	0.6	0.300	0.6	0.120	0.0525	1.00	0.0525	0.060	0.0032	2.2
25	13:45	8.30	0.6	0.300	0.6	0.120	0.0229	1.00	0.0229	0.060	0.0014	1.0
26	13:46	8.50	0.6	0.300	0.6	0.120	0.0307	1.00	0.0307	0.060	0.0018	1.3
27	13:46	8.70	0.6	0.200	0.6	0.080	0.0556	1.00	0.0556	0.040	0.0022	1.5
28	13:47	8.90	0.6	0.300	0.6	0.120	0.0637	1.00	0.0637	0.060	0.0038	2.7
29	13:47	9.10	0.6	0.300	0.6	0.120	0.0630	1.00	0.0630	0.120	0.0076	5.2
30	13:47	9.70	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.2-4 Discharge Sheet – Lake C1 Outlet, 20 June 2014

Discharge Measurement Summary

Date Generated: Wed Jul 9 2014

File Information

File Name	C1JUNE20.WAD
Start Date and Time	2014/06/20 14:51:17

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	1.9%
Velocity	0.8%	5.4%
Width	0.1%	0.1%
Method	2.2%	-
# Stations	2.3%	-
Overall	**3.4%**	**5.8%**

Summary

Averaging Int.	15	# Stations	22
Start Edge	LEW	Total Width	10.250
Mean SNR	27.1 dB	Total Area	4.034
Mean Temp	11.93 °C	Mean Depth	0.394
Disch. Equation	Mid-Section	Mean Velocity	0.0469
		Total Discharge	**0.1890**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:51	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	14:51	0.50	0.6	0.480	0.6	0.192	0.0057	1.00	0.0057	0.240	0.0014	0.7
2	14:53	1.00	0.6	0.460	0.6	0.184	0.0098	1.00	0.0098	0.230	0.0023	1.2
3	14:55	1.50	0.6	0.430	0.6	0.172	0.0004	1.00	0.0004	0.215	0.0001	0.0
4	14:58	2.00	0.6	0.430	0.6	0.172	0.0247	1.00	0.0247	0.215	0.0053	2.8
5	14:59	2.50	0.6	0.390	0.6	0.156	0.0264	1.00	0.0264	0.195	0.0051	2.7
6	15:01	3.00	0.6	0.420	0.6	0.168	0.0376	1.00	0.0376	0.210	0.0079	4.2
7	15:01	3.50	0.6	0.420	0.6	0.168	0.0536	1.00	0.0536	0.210	0.0113	6.0
8	15:03	4.00	0.6	0.440	0.6	0.176	0.0738	1.00	0.0738	0.220	0.0162	8.6
9	15:04	4.50	0.6	0.470	0.6	0.188	0.0833	1.00	0.0833	0.235	0.0196	10.4
10	15:05	5.00	0.6	0.450	0.6	0.180	0.0782	1.00	0.0782	0.225	0.0176	9.3
11	15:05	5.50	0.6	0.500	0.6	0.200	0.0525	1.00	0.0525	0.250	0.0131	6.9
12	15:06	6.00	0.6	0.480	0.6	0.192	0.0522	1.00	0.0522	0.240	0.0125	6.6
13	15:07	6.50	0.6	0.500	0.6	0.200	0.0689	1.00	0.0689	0.250	0.0172	9.1
14	15:08	7.00	0.6	0.460	0.6	0.184	0.1119	1.00	0.1119	0.230	0.0257	13.6
15	15:08	7.50	0.6	0.410	0.6	0.164	0.1102	1.00	0.1102	0.205	0.0226	12.0
16	15:09	8.00	0.6	0.390	0.6	0.156	0.0411	1.00	0.0411	0.195	0.0080	4.2
17	15:10	8.50	0.6	0.350	0.6	0.140	0.0079	1.00	0.0079	0.175	0.0014	0.7
18	15:19	9.00	0.6	0.190	0.6	0.076	0.0040	1.00	0.0040	0.119	0.0005	0.3
19	15:20	9.75	0.6	0.220	0.6	0.088	0.0056	1.00	0.0056	0.110	0.0006	0.3
20	15:21	10.00	0.6	0.260	0.6	0.104	0.0091	1.00	0.0091	0.065	0.0006	0.3
21	15:21	10.25	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.2-5 Discharge Sheet – Lake C1 Outlet, 30 July 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	C1JUL30.WAD
Start Date and Time	2014/07/30 09:22:19

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	1.8%
Velocity	1.7%	7.2%
Width	0.2%	0.2%
Method	2.4%	-
# Stations	2.6%	-
Overall	**4.0%**	**7.5%**

Summary			
Averaging Int.	20	# Stations	19
Start Edge	LEW	Total Width	0.800
Mean SNR	30.2 dB	Total Area	0.291
Mean Temp	16.02 °C	Mean Depth	0.364
Disch. Equation	Mid-Section	Mean Velocity	0.1360
		Total Discharge	**0.0396**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:22	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	09:23	0.05	0.6	0.290	0.6	0.116	0.0000	1.00	0.0000	0.015	0.0000	0.0
2	09:24	0.10	0.6	0.310	0.6	0.124	0.0000	1.00	0.0000	0.016	0.0000	0.0
3	09:25	0.15	0.6	0.420	0.6	0.168	0.0075	1.00	0.0075	0.021	0.0002	0.4
4	09:27	0.20	0.6	0.440	0.6	0.176	-0.0001	1.00	-0.0001	0.022	0.0000	0.0
5	09:29	0.25	0.6	0.420	0.6	0.168	0.0312	1.00	0.0312	0.021	0.0007	1.7
6	09:31	0.30	0.6	0.400	0.6	0.160	0.1161	1.00	0.1161	0.020	0.0023	5.9
7	09:32	0.35	0.6	0.460	0.6	0.184	0.0037	1.00	0.0037	0.023	0.0001	0.2
8	09:34	0.40	0.6	0.460	0.6	0.184	0.1809	1.00	0.1809	0.023	0.0042	10.5
9	09:34	0.45	0.6	0.450	0.6	0.180	0.2384	1.00	0.2384	0.023	0.0054	13.5
10	09:35	0.50	0.6	0.470	0.6	0.188	0.2521	1.00	0.2521	0.024	0.0059	14.9
11	09:36	0.55	0.6	0.490	0.6	0.196	0.2732	1.00	0.2732	0.018	0.0050	12.7
12	09:37	0.58	0.6	0.490	0.6	0.196	0.2581	1.00	0.2581	0.012	0.0032	8.0
13	09:38	0.60	0.6	0.450	0.6	0.180	0.2487	1.00	0.2487	0.011	0.0028	7.1
14	09:39	0.63	0.6	0.420	0.6	0.168	0.2598	1.00	0.2598	0.011	0.0027	6.9
15	09:39	0.65	0.6	0.440	0.6	0.176	0.2485	1.00	0.2485	0.011	0.0027	6.9
16	09:40	0.68	0.6	0.380	0.6	0.152	0.2117	1.00	0.2117	0.010	0.0020	5.1
17	09:41	0.70	0.6	0.200	0.6	0.080	0.2008	1.00	0.2008	0.013	0.0025	6.3
18	09:41	0.80	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.2-6 Discharge Sheet – Lake C1 Outlet, 18 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	C1SEPT18.WAD
Start Date and Time	2014/09/18 14:01:41

Site Details	
Site Name	C1
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	9.1%
Velocity	5.1%	19.2%
Width	0.3%	0.3%
Method	4.2%	-
# Stations	5.1%	-
Overall	**8.4%**	**21.3%**

Summary			
Averaging Int.	20	# Stations	10
Start Edge	LEW	Total Width	1.000
Mean SNR	27.2 dB	Total Area	0.228
Mean Temp	2.18 °C	Mean Depth	0.228
Disch. Equation	Mid-Section	Mean Velocity	0.0097
		Total Discharge	**0.0022**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:01	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	14:01	0.25	0.6	0.270	0.6	0.108	0.0000	1.00	0.0000	0.041	0.0000	0.0
2	14:02	0.30	0.6	0.270	0.6	0.108	0.0006	1.00	0.0006	0.020	0.0000	0.6
3	14:04	0.40	0.6	0.300	0.6	0.120	-0.0024	1.00	-0.0024	0.030	-0.0001	-3.3
4	14:05	0.50	0.6	0.300	0.6	0.120	0.0006	1.00	0.0006	0.030	0.0000	0.8
5	14:06	0.60	0.6	0.320	0.6	0.128	0.0233	1.00	0.0233	0.032	0.0007	33.8
6	14:07	0.70	0.6	0.350	0.6	0.140	0.0223	1.00	0.0223	0.035	0.0008	35.4
7	14:08	0.80	0.6	0.340	0.6	0.136	0.0171	1.00	0.0171	0.034	0.0006	26.4
8	14:10	0.90	0.6	0.060	0.6	0.024	0.0234	1.00	0.0234	0.006	0.0001	6.4
9	14:10	1.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A4.3 Lake E1 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	537258.182 m
Northing	7175313.662 m
Elevation	419.725 m (geodetic)
Datum Elevation	417.500 m (geodetic)

Table A4.3-1 2014 Hydrometric Data at Lake E1 Outlet Station

Date and Time	Water Surface Elevation (m)	Transducer Reading (m)	Transducer Elevation (m)	Mean Transducer Elevation (m)	Stage (m)	Measured Discharge (m^3/s)
26-Apr-2014 11:00	--	--	--	--	--	Frozen to bottom
31-May-2014 10:40	418.079	0.669	417.411	417.504	0.579	--
3-Jun-2014 18:00	418.127	0.565	417.563		0.627	--
6-Jun-2014 12:30	418.029	0.494	417.535		0.529	4.728
21-Jun-2014 14:40	417.907	0.430	417.478		0.407	2.112
27-Jun-2014 15:40	417.896	0.372	417.525		0.396	2.350
1-Aug-2014 12:20	417.829	0.315	417.515		0.329	1.122
18-Sep-2014 14:55	417.715	--	--		0.215	0.346

Figure A4.3-1 Open-Water 2014 Stage-Discharge Rating Curve at Lake E1 Outlet Station

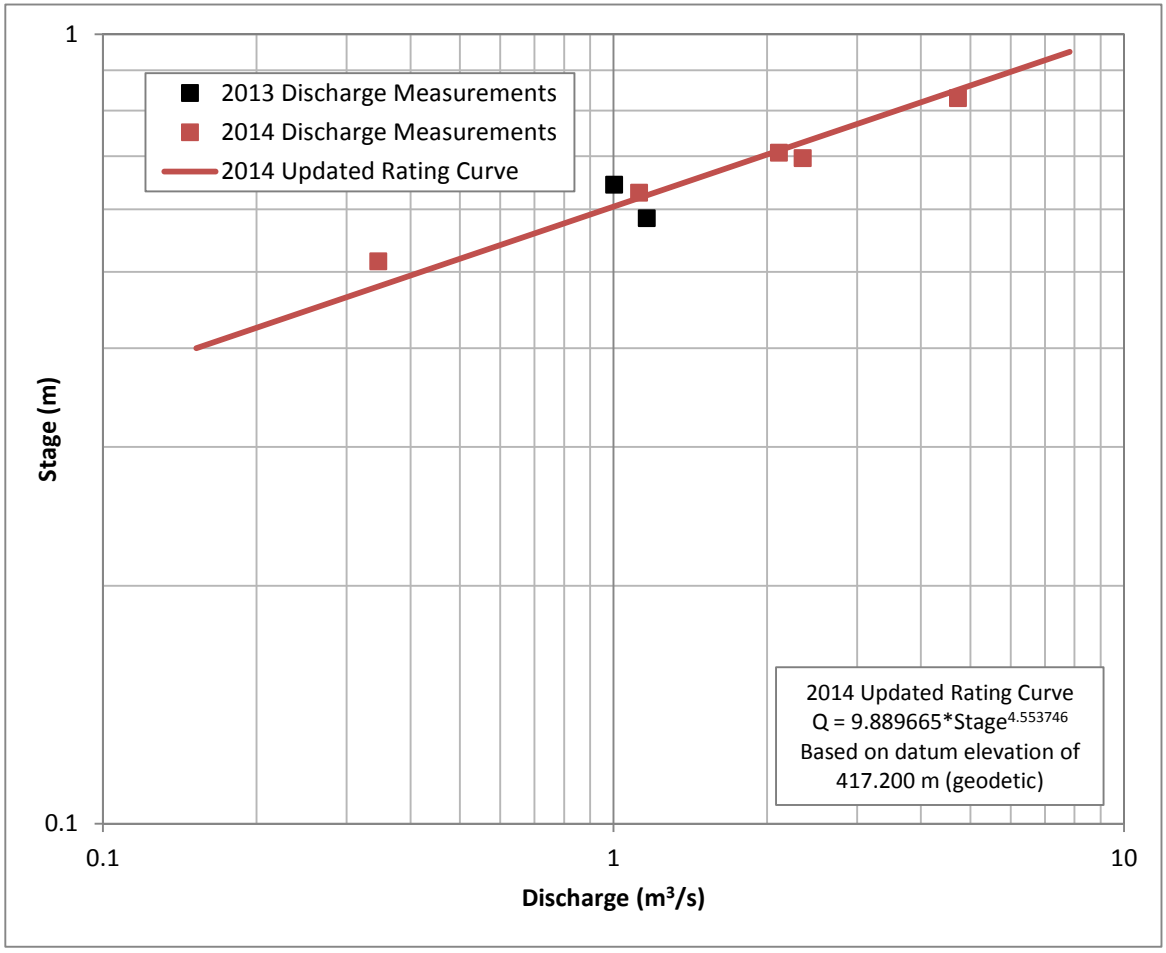


Table A4.3-2 Lake E1 Outlet, 2014 Mean Daily Discharge and Water Surface Elevation

	Discharge (m^3/s)					Water Surface Elevation (m, geodetic)				
DATE	May	Jun	Jul	Aug	Sep	May	Jun	Jul	Aug	Sep
1	--	6.446	2.455	1.157	0.587	--	418.109	417.936	417.824	417.738
2	--	6.255	2.271	0.993	0.585	--	418.104	417.923	417.803	417.737
3	--	5.713	2.069	0.986	0.585	--	418.086	417.909	417.803	417.737
4	--	5.177	1.907	0.982	0.661	--	418.067	417.896	417.802	417.752
5	--	4.309	1.828	0.914	0.690	--	418.033	417.890	417.793	417.757
6	--	3.686	1.811	0.961	0.743	--	418.005	417.889	417.799	417.766
7	--	3.576	1.787	0.962	0.667	--	417.999	417.887	417.799	417.753
8	--	3.303	1.630	0.951	0.685	--	417.986	417.873	417.798	417.756
9	--	3.125	1.555	0.866	0.679	--	417.976	417.866	417.785	417.755
10	--	3.197	1.456	0.864	0.675	--	417.980	417.856	417.785	417.754
11	--	3.380	1.531	0.862	0.601	--	417.990	417.864	417.785	417.740
12	--	3.227	1.469	0.800	0.661	--	417.982	417.858	417.775	417.752
13	--	3.003	1.345	0.755	0.666	--	417.969	417.845	417.768	417.753
14	--	3.024	1.175	0.845	0.650	--	417.971	417.826	417.783	417.750
15	--	3.043	1.136	0.813	0.691	--	417.972	417.822	417.778	417.757
16	--	3.014	1.348	0.760	0.661	--	417.970	417.845	417.769	417.752
17	--	2.767	1.839	0.801	0.628	--	417.956	417.891	417.776	417.746
18	--	2.691	2.091	0.885	0.603P	--	417.951	417.911	417.788	417.741P
19	--	2.565	1.989	0.826	--	--	417.943	417.903	417.779	--
20	--	2.489	1.851	0.803	--	--	417.938	417.892	417.776	--
21	--	2.599	1.707	0.757	--	--	417.945	417.879	417.769	--
22	--	2.556	1.583	0.731	--	--	417.943	417.868	417.764	--
23	--	2.310	1.451	0.684	--	--	417.926	417.856	417.756	--
24	--	2.018	1.302	0.658	--	--	417.905	417.840	417.751	--
25	--	1.921	1.218	0.617	--	--	417.897	417.831	417.744	--
26	--	1.840	1.142	0.620	--	--	417.891	417.822	417.744	--
27	--	1.761	1.118	0.648	--	--	417.884	417.819	417.750	--
28	10.652P	1.726	1.062	0.668	--	418.216P	417.881	417.812	417.753	--
29	9.418	2.309	1.042	0.661	--	418.188	417.926	417.810	417.751	--
30	8.968	2.706	1.006	0.608	--	418.179	417.952	417.805	417.741	--
31	8.695	--	1.089	0.584	--	418.172	--	417.816	417.737	--
MIN	8.695	1.726	1.006	0.584	0.585	418.172	417.881	417.805	417.737	417.737
MEAN	9.433	3.191	1.557	0.807	0.651	418.189	417.971	417.863	417.775	417.750
MAX	10.652	6.446	2.455	1.157	0.743	418.216	418.109	417.936	417.824	417.766

Table A4.3-3 Discharge Sheet – Lake E1 Outlet - Side Channel, 6 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 12 2015

File Information

File Name	E1SIDECH.MAY.WAD
Start Date and Time	2014/06/06 11:26:18

Site Details

Site Name	E1 SIDECH
Operator(s)	DC CD

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.5%	8.1%
Velocity	1.4%	7.2%
Width	0.2%	0.2%
Method	2.5%	-
# Stations	3.0%	-
Overall	**4.3%**	**10.9%**

Summary

Averaging Int.	15	# Stations	17
Start Edge	LEW	Total Width	5.000
Mean SNR	16.6 dB	Total Area	0.429
Mean Temp	3.86 °C	Mean Depth	0.086
Disch. Equation	Mid-Section	Mean Velocity	0.1018
		Total Discharge	**0.0437**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:26	1.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	11:26	1.60	0.6	0.100	0.6	0.040	0.2412	1.00	0.2412	0.030	0.0072	16.6
2	11:27	1.90	0.6	0.140	0.6	0.056	0.2202	1.00	0.2202	0.042	0.0092	21.2
3	11:27	2.20	0.6	0.150	0.6	0.060	0.1168	1.00	0.1168	0.045	0.0053	12.0
4	11:28	2.50	0.6	0.150	0.6	0.060	0.0365	1.00	0.0365	0.045	0.0016	3.8
5	*11:28*	*2.80*	*0.6*	*0.050*	*0.6*	*0.020*	*0.0278*	*1.00*	*0.0278*	*0.015*	*0.0004*	*1.0*
6	11:29	3.10	0.6	0.050	0.6	0.020	0.1220	1.00	0.1220	0.015	0.0018	4.2
7	11:29	3.40	0.6	0.140	0.6	0.056	0.1037	1.00	0.1037	0.042	0.0044	10.0
8	11:30	3.70	0.6	0.080	0.6	0.032	0.1030	1.00	0.1030	0.024	0.0025	5.7
9	11:30	4.00	0.6	0.080	0.6	0.032	0.0736	1.00	0.0736	0.024	0.0018	4.0
10	*11:31*	*4.30*	*0.6*	*0.100*	*0.6*	*0.040*	*0.1148*	*1.00*	*0.1148*	*0.030*	*0.0034*	*7.9*
11	11:32	4.60	0.6	0.100	0.6	0.040	0.0596	1.00	0.0596	0.030	0.0018	4.1
12	11:32	4.90	0.6	0.080	0.6	0.032	0.0677	1.00	0.0677	0.024	0.0016	3.7
13	11:33	5.20	0.6	0.070	0.6	0.028	0.0456	1.00	0.0456	0.021	0.0010	2.2
14	*11:34*	*5.50*	*0.6*	*0.060*	*0.6*	*0.024*	*0.0457*	*1.00*	*0.0457*	*0.018*	*0.0008*	*1.9*
15	*11:34*	*5.80*	*0.6*	*0.060*	*0.6*	*0.024*	*0.0343*	*1.00*	*0.0343*	*0.024*	*0.0008*	*1.9*
16	11:34	6.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.3-4 Discharge Sheet – Lake E1 Outlet - Main Channel, 6 June 2014

Discharge Measurement Summary

Date Measured: Friday, 06 June, 2014

Site Information		Measurement Information	
Site Name	e1	Party	
Station Number		Boat/Motor	
Location		Meas. Number	

System Information		System Setup		Units	
System Type	RS-M9	Transducer Depth (m)	0.06	Distance	m
Serial Number	2625	Salinity (ppt)	0.0	Velocity	m/s
Firmware Version	3.00	Magnetic Declination (deg)	14.4	Area	m2
Software Version	3.50			Discharge	m3/s
				Temperature	degC

Discharge Calculation Settings				Discharge Results	
Track Reference	GPS-GGA	Left Method	User Input	Width (m)	18.67
Depth Reference	Vertical Beam	Right Method	Sloped Bank	Area (m2)	10.3
Coordinate System	ENU	Top Fit Type	Power Fit	Mean Speed (m/s)	0.453
		Bottom Fit Type	Power Fit	Total Q (m3/s)	4.684

Measurement Results

Tr		Time			Distance				Mean Vel		Discharge							%
#		Time	Duration	Temp.	Track	DMG	Width	Area	Boat	Water	Left	Right	Top	Middle	Bottom	Total	MBTotal	Measured
1	L	10:15:58 AM	0:06:25	2.2	10.85	10.12	18.12	10.5	0.028	0.437	0.00	0.25	0.91	2.81	0.62	4.589	–	61.2
2	R	10:22:58 AM	0:02:43	2.5	11.40	10.52	18.52	10.4	0.070	0.464	0.00	0.25	0.99	2.99	0.60	4.828	–	62.0
3	L	10:26:04 AM	0:02:55	2.1	11.81	10.72	18.72	10.3	0.067	0.443	0.00	0.18	0.93	2.84	0.62	4.569	–	62.2
4	R	10:29:34 AM	0:02:50	2.5	11.55	10.66	18.66	10.3	0.068	0.455	0.00	0.19	0.96	2.93	0.59	4.671	–	62.7
5	L	10:32:55 AM	0:03:21	2.1	11.96	10.69	18.69	10.3	0.060	0.472	0.00	0.18	0.97	3.04	0.65	4.846	–	62.7
6	R	10:36:37 AM	0:03:19	2.4	12.06	10.98	18.98	10.4	0.061	0.454	0.00	0.19	0.98	2.95	0.62	4.740	–	62.2
7	L	10:40:55 AM	0:03:21	2.0	11.80	10.79	18.79	10.2	0.059	0.454	0.00	0.16	0.97	2.90	0.63	4.653	–	62.3
8	R	10:44:37 AM	0:03:26	2.5	11.97	10.89	18.89	10.3	0.058	0.443	0.00	0.19	0.93	2.84	0.63	4.576	–	62.0
			Mean	2.3	11.68	10.67	18.67	10.3	0.059	0.453	0.00	0.20	0.95	2.91	0.62	4.684	0.000	62.2
			StdDev	0.2	0.37	0.25	0.25	0.1	0.012	0.011	0.00	0.03	0.03	0.08	0.02	0.103	0.000	0.5
			COV	0.1	0.032	0.023	0.013	0.009	0.210	0.024	0.000	0.152	0.028	0.026	0.029	0.022	0.000	0.007

Exposure Time: 0:28:20

Tr1=20030101124958.riv; Tr2=20030101125700.riv; Tr3=20030101130008.riv; Tr4=20030101130340.riv; Tr5=20030101130702.riv; Tr6=20030101131046.riv; Tr7=20030101131505.riv; Tr8=20030101131848.riv;

Table A4.3-5 Discharge Sheet – Lake E1 Outlet, 21 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 12 2015

File Information

File Name	E1JUN21.WAD
Start Date and Time	2014/06/21 14:44:33

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	1.4%
Velocity	1.0%	3.8%
Width	0.2%	0.2%
Method	1.3%	-
# Stations	2.1%	-
Overall	**2.9%**	**4.2%**

Summary

Averaging Int.	20	# Stations	24
Start Edge	LEW	Total Width	14.500
Mean SNR	21.9 dB	Total Area	9.050
Mean Temp	13.47 °C	Mean Depth	0.624
Disch. Equation	Mid-Section	Mean Velocity	0.2333
		Total Discharge	**2.1118**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:44	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	14:44	0.50	0.6	0.180	0.6	0.072	0.0066	1.00	0.0066	0.090	0.0006	0.0
2	14:45	1.00	0.6	0.200	0.6	0.080	0.0075	1.00	0.0075	0.100	0.0008	0.0
3	14:46	1.50	0.6	0.190	0.6	0.076	0.0163	1.00	0.0163	0.095	0.0015	0.1
4	14:48	2.00	0.6	0.190	0.6	0.076	0.0370	1.00	0.0370	0.095	0.0035	0.2
5	*14:49*	*2.50*	*0.6*	*0.280*	*0.6*	*0.112*	*0.0696*	*1.00*	*0.0696*	*0.140*	*0.0097*	*0.5*
6	14:50	3.00	0.6	0.280	0.6	0.112	0.0143	1.00	0.0143	0.140	0.0020	0.1
7	14:51	3.50	0.6	0.370	0.6	0.148	0.0644	1.00	0.0644	0.185	0.0119	0.6
8	14:52	4.00	0.6	0.400	0.6	0.160	0.1282	1.00	0.1282	0.200	0.0256	1.2
9	14:53	4.50	0.6	0.400	0.6	0.160	0.1703	1.00	0.1703	0.200	0.0341	1.6
10	*14:54*	*5.00*	*0.6*	*0.520*	*0.6*	*0.208*	*0.1361*	*1.00*	*0.1361*	*0.260*	*0.0354*	*1.7*
11	14:57	5.50	0.6	0.580	0.6	0.232	0.1799	1.00	0.1799	0.290	0.0522	2.5
12	14:58	6.00	0.6	0.630	0.6	0.252	0.2693	1.00	0.2693	0.315	0.0848	4.0
13	*15:02*	*6.50*	*0.2/0.8*	*0.800*	*0.2*	*0.640*	*0.3413*	*1.00*	*0.2870*	*0.400*	*0.1148*	*5.4*
13	*15:05*	*6.50*	*0.2/0.8*	*0.800*	*0.8*	*0.160*	*0.2328*					
14	15:11	7.00	0.2/0.8	0.920	0.2	0.736	0.4377	1.00	0.3864	0.460	0.1777	8.4
14	15:13	7.00	0.2/0.8	0.920	0.8	0.184	0.3351					
15	15:16	7.50	0.8/0.2	1.100	0.2	0.880	0.4805	1.00	0.4647	0.550	0.2556	12.1
15	15:15	7.50	0.8/0.2	1.100	0.8	0.220	0.4490					
16	15:18	8.00	0.2/0.8	1.120	0.2	0.896	0.4650	1.00	0.4477	0.560	0.2507	11.9
16	15:19	8.00	0.2/0.8	1.120	0.8	0.224	0.4305					
17	15:22	8.50	0.2/0.8	1.100	0.2	0.880	0.4748	1.00	0.4733	1.100	0.5207	24.7
17	15:23	8.50	0.2/0.8	1.100	0.8	0.220	0.4719					
18	15:26	10.00	0.2/0.8	1.120	0.2	0.896	0.1964	1.00	0.2062	1.120	0.2309	10.9
18	15:26	10.00	0.2/0.8	1.120	0.8	0.224	0.2160					
19	*15:30*	*10.50*	*0.2/0.8*	*1.000*	*0.2*	*0.800*	*0.1243*	*1.00*	*0.1719*	*0.500*	*0.0860*	*4.1*
19	*15:31*	*10.50*	*0.2/0.8*	*1.000*	*0.8*	*0.200*	*0.2195*					
20	15:32	11.00	0.2/0.8	0.780	0.2	0.624	0.0906	1.00	0.0966	0.390	0.0377	1.8
20	15:33	11.00	0.2/0.8	0.780	0.8	0.156	0.1026					
21	*15:35*	*11.50*	*0.8/0.2*	*0.780*	*0.2*	*0.624*	*0.1454*	*1.00*	*0.1509*	*0.780*	*0.1177*	*5.6*
21	*15:34*	*11.50*	*0.8/0.2*	*0.780*	*0.8*	*0.156*	*0.1564*					
22	*15:37*	*13.00*	*0.6*	*0.720*	*0.6*	*0.288*	*0.0535*	*1.00*	*0.0535*	*1.080*	*0.0578*	*2.7*
23	15:37	14.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.3-6 Discharge Sheet – Lake E1 Outlet, 27 June 2014

Discharge Measurement Summary

Date Measured: Friday, June 27, 2014

Site Information		Measurement Information	
Site Name	e1	Party	dc kb
Station Number		Boat/Motor	
Location		Meas. Number	

System Information		System Setup		Units	
System Type	RS-M9	Transducer Depth (m)	0.05	Distance	m
Serial Number	2625	Salinity (ppt)	0.0	Velocity	m/s
Firmware Version	3.00	Magnetic Declination (deg)	15.2	Area	m2
Software Version	3.7			Discharge	m3/s
				Temperature	degC

Discharge Calculation Settings				Discharge Results	
Track Reference	Bottom-Track	Left Method	Sloped Bank	Width (m)	10.483
Depth Reference	Vertical Beam	Right Method	Sloped Bank	Area (m2)	8.061
Coordinate System	ENU	Top Fit Type	Power Fit	Mean Speed (m/s)	0.292
		Bottom Fit Type	Power Fit	Total Q (m3/s)	2.351
				Maximum Measured Depth	1.140
				Maximum Measured Speed	1.031

Measurement Results

Tr		Time			Distance				Mean Vel		Discharge							%
#		Time	Duration	Temp.	Track	DMG	Width	Area	Boat	Water	Left	Right	Top	Middle	Bottom	Total	MBTotal	Measured
1	L	3:08:52 PM	0:03:00	21.4	11.38	9.08	10.576	8.196	0.063	0.285	0.02	0.04	0.35	1.61	0.33	2.338	--	68.7
2	R	3:12:08 PM	0:02:32	21.5	9.86	8.54	10.036	7.681	0.065	0.311	0.02	0.04	0.35	1.56	0.41	2.386	--	65.5
3	L	3:14:56 PM	0:02:18	21.5	10.92	9.21	10.709	8.250	0.079	0.284	0.02	0.03	0.35	1.60	0.35	2.340	--	68.2
6	R	3:22:09 PM	0:02:11	21.6	10.59	9.11	10.610	8.115	0.081	0.288	0.02	0.03	0.35	1.59	0.36	2.338	--	67.8
			Mean	21.5	10.69	8.98	10.483	8.061	0.072	0.292	0.02	0.03	0.35	1.59	0.36	2.351	0.000	67.6
			Std Dev	0.0	0.55	0.26	0.263	0.225	0.008	0.011	0.00	0.00	0.00	0.02	0.03	0.021	0.000	1.2
			COV	0.0	0.052	0.029	0.025	0.028	0.111	0.037	0.079	0.133	0.009	0.010	0.087	0.009	0.000	0.018

Exposure Time: 0:10:01

Tr1=E1 27Jun14 1511.riv; Tr2=E1 27Jun14 1514.riv; Tr3=E1 27Jun14 1516.riv; Tr6=E1 27Jun14 1523.riv;

Table A4.3-7 Discharge Sheet – Lake E1 Outlet, 1 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	E1AUG1.WAD
Start Date and Time	2014/08/01 12:29:44

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	2.6%
Velocity	0.8%	3.4%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	2.2%	-
Overall	**3.1%**	**4.4%**

Summary			
Averaging Int.	20	# Stations	23
Start Edge	LEW	Total Width	7.750
Mean SNR	22.1 dB	Total Area	4.429
Mean Temp	12.89 °C	Mean Depth	0.571
Disch. Equation	Mid-Section	Mean Velocity	0.2534
		Total Discharge	**1.1223**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:29	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	12:31	0.50	0.6	0.260	0.6	0.104	0.0950	1.00	0.0950	0.130	0.0124	1.1
2	12:32	1.00	0.6	0.290	0.6	0.116	0.1347	1.00	0.1347	0.145	0.0195	1.7
3	12:33	1.50	0.6	0.430	0.6	0.172	0.0687	1.00	0.0687	0.215	0.0148	1.3
4	12:34	2.00	0.6	0.430	0.6	0.172	0.1322	1.00	0.1322	0.215	0.0284	2.5
5	12:36	2.50	0.6	0.430	0.6	0.172	0.1578	1.00	0.1578	0.215	0.0339	3.0
6	12:36	3.00	0.6	0.460	0.6	0.184	0.2080	1.00	0.2080	0.230	0.0478	4.3
7	12:38	3.50	0.6	0.590	0.6	0.236	0.2475	1.00	0.2475	0.295	0.0730	6.5
8	12:39	4.00	0.6	0.740	0.6	0.296	0.2559	1.00	0.2559	0.370	0.0947	8.4
9	12:40	4.50	0.6	0.750	0.6	0.300	0.3148	1.00	0.3148	0.281	0.0885	7.9
10	12:41	4.75	0.2/0.8	0.800	0.2	0.640	0.3215	1.00	0.3014	0.200	0.0603	5.4
10	12:42	4.75	0.2/0.8	0.800	0.8	0.160	0.2813					
11	*12:44*	*5.00*	*0.2/0.8*	*0.960*	*0.2*	*0.768*	*0.3500*	*1.00*	*0.1766*	*0.240*	*0.0424*	*3.8*
11	*12:52*	*5.00*	*0.2/0.8*	*0.960*	*0.8*	*0.192*	*0.0032*					
12	12:56	5.25	0.6	0.860	0.6	0.344	0.3289	1.00	0.3289	0.215	0.0707	6.3
13	12:57	5.50	0.6	0.720	0.6	0.288	0.4167	1.00	0.4167	0.180	0.0750	6.7
14	12:59	5.75	0.6	0.680	0.6	0.272	0.4598	1.00	0.4598	0.170	0.0782	7.0
15	13:00	6.00	0.6	0.600	0.6	0.240	0.3939	1.00	0.3939	0.150	0.0591	5.3
16	13:01	6.25	0.6	0.560	0.6	0.224	0.4043	1.00	0.4043	0.140	0.0566	5.0
17	13:02	6.50	0.6	0.570	0.6	0.228	0.4006	1.00	0.4006	0.143	0.0571	5.1
18	13:03	6.75	0.6	0.630	0.6	0.252	0.3494	1.00	0.3494	0.158	0.0550	4.9
19	13:05	7.00	0.6	1.070	0.6	0.428	0.2729	1.00	0.2729	0.268	0.0730	6.5
20	13:06	7.25	0.6	0.960	0.6	0.384	0.1791	1.00	0.1791	0.240	0.0430	3.8
21	13:07	7.50	0.6	0.920	0.6	0.368	0.1691	1.00	0.1691	0.230	0.0389	3.5
22	13:07	7.75	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.3-8 Discharge Sheet – Lake E1 Outlet, 18 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	E1SEPT18.WAD
Start Date and Time	2014/09/18 14:52:12

Site Details	
Site Name	E1
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	3.2%
Velocity	1.1%	8.2%
Width	0.1%	0.1%
Method	1.8%	-
# Stations	1.5%	-
Overall	**2.8%**	**8.9%**

Summary			
Averaging Int.	20	# Stations	34
Start Edge	LEW	Total Width	13.200
Mean SNR	22.1 dB	Total Area	6.344
Mean Temp	2.49 °C	Mean Depth	0.481
Disch. Equation	Mid-Section	Mean Velocity	0.0546
		Total Discharge	**0.3462**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:52	4.60	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	14:53	5.00	0.6	0.200	0.6	0.080	0.0152	1.00	0.0152	0.080	0.0012	0.4
2	14:54	5.40	0.6	0.280	0.6	0.112	0.0023	1.00	0.0023	0.112	0.0003	0.1
3	14:55	5.80	0.6	0.260	0.6	0.104	0.0251	1.00	0.0251	0.104	0.0026	0.8
4	14:56	6.20	0.6	0.220	0.6	0.088	0.0276	1.00	0.0276	0.088	0.0024	0.7
5	14:57	6.60	0.6	0.260	0.6	0.104	0.0482	1.00	0.0482	0.104	0.0050	1.4
6	14:58	7.00	0.6	0.260	0.6	0.104	0.0408	1.00	0.0408	0.104	0.0042	1.2
7	15:00	7.40	0.6	0.140	0.6	0.056	0.0636	1.00	0.0636	0.056	0.0036	1.0
8	15:01	7.80	0.6	0.220	0.6	0.088	0.0727	1.00	0.0727	0.088	0.0064	1.8
9	15:02	8.20	0.6	0.230	0.6	0.092	0.0742	1.00	0.0742	0.092	0.0068	2.0
10	15:04	8.60	0.6	0.460	0.6	0.184	0.0887	1.00	0.0887	0.184	0.0163	4.7
11	15:06	9.00	0.6	0.520	0.6	0.208	0.0756	1.00	0.0756	0.208	0.0157	4.5
12	15:08	9.40	0.6	0.550	0.6	0.220	0.1141	1.00	0.1141	0.220	0.0251	7.3
13	15:09	9.80	0.6	0.560	0.6	0.224	0.1290	1.00	0.1290	0.224	0.0289	8.3
14	15:10	10.20	0.6	0.820	0.6	0.328	0.1018	1.00	0.1018	0.328	0.0334	9.6
15	15:12	10.60	0.6	0.630	0.6	0.252	0.1527	1.00	0.1527	0.252	0.0385	11.1
16	15:16	11.00	0.6	0.920	0.6	0.368	0.0018	1.00	0.0018	0.368	0.0007	0.2
17	15:17	11.40	0.6	0.720	0.6	0.288	0.0277	1.00	0.0277	0.288	0.0080	2.3
18	15:19	11.80	0.6	0.820	0.6	0.328	0.0616	1.00	0.0616	0.328	0.0202	5.8
19	15:22	12.20	0.6	0.880	0.6	0.352	0.0537	1.00	0.0537	0.352	0.0189	5.5
20	15:23	12.60	0.6	0.880	0.6	0.352	0.0773	1.00	0.0773	0.352	0.0272	7.9
21	15:25	13.00	0.6	0.800	0.6	0.320	0.0670	1.00	0.0670	0.320	0.0214	6.2
22	15:26	13.40	0.6	0.620	0.6	0.248	0.0473	1.00	0.0473	0.248	0.0117	3.4
23	15:28	13.80	0.6	0.640	0.6	0.256	0.0242	1.00	0.0242	0.256	0.0062	1.8
24	15:30	14.20	0.6	0.680	0.6	0.272	0.0266	1.00	0.0266	0.272	0.0072	2.1
25	15:31	14.60	0.6	0.700	0.6	0.280	0.0469	1.00	0.0469	0.280	0.0131	3.8
26	15:32	15.00	0.6	0.640	0.6	0.256	0.0369	1.00	0.0369	0.256	0.0094	2.7
27	15:34	15.40	0.6	0.420	0.6	0.168	0.0308	1.00	0.0308	0.168	0.0052	1.5
28	15:36	15.80	0.6	0.390	0.6	0.156	0.0166	1.00	0.0166	0.156	0.0026	0.7
29	15:37	16.20	0.6	0.300	0.6	0.120	0.0076	1.00	0.0076	0.120	0.0009	0.3
30	15:39	16.60	0.6	0.260	0.6	0.104	0.0135	1.00	0.0135	0.104	0.0014	0.4
31	15:40	17.00	0.6	0.290	0.6	0.116	0.0077	1.00	0.0077	0.116	0.0009	0.3
32	15:42	17.40	0.6	0.290	0.6	0.116	0.0055	1.00	0.0055	0.116	0.0006	0.2
33	15:42	17.80	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A4.4 Ursula Lake (Lake E10) Outlet

Benchmark Coordinates	UTM Zone 12
Easting	530693 m (approximated)[a]
Northing	7185143 m (approximated)[a]
Elevation	462.474 m (geodetic, approximated)[b]
Datum Elevation	462.570 m (geodetic, approximated)[b]

a) UTMs are approximated using a hand-held GPS unit or a GPS with RTK satellite navigation system not referenced to Aurora base stations; therefore, precision to the nearest metre is reported.

b) Geodetic elevations estimated from adjusting non-geodetic August 2013 manually surveyed water levels to water surface elevations derived from LiDAR data dated 23 July to 1 August, 2013. At sites with geodetic elevations referenced to Aurora base stations (Aurora 2013), LiDAR water surface elevations were within 0.20 m agreement with geodetic water surface elevations originally taken in August 2013.

Table A4.4-1 2014 Hydrometric Data at Ursula Lake (Lake E10) Outlet Station

Date and Time	Water Surface Elevation (m)	Transducer Reading (m)	Transducer Elevation (m)	Mean Transducer Elevation (m)	Stage (m)	Measured Discharge (m^3/s)
30-May-2014 09:00	463.344	0.545	462.798	462.824	0.773	0.907
7-Jun-2014 13:50	463.376	0.547	462.829		0.806	0.914
26-Jun-2014 13:20	463.365	0.522	462.842		0.794	0.935
1-Aug-2014 09:50	463.333	0.504	462.828		0.762	0.862
19-Sep-2014 08:40	463.218	--	--		0.647	0.147

Note: The Barologger for atmospheric pressure corrections was removed on September 18, and thus, no transducer corrections were possible for September 19.

Figure A4.4-1 Open-Water 2014 Stage-Discharge Rating Curve at Ursula Lake (Lake E10) Outlet Station

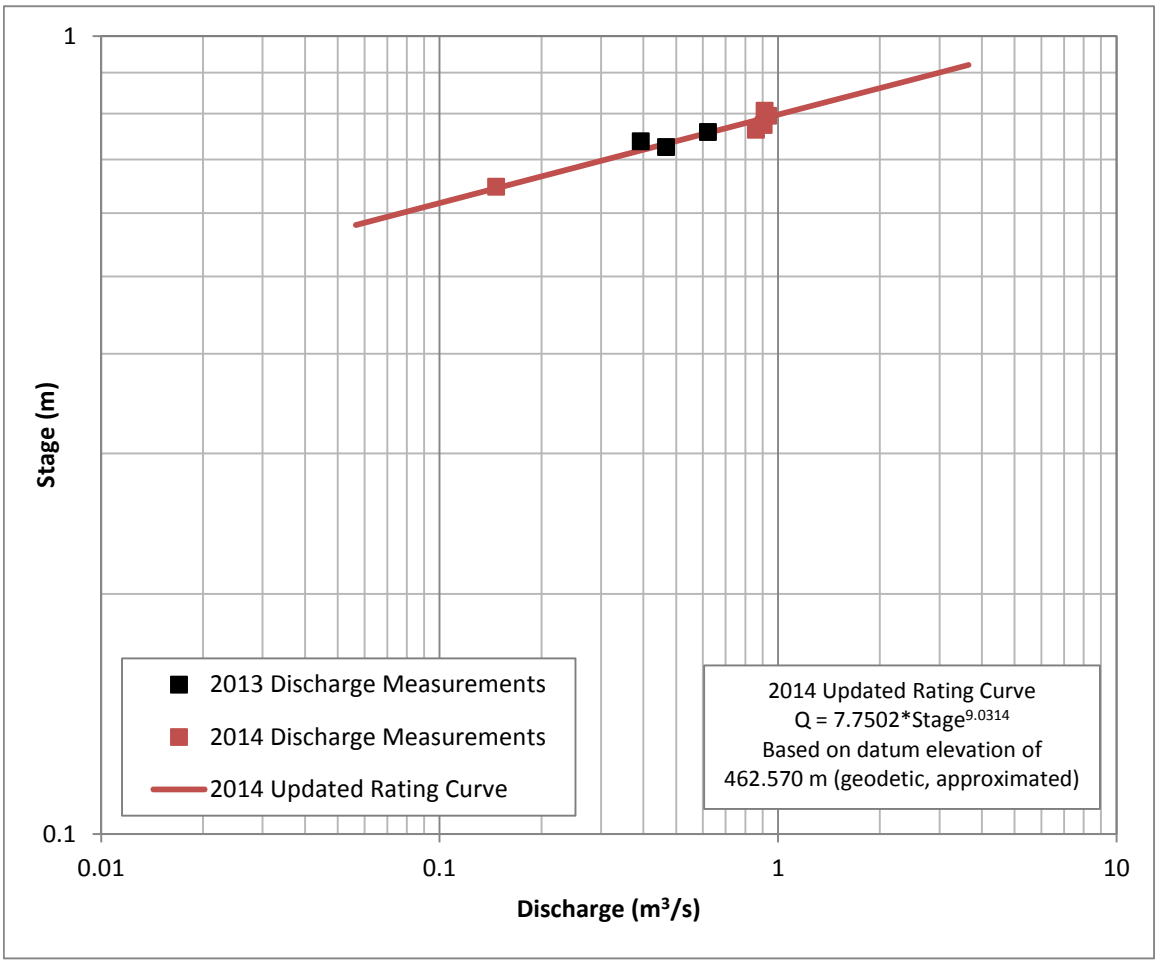


Table A4.4-2 Ursula Lake (Lake E10) Outlet, 2014 Mean Daily Discharge and Water Surface Elevation

Date	Discharge (m^3/s)					Water Surface Elevation (m, geodetic)				
	May	Jun	Jul	Aug	Sep	May	Jun	Jul	Aug	Sep
1	--	1.204	1.092	0.774	0.256	--	463.383	463.375	463.343	463.255
2	--	1.617	1.010	0.577	0.260	--	463.411	463.367	463.320	463.256
3	--	1.655	0.989	0.576	0.258	--	463.413	463.366	463.320	463.256
4	--	1.594	0.927	0.543	0.277	--	463.409	463.360	463.315	463.260
5	--	1.553	0.928	0.480	0.221	--	463.407	463.360	463.305	463.244
6	--	1.386	1.051	0.521	0.325	--	463.396	463.371	463.312	463.270
7	--	1.206	1.011	0.502	0.291	--	463.383	463.367	463.308	463.264
8	--	1.138	0.939	0.462	0.241	--	463.378	463.361	463.301	463.250
9	--	1.087	0.889	0.406	0.207	--	463.374	463.356	463.291	463.239
10	--	1.144	0.894	0.433	0.173	--	463.379	463.357	463.296	463.226
11	--	1.303	1.026	0.473	0.156	--	463.390	463.369	463.303	463.219
12	--	1.160	0.822	0.402	0.186	--	463.380	463.349	463.290	463.232
13	--	1.029	0.687	0.394	0.178	--	463.369	463.334	463.288	463.228
14	--	1.110	0.636	0.438	0.183	--	463.376	463.328	463.297	463.230
15	--	1.198	0.679	0.399	0.190	--	463.383	463.334	463.290	463.233
16	--	1.204	1.244	0.359	0.167	--	463.383	463.383	463.281	463.223
17	--	1.031	1.592	0.519	0.149	--	463.369	463.408	463.311	463.216
18	--	1.000	1.590	0.479	0.165P	--	463.367	463.408	463.304	463.223P
19	--	0.974	1.184	0.437	--	--	463.364	463.381	463.297	--
20	--	1.019	1.032	0.423	--	--	463.369	463.369	463.294	--
21	--	1.121	0.957	0.381	--	--	463.377	463.363	463.286	--
22	--	1.138	0.941	0.336	--	--	463.378	463.361	463.275	--
23	--	1.012	0.864	0.304	--	--	463.367	463.354	463.268	--
24	--	0.896	0.764	0.288	--	--	463.357	463.343	463.264	--
25	--	0.862	0.770	0.269	--	--	463.353	463.344	463.259	--
26	--	0.847	0.716	0.319	--	--	463.352	463.338	463.272	--
27	--	0.820	0.729	0.342	--	--	463.349	463.339	463.278	--
28	0.564P	0.935	0.720	0.335	--	463.318P	463.360	463.338	463.276	--
29	0.709	1.275	0.757	0.299	--	463.337	463.389	463.343	463.266	--
30	0.995	1.216	0.685	0.256	--	463.367	463.384	463.334	463.254	--
31	1.142	--	0.922	0.240	--	463.379		463.360	463.251	--
MIN	0.564	0.820	0.636	0.240	0.149	463.318	463.349	463.328	463.251	463.216
MEAN	0.852	1.158	0.937	0.418	0.216	463.350	463.378	463.359	463.291	463.240
MAX	1.142	1.655	1.592	0.774	0.325	463.379	463.413	463.408	463.343	463.270

Table A4.4-3 Discharge Sheet – Ursula Lake (Lake E10) Outlet, 30 May 2014

Discharge Measurement Summary

Date Generated: Mon Jan 12 2015

File Information

File Name	E10.WAD
Start Date and Time	2014/05/30 08:32:27

Site Details

Site Name	
Operator(s)	DC CD

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	3.9%
Velocity	1.7%	5.5%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	2.6%	-
Overall	**3.9%**	**6.9%**

Summary

Averaging Int.	15	# Stations	19
Start Edge	LEW	Total Width	9.000
Mean SNR	48.7 dB	Total Area	2.160
Mean Temp	1.77 °C	Mean Depth	0.240
Disch. Equation	Mid-Section	Mean Velocity	0.4197
		Total Discharge	**0.9066**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:32	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*08:32*	*0.50*	*0.6*	*0.340*	*0.6*	*0.136*	*0.0831*	*1.00*	*0.0831*	*0.170*	*0.0141*	*1.6*
2	*08:33*	*1.00*	*0.6*	*0.380*	*0.6*	*0.152*	*0.4323*	*1.00*	*0.4323*	*0.190*	*0.0821*	*9.1*
3	*08:34*	*1.50*	*0.6*	*0.280*	*0.6*	*0.112*	*0.4932*	*1.00*	*0.4932*	*0.140*	*0.0690*	*7.6*
4	*08:36*	*2.00*	*0.6*	*0.280*	*0.6*	*0.112*	*0.5317*	*1.00*	*0.5317*	*0.140*	*0.0744*	*8.2*
5	*08:37*	*2.50*	*0.6*	*0.260*	*0.6*	*0.104*	*0.6553*	*1.00*	*0.6553*	*0.130*	*0.0852*	*9.4*
6	08:37	3.00	0.6	0.260	0.6	0.104	0.5762	1.00	0.5762	0.130	0.0749	8.3
7	08:39	3.50	0.6	0.320	0.6	0.128	0.5732	1.00	0.5732	0.160	0.0917	10.1
8	08:40	4.00	0.6	0.340	0.6	0.136	0.4339	1.00	0.4339	0.170	0.0738	8.1
9	*08:42*	*4.50*	*0.6*	*0.340*	*0.6*	*0.136*	*0.1221*	*1.00*	*0.1221*	*0.170*	*0.0208*	*2.3*
10	08:44	5.00	0.6	0.240	0.6	0.096	0.2650	1.00	0.2650	0.120	0.0318	3.5
11	08:45	5.50	0.6	0.260	0.6	0.104	0.5241	1.00	0.5241	0.130	0.0681	7.5
12	08:46	6.00	0.6	0.200	0.6	0.080	0.5081	1.00	0.5081	0.100	0.0508	5.6
13	08:47	6.50	0.6	0.220	0.6	0.088	0.4842	1.00	0.4842	0.110	0.0533	5.9
14	08:47	7.00	0.6	0.200	0.6	0.080	0.3077	1.00	0.3077	0.100	0.0308	3.4
15	08:48	7.50	0.6	0.140	0.6	0.056	0.2612	1.00	0.2612	0.070	0.0183	2.0
16	08:49	8.00	0.6	0.200	0.6	0.080	0.5376	1.00	0.5376	0.100	0.0538	5.9
17	08:50	8.50	0.6	0.060	0.6	0.024	0.4557	1.00	0.4557	0.030	0.0137	1.5
18	08:50	9.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.4-4 Discharge Sheet – Ursula Lake (Lake E10) Outlet, 7 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 12 2015

File Information

File Name	E10JUN7.WAD
Start Date and Time	2014/06/07 13:53:15

Site Details

Site Name	
Operator(s)	DC CD

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	2.9%
Velocity	2.0%	7.0%
Width	0.1%	0.1%
Method	2.1%	-
# Stations	2.8%	-
Overall	**4.1%**	**7.7%**

Summary

Averaging Int.	15	# Stations	18
Start Edge	LEW	Total Width	8.500
Mean SNR	51.0 dB	Total Area	2.260
Mean Temp	4.25 °C	Mean Depth	0.266
Disch. Equation	Mid-Section	Mean Velocity	0.4045
		Total Discharge	**0.9142**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:53	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	13:53	0.50	0.6	0.280	0.6	0.112	0.1319	1.00	0.1319	0.140	0.0185	2.0
2	13:54	1.00	0.6	0.280	0.6	0.112	0.1971	1.00	0.1971	0.140	0.0276	3.0
3	13:55	1.50	0.6	0.260	0.6	0.104	0.6259	1.00	0.6259	0.130	0.0814	8.9
4	13:56	2.00	0.6	0.280	0.6	0.112	0.7281	1.00	0.7281	0.140	0.1019	11.1
5	13:57	2.50	0.6	0.280	0.6	0.112	0.7275	1.00	0.7275	0.140	0.1019	11.1
6	13:57	3.00	0.6	0.280	0.6	0.112	0.6467	1.00	0.6467	0.140	0.0905	9.9
7	13:58	3.50	0.6	0.320	0.6	0.128	0.4455	1.00	0.4455	0.160	0.0713	7.8
8	13:59	4.00	0.6	0.300	0.6	0.120	0.2349	1.00	0.2349	0.150	0.0352	3.9
9	14:00	4.50	0.6	0.340	0.6	0.136	0.1909	1.00	0.1909	0.170	0.0325	3.5
10	14:01	5.00	0.6	0.420	0.6	0.168	0.3410	1.00	0.3410	0.210	0.0716	7.8
11	14:02	5.50	0.6	0.300	0.6	0.120	0.4478	1.00	0.4478	0.150	0.0672	7.3
12	14:03	6.00	0.6	0.300	0.6	0.120	0.3301	1.00	0.3301	0.150	0.0495	5.4
13	14:04	6.50	0.6	0.260	0.6	0.104	0.5753	1.00	0.5753	0.130	0.0748	8.2
14	14:04	7.00	0.6	0.260	0.6	0.104	0.2329	1.00	0.2329	0.130	0.0303	3.3
15	14:05	7.50	0.6	0.220	0.6	0.088	0.3046	1.00	0.3046	0.110	0.0335	3.7
16	14:06	8.00	0.6	0.140	0.6	0.056	0.3807	1.00	0.3807	0.070	0.0266	2.9
17	14:06	8.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.4-5 Discharge Sheet – Ursula Lake (Lake E10) Outlet, 26 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	E10JUN26.WAD
Start Date and Time	2014/06/26 13:17:49

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.3%	3.7%
Velocity	0.9%	3.4%
Width	0.1%	0.1%
Method	1.8%	-
# Stations	2.3%	-
Overall	**3.2%**	**5.2%**

Summary

Averaging Int.	20	# Stations	22
Start Edge	LEW	Total Width	8.400
Mean SNR	44.9 dB	Total Area	1.904
Mean Temp	8.51 °C	Mean Depth	0.227
Disch. Equation	Mid-Section	Mean Velocity	0.4909
		Total Discharge	**0.9347**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:17	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	13:19	0.50	0.6	0.100	0.6	0.040	0.4864	1.00	0.4864	0.050	0.0243	2.6
2	13:21	1.00	0.6	0.140	0.6	0.056	0.5465	1.00	0.5465	0.070	0.0383	4.1
3	13:21	1.50	0.6	0.160	0.6	0.064	0.8105	1.00	0.8105	0.072	0.0584	6.2
4	13:24	1.90	0.6	0.220	0.6	0.088	0.7591	1.00	0.7591	0.088	0.0668	7.1
5	13:26	2.30	0.6	0.260	0.6	0.104	0.7075	1.00	0.7075	0.104	0.0736	7.9
6	13:27	2.70	0.6	0.300	0.6	0.120	0.7250	1.00	0.7250	0.120	0.0870	9.3
7	13:28	3.10	0.6	0.280	0.6	0.112	0.6327	1.00	0.6327	0.112	0.0709	7.6
8	13:29	3.50	0.6	0.280	0.6	0.112	0.5625	1.00	0.5625	0.112	0.0630	6.7
9	13:30	3.90	0.6	0.260	0.6	0.104	0.1988	1.00	0.1988	0.104	0.0207	2.2
10	13:32	4.30	0.6	0.380	0.6	0.152	0.1212	1.00	0.1212	0.152	0.0184	2.0
11	13:33	4.70	0.6	0.360	0.6	0.144	0.1927	1.00	0.1927	0.144	0.0277	3.0
12	13:34	5.10	0.6	0.300	0.6	0.120	0.4331	1.00	0.4331	0.120	0.0520	5.6
13	13:35	5.50	0.6	0.340	0.6	0.136	0.4980	1.00	0.4980	0.136	0.0677	7.2
14	13:36	5.90	0.6	0.290	0.6	0.116	0.5175	1.00	0.5175	0.116	0.0600	6.4
15	13:37	6.30	0.6	0.240	0.6	0.096	0.4536	1.00	0.4536	0.096	0.0435	4.7
16	13:38	6.70	0.6	0.170	0.6	0.068	0.6020	1.00	0.6020	0.068	0.0409	4.4
17	13:39	7.10	0.6	0.180	0.6	0.072	0.5560	1.00	0.5560	0.072	0.0400	4.3
18	13:40	7.50	0.6	0.220	0.6	0.088	0.4640	1.00	0.4640	0.088	0.0408	4.4
19	13:41	7.90	0.6	0.100	0.6	0.040	0.5559	1.00	0.5559	0.040	0.0222	2.4
20	13:42	8.30	0.6	0.160	0.6	0.064	0.4598	1.00	0.4598	0.040	0.0184	2.0
21	13:42	8.40	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.4-6 Discharge Sheet – Ursula Lake (Lake E10) Outlet, 1 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	E10AUG1.WAD
Start Date and Time	2014/08/01 09:52:23

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	2.8%
Velocity	1.1%	4.4%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	2.2%	-
Overall	**3.2%**	**5.3%**

Summary

Averaging Int.	20	# Stations	23
Start Edge	LEW	Total Width	11.000
Mean SNR	14.7 dB	Total Area	3.655
Mean Temp	13.10 °C	Mean Depth	0.332
Disch. Equation	Mid-Section	Mean Velocity	0.2357
		Total Discharge	**0.8616**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:52	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*09:55*	*0.50*	*0.6*	*0.220*	*0.6*	*0.088*	*0.2819*	*1.00*	*0.2819*	*0.110*	*0.0310*	*3.6*
2	09:57	1.00	0.6	0.280	0.6	0.112	0.3920	1.00	0.3920	0.140	0.0549	6.4
3	09:58	1.50	0.6	0.350	0.6	0.140	0.3806	1.00	0.3806	0.175	0.0666	7.7
4	09:59	2.00	0.6	0.320	0.6	0.128	0.2611	1.00	0.2611	0.160	0.0418	4.8
5	10:00	2.50	0.6	0.310	0.6	0.124	0.3687	1.00	0.3687	0.155	0.0571	6.6
6	10:00	3.00	0.6	0.380	0.6	0.152	0.2964	1.00	0.2964	0.190	0.0563	6.5
7	10:01	3.50	0.6	0.380	0.6	0.152	0.2228	1.00	0.2228	0.190	0.0423	4.9
8	10:02	4.00	0.6	0.250	0.6	0.100	0.2348	1.00	0.2348	0.125	0.0294	3.4
9	10:03	4.50	0.6	0.400	0.6	0.160	0.2553	1.00	0.2553	0.200	0.0511	5.9
10	10:04	5.00	0.6	0.400	0.6	0.160	0.1282	1.00	0.1282	0.200	0.0256	3.0
11	10:05	5.50	0.6	0.400	0.6	0.160	0.2534	1.00	0.2534	0.200	0.0507	5.9
12	10:06	6.00	0.6	0.420	0.6	0.168	0.2265	1.00	0.2265	0.210	0.0476	5.5
13	10:06	6.50	0.6	0.400	0.6	0.160	0.2287	1.00	0.2287	0.200	0.0457	5.3
14	10:07	7.00	0.6	0.480	0.6	0.192	0.2027	1.00	0.2027	0.240	0.0486	5.6
15	10:08	7.50	0.6	0.480	0.6	0.192	0.1616	1.00	0.1616	0.240	0.0388	4.5
16	10:08	8.00	0.6	0.480	0.6	0.192	0.2108	1.00	0.2108	0.240	0.0506	5.9
17	10:09	8.50	0.6	0.340	0.6	0.136	0.2119	1.00	0.2119	0.170	0.0360	4.2
18	10:10	9.00	0.6	0.320	0.6	0.128	0.2116	1.00	0.2116	0.160	0.0339	3.9
19	10:11	9.50	0.6	0.280	0.6	0.112	0.1674	1.00	0.1674	0.140	0.0234	2.7
20	10:11	10.00	0.6	0.200	0.6	0.080	0.1756	1.00	0.1756	0.100	0.0176	2.0
21	10:12	10.50	0.6	0.220	0.6	0.088	0.1143	1.00	0.1143	0.110	0.0126	1.5
22	10:12	11.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.4-7 Discharge Sheet – Ursula Lake (Lake E10) Outlet, 19 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	E10SEP19.WAD
Start Date and Time	2014/09/19 08:35:04

Site Details	
Site Name	E10
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	5.0%
Velocity	1.3%	11.9%
Width	0.1%	0.1%
Method	2.0%	-
# Stations	2.4%	-
Overall	**3.5%**	**13.0%**

Summary			
Averaging Int.	20	# Stations	21
Start Edge	LEW	Total Width	9.500
Mean SNR	16.4 dB	Total Area	2.044
Mean Temp	3.33 °C	Mean Depth	0.215
Disch. Equation	Mid-Section	Mean Velocity	0.0720
		Total Discharge	**0.1472**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:35	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*08:35*	*0.10*	*0.6*	*0.020*	*0.6*	*0.008*	*-0.0008*	*1.00*	*-0.0008*	*0.005*	*0.0000*	*0.0*
2	08:36	0.50	0.6	0.230	0.6	0.092	0.1603	1.00	0.1603	0.104	0.0166	11.3
3	08:37	1.00	0.6	0.230	0.6	0.092	0.1131	1.00	0.1131	0.115	0.0130	8.8
4	08:39	1.50	0.6	0.270	0.6	0.108	-0.0026	1.00	-0.0026	0.135	-0.0004	-0.2
5	08:42	2.00	0.6	0.100	0.6	0.040	0.0694	1.00	0.0694	0.050	0.0035	2.4
6	08:43	2.50	0.6	0.130	0.6	0.052	0.1133	1.00	0.1133	0.065	0.0074	5.0
7	08:44	3.00	0.6	0.140	0.6	0.056	0.1242	1.00	0.1242	0.070	0.0087	5.9
8	08:45	3.50	0.6	0.210	0.6	0.084	0.1196	1.00	0.1196	0.105	0.0126	8.5
9	08:46	4.00	0.6	0.250	0.6	0.100	0.0231	1.00	0.0231	0.125	0.0029	2.0
10	08:47	4.50	0.6	0.280	0.6	0.112	0.0762	1.00	0.0762	0.140	0.0107	7.2
11	08:48	5.00	0.6	0.260	0.6	0.104	0.0935	1.00	0.0935	0.130	0.0122	8.3
12	08:49	5.50	0.6	0.280	0.6	0.112	0.0869	1.00	0.0869	0.140	0.0122	8.3
13	08:50	6.00	0.6	0.260	0.6	0.104	0.0795	1.00	0.0795	0.130	0.0103	7.0
14	08:51	6.50	0.6	0.320	0.6	0.128	0.0683	1.00	0.0683	0.160	0.0109	7.4
15	08:51	7.00	0.6	0.320	0.6	0.128	0.0555	1.00	0.0555	0.160	0.0089	6.0
16	08:52	7.50	0.6	0.300	0.6	0.120	0.0410	1.00	0.0410	0.150	0.0062	4.2
17	08:53	8.00	0.6	0.260	0.6	0.104	0.0500	1.00	0.0500	0.130	0.0065	4.4
18	08:54	8.50	0.6	0.140	0.6	0.056	0.0411	1.00	0.0411	0.070	0.0029	2.0
19	*08:55*	*9.00*	*0.6*	*0.120*	*0.6*	*0.048*	*0.0381*	*1.00*	*0.0381*	*0.060*	*0.0023*	*1.6*
20	08:55	9.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A4.5 Lake G2 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	545888.491 m
Northing	7174288.034 m
Elevation	425.983 m (geodetic)
Datum Elevation	422.300 m (geodetic)

Table A4.5-1 2014 Hydrometric Data at Lake G2 Outlet Station

Date and Time	Water Surface Elevation (m)	Transducer Reading (m)	Transducer Elevation (m)	Mean Transducer Elevation (m)	Stage (m)	Measured Discharge (m^3/s)
26-Apr-2014 12:30	--	--	--	--	--	Frozen to bottom
29-May-2014 14:10	422.853	0.538	422.315	422.321	0.553	5.228
5-Jun-2014 14:50	422.681	0.370	422.311		0.381	3.514
22-Jun-2014 09:20	422.793	0.484	422.309		0.493	6.367
1-Aug-2014 14:20	422.652	0.318	422.334		0.352	3.847
19-Sep-2014 09:50	422.525	0.192	422.333		0.225	1.000

Figure A4.5-1 2014 Open-Water Stage-Discharge Rating Curve at Lake G2 Outlet Station

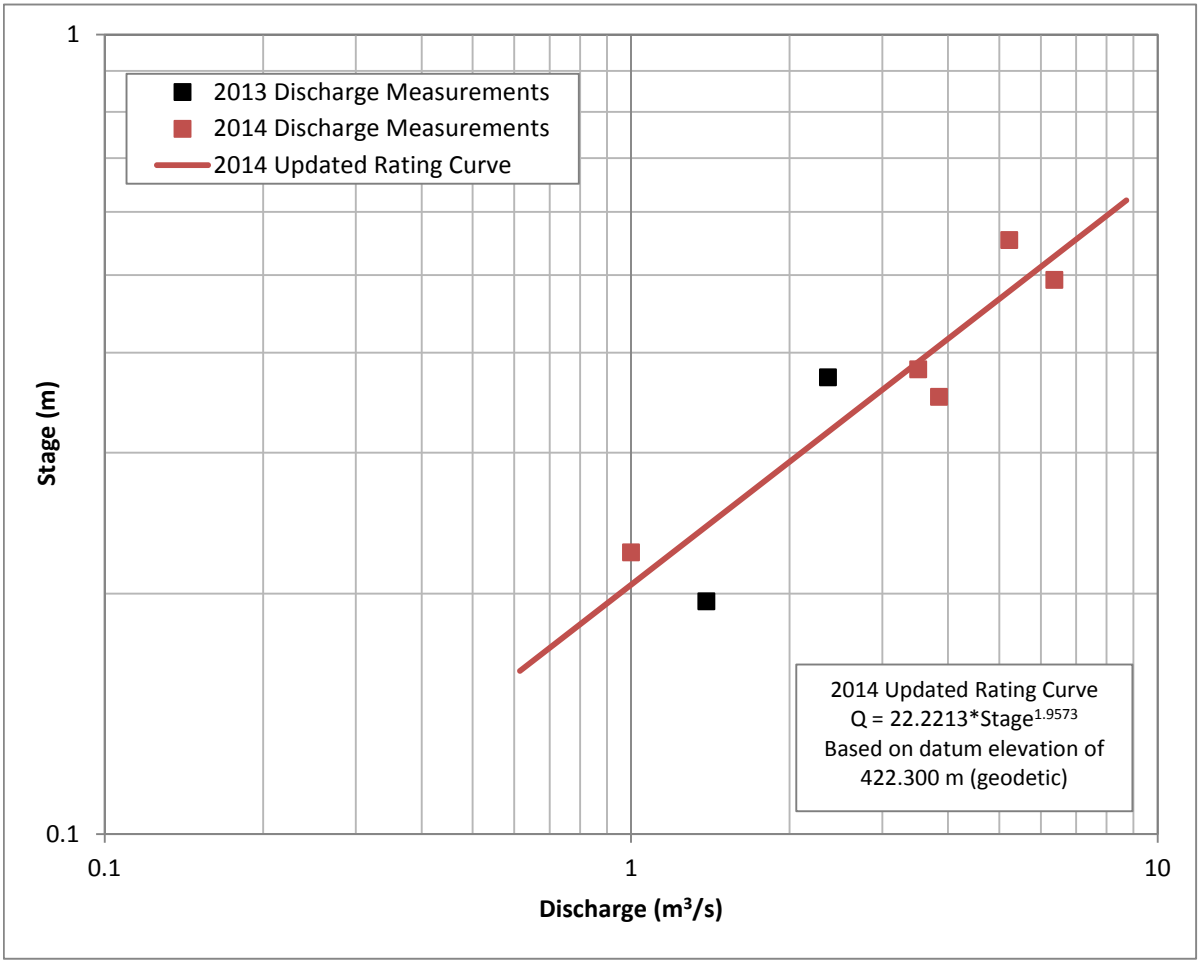


Table A4.5-2 Lake G2 Outlet, 2014 Mean Daily Discharge and Water Surface Elevation

	Discharge (m^3/s)					Water Surface Elevation (m, geodetic)				
DATE	May	Jun	Jul	Aug	Sep	May	Jun	Jul	Aug	Sep
1	--	4.346	3.778	2.846	0.876	--	422.734	422.704	422.650	422.492
2	--	4.336	3.621	2.585	0.881	--	422.734	422.696	422.633	422.492
3	--	3.928	3.542	2.527	0.815	--	422.712	422.691	422.629	422.485
4	--	3.618	3.518	2.495	0.943	--	422.695	422.690	422.627	422.497
5	--	3.607	3.319	2.360	1.051	--	422.695	422.678	422.618	422.510
6	--	3.593	3.419	2.387	1.056	--	422.694	422.684	422.620	422.510
7	--	3.702	3.370	2.312	1.144	--	422.700	422.681	422.614	422.518
8	--	4.004	3.272	2.091	1.141	--	422.717	422.676	422.599	422.518
9	--	4.336	3.142	1.851	1.064	--	422.734	422.668	422.581	422.511
10	--	4.849	3.024	1.803	0.940	--	422.759	422.661	422.577	422.498
11	--	5.418	3.293	1.797	0.937	--	422.786	422.677	422.576	422.498
12	--	5.457	3.066	1.594	1.048	--	422.788	422.663	422.560	422.510
13	--	5.428	2.856	1.604	0.951	--	422.787	422.650	422.561	422.500
14	--	5.759	2.670	1.661	1.028	--	422.802	422.639	422.566	422.507
15	--	5.910	2.623	1.561	1.060	--	422.808	422.636	422.557	422.511
16	--	5.981	3.367	1.479	0.998	--	422.811	422.680	422.550	422.505
17	--	5.671	4.078	1.582	0.946	--	422.798	422.720	422.558	422.499
18	--	5.660	4.450	1.580	0.888P	--	422.797	422.740	422.559	422.493P
19	--	5.543	4.503	1.481	--	--	422.792	422.742	422.550	--
20	--	5.533	4.471	1.332	--	--	422.791	422.741	422.537	--
21	--	5.691	4.379	1.259	--	--	422.799	422.736	422.531	--
22	--	5.698	4.310	1.137	--	--	422.799	422.732	422.519	--
23	--	5.181	4.175	1.013	--	--	422.775	422.725	422.506	--
24	--	4.731	3.910	0.924	--	--	422.753	422.711	422.497	--
25	--	4.529	3.732	0.899	--	--	422.743	422.702	422.494	--
26	--	4.401	3.524	0.961	--	--	422.737	422.690	422.500	--
27	--	4.206	3.436	1.110	--	--	422.727	422.685	422.515	--
28	8.879P	4.195	3.252	1.083	--	422.926P	422.726	422.674	422.513	--
29	7.612	4.357	3.172	0.956	--	422.878	422.735	422.670	422.500	--
30	6.083	4.110	2.997	0.924	--	422.815	422.722	422.659	422.497	--
31	5.074	--	3.133	0.910	--	422.770	--	422.667	422.495	--
MIN	5.074	3.593	2.623	0.899	0.815	422.770	422.694	422.636	422.494	422.485
MEAN	6.912	4.793	3.529	1.616	0.987	422.847	422.755	422.689	422.558	422.503
MAX	8.879	5.981	4.503	2.846	1.144	422.926	422.811	422.742	422.650	422.518

Table A4.5-3 Discharge Sheet – Lake G2 Outlet, 29 May 2014

Discharge Measurement Summary

Date Generated: Wed Jan 14 2015

File Information

File Name	G2MAY29.WAD
Start Date and Time	2014/05/29 16:19:22

Site Details

Site Name	G2
Operator(s)	DC CD

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	1.3%
Velocity	0.6%	3.1%
Width	0.1%	0.1%
Method	1.0%	-
# Stations	1.6%	-
Overall	**2.2%**	**3.5%**

Summary

Averaging Int.	15	# Stations	33
Start Edge	LEW	Total Width	50.000
Mean SNR	21.4 dB	Total Area	19.403
Mean Temp	2.03 °C	Mean Depth	0.388
Disch. Equation	Mid-Section	Mean Velocity	0.2695
		Total Discharge	**5.2284**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	16:19	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*16:44*	*0.27*	*0.6*	*0.240*	*0.6*	*0.096*	*0.2933*	*1.00*	*0.2933*	*0.240*	*0.0704*	*1.3*
2	*16:19*	*2.00*	*0.6*	*0.200*	*0.6*	*0.080*	*0.0740*	*1.00*	*0.0740*	*0.373*	*0.0276*	*0.5*
3	*16:20*	*4.00*	*0.6*	*0.400*	*0.6*	*0.160*	*0.2067*	*1.00*	*0.2067*	*0.800*	*0.1654*	*3.2*
4	16:21	6.00	0.6	0.600	0.6	0.240	0.2758	1.00	0.2758	1.200	0.3310	6.3
5	16:22	8.00	0.2/0.8	0.760	0.2	0.608	0.3157	1.00	0.2665	1.140	0.3039	5.8
5	16:23	8.00	0.2/0.8	0.760	0.8	0.152	0.2174					
6	16:24	9.00	0.8/0.2	0.700	0.2	0.560	0.3215	1.00	0.2502	0.700	0.1752	3.4
6	16:24	9.00	0.8/0.2	0.700	0.8	0.140	0.1790					
7	16:25	10.00	0.2/0.8	0.740	0.2	0.592	0.3388	1.00	0.2827	0.740	0.2092	4.0
7	16:25	10.00	0.2/0.8	0.740	0.8	0.148	0.2266					
8	16:27	11.00	0.8/0.2	0.740	0.2	0.592	0.3428	1.00	0.2963	0.740	0.2193	4.2
8	16:26	11.00	0.8/0.2	0.740	0.8	0.148	0.2499					
9	16:27	12.00	0.2/0.8	0.800	0.2	0.640	0.3338	1.00	0.2715	0.800	0.2172	4.2
9	16:28	12.00	0.2/0.8	0.800	0.8	0.160	0.2093					
10	16:29	13.00	0.8/0.2	0.820	0.2	0.656	0.3579	1.00	0.2662	0.820	0.2183	4.2
10	16:28	13.00	0.8/0.2	0.820	0.8	0.164	0.1745					
11	16:29	14.00	0.2/0.8	0.840	0.2	0.672	0.3568	1.00	0.2776	0.840	0.2332	4.5
11	16:30	14.00	0.2/0.8	0.840	0.8	0.168	0.1985					
12	16:31	15.00	0.2/0.6/0.8	0.820	0.2	0.656	0.4138	1.00	0.3330	0.820	0.2731	5.2
12	16:32	15.00	0.2/0.6/0.8	0.820	0.6	0.328	0.3686					
12	16:31	15.00	0.2/0.6/0.8	0.820	0.8	0.164	0.1810					
13	*16:33*	*16.00*	*0.8/0.2*	*0.820*	*0.2*	*0.656*	*0.3683*	*1.00*	*0.3080*	*0.820*	*0.2526*	*4.8*
13	*16:33*	*16.00*	*0.8/0.2*	*0.820*	*0.8*	*0.164*	*0.2478*					
14	16:34	17.00	0.2/0.8	0.860	0.2	0.688	0.4025	1.00	0.3381	0.860	0.2908	5.6
14	16:35	17.00	0.2/0.8	0.860	0.8	0.172	0.2737					
15	16:36	18.00	0.8/0.2	0.860	0.2	0.688	0.3812	1.00	0.3450	0.860	0.2967	5.7
15	16:35	18.00	0.8/0.2	0.860	0.8	0.172	0.3088					
16	16:36	19.00	0.2/0.8	0.860	0.2	0.688	0.4079	1.00	0.3659	0.860	0.3147	6.0
16	16:37	19.00	0.2/0.8	0.860	0.8	0.172	0.3240					
17	16:38	20.00	0.8/0.2	0.800	0.2	0.640	0.3988	1.00	0.3211	0.800	0.2569	4.9
17	16:38	20.00	0.8/0.2	0.800	0.8	0.160	0.2435					
18	*16:39*	*21.00*	*0.2/0.8*	*0.720*	*0.2*	*0.576*	*0.3877*	*1.00*	*0.2235*	*0.720*	*0.1609*	*3.1*
18	*16:40*	*21.00*	*0.2/0.8*	*0.720*	*0.8*	*0.144*	*0.0593*					
19	16:41	22.00	0.8/0.2	0.640	0.2	0.512	0.3953	1.00	0.3333	0.640	0.2133	4.1
19	16:41	22.00	0.8/0.2	0.640	0.8	0.128	0.2714					
20	16:42	23.00	0.6	0.560	0.6	0.224	0.2888	1.00	0.2888	0.560	0.1617	3.1
21	*16:43*	*24.00*	*0.6*	*0.480*	*0.6*	*0.192*	*0.2829*	*1.00*	*0.2829*	*0.960*	*0.2716*	*5.2*
22	16:43	27.00	0.6	0.400	0.6	0.160	0.2805	1.00	0.2805	1.000	0.2805	5.4
23	16:45	29.00	0.6	0.180	0.6	0.072	0.2668	1.00	0.2668	0.360	0.0960	1.8
24	16:53	31.00	0.6	0.100	0.6	0.040	0.2041	1.00	0.2041	0.200	0.0408	0.8
25	16:54	33.00	0.6	0.050	0.6	0.020	0.1292	1.00	0.1292	0.125	0.0162	0.3
26	16:55	36.00	0.6	0.050	0.6	0.020	0.0976	1.00	0.0976	0.125	0.0122	0.2
27	16:56	38.00	0.6	0.140	0.6	0.056	0.1436	1.00	0.1436	0.280	0.0402	0.8
28	16:57	40.00	0.6	0.120	0.6	0.048	0.1719	1.00	0.1719	0.240	0.0413	0.8
29	*16:57*	*42.00*	*0.6*	*0.120*	*0.6*	*0.048*	*0.0401*	*1.00*	*0.0401*	*0.240*	*0.0096*	*0.2*
30	*16:58*	*44.00*	*0.6*	*0.120*	*0.6*	*0.048*	*0.0610*	*1.00*	*0.0610*	*0.360*	*0.0220*	*0.4*
31	16:59	48.00	0.6	0.060	0.6	0.024	0.0370	1.00	0.0370	0.180	0.0067	0.1
32	16:59	50.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.5-4 Discharge Sheet – Lake G2 Outlet, 5 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 12 2015

File Information

File Name	G2.WAD
Start Date and Time	2014/06/05 14:49:38

Site Details

Site Name	
Operator(s)	DC CD

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	**(Metric Units)**
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	0.7%
Velocity	0.8%	2.3%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	2.0%	-
Overall	**2.9%**	**2.6%**

Summary

Averaging Int.	15	# Stations	26
Start Edge	LEW	Total Width	26.000
Mean SNR	13.6 dB	Total Area	11.060
Mean Temp	1.45 °C	Mean Depth	0.425
Disch. Equation	Mid-Section	Mean Velocity	0.3177
		Total Discharge	**3.5136**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:49	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*14:49*	*1.00*	*0.6*	*0.180*	*0.6*	*0.072*	*0.0388*	*1.00*	*0.0388*	*0.180*	*0.0070*	*0.2*
2	14:50	2.00	0.6	0.320	0.6	0.128	0.2131	1.00	0.2131	0.320	0.0682	1.9
3	14:51	3.00	0.6	0.440	0.6	0.176	0.2098	1.00	0.2098	0.440	0.0923	2.6
4	14:52	4.00	0.6	0.460	0.6	0.184	0.2624	1.00	0.2624	0.460	0.1207	3.4
5	14:52	5.00	0.6	0.540	0.6	0.216	0.2065	1.00	0.2065	0.540	0.1115	3.2
6	14:53	6.00	0.6	0.520	0.6	0.208	0.2368	1.00	0.2368	0.520	0.1231	3.5
7	14:54	7.00	0.6	0.520	0.6	0.208	0.2107	1.00	0.2107	0.520	0.1096	3.1
8	14:55	8.00	0.6	0.560	0.6	0.224	0.2930	1.00	0.2930	0.560	0.1641	4.7
9	14:56	9.00	0.6	0.580	0.6	0.232	0.2830	1.00	0.2830	0.580	0.1641	4.7
10	14:57	10.00	0.6	0.620	0.6	0.248	0.3334	1.00	0.3334	0.620	0.2067	5.9
11	14:57	11.00	0.6	0.640	0.6	0.256	0.3868	1.00	0.3868	0.640	0.2476	7.0
12	14:58	12.00	0.6	0.620	0.6	0.248	0.3749	1.00	0.3749	0.620	0.2324	6.6
13	14:59	13.00	0.6	0.620	0.6	0.248	0.3878	1.00	0.3878	0.620	0.2404	6.8
14	15:00	14.00	0.6	0.600	0.6	0.240	0.4224	1.00	0.4224	0.600	0.2534	7.2
15	15:00	15.00	0.6	0.600	0.6	0.240	0.4151	1.00	0.4151	0.600	0.2491	7.1
16	15:01	16.00	0.6	0.560	0.6	0.224	0.4013	1.00	0.4013	0.560	0.2247	6.4
17	15:02	17.00	0.6	0.520	0.6	0.208	0.4092	1.00	0.4092	0.520	0.2128	6.1
18	15:02	18.00	0.6	0.500	0.6	0.200	0.3964	1.00	0.3964	0.500	0.1982	5.6
19	15:03	19.00	0.6	0.460	0.6	0.184	0.2798	1.00	0.2798	0.460	0.1287	3.7
20	15:04	20.00	0.6	0.380	0.6	0.152	0.3602	1.00	0.3602	0.380	0.1369	3.9
21	15:05	21.00	0.6	0.280	0.6	0.112	0.3230	1.00	0.3230	0.280	0.0904	2.6
22	15:06	22.00	0.6	0.200	0.6	0.080	0.2881	1.00	0.2881	0.200	0.0576	1.6
23	15:07	23.00	0.6	0.160	0.6	0.064	0.2459	1.00	0.2459	0.160	0.0393	1.1
24	15:07	24.00	0.6	0.120	0.6	0.048	0.1927	1.00	0.1927	0.180	0.0347	1.0
25	15:07	26.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.5-5 Discharge Sheet – Lake G2 Outlet, 22 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 12 2015

File Information	
File Name	G2JUN22.WAD
Start Date and Time	2014/06/22 09:29:31

Site Details	
Site Name	
Operator(s)	DC KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	0.8%
Velocity	0.5%	1.8%
Width	0.1%	0.1%
Method	1.2%	-
# Stations	1.4%	-
Overall	**2.2%**	**2.2%**

Summary			
Averaging Int.	20	# Stations	36
Start Edge	LEW	Total Width	38.000
Mean SNR	21.5 dB	Total Area	16.130
Mean Temp	4.06 °C	Mean Depth	0.424
Disch. Equation	Mid-Section	Mean Velocity	0.3947
		Total Discharge	**6.3672**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:29	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*09:29*	*1.00*	*0.6*	*0.040*	*0.6*	*0.016*	*0.0014*	*1.00*	*0.0014*	*0.060*	*0.0001*	*0.0*
2	09:31	3.00	0.6	0.060	0.6	0.024	0.0869	1.00	0.0869	0.120	0.0104	0.2
3	*09:33*	*5.00*	*0.6*	*0.060*	*0.6*	*0.024*	*0.0003*	*1.00*	*0.0003*	*0.090*	*0.0000*	*0.0*
4	09:34	6.00	0.6	0.060	0.6	0.024	0.1047	1.00	0.1047	0.060	0.0063	0.1
5	09:37	7.00	0.6	0.100	0.6	0.040	0.2075	1.00	0.2075	0.100	0.0208	0.3
6	09:38	8.00	0.6	0.140	0.6	0.056	0.2969	1.00	0.2969	0.140	0.0416	0.7
7	09:39	9.00	0.6	0.180	0.6	0.072	0.3409	1.00	0.3409	0.180	0.0614	1.0
8	09:40	10.00	0.6	0.260	0.6	0.104	0.2802	1.00	0.2802	0.260	0.0729	1.1
9	09:41	11.00	0.6	0.340	0.6	0.136	0.3260	1.00	0.3260	0.340	0.1108	1.7
10	09:42	12.00	0.6	0.420	0.6	0.168	0.3296	1.00	0.3296	0.420	0.1384	2.2
11	09:43	13.00	0.6	0.520	0.6	0.208	0.2995	1.00	0.2995	0.520	0.1557	2.4
12	09:44	14.00	0.6	0.600	0.6	0.240	0.4258	1.00	0.4258	0.600	0.2555	4.0
13	09:46	15.00	0.6	0.740	0.6	0.296	0.3722	1.00	0.3722	0.740	0.2754	4.3
14	09:47	16.00	0.2/0.8	0.740	0.2	0.592	0.5312	1.00	0.4670	0.740	0.3456	5.4
14	09:49	16.00	0.2/0.8	0.740	0.8	0.148	0.4029					
15	09:50	17.00	0.2/0.8	0.880	0.2	0.704	0.5357	1.00	0.4656	0.880	0.4097	6.4
15	09:51	17.00	0.2/0.8	0.880	0.8	0.176	0.3955					
16	09:52	18.00	0.2/0.8	0.880	0.2	0.704	0.5419	1.00	0.4842	0.880	0.4261	6.7
16	09:53	18.00	0.2/0.8	0.880	0.8	0.176	0.4266					
17	09:54	19.00	0.2/0.8	0.840	0.2	0.672	0.6017	1.00	0.5240	0.840	0.4402	6.9
17	09:55	19.00	0.2/0.8	0.840	0.8	0.168	0.4463					
18	09:56	20.00	0.2/0.8	0.880	0.2	0.704	0.5794	1.00	0.4868	0.880	0.4284	6.7
18	09:57	20.00	0.2/0.8	0.880	0.8	0.176	0.3942					
19	09:58	21.00	0.2/0.8	0.800	0.2	0.640	0.5614	1.00	0.4730	0.800	0.3784	5.9
19	09:59	21.00	0.2/0.8	0.800	0.8	0.160	0.3847					
20	10:00	22.00	0.6	0.700	0.6	0.280	0.4795	1.00	0.4795	0.700	0.3357	5.3
21	10:01	23.00	0.6	0.680	0.6	0.272	0.4609	1.00	0.4609	0.680	0.3134	4.9
22	10:02	24.00	0.6	0.620	0.6	0.248	0.4668	1.00	0.4668	0.620	0.2894	4.5
23	10:03	25.00	0.6	0.600	0.6	0.240	0.5369	1.00	0.5369	0.600	0.3221	5.1
24	10:04	26.00	0.6	0.560	0.6	0.224	0.4717	1.00	0.4717	0.560	0.2642	4.1
25	10:05	27.00	0.6	0.540	0.6	0.216	0.4065	1.00	0.4065	0.540	0.2195	3.4
26	10:06	28.00	0.6	0.520	0.6	0.208	0.3759	1.00	0.3759	0.520	0.1955	3.1
27	10:07	29.00	0.6	0.520	0.6	0.208	0.3754	1.00	0.3754	0.520	0.1952	3.1
28	10:07	30.00	0.6	0.560	0.6	0.224	0.2778	1.00	0.2778	0.560	0.1556	2.4
29	10:08	31.00	0.6	0.560	0.6	0.224	0.2968	1.00	0.2968	0.560	0.1662	2.6
30	10:09	32.00	0.6	0.500	0.6	0.200	0.2837	1.00	0.2837	0.500	0.1419	2.2
31	10:10	33.00	0.6	0.440	0.6	0.176	0.2395	1.00	0.2395	0.440	0.1054	1.7
32	10:12	34.00	0.6	0.300	0.6	0.120	0.1502	1.00	0.1502	0.300	0.0451	0.7
33	10:13	35.00	0.6	0.200	0.6	0.080	0.1247	1.00	0.1247	0.200	0.0249	0.4
34	10:13	36.00	0.6	0.120	0.6	0.048	0.0861	1.00	0.0861	0.180	0.0155	0.2
35	10:13	38.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.5-6 Discharge Sheet – Lake G2 Outlet, 1 August 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	G1AUG1.WAD
Start Date and Time	2014/08/01 14:39:26

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	1.6%
Velocity	0.7%	1.5%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	1.8%	-
Overall	**2.7%**	**2.4%**

Summary

Averaging Int.	20	# Stations	28
Start Edge	LEW	Total Width	23.000
Mean SNR	12.5 dB	Total Area	10.643
Mean Temp	15.15 °C	Mean Depth	0.463
Disch. Equation	Mid-Section	Mean Velocity	0.3615
		Total Discharge	**3.8471**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:39	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	14:39	2.00	0.6	0.120	0.6	0.048	0.1554	1.00	0.1554	0.165	0.0256	0.7
2	14:40	2.75	0.6	0.160	0.6	0.064	0.1892	1.00	0.1892	0.120	0.0227	0.6
3	14:42	3.50	0.6	0.240	0.6	0.096	0.2195	1.00	0.2195	0.180	0.0395	1.0
4	14:43	4.25	0.6	0.350	0.6	0.140	0.2803	1.00	0.2803	0.263	0.0736	1.9
5	14:43	5.00	0.6	0.400	0.6	0.160	0.2876	1.00	0.2876	0.300	0.0863	2.2
6	14:44	5.75	0.6	0.460	0.6	0.184	0.3561	1.00	0.3561	0.345	0.1229	3.2
7	14:45	6.50	0.6	0.500	0.6	0.200	0.2698	1.00	0.2698	0.375	0.1012	2.6
8	14:46	7.25	0.6	0.660	0.6	0.264	0.3347	1.00	0.3347	0.495	0.1657	4.3
9	14:47	8.00	0.6	0.700	0.6	0.280	0.3434	1.00	0.3434	0.525	0.1803	4.7
10	14:48	8.75	0.6	0.740	0.6	0.296	0.3199	1.00	0.3199	0.555	0.1775	4.6
11	14:51	9.50	0.6	0.740	0.6	0.296	0.3574	1.00	0.3574	0.555	0.1984	5.2
12	14:52	10.25	0.6	0.750	0.6	0.300	0.3727	1.00	0.3727	0.563	0.2096	5.4
13	14:53	11.00	0.6	0.700	0.6	0.280	0.4320	1.00	0.4320	0.525	0.2268	5.9
14	14:53	11.75	0.6	0.740	0.6	0.296	0.4413	1.00	0.4413	0.555	0.2449	6.4
15	14:54	12.50	0.6	0.620	0.6	0.248	0.4658	1.00	0.4658	0.465	0.2166	5.6
16	14:55	13.25	0.6	0.600	0.6	0.240	0.4644	1.00	0.4644	0.450	0.2090	5.4
17	14:56	14.00	0.6	0.600	0.6	0.240	0.4644	1.00	0.4644	0.450	0.2090	5.4
18	14:56	14.75	0.6	0.580	0.6	0.232	0.4608	1.00	0.4608	0.435	0.2004	5.2
19	14:57	15.50	0.6	0.580	0.6	0.232	0.4201	1.00	0.4201	0.435	0.1827	4.8
20	14:58	16.25	0.6	0.560	0.6	0.224	0.4186	1.00	0.4186	0.420	0.1758	4.6
21	14:59	17.00	0.6	0.520	0.6	0.208	0.3905	1.00	0.3905	0.390	0.1523	4.0
22	15:00	17.75	0.6	0.500	0.6	0.200	0.3412	1.00	0.3412	0.375	0.1280	3.3
23	15:01	18.50	0.6	0.480	0.6	0.192	0.2663	1.00	0.2663	0.360	0.0959	2.5
24	15:02	19.25	0.6	0.500	0.6	0.200	0.2528	1.00	0.2528	0.375	0.0948	2.5
25	15:03	20.00	0.6	0.300	0.6	0.120	0.3360	1.00	0.3360	0.338	0.1134	2.9
26	15:04	21.50	0.6	0.420	0.6	0.168	0.3083	1.00	0.3083	0.630	0.1942	5.0
27	15:04	23.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.5-7 Discharge Sheet – Lake G2 Outlet, 19 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	G2SEPT19.WAD
Start Date and Time	2014/09/19 10:02:43

Site Details	
Site Name	
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	0.8%
Velocity	0.7%	2.3%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	1.5%	-
Overall	**2.5%**	**2.6%**

Summary			
Averaging Int.	20	# Stations	35
Start Edge	LEW	Total Width	19.400
Mean SNR	13.2 dB	Total Area	5.856
Mean Temp	3.15 °C	Mean Depth	0.302
Disch. Equation	Mid-Section	Mean Velocity	0.1708
		Total Discharge	**1.0003**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:02	4.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*10:02*	*5.00*	*0.6*	*0.100*	*0.6*	*0.040*	*0.0113*	*1.00*	*0.0113*	*0.075*	*0.0008*	*0.1*
2	10:04	5.50	0.6	0.150	0.6	0.060	0.0372	1.00	0.0372	0.075	0.0028	0.3
3	10:05	6.00	0.6	0.180	0.6	0.072	0.0638	1.00	0.0638	0.090	0.0057	0.6
4	10:06	6.50	0.6	0.200	0.6	0.080	0.0563	1.00	0.0563	0.100	0.0056	0.6
5	10:07	7.00	0.6	0.250	0.6	0.100	0.0486	1.00	0.0486	0.125	0.0061	0.6
6	10:08	7.50	0.6	0.280	0.6	0.112	0.1179	1.00	0.1179	0.140	0.0165	1.7
7	10:09	8.00	0.6	0.320	0.6	0.128	0.1548	1.00	0.1548	0.160	0.0248	2.5
8	10:09	8.50	0.6	0.320	0.6	0.128	0.1617	1.00	0.1617	0.160	0.0259	2.6
9	10:11	9.00	0.6	0.380	0.6	0.152	0.1794	1.00	0.1794	0.190	0.0341	3.4
10	10:11	9.50	0.6	0.380	0.6	0.152	0.2344	1.00	0.2344	0.190	0.0445	4.5
11	10:12	10.00	0.6	0.420	0.6	0.168	0.2483	1.00	0.2483	0.210	0.0521	5.2
12	10:13	10.50	0.6	0.420	0.6	0.168	0.2633	1.00	0.2633	0.210	0.0553	5.5
13	10:13	11.00	0.6	0.420	0.6	0.168	0.3222	1.00	0.3222	0.210	0.0677	6.8
14	10:14	11.50	0.6	0.450	0.6	0.180	0.2441	1.00	0.2441	0.225	0.0549	5.5
15	10:15	12.00	0.6	0.450	0.6	0.180	0.3141	1.00	0.3141	0.225	0.0707	7.1
16	10:16	12.50	0.6	0.480	0.6	0.192	0.2722	1.00	0.2722	0.240	0.0653	6.5
17	10:16	13.00	0.6	0.480	0.6	0.192	0.2588	1.00	0.2588	0.240	0.0621	6.2
18	10:17	13.50	0.6	0.460	0.6	0.184	0.2876	1.00	0.2876	0.230	0.0661	6.6
19	10:18	14.00	0.6	0.440	0.6	0.176	0.2374	1.00	0.2374	0.220	0.0522	5.2
20	10:19	14.50	0.6	0.440	0.6	0.176	0.2190	1.00	0.2190	0.220	0.0482	4.8
21	10:19	15.00	0.6	0.420	0.6	0.168	0.2112	1.00	0.2112	0.210	0.0444	4.4
22	10:20	15.50	0.6	0.420	0.6	0.168	0.1679	1.00	0.1679	0.210	0.0353	3.5
23	10:21	16.00	0.6	0.400	0.6	0.160	0.1636	1.00	0.1636	0.200	0.0327	3.3
24	10:21	16.50	0.6	0.370	0.6	0.148	0.1251	1.00	0.1251	0.185	0.0231	2.3
25	10:22	17.00	0.6	0.390	0.6	0.156	0.1187	1.00	0.1187	0.195	0.0231	2.3
26	10:23	17.50	0.6	0.340	0.6	0.136	0.1053	1.00	0.1053	0.170	0.0179	1.8
27	*10:23*	*18.00*	*0.6*	*0.340*	*0.6*	*0.136*	*0.0828*	*1.00*	*0.0828*	*0.170*	*0.0141*	*1.4*
28	*10:26*	*18.50*	*0.6*	*0.300*	*0.6*	*0.120*	*0.0714*	*1.00*	*0.0714*	*0.150*	*0.0107*	*1.1*
29	10:26	19.00	0.6	0.300	0.6	0.120	0.0643	1.00	0.0643	0.225	0.0145	1.4
30	*10:27*	*20.00*	*0.6*	*0.240*	*0.6*	*0.096*	*0.0509*	*1.00*	*0.0509*	*0.240*	*0.0122*	*1.2*
31	10:28	21.00	0.6	0.190	0.6	0.076	0.0409	1.00	0.0409	0.228	0.0093	0.9
32	*10:30*	*22.40*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0051*	*1.00*	*0.0051*	*0.088*	*0.0004*	*0.0*
33	*10:31*	*23.20*	*0.6*	*0.100*	*0.6*	*0.040*	*0.0192*	*1.00*	*0.0192*	*0.050*	*0.0010*	*0.1*
34	10:31	23.40	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A4.6 Lake I1A Outlet

Benchmark Coordinates	UTM Zone 12
Easting	552994.659 m
Northing	7170975.573 m
Elevation	425.405 m (geodetic)
Datum Elevation	424.190 m (geodetic)

Table A4.6-1 2014 Hydrometric Data at Lake I1A Outlet Station

Date and Time	Water Surface Elevation (m)	Transducer Reading (m)	Transducer Elevation (m)	Mean Transducer Elevation (m)	Stage (m)	Measured Discharge (m^3/s)
1-Jun-2014 13:10	424.861	0.273	424.588	424.547	0.671	4.893
7-Jun-2014 12:30	424.836	0.263	424.573		0.646	4.331
23-Jun-2014 09:20	424.909	0.352	424.557		0.719	5.487
31-Jul-2014 14:00	424.758	0.286	424.472		0.568	3.236
19-Sep-2014 10:50	424.626	--	--		0.436	0.971

Note: The Barologger for atmospheric pressure corrections was removed on September 18, and thus, no transducer corrections were possible for September 19.

Specific site conditions at the lake outlet (boulder outlet channel with interstitial flow) make for a difficult discharge measurement at low flows. Therefore, the discharge measurement data from September has a low confidence level. Further data collection may provide more information for the site specifics. This is discussed in the main report.

Figure A4.6-1 Open-Water 2014 Stage-Discharge Rating Curve at Lake I1A Outlet Station

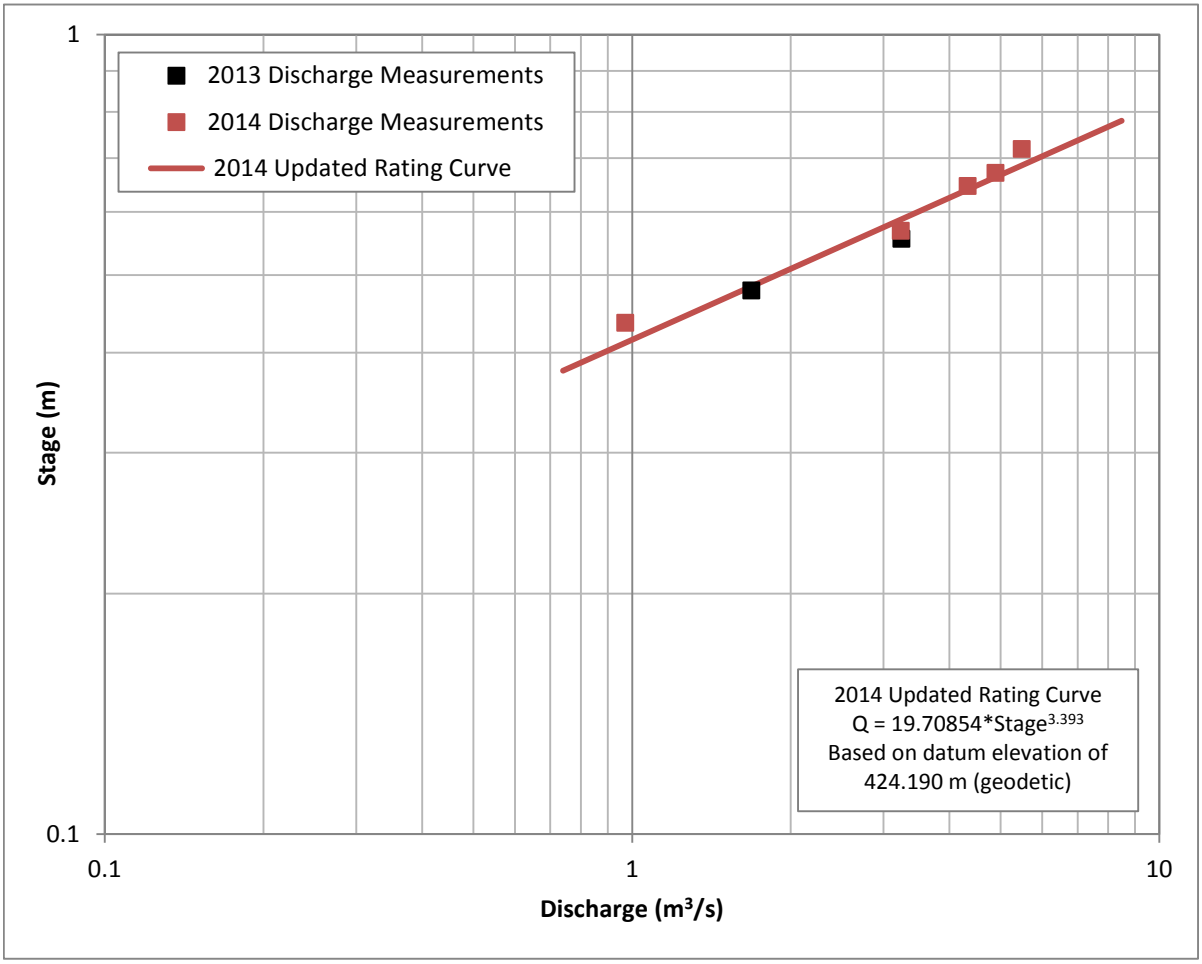


Table A4.6-2 Lake I1A Outlet, 2014 Mean Daily Discharge and Water Surface Elevation

	Discharge (m^3/s)					Water Surface Elevation (m, geodetic)				
DATE	May	Jun	Jul	Aug	Sep	May	Jun	Jul	Aug	Sep
1	--	4.874	5.249	3.460	2.293	--	424.852	424.867	424.789	424.720
2	--	5.398	4.965	3.266	2.266	--	424.873	424.856	424.779	424.718
3	--	5.352	4.833	3.247	2.247	--	424.871	424.851	424.778	424.717
4	--	5.190	4.854	3.188	2.351	--	424.865	424.851	424.774	424.724
5	--	5.106	4.670	3.127	2.413	--	424.862	424.844	424.771	424.728
6	--	4.808	4.816	3.285	2.462	--	424.850	424.850	424.780	424.732
7	--	4.396	4.806	3.122	2.457	--	424.832	424.850	424.771	424.731
8	--	4.178	4.728	2.882	2.427	--	424.823	424.846	424.757	424.729
9	--	4.064	4.634	2.679	2.347	--	424.818	424.842	424.745	424.724
10	--	4.151	4.549	2.706	2.275	--	424.822	424.839	424.747	424.719
11	--	4.861	4.757	2.728	2.334	--	424.852	424.848	424.748	424.723
12	--	5.002	4.537	2.559	2.511	--	424.857	424.839	424.738	424.735
13	--	5.005	4.330	2.595	2.381	--	424.858	424.830	424.740	424.726
14	--	5.381	4.124	2.680	2.510	--	424.872	424.821	424.745	424.735
15	--	5.670	4.047	2.659	2.576	--	424.883	424.817	424.744	424.739
16	--	5.826	4.486	2.626	2.502	--	424.888	424.836	424.742	424.734
17	--	5.537	4.613	2.799	2.441	--	424.878	424.842	424.752	424.730
18	--	5.443	4.617	3.020	2.333P	--	424.874	424.842	424.765	424.723P
19	--	5.561	4.554	2.959	--	--	424.879	424.839	424.762	--
20	--	5.772	4.331	2.820	--	--	424.886	424.830	424.754	--
21	--	6.141	4.161	2.765	--	--	424.899	424.822	424.750	--
22	--	6.289	4.037	2.659	--	--	424.904	424.817	424.744	--
23	--	6.050	3.920	2.535	--	--	424.896	424.811	424.736	--
24	--	5.722	3.709	2.461	--	--	424.884	424.801	424.732	--
25	--	5.655	3.616	2.442	--	--	424.882	424.797	424.730	--
26	--	5.688	3.506	2.451	--	--	424.883	424.791	424.731	--
27	--	5.500	3.531	2.539	--	--	424.876	424.792	424.736	--
28	--	5.493	3.445	2.479	--	--	424.876	424.788	424.733	--
29	4.152P	5.618	3.455	2.442	--	424.822P	424.881	424.789	424.730	--
30	4.464	5.432	3.368	2.386	--	424.836	424.874	424.784	424.726	--
31	4.694	--	3.617	2.354	--	424.845	--	424.797	424.724	--
MIN	4.152	4.064	3.368	2.354	2.247	424.822	424.818	424.784	424.724	424.717
MEAN	4.437	5.305	4.286	2.772	2.396	424.834	424.868	424.827	424.750	424.727
MAX	4.694	6.289	5.249	3.460	2.576	424.845	424.904	424.867	424.789	424.739

Table A4.6-3 Discharge Sheet – Lake I1A Outlet, 1 June 2014

Discharge Measurement Summary

Date Generated: Mon Jan 19 2015

File Information	
File Name	I1A_June1.WAD
Start Date and Time	2014/06/01 13:09:42

Site Details	
Site Name	
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	5.4%
Velocity	1.4%	7.6%
Width	0.1%	0.1%
Method	1.5%	-
# Stations	1.4%	-
Overall	**2.7%**	**9.4%**

Summary			
Averaging Int.	15	# Stations	38
Start Edge	LEW	Total Width	66.500
Mean SNR	16.5 dB	Total Area	15.485
Mean Temp	2.54 °C	Mean Depth	0.233
Disch. Equation	Mid-Section	Mean Velocity	0.3160
		Total Discharge	**4.8929**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:09	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	13:09	2.00	0.6	0.100	0.6	0.040	0.1667	1.00	0.1667	0.200	0.0333	0.7
2	13:11	4.00	0.6	0.200	0.6	0.080	0.1878	1.00	0.1878	0.400	0.0751	1.5
3	13:13	6.00	0.6	0.300	0.6	0.120	0.1010	1.00	0.1010	0.600	0.0606	1.2
4	13:14	8.00	0.6	0.280	0.6	0.112	0.2115	1.00	0.2115	0.560	0.1184	2.4
5	13:17	10.00	0.6	0.240	0.6	0.096	0.4819	1.00	0.4819	0.480	0.2313	4.7
6	13:18	12.00	0.6	0.160	0.6	0.064	0.6192	1.00	0.6192	0.320	0.1981	4.0
7	13:20	14.00	0.6	0.100	0.6	0.040	0.1807	1.00	0.1807	0.200	0.0361	0.7
8	13:20	16.00	0.6	0.320	0.6	0.128	0.3780	1.00	0.3780	0.560	0.2117	4.3
9	13:21	17.50	0.6	0.320	0.6	0.128	0.2570	1.00	0.2570	0.480	0.1234	2.5
10	13:22	19.00	0.6	0.200	0.6	0.080	0.3452	1.00	0.3452	0.350	0.1208	2.5
11	13:23	21.00	0.6	0.220	0.6	0.088	0.1418	1.00	0.1418	0.385	0.0546	1.1
12	13:24	22.50	0.6	0.100	0.6	0.040	0.3585	1.00	0.3585	0.150	0.0538	1.1
13	13:26	24.00	0.6	0.260	0.6	0.104	0.3003	1.00	0.3003	0.585	0.1757	3.6
14	13:28	27.00	0.6	0.340	0.6	0.136	0.2087	1.00	0.2087	0.850	0.1774	3.6
15	13:29	29.00	0.6	0.140	0.6	0.056	0.3816	1.00	0.3816	0.280	0.1068	2.2
16	13:30	31.00	0.6	0.220	0.6	0.088	0.3054	1.00	0.3054	0.495	0.1512	3.1
17	13:31	33.50	0.6	0.080	0.6	0.032	0.1265	1.00	0.1265	0.140	0.0177	0.4
18	13:33	34.50	0.6	0.080	0.6	0.032	0.1000	1.00	0.1000	0.080	0.0080	0.2
19	13:34	35.50	0.6	0.060	0.6	0.024	0.4079	1.00	0.4079	0.090	0.0367	0.8
20	13:36	37.50	0.6	0.320	0.6	0.128	0.5022	1.00	0.5022	0.480	0.2411	4.9
21	13:37	38.50	0.6	0.260	0.6	0.104	0.3410	1.00	0.3410	0.325	0.1108	2.3
22	13:38	40.00	0.6	0.200	0.6	0.080	0.3175	1.00	0.3175	0.250	0.0794	1.6
23	13:39	41.00	0.6	0.200	0.6	0.080	0.1441	1.00	0.1441	0.300	0.0432	0.9
24	13:40	43.00	0.6	0.280	0.6	0.112	0.3831	1.00	0.3831	0.490	0.1877	3.8
25	13:42	44.50	0.6	0.340	0.6	0.136	0.1171	1.00	0.1171	0.510	0.0597	1.2
26	13:45	46.00	0.6	0.200	0.6	0.080	0.1917	1.00	0.1917	0.400	0.0767	1.6
27	13:46	48.50	0.6	0.280	0.6	0.112	0.6300	1.00	0.6300	0.630	0.3969	8.1
28	13:47	50.50	0.6	0.240	0.6	0.096	0.3558	1.00	0.3558	0.420	0.1494	3.1
29	13:49	52.00	0.6	0.300	0.6	0.120	0.3857	1.00	0.3857	0.375	0.1446	3.0
30	13:50	53.00	0.6	0.260	0.6	0.104	0.4960	1.00	0.4960	0.325	0.1612	3.3
31	13:51	54.50	0.6	0.420	0.6	0.168	0.5030	1.00	0.5030	0.735	0.3697	7.6
32	13:52	56.50	0.6	0.420	0.6	0.168	0.3393	1.00	0.3393	0.840	0.2850	5.8
33	13:53	58.50	0.6	0.360	0.6	0.144	0.0905	1.00	0.0905	0.720	0.0652	1.3
34	13:54	60.50	0.6	0.340	0.6	0.136	0.4259	1.00	0.4259	0.680	0.2896	5.9
35	13:55	62.50	0.6	0.120	0.6	0.048	0.4829	1.00	0.4829	0.240	0.1159	2.4
36	13:56	64.50	0.6	0.280	0.6	0.112	0.2248	1.00	0.2248	0.560	0.1259	2.6
37	13:56	66.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.6-4 Discharge Sheet – Lake I1A Outlet, 7 June 2014

Discharge Measurement Summary

Date Generated: Tue Jan 27 2015

File Information

File Name	I1207JUN.WAD
Start Date and Time	2014/06/07 12:24:30

Site Details

Site Name	
Operator(s)	DC CD

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	6.2%
Velocity	1.3%	6.8%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	1.5%	-
Overall	**2.8%**	**9.3%**

Summary

Averaging Int.	15	# Stations	34
Start Edge	LEW	Total Width	62.200
Mean SNR	15.1 dB	Total Area	13.738
Mean Temp	3.09 °C	Mean Depth	0.221
Disch. Equation	Mid-Section	Mean Velocity	0.3153
		Total Discharge	**4.3311**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:24	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	12:25	1.25	0.6	0.100	0.6	0.040	0.0694	1.00	0.0694	0.163	0.0113	0.3
2	12:27	3.25	0.6	0.080	0.6	0.032	0.1076	1.00	0.1076	0.160	0.0172	0.4
3	12:28	5.25	0.6	0.140	0.6	0.056	0.2623	1.00	0.2623	0.280	0.0734	1.7
4	12:29	7.25	0.6	0.260	0.6	0.104	0.2939	1.00	0.2939	0.390	0.1146	2.6
5	12:30	8.25	0.6	0.380	0.6	0.152	0.2744	1.00	0.2744	0.570	0.1564	3.6
6	12:31	10.25	0.6	0.200	0.6	0.080	0.3529	1.00	0.3529	0.400	0.1412	3.3
7	12:32	12.25	0.6	0.200	0.6	0.080	0.2891	1.00	0.2891	0.500	0.1446	3.3
8	12:33	15.25	0.6	0.240	0.6	0.096	0.3936	1.00	0.3936	0.720	0.2834	6.5
9	12:35	18.25	0.6	0.180	0.6	0.072	0.3223	1.00	0.3223	0.540	0.1740	4.0
10	12:36	21.25	0.6	0.280	0.6	0.112	0.0326	1.00	0.0326	0.700	0.0228	0.5
11	12:36	23.25	0.6	0.280	0.6	0.112	0.2634	1.00	0.2634	0.770	0.2028	4.7
12	12:38	26.75	0.6	0.100	0.6	0.040	0.2045	1.00	0.2045	0.338	0.0690	1.6
13	12:39	30.00	0.6	0.120	0.6	0.048	0.3648	1.00	0.3648	0.315	0.1149	2.7
14	12:40	32.00	0.6	0.100	0.6	0.040	0.2999	1.00	0.2999	0.175	0.0525	1.2
15	12:41	33.50	0.6	0.100	0.6	0.040	0.3338	1.00	0.3338	0.115	0.0384	0.9
16	12:42	34.30	0.6	0.240	0.6	0.096	0.2820	1.00	0.2820	0.216	0.0609	1.4
17	12:44	35.30	0.6	0.160	0.6	0.064	0.6003	1.00	0.6003	0.280	0.1681	3.9
18	12:45	37.80	0.6	0.180	0.6	0.072	0.1074	1.00	0.1074	0.315	0.0338	0.8
19	12:46	38.80	0.6	0.160	0.6	0.064	0.2138	1.00	0.2138	0.240	0.0513	1.2
20	12:47	40.80	0.6	0.240	0.6	0.096	0.3145	1.00	0.3145	0.480	0.1510	3.5
21	12:48	42.80	0.6	0.120	0.6	0.048	0.1923	1.00	0.1923	0.192	0.0369	0.9
22	12:49	44.00	0.6	0.380	0.6	0.152	0.4161	1.00	0.4161	0.513	0.2135	4.9
23	12:50	45.50	0.6	0.380	0.6	0.152	0.3896	1.00	0.3896	0.570	0.2221	5.1
24	12:51	47.00	0.6	0.300	0.6	0.120	0.1894	1.00	0.1894	0.450	0.0852	2.0
25	12:52	48.50	0.6	0.300	0.6	0.120	0.3551	1.00	0.3551	0.375	0.1332	3.1
26	12:53	49.50	0.6	0.240	0.6	0.096	0.5867	1.00	0.5867	0.240	0.1408	3.3
27	12:54	50.50	0.6	0.400	0.6	0.160	0.4589	1.00	0.4589	0.600	0.2753	6.4
28	12:55	52.50	0.6	0.400	0.6	0.160	0.3535	1.00	0.3535	0.800	0.2828	6.5
29	12:56	54.50	0.6	0.340	0.6	0.136	0.2072	1.00	0.2072	0.680	0.1409	3.3
30	12:57	56.50	0.6	0.380	0.6	0.152	0.3533	1.00	0.3533	0.798	0.2819	6.5
31	12:58	58.70	0.6	0.140	0.6	0.056	0.4842	1.00	0.4842	0.259	0.1254	2.9
32	12:59	60.20	0.6	0.340	0.6	0.136	0.5234	1.00	0.5234	0.595	0.3114	7.2
33	12:59	62.20	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.6-5 Discharge Sheet – Lake I1A Outlet, 23 June 2014

Discharge Measurement Summary

Date Generated: Thu Jul 10 2014

File Information

File Name	I1AJUN23.WAD
Start Date and Time	2014/06/23 08:13:38

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	5.2%
Velocity	1.3%	8.6%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	1.5%	-
Overall	**2.8%**	**10.1%**

Summary

Averaging Int.	20	# Stations	34
Start Edge	LEW	Total Width	54.500
Mean SNR	18.8 dB	Total Area	15.210
Mean Temp	4.72 °C	Mean Depth	0.279
Disch. Equation	Mid-Section	Mean Velocity	0.3607
		Total Discharge	**5.4868**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:13	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	08:13	1.00	0.6	0.200	0.6	0.080	0.6062	1.00	0.6062	0.200	0.1212	2.2
2	08:15	2.00	0.6	0.200	0.6	0.080	0.6120	1.00	0.6120	0.200	0.1224	2.2
3	08:18	3.00	0.6	0.160	0.6	0.064	0.1905	1.00	0.1905	0.140	0.0267	0.5
4	08:19	3.75	0.6	0.220	0.6	0.088	0.2786	1.00	0.2786	0.220	0.0613	1.1
5	08:21	5.00	0.6	0.260	0.6	0.104	0.7288	1.00	0.7288	0.260	0.1895	3.5
6	08:23	5.75	0.6	0.440	0.6	0.176	0.4944	1.00	0.4944	0.385	0.1903	3.5
7	08:25	6.75	0.6	0.320	0.6	0.128	0.2342	1.00	0.2342	0.480	0.1124	2.0
8	08:26	8.75	0.6	0.160	0.6	0.064	0.4615	1.00	0.4615	0.320	0.1477	2.7
9	08:29	10.75	0.6	0.380	0.6	0.152	0.4639	1.00	0.4639	0.760	0.3526	6.4
10	08:29	12.75	0.6	0.380	0.6	0.152	0.3081	1.00	0.3081	0.760	0.2342	4.3
11	08:31	14.75	0.6	0.400	0.6	0.160	0.2363	1.00	0.2363	0.800	0.1890	3.4
12	08:32	16.75	0.6	0.540	0.6	0.216	0.3788	1.00	0.3788	1.080	0.4091	7.5
13	08:33	18.75	0.6	0.640	0.6	0.256	0.1989	1.00	0.1989	1.280	0.2546	4.6
14	08:35	20.75	0.6	0.600	0.6	0.240	0.5420	1.00	0.5420	1.200	0.6504	11.9
15	08:37	22.75	0.6	0.660	0.6	0.264	0.2205	1.00	0.2205	1.320	0.2911	5.3
16	08:41	24.75	0.6	0.200	0.6	0.080	0.2174	1.00	0.2174	0.400	0.0870	1.6
17	08:42	26.75	0.6	0.180	0.6	0.072	0.2571	1.00	0.2571	0.360	0.0926	1.7
18	08:44	28.75	0.6	0.240	0.6	0.096	0.3032	1.00	0.3032	0.480	0.1455	2.7
19	08:46	30.75	0.6	0.260	0.6	0.104	0.2140	1.00	0.2140	0.520	0.1113	2.0
20	08:48	32.75	0.6	0.240	0.6	0.096	0.3547	1.00	0.3547	0.480	0.1703	3.1
21	08:49	34.75	0.6	0.200	0.6	0.080	0.2082	1.00	0.2082	0.400	0.0833	1.5
22	08:51	36.75	0.6	0.180	0.6	0.072	0.6123	1.00	0.6123	0.360	0.2204	4.0
23	08:53	38.75	0.6	0.280	0.6	0.112	0.6255	1.00	0.6255	0.560	0.3503	6.4
24	08:54	40.75	0.6	0.200	0.6	0.080	0.1963	1.00	0.1963	0.400	0.0785	1.4
25	08:56	42.75	0.6	0.140	0.6	0.056	0.2618	1.00	0.2618	0.280	0.0733	1.3
26	08:57	44.75	0.6	0.200	0.6	0.080	0.5221	1.00	0.5221	0.400	0.2088	3.8
27	08:58	46.75	0.6	0.140	0.6	0.056	0.5463	1.00	0.5463	0.280	0.1530	2.8
28	08:59	48.75	0.6	0.140	0.6	0.056	0.4022	1.00	0.4022	0.193	0.0774	1.4
29	09:02	49.50	0.6	0.140	0.6	0.056	0.5471	1.00	0.5471	0.123	0.0670	1.2
30	09:04	50.50	0.6	0.200	0.6	0.080	0.4678	1.00	0.4678	0.300	0.1403	2.6
31	09:06	52.50	0.6	0.100	0.6	0.040	0.4422	1.00	0.4422	0.150	0.0663	1.2
32	09:09	53.50	0.6	0.120	0.6	0.048	0.0750	1.00	0.0750	0.120	0.0090	0.2
33	09:09	54.50	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.6-6 Discharge Sheet – Lake I1A Outlet, 31 July 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	I1AJU31.WAD
Start Date and Time	2014/07/31 15:21:50

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	50.6%
Velocity	1.5%	15.7%
Width	0.2%	0.2%
Method	3.1%	-
# Stations	1.4%	-
Overall	**3.8%**	**53.0%**

Summary			
Averaging Int.	20	# Stations	38
Start Edge	LEW	Total Width	54.000
Mean SNR	14.2 dB	Total Area	34.854
Mean Temp	16.98 °C	Mean Depth	0.645
Disch. Equation	Mid-Section	Mean Velocity	0.1795
		Total Discharge	**6.2578**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:21	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	16:19	0.11	0.6	9.000	0.6	3.600	0.1676	1.00	0.1676	4.500	0.7542	12.1
2	15:27	1.00	0.6	0.510	0.6	0.204	0.1299	1.00	0.1299	0.737	0.0957	1.5
3	15:29	3.00	0.6	0.300	0.6	0.120	0.1708	1.00	0.1708	0.450	0.0769	1.2
4	15:32	4.00	0.6	0.280	0.6	0.112	0.0997	1.00	0.0997	0.350	0.0349	0.6
5	*15:34*	*5.50*	*0.6*	*0.200*	*0.6*	*0.080*	*0.1803*	*1.00*	*0.1803*	*0.300*	*0.0541*	*0.9*
6	*15:36*	*7.00*	*0.6*	*0.580*	*0.6*	*0.232*	*0.2640*	*1.00*	*0.2640*	*0.870*	*0.2297*	*3.7*
7	*15:38*	*8.50*	*0.6*	*0.530*	*0.6*	*0.212*	*0.1167*	*1.00*	*0.1167*	*0.795*	*0.0928*	*1.5*
8	15:39	10.00	0.6	0.660	0.6	0.264	0.1822	1.00	0.1822	0.990	0.1804	2.9
9	15:42	11.50	0.6	0.570	0.6	0.228	0.0682	1.00	0.0682	0.855	0.0583	0.9
10	*15:44*	*13.00*	*0.6*	*0.500*	*0.6*	*0.200*	*0.2218*	*1.00*	*0.2218*	*0.750*	*0.1664*	*2.7*
11	*15:45*	*14.50*	*0.6*	*0.420*	*0.6*	*0.168*	*0.2539*	*1.00*	*0.2539*	*0.630*	*0.1600*	*2.6*
12	15:46	16.00	0.6	0.550	0.6	0.220	0.2712	1.00	0.2712	0.825	0.2237	3.6
13	*15:48*	*17.50*	*0.6*	*0.310*	*0.6*	*0.124*	*0.0874*	*1.00*	*0.0874*	*0.465*	*0.0406*	*0.6*
14	15:49	19.00	0.6	0.610	0.6	0.244	0.2271	1.00	0.2271	0.915	0.2078	3.3
15	15:50	20.50	0.6	0.610	0.6	0.244	0.3053	1.00	0.3053	0.915	0.2793	4.5
16	*15:51*	*22.00*	*0.6*	*0.500*	*0.6*	*0.200*	*0.3550*	*1.00*	*0.3550*	*0.750*	*0.2663*	*4.3*
17	*15:53*	*23.50*	*0.6*	*0.520*	*0.6*	*0.208*	*0.1748*	*1.00*	*0.1748*	*0.780*	*0.1363*	*2.2*
18	15:54	25.00	0.6	0.360	0.6	0.144	0.2719	1.00	0.2719	0.540	0.1468	2.3
19	15:55	26.50	0.6	0.280	0.6	0.112	0.2465	1.00	0.2465	0.420	0.1035	1.7
20	15:56	28.00	0.6	0.460	0.6	0.184	0.1367	1.00	0.1367	0.690	0.0943	1.5
21	15:59	29.50	0.6	0.390	0.6	0.156	0.0694	1.00	0.0694	0.585	0.0406	0.6
22	16:00	31.00	0.6	0.330	0.6	0.132	0.0117	1.00	0.0117	0.495	0.0058	0.1
23	16:02	32.50	0.6	0.140	0.6	0.056	0.0492	1.00	0.0492	0.210	0.0103	0.2
24	16:04	34.00	0.6	0.140	0.6	0.056	0.1728	1.00	0.1728	0.210	0.0363	0.6
25	16:04	35.50	0.6	0.140	0.6	0.056	0.1760	1.00	0.1760	0.210	0.0370	0.6
26	16:06	37.00	0.6	0.220	0.6	0.088	0.1775	1.00	0.1775	0.330	0.0586	0.9
27	16:07	38.50	0.6	0.170	0.6	0.068	0.1916	1.00	0.1916	0.255	0.0489	0.8
28	16:08	40.00	0.6	0.180	0.6	0.072	0.1874	1.00	0.1874	0.270	0.0506	0.8
29	16:10	41.50	0.6	0.370	0.6	0.148	0.1262	1.00	0.1262	0.555	0.0700	1.1
30	16:13	43.00	0.6	0.080	0.6	0.032	0.3704	1.00	0.3704	0.120	0.0444	0.7
31	16:16	44.50	0.6	0.060	0.6	0.024	0.3503	1.00	0.3503	0.090	0.0315	0.5
32	16:18	46.00	0.6	9.000	0.6	3.600	0.1732	1.00	0.1732	13.500	2.3382	37.4
33	16:20	47.50	0.6	0.100	0.6	0.040	0.1834	1.00	0.1834	0.150	0.0275	0.4
34	*16:21*	*49.00*	*0.6*	*0.100*	*0.6*	*0.040*	*0.1487*	*1.00*	*0.1487*	*0.150*	*0.0223*	*0.4*
35	*16:22*	*50.50*	*0.6*	*0.050*	*0.6*	*0.020*	*0.2702*	*1.00*	*0.2702*	*0.075*	*0.0203*	*0.3*
36	*16:25*	*52.00*	*0.6*	*0.070*	*0.6*	*0.028*	*0.1098*	*1.00*	*0.1098*	*0.123*	*0.0135*	*0.2*
37	16:25	54.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.6-7 Discharge Sheet – Lake I1A Outlet, 19 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	I1ASEP19.WAD
Start Date and Time	2014/09/19 11:35:18

Site Details	
Site Name	
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	3.1%
Velocity	1.9%	6.2%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	1.5%	-
Overall	**3.1%**	**7.0%**

Summary			
Averaging Int.	20	# Stations	35
Start Edge	LEW	Total Width	70.000
Mean SNR	19.0 dB	Total Area	28.060
Mean Temp	3.24 °C	Mean Depth	0.401
Disch. Equation	Mid-Section	Mean Velocity	0.0343
		Total Discharge	**0.9621**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:35	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*11:35*	*2.00*	*0.6*	*0.300*	*0.6*	*0.120*	*-0.0022*	*1.00*	*-0.0022*	*0.600*	*-0.0013*	*-0.1*
2	*11:37*	*4.00*	*0.6*	*0.360*	*0.6*	*0.144*	*0.0075*	*1.00*	*0.0075*	*0.720*	*0.0054*	*0.6*
3	*11:37*	*6.00*	*0.6*	*0.330*	*0.6*	*0.132*	*0.0249*	*1.00*	*0.0249*	*0.660*	*0.0164*	*1.7*
4	*11:39*	*8.00*	*0.6*	*0.280*	*0.6*	*0.112*	*0.0023*	*1.00*	*0.0023*	*0.560*	*0.0013*	*0.1*
5	*11:41*	*10.00*	*0.6*	*0.340*	*0.6*	*0.136*	*0.0155*	*1.00*	*0.0155*	*0.680*	*0.0105*	*1.1*
6	*11:42*	*12.00*	*0.6*	*0.160*	*0.6*	*0.064*	*-0.0107*	*1.00*	*-0.0107*	*0.320*	*-0.0034*	*-0.4*
7	*11:43*	*14.00*	*0.6*	*0.300*	*0.6*	*0.120*	*0.0092*	*1.00*	*0.0092*	*0.600*	*0.0055*	*0.6*
8	11:45	16.00	0.6	0.400	0.6	0.160	0.0305	1.00	0.0305	0.800	0.0244	2.5
9	11:46	18.00	0.6	0.480	0.6	0.192	0.0196	1.00	0.0196	0.960	0.0188	2.0
10	11:47	20.00	0.6	0.660	0.6	0.264	0.0332	1.00	0.0332	1.320	0.0438	4.6
11	11:49	22.00	0.6	0.500	0.6	0.200	0.0532	1.00	0.0532	1.000	0.0532	5.5
12	11:50	24.00	0.6	0.580	0.6	0.232	0.0442	1.00	0.0442	1.160	0.0513	5.3
13	*11:50*	*26.00*	*0.6*	*0.580*	*0.6*	*0.232*	*0.0207*	*1.00*	*0.0207*	*1.160*	*0.0240*	*2.5*
14	11:52	28.00	0.6	0.680	0.6	0.272	0.0404	1.00	0.0404	1.360	0.0549	5.7
15	11:53	30.00	0.6	0.600	0.6	0.240	0.0747	1.00	0.0747	1.200	0.0896	9.3
16	11:54	32.00	0.6	0.520	0.6	0.208	0.0455	1.00	0.0455	1.040	0.0473	4.9
17	11:55	34.00	0.6	0.580	0.6	0.232	0.0540	1.00	0.0540	1.160	0.0626	6.5
18	11:56	36.00	0.6	0.580	0.6	0.232	0.0638	1.00	0.0638	1.160	0.0740	7.7
19	11:57	38.00	0.6	0.360	0.6	0.144	0.0674	1.00	0.0674	0.720	0.0485	5.0
20	11:59	40.00	0.6	0.600	0.6	0.240	0.0497	1.00	0.0497	1.200	0.0596	6.2
21	12:00	42.00	0.6	0.500	0.6	0.200	0.0467	1.00	0.0467	1.000	0.0467	4.9
22	12:01	44.00	0.6	0.400	0.6	0.160	0.0640	1.00	0.0640	0.800	0.0512	5.3
23	*12:02*	*46.00*	*0.6*	*0.380*	*0.6*	*0.152*	*0.0272*	*1.00*	*0.0272*	*0.760*	*0.0207*	*2.1*
24	12:04	48.00	0.6	0.360	0.6	0.144	0.0242	1.00	0.0242	0.720	0.0174	1.8
25	12:06	50.00	0.6	0.420	0.6	0.168	0.0370	1.00	0.0370	0.840	0.0311	3.2
26	12:08	52.00	0.6	0.400	0.6	0.160	0.0321	1.00	0.0321	0.800	0.0257	2.7
27	12:10	54.00	0.6	0.280	0.6	0.112	0.0198	1.00	0.0198	0.560	0.0111	1.2
28	12:12	56.00	0.6	0.340	0.6	0.136	0.0142	1.00	0.0142	0.680	0.0097	1.0
29	*12:12*	*58.00*	*0.6*	*0.300*	*0.6*	*0.120*	*0.0361*	*1.00*	*0.0361*	*0.600*	*0.0217*	*2.3*
30	12:15	60.00	0.6	0.280	0.6	0.112	0.0231	1.00	0.0231	0.560	0.0129	1.3
31	12:16	62.00	0.6	0.320	0.6	0.128	0.0211	1.00	0.0211	0.640	0.0135	1.4
32	12:17	64.00	0.6	0.320	0.6	0.128	0.0071	1.00	0.0071	0.640	0.0045	0.5
33	*12:19*	*66.00*	*0.6*	*0.360*	*0.6*	*0.144*	*0.0086*	*1.00*	*0.0086*	*1.080*	*0.0093*	*1.0*
34	12:19	70.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A4.7 Lake J1 Outlet

Benchmark Coordinates	UTM Zone 12
Easting	555986.724 m
Northing	7166458.007 m
Elevation	416.960 m (geodetic)
Datum Elevation	417.000 m (geodetic)

Table A4.7-1 2014 Hydrometric Data at Lake J1 Outlet Station

Date and Time	Water Surface Elevation (m)	Transducer Reading (m)	Transducer Elevation (m)	Mean Transducer Elevation (m)	Stage (m)	Measured Discharge (m^3/s)
28-Apr-2014 13:30	--	--	--	--	--	Frozen to bottom
2-Jun-2014 11:30	417.259	0.740	416.518	416.593	0.258	1.014
24-Jun-2014 10:20	417.311	0.695	416.615		0.310	2.896
31-Jul-2014 11:50	417.249	0.633	416.616		0.248	1.287
19-Sep-2014 13:10	417.171	0.549	416.621		0.170	0.055

Figure A4.7-1 Open-Water 2014 Stage-Discharge Rating Curve at Lake J1 Outlet Station

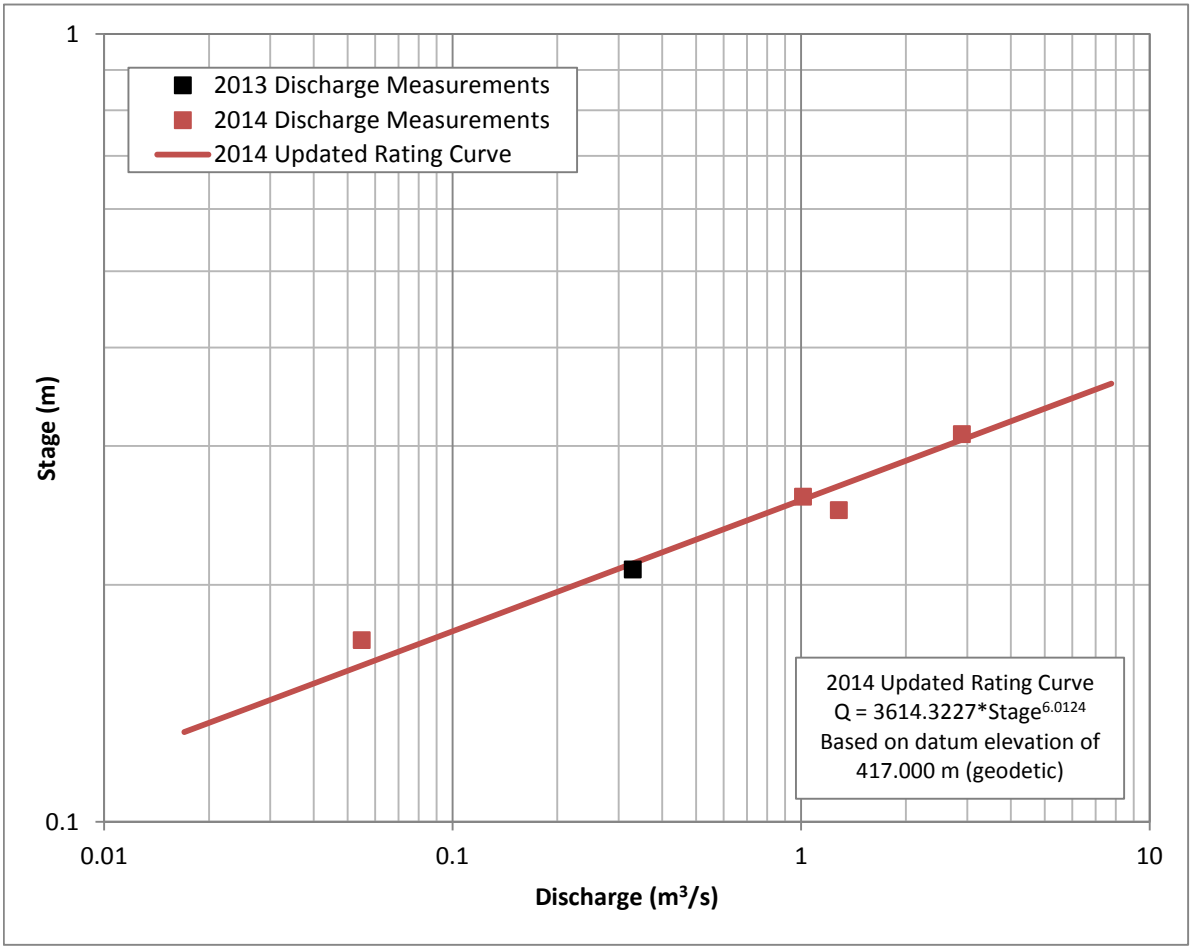


Table A4.7-2 Lake J1 Outlet, 2014 Mean Daily Discharge and Water Surface Elevation

DATE	Discharge (m^3/s)					Water Surface Elevation (m, geodetic)				
	May	Jun	Jul	Aug	Sep	May	Jun	Jul	Aug	Sep
1	--	2.497	2.259	0.478	0.259	--	417.297	417.291	417.205	417.183
2	--	4.288	2.005	0.389	0.231	--	417.335	417.283	417.200	417.178
3	--	4.858	1.936	0.451	0.208	--	417.344	417.282	417.205	417.174
4	--	4.989	2.435	0.438	0.223	--	417.345	417.294	417.203	417.177
5	--	5.163	1.872	0.477	0.259	--	417.348	417.278	417.207	417.182
6	--	4.546	1.977	0.646	0.198	--	417.338	417.283	417.222	417.171
7	--	3.855	1.919	0.729	0.357	--	417.326	417.281	417.226	417.196
8	--	3.680	1.995	0.441	0.377	--	417.323	417.283	417.204	417.199
9	--	3.609	1.689	0.287	0.326	--	417.322	417.273	417.185	417.191
10	--	4.038	1.493	0.254	0.174	--	417.330	417.266	417.182	417.165
11	--	4.691	1.922	0.309	0.233	--	417.341	417.281	417.189	417.178
12	--	4.153	1.587	0.229	0.378	--	417.332	417.269	417.177	417.198
13	--	3.671	1.073	0.281	0.236	--	417.323	417.247	417.184	417.178
14	--	4.209	0.842	0.316	0.387	--	417.333	417.236	417.191	417.199
15	--	4.284	0.872	0.301	0.449	--	417.334	417.238	417.188	417.206
16	--	4.298	1.692	0.294	0.424	--	417.334	417.273	417.188	417.203
17	--	3.475	1.678	0.348	0.404	--	417.319	417.272	417.193	417.201
18	--	3.391	1.624	0.434	0.231	--	417.318	417.271	417.204	417.178
19	--	3.162	1.663	0.429	0.179P	--	417.312	417.272	417.202	417.169P
20	--	3.092	1.439	0.260	--	--	417.312	417.264	417.182	--
21	--	3.808	1.169	0.246	--	--	417.326	417.252	417.181	--
22	--	3.843	1.048	0.194	--	--	417.326	417.247	417.169	--
23	--	2.758	1.040	0.128	--	--	417.302	417.246	417.155	--
24	--	2.184	0.846	0.083	--	--	417.289	417.235	417.142	--
25	--	2.170	0.744	0.091	--	--	417.288	417.229	417.145	--
26	--	2.106	0.661	0.095	--	--	417.287	417.223	417.148	--
27	--	1.993	0.662	0.148	--	--	417.283	417.224	417.162	--
28	--	2.174	0.579	0.258	--	--	417.288	417.217	417.182	--
29	0.370P	3.784	0.590	0.336	--	417.197P	417.325	417.219	417.192	--
30	0.929	2.957	0.547	0.363	--	417.241	417.308	417.214	417.196	--
31	1.679	--	0.681	0.332	--	417.274	--	417.225	417.192	--
MIN	0.370	1.993	0.547	0.083	0.174	417.197	417.283	417.214	417.142	417.165
MEAN	0.993	3.591	1.372	0.325	0.291	417.237	417.320	417.257	417.187	417.186
MAX	1.679	5.163	2.435	0.729	0.449	417.274	417.348	417.294	417.226	417.206

Table A4.7-3 Discharge Sheet – Lake J1 Outlet - Main Channel, 2 June 2014

Discharge Measurement Summary

Date Generated: Tue Jan 27 2015

File Information

File Name	J1MAINCH.MAY.WAD
Start Date and Time	2014/06/02 11:42:51

Site Details

Site Name	J1 LAKE
Operator(s)	DC CD

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	4.4%
Velocity	2.0%	10.3%
Width	0.1%	0.1%
Method	2.2%	-
# Stations	2.6%	-
Overall	**4.1%**	**11.2%**

Summary

Averaging Int.	15	# Stations	19
Start Edge	LEW	Total Width	16.000
Mean SNR	24.5 dB	Total Area	2.195
Mean Temp	0.47 °C	Mean Depth	0.137
Disch. Equation	Mid-Section	Mean Velocity	0.3953
		Total Discharge	**0.8676**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:42	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	11:42	0.50	0.6	0.200	0.6	0.080	0.8254	1.00	0.8254	0.100	0.0825	9.5
2	*11:44*	*1.00*	*0.6*	*0.200*	*0.6*	*0.080*	*0.5506*	*1.00*	*0.5506*	*0.100*	*0.0551*	*6.3*
3	11:45	1.50	0.6	0.240	0.6	0.096	0.9404	1.00	0.9404	0.120	0.1128	13.0
4	*11:45*	*2.00*	*0.6*	*0.180*	*0.6*	*0.072*	*0.8411*	*1.00*	*0.8411*	*0.090*	*0.0757*	*8.7*
5	*11:46*	*2.50*	*0.6*	*0.260*	*0.6*	*0.104*	*0.4424*	*1.00*	*0.4424*	*0.260*	*0.1150*	*13.3*
6	11:48	4.00	0.6	0.240	0.6	0.096	0.3255	1.00	0.3255	0.300	0.0977	11.3
7	*11:49*	*5.00*	*0.6*	*0.140*	*0.6*	*0.056*	*0.2055*	*1.00*	*0.2055*	*0.140*	*0.0288*	*3.3*
8	*11:50*	*6.00*	*0.6*	*0.100*	*0.6*	*0.040*	*0.2102*	*1.00*	*0.2102*	*0.100*	*0.0210*	*2.4*
9	11:51	7.00	0.6	0.100	0.6	0.040	0.4810	1.00	0.4810	0.075	0.0361	4.2
10	11:52	7.50	0.6	0.100	0.6	0.040	0.2191	1.00	0.2191	0.075	0.0164	1.9
11	11:53	8.50	0.6	0.100	0.6	0.040	0.4591	1.00	0.4591	0.100	0.0459	5.3
12	11:54	9.50	0.6	0.120	0.6	0.048	0.3917	1.00	0.3917	0.120	0.0470	5.4
13	11:55	10.50	0.6	0.120	0.6	0.048	0.4088	1.00	0.4088	0.120	0.0491	5.7
14	*11:56*	*11.50*	*0.6*	*0.120*	*0.6*	*0.048*	*0.1632*	*1.00*	*0.1632*	*0.120*	*0.0196*	*2.3*
15	*11:57*	*12.50*	*0.6*	*0.100*	*0.6*	*0.040*	*0.2170*	*1.00*	*0.2170*	*0.100*	*0.0217*	*2.5*
16	*11:59*	*13.50*	*0.6*	*0.100*	*0.6*	*0.040*	*0.0636*	*1.00*	*0.0636*	*0.100*	*0.0064*	*0.7*
17	*12:00*	*14.50*	*0.6*	*0.140*	*0.6*	*0.056*	*0.2108*	*1.00*	*0.2108*	*0.175*	*0.0369*	*4.3*
18	12:00	16.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.7-4 Discharge Sheet – Lake J1 Outlet - Secondary Channel, 2 June 2014

Discharge Measurement Summary

Date Generated: Tue Jan 20 2015

File Information	
File Name	J1_June2.WAD
Start Date and Time	2014/06/02 11:32:48

Site Details	
Site Name	J1 OUTLET
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	1.8%
Velocity	2.8%	3.1%
Width	0.2%	0.2%
Method	2.8%	-
# Stations	5.1%	-
Overall	**6.6%**	**3.7%**

Summary			
Averaging Int.	15	# Stations	10
Start Edge	LEW	Total Width	1.000
Mean SNR	31.1 dB	Total Area	0.455
Mean Temp	0.52 °C	Mean Depth	0.455
Disch. Equation	Mid-Section	Mean Velocity	0.3219
		Total Discharge	**0.1465**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:32	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*11:32*	*0.10*	*0.6*	*0.400*	*0.6*	*0.160*	*0.4145*	*1.00*	*0.4145*	*0.040*	*0.0166*	*11.3*
2	11:33	0.20	0.6	0.440	0.6	0.176	0.3899	1.00	0.3899	0.066	0.0257	17.6
3	11:34	0.40	0.6	0.580	0.6	0.232	0.3482	1.00	0.3482	0.087	0.0303	20.7
4	11:35	0.50	0.6	0.580	0.6	0.232	0.2841	1.00	0.2841	0.058	0.0165	11.3
5	*11:35*	*0.60*	*0.6*	*0.580*	*0.6*	*0.232*	*0.2355*	*1.00*	*0.2355*	*0.058*	*0.0137*	*9.3*
6	11:36	0.70	0.6	0.540	0.6	0.216	0.3080	1.00	0.3080	0.054	0.0166	11.4
7	11:36	0.80	0.6	0.460	0.6	0.184	0.2901	1.00	0.2901	0.046	0.0133	9.1
8	11:38	0.90	0.6	0.460	0.6	0.184	0.2986	1.00	0.2986	0.046	0.0137	9.4
9	11:38	1.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.7-5 Discharge Sheet – Lake J1 Outlet, 24 June 2014

Discharge Measurement Summary

Date Generated: Mon Jul 14 2014

File Information

File Name	J1AJUN24.WAD
Start Date and Time	2014/06/24 10:23:03

Site Details

Site Name	
Operator(s)	DC KB

System Information

Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units (Metric Units)

Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	4.5%
Velocity	1.2%	11.3%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	1.6%	-
Overall	**2.8%**	**12.3%**

Summary

Averaging Int.	20	# Stations	33
Start Edge	LEW	Total Width	41.750
Mean SNR	29.4 dB	Total Area	7.963
Mean Temp	10.97 °C	Mean Depth	0.191
Disch. Equation	Mid-Section	Mean Velocity	0.3637
		Total Discharge	**2.8959**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:23	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	10:23	1.00	0.6	0.120	0.6	0.048	0.2323	1.00	0.2323	0.120	0.0279	1.0
2	10:25	2.00	0.6	0.100	0.6	0.040	0.4055	1.00	0.4055	0.125	0.0507	1.8
3	10:26	3.50	0.6	0.080	0.6	0.032	0.1864	1.00	0.1864	0.120	0.0224	0.8
4	10:28	5.00	0.6	0.080	0.6	0.032	0.2812	1.00	0.2812	0.120	0.0337	1.2
5	10:29	6.50	0.6	0.120	0.6	0.048	0.3995	1.00	0.3995	0.210	0.0839	2.9
6	10:31	8.50	0.6	0.100	0.6	0.040	0.1812	1.00	0.1812	0.150	0.0272	0.9
7	10:34	9.50	0.6	0.200	0.6	0.080	0.5045	1.00	0.5045	0.175	0.0883	3.0
8	*10:37*	*10.25*	*0.6*	*0.200*	*0.6*	*0.080*	*0.4109*	*1.00*	*0.4109*	*0.150*	*0.0616*	*2.1*
9	*10:39*	*11.00*	*0.6*	*0.120*	*0.6*	*0.048*	*0.2637*	*1.00*	*0.2637*	*0.105*	*0.0277*	*1.0*
10	10:42	12.00	0.6	0.120	0.6	0.048	0.1711	1.00	0.1711	0.120	0.0205	0.7
11	10:43	13.00	0.6	0.200	0.6	0.080	0.7471	1.00	0.7471	0.200	0.1494	5.2
12	*10:45*	*14.00*	*0.6*	*0.220*	*0.6*	*0.088*	*0.8915*	*1.00*	*0.8915*	*0.220*	*0.1961*	*6.8*
13	*10:48*	*15.00*	*0.6*	*0.220*	*0.6*	*0.088*	*0.4416*	*1.00*	*0.4416*	*0.220*	*0.0972*	*3.4*
14	*10:51*	*16.00*	*0.6*	*0.440*	*0.6*	*0.176*	*0.9509*	*1.00*	*0.9509*	*0.330*	*0.3138*	*10.8*
15	*10:52*	*16.50*	*0.6*	*0.500*	*0.6*	*0.200*	*0.9226*	*1.00*	*0.9226*	*0.250*	*0.2307*	*8.0*
16	*10:54*	*17.00*	*0.6*	*0.320*	*0.6*	*0.128*	*0.5431*	*1.00*	*0.5431*	*0.160*	*0.0869*	*3.0*
17	10:55	17.50	0.6	0.320	0.6	0.128	0.4905	1.00	0.4905	0.240	0.1177	4.1
18	*10:58*	*18.50*	*0.6*	*0.440*	*0.6*	*0.176*	*0.3809*	*1.00*	*0.3809*	*0.385*	*0.1466*	*5.1*
19	10:59	19.25	0.6	0.300	0.6	0.120	0.7000	1.00	0.7000	0.263	0.1838	6.3
20	11:01	20.25	0.6	0.300	0.6	0.120	0.5546	1.00	0.5546	0.300	0.1664	5.7
21	11:01	21.25	0.6	0.240	0.6	0.096	0.3660	1.00	0.3660	0.240	0.0878	3.0
22	11:03	22.25	0.6	0.160	0.6	0.064	0.9218	1.00	0.9218	0.140	0.1291	4.5
23	11:05	23.00	0.6	0.250	0.6	0.100	0.5089	1.00	0.5089	0.188	0.0954	3.3
24	*11:07*	*23.75*	*0.6*	*0.200*	*0.6*	*0.080*	*0.6145*	*1.00*	*0.6145*	*0.125*	*0.0768*	*2.7*
25	11:07	24.25	0.6	0.090	0.6	0.036	0.4645	1.00	0.4645	0.045	0.0209	0.7
26	*11:08*	*24.75*	*0.6*	*0.090*	*0.6*	*0.036*	*0.1003*	*1.00*	*0.1003*	*0.113*	*0.0113*	*0.4*
27	11:13	26.75	0.6	0.180	0.6	0.072	0.1937	1.00	0.1937	0.450	0.0872	3.0
28	*11:14*	*29.75*	*0.6*	*0.120*	*0.6*	*0.048*	*0.1293*	*1.00*	*0.1293*	*0.360*	*0.0465*	*1.6*
29	11:15	32.75	0.6	0.260	0.6	0.104	0.0620	1.00	0.0620	0.780	0.0484	1.7
30	11:16	35.75	0.6	0.280	0.6	0.112	0.1174	1.00	0.1174	0.840	0.0986	3.4
31	11:18	38.75	0.6	0.240	0.6	0.096	0.0854	1.00	0.0854	0.720	0.0615	2.1
32	11:18	41.75	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.7-6 Discharge Sheet – Lake J1 Outlet, 31 July 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	J1AJU31.WAD
Start Date and Time	2014/07/31 12:15:10

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	9.7%
Velocity	1.6%	8.7%
Width	0.1%	0.1%
Method	2.2%	-
# Stations	1.8%	-
Overall	**3.5%**	**13.0%**

Summary			
Averaging Int.	20	# Stations	28
Start Edge	LEW	Total Width	27.000
Mean SNR	25.2 dB	Total Area	4.460
Mean Temp	16.79 °C	Mean Depth	0.165
Disch. Equation	Mid-Section	Mean Velocity	0.2885
		Total Discharge	**1.2865**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	12:15	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*12:15*	*1.00*	*0.6*	*0.060*	*0.6*	*0.024*	*0.0495*	*1.00*	*0.0495*	*0.060*	*0.0030*	*0.2*
2	12:16	2.00	0.6	0.100	0.6	0.040	0.3298	1.00	0.3298	0.100	0.0330	2.6
3	*12:17*	*3.00*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0569*	*1.00*	*0.0569*	*0.080*	*0.0046*	*0.4*
4	12:17	4.00	0.6	0.100	0.6	0.040	0.0032	1.00	0.0032	0.100	0.0003	0.0
5	*12:19*	*5.00*	*0.6*	*0.120*	*0.6*	*0.048*	*0.0008*	*1.00*	*0.0008*	*0.120*	*0.0001*	*0.0*
6	*12:20*	*6.00*	*0.6*	*0.200*	*0.6*	*0.080*	*-0.0005*	*1.00*	*-0.0005*	*0.200*	*-0.0001*	*0.0*
7	*12:22*	*7.00*	*0.6*	*0.100*	*0.6*	*0.040*	*0.0011*	*1.00*	*0.0011*	*0.100*	*0.0001*	*0.0*
8	*12:23*	*8.00*	*0.6*	*0.280*	*0.6*	*0.112*	*0.0000*	*1.00*	*0.0000*	*0.280*	*0.0000*	*0.0*
9	*12:23*	*9.00*	*0.6*	*0.120*	*0.6*	*0.048*	*0.0908*	*1.00*	*0.0908*	*0.120*	*0.0109*	*0.8*
10	12:26	10.00	0.6	0.100	0.6	0.040	0.0046	1.00	0.0046	0.100	0.0005	0.0
11	12:28	11.00	0.6	0.160	0.6	0.064	0.1595	1.00	0.1595	0.160	0.0255	2.0
12	12:29	12.00	0.6	0.140	0.6	0.056	0.2686	1.00	0.2686	0.140	0.0376	2.9
13	12:31	13.00	0.6	0.100	0.6	0.040	0.2880	1.00	0.2880	0.100	0.0288	2.2
14	*12:33*	*14.00*	*0.6*	*0.200*	*0.6*	*0.080*	*0.3673*	*1.00*	*0.3673*	*0.200*	*0.0735*	*5.7*
15	*12:34*	*15.00*	*0.6*	*0.200*	*0.6*	*0.080*	*0.1879*	*1.00*	*0.1879*	*0.200*	*0.0376*	*2.9*
16	12:35	16.00	0.6	0.180	0.6	0.072	0.3295	1.00	0.3295	0.180	0.0593	4.6
17	*12:36*	*17.00*	*0.6*	*0.180*	*0.6*	*0.072*	*0.1753*	*1.00*	*0.1753*	*0.180*	*0.0316*	*2.5*
18	12:37	18.00	0.6	0.280	0.6	0.112	0.5974	1.00	0.5974	0.280	0.1673	13.0
19	*12:39*	*19.00*	*0.6*	*0.140*	*0.6*	*0.056*	*0.6369*	*1.00*	*0.6369*	*0.140*	*0.0892*	*6.9*
20	12:40	20.00	0.6	0.400	0.6	0.160	0.5527	1.00	0.5527	0.400	0.2211	17.2
21	*12:41*	*21.00*	*0.6*	*0.210*	*0.6*	*0.084*	*0.2917*	*1.00*	*0.2917*	*0.210*	*0.0613*	*4.8*
22	12:42	22.00	0.6	0.240	0.6	0.096	0.5824	1.00	0.5824	0.240	0.1398	10.9
23	12:43	23.00	0.6	0.290	0.6	0.116	0.4049	1.00	0.4049	0.290	0.1174	9.1
24	12:44	24.00	0.6	0.220	0.6	0.088	0.0974	1.00	0.0974	0.220	0.0214	1.7
25	12:45	25.00	0.6	0.100	0.6	0.040	0.3558	1.00	0.3558	0.100	0.0356	2.8
26	12:46	26.00	0.6	0.160	0.6	0.064	0.5463	1.00	0.5463	0.160	0.0874	6.8
27	12:46	27.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.7-7 Discharge Sheet – Lake J1 Outlet, 19 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	J1SEPT19.WAD
Start Date and Time	2014/09/19 13:23:52

Site Details	
Site Name	J1
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.5%	5.5%
Velocity	3.7%	16.8%
Width	0.2%	0.2%
Method	2.7%	-
# Stations	3.3%	-
Overall	**5.8%**	**17.7%**

Summary			
Averaging Int.	20	# Stations	15
Start Edge	LEW	Total Width	7.800
Mean SNR	22.9 dB	Total Area	1.059
Mean Temp	3.93 °C	Mean Depth	0.136
Disch. Equation	Mid-Section	Mean Velocity	0.0519
		Total Discharge	**0.0549**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	13:23	0.90	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*13:23*	*1.50*	*0.6*	*0.170*	*0.6*	*0.068*	*0.0659*	*1.00*	*0.0659*	*0.153*	*0.0101*	*18.4*
2	*13:25*	*2.70*	*0.6*	*0.170*	*0.6*	*0.068*	*0.0142*	*1.00*	*0.0142*	*0.162*	*0.0023*	*4.2*
3	13:28	3.40	0.6	0.150	0.6	0.060	0.0626	1.00	0.0626	0.120	0.0075	13.7
4	13:29	4.30	0.6	0.090	0.6	0.036	0.0119	1.00	0.0119	0.072	0.0009	1.6
5	*13:31*	*5.00*	*0.6*	*0.120*	*0.6*	*0.048*	*0.0341*	*1.00*	*0.0341*	*0.084*	*0.0029*	*5.2*
6	*13:32*	*5.70*	*0.6*	*0.060*	*0.6*	*0.024*	*0.0044*	*1.00*	*0.0044*	*0.039*	*0.0002*	*0.3*
7	*13:33*	*6.30*	*0.6*	*0.080*	*0.6*	*0.032*	*0.0308*	*1.00*	*0.0308*	*0.040*	*0.0012*	*2.2*
8	13:34	6.70	0.6	0.100	0.6	0.040	0.0989	1.00	0.0989	0.035	0.0035	6.3
9	*13:36*	*7.00*	*0.6*	*0.200*	*0.6*	*0.080*	*0.1164*	*1.00*	*0.1164*	*0.060*	*0.0070*	*12.7*
10	13:39	7.30	0.6	0.210	0.6	0.084	0.1187	1.00	0.1187	0.084	0.0100	18.2
11	13:40	7.80	0.6	0.180	0.6	0.072	0.0458	1.00	0.0458	0.072	0.0033	6.0
12	13:41	8.10	0.6	0.220	0.6	0.088	0.0045	1.00	0.0045	0.066	0.0003	0.5
13	13:42	8.40	0.6	0.240	0.6	0.096	0.0821	1.00	0.0821	0.072	0.0059	10.8
14	13:42	8.70	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A4.8 Lac du Sauvage Outlet

Benchmark Coordinates	UTM Zone 12
Easting	546907.386 m
Northing	7159643.875 m
Elevation	416.705 m (geodetic)
Datum Elevation	415.500 m (geodetic)

Table A4.8-1 2014 Hydrometric Data at Lac du Sauvage Outlet Station

Date and Time	Water Surface Elevation (m)	Transducer Reading (m)	Transducer Elevation (m)	Mean Transducer Elevation (m)	Stage (m)	Measured Discharge (m^3/s)
28-Apr-2014 15:30	415.515	--	--	--	0.014	0.231
29-May-2014 15:10	415.810	0.303	415.507	415.495	0.310	3.628
6-Jun-2014 13:50	415.987	0.517	415.470		--	--
26-Jun-2014 10:10	416.155	0.641	415.514		0.655	13.484
31-Jul-2014 08:40	416.149	0.659	415.490		0.649	15.313
23-Sep-2014 12:50	415.855	--	--		0.354	2.801

Note: The Barologger for atmospheric pressure corrections was removed on September 18, and thus, no transducer corrections were possible for September 23.

Previous assessments for the Lac du Sauvage outlet lake stage-discharge rating curve assumed that the outlet had backwatering effects due to downstream Lac de Gras. For the 2014 baseline data analysis and report, one single rating curve is proposed to derive outlet discharges from measured lake water levels. Based on the available water level and discharge data taken from the 2013 and 2014 seasons (shown below in Figure A4.8-1), a single rating curve appears to be most applicable. Additional data are required to support the backwater modelling including concurrent water level records from both Lac du Sauvage and Lac de Gras at the Lac du Sauvage Narrows. This approach may only be applicable for low flow years.

Figure A4.8-1 Open-Water 2014 Stage-Discharge Rating Curve at Lac du Sauvage Outlet Station

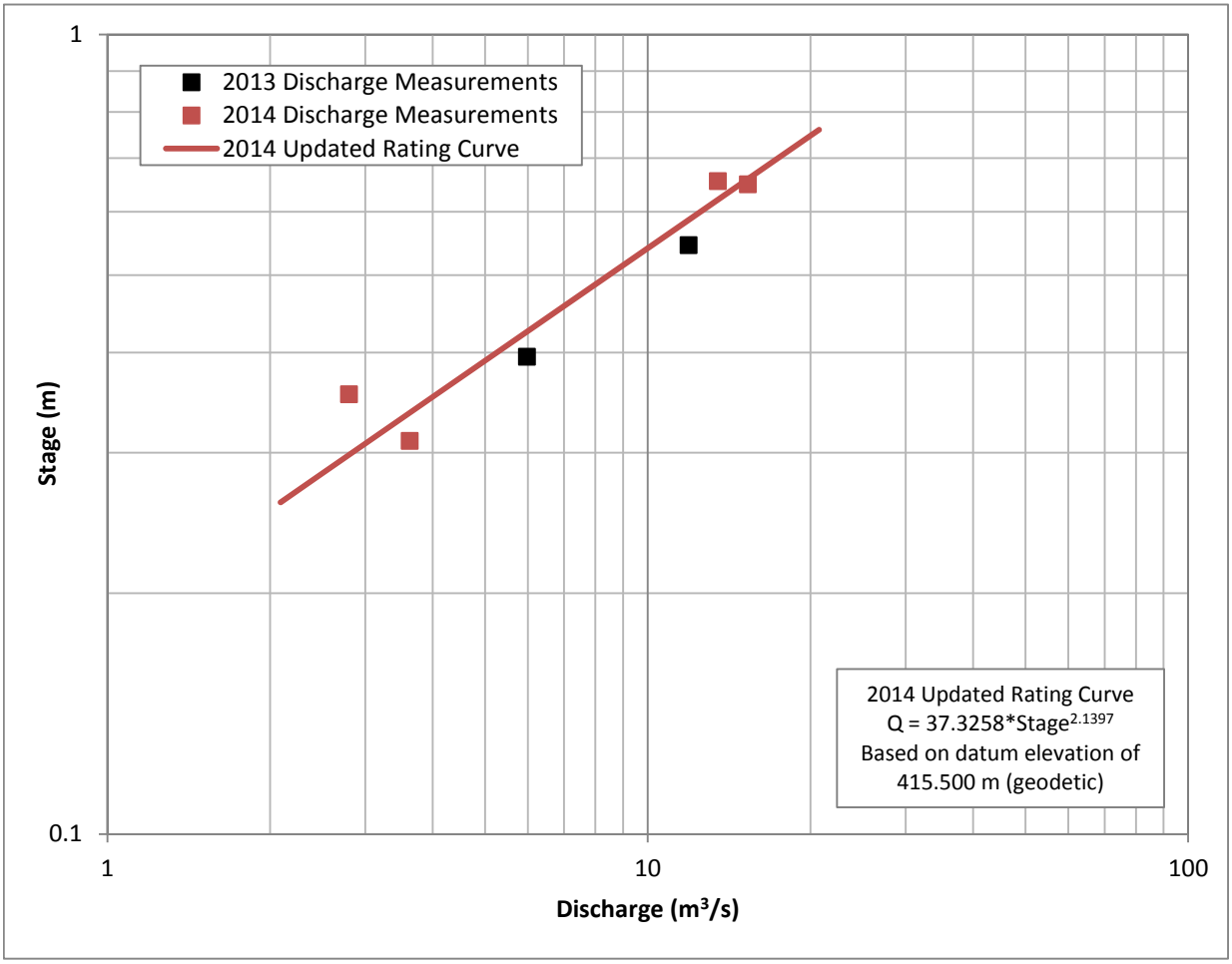


Table A4.8-2 Lac du Sauvage Outlet, 2014 Mean Daily Discharge and Water Surface Elevation

	Discharge (m^3/s)					Water Surface Elevation (m, geodetic)				
DATE	May	Jun	Jul	Aug	Sep	May	Jun	Jul	Aug	Sep
1	--	5.679	15.252	13.849	6.791	--	415.915	416.158	416.129	415.951
2	--	7.079	15.154	13.154	6.709	--	415.960	416.156	416.114	415.948
3	--	7.840	15.160	13.186	6.562	--	415.982	416.156	416.115	415.944
4	--	8.316	15.344	12.894	7.234	--	415.996	416.160	416.108	415.964
5	--	8.851	15.120	12.505	6.891	--	416.010	416.155	416.100	415.954
6	--	9.011	15.733	12.828	7.141	--	416.015	416.168	416.107	415.962
7	--	8.829	15.757	12.555	7.501	--	416.010	416.168	416.101	415.972
8	--	9.000	15.478	11.939	6.837	--	416.014	416.163	416.087	415.952
9	--	9.265	15.041	11.223	6.416	--	416.021	416.154	416.070	415.939
10	--	9.859	14.958	11.189	5.705	--	416.037	416.152	416.069	415.915
11	--	10.673	16.053	11.389	5.687	--	416.057	416.174	416.074	415.915
12	--	10.679	15.206	10.670	6.070	--	416.057	416.157	416.057	415.928
13	--	10.695	14.283	10.688	5.640	--	416.057	416.138	416.057	415.913
14	--	11.417	13.915	10.944	5.883	--	416.075	416.130	416.064	415.922
15	--	11.936	14.008	10.539	5.863	--	416.087	416.132	416.054	415.921
16	--	12.339	15.976	10.157	5.494	--	416.096	416.172	416.044	415.908
17	--	12.167	16.981	10.981	5.136	--	416.092	416.192	416.064	415.896
18	--	12.554	16.917	10.639	5.238	--	416.101	416.191	416.056	415.899
19	--	12.783	16.058	10.167	--	--	416.106	416.174	416.044	--
20	--	13.239	15.523	9.746	--	--	416.116	416.164	416.034	--
21	--	14.077	15.210	9.411	--	--	416.134	416.157	416.025	--
22	--	14.512	15.142	8.811	--	--	416.143	416.156	416.009	--
23	--	14.281	14.914	8.368	--	--	416.138	416.151	415.997	--
24	--	13.935	14.368	7.996	--	--	416.131	416.140	415.987	--
25	--	14.007	14.303	7.844	--	--	416.132	416.139	415.982	--
26	--	14.252	14.040	8.018	--	--	416.138	416.133	415.987	--
27	--	14.351	13.983	8.271	--	--	416.140	416.132	415.994	--
28	--	14.747	13.735	8.043	--	--	416.148	416.127	415.988	--
29	2.983	15.966	13.739	7.606	--	415.807	416.172	416.127	415.975	--
30	3.948	15.751	13.219	7.187	--	415.850	416.168	416.115	415.963	--
31	4.929	--	14.675	6.962	--	415.888	--	416.146	415.956	--
MIN	2.983	5.679	13.219	6.962	5.136	415.807	415.915	416.115	415.956	415.896
MEAN	3.953	11.603	15.008	10.315	6.267	415.848	416.075	416.153	416.046	415.934
MAX	4.929	15.966	16.981	13.849	7.501	415.888	416.172	416.192	416.129	415.972

Table A4.8-3 Discharge Sheet – Lac du Sauvage Outlet, 28 April 2014

Waterbody:		Lac du Sauvage			**Date**		28-Apr-14	
Crossing ID:		Lac du Sauvage Outlet			**Start Time**		9:30	
					End Time		10:05	
BM UTM12 Location		**Survey**						
East	546807	BM_read	1.118		**Meter Type:** FlowTracker			
North	7159616	WL_read	2.744		**Total Discharge**		0.231 (m^3/s)	
Elevation	417.14	WL_Elev	415.515		**Crew:**	DS/JM/DB		
Station Start LDB	**Distance from LDB** (m)	**Total Depth** (m)	**Ice Thickness** (m)	**Active Depth** (m)	**Velocity** 0.2 Depth (m/s)	0.6/0.8 Depth (m/s)	Qi (m^3/s)	
1	2.00	0.00						
2	2.40	0.05				0.00	0.000	
3	2.80	0.12				0.00	0.000	
4	3.20	0.10				0.01	0.000	
5	3.60	0.15				0.00	0.000	
6	4.00	0.20				0.01	0.001	
7	4.40	0.24				0.02	0.002	
8	4.80	0.24				0.01	0.001	
9	5.20	0.32				0.07	0.009	
10	5.60	0.30				0.02	0.002	
11	6.00	0.37				0.03	0.004	
12	6.40	0.41				0.04	0.007	
13	6.80	0.52				0.05	0.010	
14	7.20	0.55				0.06	0.013	
15	7.60	0.55				0.02	0.004	
16	8.00	0.42				0.12	0.020	
17	8.40	0.44				0.10	0.018	
18	8.80	0.47				0.17	0.024	
19	9.00	0.47				0.12	0.011	
20	9.20	0.49				0.06	0.009	
21	9.60	0.42				0.10	0.017	
22	10.00	0.40				0.01	0.002	
23	10.40	0.34				0.11	0.015	
24	10.80	0.37				0.19	0.021	
25	11.00	0.36				0.13	0.009	
26	11.20	0.33				0.24	0.024	
27	11.60	0.27				0.07	0.008	
28	12.00	0.12				0.00	0.000	
29	12.60	0.06				0.00	0.000	
30	13.40	0.00						

Table A4.8-4 Discharge Sheet – Lac du Sauvage Outlet, 29 May 2014

Discharge Measurement Summary

Date Generated: Tue Jan 20 2015

File Information	
File Name	LDS_May29.WAD
Start Date and Time	2014/05/29 15:10:46

Site Details	
Site Name	LDS
Operator(s)	DC CD

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	2.9%
Velocity	1.1%	3.4%
Width	0.1%	0.1%
Method	1.6%	-
# Stations	2.0%	-
Overall	**3.0%**	**4.6%**

Summary			
Averaging Int.	Varies	# Stations	25
Start Edge	LEW	Total Width	15.000
Mean SNR	18.8 dB	Total Area	5.794
Mean Temp	2.28 °C	Mean Depth	0.386
Disch. Equation	Mid-Section	Mean Velocity	0.6262
		Total Discharge	**3.6282**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Npts	Vel	CorrFact	MeanV	Area	Flow	%Q
0	15:10	0.00	None	0.000	0.0	0.0	0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	15:10	0.90	0.6	0.260	0.6	0.104	30	0.1427	1.00	0.1427	0.234	0.0334	0.9
2	15:13	1.80	0.6	0.340	0.6	0.136	30	0.1745	1.00	0.1745	0.238	0.0415	1.1
3	15:14	2.30	0.6	0.540	0.6	0.216	30	0.2997	1.00	0.2997	0.270	0.0809	2.2
4	15:17	2.80	0.6	0.540	0.6	0.216	15	0.4397	1.00	0.4397	0.270	0.1187	3.3
5	15:17	3.30	0.6	0.580	0.6	0.232	15	0.7713	1.00	0.7713	0.290	0.2237	6.2
6	15:18	3.80	0.6	0.580	0.6	0.232	15	0.6846	1.00	0.6846	0.290	0.1985	5.5
7	15:19	4.30	0.6	0.580	0.6	0.232	15	0.6292	1.00	0.6292	0.290	0.1825	5.0
8	15:20	4.80	0.6	0.560	0.6	0.224	15	1.0099	1.00	1.0099	0.280	0.2828	7.8
9	15:21	5.30	0.2/0.8	0.760	0.2	0.608	15	1.1272	1.00	0.8854	0.380	0.3365	9.3
9	15:23	5.30	0.2/0.8	0.760	0.8	0.152	15	0.6437					
10	15:24	5.80	0.6	0.600	0.6	0.240	15	0.9723	1.00	0.9723	0.300	0.2917	8.0
11	15:25	6.30	0.6	0.680	0.6	0.272	15	0.8412	1.00	0.8412	0.340	0.2860	7.9
12	15:26	6.80	0.2/0.8	0.700	0.2	0.560	15	1.0405	1.00	0.7663	0.350	0.2682	7.4
12	15:26	6.80	0.2/0.8	0.700	0.8	0.140	15	0.4922					
13	15:27	7.30	0.6	0.620	0.6	0.248	15	0.7198	1.00	0.7198	0.310	0.2231	6.2
14	15:28	7.80	0.6	0.520	0.6	0.208	15	0.8269	1.00	0.8269	0.260	0.2150	5.9
15	15:30	8.30	0.6	0.580	0.6	0.232	15	0.5603	1.00	0.5603	0.290	0.1625	4.5
16	15:30	8.80	0.6	0.500	0.6	0.200	15	0.4792	1.00	0.4792	0.250	0.1198	3.3
17	15:31	9.30	0.6	0.420	0.6	0.168	15	0.4304	1.00	0.4304	0.210	0.0904	2.5
18	15:32	9.80	0.6	0.400	0.6	0.160	15	0.4276	1.00	0.4276	0.200	0.0855	2.4
19	15:33	10.30	0.6	0.300	0.6	0.120	15	0.3800	1.00	0.3800	0.150	0.0570	1.6
20	15:34	10.80	0.6	0.150	0.6	0.060	15	0.5600	1.00	0.5600	0.120	0.0672	1.9
21	15:35	11.90	0.6	0.150	0.6	0.060	15	0.6256	1.00	0.6256	0.150	0.0938	2.6
22	15:36	12.80	0.6	0.150	0.6	0.060	15	0.6948	1.00	0.6948	0.135	0.0938	2.6
23	15:37	13.70	0.6	0.170	0.6	0.068	15	0.4046	1.00	0.4046	0.187	0.0757	2.1
24	15:37	15.00	None	0.000	0.0	0.0	0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.8-5 Discharge Sheet – Lac du Sauvage Outlet, 26 June 2014

Discharge Measurement Summary

Date Measured: Thursday, June 26, 2014

Site Information		Measurement Information	
Site Name	lds 25jun 1	Party	dc kb
Station Number		Boat/Motor	
Location		Meas. Number	

System Information		System Setup		Units	
System Type	RS-M9	Transducer Depth (m)	0.03	Distance	m
Serial Number	2625	Salinity (ppt)	0.0	Velocity	m/s
Firmware Version	3.00	Magnetic Declination (deg)	15.2	Area	m2
Software Version	3.7			Discharge	m3/s
				Temperature	degC

Discharge Calculation Settings				Discharge Results	
Track Reference	Bottom-Track	Left Method	Sloped Bank	Width (m)	49.395
Depth Reference	Vertical Beam	Right Method	Sloped Bank	Area (m2)	29.070
Coordinate System	ENU	Top Fit Type	Power Fit	Mean Speed (m/s)	0.464
		Bottom Fit Type	Power Fit	Total Q (m3/s)	13.484
				Maximum Measured Depth	1.146
				Maximum Measured Speed	1.238

Measurement Results

Tr		Time			Distance				Mean Vel		Discharge							%
#		Time	Duration	Temp.	Track	DMG	Width	Area	Boat	Water	Left	Right	Top	Middle	Bottom	Total	MBTotal	Measured
2	L	9:23:27 AM	0:03:10	7.6	46.44	42.25	49.253	29.237	0.244	0.453	0.16	0.02	2.31	9.06	1.68	13.234	--	68.5
3	R	9:27:00 AM	0:04:31	6.8	46.87	42.08	49.084	28.616	0.173	0.472	0.25	0.02	2.33	9.26	1.65	13.511	--	68.5
4	L	9:32:07 AM	0:04:04	6.8	46.53	42.86	49.858	29.112	0.191	0.464	0.15	0.01	2.30	9.43	1.61	13.497	--	69.9
5	R	9:36:33 AM	0:04:31	6.2	45.18	42.38	49.383	29.314	0.167	0.467	0.24	0.02	2.41	9.38	1.64	13.696	--	68.5
			Mean	6.8	46.26	42.39	49.395	29.070	0.194	0.464	0.20	0.02	2.34	9.28	1.64	13.484	0.000	68.8
			Std Dev	0.5	0.64	0.29	0.288	0.271	0.031	0.007	0.05	0.00	0.05	0.14	0.03	0.164	0.000	0.6
			COV	0.1	0.014	0.007	0.006	0.009	0.158	0.015	0.232	0.195	0.019	0.015	0.016	0.012	0.000	0.009

Exposure Time: 0:16:16

Tr2=20030101122030.riv; Tr3=LDS - 25Jun15 0931.riv; Tr4=LDS - 25Jun15 0935.riv; Tr5=LDS - 25Jun14 0940.riv;

Table A4.8-6 Discharge Sheet First Section – Lac du Sauvage Outlet, 31 July 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	LDSJUL31.WAD
Start Date and Time	2014/07/31 10:23:17

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	2.4%
Velocity	0.6%	2.2%
Width	0.1%	0.1%
Method	1.5%	-
# Stations	2.8%	-
Overall	**3.4%**	**3.4%**

Summary			
Averaging Int.	20	# Stations	18
Start Edge	LEW	Total Width	34.100
Mean SNR	14.2 dB	Total Area	25.670
Mean Temp	13.35 °C	Mean Depth	0.753
Disch. Equation	Mid-Section	Mean Velocity	0.4739
		Total Discharge	**12.1659**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	10:23	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	10:23	2.00	0.6	0.500	0.6	0.200	0.2677	1.00	0.2677	1.000	0.2677	2.2
2	10:25	4.00	0.6	0.520	0.6	0.208	0.2068	1.00	0.2068	1.040	0.2151	1.8
3	10:26	6.00	0.6	0.620	0.6	0.248	0.3977	1.00	0.3977	1.240	0.4931	4.1
4	10:27	8.00	0.6	0.640	0.6	0.256	0.4766	1.00	0.4766	1.280	0.6100	5.0
5	10:28	10.00	0.6	0.620	0.6	0.248	0.4580	1.00	0.4580	1.240	0.5679	4.7
6	10:30	12.00	0.6	0.740	0.6	0.296	0.3953	1.00	0.3953	1.480	0.5850	4.8
7	10:32	14.00	0.2/0.8	0.840	0.2	0.672	0.4824	1.00	0.4173	1.680	0.7011	5.8
7	10:33	14.00	0.2/0.8	0.840	0.8	0.168	0.3522					
8	10:35	16.00	0.2/0.8	1.140	0.2	0.912	0.4706	1.00	0.4151	2.280	0.9465	7.8
8	10:36	16.00	0.2/0.8	1.140	0.8	0.228	0.3597					
9	10:38	18.00	0.2/0.8	1.290	0.2	1.032	0.4688	1.00	0.4609	2.580	1.1893	9.8
9	10:40	18.00	0.2/0.8	1.290	0.8	0.258	0.4531					
10	10:41	20.00	0.2/0.8	1.040	0.2	0.832	0.4694	1.00	0.4787	2.080	0.9958	8.2
10	10:42	20.00	0.2/0.8	1.040	0.8	0.208	0.4881					
11	10:43	22.00	0.2/0.8	0.920	0.2	0.736	0.5159	1.00	0.5311	1.840	0.9773	8.0
11	10:44	22.00	0.2/0.8	0.920	0.8	0.184	0.5464					
12	10:45	24.00	0.2/0.8	1.000	0.2	0.800	0.5649	1.00	0.5303	2.000	1.0606	8.7
12	10:46	24.00	0.2/0.8	1.000	0.8	0.200	0.4957					
13	10:48	26.00	0.6	0.750	0.6	0.300	0.6348	1.00	0.6348	1.500	0.9522	7.8
14	10:49	28.00	0.6	0.640	0.6	0.256	0.6193	1.00	0.6193	1.280	0.7927	6.5
15	10:50	30.00	0.6	0.640	0.6	0.256	0.5773	1.00	0.5773	1.920	1.1084	9.1
16	10:51	34.00	0.6	0.600	0.6	0.240	0.5716	1.00	0.5716	1.230	0.7031	5.8
17	10:51	34.10	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.8-7 Discharge Sheet Second Section – Lac du Sauvage Outlet, 31 July 2014

Discharge Measurement Summary

Date Generated: Fri Aug 15 2014

File Information	
File Name	LDSJU312.WAD
Start Date and Time	2014/07/31 11:08:06

Site Details	
Site Name	
Operator(s)	TE KB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.30
Mounting Correction	0.0%

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.2%	3.6%
Velocity	0.9%	2.5%
Width	0.2%	0.2%
Method	2.8%	-
# Stations	5.1%	-
Overall	**6.0%**	**4.5%**

Summary

Averaging Int.	20	# Stations	10
Start Edge	LEW	Total Width	19.000
Mean SNR	14.6 dB	Total Area	7.114
Mean Temp	13.14 °C	Mean Depth	0.374
Disch. Equation	Mid-Section	Mean Velocity	0.4424
		Total Discharge	**3.1472**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	11:08	34.00	None	0.600	0.0	0.0	0.0000	1.00	0.5211	0.030	0.0156	0.5
1	11:08	34.10	0.6	0.600	0.6	0.240	0.5211	1.00	0.5211	0.600	0.3127	9.9
2	11:09	36.00	0.6	0.520	0.6	0.208	0.5256	1.00	0.5256	1.014	0.5330	16.9
3	11:10	38.00	0.6	0.560	0.6	0.224	0.4861	1.00	0.4861	1.120	0.5444	17.3
4	11:11	40.00	0.6	0.500	0.6	0.200	0.4595	1.00	0.4595	1.000	0.4595	14.6
5	11:12	42.00	0.6	0.400	0.6	0.160	0.4669	1.00	0.4669	0.800	0.3735	11.9
6	11:13	44.00	0.6	0.400	0.6	0.160	0.4362	1.00	0.4362	1.200	0.5234	16.6
7	11:15	48.00	0.6	0.300	0.6	0.120	0.2852	1.00	0.2852	1.200	0.3422	10.9
8	11:16	52.00	0.6	0.060	0.6	0.024	0.2852	1.00	0.2852	0.150	0.0428	1.4
9	11:16	53.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Table A4.8-8 Discharge Sheet – Lac du Sauvage Outlet, 23 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	LDS23SEP.WAD
Start Date and Time	2014/09/23 14:14:11

Site Details	
Site Name	LDS
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	1.5%
Velocity	0.9%	6.9%
Width	0.1%	0.1%
Method	1.1%	-
# Stations	1.1%	-
Overall	**2.1%**	**7.2%**

Summary			
Averaging Int.	20	# Stations	47
Start Edge	LEW	Total Width	45.000
Mean SNR	21.9 dB	Total Area	20.680
Mean Temp	5.51 °C	Mean Depth	0.460
Disch. Equation	Mid-Section	Mean Velocity	0.1355
		Total Discharge	**2.8014**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	14:14	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	14:14	1.00	0.6	0.160	0.6	0.064	0.0004	1.00	0.0004	0.160	0.0001	0.0
2	14:15	2.00	0.6	0.200	0.6	0.080	0.0513	1.00	0.0513	0.150	0.0077	0.3
3	14:16	2.50	0.6	0.160	0.6	0.064	0.0002	1.00	0.0002	0.080	0.0000	0.0
4	14:17	3.00	0.6	0.000	0.6	0.000	-0.0469	1.00	0.0000	0.000	0.0000	0.0
5	14:19	4.00	0.6	0.100	0.6	0.040	0.0536	1.00	0.0536	0.100	0.0054	0.2
6	14:19	5.00	0.6	0.210	0.6	0.084	0.1525	1.00	0.1525	0.210	0.0320	1.1
7	14:21	6.00	0.6	0.200	0.6	0.080	0.0060	1.00	0.0060	0.200	0.0012	0.0
8	14:22	7.00	0.6	0.200	0.6	0.080	0.1903	1.00	0.1903	0.200	0.0381	1.4
9	14:22	8.00	0.6	0.280	0.6	0.112	0.1601	1.00	0.1601	0.280	0.0448	1.6
10	14:23	9.00	0.6	0.320	0.6	0.128	0.1808	1.00	0.1808	0.320	0.0579	2.1
11	14:26	10.00	0.6	0.300	0.6	0.120	0.1785	1.00	0.1785	0.300	0.0536	1.9
12	14:28	11.00	0.6	0.310	0.6	0.124	0.0054	1.00	0.0054	0.310	0.0017	0.1
13	14:29	12.00	0.6	0.340	0.6	0.136	0.1446	1.00	0.1446	0.340	0.0492	1.8
14	14:30	13.00	0.6	0.270	0.6	0.108	0.1559	1.00	0.1559	0.270	0.0421	1.5
15	14:31	14.00	0.6	0.400	0.6	0.160	0.1221	1.00	0.1221	0.400	0.0488	1.7
16	14:33	15.00	0.6	0.440	0.6	0.176	0.0043	1.00	0.0043	0.440	0.0019	0.1
17	14:34	16.00	0.6	0.360	0.6	0.144	0.2327	1.00	0.2327	0.360	0.0838	3.0
18	14:35	17.00	0.6	0.340	0.6	0.136	0.2559	1.00	0.2559	0.340	0.0870	3.1
19	14:36	18.00	0.6	0.400	0.6	0.160	0.2123	1.00	0.2123	0.400	0.0849	3.0
20	14:37	19.00	0.6	0.560	0.6	0.224	0.1447	1.00	0.1447	0.560	0.0810	2.9
21	14:38	20.00	0.6	0.560	0.6	0.224	0.2716	1.00	0.2716	0.560	0.1521	5.4
22	14:39	21.00	0.6	0.720	0.6	0.288	0.1267	1.00	0.1267	0.720	0.0912	3.3
23	14:42	22.00	0.2/0.6/0.8	1.040	0.2	0.832	0.2335	1.00	0.1700	1.040	0.1769	6.3
23	14:44	22.00	0.2/0.6/0.8	1.040	0.6	0.416	0.2156					
23	14:43	22.00	0.2/0.6/0.8	1.040	0.8	0.208	0.0155					
24	14:46	23.00	0.2/0.8	1.040	0.2	0.832	0.2063	1.00	0.1028	1.040	0.1070	3.8
24	14:47	23.00	0.2/0.8	1.040	0.8	0.208	-0.0006					
25	14:50	24.00	0.8/0.2	1.040	0.2	0.832	0.2503	1.00	0.1873	1.040	0.1948	7.0
25	14:49	24.00	0.8/0.2	1.040	0.8	0.208	0.1243					
26	14:52	25.00	0.2/0.8	0.960	0.2	0.768	0.1822	1.00	0.2118	0.960	0.2034	7.3
26	14:53	25.00	0.2/0.8	0.960	0.8	0.192	0.2415					
27	14:54	26.00	0.8/0.2	0.960	0.2	0.768	0.1378	1.00	0.1823	0.960	0.1751	6.2
27	14:53	26.00	0.8/0.2	0.960	0.8	0.192	0.2269					
28	14:55	27.00	0.2/0.8	0.920	0.2	0.736	0.1286	1.00	0.1540	0.920	0.1417	5.1
28	14:56	27.00	0.2/0.8	0.920	0.8	0.184	0.1794					
29	14:57	28.00	0.6	0.780	0.6	0.312	0.2086	1.00	0.2086	0.780	0.1627	5.8
30	14:59	29.00	0.6	0.560	0.6	0.224	0.1952	1.00	0.1952	0.560	0.1093	3.9
31	14:59	30.00	0.6	0.460	0.6	0.184	0.1615	1.00	0.1615	0.460	0.0743	2.7
32	15:00	31.00	0.6	0.460	0.6	0.184	0.1308	1.00	0.1308	0.460	0.0602	2.1
33	15:01	32.00	0.6	0.540	0.6	0.216	0.1315	1.00	0.1315	0.540	0.0710	2.5
34	15:02	33.00	0.6	0.540	0.6	0.216	0.1028	1.00	0.1028	0.540	0.0555	2.0
35	15:03	34.00	0.6	0.540	0.6	0.216	0.0967	1.00	0.0967	0.540	0.0522	1.9
36	15:04	35.00	0.6	0.480	0.6	0.192	0.0829	1.00	0.0829	0.480	0.0398	1.4
37	15:04	36.00	0.6	0.480	0.6	0.192	0.0924	1.00	0.0924	0.480	0.0444	1.6
38	15:05	37.00	0.6	0.460	0.6	0.184	0.0907	1.00	0.0907	0.460	0.0417	1.5
39	15:06	38.00	0.6	0.480	0.6	0.192	0.0800	1.00	0.0800	0.480	0.0384	1.4
40	15:07	39.00	0.6	0.540	0.6	0.216	0.0592	1.00	0.0592	0.540	0.0320	1.1
41	15:08	40.00	0.6	0.480	0.6	0.192	0.0497	1.00	0.0497	0.480	0.0239	0.9
42	15:09	41.00	0.6	0.340	0.6	0.136	0.0499	1.00	0.0499	0.340	0.0170	0.6
43	15:10	42.00	0.6	0.340	0.6	0.136	0.0299	1.00	0.0299	0.340	0.0102	0.4
44	15:11	43.00	0.6	0.280	0.6	0.112	0.0082	1.00	0.0082	0.280	0.0023	0.1
45	15:12	44.00	0.6	0.260	0.6	0.104	0.0138	1.00	0.0138	0.260	0.0036	0.1
46	15:12	45.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A4.9 Lac de Gras Outlet

Benchmark Coordinates	UTM Zone 12
Easting	490252.940 m
Northing	7162641.838 m
Elevation	416.515 m (geodetic)
Datum Elevation	415.300 m (geodetic)

Figure A4.9-1 Aerial View of Lac de Gras Outlet Channel during Freshet (view upstream), 26 May 2014

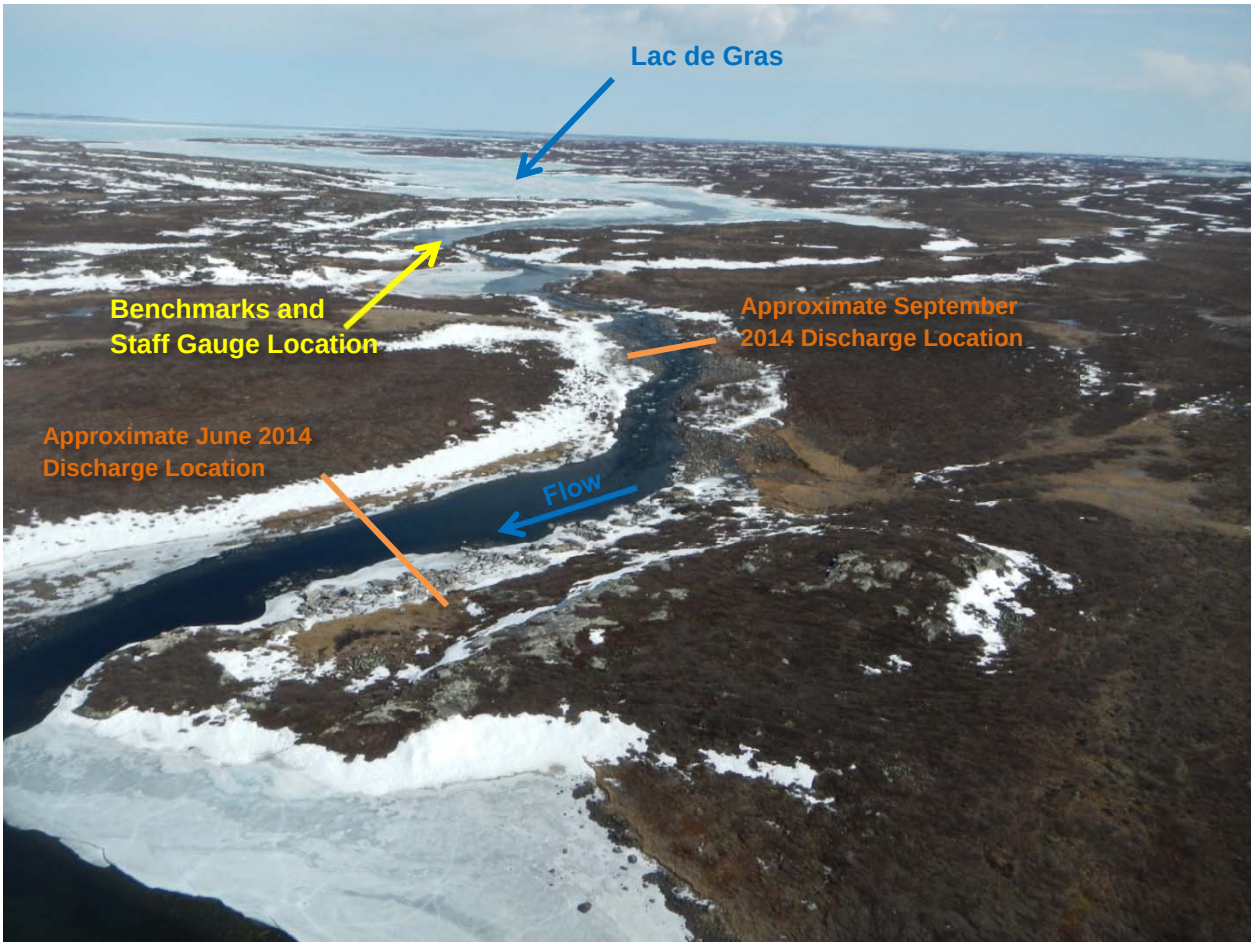


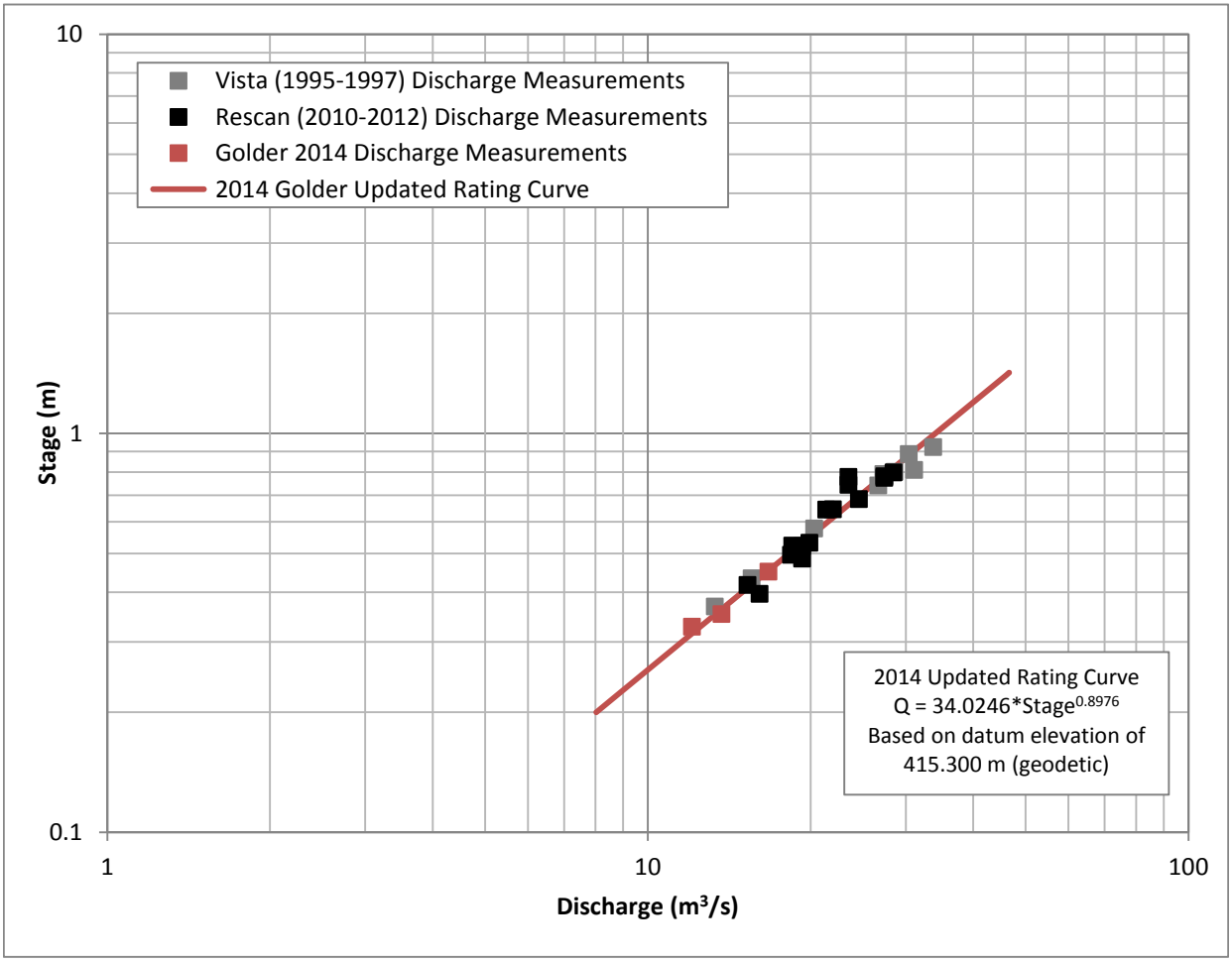
Figure A4.9-2 Lac de Gras Outlet Station - Aerial View of Outlet Channel (view upstream), 4 June 2014

Figure A4.9-3: Lac de Gras Outlet Station, Staff Gauge location (view downstream), 4 June 2014

Table A4.9-1 2014 Hydrometric Data at Lac de Gras Outlet Station

Date and Time	Water Surface Elevation (m)	Transducer Reading (m)	Transducer Elevation (m)	Mean Transducer Elevation (m)	Stage (m)	Staff Gauge Reading (m)	Measured Discharge (m^3/s)
29-May-2014 12:00	415.556	0.221	415.335	415.335	0.256	-0.11	
4-Jun-2014 10:10	415.636	0.301	415.335		0.336	--	--
5-Jun-2014 12:50	415.653	0.323	415.330		0.352	0.02	13.682
25-Jun-2014 12:20	415.751	0.420	415.331		0.45	0.13	16.727
1-Aug-2014 14:20	415.838	0.493	415.344		0.538	0.20	--
19-Sep-2014 09:50	415.628	0.396	415.231		0.327	0.005	12.067

Figure A4.9-4 2014 Open-Water Stage-Discharge Rating Curve at Lac de Gras Outlet Station



Sources include Vista (1997) and ERM Rescan (2013).

Table A4.9-2 Lac de Gras Outlet, 2014 Mean Daily Discharge and Water Surface Elevation

	Discharge (m^3/s)					Water Surface Elevation (m, geodetic)				
DATE	May	Jun	Jul	Aug	Sep	May	Jun	Jul	Aug	Sep
1	--	12.10	17.37	20.53	20.15	--	415.616	415.773	415.870	415.858
2	--	12.36	17.58	21.17	19.89	--	415.624	415.779	415.889	415.850
3	--	12.65	17.60	21.27	19.71	--	415.632	415.780	415.892	415.844
4	--	12.95	17.75	21.35	19.77	--	415.641	415.784	415.895	415.846
5	--	13.32	17.80	21.63	20.48	--	415.652	415.786	415.904	415.868
6	--	13.62	17.70	21.87	18.77	--	415.661	415.783	415.911	415.816
7	--	13.83	17.96	21.92	19.37	--	415.667	415.791	415.913	415.834
8	--	14.04	17.97	21.46	19.73	--	415.673	415.791	415.899	415.845
9	--	14.32	17.96	21.25	19.89	--	415.681	415.791	415.892	415.850
10	--	14.52	17.87	21.13	19.52	--	415.687	415.788	415.888	415.838
11	--	14.71	18.01	21.26	20.04	--	415.693	415.792	415.892	415.855
12	--	14.89	18.30	21.34	19.96	--	415.698	415.801	415.895	415.852
13	--	15.10	18.39	21.45	19.30	--	415.704	415.804	415.898	415.832
14	--	15.29	18.29	21.50	19.74	--	415.710	415.801	415.900	415.845
15	--	15.35	18.15	21.68	19.56	--	415.712	415.797	415.905	415.840
16	--	15.61	18.64	21.91	19.65	--	415.720	415.812	415.912	415.843
17	--	15.81	18.81	21.23	19.63	--	415.726	415.817	415.891	415.842
18	--	16.04	18.89	21.73	19.16	--	415.733	415.819	415.907	415.827
19	--	16.15	19.37	21.81	19.45	--	415.736	415.834	415.909	415.836
20	--	16.18	19.60	20.95	19.08	--	415.737	415.841	415.883	415.825
21	--	16.36	19.68	21.13	19.43	--	415.742	415.843	415.888	415.836
22	--	16.43	19.66	21.07	20.34	--	415.744	415.843	415.886	415.864
23	--	16.58	19.91	20.77	18.89P	--	415.749	415.850	415.877	415.819P
24	--	16.63	20.11	20.57	--	--	415.750	415.857	415.871	--
25	--	16.73	20.03	20.76	--	--	415.753	415.854	415.877	--
26	--	16.92	20.18	20.26	--	--	415.759	415.859	415.861	--
27	--	16.99	20.21	20.34	--	--	415.761	415.860	415.864	--
28	--	17.01	20.18	20.04	--	--	415.762	415.859	415.854	--
29	10.51P	17.22	20.20	20.14	--	415.570P	415.768	415.859	415.858	--
30	10.78	17.35	20.47	20.62	--	415.578	415.772	415.868	415.872	--
31	11.43	--	20.54	20.55	--	415.597	--	415.870	415.870	--
MIN	10.51	12.10	17.37	20.04	18.77	415.570	415.616	415.773	415.854	415.816
MEAN	10.91	15.23	18.88	21.12	19.63	415.582	415.709	415.819	415.888	415.842
MAX	11.43	17.35	20.54	21.92	20.48	415.597	415.772	415.870	415.913	415.868

Table A4.9-3 Discharge Sheet Second Section – Lac de Gras Outlet, 5 June 2014

Discharge Measurement Summary

Date Measured: Thursday, 05 June, 2014

Site Information	
Site Name	ldg
Station Number	1
Location	ds rapids

Measurement Information	
Party	dc cd
Boat/Motor	
Meas. Number	1

System Information	
System Type	RS-M9
Serial Number	2625
Firmware Version	3.00
Software Version	3.50

System Setup	
Transducer Depth (m)	0.06
Salinity (ppt)	0.0
Magnetic Declination (deg)	15.3

Units	
Distance	m
Velocity	m/s
Area	m2
Discharge	m3/s
Temperature	degC

Discharge Calculation Settings			
Track Reference	GPS-GGA	Left Method	Sloped Bank
Depth Reference	Vertical Beam	Right Method	Sloped Bank
Coordinate System	ENU	Top Fit Type	Power Fit
		Bottom Fit Type	Power Fit

Discharge Results	
Width (m)	36.53
Area (m2)	53.8
Mean Speed (m/s)	0.255
Total Q (m3/s)	13.682

Measurement Results

Tr		Time			Distance				Mean Vel		Discharge							%
#		Time	Duration	Temp.	Track	DMG	Width	Area	Boat	Water	Left	Right	Top	Middle	Bottom	Total	MBTotal	Measured
4	L	11:46:49 AM	0:06:08	2.9	34.90	31.22	36.22	53.7	0.095	0.268	-0.01	0.07	1.25	11.24	1.84	14.387	–	78.1
5	R	11:53:18 AM	0:05:33	2.9	34.32	31.62	36.62	53.9	0.103	0.243	0.00	0.06	1.17	10.21	1.69	13.128	–	77.8
7	R	12:06:10 PM	0:05:48	2.8	34.84	31.72	36.72	53.9	0.100	0.242	0.00	0.02	1.13	10.29	1.60	13.038	–	78.9
8	L	12:12:18 PM	0:06:13	2.8	35.04	31.55	36.55	53.5	0.094	0.265	-0.01	0.04	1.22	11.13	1.79	14.173	–	78.4
			Mean	2.8	34.77	31.53	36.53	53.8	0.098	0.255	-0.01	0.04	1.19	10.72	1.73	13.682	0.000	78.3
			StdDev	0.0	0.27	0.19	0.19	0.2	0.004	0.012	0.00	0.02	0.05	0.47	0.09	0.604	0.000	0.4
			COV	0.0	0.008	0.006	0.005	0.003	0.038	0.047	-0.806	0.445	0.040	0.044	0.052	0.044	0.000	0.006

Exposure Time: 0:23:42

Tr4=20030102081405.riv ; Tr5=20030102082036.riv ; Tr7=20030102083325.riv ; Tr8=20030102083944.riv;

Comments

Tr4=20030102081405.riv - ; Tr5=20030102082036.riv - ; Tr7=20030102083325.riv - ; Tr8=20030102083944.riv - ;

Table A4.9-4 Discharge Sheet Second Section – Lac de Gras Outlet, 25 June 2014

Discharge Measurement Summary

Date Measured: Wednesday, June 25, 2014

Site Information		Measurement Information	
Site Name	ldg sample 2	Party	dc kb
Station Number	1	Boat/Motor	
Location		Meas. Number	

System Information		System Setup		Units	
System Type	RS-M9	Transducer Depth (m)	0.03	Distance	m
Serial Number	2625	Salinity (ppt)	0.0	Velocity	m/s
Firmware Version	3.00	Magnetic Declination (deg)	15.2	Area	m2
Software Version	3.7			Discharge	m3/s
				Temperature	degC

Discharge Calculation Settings				Discharge Results	
Track Reference	Bottom-Track	Left Method	Sloped Bank	Width (m)	36.139
Depth Reference	Vertical Beam	Right Method	Sloped Bank	Area (m2)	55.509
Coordinate System	ENU	Top Fit Type	Power Fit	Mean Speed (m/s)	0.301
		Bottom Fit Type	Power Fit	Total Q (m3/s)	16.727
				Maximum Measured Depth	2.865
				Maximum Measured Speed	1.389

Measurement Results

Tr		Time			Distance				Mean Vel		Discharge							%
#		Time	Duration	Temp.	Track	DMG	Width	Area	Boat	Water	Left	Right	Top	Middle	Bottom	Total	MBTotal	Measured
2	L	9:55:15 AM	0:03:38	6.2	37.73	31.95	35.952	55.650	0.173	0.302	-0.02	0.04	1.28	13.40	2.13	16.829	--	79.4
3	R	10:14:09 AM	0:04:20	6.1	35.90	32.38	36.380	56.258	0.138	0.288	-0.01	0.03	1.18	12.94	2.05	16.190	--	79.8
4	R	10:46:27 AM	0:03:47	6.1	36.32	31.27	35.274	54.452	0.160	0.316	-0.02	0.02	1.28	13.70	2.20	17.185	--	79.6
5	L	10:50:33 AM	0:03:13	6.0	35.14	32.67	36.669	55.879	0.182	0.299	-0.01	0.17	1.27	13.27	2.03	16.727	--	79.2
6	R	10:54:02 AM	0:03:34	6.1	34.47	31.62	35.622	54.060	0.161	0.309	-0.01	0.04	1.23	13.47	2.00	16.724	--	80.4
7	R	11:01:39 AM	0:03:44	6.1	35.79	32.34	36.338	55.603	0.160	0.299	-0.01	0.02	1.23	13.28	2.10	16.627	--	79.7
8	L	11:05:47 AM	0:03:16	6.0	36.11	32.40	36.404	55.361	0.184	0.296	-0.01	0.01	1.21	13.12	2.04	16.370	--	80.0
9	R	11:09:22 AM	0:03:42	6.1	35.97	32.47	36.473	56.805	0.162	0.302	-0.01	0.03	1.26	13.69	2.21	17.167	--	79.6
			Mean	6.1	35.93	32.14	36.139	55.509	0.165	0.301	-0.01	0.05	1.24	13.36	2.10	16.727	0.000	79.7
			Std Dev	0.1	0.88	0.45	0.449	0.840	0.014	0.008	0.00	0.05	0.03	0.25	0.07	0.324	0.000	0.4
			COV	0.0	0.024	0.014	0.012	0.015	0.084	0.026	-0.177	1.091	0.026	0.018	0.036	0.019	0.000	0.004

Exposure Time: 0:29:14

Tr2=20030101121253.riv; Tr3=20030101123154.riv; Tr4=20030101121305.riv; Tr5=20030101121713.riv; Tr6=20030101122042.riv; Tr7=20030101122822.riv; Tr8=20030101123233.riv; Tr9=20030101123608.riv;

Table A4.9-5 Discharge Sheet Second Section – Lac de Gras Outlet, 23 September 2014

Discharge Measurement Summary

Date Generated: Tue Nov 18 2014

File Information	
File Name	LDGSEP23.WAD
Start Date and Time	2014/09/23 09:18:15

Site Details	
Site Name	
Operator(s)	CVKB

System Information	
Sensor Type	FlowTracker
Serial #	P4017
CPU Firmware Version	3.9
Software Ver	2.20

Units	(Metric Units)
Distance	m
Velocity	m/s
Area	m^2
Discharge	m^3/s

Discharge Uncertainty		
Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.1%	2.5%
Velocity	1.1%	3.7%
Width	0.1%	0.1%
Method	1.7%	-
# Stations	1.5%	-
Overall	**2.7%**	**4.6%**

Summary			
Averaging Int.	20	# Stations	34
Start Edge	LEW	Total Width	33.000
Mean SNR	27.3 dB	Total Area	13.460
Mean Temp	5.87 °C	Mean Depth	0.408
Disch. Equation	Mid-Section	Mean Velocity	0.8965
		Total Discharge	**12.0673**

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:18	0.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	*09:18*	*1.00*	*0.6*	*0.220*	*0.6*	*0.088*	*0.0493*	*1.00*	*0.0493*	*0.220*	*0.0108*	*0.1*
2	*09:19*	*2.00*	*0.6*	*0.180*	*0.6*	*0.072*	*0.0814*	*1.00*	*0.0814*	*0.180*	*0.0147*	*0.1*
3	*09:20*	*3.00*	*0.6*	*0.080*	*0.6*	*0.032*	*0.2226*	*1.00*	*0.2226*	*0.080*	*0.0178*	*0.1*
4	09:22	4.00	0.6	0.080	0.6	0.032	0.3689	1.00	0.3689	0.080	0.0295	0.2
5	*09:26*	*5.00*	*0.6*	*0.140*	*0.6*	*0.056*	*0.2104*	*1.00*	*0.2104*	*0.140*	*0.0295*	*0.2*
6	09:26	6.00	0.6	0.060	0.6	0.024	0.3862	1.00	0.3862	0.060	0.0232	0.2
7	09:27	7.00	0.6	0.240	0.6	0.096	0.2541	1.00	0.2541	0.240	0.0610	0.5
8	09:28	8.00	0.6	0.350	0.6	0.140	0.3350	1.00	0.3350	0.350	0.1173	1.0
9	09:30	9.00	0.6	0.540	0.6	0.216	1.0099	1.00	1.0099	0.540	0.5453	4.5
10	09:31	10.00	0.6	0.520	0.6	0.208	1.3874	1.00	1.3874	0.520	0.7214	6.0
11	09:33	11.00	0.6	0.680	0.6	0.272	1.3345	1.00	1.3345	0.680	0.9075	7.5
12	09:35	12.00	0.6	0.620	0.6	0.248	1.0004	1.00	1.0004	0.620	0.6202	5.1
13	*09:36*	*13.00*	*0.6*	*0.540*	*0.6*	*0.216*	*1.3782*	*1.00*	*1.3782*	*0.540*	*0.7442*	*6.2*
14	09:38	14.00	0.6	0.500	0.6	0.200	1.1617	1.00	1.1617	0.500	0.5809	4.8
15	09:39	15.00	0.6	0.480	0.6	0.192	0.8304	1.00	0.8304	0.480	0.3986	3.3
16	09:40	16.00	0.6	0.550	0.6	0.220	1.0256	1.00	1.0256	0.550	0.5641	4.7
17	09:41	17.00	0.6	0.550	0.6	0.220	0.8024	1.00	0.8024	0.550	0.4413	3.7
18	09:42	18.00	0.6	0.700	0.6	0.280	0.8575	1.00	0.8575	0.700	0.6003	5.0
19	09:44	19.00	0.6	0.760	0.6	0.304	1.3358	1.00	1.3358	0.760	1.0152	8.4
20	09:45	20.00	0.6	0.720	0.6	0.288	1.2455	1.00	1.2455	0.720	0.8968	7.4
21	*09:47*	*21.00*	*0.6*	*0.650*	*0.6*	*0.260*	*1.1560*	*1.00*	*1.1560*	*0.650*	*0.7514*	*6.2*
22	*09:50*	*22.00*	*0.6*	*0.700*	*0.6*	*0.280*	*0.6779*	*1.00*	*0.6779*	*0.700*	*0.4745*	*3.9*
23	09:51	23.00	0.6	0.400	0.6	0.160	0.3152	1.00	0.3152	0.400	0.1261	1.0
24	09:52	24.00	0.6	0.360	0.6	0.144	0.3996	1.00	0.3996	0.360	0.1439	1.2
25	09:53	25.00	0.6	0.300	0.6	0.120	0.9746	1.00	0.9746	0.300	0.2924	2.4
26	*09:54*	*26.00*	*0.6*	*0.440*	*0.6*	*0.176*	*1.0506*	*1.00*	*1.0506*	*0.440*	*0.4623*	*3.8*
27	09:56	27.00	0.6	0.480	0.6	0.192	1.0049	1.00	1.0049	0.480	0.4824	4.0
28	09:57	28.00	0.6	0.500	0.6	0.200	0.5886	1.00	0.5886	0.500	0.2943	2.4
29	09:58	29.00	0.6	0.500	0.6	0.200	0.7947	1.00	0.7947	0.500	0.3974	3.3
30	09:59	30.00	0.6	0.220	0.6	0.088	0.5539	1.00	0.5539	0.220	0.1219	1.0
31	09:59	31.00	0.6	0.140	0.6	0.056	0.7114	1.00	0.7114	0.140	0.0996	0.8
32	*10:00*	*32.00*	*0.6*	*0.260*	*0.6*	*0.104*	*0.3150*	*1.00*	*0.3150*	*0.260*	*0.0819*	*0.7*
33	10:00	33.00	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

A5 REFERENCES

Aurora (Aurora Geosciences Ltd.). 2013. Lac du Sauvage – Northwest Territories, Canada. Technical Report. Yellowknife, NWT, Canada.

ERM Rescan (ERM Rescan Environmental Services Ltd.). 2013. Status Report for Reclamation Research Plan 1.5 Water Withdrawal from Sources Lakes, Task 3 Lac de Gras Hydrology. Prepared for Dominion Diamonds Ekati Corporation by Rescan Environmental Services, Vancouver, BC, Canada, August 29, 2013, 16 p.

Vista (Vista Engineering). 1997. Diavik Diamond Mines, Lac de Gras Hydrometric Program Station Data Book. Memorandum prepared for Diavik Diamond Mines Inc., Yellowknife, by Vista Engineering Ltd., Yellowknife, NWT, Canada, 390 p.