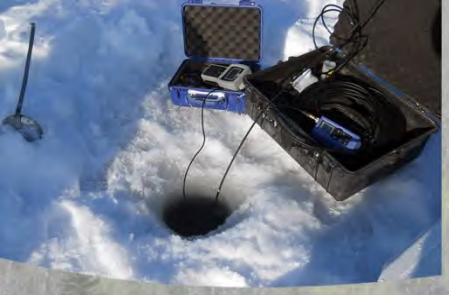

Lake St. Martin Emergency Relief Channel
Monitoring and Development of Habitat Compensation
Volume 3 - Water Quality

REPORT

Prepared for Manitoba Infrastructure and Transportation · November 2016
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Lake St. Martin Emergency Relief Channel
Monitoring and Development of Habitat Compensation

2011-2015

Volume 3 – Water Quality

A Draft Report Prepared for

Manitoba Infrastructure and Transportation

By:

North/South Consultants Inc.
and
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November 2016

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EXECUTIVE SUMMARY

Widespread record flooding throughout southern Manitoba during 2011 led to water levels in Lake Manitoba and Lake St. Martin that were several feet higher than desirable, resulting in significant damage to hundreds of properties, restricted road access to several communities, and long-term evacuation of four First Nations communities in the vicinity of Lake St. Martin. As part of emergency relief measures, the Province of Manitoba, through Manitoba Infrastructure and Transportation (MIT), constructed the Lake St. Martin Emergency Outlet Channel System, which is comprised of two emergency channels. The Reach 1 Emergency Outlet Channel (Reach 1) begins at the northeast shore of the north basin of Lake St. Martin and extends approximately 6 km to the bog area surrounding Big Buffalo Lake. Water from Reach 1 inundates the bog area and then follows the natural Buffalo Creek Drainage System until flowing into the lower Dauphin River and ultimately into Sturgeon Bay. Water began to flow through Reach 1 on November 1, 2011 and the channel was operated until November 21, 2012.

Computer models of potential water levels at the mouth of the Dauphin River indicated that there was a significant risk of major flooding of the Dauphin River communities in spring 2012. Consequently, a second channel (Reach 3 Emergency Channel; Reach 3) was constructed during winter 2012. Reach 3 was designed to divert excess flow from Reach 1 and Buffalo Creek and away from the lower Dauphin River. It was determined that operation of Reach 3 prior to the spring break up, in combination with the construction of dikes along the banks of the Dauphin River, would be likely to substantially reduce the risk of flooding for the Dauphin River communities.

Due to extremely mild winter conditions in 2011/2012, ice effects on both Reach 1 and the Dauphin River were much less severe than forecasted. With the continuous extreme mild conditions, updated flood forecasts indicated that the estimated discharge in the lower Dauphin River during ice break up would be well below the capacity of the Dauphin River community dikes. Consequently, the proposed operation of Reach 3 was no longer required.

Heavy precipitation during winter 2013/2014 and spring 2014 again elevated water levels in Lake Manitoba and Lake St. Martin, prompting MIT to re-open Reach 1 at the beginning of July 2014. The channel was re-opened in two stages. The first occurred during July 2014 when approximately 35 m of the berm closing Reach 1 was removed. The second stage occurred in November 2014, when an additional 10 m of the closure berm were removed to allow additional flow into the channel. Flow into Reach 1 was halted in late August 2015.

Collectively, construction and operation of Reach 1, as well as construction of Reach 3, are referred to hereafter as “the Project”.

Concurrent with construction of Reach 1 in summer 2011, MIT initiated studies and monitoring to help describe and assess environmental effects arising from the Project. These included studies to document changes to the physical environment (*e.g.*, measurement of water flow through Reach 1 and the

Dauphin River; sedimentation and erosion studies) and possible subsequent effects to the biological environment (*e.g.*, possible change to fish community in Buffalo Creek). Environmental studies began in August 2011 and continued until September 2015.

This report provides an overview of the water quality monitoring programs including a summary of Project related effects to water quality in Lake St. Martin, the Buffalo Creek watershed, the lower Dauphin River, and Sturgeon Bay (Lake Winnipeg). Water quality is also compared to: the Manitoba Water Quality Standards, Objectives and Guidelines (MWQSOGs) for the Protection of Aquatic Life (PAL) and drinking water; and the federal Canadian Council of Ministers of the Environment (CCME) guidelines for PAL. This report also compiles all raw data collected for the Project from September 2011 to September 2015.

Lake St. Martin

Sites located in Lake St. Martin upstream of the Project exhibited natural variability in water quality parameters over the course of the monitoring program. Although conditions fluctuated seasonally and between years, there was no linkage between operation of Reach 1 and water quality in Lake St. Martin, with the following exception:

- During dredging in October 2011, total suspended solids (TSS) in the vicinity of the Reach 1 inlet exceeded the 30 day Manitoba water quality objectives / CCME long-term guideline for PAL (average of 5 mg/L above background), and periodically exceeded the 1-day Manitoba PAL objective/CCME short-term PAL guideline (25 mg/L above background).

Reach 1 and the Buffalo Creek Watershed

The water quality of the Buffalo Creek watershed changed during each Project phase, reflecting the influence of the chemistry of water from Lake St. Martin as well as Project activities, as follows:

- Routine water quality parameters (conductivity [i.e., specific conductance], total dissolved solids [TDS], pH, hardness, and colour) varied in part as a result of the input of water from Lake St. Martin:
    - During the two periods when Reach 1 was operational (November 2011-November 2012, July 2014-August 2015), conductivity, TDS, pH, and hardness increased (relative to conditions measured during flood conditions in 2011), and colour decreased.
    - While Reach 1 was closed from November 2012 to July 2014, conductivity, TDS, hardness, and pH declined, though conductivity and TDS levels remained above those measured during the 2011 Flood. These parameters were not measured after closure in August 2015.

- Dissolved oxygen (DO) generally met the Manitoba objectives for the protection of cool and cold-water aquatic life, though it declined below the objectives at various points during the monitoring program:

  - At the onset of 2014/2015 Operation, DO temporarily (for 1-10 days depending upon location) decreased below the Manitoba/CCME PALs throughout the watershed (this was not observed at the onset of 2011/2012 Operation).
  - Concentrations measured in August 2015 at the onset of closure also temporarily decreased below the PALs.
  - DO concentrations below the Manitoba guidelines and CCME objectives were also observed prior to Reach 1 operation. However, baseline data are too limited to determine whether declines observed during the Project were as a result of the Project or natural conditions.

- TSS concentrations were affected at the onset of both Project operation and closure periods:
  - At the onset of the 2011/2012 and 2014/2015 Operation periods, TSS concentrations in the Buffalo Creek watershed increased 5 to 30 times compared to the 2011 flood. TSS increases at the downstream end of Buffalo Creek were three times greater in 2014 than in 2011.
  - During closure after November 2012, spring TSS was approximately four times higher than pre-Project levels; concentrations subsequently declined but remained higher than baseline at the downstream end of Buffalo Creek. A similar increase in TSS was observed following closure activities in August 2015, and levels remained elevated at the end of the monitoring program in September 2015.
  - The increases in TSS described above resulted in exceedances of both the short and long term MSWQSOGs.

- Nutrients and chlorophyll *a* fluctuated during the Project, but the limited baseline data do not allow Project effects to be distinguished from natural variation:
  - At the onset of operation in 2011 and 2014, total phosphorus (TP) in Buffalo Creek increased above the MWQSOGs narrative guideline for streams (0.050 mg/L), but returned to pre-Project concentrations within a week in both years.
  - In winter and spring 2012 following the closure of Reach 1, TP and total nitrogen (TN) increased beyond the concentrations measured during 2011/2012 Operation and pre-Project phases. Following the freshet, both nutrients returned to baseline in most of the watershed, but TP remained high at the downstream end of Buffalo Creek throughout 2013. In spring 2014, there was another spike in TP, and TP increased again immediately following closure in August 2015.
  - TP occasionally exceeded the narrative guideline for streams during closures from November 2012-July 2014 and after August 2015.
  - During closure, ammonia occasionally exceeded the CCME PAL guideline in Big Buffalo Lake.
  - Chlorophyll *a* concentrations in Buffalo Creek were consistently higher than baseline from spring 2012 to August 2015, though baseline data are limited. There are no MWQSOGs or CCME guidelines for chlorophyll *a*.

- Concentrations of several metals and ions were affected by Project operation/closure, likely due to the influence of water from Lake St. Martin. However, due to limited baseline data, the extent of exceedance of guidelines under natural conditions is not known:
    - Several metals and major ions increased relative to baseline conditions in Buffalo Creek during operation in 2011/2012 and 2014/2015, including: arsenic, barium, boron, calcium, chloride, fluoride, magnesium, molybdenum, potassium, sodium, sulphate, and uranium. These metals all decreased during closure from November 2012-July 2014 to concentrations near pre-Project levels.
    - Copper increased during 2011/2012 Operation, but decreased during 2014/2015 Operation.
    - At the onset of 2014/2015 Operation there was a small increase in mercury and methylmercury in Buffalo Creek, but both returned to baseline by October 2014. Comparable data were not collected during the 2011/2012 Operation.
    - During operation in 2011/2012 and 2013/2014, chloride and fluoride exceeded the CCME PAL guidelines (120 and 0.12 mg/L, respectively) in the Buffalo Creek watershed. These guidelines were occasionally exceeded in Big Buffalo Lake during the closure from November 2012-July 2014, but not in Buffalo Creek.
    - During 2011/2012 Operation, selenium was frequently above the MWQSOGs/CCME PAL (0.001 mg/L) in the Buffalo Creek watershed.
    - During closure from November 2012-July 2014, iron frequently exceeded the PAL (0.3 mg/L), and chromium occasionally exceeded the CCME PAL (0.0089 mg/L) at the downstream end of Buffalo Creek.

Lower Dauphin River

Temporary changes in some water chemistry parameters in the lower Dauphin River were observed during Project operation and closure periods:

- No changes to routine water quality of the Dauphin River were observed that were attributable to the Project:
    - Conductivity, TDS, laboratory pH, true colour and hardness were similar in the Dauphin River upstream and downstream of Buffalo Creek during baseline, operation, and closure.
    - Although conductivity and TDS in the Dauphin River did not vary as a result of operation, conditions measured during each operation and closure period were lower than those recorded in October 2011.
- The Dauphin River was generally well-oxygenated and DO generally met the Manitoba objectives and CCME guidelines for the protection of cool and cold-water aquatic life, though it declined below the PALs at various points during the monitoring program:
    - A small decrease (<2 mg/L) in DO was observed downstream of Buffalo Creek during operation in 2015.
    - DO concentrations below the MWQSOGs objectives/CCME PAL guidelines were periodically observed both upstream and downstream of Buffalo Creek during both the

open-water and ice cover seasons. Reductions below the guidelines were also observed historically in the river during the ice-cover period.

- TSS concentrations increased at various times during both operation and closure:
    - At the onset of operation in 2011 and 2014, TSS increased and a sediment plume was visible along the left shoreline. After approximately one month of operation in 2011 and two weeks of operation in 2014, TSS returned to background (i.e., similar to conditions observed concurrently upstream of Buffalo Creek).
    - During March of the 2014/2015 Operation, TSS was again elevated downstream of Buffalo Creek.
    - TSS increased along the Dauphin River left-hand bank downstream of Buffalo Creek in spring 2013 during closure.
    - At the onset of operation in both 2011 and 2014, TSS concentrations exceeded the MWQSOGs /CCME short-term PAL as far downstream as Sturgeon Bay.
    - TSS was also consistently above the MWQSOGs 30 day/CCME long-term PAL from 04-25 November 2011, 05-16 July 2014, 27 March 2015; and, along the left shoreline downstream of Buffalo Creek 01 May 2015 and 11 June 2015.

- Phosphorous concentrations increased at various points during monitoring but no other changes to nutrient or chlorophyll *a* concentrations can be attributed to Project-related activities:
    - Phosphorus concentrations between the confluence and Sturgeon Bay increased at the onset of operation in 2011 and 2014, in the spring of 2013, and in March of 2015.
    - At the onset of each operation period, TP exceeded the MWQSOGs narrative guidelines.

- There were no observed changes to most metals or major ions, with the exception of mercury and methylmercury, that can be attributed to the Project:
    - Mercury and methylmercury increased downstream of Buffalo Creek at the onset of 2014/2015 Operation. Comparable data were not collected during the 2011/2012 Operation.
    - Both mercury compounds remained well below the MWQSOGs/CCME PAL guidelines (26 and 4 ng/L, respectively) during 2014/2015 Operation.

Sturgeon Bay

Some changes in water quality parameters in Sturgeon Bay were observed during Project operation and closure periods:

- Routine water quality parameters were variable during operation and closure periods:
    - Conductivity and TDS concentrations in the water entering Sturgeon Bay from the Dauphin River were not affected by operation; however, the spatial extent of the influence of the Dauphin River outflow in Sturgeon Bay would have been altered as a result of changes to its discharge during the operation and closure of the Project.
    - During 2011/2012 Operation, conductivity and TDS at sites distant from the Dauphin River increased compared to conditions measured during the 2011 Flood.

  - After closure in November 2012, conductivity and TDS at some sites distant from the Dauphin River remained higher compared to October 2011 while conductivity and TDS at sites closer to the Dauphin River were lower than measured during the 2011 Flood.
  - pH, colour, and hardness measured during operation and closure were generally similar to conditions measured in October 2011.
- No changes to DO were observed that can be attributed to the Project.
  - Sturgeon Bay was well-oxygenated during baseline, operation and closure.
  - DO was generally within PAL and objectives for cool and cold-water species; the exceptions occurred at two sites in March 2015.

- Project activities resulted in increases in TSS concentrations during operation periods:
  - During 2011/2012 Operation, TSS increased in spring 2012 near the mouth of the Dauphin River; however, data are not available at the onset of the period, so the duration and magnitude of effects is unknown.
  - At the onset of 2014/2015 Operation, TSS increased near the Dauphin River mouth and remained elevated for about a month.
  - No changes to TSS were observed during the closure from November 2012-July 2014 that can be attributed to the Project.

- Temporary increases in nutrient and chlorophyll *a* concentrations were observed:
  - In the spring of 2011/2012 Operation, nitrogen and phosphorus near the mouth of the Dauphin River increased above concentrations measured in October 2011.
  - No other changes to nutrient concentrations in Sturgeon Bay were observed that can be attributed to the Project.
  - Chlorophyll *a* concentrations near the Dauphin River were higher in spring 2012 and lower in October 2014, compared with the rest of Sturgeon Bay. At other times, chlorophyll *a* was generally similar throughout the bay. Baseline data are too limited to determine if changes to chlorophyll *a* concentrations occurred as a result of the Project.

- There were no observed changes to most metals or major ions, with the exception of mercury and methylmercury, that can be attributed to the Project:
  - During 2011/2012 Operation, methylmercury was more frequently detected and at higher concentrations near the Dauphin River than in the rest of Sturgeon Bay. Similarly, in March 2015, during 2014/2015 Operation, methylmercury was detected near the Dauphin River and Willow Point but not at other sites in Sturgeon Bay. However, concentrations were consistently well below the MWQSOGs/CCME PAL guideline (4 ng/L).

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1.0 INTRODUCTION

Widespread record flooding throughout southern Manitoba during 2011 (Figure 1) led to water levels in Lake Manitoba and Lake St. Martin that were several feet higher than desirable, resulting in significant damage to hundreds of properties, restricted road access to several communities, and long-term evacuation of four First Nations communities in the vicinity of Lake St. Martin. As part of emergency relief measures, the Province of Manitoba, through Manitoba Infrastructure and Transportation (MIT), constructed the Lake St. Martin Emergency Outlet Channel (LSMEOC) System, which is comprised of two emergency channels (Figure 2). The Reach 1 Emergency Outlet Channel (Reach 1) begins at the northeast shore of the north basin of Lake St. Martin and extends approximately 6 km to the bog area surrounding Big Buffalo Lake. Water from Reach 1 inundates the bog area and then follows the natural Buffalo Creek Drainage System until flowing into the lower Dauphin River and ultimately into Sturgeon Bay (Figure 2). Water began to flow through Reach 1 on 01 November 2011 and the channel was operated until 21 November 2012.

Computer models of potential water levels at the mouth of the Dauphin River indicated that there was a significant risk of major flooding of the Dauphin River communities in spring 2012. This risk was due to the potential formation of frazil ice jams combined with unprecedented winter flows that resulted from the Fairford River Water Control Structure running at full capacity all winter. Consequently, a second channel (Reach 3 Emergency Channel; Reach 3) was constructed during winter 2011/2012. Reach 3 was designed to divert excess flow from Reach 1 and Buffalo Creek and away from the lower Dauphin River. Due to extremely mild winter conditions in 2011/2012, ice effects on both Reach 1 and the Dauphin River were much less severe than forecasted. Consequently, the proposed operation of Reach 3 was no longer required. Collectively, construction and operation of Reach 1, as well as construction of Reach 3, are referred to hereafter as “the Project”.

Heavy precipitation during winter 2013/2014 and spring 2014 again elevated water levels in Lake Manitoba and Lake St. Martin, prompting MIT to re-open Reach 1 at the beginning of July 2014. Reach 1 remained in operation until August 2015.

Concurrent with construction of Reach 1 in summer 2011, MIT initiated studies and monitoring to help describe and assess environmental effects arising from the Project. These included studies to document changes to the physical environment (e.g., measurement of water flow through Reach 1 and the Dauphin River; sedimentation and erosion studies) and possible subsequent effects to the biological environment (e.g., possible change to fish community in Buffalo Creek). Environmental studies began in August 2011 and concluded in September 2015.

Aquatic environment monitoring for the Project included two main water quality monitoring programs: (1) a Regional Water Quality Monitoring Program (RWQMP), which collected water quality information from all major waterbodies and waterways within the study area that were affected by flooding; and, (2) water quality monitoring within the LSMEOC System. Water quality data gathered during the conduct of these programs are the major sources of information used in this report. Additionally, water quality

data collected by Manitoba Conservation and Water Stewardship (MCWS) are included in order to provide historical context and to supplement data collected by the RWQMP.

This report provides an overview of the water quality monitoring programs, including a summary of Project-related effects to water quality in Lake St. Martin, the Buffalo Creek watershed, the lower Dauphin River, and Sturgeon Bay. All water quality data collected for the Project from September 2011 to September 2015 are appended.

It should be noted that a detailed presentation of water quality effects was previously provided as a supporting volume for an Offsetting Plan to Fisheries and Oceans Canada, submitted in May 2015. This report builds upon that submission and incorporates data collected subsequent to May 2015.

2.0 PROJECT DESCRIPTION AND STUDY AREA

2.1 PROJECT DESCRIPTION

Infrastructure constructed to support the emergency reduction of Lake Manitoba and Lake St. Martin water levels included two channels designed to increase flow from Lake St. Martin to Sturgeon Bay. The first channel, the Reach 1 Emergency Outlet Channel, was completed in fall 2011. The second channel, the Reach 3 Emergency Channel, was constructed during winter 2011/2012 but was not operated. Additional details pertinent to each of the channels are presented in the following sections.

2.1.1 Reach 1 Emergency Outlet Channel

As previously stated, Reach 1 was constructed to increase the flow of water from Lake St. Martin to Sturgeon Bay. The inlet to Reach 1 is located along the northeast shore of the Lake St. Martin north basin. The channel extends north east for approximately 6 km to a bog area surrounding Big Buffalo Lake. Drainage water from Reach 1 flowed through the bog area and Big Buffalo Lake into Buffalo Creek, and then flowed down Buffalo Creek to its confluence with the lower Dauphin River, approximately 4 km upstream of Sturgeon Bay.

The inlet of Reach 1 consisted of a fixed-level invert with a sill at an elevation of 243.1 m above sea level (mASL). The sill was designed to convey the desired flow of 142 m^3/s at 244.1 mASL and was 120 m in length, had a bottom width of 60 m, and 3:1 side slopes. At the onset of operation, flow through Reach 1 was estimated to be 255 m^3/s based on Lake St. Martin water level at that time.

2.1.2 Reach 3 Emergency Channel

Water level projections indicated that there was a substantial risk for major flooding in the Dauphin River communities in spring 2012 due to unprecedented flows along the Dauphin River downstream of Buffalo Creek and the increased potential for frazil ice jamming at the mouth of the Dauphin River. It was determined that the construction of an additional channel to divert Reach 1 flows away from the Dauphin River, and construction of dikes along the banks of the lower Dauphin River prior to spring break up was necessary to reduce the risk of flooding in the communities.

Following a review of configuration options, the Reach 3 Emergency Channel was constructed. Reach 3 originates at Buffalo Creek about 8 km downstream of Big Buffalo Lake (Figure 2), is approximately 6 km in length, and terminates in a lowland area 3 km inland of Sturgeon Bay. From the outlet of Reach 3, water would flow overland towards Sturgeon Bay, entering the bay through a proposed shoreline breach structure which was to be constructed through the beach ridge to the west of Willow Point.

It was expected that Reach 3 would only operate for a short period of time during the spring freshet in 2012 to limit the threat of flooding along the lower Dauphin River. However, an exceptionally mild winter in 2011/2012 allowed sufficient drainage from Lake Manitoba and Lake St. Martin to reduce water levels to a point where the risk of frazil ice jamming and flooding at Dauphin River communities became negligible. Consequently, Reach 3 was not operated.

2.1.3 Project Schedule

Construction of Reach 1 was initiated in mid-July 2011. The channel was completed and water began to flow through it by November 01, 2011. Closure of Reach 1 was initiated on November 15, 2012. Closure operations included constructing a dike across the Reach 1 inlet at Lake St. Martin to prevent water from flowing into the channel. By November 21, construction had progressed to where no flow was entering Reach 1 (Table 1).

Heavy precipitation during winter 2013/2014 and spring 2014 again elevated water levels in Lake Manitoba and Lake St. Martin, prompting MIT to re-open Reach 1 at the beginning of July 2014 (Table 1). The channel was re-opened in two stages. The first occurred during in July 2014 when approximately 35 m of the berm closing Reach 1 was removed. The second stage occurred in November 2014, when an additional 10 m of the closure berm were removed to allow additional flow into the channel. Flow into Reach 1 was halted in late August 2015.

2.2 STUDY AREA

The emphasis of aquatic monitoring is to determine what effects construction and operation of Reach 1 may have had on waterways downstream of the channel. These include the Buffalo Creek watershed, the lower Dauphin River, and Sturgeon Bay. However, these waterways are also affected by conditions occurring upstream of Reach 1 and, in some instances, fish move between areas upstream and downstream of Reach 1. Consequently, some components of the aquatic monitoring program (water quality monitoring and fisheries investigations) include waterways upstream of Reach 1.

Local hydrology is affected by water flow from across the province. The main water inflows into Lake Manitoba are from the Whitemud River, the Waterhen River (including Lake Winnipegosis and Dauphin Lake), and the Portage Diversion, which routes excess flows from the Assiniboine River into the south end of Lake Manitoba (Figure 1). Water flows out of Lake Manitoba through the Fairford River and Lake Pineimuta into Lake St. Martin, and then through the Dauphin River to Sturgeon Bay.

The Buffalo Creek watershed is situated between Lake St. Martin to the south and the Dauphin River and Sturgeon Bay to the north. Prior to operation of Reach 1, the watershed was isolated and did not receive water from other waterways; all flow was due to local run off. The headwaters of the watershed are comprised of a bog complex including Big Buffalo Lake (0.55 km^2) and several other ponds. Buffalo Creek originates in Big Buffalo Lake and flows through the bog complex before entering into a more defined creek channel with greater gradient and greater habitat diversity. The creek discharges into the Dauphin River approximately 4 km upstream of Sturgeon Bay.

Additional descriptions of the biophysical environments and flow regulation on Lake Manitoba, Fairford River, Lake Pineimuta, Lake St. Martin, Dauphin River and Sturgeon Bay are provided in North/South Consultants Inc. (NSC; 2013).

For the purpose of this report, monitoring data were grouped, as follows:

- Upstream areas, including the Fairford River and Lake St. Martin;

- The Buffalo Creek watershed, including Reach 1, Big Buffalo Lake, and Buffalo Creek;
- The Dauphin River, including areas upstream and downstream of Buffalo Creek; and,
- Sturgeon Bay.

Table 1. Timing of Reach 1 Construction and Operation milestones.

Project Component and Phase	Date	Comments
Construction		
Site Preparation	• Initiated in mid- July 2011	-
Channel Construction	• Initiated late August 2011; • Completed 01 November 2011	-
2011/2012 Operation		
	• 01 November 2011 - 21 November 2012	• Closure activities initiated on 15 November; and, • Flow into Reach 1 halted 21 November.
2011/2012 Closure		
	• 22 November 2012 - 04 July 2014	
2014/2015 Operation		
Stage 1 Opening	• 02-06 July 2014	• Flow into Reach 1 began on 04 July; • Construction halted on 06 July; and, • Opening of approximately 35 m excavated.
Stage 2 Opening	• 14-17 November 2014	• Additional 10 m excavated; and, • Total opening width approximately 45 m.
2014/2015 Closure		
	• 13-23 August 2015	• Closure activities initiated on 13 August; • inlet opening was infilled with rock over the next several days; and, • all flow into Reach 1 stopped by 20 August.

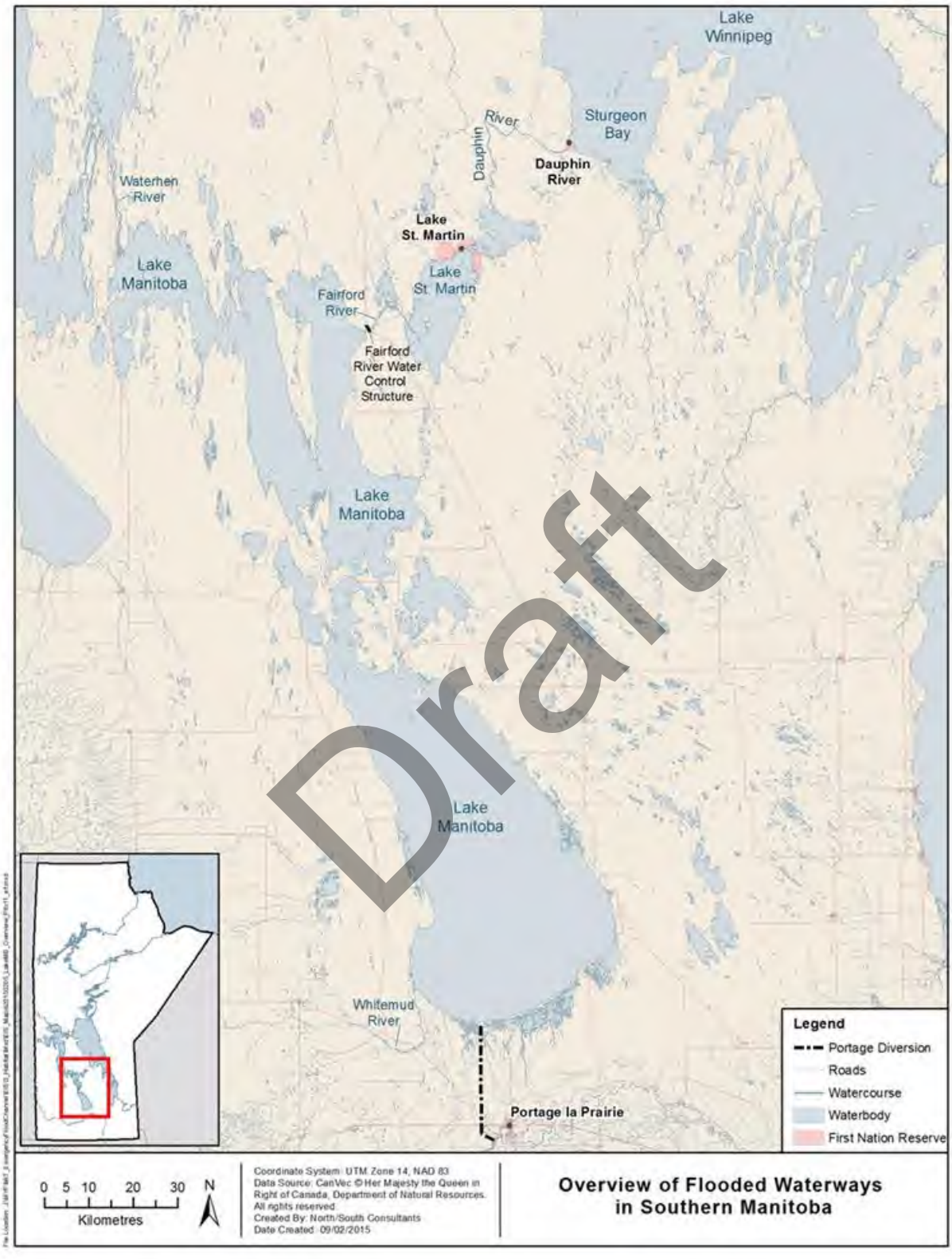

Figure 1. The location of major waterbodies and waterways affected by flooding in southern Manitoba during spring 2011.

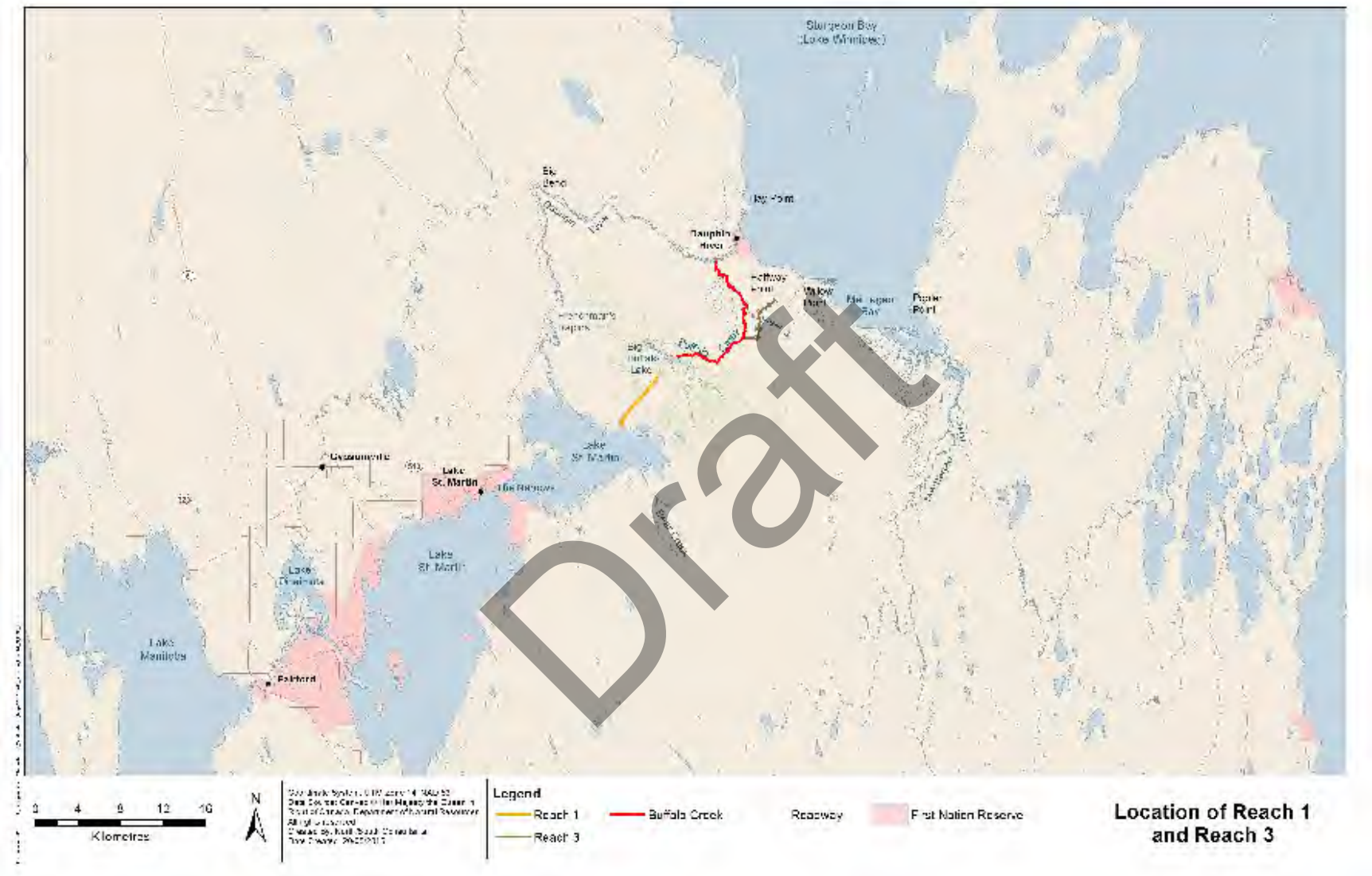

Figure 2. Location of the Reach 1 Emergency Outlet Channel, the Reach 3 Emergency Channel, and the Buffalo Creek watershed in relation to Lake St. Martin, the Dauphin River and Sturgeon Bay.

3.0 METHODS

Data collection and analytical methods are presented in the following sections.

3.1 LSMEOC MONITORING PROGRAM

LSMEOC monitoring was initiated during the early construction of Reach 1 and provided additional and targeted temporal and spatial water quality monitoring in Reach 1 and the Buffalo Creek watershed. This program continued until September 2015. Waterbodies sampled included Lake St. Martin, Reach 1, the Buffalo Creek watershed and the lower Dauphin River; details on sampling site locations are provided in Figure 3. This program included special consideration of total suspended solids (TSS) and dissolved oxygen (DO) to determine potential changes due to project activities. Other parameters analyzed included nutrients, mercury, and petroleum hydrocarbons. A complete list of laboratory analysed parameters is provided in Table 2. *In situ* measurements of water quality parameters including turbidity, DO, temperature, pH, and specific conductance were also collected. Sampling was typically more frequent than the RWQMP but varied with Project phase; a list of sampling dates and parameters measured is provided in Table 3.

3.1.1 Sampling Sites

Sampling sites were added or removed as appropriate for each Project phase; however, in general, sampling was conducted at 12 sites within the LSMEOC system as follows:

- Lake St. Martin – one of two sites, including one site near the centre of the north basin (LSM1), and one site near the Reach 1 inlet (LSM2);
- Reach 1 – three sites, including one site at the upstream end of the channel (EC1), one at the downstream end of the channel (EC2), and one downstream of the channel where the water entered the wetland area surrounding Big Buffalo Lake (EC3);
- Buffalo Creek – five sites, including one site at the upstream most end of the creek (BC1), one site near the upstream end of the creek (BC2), one site downstream of the proposed entrance to Reach 3 (BC4), one site downstream of Creek 3 (BC5), and one site at the mouth of the creek (BC3); and,
- Dauphin River – three sites, one site upstream of the confluence of Buffalo Creek, one site immediately downstream of the confluence of Buffalo Creek, and one site in the mouth of the Dauphin River upstream of Sturgeon Bay.

Additionally, two sites in Lake St. Martin near the Reach 1 inlet (LSM03 and LSM04) were monitored for TSS and turbidity during the construction phase of the Project; one site was sampled in Big Buffalo Lake (BBL) in 2013 and 2014; and, water samples for analysis of TSS and turbidity were also collected at the turbidity monitoring station in Buffalo Creek (BC-TM).

3.1.2 Sampling Frequency

In general, sampling frequency changed in response to Project phase as follows:

- Baseline monitoring was approximately every two weeks;
- Construction monitoring was almost daily from 05 October to 07 November 2011;
- During operation, sampling was approximately monthly;
- During closure, sampling was conducted seasonally; and,
- When it was expected that there would be an increase in sediment transport (e.g., channel opening, spring freshet) more frequent (e.g., daily, every 2-3 days, or weekly, as appropriate) sampling occurred.

3.1.3 Sampling Methods

In situ water quality data was measured during each sample event at each sample site using a handheld multi-meter (YSI or Horiba). *In situ* turbidity was also measured during each sampling event using a handheld Oakton turbidity meter. The handheld multi-meter was calibrated prior to each sample event to maximize accuracy. However, these probes do not always function properly when operated under freezing conditions. On several occasions during the winter months, the probe froze and/or became encased in ice and it was not possible to complete *in situ* data collections. In 2011, samples were collected from the water's edge, whereas in 2012, 2013, and 2014 most samples were collected by a device lowered from a helicopter. Exceptions included: winter sampling when all sites were accessed by snowmobile and samples collected from holes drilled in the ice; and, the Lake St. Martin which was sampled by boat during open water periods.

When sampling from helicopter, one staff harnessed into the helicopter lowered a weighted sampling device to the water surface. Samples were retrieved from just below the surface of the water (approximately 0.3 m) and examined to ensure water was free of excess sediment resulting from sampling error. Water from the sampler was used to fill sample bottles and take *in situ* measurements. The weighted sampler was rinsed at each site prior to sample collection.

When sampling through the ice, a hole was drilled using a hand auger. Samples were collected by lowering a Kemmerer sampler approximately 1.0 m below the ice. The Kemmerer was site rinsed before samples were collected. *In situ* measurements were collected from under the ice. When sampling from a boat, samples were collected from just below the surface (0.3 m) directly into laboratory supplied sample bottles.

Where necessary, samples were preserved according to instructions provided by the analytical laboratory. After collection, samples were placed in a cooler and kept cool using ice packs until submission (within 48 hours) to ALS Laboratories in Winnipeg, MB (a Canadian Association for Laboratory Accreditations, Inc. [CALA] accredited laboratory) for analysis.

Standard Quality Assurance/Quality Control (QA/QC) samples were included during each sampling event, including: an equipment and/or field blank; a trip blank provided by the laboratory; and, a duplicate sample. Results were regularly examined upon receipt and any spikes or anomalous

concentrations were assessed to protect against sampling error and to ensure appropriate sampling procedures during future sampling events.

3.2 REGIONAL WATER QUALITY MONITORING PROGRAM

The RWQMP was initiated in October 2011, prior to the operation of Reach 1, and continued until May 2015. The intent of this program was to provide a regional perspective on water quality conditions both upstream and downstream of Reach 1. Water quality in all major waterbodies and waterways within the study area were sampled. Water quality parameters included in the RWQMP were identified based on potential linkages between the Project and water quality, including potential effects on TSS and related variables (e.g., nutrients and metals), effects related to diversion, and potential effects of flooding and/or diversion on water quality (i.e., nutrients, DO, pH and metals), and/or variables that provide supporting information for interpretation of other data. Ultra-trace mercury and methyl-mercury were included to facilitate comparison to the Manitoba Water Quality Standards, Objectives, and Guidelines (MWQSOGs; MWS 2011) and because both may be affected by flooding. A complete list of water quality parameters selected for laboratory analysis and *in situ* measurements are provided in Table 4. In general, four sampling periods occurred during each year. Details on sampling site locations and sampling periods are provided in Table 5 and Figure 4.

3.2.1 Sample Sites

In general, sampling was conducted at 17 sites throughout the study area, as follows:

- Waterhen River – one site at the bridge on PR # 328 (at MWS site MB05LHS002);
- Lake Manitoba – one site at Lake Manitoba Narrows (at MWS site MB05LKS009);
- Fairford River – one site at the PTH # 6 bridge (at MWS site MB05LMS001);
- Lake St. Martin – one site in the north basin;
- Dauphin River – four sites, including one site near the outflow from Lake St. Martin, one site near the existing MWS site (MWS Site MB05LMS003), one site upstream of the confluence of Buffalo Creek, and one site in the mouth of the Dauphin River upstream of Sturgeon Bay;
- Buffalo Creek – one site at the creek mouth; and,
- Sturgeon Bay – eight sites.

However, not all sites were sampled during all sampling periods. The following exceptions occurred:

- Sampling at the Waterhen River and Lake Manitoba Narrows was discontinued after 2012 as it was felt that the site in the Fairford River captured the condition of the water quality entering the Lake St. Martin/Dauphin River system;
- The eighth site in Sturgeon Bay, LKW3B (near the Dauphin River mouth), was added in spring 2012; and,
- During winter sampling, some sites were not accessible due to ice/snow conditions and were therefore either relocated to a more accessible location or not sampled at all.

Additionally, occasional RWQMP sampling was conducted at sites within the LSMEOC system, including:

- Lake St. Martin - near the Reach 1 inlet (October 2011);
- Big Buffalo Lake –in the middle of the basin (March and May 2013; and, April and June 2014);
- Buffalo Creek - in the upper reaches of the creek (October 2011, January 2012, and May 2013); and,
- Dauphin River - immediately downstream of the confluence with Buffalo Creek (October 2011 and August 2014).

3.2.2 Sampling Methods

Sampling sites were accessed by truck, boat, helicopter, or snowmobile depending on site accessibility and season. Sample locations were recorded using a handheld Garmin GPS receiver. Sampling date and time were noted for each sampling site. Measurements of effective water depth (using a handheld depth sounder) and of ice thickness (if appropriate) were recorded at each site. In winter, where necessary, holes were drilled through the ice using a power auger.

In situ measurements of water quality parameters including pH, specific conductance, DO, turbidity, and water temperature were collected using a handheld water quality meter. At river sites and those accessed from shore, *in situ* parameters were measured at approximately 0.3 m below the water surface. At lake sites, *in situ* profiles were taken in one of two ways: measurements were recorded near the surface (i.e., at 0.3 m) and then at either 0.5 m (if total water depth was less than 5.0 m) or 1.0 m increments, or measurements were recorded both near the surface (about 0.3 m beneath the bottom surface of the ice) and at approximately 0.3 m above the lake bottom. Due to several water quality meter malfunctions, *in situ* measurements were not consistently measured with one brand of device throughout the sampling program (see Project data reports for details).

At each sampling site, grab samples were collected from approximately 0.3 m below the water surface into clean sample bottles supplied by ALS Laboratories. Under ice-cover, samples were collected from 0.5 m below the ice using a Kemmerer sampler. If thermal stratification was evident at lake sampling sites, water samples were also collected from approximately 1.0 m above the sediments using a Kemmerer sampler. Where necessary, samples were preserved according to instructions provided by the analytical laboratory. After collection, samples were placed in a cooler and kept cool using ice packs until submission (within 48 hours) to ALS Laboratories in Winnipeg for analysis.

Standard QA/QC measures were followed during sample collection (e.g., use of latex gloves, standard labelling practices, meter calibration, etc.). Additionally, QA/QC samples were collected, including field blanks, trip blanks, and replicate samples. All water quality data were examined qualitatively for potential outliers and/or transcription or analytical errors. In general, QA/QC samples indicated high precision and no sample contamination; details are available in Project data reports.

3.3 *IN SITU* MONITORING PROGRAM

The *in situ* monitoring program was conducted in Sturgeon Bay in fall 2011, and in February and March, 2012. The primary objective of the program was to gather spatial information on the water quality of Sturgeon Bay This program included the collection of *in situ* measurements of pH, specific conductance, DO, turbidity, and water temperature; as well as, sample collection for laboratory analysis of TSS and turbidity.

3.4 MANITOBA CONSERVATION AND WATER STEWARDSHIP

MCWS has monitored water quality at 28 sites in Lake Manitoba, in the Fairford River at PTH #6 west of Fairford (MB05LMS001), in the Dauphin River near Anama Bay (MB05LMS003), and in Sturgeon Bay (MB05SES012) over various time periods since 1973 (MCWS 2014). The frequency of sampling has varied over the monitoring period and monitoring in Sturgeon Bay has only been recently initiated (since 2008). The list of water quality parameters measured varies with time and in some instances only a limited number of parameters have been measured. For the purposes of this assessment, the data collected from Lake Manitoba have been excluded because it was felt that the site in the Fairford River captures the condition of the water quality entering the Lake St. Martin/Dauphin River system. Figure 5 shows the locations of the MCWS sampling sites in the Fairford River, Dauphin River and Sturgeon Bay.

MCWS data presented herein were provided to NSC by the Water Quality Management Section (MCWS 2014). All data were reviewed for errors and potential outliers prior to use.

3.5 ANALYSIS

3.5.1 Quality Assurance and Quality Control (QA/QC)

For both the RWQMP and LSMEOC monitoring program standard QA/QC measures were followed during sample collection (e.g., use of latex gloves, standard labelling practices, meter calibration, etc.). Additionally, QA/QC samples were collected, including field blanks, trip blanks, and replicate samples.

3.5.1.1 Field Blanks

Field blanks are intended to provide information on sample contamination from atmospheric exposure and sample handling techniques (i.e., cleanliness of sampling equipment, carry-over contamination from site to site), as well as potential laboratory contamination and/or error (British Columbia Ministry of Environment, Lands, and Parks (BCMELP) 1998). Field blanks were prepared by filling sample bottles with deionized water (both provided by the analytical laboratory) in the field and submitting the blanks along with the environmental samples.

3.5.1.2 Trip Blanks

Trip blanks are used for evaluating the potential for sample contamination that may occur from the container or preservatives through transport and storage of the sample, as well as laboratory precision (BCMELP 1998). Trip blanks were prepared in the laboratory by filling sample bottles with deionized

water. Trip blanks were transported to the field sampling sites, but remained sealed, and were then submitted to the analytical laboratory in conjunction with environmental samples for analysis.

3.5.1.3 Replicate Samples

Replicate samples were collected at randomly selected sites to provide a measure of variability of environmental conditions and the overall precision associated with field methods and laboratory analyses.

3.5.1.4 QA/QC Assessment

All water quality data were examined qualitatively for potential outliers and/or transcription or analytical errors. Where one replicate sample differed notably from the others, the measurement was flagged as "suspect".

QA/QC samples were assessed according to standard criteria to evaluate precision and identify potential sample contamination issues (BCMELP 1998). Percent relative standard deviation (PRSD) was calculated for triplicate samples as follows:

$$\text{PRSD (\%)} = \text{standard deviation of the triplicate values} / \text{mean of the triplicate values} \times 100$$

The relative percent mean difference (RPMD) was calculated for duplicate samples as follows:

$$\text{RPMD (\%)} = \left| (\text{value 1} - \text{value 2}) / ((\text{value 1} + \text{value 2}) / 2) \right| \times 100$$

Precision of replicate samples was evaluated using the "rule of thumb" criteria for precision of 18% for triplicate samples and 25% for duplicate samples (BCMELP 1998). Where one or more of the replicate values were less than five times the analytical detection limit (DL), an analysis of precision was not undertaken, in accordance with guidance provided in BCMELP (1998).

Field and trip blank results were also evaluated for evidence of sample contamination. Values for any parameter that exceeded five times the DL were considered to be indicative of sample contamination and/or laboratory error.

3.6 DATA SELECTION AND INTEGRATION

In 2015, an Effects Assessment of the Project was completed and included analysis of changes in water quality in the Study Area associated with the Project (NSC and KGS 2015). For the assessment, available water quality data were reduced to include only the sampling sites and parameters that would provide the most meaningful information from which to assess the effects of the Project on water quality. For consistency, the current analysis follows the methods developed for the Effects Assessment; the analysis is described in the following sections. Data that may have been collected but not included in the subsequent analyses are included in the appendices attached to this report.

3.6.1 Sites Selected

Sampling sites were considered based on their location and parameters sampled. The sites used in the effects assessment and current analysis are shown in Figure 6 and were as follows:

- All sampling sites upstream of the Fairford River were omitted as it was felt that the Fairford site captures the condition of the water quality entering the Lake St. Martin/Dauphin River system;
- Fairford River (i.e., FR1) – this site is located at the Fairford River control structure at PTH #6 and includes data collected by both the RWQMP and MCWS at MB05LMS001;
- Lake St. Martin – two sampling sites were included, LSM1 in the middle of the north basin and LSM2 near the inlet to Reach 1. Additional sampling was conducted in Lake St. Martin by the LSMEOC monitoring program during 2011/2012 Closure, however site location varied considerably. Because sampling was conducted at LSM1 by the RWQMP, and Reach 1 was closed and therefore background information was not needed for Reach1, data from these sites were not included in this assessment;
- Reach 1 – two sites were included, EC1 at the upstream end, and EC2 at the downstream end;
- Big Buffalo Lake – one site located approximately in the middle of the lake (BBL) was included;
- Buffalo Creek – three sites were included, BC1 at the upstream end of the creek and BC3 at the downstream end of the creek, plus BC2 near the upstream end of the creek, for which additional mercury data were available;
- Dauphin River – five sites were included from the inlet at Lake St. Martin to the river mouth at Sturgeon Bay. Site IDs for sampling locations along the Dauphin River had varied in reporting from 2011-2013 due to differences in monitoring programs and sampling agencies. To eliminate confusion for this assessment and going forward, sites along the Dauphin River have been renamed from DR-A to DR-E based on their upstream to downstream location as indicated in Table 6 and shown in Figure 6; and,
- Sturgeon Bay – all eight sites from the RWQMP were included (LKW1 to LKW7 plus LKW3B). The MCWS sampling site (MB05SES012) was excluded from the effects assessment as the data are limited and the location of the sampling site is at least 10 km farther into Lake Winnipeg than the nearest Project sampling site.

3.6.2 Parameters Selected

In order to further streamline the assessment of possible changes in water quality, the available data were reduced to a set of key parameters. Key parameters chosen include selected routine parameters and those metals and major ions for which there are Manitoba Water Quality Standards, Objectives and Guidelines (MWQSOGs, MWS 2011) for the protection of aquatic life (PAL), Canadian Council of Ministers of the Environment (CCME) guidelines for the protection of freshwater aquatic life (PAL; CCME 1999; updated to 2015), or MWQSOGs or Health Canada (Health Canada 2014) guidelines for drinking water. Additional parameters that could potentially have been affected by the Project were also chosen. The list of the key parameters includes:

- Dissolved Oxygen (DO);

- Conductivity and total dissolved solids (TDS);
- pH;
- Total suspended solids (TSS) and turbidity;
- Nitrogen;
- Phosphorus;
- Carbon;
- Chlorophyll *a*;
- Metals and major ions with MWQSOGs or CCME guidelines for PAL, or MWQSOGs or Health Canada Guidelines for drinking water; and,
- Petroleum hydrocarbons.

Metals and major ions on the list include: aluminum, antimony, arsenic, barium; boron, cadmium, chloride, chromium, copper, fluoride, iron, lead, manganese, mercury, methyl mercury, molybdenum, nickel, selenium, silver, sodium, sulphate, thallium, uranium, and, zinc. Hardness was also included as it is necessary for the determination of MWQSOGs/CCME PAL for some metals.

3.6.3 Data Integration

After the available data were reduced based on the sites and parameters selected, data from all three sources (i.e., RWQMP, LSMEOC monitoring program, and MCWS) were combined into a single dataset that was used in the effects assessment. A summary of data included is provided in Table 7.

3.6.4 Data Analysis

3.6.4.1 Time Periods

Water quality data were divided into five time periods based on the 2011 flood and operation of Reach 1. These periods were defined as follows:

- Historical – The 10-year period prior to the 2011 flood;
- 2011 Flood – April 2011 to 31 October 2011;
- 2011/2012 Operation – 01 November 2011 to 27 November 2012;
- 2011/2012 Closure – 28 November 2012 to 30 June 2014;
- 2014/2015 Operation – 01 July 2014 to 31 December 2014; and,
- 2014/2015 Closure – August 13, 2015-end of Project monitoring.

The intent of the historical period is to give information on “normal” water quality conditions and to provide historical context on conditions prior to the Project. Data from this period are restricted to those collected by MCWS. Additionally, because water quality is typically affected during flood events, it was expected that water quality in 2011 would differ from historical conditions. Data from prior to 2011/2012 Operation were therefore divided into two time periods: those collected during what could be considered “normal” historical conditions; and, those collected during flood stage in 2011.

Although operation of Reach 1 ended on 21 November 2012, water quality data collected from 22-27 November 2012 (i.e., six days after the closure of Reach 1) were included herein in the 2011/2012 Operation period, as there may have been remnant effects from closure activities.

3.6.5 Analytical Methods

To assist in data interpretation and presentation, summary statistics including mean, median, minimum, maximum, standard error (SE), number of samples (n), and percent of samples above the analytical detection limit (DL) were calculated. Summary statistics were calculated for water quality variables at each site during each time period (i.e., Historical [10-years prior to 2011]; 2011 Flood; 2011/2012 Operation; 2011/2012 Closure; 2014/2015 Operation; and 2014/2015 Closure). All data analyses treated censured values (i.e., values reported as below the DL) as equal to one half the DL. In cases where replicate samples were collected, or when more than one sample was collected across the stream channel (i.e., additional TSS samples), sample means were used for the calculation of summary statistics. Scatter plots were created to graphically represent the data and to show trends in water quality over time.

The high-level mercury data collected by the LSMEOC monitoring program in 2011 have been excluded from the analysis. The analytical detection limit (50 ng/L) used for these samples was 50 times higher than the analytical detection limit (1 ng/L) used for other samples collected for the Project making comparisons with the data problematic. Additionally, confidence in these data is low as the sampling method used is prone to contamination.

Due to inconsistencies in the water quality meters used between and within sampling periods and programs, and due to occasional malfunctions of the water quality meters, confidence in any comparisons (between sampling periods and/or sites) made with these data would be low. Because, with the exception of DO, laboratory analysed data were available for each of the *in situ* variables, including, pH, specific conductance, and turbidity, the choice was made to exclude the *in situ* data where possible. As a result, *in situ* DO data were included, but all other *in situ* data were excluded from analyses presented here.

Nitrogen to phosphorus (TN:TP) molar ratios were calculated to assist in estimating the limiting nutrient. Ratios less than 10 were considered indicative of nitrogen limitation and values greater than 20 were considered indicative of phosphorus limitation. Ratios between 10 and 20 were considered to indicate co-limitation.

Total organic carbon to organic nitrogen (TOC:ON) molar ratios were derived to provide an indication of the key source of carbon in each waterbody. Ratios greater than 50:1 were considered indicative of organic matter that is primarily allochthonous and ratios less than 12:1 were considered indicative of organic matter that is primarily autochthonous (Wetzel 1983).

Key water quality parameters were assessed qualitatively (both temporally and spatially) to identify Project-related effects. Temporal comparisons were made by assessing similarities and differences in water quality conditions during different Project phases. Spatial comparisons assessed differences in

key water quality parameters between sampling sites, with a focus on comparing water quality conditions upstream and downstream of Reach 1 and Buffalo Creek.

3.6.6 Comparison to Water Quality Objectives and Guidelines

Results were compared to the MWQSOGs (MWS 2011) for the protection of aquatic life (PAL) as well as the Canadian Council of Ministers of the Environment (CCME) guidelines for the protection of freshwater aquatic life (CCME 1999; updated to 2015). In general, the MWQSOGs for PAL are similar to the CCME guidelines for PAL for parameters measured; however, there are CCME guidelines for some parameters which lack a provincial guideline/objective and others for which the CCME guideline is different from the provincial one; typically the CCME guideline is more stringent than the MWQSOGs.

Drinking water quality objectives and guidelines are intended to be applied to treated or finished water as it emerges from the tap and "are not intended to be applied directly to source waters" (CCME 1999, updated to 2015). However, comparison of water quality in the study area to drinking water quality objectives and guidelines is included to provide context. The MWQSOGs indicate that "all surface waters…are susceptible to uncontrolled microbiological contamination... [and] it is therefore assumed that all raw surface water supplies will be disinfected as the minimum level of treatment prior to consumption" (MWS 2011). Furthermore, it is indicated that the MWQSOGs "apply to finished drinking water, but can be extrapolated to provide protection to raw drinking water sources."

In general, water quality objectives and guidelines are more stringent for the protection of aquatic life and wildlife, relative to those established to protect various human usages (e.g., drinking water). A summary of relevant water quality objectives and guidelines is presented in Appendix A.

3.6.6.1 Estimation of Background Conditions

MWQSOGs (MWS 2011) and CCME guidelines (CCME 1999, updated to 2015) for PAL for TSS and turbidity are based on changes from a background condition. Background conditions were estimated as follows:

- For Reach 1, the conditions observed during the same sampling event upstream in Lake St. Martin (i.e., LSM1 or LSM2) were considered to represent background conditions (Note: Assessment of background was only considered during Reach 1 operation);
- For Big Buffalo Lake, the average conditions in the lake in 2014 prior to 2014/2015 Operation were considered to represent background conditions (Note: this was only applicable for 2014/2015 Operation because Big Buffalo Lake was not sampled prior to 2013);
- For Buffalo Creek, the average conditions in the creek prior to operation of Reach 1 (i.e., between 02 September and 28 October 2011) were considered to represent background conditions; and,
- For the lower Dauphin River (i.e., DR-D and DR-E), the conditions observed during the sample sampling event upstream of Buffalo Creek (i.e., DR-C) were considered to represent background conditions.

Table 2. Laboratory analysed parameters measured as part of the LSMEOC monitoring program, 2011-2015.

Parameter	Units	Analytical Detection Limit 2011	Analytical Detection Limit 2012-2015
Total suspended solids	mg/L	5	2
Turbidity [1]	NTU	Not sampled	0.1
Routine			
Ammonia	mg N/L	0.050 [2]	0.010
Nitrate and nitrite	mg N/L	0.071 (0.0051) [2]	0.071 (0.0051) [2]
Nitrate	mg N/L	0.050 (0.005) [2]	0.050 (0.005) [2]
Nitrite	mg N/L	0.050 (0.001) [2]	0.050 (0.001) [2]
Total Kjeldahl nitrogen	mg/L	0.2	0.2
Total nitrogen	mg/L	0.2	0.2
Total dissolved phosphorus	mg/L	0.010	0.010
Total phosphorus	mg/L	0.010	0.010
Petroleum Hydrocarbons			
Benzene	mg/L	0.0005	0.0005
Ethyl-benzene	mg/L	0.0005	0.0005
Toluene	mg/L	0.001	0.001
o-xylene	mg/L	0.0005	0.0005
m+p-Xylenes	mg/L	0.0005	0.0005
Xylenes	mg/L	0.0015	0.0015
Total hydrocarbons (C6-C50)	mg/L	0.44	0.44
Fraction F1 (C6-C10)	mg/L	0.1	0.1
Fraction F2 (C10-C15)	mg/L	0.25	0.25
Fraction F3 (C16-C34)	mg/L	0.25	0.25
Fraction F4 (C35-C50)	mg/L	0.25	0.25
Mercury			
Mercury, total	ng/L	50 (1.0) [2]	1.0
Mercury, dissolved	ng/L	50 (1.0) [2]	1.0
Methyl Mercury			
Methyl mercury, total	ng/L	0.5	0.5
Methyl mercury, dissolved	ng/L	0.5	0.5

1 - Turbidity was added to the program in 2012 to provide an alternate estimation of impacts from suspended solids and to correlate with *in situ* data.

2 - A lower detection limit (as indicated in brackets) was used when sampling was conducted in conjunction with the RWQMP.

Table 3. Samples collected for the LSMEOC monitoring program, 2011-2015

Sampling Date(s)	*In Situ* Measurements	TSS	Routine	Mercury [1]	Methyl Mercury [1]	Petroleum Hydrocarbons [2]
2011 Flood						
02 Sep 2011	✓	✓	✓	✓	-	✓
07 Sep 2011	✓	-	-	-	-	-
14 Sep 2011	-	-	-	-	-	✓
26 Sep 2011	✓	✓	✓	✓	-	✓
29 Sep 2011	-	-	-	-	-	✓
14 Oct 2011	✓	✓	✓	✓	-	✓
21 Oct 2011	✓	-	-	-	-	-
29 Oct 2011	✓	✓	✓	✓	-	✓
2011/2012 Operation						
02 Nov 2011	✓	✓	✓	✓	-	✓
04 Nov 2011	✓	✓	✓	✓	-	✓
07 Nov 2011	✓	✓	✓	✓	-	✓
10 Nov 2011	✓	✓	✓	✓	-	✓
14 Nov 2011	✓	✓	✓	✓	-	✓
17 Nov 2011	✓	✓	✓	✓	-	✓
25 Nov 2011	✓	✓	✓	✓	-	✓
29 Nov 2011	-	-	-	-	-	✓
17-18 Jan 2012	-	✓	✓	✓	✓	-
07-09 Feb 2012	-	✓	✓	-	-	✓
21 Feb 2012		✓	✓			-
16 Mar 2012	✓	✓	✓	✓	✓	-
17 Apr 2012	✓	✓	✓	-	-	-
16-17 May 2012	✓	✓	✓	✓	✓	-
13 Jun 2012	✓	✓	✓	-	-	-
09 Aug 2012	✓	✓	✓	-	-	-
12 Sep 2012	✓	✓	✓	-	-	-
19 Oct 2012	✓	✓	✓	-	-	-
13 Nov 2012	✓	✓	✓	-	-	✓
19 Nov 2012	✓	✓	✓	-	-	✓
22 Nov 2012	✓	✓	✓	-	-	✓
27 Nov 2012	✓	✓	✓	-	-	✓
2011/2012 Closure						
24-27 Mar 2013	✓	✓	✓	✓	✓	-
02 May 2013	✓	✓	✓	-	-	-
14 May 2013	✓	✓	✓	-	-	-
28 May 2013	✓	✓	✓	-	-	-
24 Jul 2013	✓	✓	✓	-	-	-
09-16 Oct 2013	✓	✓	✓	-	-	-
07 April 2014	✓	✓	✓	-	-	-
02 May 2014	✓	✓	✓	-	-	-
15 May 2014	✓	✓	✓	-	-	-
29 May 2014	✓	✓	✓	-	-	-
18-20 Jun 2014	✓	✓	✓	-	-	✓

Table 3. Continued.

Sampling Date(s)	*In Situ* Measurements	TSS	Routine	Mercury [1]	Methyl Mercury [1]	Petroleum Hydrocarbons [2]
2014/2015 Operation						
03 Jul 2014	✓	✓	-	-	-	-
04 Jul 2014	✓	✓	✓	-	-	✓
05 Jul 2014	✓	✓	-	-	-	-
06 Jul 2014	✓	✓	✓	-	-	✓
07 Jul 2014	✓	✓	-	-	-	-
08 Jul 2014	✓	✓	✓	✓	✓	✓
11 Jul 2014	✓	✓	✓	-	-	-
16 Jul 2014	✓	✓	✓	✓	✓	-
Aug 26-27, 2014	✓	✓	✓	✓	✓	-
22 Sep 2014	✓	✓	✓	-	-	-
23 Oct 2014	✓	✓	✓	-	-	-
17 Nov 2014	✓	✓	✓	-	-	✓
18 Nov 2014	✓	✓	-	-	-	-
01 May 2015	✓	✓	✓	-	-	-
11 Jun 2015	-	✓	-	-	-	-
30 Jul 2015	✓	✓	✓	-	-	-
2014/2015 Closure						
13 Aug 2015	✓	✓	✓	-	-	-
19 Aug 2015	✓	✓	✓	-	-	-
14 Sep 2015	✓	✓	✓	-	-	-

1 - Sampling was occasional and only occurred only when the parameter was not sufficiently monitored by the RWQMP or to supplement data collected by the RWQMP.

2 - Petroleum hydrocarbons were sampled during construction, closure and re-opening activities.

Table 4. Water quality parameters measured as part of the RWQMP, 2011-2015.

Parameters	Parameters
Routine Parameters	Metals (Total and Dissolved) and Major Ions
Alkalinity	Antimony (Sb)
Dissolved Organic Carbon	Arsenic (As)
Total Inorganic Carbon	Barium (Ba)
Total Organic Carbon	Beryllium (Be)
Colour, True	Bismuth (Bi)
Conductivity (at 25°C)	Boron (B)
Hardness (Calculated from metals)	Cadmium (Cd)
Total Kjeldahl Nitrogen	Calcium (Ca)
Ammonia-N	Cesium (Cs)
Nitrate+Nitrite- N	Chromium (Cr)
Nitrite-N	Chloride (dissolved)
Nitrate-N	Cobalt (Co)
Phosphorus, Total	Copper (Cu)
Phosphorus, Total Dissolved	Fluoride (dissolved)
Phosphorus Total Particulate (Calculated)	Iron (Fe)
pH	Lead (Pb)
Total Dissolved Solids	Lithium (Li)
Total Suspended Solids	Magnesium (Mg)
Turbidity	Manganese (Mn)
	Molybdenum (Mo)
In Situ Parameters	Mercury (Hg)
pH	Nickel (Ni)
Temperature	Potassium (K)
Dissolved oxygen	Rubidium (Rb)
Turbidity	Selenium (Se)
Specific Conductance	Silicon (Si)
	Silver (Ag)
Occasional Parameters	Sodium (Na)
Escherichia coli (not included herein)	Strontium (Sr)
Pesticides (not included herein)	Tellurium (Te)
	Sulphate (dissolved)
	Thallium (Tl)
	Thorium (Th)
	Tin (Sn)
	Titanium (Ti)
	Tungsten (W)
	Uranium (U)
	Vanadium (V)
	Zinc (Zn)
	Zirconium (Zr)
	Methyl mercury

Table 5. Main sites and sampling periods for the RWQMP, 2011-2015

Waterbody	Site ID	Flood	2011/2012 Operation				2011/2012 Closure							2014/2015 Operation				
		Oct 28-29 2011	Jan 16-19 2012	May 16-21 2012	Jul 16-17 2012	Oct 15-16 2012	Mar 24-27 2013	Jun 10-12 2013	Jul 21-22 2013	Oct 6-7 2013	Apr 7-10 2014	May 28-29 2014	Jun 18-20 2014	Jul 24-25 2014	Aug 26-27 2014	Oct 16-20 2014	Mar 24-27 2015	May 3-4 2015
Waterhen River	WHR1	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-
Lake Manitoba	NARR1	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-
Fairford River	FR1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
Lake St. Martin	LSM1	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	-
Dauphin River	DR1.1	X	-	X	X	X	X[1]	X	X	X	X	X	X	X	-	X	X	-
	DR1.3	X	X[1]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
	DR1 (NOTE 2)	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Buffalo Creek	BC3	X	X	X	X	X	-	X	X	X	-	X	X	X	X	X	X	X
Dauphin River	DR2C	X[2]	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lake Winnipeg	LKW3B	-	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	LKW3	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	-
	LKW2	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	-
	LKW1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
	LKW4	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	-
	LKW5	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X	-
	LKW6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-
	LKW7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-

Table 6. Standardized site identification for sampling locations on the Dauphin River.

Site ID	Location Description	KGS Name	AECOM Name	NSC Name	MCWS Name
DR-A	Inlet at Lake St. Martin	-	-	DR1, DR1.1, DR1.0	-
DR-B	Upstream of the Big Bend	-	-	DR2, DR1.3, DR1.2	MB05LMS003
DR-C	Immediately upstream of Buffalo Creek	DR1	DR01	DR1(Note2), DR2.1	-
DR-D	Immediately downstream of Buffalo Creek	DR3	-	-	-
DR-E	Mouth at Sturgeon Bay	DR2C	DR02	DR2C, DR-3	-

Table 7. Summary of water quality data used in the effects assessment.

Location	Period	Number of Sampling Events [1]			Key Parameters Sampled by Combined Programs					
		LSMEOC	RWQMP	MCWS	Routine	TSS and Turbidity	Nutrients	Chlorophyll *a*	Metals and Major Ions	Petroleum Hydrocarbons
Fairford River	Historic	-	-	34	✓	✓	✓	✓	✓	-
	2011 Flood	-	1	15	✓	✓	✓	✓	✓	-
	2011/2012 Operation	-	4	11	✓	✓	✓	✓	✓	-
	2011/2012 Closure	-	7	10	✓	✓	✓	✓	✓	-
	2014/2015 Operation	-	3	5	✓	✓	✓	✓	✓	-
Lake St. Martin	Historic	-	-	-	-	-	-	-	-	
	2011 Flood	4	1	-	✓	✓	✓	✓	✓	-
	2011/2012 Operation	16	4	-	✓	✓	✓	✓	✓	✓
	2011/2012 Closure	3 [2]	7	-	✓	✓	✓	✓	✓	✓
	2014/2015 Operation	12	2 [3]	-	✓	✓	✓	✓	✓	-
										✓
Reach 1	Historic	-	-	-	-	-	-	-	-	
	2011 Flood	-	-	-	-	-	-	-	-	-
	2011/2012 Operation	20	1	-	✓	✓	✓	✓	✓	-
	2011/2012 Closure	10	1	-	✓	✓	✓	✓	✓	✓
	2014/2015 Operation	12	-	-	✓	✓	✓	✓	✓	-
										✓
Big Buffalo Lake	Historic	-	-	-	-	-	-	-	-	
	2011 Flood	-	-	-	-	-	-	-	-	-
	2011/2012 Operation	-	-	-	-	-	-	-	-	-
	2011/2012 Closure	9	3	-	✓	✓	✓	✓	✓	-
	2014/2015 Operation	9	-	-	✓	✓	✓	✓	✓	-
										-
Buffalo Creek	Historic	-	-	-	-	-	-	-	-	
	2011 Flood	6	1	-	✓	✓	✓	✓	✓	-
	2011/2012 Operation	21	3 [4]	-	✓	✓	✓	✓	✓	✓
	2011/2012 Closure	10	5 [4]	-	✓	✓	✓	✓	✓	✓
	2014/2015 Operation	13	3	-	✓	✓	✓	✓	✓	-

Table 7. Continued.

Location	Period	Number of Sampling Events[1]			Key Parameters Sampled by Combined Programs					
		LSMEOC	RWQMP	MCWS	Routine	TSS and Turbidity	Nutrients	Chlorophyll *a*	Metals and Major Ions	Petroleum Hydrocarbons
Upper Dauphin River	Historic	-	-	24	✓	✓	✓	✓	✓	-
	2011 Flood	6	1	1	✓	✓	✓	✓	✓	✓
	2011/2012 Operation	20	4	7	✓	✓	✓	✓	✓	✓
	2011/2012 Closure	10	7	10	✓	✓	✓	✓	✓	-
	2014/2015 Operation	12	3	15	✓	✓	✓	✓	✓	✓
Lower Dauphin River	Historic	-	-	-	-	-	-	-	-	-
	2011 Flood	6	1	-	✓	✓	✓	✓	✓	✓
	2011/2012 Operation	23	3[4]	-	✓	✓	✓	✓	✓	✓
	2011/2012 Closure	10	7	-	✓	✓	✓	✓	✓	-
	2014/2015 Operation	12	3	-	✓	✓	✓	✓	✓	✓
Sturgeon Bay	Historic	-	-	-	-	-	-	-	-	-
	2011 Flood	-	1	-	✓	✓	✓	✓	✓	-
	2011/2012 Operation	-	4	-	✓	✓	✓	✓	✓	-
	2011/2012 Closure	-	7	-	✓	✓	✓	✓	✓	-
	2014/2015 Operation	5	3	-	✓	✓	✓	✓	✓	-

1 - Not all parameters were sampled during each sampling event.

2 - Additional sampling was conducted in Lake St. Martin by the LSMEOC program during 2011/2012 Closure, however site location varied considerably. Because sampling was conducted at LSM1 by the RWQMP, and because the channel was closed and therefore background information was not needed for Reach1, these data were not included in this assessment.

3 - Sampling was conducted at a limited number of sites in August 2014. Lake St. Martin was not included in this program.

4 - Area was not accessible in winter and was, therefore, not sampled.

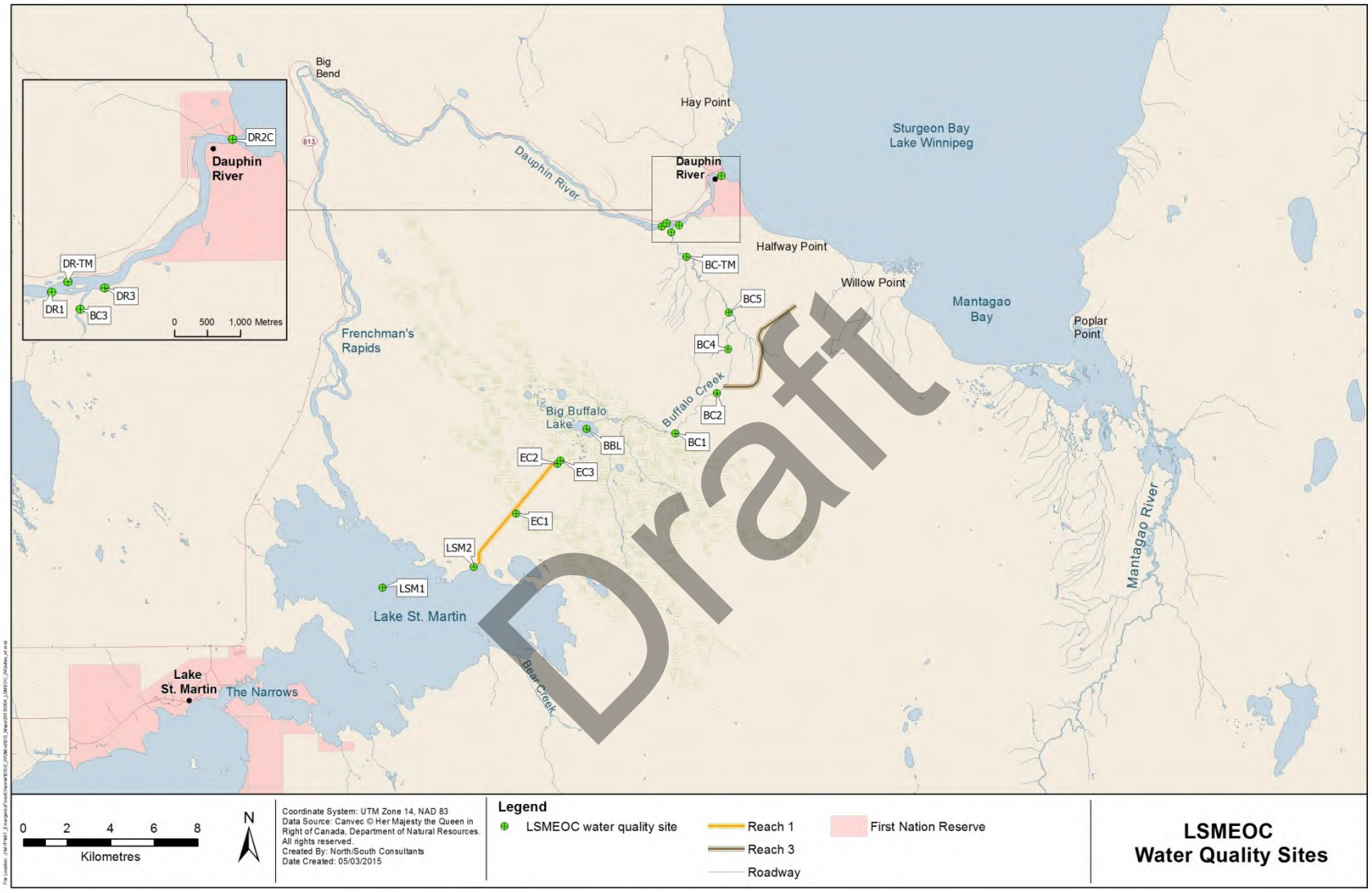

Figure 3. Water quality sampling sites that were part of the LSMEOC monitoring program, 2011-2015.

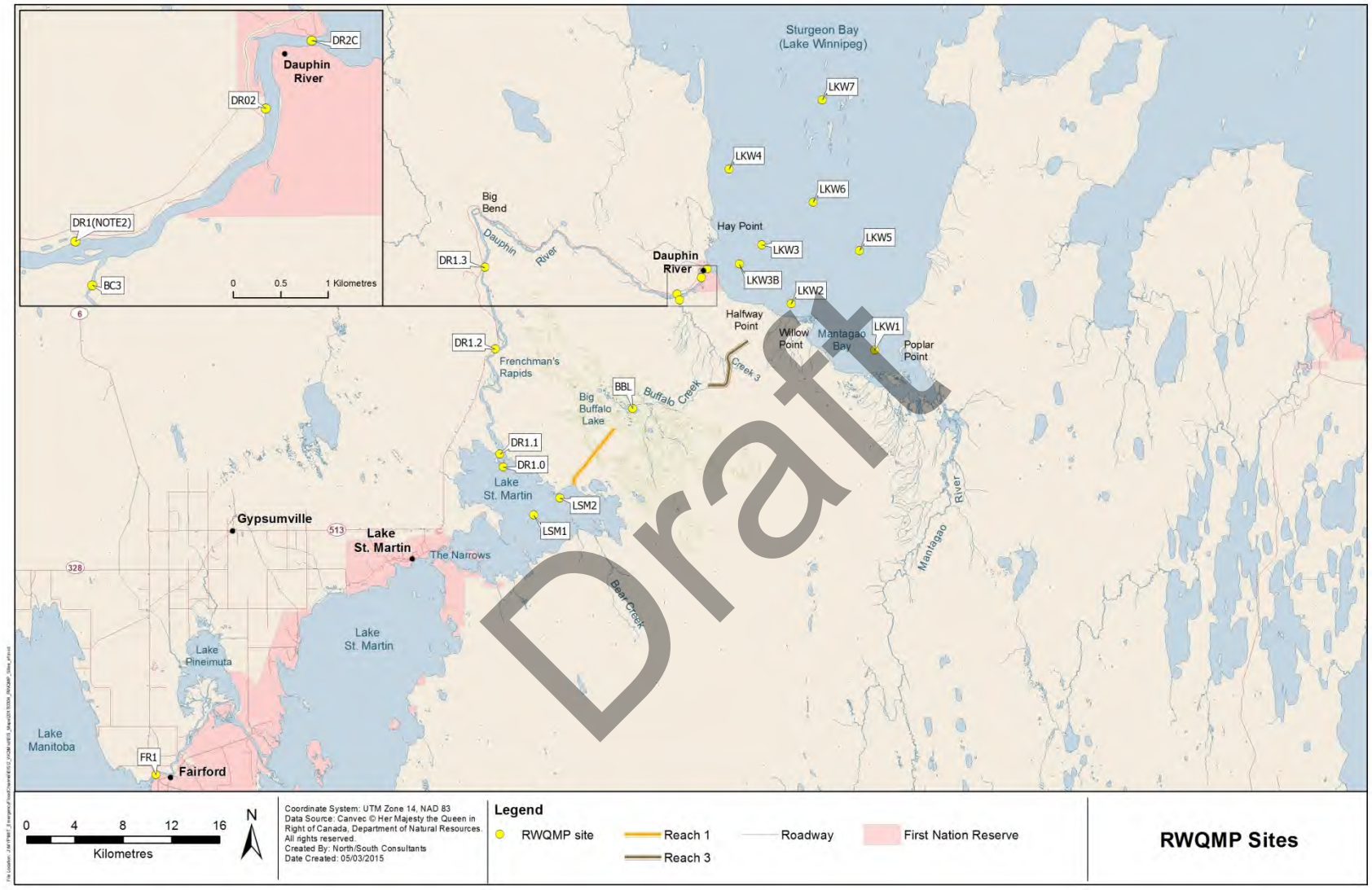

Figure 4. Water quality sampling sites that were part of the RWQMP, 2011-2015.

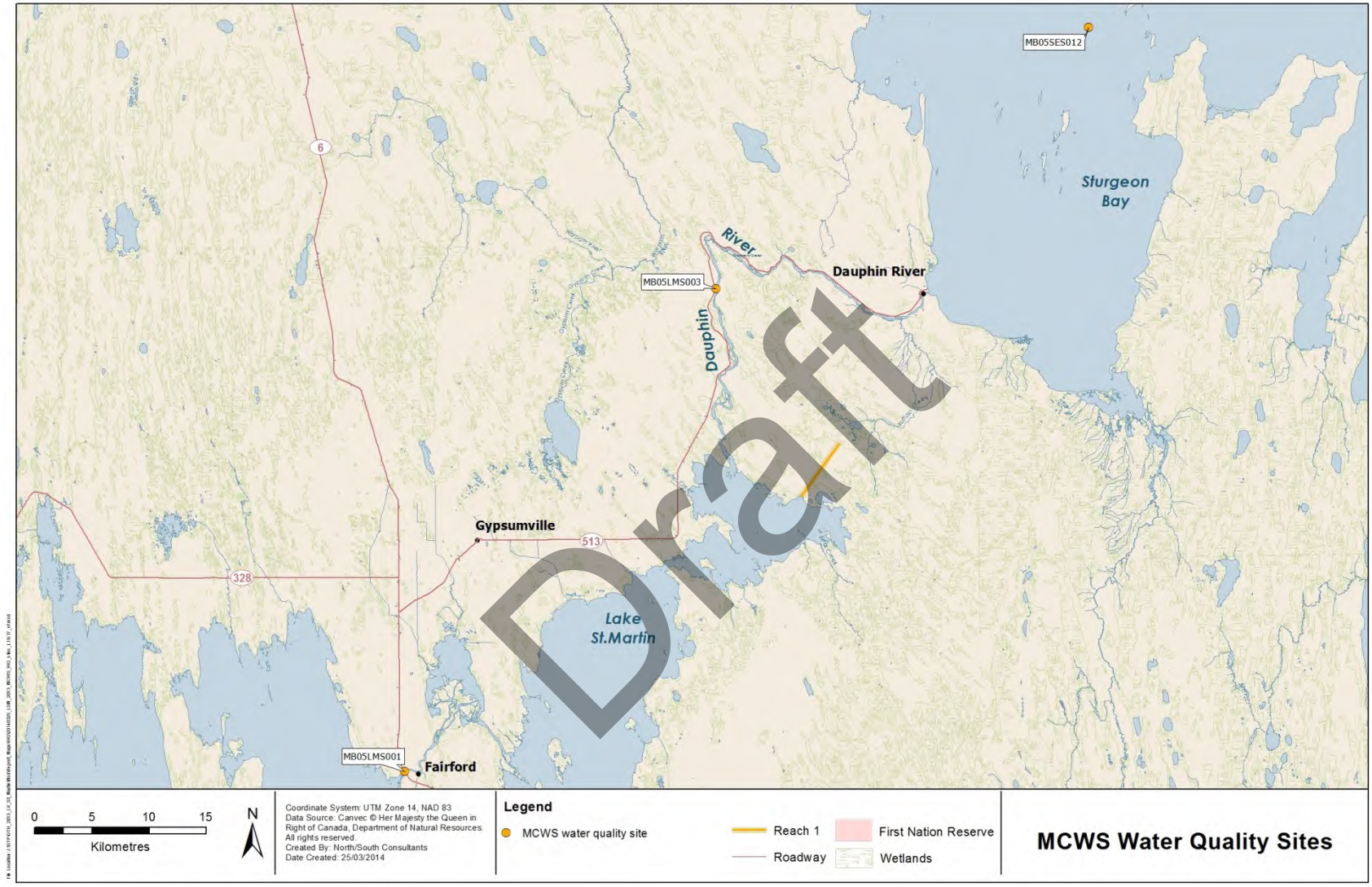

Figure 5. MCWS water quality monitoring sites in the Fairford and Dauphin rivers, and Sturgeon Bay.

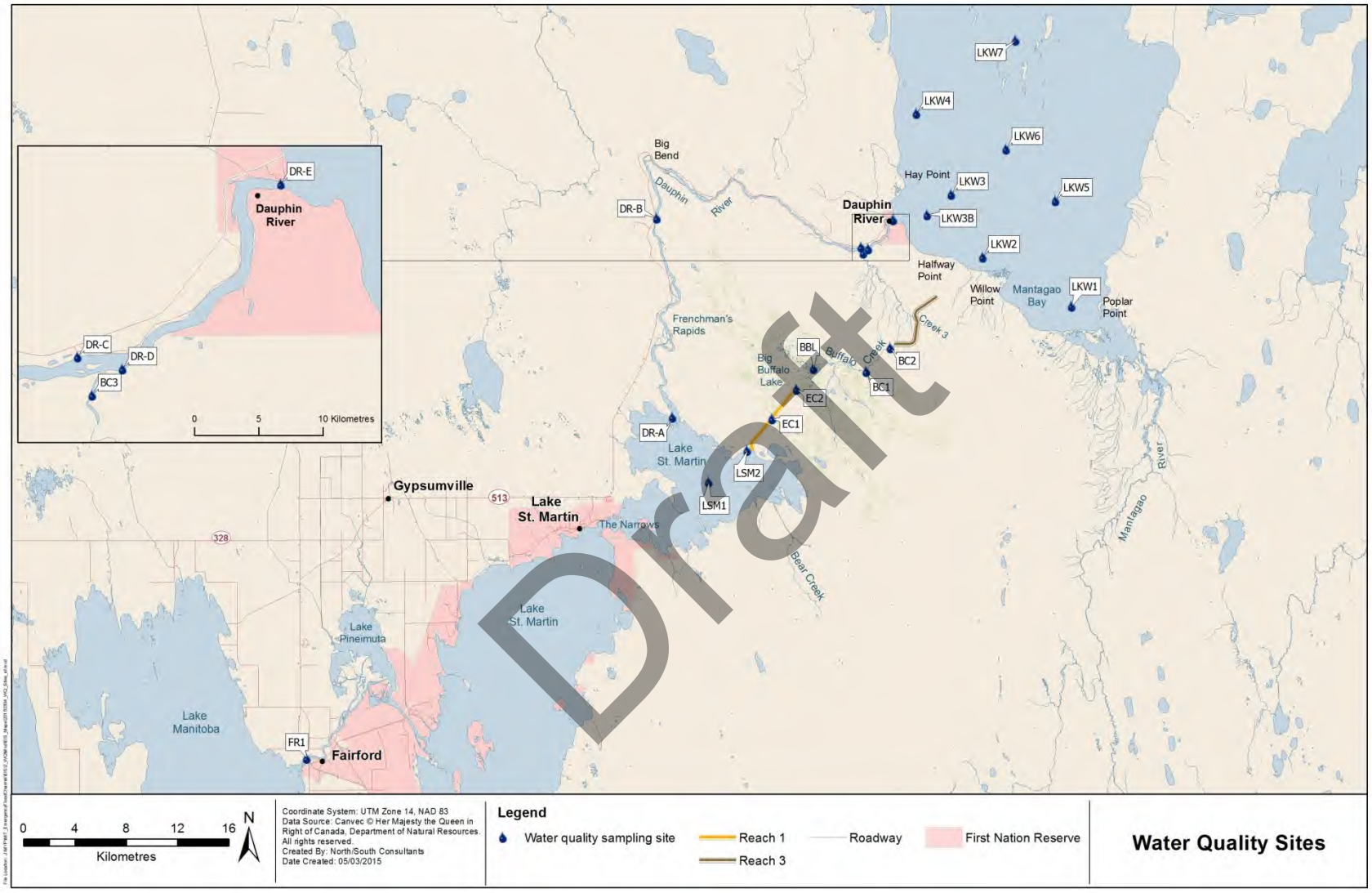

Figure 6. Water quality sampling sites included in the project.

4.0 RESULTS

The following section provides a summary of the results of the water quality monitoring programs conducted since 2011. Raw laboratory and *in situ* results from the RWQMP are provided in Appendices B-F; measurements from the *in situ* sampling programs in Sturgeon Bay and Dauphin River are presented in Appendices G and H, and results of the LSMEOC program are included in Appendix I.

4.1 UPSTREAM AREAS MONITORING RESULTS

This section presents the assessment of change/lack of change to water quality within upstream areas from 2011 through 2015. Upstream conditions are represented with data collected from a site on the Fairford River (FR1 at PTH #6) and two sites on Lake St. Martin, LSM1 in the middle of the north basin and LSM2 at the inlet to Reach1 (Figure 6). Summary statistics for key water quality parameters for each time period are presented in Table 8 and Figures 7 to 31 show patterns in water quality from through time at sites sampled on the Fairford River and Lake St. Martin.

4.1.1 Pre-Operation

Water quality data for Upstream Areas prior to the Project include Historic and 2011 Flood data collected by MCWS (2004-2011) and the Project (2011) at a site on the Fairford River (FR1), and 2011 Flood data collected by the Project at two sites on Lake St. Martin (LSM1 and LSM2) in fall 2011. Based on these data, the water quality of the Fairford River and Lake St. Martin could be generally described as moderately nutrient rich, low to moderately turbid, slightly alkaline, very hard, and well-oxygenated (Table 8).

Historically, TSS concentrations averaged 10 mg/L and ranged from < 5.0 to 32 mg/L (Figure 7) in the Fairford River. Laboratory pH ranged from 7.59 to 8.67 (Figure 8) and true colour from < 5.0 to 20.0 CU (Table 8). Conductivity and TDS in the Fairford River ranged from 1280-2000 µmhos/cm and 724-1480 mg/L, respectively (Figure 9 and Figure 10). Water in the Fairford River was very hard (236-321 mg/L; Figure 11) and well oxygenated (7.3-13.2 mg/L; Figure 12). TN ranged from 0.68 to 2.96 mg/L and was mostly composed of organic forms (Figure 13); however, DIN tended to increase during the winter months (Figure 14). TP concentrations at FR1 averaged 0.02 mg/L, ranging between 0.002 and 0.045 mg/L, and were composed of a mix of particulate and dissolved forms (Figure 15 and Figure 16). Carbon was predominantly concentrated as inorganic forms (Table 8). Based on TN:TP molar ratios, the Fairford River was phosphorus limited (i.e., TN:TP ratio > 20; Kalff 2002). TOC:TN molar ratios indicate that the organic matter in the Fairford River was composed of a mix of autochthonous (within the river) and allochthonous (outside the river) sources (Wetzel 1983). Chlorophyll *a* concentrations ranged between < 0.50 and 19.5 µg/L with a mean of 5.84 µg/L, indicating that primary productivity was moderate (Figure 17).

During the flood conditions of 2011, water quality of the Fairford River was generally similar to what was measured historically; however, conductivity (i.e., specific conductance),, TDS, chloride, and sodium were lower during the 2011 Flood period than they were during the Historic period, particularly in fall

2011 (Table 8; Figure 9 and Figure 10), and TSS, total aluminum, total manganese, true colour, and chlorophyll *a* appeared to increase somewhat during 2011 Flood, again during fall (Table 8; Figures 7, 16, 18, and 19). During 2011 Flood, conductivity and TDS ranged from 964-1440 µmhos/cm and 626-860 mg/L, respectively. TN was also lower during 2011 Flood than it was on average during the Historic period, but TN appears to have been somewhat lower in the Fairford River since 2009 and may have increased marginally during 2011 Flood (Figure 13). Under 2011 Flood conditions, TSS in the river averaged 18 mg/L and ranged from < 5.0-44 mg/L (Figure 7), while chlorophyll *a* concentrations averaged 8.61 µg/L and ranged from 1.53-14.5 µg/L (Figure 17).

Water quality was generally similar throughout Lake St. Martin (LSM1 and LSM2) during the 2011 Flood period (fall 2011 data only) (Table 8). TSS concentrations ranged from 4 to 10 mg/L (Figure 20) in Lake St. Martin. Laboratory pH ranged from 8.46 to 8.47 (Figure 21) and true colour from 6.9 to 8.4 CU (Table 8). Conductivity and TDS in Lake St. Martin ranged from 1060-1080 µmhos/cm and 652-704 mg/L, respectively (Figure 22 and Figure 23). Water in Lake St. Martin was very hard (328-341 mg/L; Figure 24) and well oxygenated (9.9-13.1 mg/L; Figure 25). TN ranged from 1.06 to 2.33 mg/L and was mostly composed of organic forms (Figure 26). TP concentrations ranged between 0.013 and 0.024 mg/L, and were composed of a mix of particulate and dissolved forms (Figure 27 and Figure 28). Carbon was predominantly concentrated as inorganic forms and organic carbon was primarily dissolved (Table 8). Based on TN:TP molar ratios, Lake St. Martin was phosphorus limited (i.e., TN:TP ratio > 20; Kalff 2002). TOC:TN molar ratios indicate that the organic matter in Lake St. Martin was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983). Chlorophyll *a* concentrations ranged between 6.85 and 6.98 µg/L in fall 2011, indicating that primary productivity was moderate (Figure 29).

Historically, DO was occasionally (two out of 14 measurements) below the MWQSOGs long-term objective/CCME lowest acceptable concentration for cold-water early-life (9.5 mg/L) when water temperatures were ≤ 5°C in the Fairford River (Table 9). DO was consistently within the MWQSOGs/CCME PAL objectives at all other times sampled during the Historic period in the river and during 2011 Flood in both the river and Lake St. Martin. All other routine parameters (ammonia, TP, nitrate, nitrite, and pH) measured during the Historic and 2011 Flood periods were within MWQSOGs/CCME guidelines or objectives for PAL.

TDS consistently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 500 mg/L) in the Fairford River during the Historic and 2011 Flood periods and in Lake St. Martin during the 2011 Flood period (Figure 10 and Figure 23). True colour rarely (one out of 26 measurements) exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 15 CU) in the Fairford River during the Historic period. True colour occasionally (two out of 16 measurements) exceeded this objective in the river during 2011 Flood; however, true colour was consistently within this objective in Lake St. Martin during 2011 Flood. Laboratory pH was occasionally (four out of 31 measurements) above the MWQSOGs/Health Canada aesthetic objective (6.5-8.5) upper limit in the river during the Historic period. During 2011 Flood, laboratory pH frequently (12 out of 16 measurements) exceeded this objective in the river (Figure 8); however, pH was consistently within this objective in Lake St. Martin (Figure 21). All other routine parameters (nitrate, nitrite) measured during the Historic and 2011 Flood periods were within MWQSOGs/CCME guidelines for PAL.

Total aluminum rarely exceeded the MWQSOGs/CCME guideline for PAL (0.1 mg/L) in the Fairford River during the Historic period, but occasionally exceeded it during 2011 Flood (Figure 18); total aluminum was consistently within this objective in Lake St. Martin during 2011 Flood (Table 10). Chloride consistently exceeded the CCME long-term exposure guideline for PAL (120 mg/L) during the Historic and 2011 Flood periods in the river and the 2011 Flood period in the lake (Table 10). Additionally, chloride frequently exceeded the MWQSOGs/Health Canada aesthetic objective (≤ 250 mg/L) in the Fairford River during the Historic period, but only occasionally during 2011 Flood (Table 11). Fluoride consistently exceeded the CCME interim PAL (0.12 mg/L) in the Fairford River and Lake St. Martin during the 2011 Flood period; no historical data for fluoride are available (Table 10). Selenium occasionally exceeded the MWQSOGs/CCME PAL (0.001 mg/L) in the Fairford River during Historic and 2011 Flood periods and silver (0.0001 mg/L) occasionally during the Historic period. Selenium and silver concentrations were near the analytical detection limits and measurements that are at or near detection limits are associated with relatively high uncertainty and there is subsequently low confidence that an actual exceedance of a PAL guideline has occurred. Sodium frequently exceeded the MWQSOGs/Health Canada aesthetic objective (≤ 200 mg/L) in the Fairford River during the Historic Period; sodium only rarely exceeded this objective during 2011 Flood. All other metals and major ions were within guidelines for PAL (Table 10) and drinking water (Table 11).

Petroleum hydrocarbons were not detected in Lake St. Martin during 2011 Flood; they were not monitored at the Fairford River (Figure 30). Analytical detection limits for hydrocarbon parameters sampled were well below the MWQSOGs/CCME guidelines for PAL and drinking water, as applicable (Table 12).

4.1.1.1 Construction of Reach 1

During dredging related to construction activities in October 2011, TSS increased in the vicinity of the Reach 1 inlet (Appendix J). TSS periodically exceeded the MWQSOGs 1-day averaging objective/CCME short-term exposure objective of 25 mg/L above background. Additionally, TSS exceeded the MWQSOGs 30-day averaging objective/CCME long-term exposure objective of 5 mg/L above background from 05 October to 03 November 2011.

4.1.2 2011/2012 Operation

Water quality data for Upstream Areas during 2011/2012 Operation are limited to the Fairford River (FR1) and LSM1 in the middle of the north basin of Lake St. Martin. During 2011/2012 Operation, the water quality at FR1 and LSM1 remained generally consistent with that observed during the 2011 Flood period (Table 8). The following sections highlight any qualitative changes observed.

4.1.2.1 Routine

Conductivity and TDS in the Fairford River were lower in concentration during the 2011 Flood period than they were during the Historic period and remained comparable to 2011 Flood concentrations during 2011/2012 Operation (Figure 9 and Figure 10). True colour appeared to increase in the Fairford River during fall 2011 (2011 Flood), but had returned to levels during 2011/2012 Operation that were more comparable to Historic conditions (Table 8). During 2011/2012 Operation, conductivity and TDS in

Lake St. Martin were comparable to 2011 Flood conditions (Figure 22 and Figure 23); true colour in October 2012 (< 5.0 CU) was notably lower than measured during flood conditions in October 2011 (6.9 CU) (Table 8).

As during 2011 Flood, TDS consistently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water in both the Fairford River and Lake St. Martin during 2011/2012 Operation (Figure 10 and Figure 23). Laboratory pH frequently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water in both the Fairford River and Lake St. Martin.

4.1.2.2 Dissolved Oxygen

During 2011/2012 Operation, the Fairford River and Lake St. Martin were well oxygenated, with concentrations ranging from 7.6-14.8 mg/L and 8.2-14.4 mg/L, respectively (Figure 12 and Figure 25). DO concentrations in the Fairford River were consistently above objectives for PAL, whereas DO in Lake St. Martin at LSM1 was occasionally below the MWQSOGs long-term objective/CCME lowest acceptable concentration for cold-water early-life (9.5 mg/L) when water temperatures were ≤5 °C (Table 9).

4.1.2.3 TSS

At the onset of 2011/2012 Operation in November 2011, TSS concentrations remained elevated in the Fairford River through to the beginning of December (Figure 7). TSS remained at background levels at this site until mid-May 2012 when it measured 8.0-10.1 mg/L. Elevated concentrations ranging from 20.8-24.0 mg/L were measured in early October 2012; this may have been related to heavy wind conditions that occurred in the watershed in mid-September. Similar to the Fairford River, TSS in Lake St. Martin was elevated at the onset of 2011/2012 Operation, but quickly declined and remained at background levels until mid-April 2012; an increase in TSS in the lake at this time likely coincided with spring melt conditions (Figure 20). TSS was somewhat elevated in mid-October (15.4 mg/L) and, again, may have been a residual effect of the heavy wind conditions that occurred in September 2012.

4.1.2.4 Nutrients

TN appears to have been somewhat lower in the Fairford River since 2009 and may have increased marginally during 2011 Flood conditions (Figure 13). In winter 2011, TN concentration in the river quickly declined and remained comparable to these earlier data for the remainder of the monitoring period. TN in Lake St. Martin during 2011/2012 Operation was, on average, lower (1.06 mg/L) than that measured during the 2011 Flood period (1.41 mg/L) (Table 8). The highest concentration of TN was observed in February 2012 and may be attributed to an increase in ammonia during this time (Figures 26 and 31).

4.1.2.5 Chlorophyll *a*

During 2011/2012 Operation, chlorophyll *a* concentrations in the Fairford River averaged 7.22 mg/L and ranged from 1.07-15.30 mg/L (Figure 17). In Lake St. Martin, chlorophyll *a* concentrations averaged 4.86 mg/L and ranged between 3.48 and 7.14 mg/L (Figure 29). For both waterbodies, chlorophyll *a* concentrations declined during winter 2012 and increased through the following open-water season.

4.1.2.6 Metals and Major Ions with MWQSOGs and/or CCME Guidelines

Similar to the 2011 Flood period, total aluminum occasionally exceeded the MWQSOGs/CCME guideline for PAL (0.1 mg/L) in the Fairford River during 2011/2012 Operation (Figure 18); total aluminum was consistently within this objective in Lake St. Martin during 2011/2012 Operation (Table 10). Chloride consistently exceeded the CCME long-term exposure guideline for PAL (120 mg/L) during the 2011/2012 Operation period in both the river and the lake (Table 10). Fluoride consistently exceeded the CCME interim PAL (0.12 mg/L) in the Fairford River and Lake St. Martin during 2011/2012 Operation (Table 10). As during 2011 Flood, selenium occasionally exceeded the MWQSOGs/CCME PAL (0.001 mg/L) in the Fairford River during 2011/2012 Operation, but concentrations were near the analytical detection limit and as previously mentioned when results are near the analytical detection limit there is low confidence that an exceedance has occurred. All other metals and major ions were within guidelines for PAL (Table 10) and drinking water (Table 11) in the Fairford River and Lake St. Martin during 2011/2012 Operation.

4.1.2.7 Petroleum Hydrocarbons

Petroleum hydrocarbons were not detected in Lake St. Martin at the onset of 2011/2012 Operation or during closure activities in November 2012 (Figure 30). Analytical detection limits for hydrocarbon parameters sampled were well below the MWQSOGs/CCME guidelines for PAL and drinking water, as applicable (Table 12). Petroleum hydrocarbons were not monitored at the Fairford River.

4.1.3 2011/2012 Closure

Complete water quality data for Upstream Areas during 2011/2012 Closure are limited to the Fairford River (FR1) and LSM1 in the middle of the north basin of Lake St. Martin; limited data are available for LSM2 at the inlet to Reach 1. During 2011/2012 Closure, water quality conditions of the Fairford River and Lake St. Martin remained generally consistent with those observed during 2011 Flood and 2011/2012 Operation (Table 8). The following sections highlight any changes observed.

4.1.3.1 Routine

During 2011/2012 Closure, conductivity and TDS in the Fairford River remained comparable to 2011 Flood and 2011/2012 Operation (Figure 9 and Figure 10); true colour remained comparable to Historic and 2011/2012 Operation conditions (Table 8). Conductivity, TDS, and true colour in Lake St. Martin remained similar to previously measured conditions (Table 4.1.1; Figure 22 and Figure 23).

As during previous periods, TDS consistently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water in the Fairford River during 2011/2012 Closure; the aesthetic objective was only frequently exceeded in Lake St. Martin (Figure 10 and Figure 23). True colour rarely exceeded the MWQSOGs/Health Canada objective for drinking water in the Fairford River. Laboratory pH continued to frequently exceed the MWQSOGs/Health Canada aesthetic objective for drinking water in both the Fairford River and Lake St. Martin.

4.1.3.2 Dissolved Oxygen

During 2011/2012 Closure, DO concentrations were somewhat lower in the Fairford River and Lake St. Martin compared to 2011/2012 Operation concentrations, with concentrations ranging from 4.4-12.5 mg/L and 6.9-11.5 mg/L, respectively (Figure 12 and Figure 25). DO concentrations in the Fairford River and Lake St. Martin were frequently below the MWQSOGs long-term objective/CCME lowest acceptable concentration for cold-water early-life (9.5 mg/L) when water temperatures were ≤ 5°C (Table 9). Additionally, DO concentrations in the Fairford River were occasionally below the MWQSOGs long-term objective/CCME lowest acceptable concentration for cool-water mature-life/warm-water other-life stages (5.5 mg/L) when water temperatures were ≤ 5°C.

4.1.3.3 TSS

TSS concentrations in the Fairford River during 2011/2012 Closure ranged from < 2 to 16 mg/L (Figure 7). With increasing discharge during the 2013 open-water season, there was a corresponding increase in TSS concentration measured. For Lake St. Martin, TSS concentrations during 2011/2012 Closure closely resembled those observed during 2011/2012 Operation, with the exception of a single high TSS measurement recorded at LSM2 (inlet to Reach 1) on 20 June 2014 (47 mg/L), just prior to the onset of 2014/2015 Operation (Figure 20).

4.1.3.4 Nutrients

TN measured in the Fairford River during 2011/2012 Closure (0.97 mg/L) was on average somewhat lower than during 2011/2012 Operation (1.05 mg/L) and 2011 Flood (1.15 mg/L) periods (Figure 13). Ammonia and nitrate/nitrate concentrations were both elevated during the winters of 2013 and 2014 (Figure 31 and Figure 32). TN in Lake St. Martin during 2011/2012 Closure was, on average, lower than measured previously (Table 8). Limited data from LSM2 indicated that TP exceeded the MWQSOGs narrative guideline for lakes (0.025 mg/L) on two occasions during 2011/2012 Closure, 14 May 2013 (0.043 mg/L) and 20 June 2014 (0.054 mg/L).

4.1.3.5 Chlorophyll *a*

During 2011/2012 Closure, chlorophyll *a* concentration in the Fairford River averaged 3.41 mg/L and ranged from 0.90-8.29 mg/L (Figure 17). In Lake St. Martin, chlorophyll *a* concentration averaged 4.10 mg/L and ranged between 0.50 and 6.86 mg/L (Figure 29). For both waterbodies, chlorophyll *a* was lowest in spring 2013 and 2014 and increased through the following open-water season.

4.1.3.6 Metals and Major Ions with MWQSOGs and/or CCME Guidelines

Similar to previous monitoring periods, total aluminum rarely exceeded the MWQSOGs/CCME guideline for PAL (0.1 mg/L) in the Fairford River during 2011/2012 Closure (Figure 18); total aluminum was consistently within this objective in Lake St. Martin during 2011/2012 Closure (Table 10). Again, chloride consistently exceeded the CCME long-term exposure guideline for PAL (120 mg/L) during the 2011/2012 Closure period in both the river and the lake (Table 10); additionally, chloride rarely exceeded the MWQSOGs/Health Canada aesthetic objective (≤ 250 mg/L) in the Fairford River during 2011/2012 Closure. Fluoride frequently exceeded the CCME interim PAL (0.12 mg/L) in the Fairford River and Lake

St. Martin during 2011/2012 Closure (Table 10). Silver occasionally exceeded the MWQSOGs/CCME PAL (0.0001 mg/L) in Lake St. Martin during 2011/2012 Closure, but concentration was near the analytical detection limit. All other metals and major ions were within guidelines for PAL (Table 10) and drinking water (Table 11) in the Fairford River and Lake St. Martin during 2011/2012 Closure.

4.1.3.7 Petroleum Hydrocarbons

During 2011/2012 Closure, petroleum hydrocarbons were only sampled prior to the onset of 2014/2015 Operation; they were not detected in Lake St. Martin at this time (Figure 30). Analytical detection limits for hydrocarbon parameters sampled were well below the MWQSOGs/CCME guidelines for PAL and drinking water, as applicable (Table 12). Petroleum hydrocarbons were not monitored at the Fairford River.

4.1.4 2014/2015 Operation

Complete water quality data for Upstream Areas during 2014/2015 Operation are limited to the Fairford River (FR1) and in the middle of the north basin of Lake St. Martin (LSM1); limited data are available for Lake St. Martin at the inlet to Reach 1 (LSM2). During 2014/2015 Operation, water quality conditions of the Fairford River and Lake St. Martin remained generally consistent with those observed during from 2011-2013 (Table 8). The following sections highlight any qualitative changes observed.

4.1.4.1 Routine

During 2014/2015 Operation, conductivity and TDS in both the Fairford River and Lake St. Martin were, on average, lower than those concentrations observed during 2011/2012 Operation and Closure (Table 8; Figures 9, 10, 22, and 23). However, it should be noted that this is likely due to the protracted sampling period for 2014 in comparison to previous years, which did not include spring and winter sampling dates where both of these parameters tend to be higher. True colour was, on average, higher in the river and lake during 2014/2015 Operation in comparison to other monitoring periods, but this again may be an artefact of the fewer number of samples collected during the 2014/2015 sampling program.

As during previous monitoring periods, TDS consistently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water in both the Fairford River and Lake St. Martin during 2014/2015 Operation (Figures 10 and 23). True colour did not exceed the MWQSOGs/Health Canada objective for drinking water in either the river or lake. Laboratory pH continued to frequently exceed the MWQSOGs/Heath Canada aesthetic objective for drinking water in both the Fairford River and Lake St. Martin.

4.1.4.2 Dissolved Oxygen

Similar to 2011/2012 Closure, DO concentrations in the Fairford River and Lake St. Martin were somewhat lower compared to 2011/2012 Operation with concentrations ranging from 5.7-12.0 mg/L and 6.5-11.9 mg/L, respectively (Figures 12 and 25). DO in the Fairford River was below the MWQSOGs long-term objective/CCME lowest acceptable concentration for cold-water early-life (9.5 mg/L) during the one sampling event when water temperatures were ≤ 5°C (Table 9). Additionally, DO in Lake St.

Martin was occasionally below the objective/lowest acceptable concentration for cold-water mature-life/other-life stages (6.5 mg/L) when water temperature was > 5°C.

4.1.4.3 TSS

TSS concentrations in the Fairford River during 2014/2015 Operation ranged from 7 mg/L to 23 mg/L (Figure 7). With increasing discharge during the 2014 open-water season, there was a corresponding increase in TSS concentrations. TSS in Lake St. Martin at LSM2 was elevated at the onset of 2014/2015 Operation but quickly declined and remained at background levels for the remainder of the sampling period (Figure 20).

4.1.4.4 Nutrients

TN concentrations in the Fairford River during 2014/2015 Operation (0.94 mg/L) were, on average, similar to those measured during 2011/2012 Closure (0.97 mg/L) (Figure 13). TN concentrations in Lake St. Martin were, on average, higher than those measured during 2011/2012 Closure (Table 8).

4.1.4.5 Chlorophyll *a*

During 2014/2015 Operation, chlorophyll *a* concentrations in the Fairford River averaged 5.90 mg/L and ranged from 3.62-7.22 mg/L (Figure 17). In Lake St. Martin, chlorophyll *a* averaged 6.31 mg/L and ranged between 5.89 mg/L and 6.72 mg/L (Figure 29). Although fewer samples were collected during 2014/2015 Operation, chlorophyll *a* concentrations still showed an increase through the open-water season in both waterbodies.

4.1.4.6 Metals and Major Ions with MWQSOGs and/or CCME Guidelines

In contrast to previous monitoring periods, aluminum was within the MWQSOGs/CCME guideline for PAL (0.1 mg/L) in the Fairford River during 2014/2015 Operation; previously aluminum was consistently within this objective in Lake St. Martin and remained so (Table 10). As for all previous monitoring periods, chloride consistently exceeded the CCME long-term exposure guideline for PAL (120 mg/L) during the 2014/2015 Operation period in both the river and the lake (Table 10). As during 2011/2012 Operation, fluoride consistently exceeded the CCME interim PAL (0.12 mg/L) in the Fairford River and Lake St. Martin during 2014/2015 Operation (Table 10). All other metals and major ions were within guidelines for PAL (Table 10) and drinking water (Table 11) in the Fairford River and Lake St. Martin during 2014/2015 Operation.

4.1.4.7 Petroleum Hydrocarbons

Petroleum hydrocarbons were not detected in Lake St. Martin at the onset of 2014/2015 Operation in July 2014 or during the Expanded Opening in November 2014 (Figure 30). Analytical detection limits for hydrocarbon parameters sampled were well below the MWQSOGs/CCME guidelines for PAL and drinking water, as applicable (Table 12). Petroleum hydrocarbons were not monitored at the Fairford River.

4.1.5 2014/2015 Closure

Water quality data for the Upstream Areas during the 2014/2015 Closure period are limited to the north basin of Lake St. Martin (LSM1). Measurement parameters included DO, TSS, and nutrients. During 2014/2015 Closure, water quality conditions in Lake St. Martin remained generally consistent with those observed during from 2011-2014 (Table 8). The following sections highlight any qualitative changes observed.

4.1.5.1 Dissolved Oxygen

At the onset of 2014/2015 Closure, DO concentrations in Lake St. Martin were somewhat lower compared to 2014/2015 Operation though concentrations returned to pre-Project levels by 14 September (Figure 25). DO was below the MWQSOGs long-term objective/CCME lowest acceptable concentration for cold-water mature-life/other-life stages (6.5 mg/L) during the one sampling event (August 13) when water temperatures were > 5°C (Table 9).

4.1.5.2 TSS

TSS concentrations in Lake St. Martin during 2014/2015 Closure were similar to those during 2014/2015 Operation and pre-Project phases (Figure 20). TSS in the lake ranged from 6.8 mg/L to 7.4 mg/L (Table 8).

4.1.5.3 Nutrients

TP concentrations in Lake St. Martin during 2014/2015 Closure ranged from 0.017 to 0.023 mg/L and were similar to those measured during 2014/2015 Operation and the pre-Project phases (Figure 27; Table 8). In contrast, mean, minimum, and maximum TN concentrations (1.02, 0.85, and 1.22 mg/L, respectively) were similar to those measured during 2014/2015 Operation but were slightly lower than those measured during the 2011 Flood (Figure 26; Table 8).

All nutrients that were analysed during 2014/2015 Closure were within MWQSOGs and CCME guidelines for PAL, including ammonia (varies with pH and temperature); nitrate (2.93 mg/L); and, nitrite (0.06 mg/L).

4.1.6 Summary

Sites located in Lake St. Martin upstream of the Project exhibited natural variability in water quality parameters over the course of the monitoring program. Although conditions fluctuated seasonally and between years, there was no linkage between operation of Reach 1 and water quality in Lake St. Martin, with the following exception:

- During dredging in October 2011, total suspended solids (TSS) in the vicinity of the Reach 1 inlet exceeded the 30 day Manitoba water quality objectives / CCME long-term guideline for PAL (average of 5 mg/L above background), and periodically exceeded the 1-day Manitoba PAL objective/CCME short-term PAL guideline (25 mg/L above background).

Table 8. Summary statistics for key water quality parameters measured in the Fairford River and Lake St. Martin, 2011-2015.

		Ammonia (mg N/L)							Nitrate/Nitrite (mg N/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	0.143	0.106	0.005	0.710	0.0263	32	100	0.062	<0.010	<0.0060	1.56	0.0484	32	47
	2011 Flood	0.033	0.019	<0.010	0.206	0.0126	16	81	<0.05	<0.05	<0.0051	<0.05	0.0014	16	0
	2011/2012 Operation	<0.050	<0.050	<0.050	0.087	0.0060	15	100	<0.05	<0.05	<0.0051	0.073	-	14	14
	2011/2012 Closure	0.098	0.087	<0.010	0.209	0.0211	17	76	<0.05	<0.05	<0.0051	0.121	0.0096	15	60
	2014/2015 Operation	0.010	<0.010	<0.010	0.033	0.0035	8	25	<0.0051	<0.0051	<0.0051	<0.0051	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.050	<0.050	<0.050	0.052	-	4	25	<0.071	<0.071	<0.071	<0.071	-	4	25
	2011/2012 Operation	0.070	0.067	0.013	0.211	0.0130	19	100	<0.071	<0.071	<0.0051	<0.071	-	19	5
	2011/2012 Closure	0.068	<0.010	<0.010	0.247	0.0404	7	43	0.015	<0.0051	<0.0051	0.055	0.0082	7	29
	2014/2015 Operation	0.029	0.012	<0.010	0.108	0.0199	5	60	<0.071	0.019	<0.0051	0.089	0.0160	5	40
	2014/2015 Closure	<0.010	<0.010	<0.010	<0.010	-	3	0	<0.070	<0.070	<0.070	<0.070	-	3	0
LSM2	2011 Flood	0.044	0.044	0.044	0.044	-	1	100	0.009	0.009	0.009	0.009	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.028	0.010	<0.010	0.070	0.0209	3	67	<0.071	<0.071	<0.071	<0.071	-	3	0
	2014/2015 Operation	0.016	<0.010	<0.010	0.062	0.0075	9	22	<0.071	<0.071	<0.071	<0.071	-	9	11
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

		Nitrate (mg N/L)							Nitrite (mg N/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	1	0	-	-	-	-	-	1	0
	2011/2012 Operation	<0.0050	<0.0050	<0.0050	0.007	-	4	25	0.001	0.001	0.001	0.002	-	4	25
	2011/2012 Closure	0.023	<0.0050	<0.0050	0.086	0.0119	7	43	0.001	<0.0010	<0.0010	0.004	0.0006	7	29
	2014/2015 Operation	<0.0050	<0.0050	<0.0050	<0.0050	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	4	25	<0.050	<0.050	<0.050	<0.050	-	4	25
	2011/2012 Operation	<0.050	<0.050	<0.0050	<0.050	-	19	5	<0.050	<0.050	<0.0010	<0.050	0.0023	19	11
	2011/2012 Closure	0.014	<0.0050	<0.0050	0.052	0.0078	7	29	0.001	<0.0010	<0.0010	0.003	0.0003	7	29
	2014/2015 Operation	0.024	0.010	<0.0050	0.088	0.0161	5	40	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0
	2014/2015 Closure	<0.020	<0.020	<0.020	<0.020	-	3	0	<0.010	<0.010	<0.010	<0.010	-	3	0
LSM2	2011 Flood	0.009	0.009	0.009	0.009	-	1	100	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	3	0	<0.0050	<0.0050	<0.0050	<0.0050	-	3	0
	2014/2015 Operation	<0.050	<0.050	<0.050	0.065	0.0052	9	22	<0.050	<0.050	<0.050	<0.050	-	9	11
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Dissolved Inorganic Nitrogen (mg/L)							Total Kjeldahl Nitrogen (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	0.205	0.125	0.011	1.68	0.055	32	100	1.43	1.40	0.68	2.30	0.085	32	100
	2011 Flood	<0.050	<0.050	<0.050	0.231	0.014	16	25	1.12	1.12	0.82	1.50	0.045	16	100
	2011/2012 Operation	0.051	<0.050	<0.050	0.112	0.009	14	71	1.03	1.02	0.85	1.36	0.038	15	100
	2011/2012 Closure	0.129	0.117	<0.010	0.298	0.028	16	75	0.93	0.96	0.61	1.12	0.029	17	100
	2014/2015 Operation	0.015	0.010	<0.010	0.038	0.005	8	63	0.89	0.90	0.77	0.99	0.031	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.070	<0.070	<0.070	<0.070	-	4	25	1.39	1.12	1.02	2.29	0.302	4	100
	2011/2012 Operation	0.095	0.103	<0.070	0.246	0.015	19	79	1.03	1.04	0.36	1.74	0.056	19	100
	2011/2012 Closure	0.082	<0.010	<0.010	0.284	0.049	7	43	0.84	0.86	0.61	1.04	0.058	7	100
	2014/2015 Operation	<0.071	<0.010	<0.010	<0.071	-	4	25	0.96	0.93	0.90	1.06	0.030	5	100
	2014/2015 Closure	<0.010	<0.010	<0.010	<0.010	-	3	0	1.02	1.00	0.85	1.22	0.107	3	100
LSM2	2011 Flood	0.053	0.053	0.053	0.053	-	1	100	1.11	1.11	1.11	1.11	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.070	<0.070	<0.070	0.106	-	3	33	0.80	0.85	0.68	0.86	0.058	3	100
	2014/2015 Operation	<0.070	<0.070	<0.070	0.098	-	9	33	0.90	0.90	0.81	0.98	0.019	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Total Nitrogen (mg/L)							Dissolved Phosphorus (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	1.49	1.47	0.68	2.96	0.098	32	100	0.008	0.008	<0.0010	0.017	0.0007	32	97
	2011 Flood	1.15	1.15	0.85	1.53	0.045	16	100	0.012	0.013	<0.010	0.017	0.0010	16	88
	2011/2012 Operation	1.05	1.03	0.85	1.39	0.043	14	100	0.010	0.011	<0.010	0.022	0.0016	15	93
	2011/2012 Closure	0.97	1.02	0.64	1.21	0.040	15	100	0.006	0.005	0.002	0.015	0.0008	17	100
	2014/2015 Operation	0.94	0.96	0.87	0.98	0.034	3	100	0.005	0.006	0.005	0.006	0.0001	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	1.42	1.14	1.06	2.33	0.303	4	100	<0.010	<0.010	<0.0020	0.015	0.0032	4	50
	2011/2012 Operation	1.06	1.08	0.40	1.77	0.057	19	100	<0.010	<0.010	<0.010	0.014	0.0009	18	61
	2011/2012 Closure	0.85	0.87	0.61	1.08	0.063	7	100	0.007	0.007	0.003	0.011	0.0011	7	100
	2014/2015 Operation	0.98	1.00	0.91	1.06	0.029	5	100	<0.010	<0.010	<0.010	<0.010	0.0003	5	60
	2014/2015 Closure	1.02	1.00	0.85	1.22	0.107	3	100	<0.010	<0.010	<0.010	0.012	-	3	33
LSM2	2011 Flood	1.12	1.12	1.12	1.12	-	1	100	<0.010	<0.010	<0.010	<0.010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.83	0.89	0.72	0.90	0.058	3	100	<0.010	0.010	<0.010	0.013	0.0023	3	67
	2014/2015 Operation	0.94	0.94	0.85	1.01	0.018	9	100	<0.010	<0.010	<0.010	0.011	-	9	11
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Total Particulate Phosphorus (mg/L)							Total Phosphorus (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	0.013	0.010	<0.0010	0.037	0.0017	32	97	0.020	0.019	0.002	0.045	0.0017	32	100
	2011 Flood	0.012	<0.010	<0.010	0.026	0.0021	16	50	0.025	0.024	0.015	0.038	0.0013	16	100
	2011/2012 Operation	<0.010	<0.010	<0.010	0.023	0.0016	15	47	0.020	0.019	0.012	0.029	0.0016	15	100
	2011/2012 Closure	<0.010	<0.010	<0.0010	0.017	0.0011	17	88	0.015	0.013	0.008	0.021	0.0011	17	100
	2014/2015 Operation	0.014	0.015	0.012	0.017	0.0006	8	100	0.020	0.020	0.018	0.022	0.0005	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.010	<0.010	<0.010	0.016	0.0027	4	50	0.020	0.021	0.013	0.024	0.0024	4	100
	2011/2012 Operation	0.010	0.011	<0.010	0.018	0.0012	18	56	0.019	0.019	0.011	0.027	0.0011	19	100
	2011/2012 Closure	<0.010	<0.010	<0.010	0.015	0.0020	7	86	0.014	0.013	0.010	0.021	0.0016	7	100
	2014/2015 Operation	0.011	0.012	0.006	0.014	0.0014	5	100	0.017	0.017	0.012	0.020	0.0014	5	100
	2014/2015 Closure	0.012	0.012	0.011	0.013	0.0006	3	100	0.019	0.018	0.017	0.023	0.0019	3	100
LSM2	2011 Flood	0.011	0.011	0.011	0.011	-	1	100	0.016	0.016	0.016	0.016	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.029	0.033	0.012	0.041	0.0086	3	100	0.038	0.043	0.017	0.054	0.0110	3	100
	2014/2015 Operation	0.012	0.013	<0.010	0.020	0.0016	9	78	0.018	0.018	0.011	0.025	0.0012	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

		Dissolved Fraction, Phosphorus (%)							TN:TP Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	43	43	5	98	3.9	32	100	214	162	62	1002	32.0	32	100
	2011 Flood	49	52	13	74	5.1	16	100	103	98	70	144	5.4	16	100
	2011/2012 Operation	54	63	13	83	6.5	15	100	127	127	95	176	7.8	14	100
	2011/2012 Closure	43	38	17	98	5.2	17	100	151	120	0	302	19.9	16	100
	2014/2015 Operation	28	27	24	34	1.3	8	100	41	0	0	113	20.1	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	38	40	8	63	13.2	4	100	161	158	111	215	26.3	4	100
	2011/2012 Operation	47	43	17	100	5.7	18	100	132	125	52	196	8.6	19	100
	2011/2012 Closure	51	60	17	84	9.2	7	100	146	117	71	238	23.2	7	100
	2014/2015 Operation	39	36	30	49	3.6	5	100	134	116	107	191	15.8	5	100
	2014/2015 Closure	63	42	38	109	23.0	3	100	117	117	104	130	7.4	3	100
LSM2	2011 Flood	31	31	31	31	-	1	100	155	155	155	155	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	26	24	23	29	1.9	3	100	63	37	37	115	26.2	3	100
	2014/2015 Operation	32	28	20	55	3.7	9	100	117	113	87	178	8.9	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

		DIN:DP Molar Ratio							DIN:TP Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	115	45	2	819	35.8	32	100	36	17	1	310	11.9	32	100
	2011 Flood	9	5	3	34	2.2	16	100	4	2	1	24	1.5	16	100
	2011/2012 Operation	17	9	3	58	5.1	14	100	7	5	2	21	1.5	14	100
	2011/2012 Closure	63	21	1	239	18.0	16	100	25	15	1	72	6.1	16	100
	2014/2015 Operation	6	4	2	14	1.8	8	100	2	1	1	5	0.6	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	43	11	5	146	34.3	4	100	5	4	3	11	1.9	4	100
	2011/2012 Operation	29	18	5	109	5.8	18	100	12	10	2	33	2.2	19	100
	2011/2012 Closure	35	4	1	174	24.6	7	100	17	1	1	63	10.4	7	100
	2014/2015 Operation	21	15	2	68	12.1	5	100	9	4	1	33	6.2	5	100
	2014/2015 Closure	2	2	1	2	0.4	3	100	1	1	0	1	0.1	3	100
LSM2	2011 Flood	23	23	23	23	-	1	100	7	7	7	7	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	15	16	6	23	5.0	3	100	4	5	1	5	1.2	3	100
	2014/2015 Operation	17	16	6	37	2.8	9	100	5	5	2	11	1.0	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

		Total Inorganic Carbon (mg/L)							Total Organic Carbon (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	44.2	44.0	38.0	52.0	0.77	28	100	15.6	15.4	8.1	23.0	0.62	28	100
	2011 Flood	44.5	43.9	42.7	49.1	0.43	16	100	13.7	13.9	11.8	15.3	0.23	16	100
	2011/2012 Operation	46.5	45.9	40.9	56.7	1.17	15	100	13.5	13.6	11.4	14.8	0.23	15	100
	2011/2012 Closure	47.2	47.8	37.3	58.8	1.71	17	100	13.9	14.3	11.3	16.2	0.40	17	100
	2014/2015 Operation	39.1	40.1	32.3	41.0	0.99	8	100	12.9	13.5	9.1	14.5	0.63	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	45.0	45.0	45.0	45.0	-	1	100	13.5	13.5	13.5	13.5	-	1	100
	2011/2012 Operation	45.9	45.2	42.0	51.1	2.04	4	100	14.1	14.2	12.7	15.4	0.56	4	100
	2011/2012 Closure	42.6	40.6	33.8	54.2	2.92	7	100	12.8	12.7	9.1	15.2	0.86	7	100
	2014/2015 Operation	43.3	42.0	36.4	51.4	4.38	3	100	12.3	12.4	9.8	14.7	1.40	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	30.2	30.2	30.2	30.2	-	1	100	14.8	14.8	14.8	14.8	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

		Dissolved Organic Carbon (mg/L)							TOC:ON Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	17	14	6	31	1.4	28	100
	2011 Flood	13.4	13.4	13.4	13.4	-	1	100	15	14	11	20	0.7	16	100
	2011/2012 Operation	12.1	12.1	11.5	12.5	0.27	4	100	16	16	13	20	0.6	15	100
	2011/2012 Closure	13.0	12.8	11.3	16.3	0.75	7	100	20	20	15	23	0.6	17	100
	2014/2015 Operation	12.0	13.2	8.5	14.3	1.78	3	100	17	18	12	21	0.9	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	12.0	12.0	12.0	12.0	-	1	100	14	14	14	14	-	1	100
	2011/2012 Operation	12.5	12.2	11.7	14.1	0.55	4	100	18	18	16	19	0.7	4	100
	2011/2012 Closure	12.5	12.7	9.0	15.4	0.85	7	100	19	20	16	23	1.0	7	100
	2014/2015 Operation	12.2	12.5	9.4	14.8	1.56	3	100	16	18	11	19	2.3	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	13.7	13.7	13.7	13.7	-	1	100	16	16	16	16	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

		TOC:TN Molar Ratio							Laboratory pH						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	14	14	5	25	1.1	28	100	8.27	8.36	7.59	8.67	0.045	31	100
	2011 Flood	14	14	10	19	0.6	16	100	8.52	8.57	8.19	8.63	0.028	16	100
	2011/2012 Operation	15	15	12	18	0.5	14	100	8.51	8.51	8.43	8.63	0.015	15	100
	2011/2012 Closure	17	17	15	21	0.4	15	100	8.30	8.28	7.86	8.61	0.058	17	100
	2014/2015 Operation	15	16	12	17	1.6	3	100	8.51	8.50	8.39	8.61	0.024	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	14	14	14	14	-	1	100	8.47	8.47	8.47	8.47	-	1	100
	2011/2012 Operation	17	17	16	18	0.5	4	100	8.50	8.53	8.36	8.57	0.048	4	100
	2011/2012 Closure	18	17	15	20	0.7	7	100	8.41	8.51	8.03	8.62	0.081	7	100
	2014/2015 Operation	15	14	11	19	2.1	3	100	8.58	8.58	8.47	8.68	0.061	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	15	15	15	15	-	1	100	8.46	8.46	8.46	8.46	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Laboratory Conductivity (µmhos/cm)							Total Dissolved Solids (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	1557	1530	1280	2000	29.8	32	100	906	896	742	1480	26.6	29	100
	2011 Flood	1092	1060	964	1440	29.4	16	100	687	673	626	860	14.4	16	100
	2011/2012 Operation	1096	1090	1010	1240	15.7	15	100	672	661	604	802	13.6	15	100
	2011/2012 Closure	1157	1150	931	1390	36.9	17	100	656	615	546	810	27.4	13	100
	2014/2015 Operation	921	920	898	948	6.5	8	100	529	526	508	548	5.1	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	1080	1080	1080	1080	-	1	100	652	652	652	652	-	1	100
	2011/2012 Operation	1082	1095	1027	1110	18.8	4	100	681	680	622	744	25.1	4	100
	2011/2012 Closure	1063	1030	857	1310	60.3	7	100	622	598	488	772	38.6	7	100
	2014/2015 Operation	1008	953	920	1150	71.9	3	100	574	554	512	655	42.4	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	1060	1060	1060	1060	-	1	100	704	704	704	704	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Total Suspended Solids (mg/L)							Laboratory Turbidity (NTU)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	10	7	<5.0	32	1.6	31	90	6.6	5.4	1.0	18.3	1.09	27	100
	2011 Flood	18	15	<5.0	44	3.0	16	94	12.3	8.7	0.2	35.0	2.42	16	100
	2011/2012 Operation	13	12	<5.0	28	2.5	15	67	9.6	6.7	1.1	33.0	2.51	15	100
	2011/2012 Closure	6	5	<2.0	16	1.1	17	65	3.9	2.0	0.7	11.5	0.97	13	100
	2014/2015 Operation	15	15	7	23	1.7	8	100	9.4	9.1	5.6	14.7	1.44	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	7	6	4	10	1.3	4	100	3.8	3.8	3.8	3.8	-	1	100
	2011/2012 Operation	8	7	<2.0	19	1.1	19	84	6.1	3.7	1.2	33.6	2.23	14	100
	2011/2012 Closure	6	6	<2.0	10	1.3	7	86	2.5	3.0	0.6	4.3	0.58	7	100
	2014/2015 Operation	6	5	<2.0	13	1.7	6	83	3.8	2.9	1.5	8.5	1.00	6	100
	2014/2015 Closure	7	7	7	7	0.2	3	100	5.8	6.0	5.5	6.0	0.19	3	100
LSM2	2011 Flood	5.8	5.8	5.8	5.8	-	1	100	3.3	3.3	3.3	3.3	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	20	10	4	47	13.6	3	100	12.3	5.0	1.8	30.0	8.91	3	100
	2014/2015 Operation	8	6	5	16	0.9	12	100	4.1	3.4	2.5	7.9	0.46	12	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	True Colour (CU)							Chlorophyll *a* (µg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	6.0	<5.0	<5.0	20.0	0.94	26	46	5.84	4.49	<0.50	19.5	1.13	16	94
	2011 Flood	10.4	8.9	5.7	30.5	1.47	16	100	8.61	8.02	1.53	14.5	0.823	16	100
	2011/2012 Operation	7.4	7.5	<5.0	10.4	0.54	15	93	7.22	6.42	1.07	15.3	1.16	15	100
	2011/2012 Closure	7.7	7.9	<5.0	20.8	1.33	13	77	3.41	2.67	0.90	8.29	0.510	17	100
	2014/2015 Operation	9.0	8.6	6.3	13.3	0.86	7	100	5.90	6.20	3.62	7.22	0.413	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	6.9	6.9	6.9	6.9	-	1	100	6.85	6.85	6.85	6.85	-	1	100
	2011/2012 Operation	6.2	6.2	<5.0	9.9	1.51	4	75	4.86	4.41	3.48	7.14	0.792	4	100
	2011/2012 Closure	6.5	5.7	<5.0	10.7	0.98	7	86	4.10	4.67	0.50	6.86	0.956	7	100
	2014/2015 Operation	8.8	9.0	7.9	9.5	0.49	3	100	4.46	5.89	0.76	6.72	1.864	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	8.4	8.4	8.4	8.4	-	1	100	6.98	6.98	6.98	6.98	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Phaeophytin a (µg/L)							*In Situ* Dissolved Oxygen (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	0.73	<0.60	<0.50	4.30	0.268	16	25	10.0	9.7	7.3	13.2	0.33	26	100
	2011 Flood	1.57	1.49	<0.60	3.53	0.248	16	81	9.4	9.6	7.4	11.5	0.33	16	100
	2011/2012 Operation	1.35	0.94	<0.60	3.19	0.244	15	87	11.1	11.5	7.6	14.8	0.55	14	100
	2011/2012 Closure	0.61	0.51	<0.60	1.44	0.089	17	59	9.6	10.0	4.4	12.5	0.65	13	100
	2014/2015 Operation	0.95	1.01	<0.60	1.36	0.129	8	88	9.3	9.7	5.7	12.0	0.85	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	1.83	1.83	1.83	1.83	-	1	100	11.3	12.0	9.9	12.5	0.56	5	100
	2011/2012 Operation	1.10	0.92	0.64	1.94	0.286	4	100	11.7	11.6	8.2	14.4	0.48	15	93
	2011/2012 Closure	0.81	0.69	0.56	1.30	0.106	7	100	9.9	9.5	8.9	11.5	0.38	7	100
	2014/2015 Operation	0.97	1.08	0.44	1.39	0.278	3	100	9.9	9.8	7.6	11.9	0.63	6	100
	2014/2015 Closure	-	-	-	-	-	0	-	7.7	6.7	6.1	10.3	1.32	3	100
LSM2	2011 Flood	1.92	1.92	1.92	1.92	-	1	100	13.1	13.1	13.1	13.1	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	8.6	8.9	6.9	9.9	0.89	3	100
	2014/2015 Operation	-	-	-	-	-	0	-	9.1	9.1	6.5	11.7	0.57	10	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Chloride, Dissolved (mg/L)							Fluoride, Dissolved (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	312	307	243	383	8.1	27	100	-	-	-	-	-	0	-
	2011 Flood	215	203	195	305	7.3	16	100	0.154	0.154	0.154	0.154	-	1	100
	2011/2012 Operation	193	197	174	210	3.3	15	100	0.148	0.149	0.130	0.165	0.0075	4	100
	2011/2012 Closure	199	186	137	264	10.2	13	100	0.135	0.130	0.111	0.163	0.0074	7	100
	2014/2015 Operation	142	142	133	151	2.2	7	100	0.131	0.129	0.128	0.135	0.0022	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	205	205	205	205	-	1	100	0.159	0.159	0.159	0.159	-	1	100
	2011/2012 Operation	193	188	178	220	9.8	4	100	0.151	0.150	0.133	0.170	0.0078	4	100
	2011/2012 Closure	187	183	139	242	14.3	7	100	0.135	0.134	0.110	0.160	0.0081	7	100
	2014/2015 Operation	155	151	145	169	7.1	3	100	0.142	0.133	0.127	0.165	0.0117	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	209	209	209	209	-	1	100	0.160	0.160	0.160	0.160	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Sulphate, Dissolved (mg/L)							Hardness, as CaCO3 (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	98.4	97.8	71.8	134	3.4	25	100	278	276	236	321	4.7	25	100
	2011 Flood	89.8	90.0	77.6	111	1.9	16	100	282	275	239	335	7.0	16	100
	2011/2012 Operation	98.5	94.5	84.5	133	3.5	15	100	299	287	251	348	10.4	11	100
	2011/2012 Closure	80.0	79.6	67.1	96.9	3.3	13	100	255	245	203	333	12.6	10	100
	2014/2015 Operation	73.2	72.6	64.1	82.4	2.2	7	100	237	236	220	261	5.2	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	93.9	93.9	93.9	93.9	-	1	100	341	341	341	341	-	1	100
	2011/2012 Operation	95.3	97.6	83.1	103	4.6	4	100	287	293	268	296	6.5	4	100
	2011/2012 Closure	77.2	72.9	63.4	92.5	4.1	7	100	256	254	224	292	10.4	7	100
	2014/2015 Operation	84.3	76.5	74.3	102.0	8.9	3	100	258	239	237	298	20.0	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	91.9	91.9	91.9	91.9	-	1	100	328	328	328	328	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Aluminum, Dissolved (mg/L)							Aluminum, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	0.0074	0.003	<0.0010	0.033	0.00171	25	84	0.054	0.0480	0.009	0.250	0.00891	27	100
	2011 Flood	0.0035	0.0016	<0.0020	0.0217	0.00128	16	50	0.064	0.052	0.011	0.148	0.0105	16	100
	2011/2012 Operation	0.0037	<0.0020	<0.0020	0.0218	0.00139	15	47	0.0570	0.0279	0.0094	0.223	0.0159	15	100
	2011/2012 Closure	0.0024	<0.0020	<0.0020	0.0131	0.00101	13	15	0.0312	0.0217	0.0065	0.102	0.00700	13	100
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	0.0020	-	7	14	0.0623	0.0628	0.0407	0.0886	0.00661	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	0.039	0.039	0.039	0.039	-	1	100
	2011/2012 Operation	0.0055	0.0029	<0.0020	0.0153	0.00338	4	50	0.0335	0.0229	0.0120	0.0763	0.0145	4	100
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	0.0035	-	7	14	0.0199	0.0202	0.0066	0.0311	0.00369	7	100
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	0.0276	0.0249	0.0165	0.0414	0.00731	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	0.0041	0.0041	0.0041	0.0041	-	1	100	0.0346	0.0346	0.0346	0.0346	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Antimony, Dissolved (mg/L)							Antimony, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	0.00042	0.0005	<0.0002	0.0006	0.000037	27	78
	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	16	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	25	<0.0002	<0.0002	<0.0002	0.00021	0.000008	15	13
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	<0.0002	-	13	0
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	0.00021	-	3	33	<0.0002	0.00022	<0.0002	0.00030	0.000032	7	57
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	0.00026	0.000040	4	25	<0.0002	<0.0002	<0.0002	<0.0002	-	4	0
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	<0.0002	-	7	0
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	3	0	<0.0002	<0.0002	<0.0002	0.00022	-	3	67
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Arsenic, Dissolved (mg/L)							Arsenic, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	0.00224	0.00210	0.00140	0.00406	0.000115	27	100
	2011 Flood	0.00283	0.00283	0.00283	0.00283	-	1	100	0.00289	0.00284	0.00236	0.00355	0.000071	16	100
	2011/2012 Operation	0.00215	0.00222	0.00166	0.00251	0.000207	4	100	0.00251	0.00249	0.00169	0.00326	0.000114	15	100
	2011/2012 Closure	0.00187	0.00186	0.00157	0.00233	0.000108	7	100	0.00197	0.00201	0.00158	0.00225	0.000062	13	100
	2014/2015 Operation	0.00174	0.00178	0.00167	0.00178	0.000037	3	100	0.00184	0.00187	0.00153	0.00214	0.000071	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	0.00296	0.00296	0.00296	0.00296	-	1	100	0.00275	0.00275	0.00275	0.00275	-	1	100
	2011/2012 Operation	0.00257	0.00260	0.00227	0.00281	0.000142	4	100	0.00239	0.00234	0.00214	0.00275	0.000145	4	100
	2011/2012 Closure	0.00185	0.00192	0.00138	0.00219	0.000117	7	100	0.00184	0.00198	0.00145	0.00216	0.000108	7	100
	2014/2015 Operation	0.00193	0.00177	0.00167	0.00234	0.000208	3	100	0.00194	0.00180	0.00170	0.00233	0.000195	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	0.00269	0.00269	0.00269	0.00269	-	1	100	0.00260	0.00260	0.00260	0.00260	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Barium, Dissolved (mg/L)							Barium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	0.0525	0.0525	0.0440	0.0650	0.00106	27	100
	2011 Flood	0.0491	0.0491	0.0491	0.0491	-	1	100	0.0506	0.0502	0.0422	0.0592	0.00105	16	100
	2011/2012 Operation	0.0469	0.0464	0.0435	0.0515	0.00200	4	100	0.0519	0.0503	0.0460	0.0659	0.00135	15	100
	2011/2012 Closure	0.0428	0.0394	0.0375	0.0542	0.00241	7	100	0.0461	0.0446	0.0361	0.0567	0.00167	13	100
	2014/2015 Operation	0.0409	0.0401	0.0395	0.0432	0.00115	3	100	0.0436	0.0422	0.0395	0.0539	0.00188	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	0.0498	0.0498	0.0498	0.0498	-	1	100	0.0535	0.0535	0.0535	0.0535	-	1	100
	2011/2012 Operation	0.0472	0.0475	0.0446	0.0492	0.00108	4	100	0.0513	0.0516	0.0460	0.0560	0.00211	4	100
	2011/2012 Closure	0.0416	0.0412	0.0344	0.0495	0.00197	7	100	0.0440	0.0424	0.0342	0.0528	0.00254	7	100
	2014/2015 Operation	0.0449	0.0412	0.0402	0.0532	0.00418	3	100	0.0455	0.0405	0.0402	0.0557	0.00511	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	0.0482	0.0482	0.0482	0.0482	-	1	100	0.0508	0.0508	0.0508	0.0508	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Boron, Dissolved (mg/L)							Boron, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	0.129	0.130	0.100	0.190	0.0036	27	100
	2011 Flood	0.115	0.115	0.115	0.115	-	1	100	0.101	0.103	0.084	0.115	0.0021	16	100
	2011/2012 Operation	0.089	0.091	0.067	0.108	0.0088	4	100	0.107	0.102	0.086	0.155	0.0049	15	100
	2011/2012 Closure	0.097	0.094	0.084	0.124	0.0051	7	100	0.094	0.091	0.074	0.111	0.0036	13	100
	2014/2015 Operation	0.093	0.098	0.082	0.100	0.0057	3	100	0.089	0.091	0.075	0.101	0.0032	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	0.119	0.119	0.119	0.119	-	1	100	0.106	0.106	0.106	0.106	-	1	100
	2011/2012 Operation	0.102	0.101	0.088	0.119	0.0073	4	100	0.104	0.099	0.081	0.135	0.0115	4	100
	2011/2012 Closure	0.090	0.087	0.071	0.113	0.0048	7	100	0.091	0.094	0.068	0.110	0.0056	7	100
	2014/2015 Operation	0.096	0.097	0.093	0.098	0.0015	3	100	0.100	0.098	0.093	0.108	0.0044	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	0.089	0.089	0.089	0.089	-	1	100	0.096	0.096	0.096	0.096	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Cadmium, Dissolved (mg/L)							Cadmium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	<0.000040	<0.000040	<0.000010	0.000040	-	27	4
	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	0.000020	0.0000010	16	25
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	0.000023	-	4	25	0.000014	0.000010	<0.000010	0.000089	0.0000055	15	60
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	0.000026	-	7	14	<0.000010	<0.000010	<0.000010	0.000017	-	13	8
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0	<0.000010	<0.000010	<0.000010	<0.000010	-	7	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	0.000049	0.000049	0.000049	0.000049	-	1	100
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	0.000017	-	4	25	<0.000010	<0.000010	<0.000010	0.000011	0.0000016	4	50
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	<0.000010	-	7	0	<0.000010	<0.000010	<0.000010	<0.000010	-	7	0
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	0.000016	0.000016	0.000016	0.000016	-	1	100	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Calcium, Dissolved (mg/L)							Calcium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	44.0	43.6	36.3	54.3	0.88	27	100
	2011 Flood	44.2	44.2	44.2	44.2	-	1	100	49.4	48.2	42.4	72.4	1.77	16	100
	2011/2012 Operation	43.7	43.7	38.1	49.4	3.05	4	100	49.3	48.5	42.8	55.6	0.94	15	100
	2011/2012 Closure	45.7	42.8	39.0	54.4	2.56	7	100	47.4	45.3	38.3	62.5	1.81	13	100
	2014/2015 Operation	41.0	41.9	38.8	42.2	1.09	3	100	43.1	42.6	40.1	45.9	0.75	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	44.7	44.7	44.7	44.7	-	1	100	54.8	54.8	54.8	54.8	-	1	100
	2011/2012 Operation	46.7	47.2	40.8	51.8	2.35	4	100	49.8	49.5	47.8	52.5	1.11	4	100
	2011/2012 Closure	43.4	43.2	33.7	52.5	2.28	7	100	46.4	45.6	40.7	53.6	1.94	7	100
	2014/2015 Operation	46.4	42.5	41.8	54.8	4.22	3	100	47.0	45.4	42.5	53.1	3.16	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	46.0	46.0	46.0	46.0	-	1	100	53.7	53.7	53.7	53.7	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Chromium, Dissolved (mg/L)							Chromium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	<0.0010	<0.0010	<0.0002	<0.0010	0.00003	27	63
	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	16	0
	2011/2012 Operation	0.0010	<0.0020	<0.0020	0.0011	-	4	25	<0.0010	<0.0010	<0.0010	<0.0010	-	15	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	13	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	0.0022	-	4	25	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Copper, Dissolved (mg/L)							Copper, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	0.00102	<0.0010	<0.0010	0.00390	0.000130	27	81
	2011 Flood	0.00063	0.00063	0.00063	0.00063	-	1	100	0.00074	0.00073	0.00057	0.00091	0.000024	16	100
	2011/2012 Operation	0.00060	0.00058	0.00037	0.00087	0.000119	4	100	0.00072	0.00065	0.00058	0.00101	0.000037	15	100
	2011/2012 Closure	0.00052	0.00048	<0.00020	0.00114	0.000118	7	86	0.00076	0.00064	0.00046	0.00127	0.000073	13	100
	2014/2015 Operation	0.00045	0.00042	0.00039	0.00055	0.000049	3	100	0.00089	0.00057	0.00038	0.00313	0.000375	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	0.00055	0.00055	0.00055	0.00055	-	1	100	0.00050	0.00050	0.00050	0.00050	-	1	100
	2011/2012 Operation	0.00047	0.00046	0.00036	0.00061	0.000052	4	100	0.00073	0.00073	0.00054	0.00093	0.000086	4	100
	2011/2012 Closure	0.00043	0.00044	<0.00020	0.00063	0.000070	7	86	0.00080	0.00061	0.00041	0.00202	0.000213	7	100
	2014/2015 Operation	0.00039	0.00034	0.00027	0.00057	0.000091	3	100	0.00056	0.00042	0.00042	0.00083	0.000137	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	0.00048	0.00048	0.00048	0.00048	-	1	100	0.00051	0.00051	0.00051	0.00051	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Iron, Dissolved (mg/L)							Iron, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	0.031	0.031	0.031	0.031	-	1	100	<0.10	<0.10	<0.010	0.260	0.0106	27	89
	2011 Flood	0.042	0.038	<0.010	0.092	0.0083	11	91	<0.10	<0.10	<0.10	0.220	0.0154	16	38
	2011/2012 Operation	0.033	0.018	<0.010	0.148	0.0119	12	75	0.086	<0.010	<0.010	0.220	0.0181	14	50
	2011/2012 Closure	0.017	<0.010	<0.010	0.080	0.0069	12	42	0.026	0.025	<0.010	0.041	0.0046	8	88
	2014/2015 Operation	0.010	<0.010	<0.010	0.020	-	3	33	0.053	0.045	0.036	0.092	0.0074	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	0.040	0.040	0.040	0.040	-	1	100
	2011/2012 Operation	<0.010	<0.010	<0.010	<0.010	-	4	0	0.027	0.021	0.010	0.056	0.0100	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	<0.010	-	7	0	0.019	0.023	<0.010	0.029	0.0038	7	71
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	3	0	0.024	0.023	0.020	0.028	0.0023	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	<0.010	<0.010	<0.010	<0.010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Lead, Dissolved (mg/L)							Lead, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	0.000203	<0.00020	<0.00020	0.00160	0.0000567	27	44
	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000209	0.000200	0.000090	0.000500	0.0000271	16	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000166	0.000170	<0.000090	0.000330	0.0000268	15	73
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	<0.000090	<0.000090	<0.000090	0.000170	0.0000136	13	46
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	3	0	0.000141	0.000150	<0.000090	0.000182	0.0000175	7	86
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000288	0.000288	0.000288	0.000288	-	1	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	0.000104	-	4	25	<0.000090	<0.000090	<0.000090	0.000148	0.0000251	4	50
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	<0.000090	<0.000090	<0.000090	0.000155	-	7	14
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	0.000091	-	3	33	<0.000090	<0.000090	<0.000090	0.000102	-	3	33
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000095	0.000095	0.000095	0.000095	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

		Magnesium, Dissolved (mg/L)							Magnesium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	41.1	42.0	33.1	52.1	1.01	27	100
	2011 Flood	37.7	37.7	37.7	37.7	-	1	100	38.7	37.2	32.3	49.3	1.16	16	100
	2011/2012 Operation	36.4	35.7	34.4	39.7	1.27	4	100	40.4	38.8	31.3	51.7	1.77	15	100
	2011/2012 Closure	33.9	35.5	26.6	38.2	1.81	7	100	34.0	34.0	26.2	42.9	1.32	13	100
	2014/2015 Operation	30.5	30.5	29.4	31.5	0.61	3	100	31.6	31.4	29.1	35.6	0.82	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	41.7	41.7	41.7	41.7	-	1	100	49.5	49.5	49.5	49.5	-	1	100
	2011/2012 Operation	37.8	38.1	34.6	40.6	1.53	4	100	37.9	37.9	35.9	39.8	1.06	4	100
	2011/2012 Closure	32.1	33.9	25.9	36.3	1.55	7	100	33.9	34.0	29.5	38.5	1.34	7	100
	2014/2015 Operation	33.8	31.9	30.4	39.2	2.73	3	100	34.6	31.8	30.6	41.4	3.42	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	40.2	40.2	40.2	40.2	-	1	100	47.1	47.1	47.1	47.1	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Manganese, Dissolved (mg/L)							Manganese, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	0.0061	0.0058	0.0022	0.0124	0.00051	27	100
	2011 Flood	0.00019	0.00019	0.00019	0.00019	-	1	100	0.0092	0.0084	0.0039	0.0202	0.00107	16	100
	2011/2012 Operation	0.00028	0.00029	<0.000090	0.00049	0.000091	4	75	0.0066	0.0045	0.0020	0.0155	0.00118	15	100
	2011/2012 Closure	0.00088	0.00019	<0.00010	0.00520	0.000721	7	71	0.0054	0.0048	0.0026	0.0143	0.00088	13	100
	2014/2015 Operation	0.00020	0.00022	0.00014	0.00025	0.000033	3	100	0.0091	0.0062	0.0055	0.0231	0.00240	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	0.00018	0.00018	0.00018	0.00018	-	1	100	0.0049	0.0049	0.0049	0.0049	-	1	100
	2011/2012 Operation	0.00059	0.00026	<0.00010	0.00180	0.000408	4	75	0.0055	0.0054	0.0039	0.0072	0.00074	4	100
	2011/2012 Closure	0.00037	0.00018	0.00013	0.00106	0.000134	7	100	0.0045	0.0040	0.0029	0.0065	0.00053	7	100
	2014/2015 Operation	0.00040	0.00017	0.00015	0.00087	0.000236	3	100	0.0046	0.0037	0.0035	0.0066	0.00100	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	0.00036	0.00036	0.00036	0.00036	-	1	100	0.0054	0.0054	0.0054	0.0054	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Mercury, Dissolved (ng/L)							Mercury, Total (ng/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Operation	<1.0	<1.0	<1.0	1.2	-	4	25	<1.0	<1.0	<1.0	1.5	0.27	4	50
	2011/2012 Closure	<5	<5	<1.0	<5	0.35	7	43	1.8	<5	<1.0	<5	0.36	7	71
	2014/2015 Operation	1.2	1.3	<1.0	1.9	0.41	3	67	1.9	2.1	1.5	2.1	0.20	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Operation	<1.0	<1.0	<1.0	<1.0	-	4	0	<1.0	<1.0	<1.0	1.43	0.19	5	20
	2011/2012 Closure	<5	<5	<1.0	<5	0.32	7	29	<5	<5	<1.0	<5	0.42	7	57
	2014/2015 Operation	<1.0	1.02	<1.0	1.03	0.17	3	67	1.02	<1.0	<1.0	2.07	0.52	3	33
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	1.5	1.5	1.5	1.5	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<1.0	<1.0	<1.0	<1.0	-	1	0	3.3	3.3	3.3	3.3	-	1	100
	2014/2015 Operation	2.0	1.7	1.3	3.0	0.51	3	100	1.2	1.2	1.2	1.3	0.03	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Methyl Mercury, Dissolved (ng/L)							Methyl Mercury, Total (ng/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	4	0	<0.050	<0.050	<0.050	0.087	-	4	25
	2011/2012 Closure	<0.050	<0.050	<0.050	0.061	-	7	14	<0.050	<0.050	<0.050	0.083	-	6	17
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	-	3	0	<0.050	<0.050	<0.050	0.052	-	3	33
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	5	0	<0.050	<0.050	<0.050	0.077	-	5	20
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	7	0	<0.050	<0.050	<0.050	<0.050	-	7	0
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	-	3	0	<0.050	<0.050	<0.050	0.065	-	3	33
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	0.080	0.080	0.080	0.080	-	1	100
	2014/2015 Operation	0.075	<0.050	<0.050	0.175	-	3	33	<0.050	<0.050	<0.050	<0.050	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Molybdenum, Dissolved (mg/L)							Molybdenum, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	0.00247	0.00245	0.00190	0.00300	0.000046	27	100
	2011 Flood	0.00216	0.00216	0.00216	0.00216	-	1	100	0.00218	0.00214	0.00195	0.00282	0.000052	16	100
	2011/2012 Operation	0.00211	0.00206	0.00187	0.00243	0.000122	4	100	0.00226	0.00219	0.00191	0.00302	0.000077	15	100
	2011/2012 Closure	0.00187	0.00169	0.00146	0.00257	0.000146	7	100	0.00207	0.00189	0.00157	0.00278	0.000120	13	100
	2014/2015 Operation	0.00177	0.00178	0.00176	0.00178	0.000007	3	100	0.00183	0.00173	0.00165	0.00210	0.000062	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	0.00226	0.00226	0.00226	0.00226	-	1	100	0.00242	0.00242	0.00242	0.00242	-	1	100
	2011/2012 Operation	0.00228	0.00238	0.00190	0.00248	0.000130	4	100	0.00217	0.00213	0.00206	0.00234	0.000062	4	100
	2011/2012 Closure	0.00185	0.00182	0.00147	0.00243	0.000124	7	100	0.00195	0.00176	0.00156	0.00249	0.000139	7	100
	2014/2015 Operation	0.00188	0.00173	0.00169	0.00221	0.000167	3	100	0.00196	0.00178	0.00168	0.00241	0.000228	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	0.00219	0.00219	0.00219	0.00219	-	1	100	0.00229	0.00229	0.00229	0.00229	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Nickel, Dissolved (mg/L)							Nickel, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	<0.0020	<0.0020	0.0006	0.0043	0.00014	27	74
	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	0.0020	-	16	6
	2011/2012 Operation	0.0015	0.0013	0.0005	0.0028	0.00058	4	50	<0.0020	<0.0020	<0.0020	<0.0020	0.00004	15	7
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	13	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Potassium, Dissolved (mg/L)							Potassium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	12.1	12.0	9.82	15.4	0.290	27	100
	2011 Flood	10.2	10.2	10.2	10.2	-	1	100	10.7	10.8	9.08	12.1	0.188	16	100
	2011/2012 Operation	10.5	10.4	9.55	11.4	0.49	4	100	10.7	10.9	8.51	13.8	0.400	15	100
	2011/2012 Closure	9.02	8.58	7.13	11.3	0.54	7	100	9.48	9.18	7.79	11.5	0.348	13	100
	2014/2015 Operation	8.37	8.65	7.70	8.76	0.34	3	100	8.43	8.30	7.55	10.2	0.345	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	10.2	10.2	10.2	10.2	-	1	100	10.8	10.8	10.8	10.8	-	1	100
	2011/2012 Operation	10.1	10.2	9.55	10.7	0.24	4	100	11.0	11.0	10.1	11.8	0.348	4	100
	2011/2012 Closure	8.50	8.37	6.34	10.6	0.50	7	100	9.14	9.53	7.50	10.9	0.508	7	100
	2014/2015 Operation	9.43	8.57	8.31	11.40	0.99	3	100	9.33	8.35	7.95	11.70	1.189	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	10.4	10.4	10.4	10.4	-	1	100	10.5	10.5	10.5	10.5	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

		Selenium, Dissolved (mg/L)							Selenium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	<0.0010	<0.0010	<0.00040	0.0013	0.00007	27	19
	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	0.0012	0.00006	16	19
	2011/2012 Operation	0.0013	<0.0010	<0.0010	0.0038	-	4	25	<0.0010	<0.0010	<0.0010	0.0021	-	15	13
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	13	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

		Silver, Dissolved (mg/L)							Silver, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	<0.00010	<0.00010	<0.000005	0.00012	0.000006	27	11
	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	16	0
	2011/2012 Operation	<0.00010	<0.00010	<0.000040	<0.00010	-	4	0	<0.00010	<0.00010	<0.000040	<0.00010	-	15	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	13	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	14
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Sodium, Dissolved (mg/L)							Sodium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	194	188	160	254	4.1	27	100
	2011 Flood	121	121	121	121	-	1	100	148	143	119	231	6.5	16	100
	2011/2012 Operation	130	131	114	145	6.4	4	100	132	129	118	150	2.8	15	100
	2011/2012 Closure	131	114	98	182	12.3	7	100	135	131	100	182	6.6	13	100
	2014/2015 Operation	99	101	94	102	2.5	3	100	97	96	90	108	2.2	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	132	132	132	132	-	1	100	132	132	132	132	-	1	100
	2011/2012 Operation	122	118	110	142	7.5	4	100	130	129	118	144	5.8	4	100
	2011/2012 Closure	126	118	95	173	10.8	7	100	127	121	98	171	10.2	7	100
	2014/2015 Operation	103	103	94	111	4.9	3	100	107	101	94	126	9.7	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	138	138	138	138	-	1	100	131	131	131	131	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

		Thallium, Dissolved (mg/L)							Thallium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	<0.00010	<0.00010	<0.000020	0.00035	0.000016	27	11
	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	16	0
	2011/2012 Operation	<0.00010	<0.00010	<0.000020	<0.00010	-	4	0	<0.00010	<0.00010	<0.000020	0.00025	-	15	7
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	13	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

		Uranium, Dissolved (mg/L)							Uranium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	0.00181	0.00188	0.00120	0.00230	0.000056	27	100
	2011 Flood	0.00164	0.00164	0.00164	0.00164	-	1	100	0.00164	0.00165	0.00148	0.00201	0.000035	16	100
	2011/2012 Operation	0.00170	0.00173	0.00154	0.00178	0.000057	4	100	0.00172	0.00167	0.00146	0.00221	0.000055	15	100
	2011/2012 Closure	0.00145	0.00136	0.00117	0.00180	0.000089	7	100	0.00154	0.00145	0.00126	0.00199	0.000072	13	100
	2014/2015 Operation	0.00132	0.00135	0.00122	0.00138	0.000049	3	100	0.00144	0.00140	0.00126	0.00158	0.000046	7	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	0.00169	0.00169	0.00169	0.00169	-	1	100	0.00177	0.00177	0.00177	0.00177	-	1	100
	2011/2012 Operation	0.00175	0.00173	0.00159	0.00196	0.000096	4	100	0.00178	0.00185	0.00144	0.00198	0.000123	4	100
	2011/2012 Closure	0.00141	0.00139	0.00118	0.00171	0.000079	7	100	0.00146	0.00141	0.00122	0.00177	0.000087	7	100
	2014/2015 Operation	0.00151	0.00138	0.00125	0.00190	0.000199	3	100	0.00164	0.00151	0.00141	0.00200	0.000182	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	0.00157	0.00157	0.00157	0.00157	-	1	100	0.00166	0.00166	0.00166	0.00166	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 8. Continued.

Site ID	Period	Zinc, Dissolved (mg/L)							Zinc, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
FR1	Historic[1]	-	-	-	-	-	0	-	<0.0050	<0.0050	<0.0010	0.0070	0.00033	27	41
	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	0.0053	-	16	6
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	0.0023	0.00032	4	25	<0.0050	<0.0050	<0.0020	<0.0050	0.00019	15	7
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	0.0025	-	7	14	<0.0020	<0.0020	<0.0020	0.0025	0.00016	13	23
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0050	<0.0050	<0.0020	<0.0050	-	7	14
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM1	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0050	<0.0050	<0.0020	<0.0050	-	4	25
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	0.0021	-	3	33	<0.0020	<0.0020	<0.0020	0.0044	-	3	33
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
LSM2	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

1 - Data for the Historic period were only available for FR1.

Table 9. Frequency of dissolved oxygen values in the Fairford River and Lake St. Martin below the MWQSOGs and CCME lowest acceptable concentrations for PAL, 2004-2015.

Site ID	Period	Objectives Applicable when Water Temperature is > 5°C						Objectives Applicable when Water Temperature is ≤ 5°C					
		MWQSOGs PAL for Cool Water Early life, and CCME PAL for Early Life Stages of Warm Water Biota; 6.0 mg/L			MWQSOGs PAL for Cold Water Mature Life and CCME PAL for Other Life Stages of Cold Water Biota; 6.5 mg/L			MWQSOGs PAL for Cold Water Early Life, and CCME PAL for Early Life Stages of Cold Water Biota; 9.5 mg/L			MWQSOGs PAL for Cool Water Mature Life, and CCME PAL for Other Life Stages of Warm Water Biota; 5.5 mg/L		
		n	# below	% below	n	# below	% below	n	# below	% below	n	# below	% below
FR1	Historic [1]	12	0	0	12	0	0	14	2	14	14	0	0
	2011 Flood	15	0	0	15	0	0	1	0	0	1	0	0
	2011/2012 Operation	7	0	0	7	0	0	7	0	0	7	0	0
	2011/2012 Closure	7	0	0	7	0	0	6	2	33	6	1	17
	2014/2015 Operation	6	0	0	6	0	0	1	1	100	1	0	0
	2014/2015 Closure	0	-	-	0	-	-	0	-	-	0	-	-
LSM1	2011 Flood	5	0	0	5	0	0	0	-	-	0	-	-
	2011/2012 Operation	6	0	0	6	0	0	9	1	11	9	0	0
	2011/2012 Closure	5	0	0	5	0	0	2	1	50	2	0	0
	2014/2015 Operation	5	0	0	5	0	0	1	0	0	1	0	0
	2014/2015 Closure	3	0	0	3	1	33	0	-	-	0	-	-
LSM2	2011 Flood	0	-	-	0	-	-	1	0	0	1	0	0
	2011/2012 Operation	0	-	-	0	-	-	0	-	-	0	-	-
	2011/2012 Closure	3	0	0	3	0	0	0	-	-	0	-	-
	2014/2015 Operation	8	0	0	8	1	13	2	0	0	2	0	0
	2014/2015 Closure	0	-	-	0	-	-	0	-	-	0	-	-

1 - Data from the Historic period were only available for the Fairford River (FR1).

Table 10. Frequency of exceedance of MWQSOGs and CCME guidelines for PAL for metals and major ions in the Fairford River and Lake St. Martin, 2004-2015. Only metals and major ions for which exceedances occurred within the Study Area are listed.[1] Percent exceedance values greater than zero are indicated in bold. Note: this table does not include 2014/2015 Closure data, because metals were not analysed during this period.

			Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
Site ID	Period		MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
FR1	Historic [7]	n	27	27	-	27	-	0	27	27
		# Exceeded	1	1	-	27	-	-	0	0
		% Exceedance	**4**	**4**	-	**100**	-	-	0	0
	2011 Flood	n	16	16	-	16	-	1	16	16
		# Exceeded	3	3	-	16	-	1	0	0
		% Exceedance	**19**	**19**	-	**100**	-	**100**	0	0
	2011/2012 Operation	n	15	15	-	15	-	4	15	15
		# Exceeded	3	3	-	15	-	4	0	0
		% Exceedance	**20**	**20**	-	**100**	-	**100**	0	0
	2011/2012 Closure	n	13	13	-	13	-	7	13	13
		# Exceeded	1	1	-	13	-	6	0	0
		% Exceedance	**8**	**8**	-	**100**	-	**86**	0	0
	2014/2015 Operation	n	7	7	-	7	-	3	7	7
		# Exceeded	0	0	-	7	-	3	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
LSM1	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
	2011/2012 Operation	n	4	4	-	4	-	4	4	4
		# Exceeded	0	0	-	4	-	4	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0

Table 10. Continued.

Site ID	Period		Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
			MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
LSM1	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	0	0	-	7	-	4	0	0
		% Exceedance	0	0	-	**100**	-	**57**	0	0
	2014/2015 Operation	n	3	3	-	3	-	3	3	3
		# Exceeded	0	0	-	3	-	3	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
LSM2	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
	2011/2012 Closure	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
	2014/2015 Operation	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-

Table 10. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
FR1	Historic[10]	n	27	27	27	27	27	27
		# Exceeded	0	0	3	3	2	2
		% Exceedance	0	0	**11**	**11**	**7**	**7**
	2011 Flood	n	16	16	16	16	16	16
		# Exceeded	0	0	3	3	0	0
		% Exceedance	0	0	**19**	**19**	0	0
	2011/2012 Operation	n	14	14	15	15	15	15
		# Exceeded	0	0	2	2	0	0
		% Exceedance	0	0	**13**	**13**	0	0
	2011/2012 Closure	n	8	8	13	13	13	13
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2014/2015 Operation	n	7	7	7	7	7	7
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
LSM1	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2011/2012 Operation	n	4	4	4	4	4	4
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0

Table 10. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
LSM1	2011/2012 Closure	n	7	7	7	7	7	7
		# Exceeded	0	0	0	0	1	1
		% Exceedance	0	0	0	0	**14**	**14**
	2014/2015 Operation	n	3	3	3	3	3	3
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
LSM2	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2011/2012 Closure	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
	2014/2015 Operation	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-

1 - The following metals where consistently within both the applicable MWQSOGs and CCME PAL guidelines at all sites and times: arsenic; boron; cadmium; dissolved chromium; copper; lead; mercury, methyl mercury; molybdenum; nickel; thallium; uranium; and, zinc.
2 - Long-term guideline. All concentrations were within the short-term guideline at all sites and times.
3 - Interim guideline.
4 - MWQSOGs 4-day objective. All concentrations were within the 1-hour objective.
5 - Based on sample specific hardness.
6 - Analytical detection limit is equal to the PAL guideline.
7 - Data from the Historic period were only available for the Fairford River (FR1).

Table 11. Frequency of exceedance of MWQSOGs/Health Canada aesthetic objectives for drinking water for metals and major ions measured in the Fairford River and Lake St. Martin, 2004-2015. All parameters with maximum acceptable concentrations were within these guidelines at all sites and times, including: antimony; arsenic; barium; boron; lead; mercury; selenium; and, uranium. Percent exceedance values greater than zero are indicated in bold. Note: this table does not include 2014/2015 Closure data, because metal were not analysed during this period.

Site ID	Period		Chloride, Dissolved	Iron, Total	Manganese, Total	Sodium, Total	Sulphate, Dissolved
MWQSOGs/Health Canada Aesthetic Objective (mg/L)			≤250	≤0.3	≤0.050	≤200	≤500
FR1	Historic [1]	n	27	27	27	27	25
		# Exceeded	25	0	0	9	0
		% Exceedance	**93**	0	0	**33**	0
	2011 Flood	n	16	16	16	16	16
		# Exceeded	2	0	0	1	0
		% Exceedance	**13**	0	0	**6**	0
	2011/2012 Operation	n	15	14	15	15	15
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	13	8	13	13	13
		# Exceeded	1	0	0	0	0
		% Exceedance	**8**	0	0	0	0
	2014/2015 Operation	n	7	7	7	7	7
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
LSM1	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Operation	n	4	4	4	4	4
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	7	7	7	7	7
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	3	3	3	3	3
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0

Table 11. Continued.

Site ID	Period		Chloride, Dissolved	Iron, Total	Manganese, Total	Sodium, Total	Sulphate, Dissolved
MWQSOGs/Health Canada Aesthetic Objective (mg/L)			≤250	≤0.3	≤0.050	≤200	≤500
LSM2	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Operation	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-
	2011/2012 Closure	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-
	2014/2015 Operation	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-

1 - Data from the Historic period were only available for the Fairford River (FR1).

Table 12. Laboratory analytical detection limits and water quality guidelines for PAL and drinking water for petroleum hydrocarbon parameters measured in the Study Area, 2011-2014.

		Protection of Aquatic Life (PAL)		Drinking Water [1]	
Parameter	Analytical Detection Limit	MWQSOGs [1]	CCME [2] Interim	Maximum Acceptable Concentration	Aesthetic Objective
Benzene	0.0005	0.370 mg/L	0.370 mg/L	0.005 mg/L	-
Toluene	0.001	0.0020 mg/L	0.0020 mg/L	0.06 mg/L [3]	0.024 mg/L
Ethyl benzene	0.0005	0.090 mg/L	0.090 mg/L	0.14 mg/L [3]	0.0016 mg/L [3]
Xylenes (-o,-m)	0.0005	-	-	-	-
Xylenes (-p)	0.0005	-	-	-	-
Xylene (Total)	0.0015	-	-	0.09 mg/L [3]	0.02 mg/L [3]
F1 (C6 - C10)	0.1	-	-	-	-
F2 (C10 - C16)	0.25	-	-	-	-
F3 (C16 - C34)	0.25	-	-	-	-
F4 (C34 - C50)	0.25	-	-	-	-
Total Hydrocarbons (C6 - C50)	0.44	-	-	-	-

1 - Manitoba Water Quality Standards, Objectives, and Guidelines (MWS 2011).
2 - Canadian Council of Ministers of the Environment guidelines for the protection of freshwater aquatic life (CCME 1999, updated to 2015).
3 - As updated by Health Canada in 2014. Since the intent of the MWQSOGs is to use the Health Canada guidelines, the updated guideline/objective has been applied.

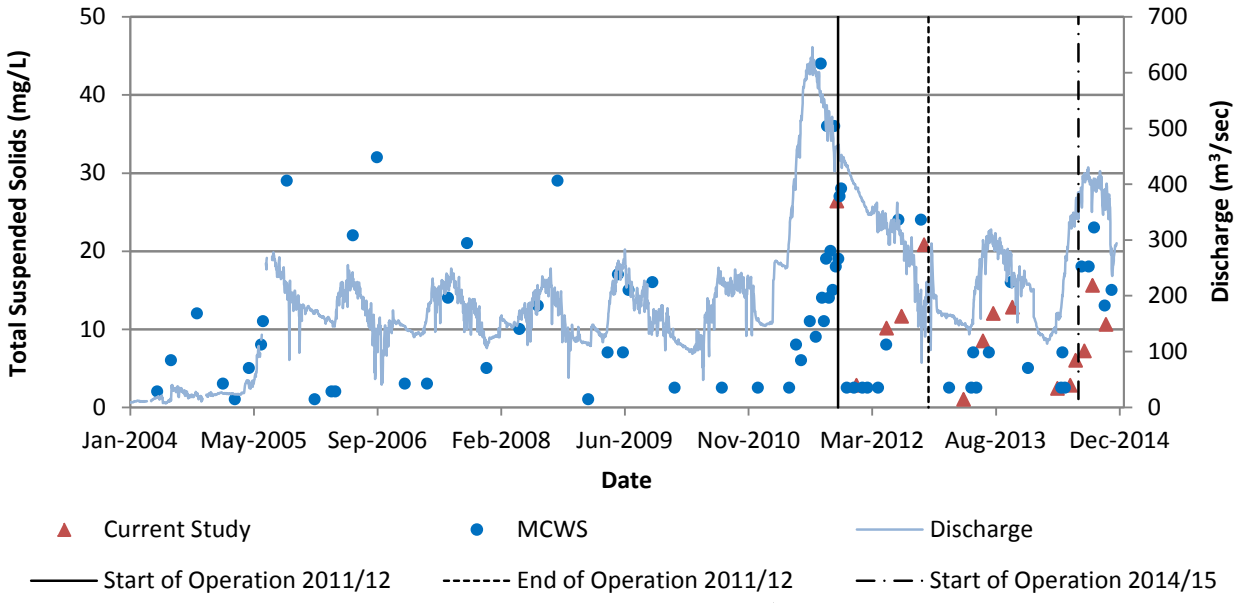

Figure 7. Total suspended solids in the Fairford River, 2004-2014.

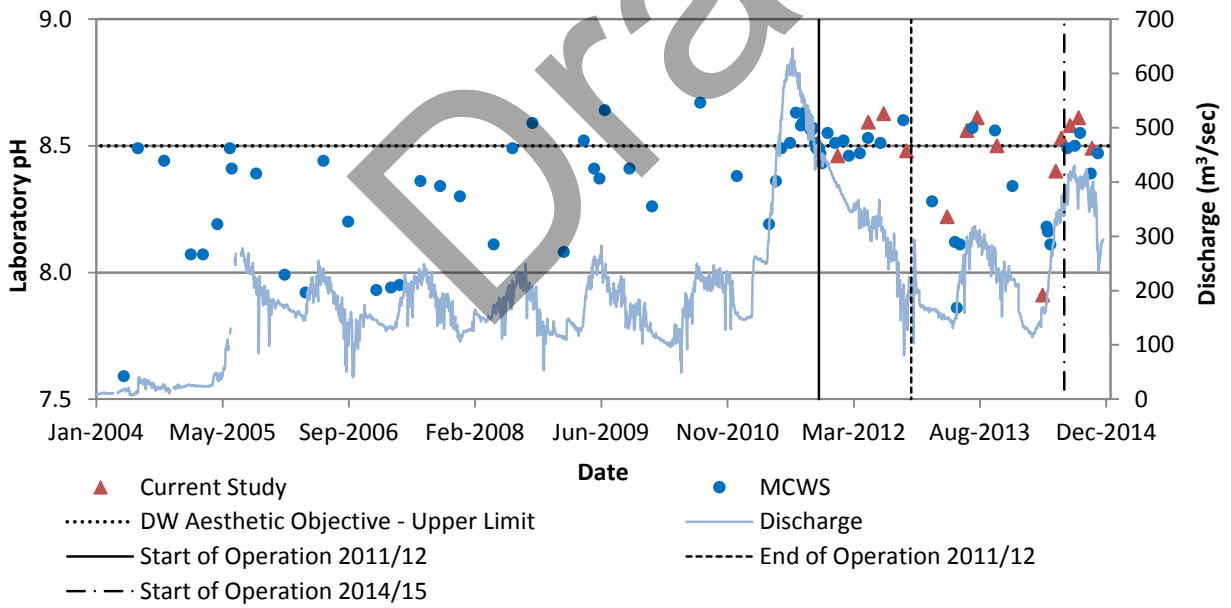

Figure 8. Laboratory measured pH in the Fairford River, 2004-2014.

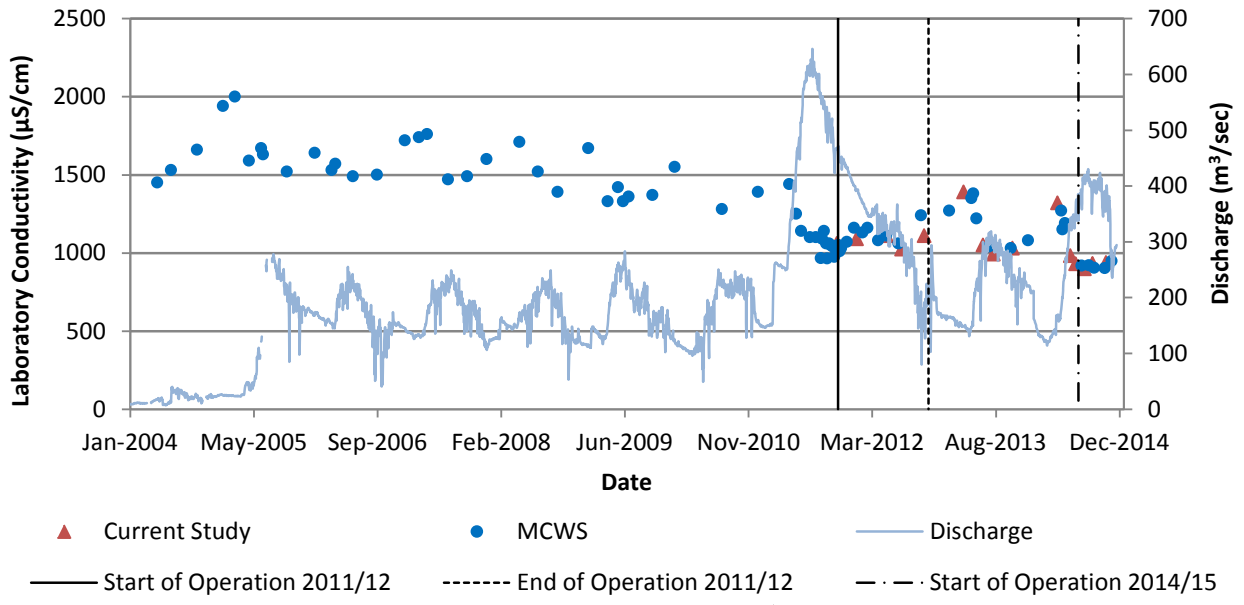

Figure 9. Conductivity in the Fairford River, 2004-2014.

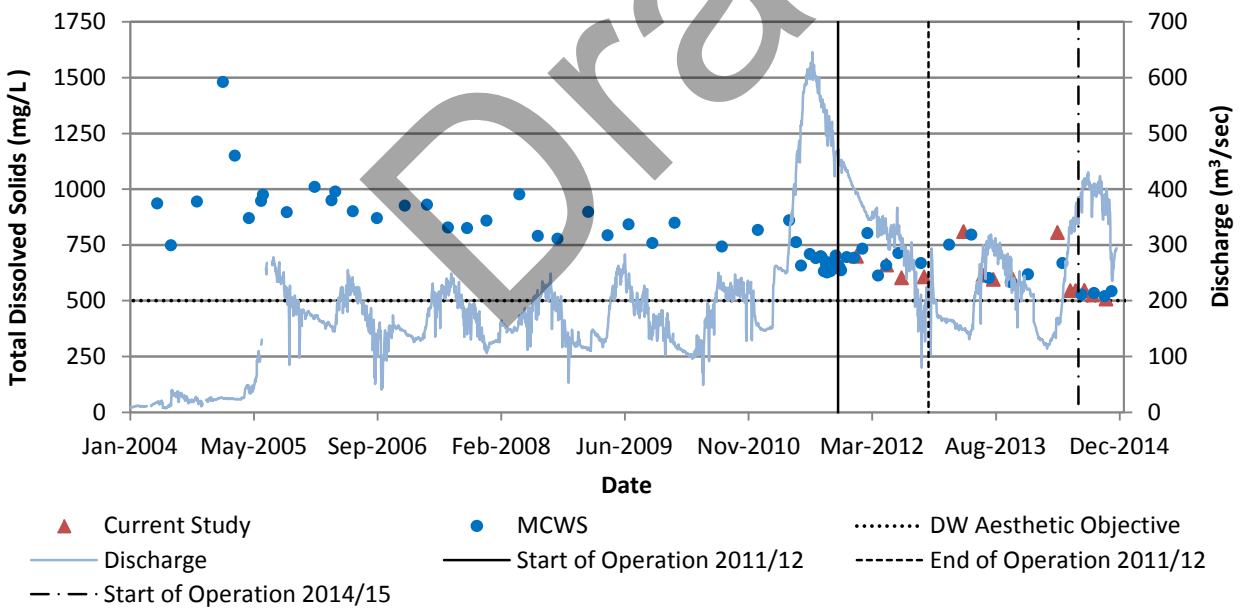

Figure 10. Total dissolved solids in the Fairford River, 2004-2014.

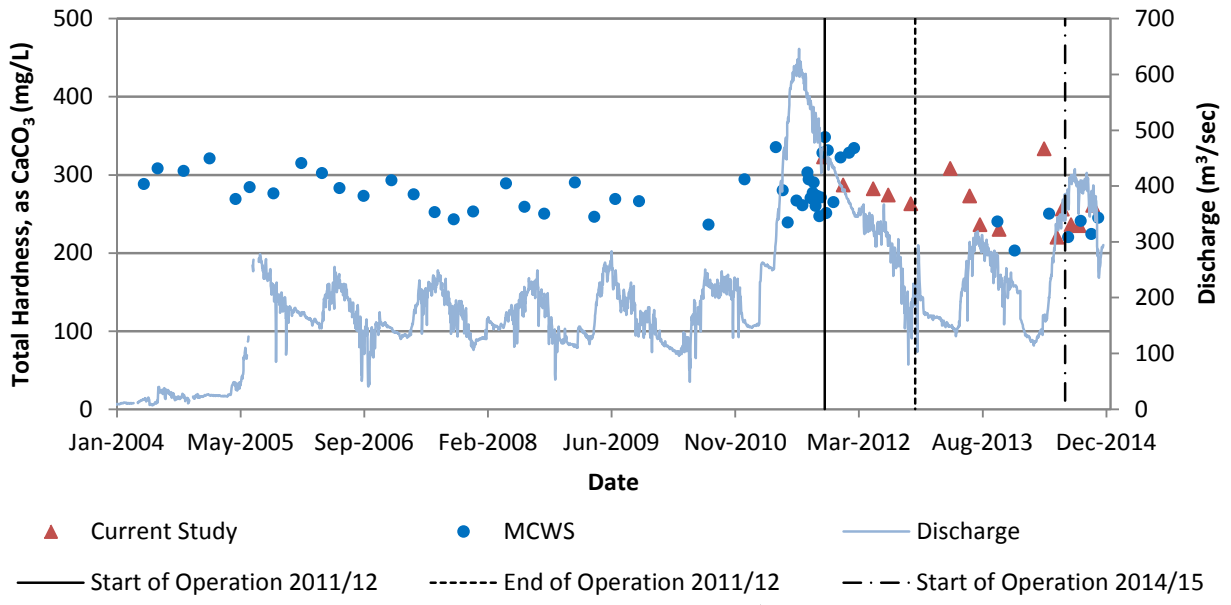

Figure 11. Total hardness in the Fairford River, 2004-2014.

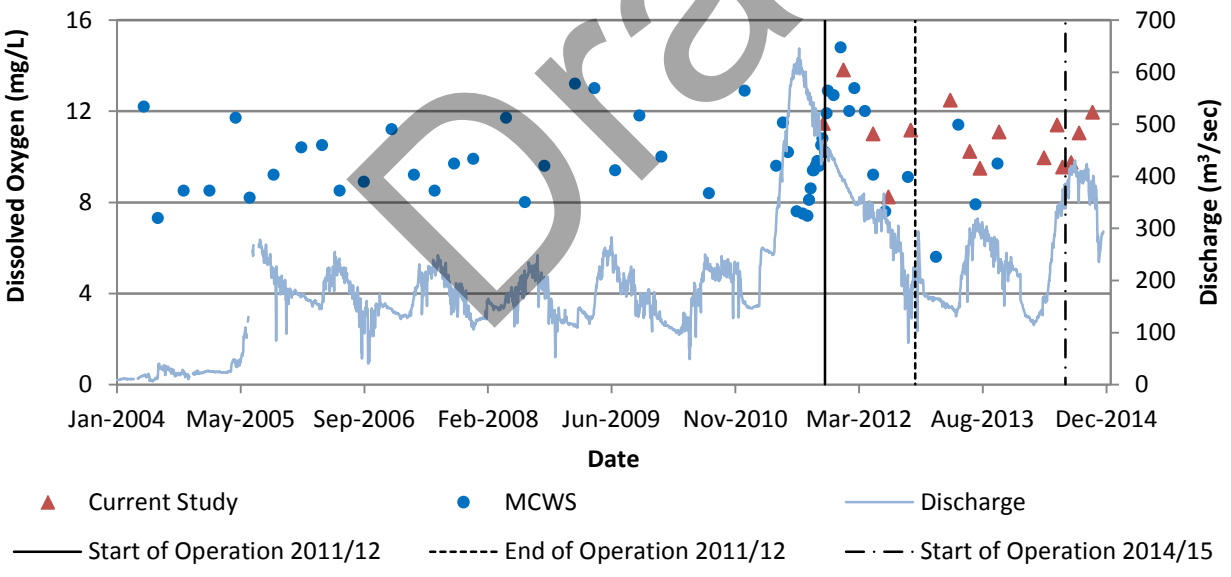

Figure 12. Dissolved oxygen concentrations in the Fairford River, 2004-2014.

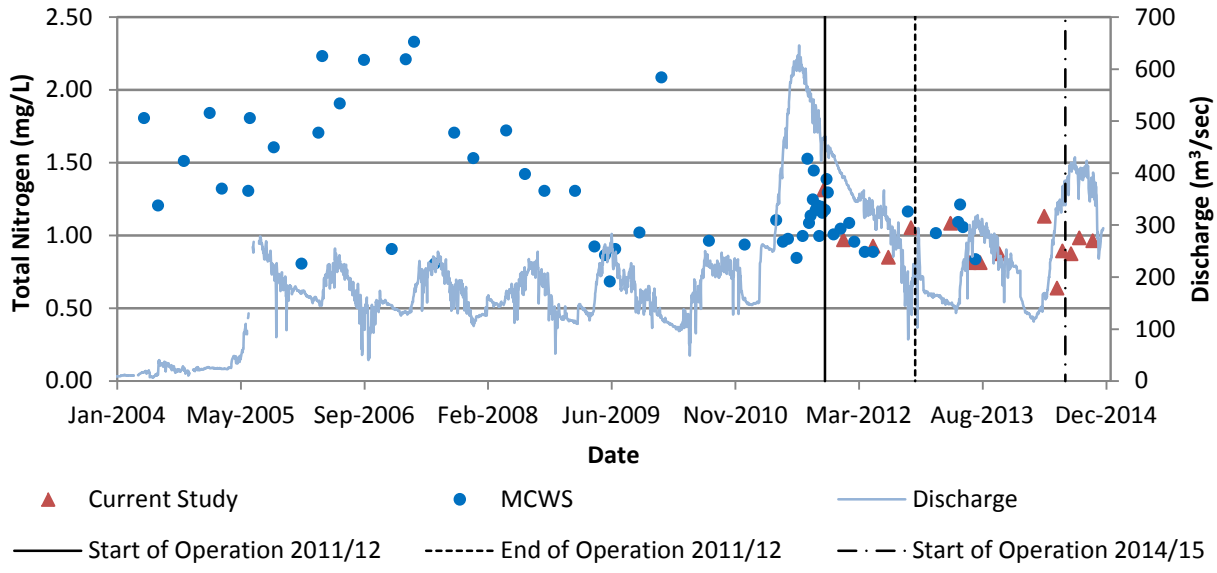

Figure 13. Total nitrogen concentrations in the Fairford River, 2004-2014.

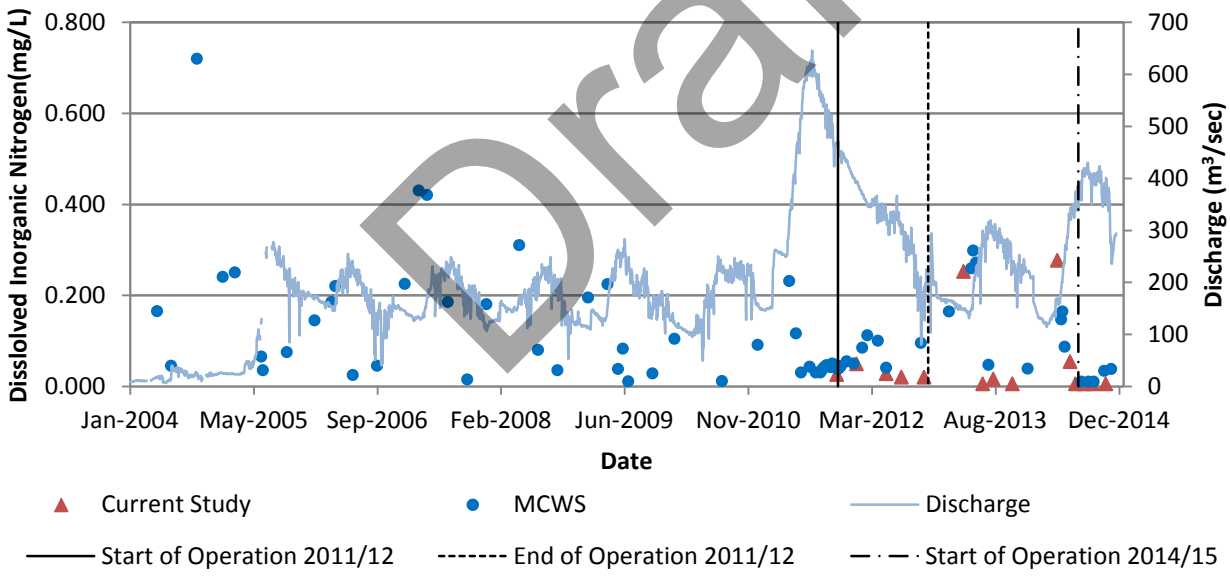

Figure 14. Dissolved inorganic nitrogen concentrations in the Fairford River, 2004-2014.

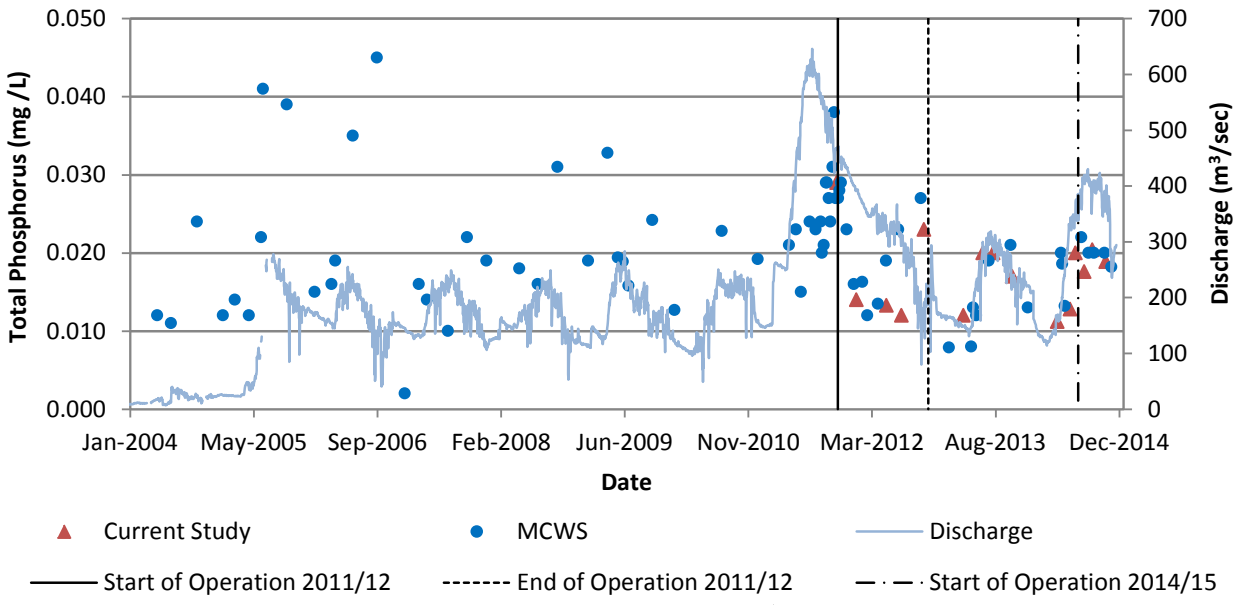

Figure 15. Total phosphorus concentrations in the Fairford River, 2004-2014. The maximum value of the y-axis is set at the MWQSOGs narrative guideline for streams.

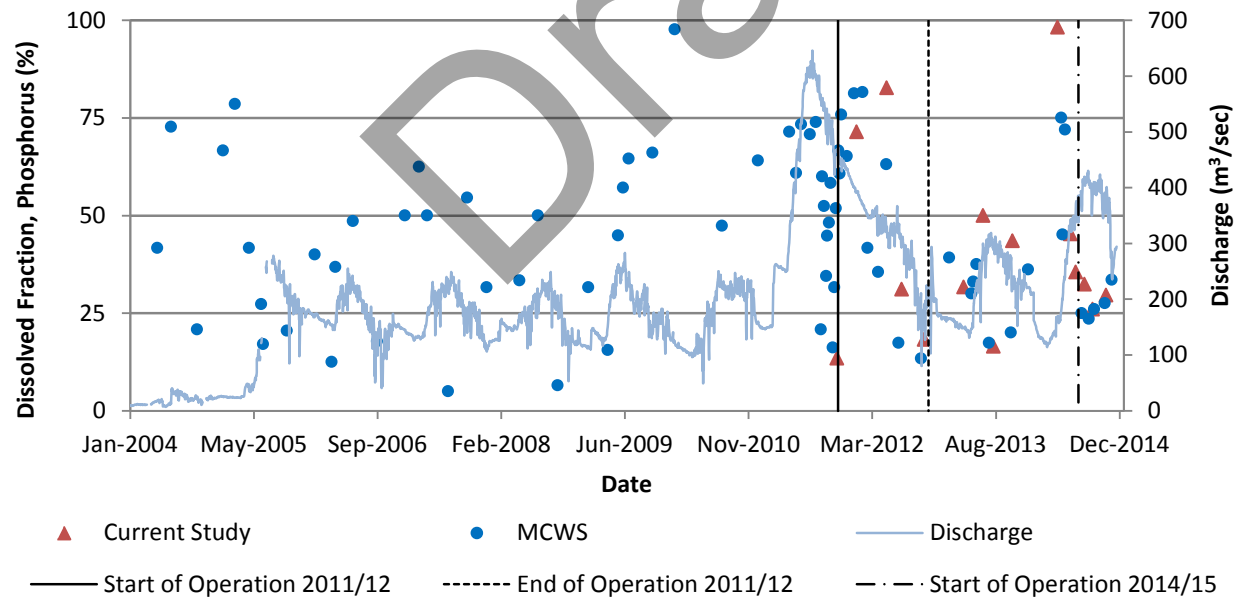

Figure 16. Phosphorus composition in the Fairford River, 2004-2014.

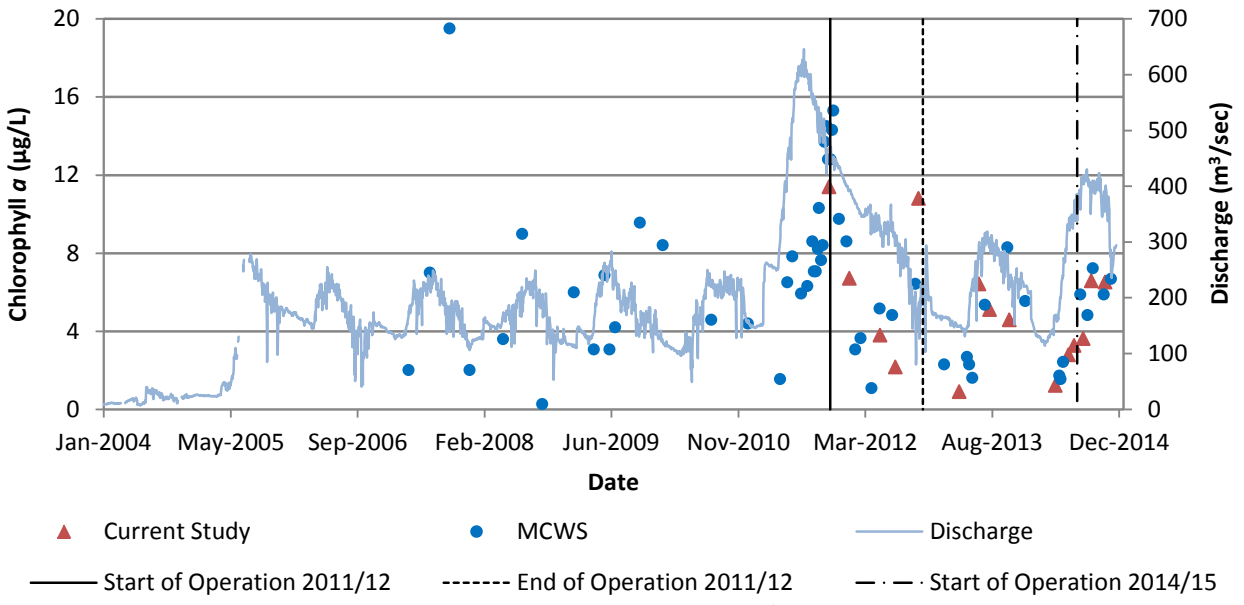

Figure 17. Chlorophyll *a* concentrations in the Fairford River, 2004-2014.

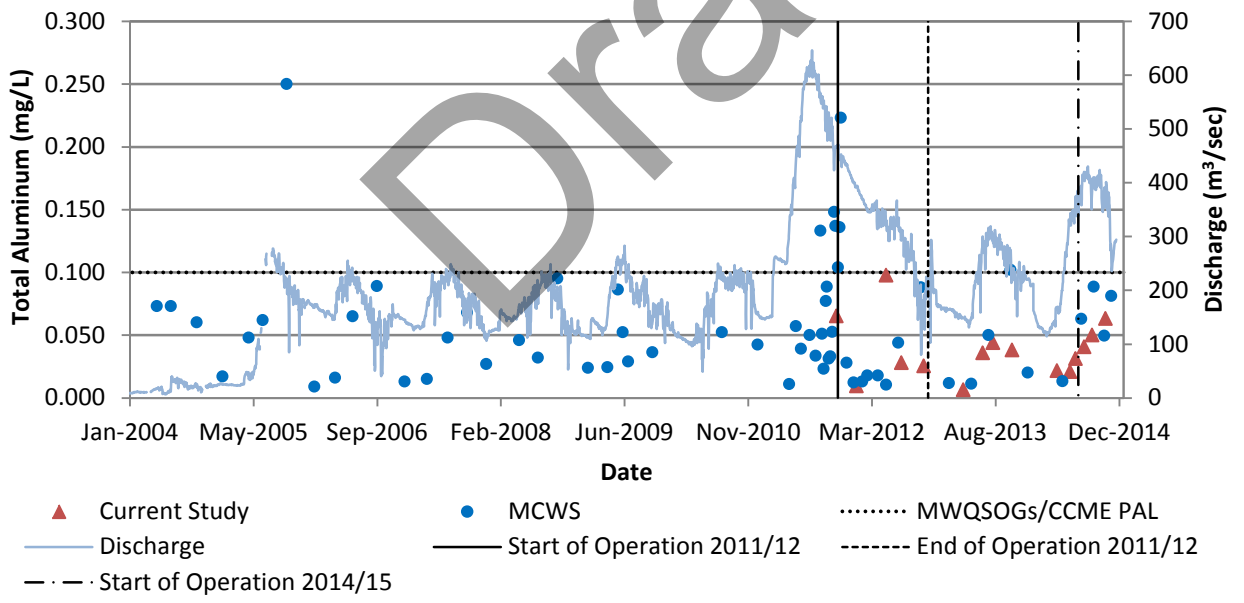

Figure 18. Total aluminum concentrations in the Fairford River, 2004-2014.

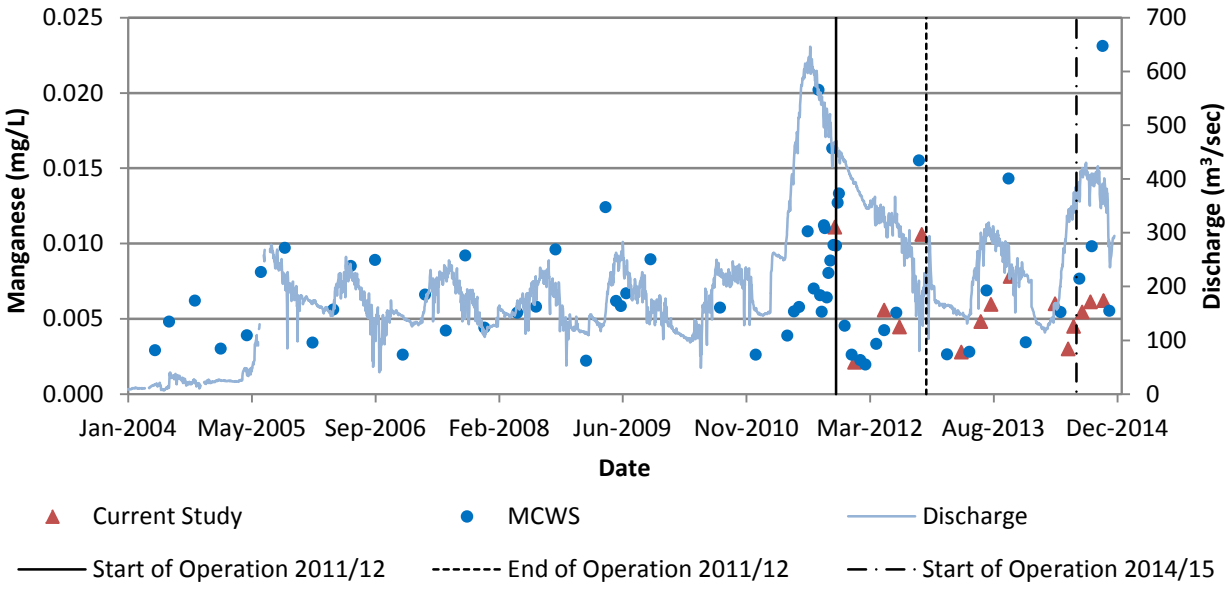

Figure 19. Total manganese concentrations in the Fairford River, 2004-2014.

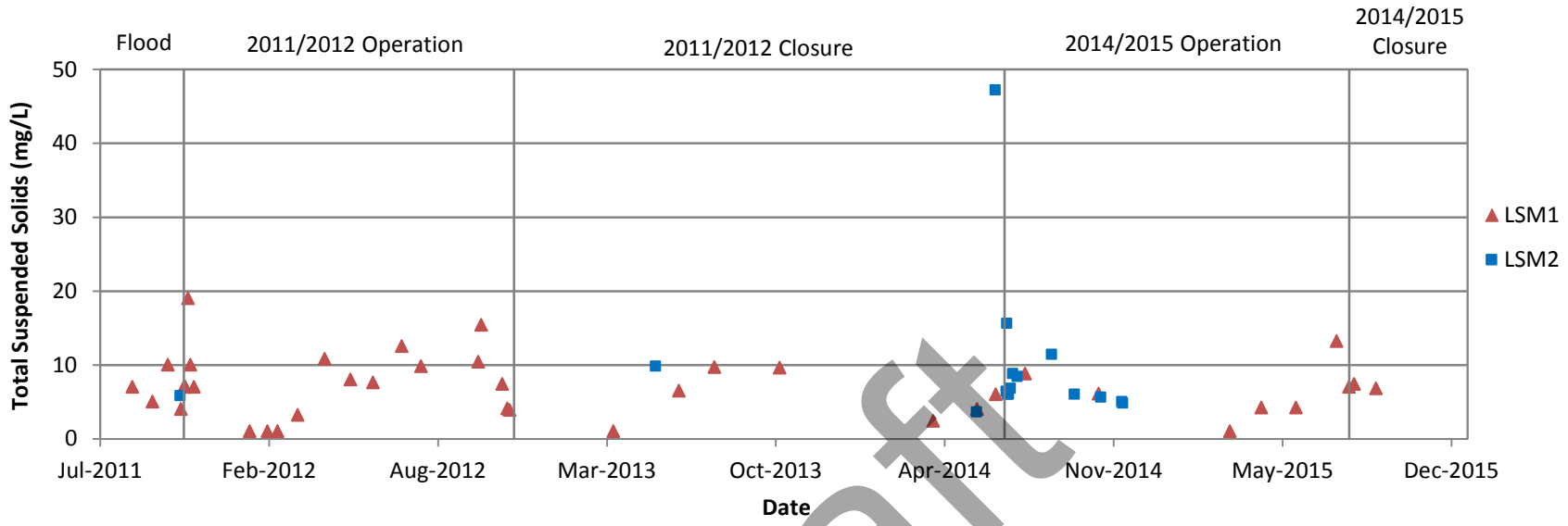

Figure 20. Total suspended solids in Lake St. Martin, 2011-2015.

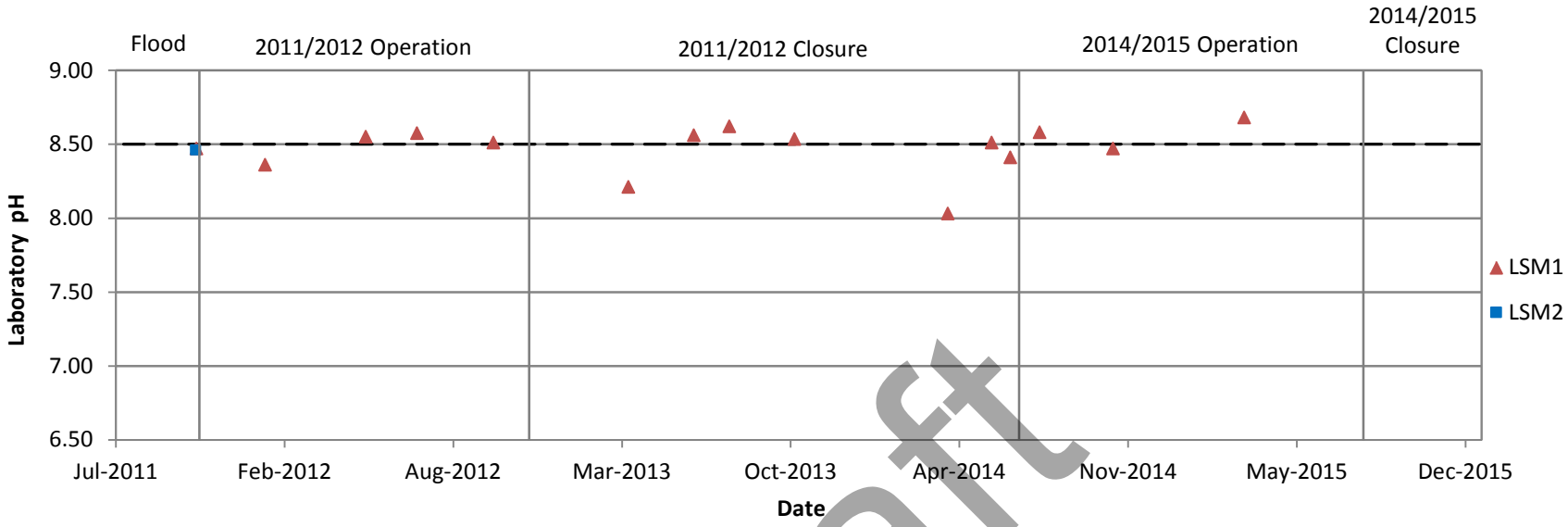

Figure 21. Laboratory measured pH in Lake St. Martin, 2011-2015. Dashed line represents the upper limit of the MWQSOGs/ Health Canada aesthetic objective for drinking water.

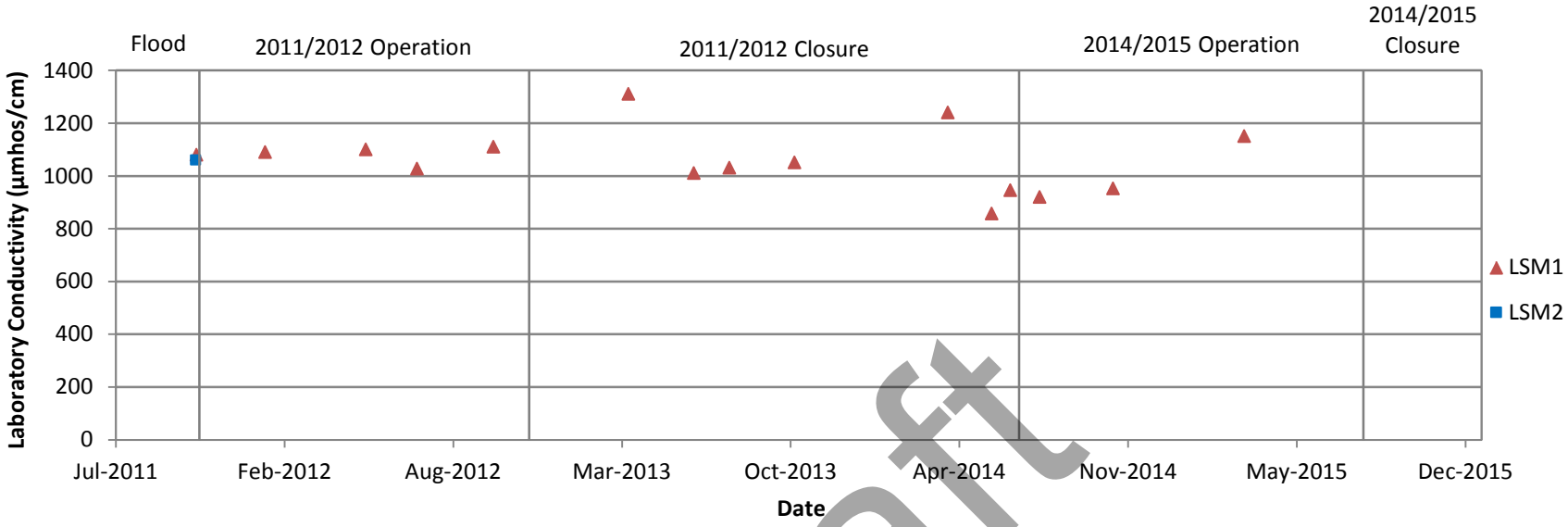

Figure 22. Conductivity in Lake St. Martin, 2011-2015.

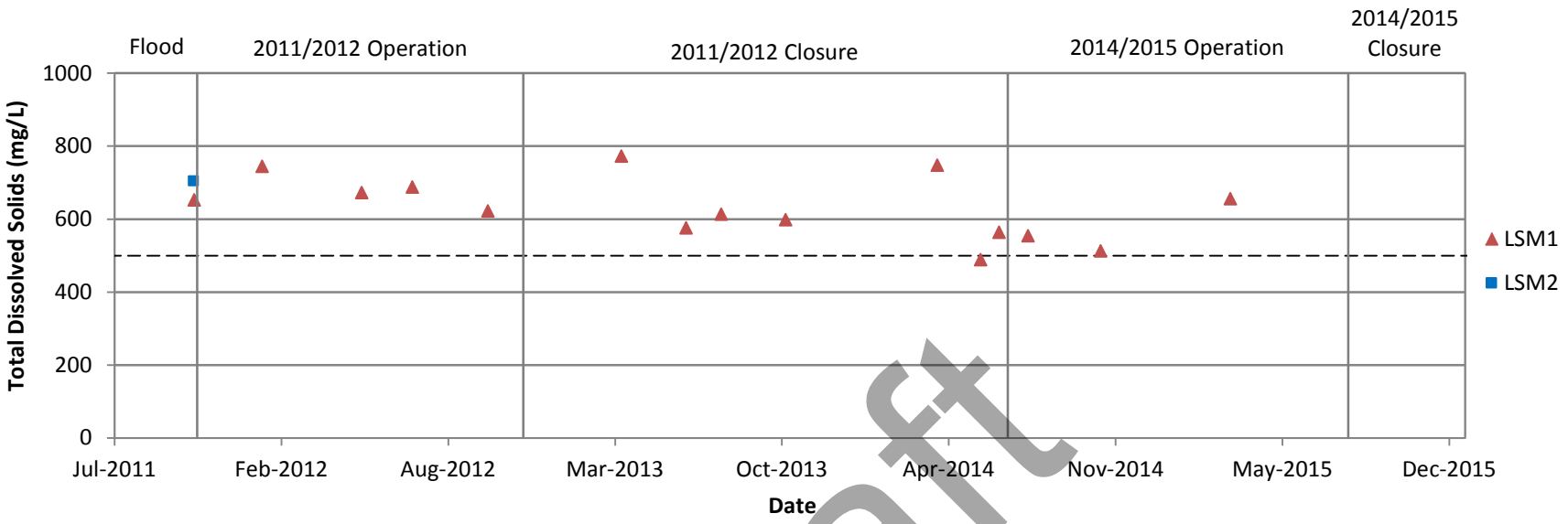

Figure 23. Total dissolved solids in Lake St. Martin, 2011-2015. Dashed line represents the MWQSOGs/Health Canada aesthetic objective for drinking water.

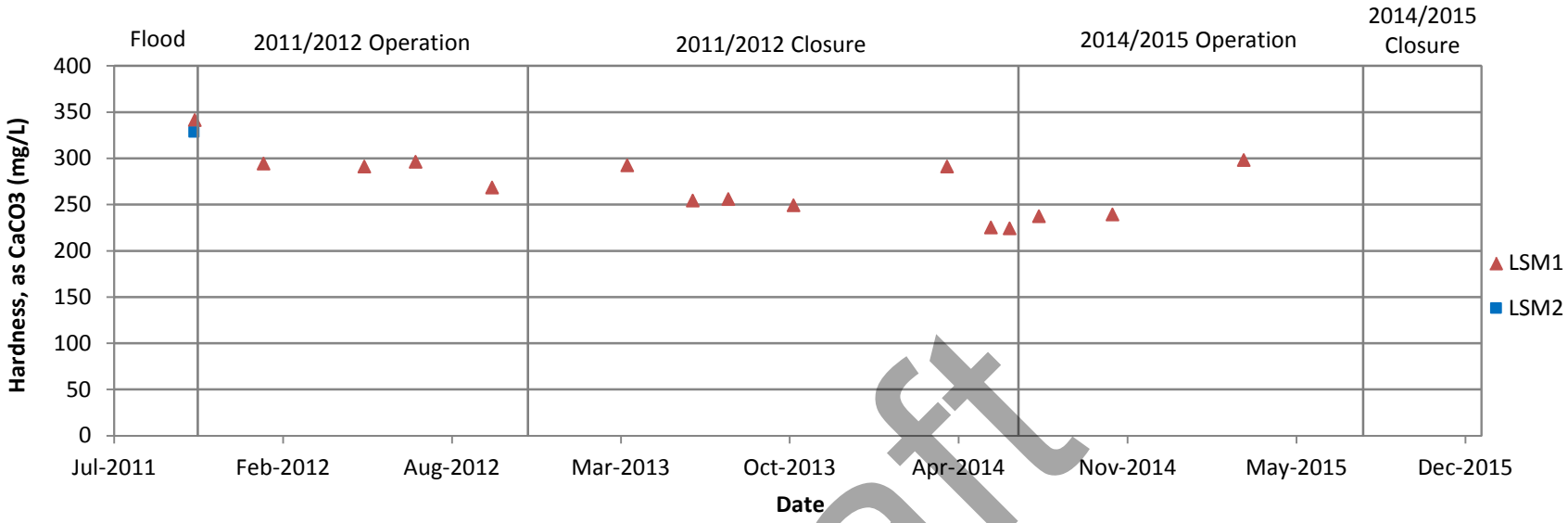

Figure 24. Total hardness in Lake St. Martin, 2011-2015.

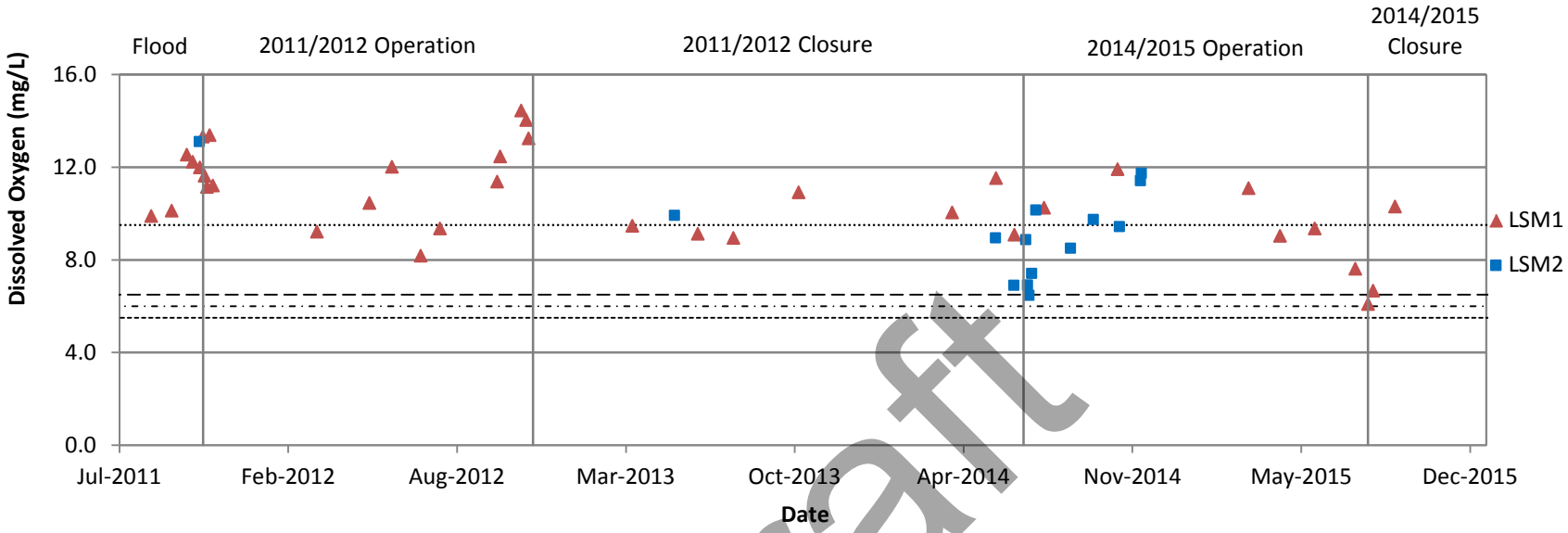

Figure 25. Dissolved oxygen concentrations in Lake St. Martin, 2011-2015.

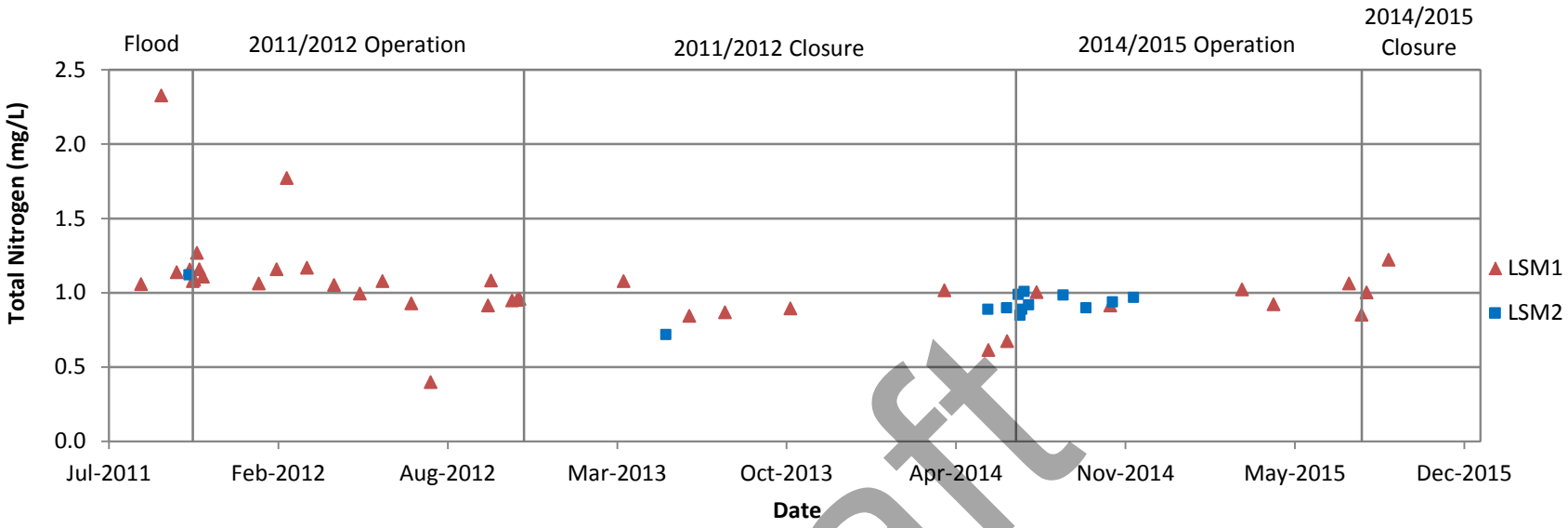

Figure 26. Total nitrogen in Lake St. Martin, 2011-2015.

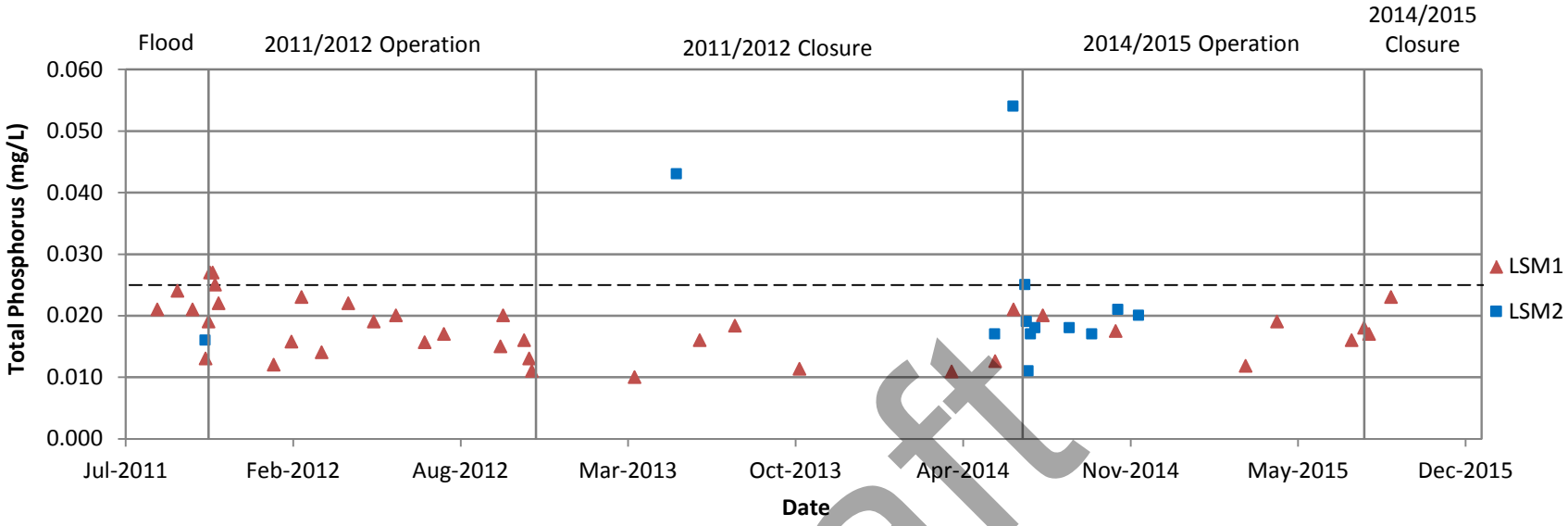

Figure 27. Total phosphorus in Lake St. Martin, 2011-2015. Dashed line represents the MWQSOGs narrative guideline for lakes and river mouths.

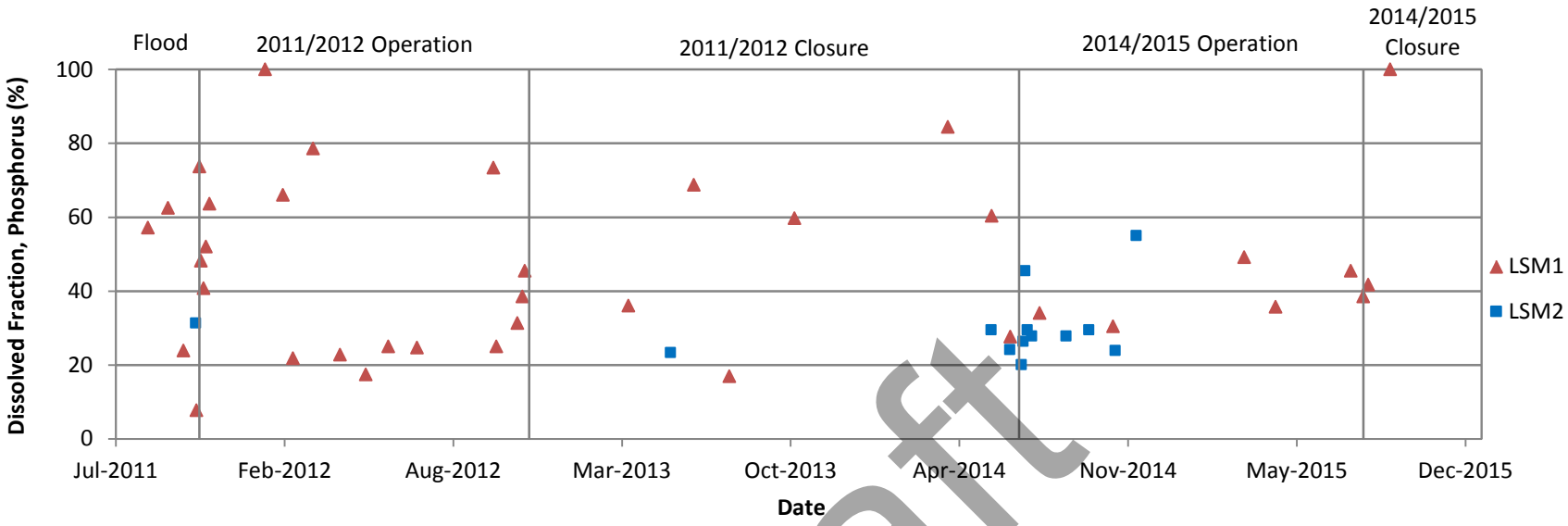

Figure 28. Phosphorus composition in Lake St. Martin, 2011-2015. Percent dissolved phosphorus values greater than 100% are plotted at 100% for the purposes of this figure.

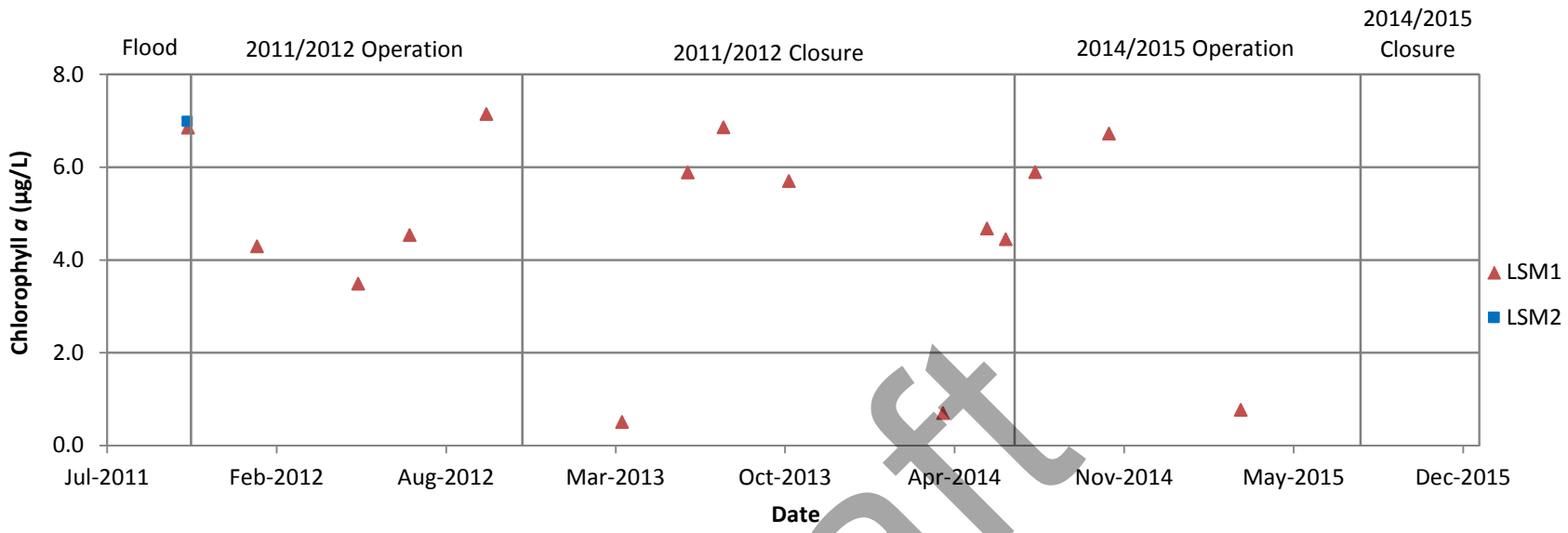

Figure 29. Chlorophyll *a* concentrations in Lake St. Martin, 2011-2015.

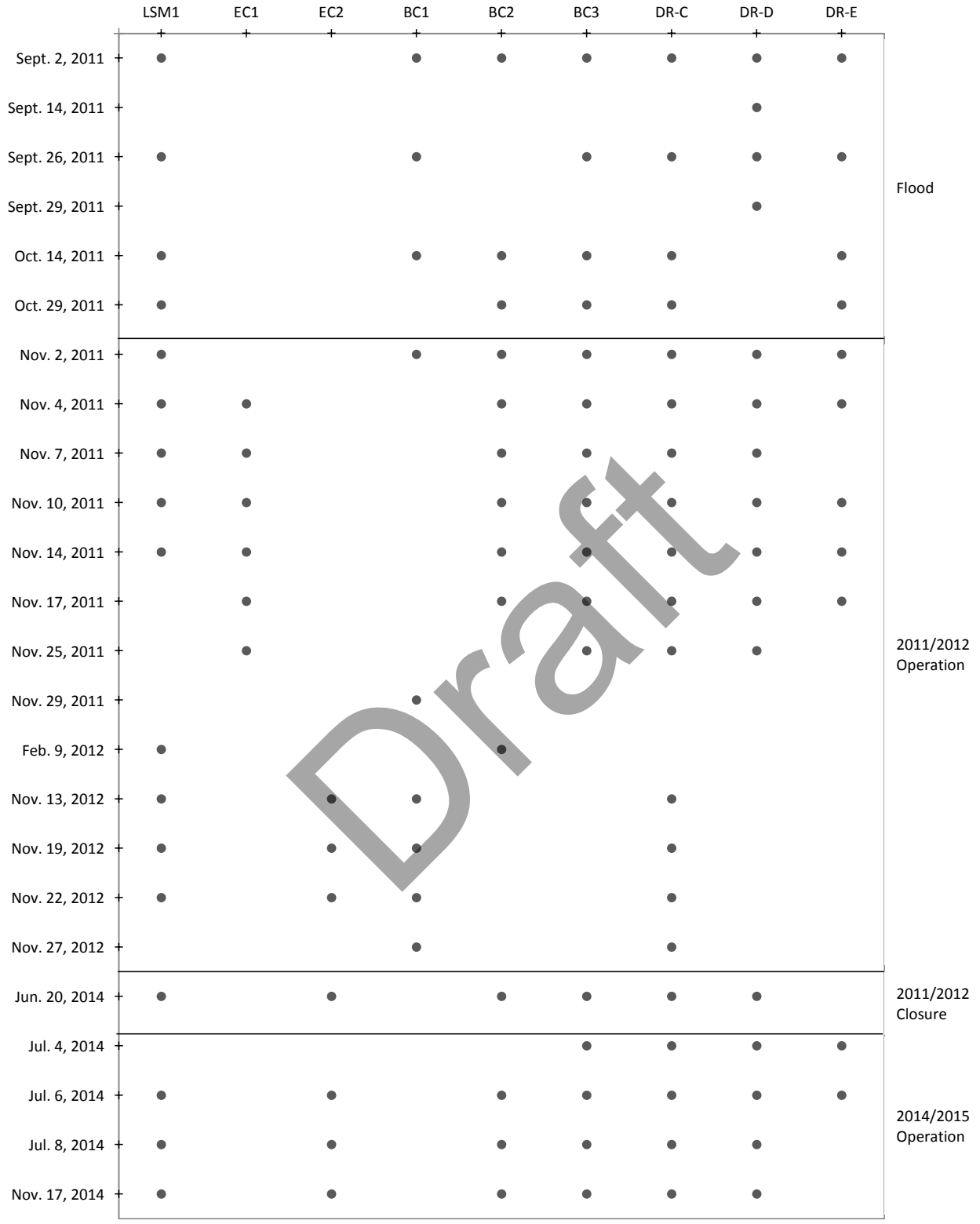

Figure 30. Petroleum hydrocarbon samples collected in the Study Area, 2011-2014. All concentrations were below the analytical detection limits.

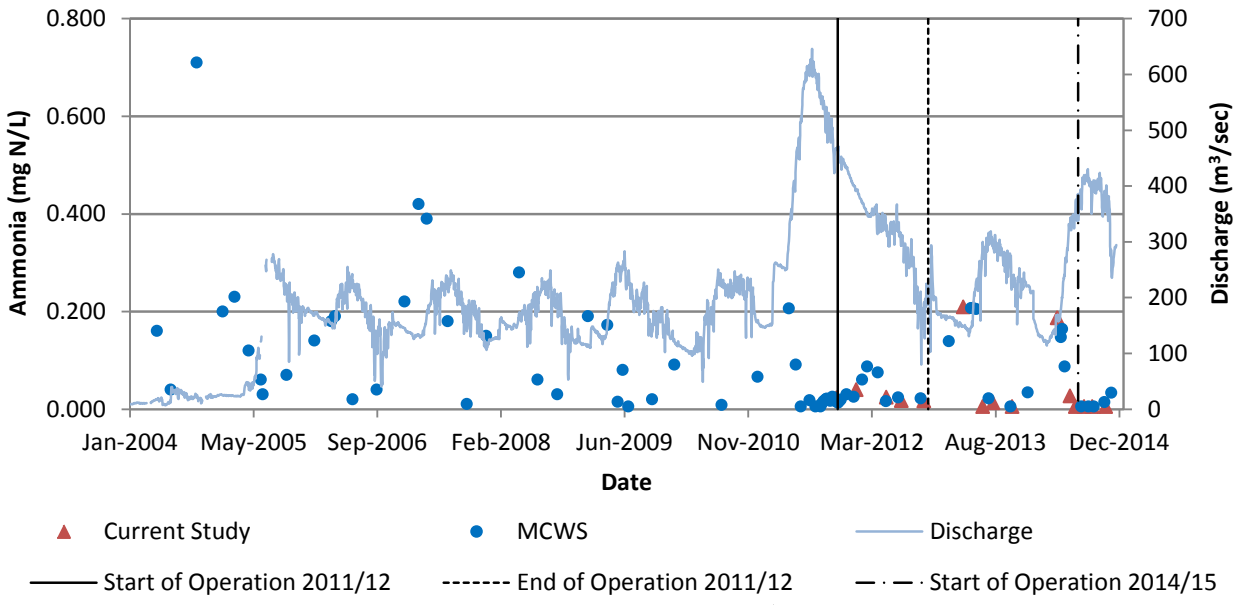

Figure 31. Ammonia concentrations in the Fairford River, 2004-2014.

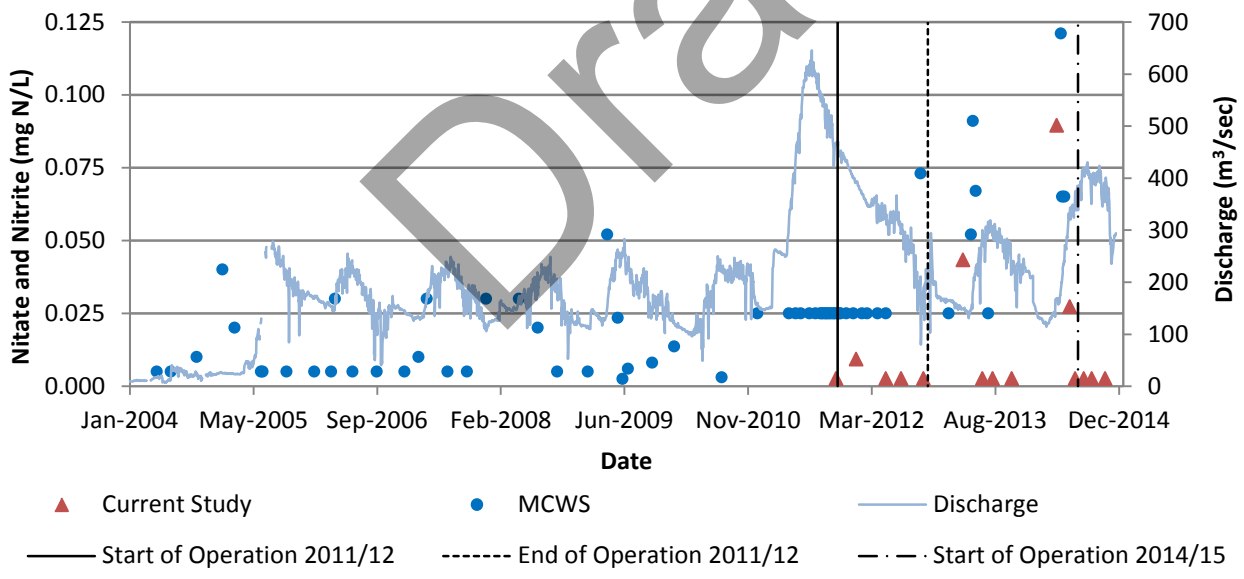

Figure 32. Nitrate/nitrite nitrogen concentrations in the Fairford River, 2004-2014.

4.2 BUFFALO CREEK WATERSHED MONITORING RESULTS

This section presents the assessment of change/lack of change to water quality within the Buffalo Creek watershed from 2011 through 2015. Summary statistics for key water quality parameters for each time period are presented in Table 13. Figures 33 to 52 show trends in water quality from 2011 through 2015 within the watershed. Water quality data for Big Buffalo Lake are not available prior to 2013.

4.2.1 Pre-Operation

Water quality data for the Buffalo Creek watershed prior to the initiation of the Project are limited to those collected in Buffalo Creek in fall 2011 during the 2011 Flood period. No historical data are available and no data are available for Big Buffalo Lake. Based on these data, the water quality of Buffalo Creek could be generally described as nutrient moderate, clear, slightly alkaline, highly coloured, hard, and generally well-oxygenated (Table 13). TSS concentrations were similar throughout the creek and ranged from < 2.0 to 6.0 mg/L (Figure 33). Laboratory data for pH are limited, but values ranged from 8.12 to 8.19. True colour ranged from 51.5 to 53.2 CU. Conductivity and TDS in the creek were relatively low for the Study Area and ranged from 217-237 µmhos/cm and 164-177 mg/L, respectively (Figures 34 and 35). Hardness ranged from 155 to 166 mg/L. DO concentrations ranged from 6.4 to 12.2 mg/L (Figure 36). TN ranged from 0.76 to 1.15 mg/L and was mostly composed of organic forms (Figures 37 and 38). TP concentrations in the creek ranged from < 0.010 to 0.026 mg/L and were predominately composed of dissolved forms (Figures 39 and 40). Carbon concentrations were composed of similar amounts of organic and inorganic forms; and, organic carbon was primarily dissolved (Table 13). On the basis of TN:TP molar ratios, Buffalo Creek was phosphorus limited (i.e., TN:TP ratio > 20; Kalff 2002). TOC:ON molar ratios indicate that the organic matter in Buffalo Creek watershed was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983). Chlorophyll *a* concentrations indicate that primary productivity in the creek was low; concentrations ranged from 0.37 to 0.52 µg/L (Figure 41).

One of five DO measurements from the upstream end of the creek (BC1) was below the MWQSOGs PAL for cold water mature life/CCME lowest acceptable concentration for other life stages of cold water biota (6.5 mg/L; Figure 36). All other DO measurements were within the MWQSOGs and CCME PALs (Table 14). All other routine parameters were within MWQSOGs and CCME guidelines for PAL, including ammonia, TP, nitrate, nitrite, and pH. Turbidity and true colour exceeded the MWQSOGs/Health Canada aesthetic objectives for drinking water (1.0 NTU and ≤ 15 CU, respectively) throughout the creek. All other routine parameters were within drinking water guidelines, including pH, nitrate/nitrite, nitrate, nitrite, and TDS.

Antimony, total boron, cadmium, chromium, lead, molybdenum, nickel, selenium, silver, thallium, uranium, and zinc were not detected in Buffalo Creek during 2011 Flood. Total aluminum, arsenic, barium, calcium, chloride, fluoride, magnesium, manganese, mercury, total methyl mercury, potassium, sodium, and sulphate were consistently detected; and, dissolved boron, copper, iron, and dissolved methyl mercury were detected in some samples. Aluminum exceeded the MWQSOGs and CCME PAL

(0.1 mg/L) at the downstream end of Buffalo Creek (Figure 42). All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 15) and drinking water (Table 16).

Petroleum hydrocarbons were not detected in Buffalo Creek during the 2011 Flood period.

4.2.2 2011/2012 Operation

Water quality data for the Buffalo Creek watershed during 2011/2012 Operation are limited to Reach 1 and Buffalo Creek. Due to safety concerns, sampling at the upstream end of Reach 1 (EC1) and the most upstream site on Buffalo Creek (BC1) was not conducted at the onset of operation; therefore data for these sites are not available until January 2012. No data are available for Big Buffalo Lake during 2011/2012 Operation.

4.2.2.1 Routine

During 2011/2012 Operation, the water quality of Buffalo Creek changed as water from Lake St. Martin was introduced to the watershed (Table 13). Conductivity, TDS, and hardness increased substantially to range from 1020-1170 µmhos/cm, 618-732 mg/L, and 254-309 mg/L, respectively (Figures 34 and 35). Laboratory pH also increased, though to a smaller degree, to range from 8.24 to 8.39. Conversely, true colour decreased and ranged from 9.0 to 15.2 CU.

TDS consistently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 500 mg/L) throughout the watershed. Additionally, true colour occasionally exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 15 CU) at the downstream end of Buffalo Creek (BC3). Laboratory pH was consistently within the MWQOSGs/CCME PAL (6.5-9.0) and the MWQSOGs/Health Canada aesthetic objective for drinking water (6.5-8.5). There are no MWQSOGs or CCME guidelines for PAL or drinking water for conductivity or hardness.

4.2.2.2 Dissolved Oxygen

During 2011/2012 Operation, Reach 1 was well oxygenated with concentrations ranging from 8.3 to 14.9 mg/L (Figure 36). DO concentrations in Reach 1 were consistently above MWQSOGs objectives and CCME guidelines for PAL.

DO concentrations in Buffalo Creek were generally lower than in Reach 1, ranging from 2.9 to 12.5 mg/L; and, with a few exceptions, remained above PAL objectives (Table 14). Exceptions occurred in March, August and November 2012, as follows:

- On 16 March, DO was below the MWQSOGs objective for cold water early life/CCME lowest acceptable concentration for early life stages of cold water biota (9.5 mg/L) at the first site at the upstream end of the creek (BC1) and at the downstream end of the creek (BC3);
- On 09 August, DO throughout Buffalo Creek (BC1, BC2, and BC3) was below the MWQSOGs PAL for cold water mature life/the CCME lowest acceptable concentration for other life stages of cold water biota (6.5 mg/L). DO was also below the MWQSOGs PAL for cool water early life/CCME lowest acceptable concentration for early life stages of warm water biota (6.0 mg/L) at one of the sites in the upstream reaches in the creek (BC2); and,

- On 27 November, a few days after the Reach 1 was closed, DO concentrations at the upstream end of Buffalo Creek (BC1 and BC2) were below both the MWQSOGs PAL for cold water early life/CCME lowest acceptable concentration for early life stages of cold water biota (9.5 mg/L); and, the MWQSOGs PAL for cool water mature life/CCME lowest acceptable concentration for other life stages of warm water biota (5.5 mg/L).

4.2.2.3 TSS and Turbidity

In November 2011, at the onset of 2011/2012 Operation, TSS concentrations in the Buffalo Creek watershed increased. Beginning 04 November, TSS ranged from 17 to 130 mg/L in Reach 1, from 10 to 30 mg/L at the upstream end of Buffalo Creek (BC2), and from 17 to 60 mg/L at the downstream end of the creek (BC3; Figure 33). TSS was consistently higher at the downstream end of the creek indicating that there was erosion and suspension of sediment occurring as the water progressed downstream. TSS remained elevated in the watershed on 25 November when sampling was stopped due to safety concerns.

TSS concentrations exceeded the MWQSOGs 1-day averaging objective/CCME short-term exposure objective of 25 mg/L above background as follows: 04, 07, and 17 November in Reach 1 (EC1); 04 November at the upstream end of Buffalo Creek (BC2); and, 04, 07, and 25 November at the downstream end of the creek (BC3). TSS concentrations consistently exceeded the MWQSOGs 30-day averaging objective/CCME long-term exposure objective of 5 mg/L above background throughout the Buffalo Creek watershed (EC1, BC2, and BC3) from 04-25 November.

TSS concentrations in the Buffalo Creek watershed had decreased when sampling resumed in January, 2012 (Figure 33); TSS concentrations in the watershed ranged from 2.8 to 6.8 mg/L in January and February 2012. TSS remained at background levels in the watershed until March 2012, when TSS increased above 20 mg/L at the downstream ends of Reach 1 (EC2) and Buffalo Creek (BC3). This change is thought to be associated with the spring melt.

Following the spring freshet, TSS concentrations returned to background in Reach 1 (EC1 and EC2) and at the upstream end of Buffalo Creek (BC1 and BC2). At the downstream end of Buffalo Creek (BC3), TSS initially returned to background levels similar to other areas, and then began to increase such that concentrations were typically above background from May to October. This trend of increasing concentration occurred throughout the creek but was most obvious at the downstream end where TSS was consistently higher.

On 12 September 2012, heavy wind and wave conditions on Lake St. Martin resulted in a plume of sediment that was visible from Lake St. Martin through Reach 1 and into Buffalo Creek (Figures 20 and 33). Additionally, on 19 November 2012, there was a notable spike in TSS in Buffalo Creek (14.7 and 18.1 mg/L, at BC2 and BC3 respectively). This spike corresponded with the closure activities on Reach 1, and although an increase in TSS was not detected upstream in Reach 1, the increased TSS in Buffalo Creek could be a result of in-stream work that occurred earlier in the week when sampling did not occur. Another possible reason for the spike could be the development of border ice, or changes in water levels and flows, that resulted in increased erosion along the banks of the creek.

It is important to note that when TSS concentrations in Reach 1 were elevated (e.g., spring freshest and 12 September), TSS remained within background at the upstream end of Buffalo Creek (BC1). This indicates that Big Buffalo Lake and the bog complex surrounding the lake acted as a settling area for suspended sediment coming from Reach 1.

TSS concentrations exceeded the MWQSOGs 1-day averaging objective/CCME short-term exposure guideline of 25 mg/L above background at the upstream end of Reach 1 (EC1) on 12 September 2012 (Figure 33). Additionally, TSS exceeded the MWQSOGs 30-day averaging objective/CCME long-term exposure guideline of 5 mg/L above background as follows: On 16 March, 17 April, 12 September and 22 November 2012 at the downstream end of Reach 1(EC2); on 16 March, 12 September and 19 November 2012 at the second sampling site at the upstream end of Buffalo Creek (BC2); and, on 8 of 12 sampling dates between 16 March and 22 November 2012 at the downstream end of Buffalo Creek (BC3).

In 2012, trends in laboratory turbidity were similar to those for TSS (Figure 43). Laboratory turbidity was not measured during 2011/2012 Operation in 2011. Turbidity was consistently above the MWQSOGs/Health Canada aesthetic objective for drinking water (1 NTU) in the Buffalo Creek watershed during 2011/2012 Operation.

4.2.2.4 Nutrients

At the onset of 2011/2012 Operation, there was a small increase in nitrogen at the downstream end of Buffalo Creek (BC3; Figure 37) that can be attributed to an increase in ammonia concentrations (Figure 44). In addition, although TN showed little change at the upstream end of the creek (BC2), there was a small increase in ammonia at the upstream end of the creek. Ammonia concentrations remained elevated throughout the winter, but by spring 2012, nitrogen concentrations in Buffalo Creek were within the range measured during the 2011 Flood period. An increase in DIN, due to increases in both ammonia and nitrate/nitrite, occurred again in fall 2012. During 2011/2012 Operation, TN in Buffalo Creek ranged from 0.39 to 1.43 mg/L and was mostly composed of organic forms (Table 13).

On 04 November 2011, there was a spike in TP in Reach 1 and Buffalo Creek (Figure 39); this spike was composed primarily of particulate forms and was short lived (Figure 40). TP throughout the watershed returned to levels measured in Buffalo Creek during 2011 Flood within a week and remained there throughout the remainder of 2011/2012 Operation. During 2011/2012 Operation, TP in Buffalo Creek ranged from < 0.010 to 0.061 mg/L and, unlike the 2011 Flood period, was composed of a mix of dissolved and particulate forms. On the basis of TN:TP molar ratios, Buffalo Creek was phosphorus limited (i.e., TN:TP ratio > 20; Kalff 2002) similar to the 2011 Flood period.

During 2011/2012 Operation, organic carbon (total and dissolved) concentrations decreased and inorganic carbon concentrations increased in Buffalo Creek (Table 13). Similar to the 2011 Flood period, TOC:ON molar ratios indicate that the organic matter in Buffalo Creek watershed was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983).

Ammonia rarely exceeded (1 of 16 samples) the CCME PAL guideline at the upstream end of Reach 1. Ammonia was within MWQSOGs and CCME PAL in the Buffalo Creek watershed at all other times during

2011/2012 Operation. TP exceeded the MWQSOGs narrative guideline for streams (0.050 mg/L) at the upstream end of Reach 1 (EC1) and at the downstream end of Buffalo Creek (BC3) on 04 November 2011. TP was within the MWQSOGs narrative guidelines in Reach 1 and Buffalo Creek at all other times during 2011/2012 Operation. Nitrate/nitrite, nitrite and nitrate were consistently within the MWQSOGs/CCME guidelines for PAL and drinking water. There are no MWQSOGs or CCME guidelines for carbon.

4.2.2.5 Chlorophyll *a*

Chlorophyll *a* concentrations in Buffalo Creek during 2011/2012 Operation were higher than those measured in October 2011, ranging from 1.54 to 3.89 µg/L (Figure 41). Chlorophyll *a* was not measured in Reach 1. There are no MWQSOGs or CCME guidelines for chlorophyll *a*.

4.2.2.6 Metals and Major Ions with MWQSOGs and/or CCME Guidelines

Chromium, dissolved lead, silver, dissolved thallium, and dissolved zinc were not detected in the Buffalo Creek watershed during 2011/2012 Operation. Total aluminum, arsenic, barium, boron, calcium, chloride, copper, fluoride, total iron, magnesium, manganese, molybdenum, potassium, sodium, sulphate, and uranium were consistently detected. Dissolved aluminum, total antimony, cadmium, dissolved iron, total lead, mercury, methyl mercury, nickel, selenium, and total zinc were detected in some samples.

Concentrations of several metals and major ions increased in Buffalo Creek during 2011/2012 Operation, including: Arsenic; barium; boron; calcium; chloride; copper; fluoride; magnesium; molybdenum; potassium; sodium; sulphate; and, uranium. Additionally, several metals that were not detected in Buffalo Creek prior to the Project were detected in the creek during 2011/2012 Operation, including: Antimony; boron; cadmium; lead; molybdenum; selenium; thallium; uranium; and, zinc. However, caution should be used when drawing any conclusions from these results. Due to an exception with laboratory methods, analytical DLs for several metals were lowered for some samples collected in May and July 2012. As a result, some metals that were previously not detected in Buffalo Creek may have been detected only because the analytical DL was lower.

Similar to the 2011 Flood period, aluminum frequently exceeded the MWQSOGs and CCME PAL (0.1 mg/L) at the downstream end of Buffalo Creek (2 of 4 samples collected; Figure 42). Unlike the 2011 Flood period, Chloride consistently exceeded the CCME long-term exposure guideline for PAL (120 mg/L) throughout the watershed during 2011/2012 Operation (Figure 45). Similarly, fluoride consistently exceeded the CCME interim PAL (0.12 mg/L), and selenium was frequently above the MWQSOGs and CCME PAL (0.001 mg/L) in the watershed during 2011/2012 Operation (Figure 46). All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 15) and drinking water (Table 16) in the Buffalo Creek watershed during 2011/2012 Operation.

4.2.2.7 Petroleum Hydrocarbons

Petroleum hydrocarbons were not detected in Buffalo Creek or Reach 1 at the onset of 2011/2012 Operation, or during closure activities in November 2012 (Figure 30). Analytical detection limits for

hydrocarbon parameters sampled were well below the MWQSOGs/CCME guidelines for PAL and drinking water, as applicable (Table 12).

4.2.3 2011/2012 Closure

Water quality data for the Buffalo Creek watershed during 2011/2012 Closure are available for Reach 1, Big Buffalo Lake and Buffalo Creek.

4.2.3.1 Routine

During 2011/2012 Closure, the water quality of Buffalo Creek changed as water from Lake St. Martin was no longer entering the watershed (Table 13). Conductivity, TDS, pH, and hardness decreased, and colour increased in Buffalo Creek. Although conductivity and TDS decreased, they remained higher than were measured during the 2011 Flood period and ranged from 273-479 µmhos/cm and 206-392 mg/L, respectively (Figures 34 and 35). Conversely, laboratory pH, hardness, and colour returned to pre-operation conditions during 2011/2012 Closure; pH ranged from 8.15-8.29, hardness ranged from 124-231 mg/L, and colour ranged from 39.8-65.8 CU.

In Big Buffalo Lake, water quality varied between the open-water and ice-covered seasons; such that, conductivity, TDS and hardness were higher and pH was lower under-ice than during the open-water season during 2011/2012 Closure. Conductivity, TDS and hardness ranged from 203-1170 µmhos/cm, 250-761 mg/L, and 153-484 mg/L, respectively. Similar to Buffalo Creek, colour was high in the lake and ranged from 39.3 to 53.7 CU. No pre-Project data are available for comparison.

TDS frequently (2 of 4 samples) exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 500 mg/L) and laboratory pH was occasionally (1 of 4 samples) above the upper limit of the MWQGOGs/Health Canada aesthetic objective (6.5-8.5) in Big Buffalo Lake. TDS and pH were consistently within these objectives in Reach 1 and Buffalo Creek. Colour consistently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤15 CU) throughout the watershed. Laboratory pH was consistently within the MWQOSGs/CCME PAL (6.5-9.0). There are no MWQSOGs or CCME guidelines for PAL or drinking water for conductivity or hardness.

4.2.3.2 Dissolved Oxygen

In March 2013 following closure of the Reach 1, anoxic conditions existed in Reach 1 and Big Buffalo Lake. At this time, DO concentrations in Buffalo Creek were also low (Figure 36). In spring 2013, DO concentrations were higher in Reach 1 (EC1 and EC2) and at the downstream end of Buffalo Creek (BC3), but remained low in Big Buffalo Lake and the upstream end of Buffalo Creek (BC1 and BC2). In fall 2013, the entire watershed was well oxygenated. Under ice in April 2014, Big Buffalo Lake was again anoxic; Buffalo Creek and Reach 1 were not sampled in winter 2013/2014. During the open-water season of 2014, the Buffalo Creek watershed was generally well oxygenated prior to 2014/2015 Operation.

During 2011/2012 Closure, when water temperatures were less than or equal to 5°C, DO concentrations in the Buffalo Creek watershed were below the MWQSOGs/CCME PALs as follows (Table 14):

- In Reach 1, DO was frequently below the MWQSOGs objective for cold water early life/CCME lowest acceptable concentration for early life stages of cold water biota (9.5 mg/L) and occasionally below the MWQSOGs PAL for cool water mature life/CCME lowest acceptable concentration for other life stages of warm water biota (5.5 mg/L);
- In Big Buffalo Lake, DO was consistently below the MWQSOGs objective for cold water early life/CCME lowest acceptable concentration for early life stages of cold water biota (9.5 mg/L) and frequently below the MWQSOGs PAL for cool water mature life/CCME lowest acceptable concentration for other life stages of warm water biota (5.5 mg/L); and,
- In Buffalo Creek, DO was frequently below the MWQSOGs objective for cold water early life/CCME lowest acceptable concentration for early life stages of cold water biota (9.5 mg/L) and occasionally below the MWQSOGs PAL for cool water mature life/CCME lowest acceptable concentration for other life stages of warm water biota (5.5 mg/L);

During 2011/2012 Closure, when water temperatures were greater than 5°C DO concentrations in the Buffalo Creek watershed were below the MWQSOGs/CCME PAL objectives as follows (Table 14):

- In Big Buffalo Lake, DO was occasionally below the MWQSOGs PAL for cold water mature life/CCME lowest acceptable concentration for other life stages of cold water biota (6.5 mg/L), and the MWQSOGs PAL for cool water early life/CCME lowest acceptable concentration for other life stages of warm water biota (6.0 mg/L); and,
- In Buffalo Creek, DO was occasionally below the MWQSOGs PAL for cold water mature life/CCME lowest acceptable concentration for other life stages of cold water biota (6.5 mg/L), and rarely below the MWQSOGs PAL for cool water early life/CCME lowest acceptable concentration for other life stages of warm water biota (6.0 mg/L).

In Reach 1, DO was consistently above the MWQSOGs/CCME PAL objectives when water temperatures were greater than 5°C.

4.2.3.3 TSS and Turbidity

In spring 2013, TSS concentrations throughout Buffalo Creek were higher than were measured after Reach 1 was closed in November 2012 (Figure 33). Following the freshet, TSS decreased to background levels at the upstream end of Buffalo Creek, but remained consistently higher than in 2011 at the downstream end of the creek. In spring 2014, a similar pattern was observed, however, at the upstream end of the creek the spike in TSS was less pronounced than was observed in 2013. TSS concentrations ranged from < 2.0 to 24 mg/L in Buffalo Creek during 2011/2012 Closure; and, with the exception of the spring freshet in 2013, TSS continued to be higher at the downstream end than at the upstream end of the creek.

TSS concentrations in Reach 1 and Big Buffalo Lake also spiked during the spring freshet of 2013 (Figure 33). TSS concentrations decreased following freshet and then remained fairly stable throughout the remainder of 2011/2012 Closure.

TSS concentrations exceeded the MWQSOGs 30-day averaging objective/CCME long-term exposure objective of 5 mg/L above background from May to July in 2013 and in May 2014 at the upstream end of Buffalo Creek (BC1 and BC2); and, consistently exceeded these objectives at the downstream end of Buffalo Creek (BC3) throughout 2011/2012 Closure. TSS concentrations never exceeded the MWQSOGs 1-day averaging objective/CCME short-term exposure objective of 25 mg/L above background in Buffalo Creek during 2011/2012 Closure. An assessment of the MWQSOGs/CCME PAL objectives for TSS could not be conducted for Big Buffalo Lake due to a lack of background data. Assessment of TSS objectives was not possible for Reach 1 as it was no longer operational.

Trends in laboratory turbidity were similar to those for TSS (Figure 43). Turbidity was consistently above the MWQSOGs/Health Canada aesthetic objective for drinking water (1 NTU) in the Buffalo Creek watershed during 2011/2012 Closure.

4.2.3.4 Nutrients

Following the closure of Reach 1 in 2012, nitrogen increased in Big Buffalo Lake and Buffalo Creek; TN and DIN were higher than both 2011/2012 Operation and the 2011 Flood period in winter and spring 2013 (Figures 37 and 47). After the spring freshet, nitrogen concentrations decreased in the lake and creek. High nitrogen concentrations were again present in Big Buffalo Lake under the ice in April 2014 and a small spike in ammonia occurred in the watershed during the spring freshet. In Reach 1, TN was lower during 2011/2012 Closure than it was during 2011/2012 Operation. During 2011/2012 Closure, TN ranged from 0.53 to 2.83 mg/L in Buffalo Creek and from 0.81 to 3.29 mg/L in Big Buffalo Lake (Table 13). Nitrogen was nearly an equal mix of organic and inorganic forms in winter and in spring 2013, but was mostly in organic form in the Buffalo Creek watershed during the remainder of 2011/2012 Closure (Figure 38).

Similar to nitrogen, in the winter and spring following the closure of Reach 1 in 2012, phosphorus increased throughout the Buffalo Creek watershed. TP concentrations were particularly high during the spring freshet; this was due to increases in both dissolved and particulate forms of phosphorus (Figures 39 and 48). Phosphorus concentrations decreased in Reach 1 (EC1 and EC2), Big Buffalo Lake, and the upstream reaches of Buffalo Creek (BC1 and BC2) after the freshet, but remained elevated at the downstream end of Buffalo Creek (BC3) throughout the open-water season of 2013. In 2014, TP increased again in the spring but had returned to pre-Project levels throughout the watershed prior to 2014/2015 Operation. During 2011/2012 Closure, TP ranged from 0.011 to 0.054 mg/L in Buffalo Creek and, unlike the 2011 Flood period, was composed of a mix of dissolved and particulate forms. TP ranged from < 0.010 to 0.044 mg/L in Big Buffalo Lake and was also composed of a mix of dissolved and particulate forms; no pre-Project data are available for comparison. On the basis of TN:TP molar ratios, the Buffalo Creek watershed remained phosphorus limited (i.e., TN:TP ratio > 20; Kalff 2002).

During 2011/2012 Closure, organic carbon (total and dissolved) concentrations in Buffalo Creek increased such that they returned to levels similar to what they were in fall 2011. Conversely, inorganic carbon concentrations in the creek did not change and remained higher than they were before 2011/2012 Operation (Table 13). Carbon (organic and inorganic) concentrations in Big Buffalo Lake were higher than in Buffalo Creek; no pre-Project data are available for comparison. Similar to the 2011

Flood period, TOC:ON molar ratios indicate that the organic matter in Buffalo Creek watershed was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983).

Ammonia occasionally (2 of 12 samples) exceeded the CCME PAL guideline in Big Buffalo Lake; ammonia was within MWQSOGs and CCME PAL in the Buffalo Creek watershed at all other times during 2011/2012 Closure. TP was above the MWQSOGs narrative guideline for streams (0.050 mg/L) in Reach 1 (EC1) in March 2013; and, in the upstream reaches of Buffalo Creek (BC2) in May 2013. TP was within the MWQSOGs narrative guidelines in Reach 1 and Buffalo Creek at all other times during 2011/2012 Closure. However, TP frequently exceeded the MWQSOGs narrative guideline for lakes (0.025 mg/L) in Big Buffalo Lake. Nitrate/nitrite, nitrite and nitrate were consistently within the MWQSOGs/CCME guidelines for PAL and drinking water. There are no MWQSOGs or CCME guidelines for carbon.

4.2.3.5 Chlorophyll *a*

Chlorophyll *a* concentrations in Buffalo Creek during 2011/2012 Closure remained higher than October 2011. Concentrations at the downstream end of the creek (BC3) ranged from 1.98 to 5.64 µg/L (Figure 41). Chlorophyll *a* in Big Buffalo Lake ranged from 1.34 to 7.96 µg/L; there are no pre-Project data for Buffalo Lake for comparison. Chlorophyll *a* was not measured in Reach 1. There are no MWQSOGs or CCME guidelines for chlorophyll *a*.

4.2.3.6 Metals and Major Ions with MWQSOGs and/or CCME Guidelines

Antimony, dissolved chromium, dissolved lead, nickel, selenium, silver, thallium, and dissolved zinc were not detected in the Buffalo Creek watershed during 2011/2012 Closure. Total aluminum, arsenic, barium, boron, calcium, chloride, total copper, magnesium, manganese, total mercury, methyl mercury, molybdenum, potassium, sodium, sulphate, and uranium were consistently detected. Dissolved aluminum, cadmium, dissolved copper, fluoride, iron, total lead, dissolved mercury, and total zinc were detected in some samples.

Most metals and major ions that had increased in Buffalo Creek during 2011/2012 Operation showed a decreasing trend in concentration during 2011/2012 Closure but remained above pre-operation levels, including: Arsenic; barium; boron; chloride; fluoride; molybdenum; and, uranium. Calcium, magnesium, potassium, sodium, and sulphate also decreased in concentration but had returned to pre-operation levels by the end the 2011/2012 Closure period. Conversely, total copper continued to increase in concentration in Buffalo Creek and, concentrations of total forms of aluminum, iron, lead, and manganese were higher in Buffalo Creek during 2011/2012 Closure than were previously measured.

Several metals with MWQSOGs or CCME guidelines for PAL and/or drinking water that were not detected in Buffalo Creek prior to the Project were still detected in the creek after Reach 1 was closed, including: boron; cadmium; lead; molybdenum; uranium; and, zinc (Table 13).

Aluminum continued to frequently exceed the MWQSOGs and CCME PAL (0.1 mg/L) in Buffalo Creek (Figure 42) as it did during 2011/2012 Operation and prior to the Project. Chloride exceeded the CCME long-term exposure guideline in 1 of 4 samples collected from Big Buffalo Lake; this guideline was no

longer exceeded elsewhere in the watershed (Figure 45). Fluoride exceeded the CCME interim PAL (0.12 mg/L) in the samples that were collected in Reach 1 and in 1 of 4 samples collected from Big Buffalo Lake; this guideline was no longer exceeded in Buffalo Creek (Figure 46). Additionally, iron frequently (in 3 of 6 samples) exceeded the MWQSOGs/CCME PAL (0.3 mg/L) and the MWQSOGs/Health Canada aesthetic objective for drinking water (0.3 mg/L; Figure 49) and chromium occasionally (1 of 6 samples) exceeded the CCME PAL at the downstream end of Buffalo Creek (BC3; Table 15). Exceedance of the latter two guidelines had not previously occurred. All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 15) and drinking water (Table 16) in the Buffalo Creek watershed during 2011/2012 Closure.

4.2.3.7 Petroleum Hydrocarbons

During 2011/2012 Closure, petroleum hydrocarbons were only sampled prior to the onset of 2014/2015 Operation; they were not detected in Reach 1 or Buffalo Creek at this time (Figure 30). Analytical detection limits for hydrocarbon parameters sampled were well below the MWQSOGs/CCME guidelines for PAL and drinking water, as applicable (Table 12). Petroleum hydrocarbons were not sampled in Big Buffalo Lake.

4.2.4 2014/2015 Operation

Water quality data for the Buffalo Creek watershed during 2014/2015 Operation are available for Reach 1, Big Buffalo Lake and Buffalo Creek.

4.2.4.1 Routine

Similar to 2011/2012 Operation, at the onset of 2014/2015 Operation, the water quality of Buffalo Creek changed as water from Lake St. Martin was introduced to the watershed (Table 13). Conductivity, TDS and hardness increased to range from 846-938 µmhos/cm, 488-537 mg/L, and 211-239 mg/L, respectively. In addition, there was a small increase in laboratory pH; pH ranged from 8.24 to 8.39 during operation in 2014. Conversely, true colour decreased and ranged from 10.3 to 20.7 CU.

TDS and true colour frequently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 500 mg/L and ≤ 15 CU, respectively) in Buffalo Creek. Laboratory pH was consistently within the MWQOSGs/CCME PAL (6.5-9.0) and the MWQSOGs/Health Canada aesthetic objective for drinking water (6.5-8.5). There are no MWQSOGs or CCME guidelines for PAL or drinking water for conductivity or hardness.

There are no data for these parameters for Reach 1 or Big Buffalo Lake during this period.

4.2.4.2 Dissolved Oxygen

At the onset of 2014/2015 Operation, DO concentrations dropped in Buffalo Creek (Figure 36); there was little effect on DO concentrations in Reach 1 and Big Buffalo Lake. DO concentrations recovered quickly at the downstream end of Buffalo Creek (BC3), but remained low until at least the middle of July at the upstream end of the creek (BC1 and BC2). From August to November 2014 DO steadily increased throughout the watershed then declined from May to July 2015.

DO concentrations in 2014 were below the MWQSOGs PAL for cold water mature life and CCME lowest acceptable concentration for other life stages of cold water biota (6.5 mg/L) at water temperatures > 5°C in Reach 1 on 06 July (EC2) and 08 July (EC1 and EC2), Big Buffalo Lake on 06 July, the upstream end of Buffalo Creek (BC1) from 04 July to 26 August, BC2 from 06-16 July, and at the downstream end of the creek on 03, 05, and 11 July. In 2015, DO concentrations were below this objective at water temperatures > 5°C on 11 June at the downstream end of Buffalo Creek (BC3) and on 30 July at the upstream and downstream ends (BC1 and BC3) of Buffalo Creek.

DO in 2014 was below the MWQSOGs PAL for cool water early life/CCME lowest acceptable concentration for early life stages of warm water biota (6.0 mg/L) at water temperatures > 5°C at the downstream end of Reach 1 on 06 and 08 July (EC2), the upstream end of Buffalo Creek at BC1 from 04-16 July and at BC2 from 06-16 July, and at the downstream end of the creek on 03, 05 and 11 July. In 2015, DO concentrations were below this objective at water temperatures > 5°C on 11 June at the downstream end of Buffalo Creek (BC3) and on 30 July at the upstream and downstream ends (BC1 and BC3) of Buffalo Creek.

In March 2015, DO was below the MWQSOGs PAL for cold water early life/CCME lowest acceptable-concentration for early life stages of cold water biota (9.5 mg/L) at the downstream end of Buffalo Creek (BC3).

4.2.4.3 TSS and Turbidity

At the onset of 2014/2015 Operation, TSS concentrations increased throughout the Buffalo Creek watershed (Figure 33) with the magnitude of change the greatest at the downstream ends of both Reach 1 and Buffalo Creek. TSS concentrations increased as the water entered Reach 1 from Lake St. Martin and flowed downstream towards Big Buffalo Lake. At Big Buffalo Lake, TSS concentrations were lower than in Reach 1 indicating that settling occurred when the water reached the wetland. TSS concentrations then continued to increase from upstream to downstream in Buffalo Creek. At the downstream end of Buffalo Creek, the spike in TSS concentrations that occurred was approximately three times greater than that which occurred at the onset of 2011/2012 Operation and concentrations were approximately thirty times higher than those measured during the flood in October 2011. In July 2014, TSS concentrations ranged from 12 to 174 mg/L in Reach 1, from 6.4 to 23.6 mg/L in Big Buffalo Lake and from 3.2 to 180 mg/L in Buffalo Creek.

Following the initial onset of 2014/2015 Operation, with one exception, TSS concentrations in the watershed gradually decreased throughout 2014. The exception occurred on 17 November when TSS concentrations spiked in Reach 1 coincident with excavation work during the Expanded Opening. TSS concentrations in Reach 1 had decreased again by 18 November.

TSS exceeded the MWQSOGs 1-day averaging objective/CCME short-term exposure objective of 25 mg/L above background as follows (Figure 33): 04 July at the upstream end of Reach 1 (EC1); 03-06 July at the downstream end of Reach 1 (EC2); 04 July at the most upstream site in Buffalo Creek (BC1); 04 and 06 July at the second sampling site at the upstream end of the creek (BC2); and, from 05-11 July at the downstream end of the creek (BC3). TSS concentrations exceeded the MWQSOGs 30-day averaging

objective/CCME long-term exposure objective of 5 mg/L above background throughout Reach 1 (EC1 and EC2) from 03-16 July and on 17 November, in Big Buffalo Lake from 03 July to 23 October, at the upstream end of Buffalo Creek (BC1 and/or BC2) from 04-11 July, and at the downstream end of the creek (BC3) from 03 July to 23 October, 2014 and 27 March to 30 July, 2015.

Trends in laboratory turbidity were similar to those for TSS (Figure 43). Turbidity was consistently above the MWQSOGs/Health Canada aesthetic objective for drinking water (1 NTU) in the Buffalo Creek watershed during 2014/2015 Operation.

4.2.4.4 Nutrients

During 2014/2015 Operation, nitrogen concentrations in the Buffalo Creek were similar to those measured in fall 2011, and concentrations in Big Buffalo Lake were similar to those measured in 2014 prior to the onset of operation (Figure 37). TN ranged from 0.64 to 1.44 mg/L in Buffalo Creek and from 0.73 to 1.06 mg/L in Big Buffalo Lake. Nitrogen in the Buffalo Creek watershed was mostly composed of organic forms (Figure 38).

At the onset of 2014/2015 Operation, there was an increase in phosphorus concentrations in the Buffalo Creek watershed (Figure 39). A similar spike in phosphorus was observed at the onset of 2011/2012 Operation; again, this spike was composed primarily of particulate forms (Figure 40). In about one week, TP throughout the watershed returned to levels measured in Buffalo Creek during 2011 Flood where they persisted throughout the remainder of 2014 and 2015. During 2014/2015 Operation, TP ranged from 0.011 to 0.089 mg/L in Buffalo Creek and from 0.014 to 0.030 mg/L in Big Buffalo Lake; TP was composed of a mix of dissolved and particulate forms. On the basis of TN:TP molar ratios, Buffalo Creek was phosphorus limited (i.e., TN:TP ratio > 20; Kalff 2002).

During 2014/2015 Operation, organic carbon (total and dissolved) concentrations decreased and inorganic carbon concentrations increased in Buffalo Creek (Table 13). Similar to the 2011 Flood period, TOC:ON molar ratios indicate that the organic matter in Buffalo Creek watershed was composed of a mix of autochthonous and allochthonous sources; however, TOC:ON molar ratios were approaching the autochthonous boundary (Wetzel 1983).

At the onset of 2014/2015 Operation, TP exceeded the MWQSOGs narrative guideline for streams (0.050 mg/L) at the upstream end of Reach 1 (EC1) and at the downstream end of Buffalo Creek (BC3) and the MWQSOGs narrative guideline for lakes (0.25 mg/L) in Big Buffalo Lake. TP was consistently within the MWQSOGs narrative guidelines in the Buffalo Creek watershed after 11 July in 2014. Ammonia, nitrate/nitrite, nitrite and nitrate were consistently within the MWQSOGs/CCME guidelines for PAL and drinking water. There are no MWQSOGs or CCME guidelines for carbon.

4.2.4.5 Chlorophyll *a*

Chlorophyll *a* concentrations in Buffalo Creek changed very little at the onset of 2014/2015 Operation and remained within the ranges that have been measured since 2011/2012 Operation. Chlorophyll *a* ranged from 1.46 to 2.80 µg/L at the downstream end of the creek (BC3) during 2014/2015 Operation in

2014 (Figure 41). Chlorophyll *a* was not measured in Reach 1 or Big Buffalo Lake. There are no MWQSOGs or CCME guidelines for chlorophyll *a*.

4.2.4.6 Metals and Major Ions with MWQSOGs and/or CCME Guidelines

Cadmium, chromium, dissolved iron, dissolved lead, nickel, selenium, silver, thallium, and dissolved zinc were not detected in the Buffalo Creek watershed during 2014/2015 Operation. Total aluminum, arsenic, barium, boron, calcium, chloride, total copper, fluoride, total iron, total lead, magnesium, manganese, molybdenum, potassium, sodium, sulphate, and uranium were consistently detected. Dissolved aluminum, antimony, dissolved copper, mercury, methyl mercury, and total zinc were detected in some samples.

Similar to 2011/2012 Operation, several metals and major ions increased in Buffalo Creek during 2014/2015 Operation, including: arsenic; barium; boron; calcium; chloride; fluoride; magnesium; molybdenum; potassium; sodium; sulphate; and, uranium. Additionally, at the onset of 2014/2015 Operation there was a slight increase in mercury and methyl mercury concentrations in Buffalo Creek, but concentrations had returned to pre-Project levels by October 2014 (Figures 50 and 51). Conversely, unlike in 2011/2012 Operation, copper concentrations decreased in Buffalo Creek following the opening of Reach 1 in 2014 (Figure 52).

- Iron exceeded the MWQSOGs/CCME PAL (0.3 mg/L) at the downstream end of Buffalo Creek (BC3) in May 2015.

Similar to the 2011 Flood period, aluminum consistently exceeded the MWQSOGs and CCME PAL (0.1 mg/L) at the downstream end of Buffalo Creek during 2014/2015 Operation (Figure 42). And similar to 2011/2012 Operation, chloride consistently exceeded the CCME long-term exposure guideline for PAL (120 mg/L) and fluoride consistently exceeded the CCME interim PAL (0.12 mg/L; Figures 45 and 46). Iron also exceeded the MWQSOGs/CCME PAL (0.3 mg/L) at the downstream end of Buffalo Creek (BC3) in May 2015. All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 15) and drinking water (Table 16) in the Buffalo Creek watershed during 2014/2015 Operation.

4.2.4.7 Petroleum Hydrocarbons

Petroleum hydrocarbons were not detected in Buffalo Creek or Reach 1 at the onset of 2014/2015 Operation in July 2014 or during the Expanded Opening in November 2014 (Figure 30). Analytical detection limits for sampled hydrocarbon parameters were well below the MWQSOGs/CCME guidelines for PAL and drinking water, as applicable (Table 12).

4.2.5 2014/2015 Closure

Water quality data for the Buffalo Creek watershed during 2014/2015 Closure are available for Reach 1, Big Buffalo Lake and Buffalo Creek. Measurement parameters included DO, TSS, and nutrients.

4.2.5.1 Dissolved Oxygen

There was little effect of the Project on DO concentrations in Reach 1, Big Buffalo Lake, or Buffalo Creek during 2014/2015 Closure. At the onset, DO concentrations were low and similar to those measured at the end of the 2014/2015 Operation; however, all concentrations increased to pre-Project levels by 14 September (Figure 36).

On 13 and 19 August, DO concentrations were below the MWQSOGs PAL for cold water mature life and CCME lowest acceptable concentration for other life stages of cold water biota (6.5 mg/L) in Reach 1 (EC2), Big Buffalo Lake, and the upstream and downstream ends of Buffalo Creek (BC1 and BC3).

DO was also below the MWQSOGs PAL for cool water early life/CCME lowest acceptable concentration for early life stages of warm water biota (6.0 mg/L) in Big Buffalo Lake, and the upstream end of Buffalo Creek (BC1) on 13 and 19 August and the downstream end of Buffalo Creek (BC3) on 13 August.

4.2.5.2 TSS and Turbidity

TSS concentrations at the upstream and downstream ends of Buffalo Creek (BC1 and BC3, respectively) increased immediately following 2014/2015 Closure though concentrations were lower at the downstream end, indicating that settling occurred with progression through the creek (Figure 33). Concentrations in the creek during the 2014/2015 Closure were up to three times higher than those measured during the 2011 Flood but remained relatively low (ranging from 5 to 19 mg/L) and similar to those measured during 2011/2012 Closure (1.0 to 25.4 mg/L; Figure 33).

TSS exceeded the MWQSOGs 30-day averaging objective/CCME long-term exposure objective of 5 mg/L above background at the upstream end of Buffalo Creek (BC1) on 14 September, and at the downstream end of the creek (BC3) on 19 August (Figure 33).

Trends in laboratory turbidity were similar to those for TSS (Figure 43). Similar to other periods, turbidity was consistently above the MWQSOGs/Health Canada aesthetic objective for drinking water (1 NTU) in the Buffalo Creek watershed during 2014/2015 Closure.

4.2.5.3 Nutrients

Similar to the 2011/2012 Closure, nutrients in Big Buffalo Lake and Buffalo Creek increased following the 2014/2015 Closure, and concentrations remained elevated at the conclusion of the monitoring program. On 19 August and 14 September, ammonia, TN, and TP increased in Big Buffalo Lake, the upstream end of Buffalo Creek (BC-1) and, to a lesser degree, the downstream end of Buffalo Creek (BC-3; Figures 37, 39, and 44). During 2014/2015 Closure, nitrogen and phosphorous concentrations in the Buffalo Creek watershed remained lower than the spike observed during 2011/2012 Closure, however. TN ranged from 0.82 to 1.70 mg/L in Buffalo Creek and from 0.91 to 1.84 mg/L in Big Buffalo Lake and was mostly composed of inorganic forms (Figure 38). TP ranged from 0.019 to 0.040 mg/L in Buffalo Creek and from 0.018 to 0.030 mg/L in Big Buffalo Lake; TP was composed of a mix of dissolved and particulate forms. On the basis of TN:TP molar ratios, Buffalo Creek was phosphorus limited (i.e., TN:TP ratio > 20; Kalff 2002).

Total Phosphorus exceeded the MWQSOGs narrative guideline for lakes (0.025 mg/L) in Big Buffalo Lake on 14 September. Ammonia also exceeded the CCME guideline (varies with water temperature and pH) in Big Buffalo Lake on 14 September. All other nutrients (nitrate/nitrite, nitrate, and nitrite) were within guidelines.

4.2.6 Summary

The water quality of the Buffalo Creek watershed changed during each Project phase, reflecting the influence of the chemistry of water from Lake St. Martin as well as Project activities, as follows:

- Routine water quality parameters (conductivity, TDS, pH, hardness, and colour) varied in part as a result of the input of water from Lake St. Martin:
    - During the two periods when Reach 1 was operational (November 2011-November 2012, July 2014-August 2015), conductivity, TDS, pH, and hardness increased (relative to conditions measured during flood conditions in 2011), and colour decreased.
    - While Reach 1 was closed from November 2012 to July 2014, conductivity, TDS, hardness, and pH declined, though conductivity and TDS levels remained above those measured during the 2011 Flood. These parameters were not measured after closure in August 2015.

- DO generally met the Manitoba objectives for the protection of cool and cold-water aquatic life, though it declined below the objectives at various points during the monitoring program:
    - At the onset of 2014/2015 Operation, DO temporarily (for 1-10 days depending upon location) decreased below the Manitoba/CCME PALs throughout the watershed (this was not observed at the onset of 2011/2012 Operation).
    - Concentrations measured in August 2015 at the onset of closure also temporarily decreased below the PALs.
    - DO concentrations below the Manitoba guidelines and CCME objectives were also observed prior to Reach 1 operation. However, baseline data are too limited to determine whether declines observed during the Project were as a result of the Project or natural conditions.

- TSS concentrations were affected at the onset of both Project operation and closure periods:
    - At the onset of the 2011/2012 and 2014/2015 Operation periods, TSS concentrations in the Buffalo Creek watershed increased 5 to 30 times compared to the 2011 flood. TSS increases at the downstream end of Buffalo Creek were three times greater in 2014 than in 2011.
    - During closure after November 2012, spring TSS was approximately four times higher than pre-Project levels; concentrations subsequently declined but remained higher than baseline at the downstream end of Buffalo Creek. A similar increase in TSS was observed following closure activities in August 2015, and levels remained elevated at the end of the monitoring program in September 2015.

- The increases in TSS described above resulted in exceedances of both the short and long term MSWQSOGs

- Nutrients and chlorophyll *a* fluctuated during the Project, but the limited baseline data do not allow Project effects to be distinguished from natural variation:
  - At the onset of operation in 2011 and 2014, TP in Buffalo Creek increased above the MWQSOGs narrative guideline for streams (0.050 mg/L), but returned to pre-Project concentrations within a week in both years.
  - In winter and spring 2012 following the closure of Reach 1, TP and TN increased beyond the concentrations measured during 2011/2012 Operation and pre-Project phases. Following the freshet, both nutrients returned to baseline in most of the watershed, but TP remained high at the downstream end of Buffalo Creek throughout 2013. In spring 2014, there was another spike in TP, and TP increased again immediately following closure in August 2015.
  - TP occasionally exceeded the narrative guideline for streams during closures from November 2012-July 2014 and after August 2015.
  - During closure, ammonia occasionally exceeded the CCME PAL guideline in Big Buffalo Lake.
  - Chlorophyll *a* concentrations in Buffalo Creek were consistently higher than baseline from spring 2012 to August 2015, though baseline data are limited. There are no MWQSOGs or CCME guidelines for chlorophyll *a*.

- Concentrations of several metals and ions were affected by Project operation/closure, likely due to the influence of water from Lake St. Martin. However, due to limited baseline data, the extent of exceedance of guidelines under natural conditions is not known:
  - Several metals and major ions increased relative to baseline conditions in Buffalo Creek during operation in 2011/2012 and 2014/2015, including: arsenic, barium, boron, calcium, chloride, fluoride, magnesium, molybdenum, potassium, sodium, sulphate, and uranium. These metals all decreased during closure from November 2012-July 2014 to concentrations near pre-Project levels.
  - Copper increased during 2011/2012 Operation, but decreased during 2014/2015 Operation.
  - At the onset of 2014/2015 Operation there was a small increase in mercury and methylmercury in Buffalo Creek, but both returned to baseline by October 2014. Comparable data were not collected during the 2011/2012 Operation.
  - During operation in 2011/2012 and 2013/2014, chloride and fluoride exceeded the CCME PAL guidelines (120 and 0.12 mg/L, respectively) in the Buffalo Creek watershed. These guidelines were occasionally exceeded in Big Buffalo Lake during the closure from November 2012-July 2014, but not in Buffalo Creek.
  - During 2011/2012 Operation, selenium was frequently above the MWQSOGs/CCME PAL (0.001 mg/L) in the Buffalo Creek watershed.

- During closure from November 2012-July 2014, iron frequently exceeded the PAL (0.3 mg/L), and chromium occasionally exceeded the CCME PAL (0.0089 mg/L) at the downstream end of Buffalo Creek.

Table 13. Summary statistics for key water quality parameters measured in the Buffalo Creek watershed, 2011-2015.

		Ammonia (mg N/L)							Nitrate/Nitrite (mg N/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.059	0.067	<0.010	0.149	0.0092	16	94	<0.071	<0.071	<0.071	<0.071	-	16	6
	2011/2012 Closure	0.041	0.020	<0.010	0.212	0.0220	9	67	<0.071	<0.071	<0.071	0.103	-	9	11
	2014/2015 Operation	<0.010	<0.010	<0.010	0.039	-	9	11	<0.071	<0.071	<0.071	<0.071	-	9	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.053	0.035	<0.010	0.145	0.0126	11	91	<0.071	<0.071	<0.071	<0.071	-	11	9
	2011/2012 Closure	0.102	0.024	<0.010	0.414	0.0486	9	78	<0.071	<0.071	<0.071	<0.071	-	9	0
	2014/2015 Operation	0.011	<0.010	<0.010	0.033	0.0033	11	27	<0.071	<0.071	<0.0051	<0.071	-	11	9
	2014/2015 Closure	<0.010	<0.010	<0.010	<0.010	-	3	0	<0.070	<0.070	<0.070	<0.070	-	3	0
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.562	0.172	0.024	1.91	0.204	12	100	<0.071	<0.071	<0.0051	<0.071	-	12	8
	2014/2015 Operation	0.011	<0.010	<0.010	0.038	0.0032	11	36	<0.071	<0.071	<0.071	<0.071	0.0035	11	18
	2014/2015 Closure	0.181	0.131	0.010	0.402	0.1159	3	100	<0.070	<0.070	<0.070	<0.070	-	3	0
BC1	2011 Flood	<0.050	<0.050	<0.010	<0.050	-	4	0	<0.071	<0.071	<0.071	<0.071	-	4	25
	2011/2012 Operation	0.085	<0.050	<0.050	0.371	0.0307	11	91	<0.071	<0.071	<0.071	0.114	0.0078	11	18
	2011/2012 Closure	0.361	0.105	<0.010	1.44	0.175	10	80	<0.071	<0.071	<0.071	0.087	0.0062	10	20
	2014/2015 Operation	0.012	<0.010	<0.010	0.042	0.0034	11	45	<0.071	<0.071	<0.071	<0.071	0.0026	11	18
	2014/2015 Closure	0.141	0.139	0.015	0.268	0.0730	3	100	<0.070	<0.070	<0.070	0.106	-	3	33
BC2	2011 Flood	<0.050	<0.050	<0.010	<0.050	-	4	0	<0.071	<0.071	<0.071	<0.071	-	4	25
	2011/2012 Operation	0.070	<0.050	<0.010	0.364	0.0185	19	68	<0.071	<0.071	<0.071	0.075	0.0022	19	11
	2011/2012 Closure	0.377	0.076	<0.010	1.55	0.195	10	80	<0.071	<0.071	<0.071	0.102	-	10	10
	2014/2015 Operation	0.010	<0.010	<0.010	0.040	0.0038	9	22	<0.071	<0.071	<0.071	<0.071	-	9	11
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.050	<0.050	<0.010	<0.050	-	4	0	<0.071	<0.071	<0.0051	<0.071	-	4	0
	2011/2012 Operation	<0.050	<0.050	<0.050	0.125	0.0071	20	75	<0.071	<0.071	<0.071	0.076	0.0040	20	25
	2011/2012 Closure	0.063	0.029	<0.010	0.355	0.0289	13	62	<0.071	<0.071	<0.071	0.105	0.0085	13	54
	2014/2015 Operation	0.017	<0.010	<0.010	0.099	0.0064	15	47	<0.071	<0.071	<0.071	0.088	0.0052	14	36
	2014/2015 Closure	0.063	0.044	0.035	0.109	0.0233	3	100	<0.070	<0.070	<0.070	0.193	0.0546	3	67

Table 13. Continued.

		Nitrate (mg N/L)							Nitrite (mg N/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	16	6	<0.050	<0.050	<0.050	<0.050	-	16	6
	2011/2012 Closure	<0.050	<0.050	<0.050	0.103	-	9	22	<0.050	<0.050	<0.050	<0.050	-	9	0
	2014/2015 Operation	<0.050	<0.050	<0.0051	<0.050	-	9	0	<0.050	<0.050	<0.0010	<0.050	-	9	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	11	9	<0.050	<0.050	<0.0010	<0.050	-	11	0
	2011/2012 Closure	<0.050	<0.050	<0.050	0.068	-	9	11	<0.050	<0.050	<0.050	<0.050	-	9	0
	2014/2015 Operation	<0.050	<0.050	<0.0050	<0.050	-	11	9	<0.050	<0.050	<0.0010	<0.050	-	11	0
	2014/2015 Closure	<0.020	<0.020	<0.020	<0.020	-	3	0	<0.010	<0.010	<0.010	<0.010	-	3	0
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.050	<0.050	<0.0050	0.064	0.0047	12	17	<0.050	<0.050	<0.0010	<0.050	-	12	8
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	0.0025	11	18	<0.050	<0.050	<0.0010	<0.050	-	11	0
	2014/2015 Closure	<0.020	<0.020	<0.020	0.026	-	3	33	<0.010	<0.010	<0.010	<0.010	-	3	0
BC1	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	4	25	<0.050	<0.050	<0.0010	<0.050	-	4	0
	2011/2012 Operation	<0.050	<0.050	<0.050	0.114	0.0090	11	18	<0.050	<0.050	<0.050	<0.050	-	11	0
	2011/2012 Closure	<0.050	<0.050	<0.050	0.087	0.0080	10	30	<0.050	<0.050	<0.050	<0.050	-	10	0
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	0.0019	11	18	<0.050	<0.050	<0.0010	<0.050	-	11	0
	2014/2015 Closure	0.038	0.024	<0.020	0.079	0.0211	3	67	<0.010	<0.010	<0.010	0.027	-	3	33
BC2	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	4	25	<0.050	<0.050	<0.0010	<0.050	-	4	0
	2011/2012 Operation	<0.050	<0.050	<0.050	0.075	0.0034	19	16	<0.050	<0.050	<0.050	<0.050	-	19	5
	2011/2012 Closure	<0.050	<0.050	<0.050	0.102	0.0083	10	30	<0.050	<0.050	<0.050	<0.050	-	10	0
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	-	9	11	<0.050	<0.050	<0.0010	<0.050	-	9	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.050	<0.050	<0.0050	<0.050	-	4	0	<0.050	<0.050	<0.0010	<0.050	-	4	0
	2011/2012 Operation	<0.050	<0.050	<0.0050	0.076	0.0043	20	25	<0.050	<0.050	<0.0010	<0.050	-	20	5
	2011/2012 Closure	<0.050	<0.050	<0.0050	0.099	0.0087	13	54	<0.050	<0.050	<0.0010	<0.050	0.0032	13	15
	2014/2015 Operation	<0.050	<0.050	<0.050	0.083	0.0049	14	43	<0.050	<0.050	<0.0010	<0.050	-	14	7
	2014/2015 Closure	0.068	0.030	0.024	0.151	0.0413	3	100	0.017	<0.010	<0.010	0.042	-	3	33

Table 13. Continued.

		Dissolved Inorganic Nitrogen (mg/L)							Total Kjeldahl Nitrogen (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.088	0.101	<0.070	0.185	0.011	16	69	1.06	1.06	0.28	1.75	0.073	16	100
	2011/2012 Closure	0.072	<0.070	<0.070	0.315	0.031	9	22	0.29	0.10	0.10	1.32	0.134	9	33
	2014/2015 Operation	<0.070	<0.070	<0.070	0.075	-	9	11	0.87	0.88	0.69	1.02	0.033	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.074	<0.070	<0.070	0.181	0.015	11	45	1.00	1.00	0.39	1.77	0.096	11	100
	2011/2012 Closure	0.129	<0.070	<0.070	0.450	0.051	9	44	0.47	0.39	0.22	1.36	0.118	9	100
	2014/2015 Operation	<0.071	<0.071	<0.010	<0.071	0.0034	11	18	0.87	0.88	0.70	1.10	0.033	11	100
	2014/2015 Closure	<0.070	<0.070	<0.070	<0.070	-	3	0	0.94	0.98	0.85	1.00	0.049	3	100
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.584	0.208	<0.070	1.91	0.203	12	83	1.52	1.00	0.77	3.29	0.262	12	100
	2014/2015 Operation	<0.071	<0.071	<0.010	0.074	0.004	11	36	0.88	0.90	0.69	1.02	0.036	11	100
	2014/2015 Closure	0.216	0.166	<0.070	0.437	0.116	3	67	1.32	1.21	0.91	1.84	0.274	3	100
BC1	2011 Flood	<0.070	<0.070	<0.070	<0.070	-	4	25	0.94	0.93	0.81	1.11	0.068	4	100
	2011/2012 Operation	0.123	0.111	<0.070	0.407	0.033	11	64	0.83	0.79	0.38	1.19	0.058	11	100
	2011/2012 Closure	0.403	0.147	<0.070	1.48	0.174	10	70	1.18	0.85	0.52	2.72	0.238	10	100
	2014/2015 Operation	<0.071	<0.071	<0.071	0.078	0.005	11	27	0.82	0.84	0.63	1.06	0.035	11	100
	2014/2015 Closure	0.199	0.174	<0.070	0.374	0.094	3	67	1.21	1.15	0.88	1.59	0.207	3	100
BC2	2011 Flood	<0.070	<0.070	<0.070	<0.070	-	4	25	0.91	0.88	0.80	1.06	0.055	4	100
	2011/2012 Operation	0.094	<0.070	<0.070	0.400	0.020	19	47	0.91	0.95	0.35	1.24	0.040	19	100
	2011/2012 Closure	0.416	0.124	<0.070	1.59	0.195	10	70	1.21	1.01	0.53	2.79	0.220	10	100
	2014/2015 Operation	<0.070	<0.070	<0.070	0.075	-	9	22	0.80	0.82	0.71	0.92	0.024	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.070	<0.070	<0.010	<0.070	-	4	0	0.95	1.02	0.76	1.03	0.067	4	100
	2011/2012 Operation	0.076	<0.070	<0.070	0.181	0.011	20	60	0.93	0.91	0.35	1.39	0.049	20	100
	2011/2012 Closure	0.105	<0.070	<0.010	0.391	0.032	13	69	0.84	0.79	0.52	1.43	0.074	13	100
	2014/2015 Operation	<0.071	<0.071	<0.071	0.079	0.004	13	54	0.86	0.87	0.60	1.44	0.048	15	100
	2014/2015 Closure	0.147	0.144	0.059	0.237	0.051	3	100	0.99	1.06	0.79	1.11	0.099	3	100

Table 13. Continued.

		Total Nitrogen (mg/L)							Dissolved Phosphorus (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	1.10	1.09	0.32	1.79	0.073	16	100	<0.010	0.011	<0.010	0.015	0.0010	15	60
	2011/2012 Closure	0.31	<0.20	<0.20	1.42	0.146	9	33	<0.010	<0.010	<0.010	0.016	0.0012	9	11
	2014/2015 Operation	0.91	0.92	0.73	1.02	0.031	9	100	<0.010	<0.010	<0.010	0.011	-	9	11
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	1.03	1.03	0.43	1.81	0.096	11	100	<0.010	<0.010	<0.010	0.035	0.0030	10	30
	2011/2012 Closure	0.51	0.43	0.26	1.40	0.118	9	100	0.010	<0.010	<0.010	0.029	0.0027	9	56
	2014/2015 Operation	0.90	0.91	0.74	1.10	0.031	11	100	<0.010	<0.010	<0.010	0.010	-	11	9
	2014/2015 Closure	0.94	0.98	0.85	1.00	0.049	3	100	<0.010	<0.010	<0.010	0.013	-	3	33
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	1.54	1.04	0.81	3.29	0.259	12	100	0.011	<0.010	<0.010	0.033	0.0023	12	67
	2014/2015 Operation	0.90	0.91	0.73	1.06	0.036	11	100	<0.010	<0.010	<0.010	0.011	-	11	9
	2014/2015 Closure	1.32	1.21	0.91	1.84	0.274	3	100	<0.010	0.010	<0.010	0.013	0.0023	3	67
BC1	2011 Flood	0.98	0.96	0.84	1.15	0.068	4	100	0.016	0.018	<0.010	0.021	0.0037	4	75
	2011/2012 Operation	0.87	0.87	0.42	1.22	0.059	11	100	<0.010	<0.010	<0.010	0.020	0.0015	10	20
	2011/2012 Closure	1.23	0.91	0.56	2.76	0.237	10	100	0.010	<0.010	<0.010	0.023	0.0020	10	50
	2014/2015 Operation	0.85	0.84	0.67	1.10	0.035	11	100	<0.010	<0.010	<0.010	<0.010	-	11	0
	2014/2015 Closure	1.24	1.15	0.88	1.70	0.241	3	100	<0.010	0.011	<0.010	0.013	0.0024	3	67
BC2	2011 Flood	0.93	0.92	0.81	1.10	0.060	4	100	0.016	0.018	<0.010	0.022	0.0037	4	75
	2011/2012 Operation	0.94	0.99	0.39	1.28	0.040	19	100	<0.010	<0.010	<0.0010	0.018	0.0013	17	41
	2011/2012 Closure	1.25	1.04	0.57	2.83	0.220	10	100	0.010	<0.010	<0.010	0.023	0.0020	10	50
	2014/2015 Operation	0.83	0.86	0.72	0.95	0.026	9	100	<0.010	<0.010	<0.010	0.012	-	9	11
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	0.98	1.05	0.76	1.07	0.075	4	100	0.014	0.017	<0.010	0.018	0.0030	4	75
	2011/2012 Operation	0.97	0.96	0.39	1.43	0.049	20	100	<0.010	<0.010	<0.010	0.018	0.0010	19	58
	2011/2012 Closure	0.89	0.83	0.53	1.52	0.078	13	100	<0.010	<0.010	<0.010	0.018	0.0013	13	69
	2014/2015 Operation	0.89	0.87	0.64	1.44	0.046	15	100	<0.010	<0.010	<0.010	0.011	0.0006	14	43
	2014/2015 Closure	1.06	1.06	0.82	1.30	0.139	3	100	<0.010	0.010	<0.010	0.012	0.0021	3	67

Table 13. Continued.

		Total Particulate Phosphorus (mg/L)							Total Phosphorus (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.027	0.017	<0.010	0.140	0.0088	15	73	0.035	0.027	0.013	0.145	0.0081	16	100
	2011/2012 Closure	0.022	<0.010	<0.010	0.110	0.0117	9	33	0.027	0.012	<0.010	0.115	0.0122	9	67
	2014/2015 Operation	0.019	0.015	0.010	0.051	0.0042	9	100	0.024	0.020	0.015	0.056	0.0042	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.010	<0.010	<0.010	0.023	0.0023	10	40	0.019	0.017	0.013	0.031	0.0020	11	100
	2011/2012 Closure	0.017	0.014	<0.010	0.056	0.0056	9	56	0.029	0.018	0.012	0.070	0.0066	9	100
	2014/2015 Operation	0.018	0.014	<0.010	0.038	0.0030	11	91	0.023	0.020	0.013	0.043	0.0028	11	100
	2014/2015 Closure	0.016	0.015	0.012	0.020	0.0024	3	100	0.023	0.025	0.020	0.025	0.0018	3	100
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.013	<0.010	<0.010	0.036	0.0034	12	50	0.025	0.021	<0.010	0.044	0.0040	12	92
	2014/2015 Operation	0.013	0.012	<0.010	0.025	0.0017	11	91	0.019	0.017	0.014	0.030	0.0015	11	100
	2014/2015 Closure	0.015	0.015	0.013	0.017	0.0012	3	100	0.024	0.025	0.018	0.030	0.0035	3	100
BC1	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	4	0	0.018	0.021	<0.010	0.024	0.0044	4	75
	2011/2012 Operation	<0.010	<0.010	<0.010	0.013	0.0011	10	40	0.015	0.015	<0.010	0.023	0.0014	11	91
	2011/2012 Closure	0.014	<0.010	<0.010	0.045	0.0043	10	40	0.024	0.024	0.011	0.050	0.0041	10	100
	2014/2015 Operation	0.013	0.011	<0.010	0.029	0.0020	11	82	0.018	0.016	0.011	0.034	0.0019	11	100
	2014/2015 Closure	0.019	0.016	0.014	0.027	0.0040	3	100	0.029	0.027	0.019	0.040	0.0061	3	100
BC2	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	4	0	0.019	0.019	0.011	0.025	0.0029	4	100
	2011/2012 Operation	<0.010	0.010	<0.010	0.026	0.0013	17	59	0.018	0.016	0.010	0.042	0.0016	19	100
	2011/2012 Closure	0.019	0.015	<0.010	0.044	0.0041	10	80	0.029	0.027	0.013	0.054	0.0045	10	100
	2014/2015 Operation	0.015	0.011	<0.010	0.033	0.0035	9	78	0.021	0.016	0.013	0.038	0.0032	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.010	<0.010	<0.010	0.010	-	4	25	0.018	0.018	0.011	0.026	0.0032	4	100
	2011/2012 Operation	0.013	0.011	<0.010	0.047	0.0023	19	68	0.021	0.018	0.011	0.061	0.0026	20	100
	2011/2012 Closure	0.020	0.020	<0.010	0.030	0.0022	13	92	0.028	0.028	0.015	0.041	0.0024	13	100
	2014/2015 Operation	0.024	0.017	<0.010	0.084	0.0053	14	93	0.031	0.026	0.017	0.089	0.0048	15	100
	2014/2015 Closure	0.016	0.018	0.010	0.019	0.0028	3	100	0.025	0.023	0.022	0.029	0.0022	3	100

Table 13. Continued.

		Dissolved Fraction, Phosphorus (%)							TN:TP Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	40	36	3	100	6.9	15	100	96	88	19	179	11.5	16	100
	2011/2012 Closure	54	42	4	100	12.3	9	100	30	27	17	44	4.0	9	100
	2014/2015 Operation	26	28	9	38	2.7	9	100	96	109	38	131	10.7	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	48	36	18	113	10.6	10	100	126	129	52	178	11.9	11	100
	2011/2012 Closure	37	39	15	62	5.7	9	100	44	44	20	68	5.5	9	100
	2014/2015 Operation	27	26	12	50	3.3	11	100	96	102	38	141	9.0	11	100
	2014/2015 Closure	56	34	25	108	26.3	3	100	90	88	87	96	2.8	3	100
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	52	49	12	100	7.3	12	100	158	148	82	370	23.2	12	100
	2014/2015 Operation	32	30	17	52	3.3	11	100	112	116	56	167	9.4	11	100
	2014/2015 Closure	61	67	38	76	11.4	3	100	118	112	107	136	8.8	3	100
BC1	2011 Flood	90	88	83	100	3.9	4	100	176	115	78	397	74.1	4	100
	2011/2012 Operation	48	37	28	100	8.4	10	100	152	128	54	451	32.0	11	100
	2011/2012 Closure	47	44	10	92	8.2	10	100	120	119	64	197	15.4	10	100
	2014/2015 Operation	32	31	15	50	3.0	11	100	109	114	67	156	8.3	11	100
	2014/2015 Closure	51	48	36	69	9.6	3	100	97	94	94	102	2.8	3	100
BC2	2011 Flood	80	87	45	100	11.8	4	100	123	118	71	184	24.2	4	100
	2011/2012 Operation	46	38	5	95	5.6	17	100	128	122	45	217	11.2	19	100
	2011/2012 Closure	39	35	10	86	7.2	10	100	100	103	48	145	10.0	10	100
	2014/2015 Operation	32	31	13	77	6.4	9	100	99	113	47	136	11.3	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	84	78	33	145	23.7	4	100	129	135	91	153	15.0	4	100
	2011/2012 Operation	44	33	23	97	5.5	19	100	117	125	43	193	10.0	20	100
	2011/2012 Closure	31	29	11	58	4.1	13	100	70	72	46	96	4.0	13	100
	2014/2015 Operation	26	24	6	65	3.9	14	100	76	75	20	127	7.8	15	100
	2014/2015 Closure	67	53	28	120	27.5	3	100	97	81	79	131	17.0	3	100

Table 13. Continued.

		DIN:DP Molar Ratio							DIN:TP Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	26	18	7	82	5.2	15	100	8	7	1	18	1.3	16	100
	2011/2012 Closure	31	16	5	140	13.9	9	100	10	6	1	17	2.0	9	100
	2014/2015 Operation	14	16	2	16	1.5	9	100	4	4	1	6	0.6	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	30	16	2	80	8.0	10	100	10	6	3	20	2.2	11	100
	2011/2012 Closure	45	16	6	221	23.1	9	100	10	6	2	42	4.1	9	100
	2014/2015 Operation	16	16	2	30	2.2	11	100	4	4	1	6	0.5	11	100
	2014/2015 Closure	2	2	1	2	0.5	3	100	0	0	0	1	0.0	3	100
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	129	48	14	511	52.4	12	100	38	29	6	100	9.7	12	100
	2014/2015 Operation	15	16	5	25	1.4	11	100	4	5	2	8	0.5	11	100
	2014/2015 Closure	44	37	20	74	16.1	3	100	17	15	6	32	7.8	3	100
BC1	2011 Flood	7	4	4	16	2.8	4	100	7	4	3	16	3.0	4	100
	2011/2012 Operation	54	49	4	180	16.6	10	100	23	16	3	78	7.5	11	100
	2011/2012 Closure	105	42	6	605	57.2	10	100	28	17	6	105	10.0	10	100
	2014/2015 Operation	17	16	6	34	2.2	11	100	5	5	2	11	0.7	11	100
	2014/2015 Closure	40	35	22	64	12.3	3	100	14	14	6	21	4.3	3	100
BC2	2011 Flood	6	4	1	16	3.1	4	100	4	4	1	7	1.2	4	100
	2011/2012 Operation	43	18	4	177	12.4	17	100	14	8	2	68	3.5	19	100
	2011/2012 Closure	109	32	6	684	65.5	10	100	22	10	4	70	7.9	10	100
	2014/2015 Operation	14	16	5	16	1.1	9	100	4	5	2	11	0.9	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	6	4	1	16	3.2	4	100	3	3	1	5	0.9	4	100
	2011/2012 Operation	29	16	4	80	6.3	19	100	10	5	1	33	1.9	20	100
	2011/2012 Closure	28	16	2	132	9.8	13	100	7	6	1	21	1.8	13	100
	2014/2015 Operation	17	16	4	56	3.3	14	100	4	3	0	12	0.8	15	100
	2014/2015 Closure	34	32	26	44	5.2	3	100	13	11	6	24	5.4	3	100

Table 13. Continued.

		Total Inorganic Carbon (mg/L)							Total Organic Carbon (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	50.7	50.7	50.7	50.7	-	1	100	14.6	14.6	14.6	14.6	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	3.6	3.6	3.6	3.6	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	50.3	50.3	50.3	50.3	-	1	100	15.1	15.1	15.1	15.1	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	10.5	10.5	10.5	10.5	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	84.3	91.8	37.0	124	25.4	3	100	23.0	22.1	18.6	29.1	2.62	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	22.3	22.3	22.3	22.3	-	1	100	20.7	20.7	20.7	20.7	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	16.7	16.7	16.7	16.7	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	23.5	23.5	23.5	23.5	-	1	100	19.1	19.1	19.1	19.1	-	1	100
	2011/2012 Operation	51.1	51.1	51.1	51.1	-	1	100	14.6	14.6	14.6	14.6	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	21.3	21.3	21.3	21.3	-	1	100	19.6	19.6	19.6	19.6	-	1	100
	2011/2012 Operation	47.3	46.5	44.3	52.0	1.76	4	100	13.7	13.5	13.1	14.7	0.36	4	100
	2011/2012 Closure	34.8	34.3	27.4	45.0	3.12	5	100	18.4	18.3	16.3	22.3	0.87	6	100
	2014/2015 Operation	41.9	41.4	36.0	49.0	2.07	5	100	12.1	12.0	9.7	14.5	0.80	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Dissolved Organic Carbon (mg/L)							TOC:ON Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	13.0	13.0	13.0	13.0	-	1	100	18	18	18	18	-	1	100
	2011/2012 Closure	3.3	3.3	3.3	3.3	-	1	100	16	16	16	16	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	13.0	13.0	13.0	13.0	-	1	100	19	19	19	19	-	1	100
	2011/2012 Closure	10.2	10.2	10.2	10.2	-	1	100	25	25	25	25	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	22.7	22.1	18.4	28.3	2.49	4	100	24	24	23	25	0.3	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	20.8	20.8	20.8	20.8	-	1	100	30	30	30	30	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	16.9	16.9	16.9	16.9	-	1	100	28	28	28	28	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	16.9	16.9	16.9	16.9	-	1	100	28	28	28	28	-	1	100
	2011/2012 Operation	14.1	14.1	14.1	14.1	-	1	100	19	19	19	19	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	17.3	17.3	17.3	17.3	-	1	100	30	30	30	30	-	1	100
	2011/2012 Operation	12.6	12.4	11.7	13.9	0.51	4	100	18	18	16	21	1.0	4	100
	2011/2012 Closure	17.9	17.8	15.3	21.6	0.87	6	100	31	31	24	37	1.7	6	100
	2014/2015 Operation	11.9	11.7	9.4	14.4	0.83	5	100	17	17	13	21	1.5	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		TOC:TN Molar Ratio							Laboratory pH						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	16	16	16	16	-	1	100	8.39	8.39	8.39	8.39	-	1	100
	2011/2012 Closure	13	13	13	13	-	1	100	8.37	8.37	8.37	8.37	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	17	17	17	17	-	1	100	8.41	8.41	8.41	8.41	-	1	100
	2011/2012 Closure	21	21	21	21	-	1	100	8.43	8.43	8.43	8.43	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	16	16	10	23	3.4	4	100	7.92	7.91	7.31	8.54	0.303	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	29	29	29	29	-	1	100	8.12	8.12	8.12	8.12	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	24	24	24	24	-	1	100	8.00	8.00	8.00	8.00	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	28	28	28	28	-	1	100	8.19	8.19	8.19	8.19	-	1	100
	2011/2012 Operation	17	17	17	17	-	1	100	8.26	8.26	8.26	8.26	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	30	30	30	30	-	1	100	8.19	8.19	8.19	8.19	-	1	100
	2011/2012 Operation	17	17	16	18	0.5	4	100	8.30	8.32	8.24	8.35	0.023	4	100
	2011/2012 Closure	29	27	24	37	1.9	6	100	8.23	8.24	8.15	8.29	0.021	6	100
	2014/2015 Operation	16	15	13	21	1.5	5	100	8.29	8.29	8.04	8.44	0.073	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Laboratory Conductivity (µmhos/cm)							Total Dissolved Solids (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	1150	1150	1150	1150	-	1	100	740	740	740	740	-	1	100
	2011/2012 Closure	571	571	571	571	-	1	100	344	344	344	344	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	1150	1150	1150	1150	-	1	100	704	704	704	704	-	1	100
	2011/2012 Closure	498	498	498	498	-	1	100	292	292	292	292	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	779	792	362	1170	203	4	100	490	474	250	761	125	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	217	217	217	217	-	1	100	164	164	164	164	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	401	401	401	401	-	1	100	241	241	241	241	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	217	217	217	217	-	1	100	166	166	166	166	-	1	100
	2011/2012 Operation	1160	1160	1160	1160	-	1	100	758	758	758	758	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	237	237	237	237	-	1	100	177	177	177	177	-	1	100
	2011/2012 Operation	1093	1090	1020	1170	30.7	4	100	664	653	618	732	25.2	4	100
	2011/2012 Closure	356	355	273	479	30.3	6	100	256	236	208	392	28.1	6	100
	2014/2015 Operation	917	869	846	1080	44.1	5	100	524	525	474	597	21.6	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Total Suspended Solids (mg/L)							Laboratory Turbidity (NTU)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	29	13	2	137	9.7	18	100	11.1	3.9	1.1	89.3	7.13	12	100
	2011/2012 Closure	7	7	2	14	1.2	9	100	6.1	5.8	2.9	10.7	0.78	9	100
	2014/2015 Operation	26	14	6	136	12.4	10	100	17.6	8.0	3.1	97.0	9.00	10	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-							
	2011/2012 Operation	18	10	3	93	6.7	13	100	10.4	5.2	1.7	74.6	5.40	13	100
	2011/2012 Closure	7	7	<2.0	15	1.6	9	89	6.4	6.5	1.8	12.9	1.19	9	100
	2014/2015 Operation	32	17	5	174	11.3	15	100	25.3	11.3	3.0	121	1.17	15	100
	2014/2015 Closure	13	13	11	15	1.2	3	100	15.6	17.3	8.4	21.0	3.76	3	100
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	5	3	<2.0	26	2.0	12	58	4.3	1.7	0.7	25.4	2.00	12	100
	2014/2015 Operation	10	7	3	24	1.9	12	100	8.1	6.0	1.8	25.0	0.63	12	100
	2014/2015 Closure	7	7	7	8	0.6	3	100	5.4	5.5	4.9	5.8	0.26	3	100
BC1	2011 Flood	<5.0	<5.0	<2.0	6	1.1	4	50	0.7	0.7	0.7	0.7	-	1	100
	2011/2012 Operation	<5.0	<5.0	<2.0	6	0.5	14	71	2.3	1.9	1.2	6.7	0.41	13	100
	2011/2012 Closure	8	4	<2.0	24	2.4	10	90	3.8	2.0	1.0	14.2	1.27	10	100
	2014/2015 Operation	8	4	<2.0	43	3.0	14	93	5.0	2.7	1.2	24.0	0.29	14	100
	2014/2015 Closure	10	7	5	19	4.5	3	100	6.5	4.5	2.9	12.2	2.87	3	100
BC2	2011 Flood	<5.0	<5.0	<2.0	6	1.1	4	25	0.9	0.9	0.9	0.9	-	1	100
	2011/2012 Operation	9	7	<5.0	30	1.7	19	95	2.9	3.2	1.4	4.5	0.34	13	100
	2011/2012 Closure	8	6	<2.0	20	1.8	10	90	6.1	4.5	1.6	25.4	2.19	10	100
	2014/2015 Operation	18	7	4	65	6.7	10	100	10.7	4.6	1.9	34.0	3.88	10	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<5.0	<5.0	<5.0	6	0.8	4	50	4.8	4.8	4.8	4.8	-	1	100
	2011/2012 Operation	15	8	<5.0	60	3.0	22	95	4.4	4.1	2.2	7.0	0.34	15	100
	2011/2012 Closure	15	15	11	24	1.2	13	100	11.6	11.1	4.9	19.2	1.42	13	100
	2014/2015 Operation	31	12	4	180	9.7	20	100	21.5	7.4	3.9	132	0.27	20	100
	2014/2015 Closure	10	11	7	12	1.6	3	100	7.2	6.2	5.7	9.8	1.29	3	100

Table 13. Continued.

		True Colour (CU)							Chlorophyll *a* (µg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	10.8	10.8	10.8	10.8	-	1	100	6.23	6.23	6.23	6.23	-	1	100
	2011/2012 Closure	<5.0	<5.0	<5.0	<5.0	-	1	0	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	11.5	11.5	11.5	11.5	-	1	100	6.16	6.16	6.16	6.16	-	1	100
	2011/2012 Closure	20.0	20.0	20.0	20.0	-	1	100	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	47.3	48.2	39.3	53.7	3.65	4	100	3.94	2.51	1.34	7.96	2.04	3	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	52.3	52.3	52.3	52.3	-	1	100	0.51	0.51	0.51	0.51	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	39.8	39.8	39.8	39.8	-	1	100	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	51.5	51.5	51.5	51.5	-	1	100	0.37	0.37	0.37	0.37	-	1	100
	2011/2012 Operation	9.0	9.0	9.0	9.0	-	1	100	3.89	3.89	3.89	3.89	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	53.2	53.2	53.2	53.2	-	1	100	0.52	0.52	0.52	0.52	-	1	100
	2011/2012 Operation	11.6	11.0	9.1	15.2	1.32	4	100	2.33	2.30	1.54	3.20	0.369	4	100
	2011/2012 Closure	57.2	59.3	43.9	65.8	3.53	6	100	3.21	2.79	1.98	5.64	0.650	5	100
	2014/2015 Operation	13.6	11.4	7.4	20.7	2.50	5	100	2.23	2.56	0.61	3.72	0.542	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Phaeophytin *a* (µg/L)							*In Situ* Dissolved Oxygen (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	2.30	2.30	2.30	2.30	-	1	100	11.2	11.0	8.3	14.9	0.54	15	100
	2011/2012 Closure	-	-	-	-	-	0	-	9.7	8.5	7.5	12.3	0.67	9	100
	2014/2015 Operation	-	-	-	-	-	0	-	9.0	8.7	6.5	12.0	0.59	10	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	2.34	2.34	2.34	2.34	-	1	100	11.0	10.0	8.4	14.9	0.77	10	100
	2011/2012 Closure	-	-	-	-	-	0	-	7.9	8.0	0.2	12.1	1.09	9	100
	2014/2015 Operation	-	-	-	-	-	0	-	8.5	7.7	5.0	12.0	0.56	13	100
	2014/2015 Closure	-	-	-	-	-	0	-	7.5	6.4	6.0	10.0	1.24	3	100
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.49	0.30	<0.10	1.13	0.326	3	67	6.3	6.9	0.0	12.3	1.10	12	100
	2014/2015 Operation	-	-	-	-	-	0	-	8.3	8.0	6.2	11.7	0.47	12	100
	2014/2015 Closure	-	-	-	-	-	0	-	7.5	5.8	5.8	10.8	1.65	3	100
BC1	2011 Flood	0.57	0.57	0.57	0.57	-	1	100	9.7	10.4	6.4	12.0	0.96	6	83
	2011/2012 Operation	-	-	-	-	-	0	-	8.8	9.8	2.9	11.7	0.77	11	73
	2011/2012 Closure	-	-	-	-	-	0	-	7.3	6.8	2.1	11.8	0.90	10	100
	2014/2015 Operation	-	-	-	-	-	0	-	6.6	6.2	4.5	10.4	0.56	12	100
	2014/2015 Closure	-	-	-	-	-	0	-	6.9	5.9	5.3	9.5	1.31	3	100
BC2	2011 Flood	0.61	0.61	0.61	0.61	-	1	100	9.7	9.1	7.8	11.9	0.66	6	100
	2011/2012 Operation	1.96	1.96	1.96	1.96	-	1	100	9.2	10.0	4.2	11.8	0.58	15	87
	2011/2012 Closure	-	-	-	-	-	0	-	7.8	7.2	5.1	11.9	0.60	10	100
	2014/2015 Operation	-	-	-	-	-	0	-	6.7	6.8	3.5	10.2	0.73	10	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	0.77	0.77	0.77	0.77	-	1	100	10.3	10.3	8.1	12.2	0.79	6	100
	2011/2012 Operation	1.06	0.95	0.62	1.73	0.242	4	100	9.8	10.0	6.3	12.5	0.45	18	89
	2011/2012 Closure	2.62	2.26	1.29	5.23	0.676	5	100	9.0	9.1	6.4	10.7	0.39	13	100
	2014/2015 Operation	1.03	1.09	0.41	1.42	0.173	5	100	7.8	8.0	2.9	11.4	0.53	19	100
	2014/2015 Closure	-	-	-	-	-	0	-	7.4	6.4	5.9	10.0	1.29	3	100

Table 13. Continued.

		Chloride, Dissolved (mg/L)							Fluoride, Dissolved (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	219	219	219	219	-	1	100	0.177	0.177	0.177	0.177	-	1	100
	2011/2012 Closure	32	32	32	32	-	1	100	0.180	0.180	0.180	0.180	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	220	220	220	220	-	1	100	0.171	0.171	0.171	0.171	-	1	100
	2011/2012 Closure	33	33	33	33	-	1	100	0.150	0.150	0.150	0.150	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	74	67	18	144	27.0	4	100	0.122	0.102	0.085	0.200	0.0264	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	4	4	4	4	-	1	100	0.060	0.060	0.060	0.060	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	29	29	29	29	-	1	100	0.050	0.050	0.050	0.050	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	4	4	4	4	-	1	100	0.061	0.061	0.061	0.061	-	1	100
	2011/2012 Operation	222	222	222	222	-	1	100	0.172	0.172	0.172	0.172	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	6	6	6	6	-	1	100	0.069	0.069	0.069	0.069	-	1	100
	2011/2012 Operation	190	182	174	222	11.2	4	100	0.149	0.150	0.122	0.173	0.0105	4	100
	2011/2012 Closure	20	23	9	30	3.6	6	100	<0.10	<0.10	<0.10	0.109	0.0102	6	83
	2014/2015 Operation	142	141	125	170	7.7	5	100	0.134	0.134	0.126	0.148	0.0038	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Sulphate, Dissolved (mg/L)							Hardness, as CaCO3 (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	106.0	106.0	106.0	106.0	-	1.0	100	295	295	295	295	-	1	100
	2011/2012 Closure	90.2	90.2	90.2	90.2	-	1	100	220	220	220	220	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	106	106	106	106	-	1	100	299	299	299	299	-	1	100
	2011/2012 Closure	53.5	53.5	53.5	53.5	-	1	100	202	202	202	202	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	38.0	16.5	11.2	108	23.4	4	100	289	260	153	484	76.5	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	1.4	1.4	1.4	1.4	-	1	100	166	166	166	166	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	8.9	8.9	8.9	8.9	-	1	100	167	167	167	167	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	1.4	1.4	1.4	1.4	-	1	100	166	166	166	166	-	1	100
	2011/2012 Operation	107	107	107	107	-	1	100	309	309	309	309	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	5.0	5.0	5.0	5.0	-	1	100	159	159	159	159	-	1	100
	2011/2012 Operation	93.1	92.5	80.3	107	5.7	4	100	286	292	254	308	12.9	4	100
	2011/2012 Closure	9.9	9.3	5.1	18.9	2.0	6	100	168	162	124	231	14.5	6	100
	2014/2015 Operation	75.0	73.5	62.1	95.3	5.7	5	100	243	239	211	286	12.1	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Aluminum, Dissolved (mg/L)							Aluminum, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	0.0251	0.0251	0.0251	0.0251	-	1	100
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	0.0479	0.0479	0.0479	0.0479	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	0.0220	0.0220	0.0220	0.0220	-	1	100
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	0.0648	0.0648	0.0648	0.0648	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	0.0255	0.0260	0.0065	0.0435	0.00885	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	0.0052	0.0052	0.0052	0.0052	-	1	100	0.0307	0.0307	0.0307	0.0307	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.0029	0.0029	0.0029	0.0029	-	1	100	0.166	0.166	0.166	0.166	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	0.0043	0.0043	0.0043	0.0043	-	1	100	0.0550	0.0550	0.0550	0.0550	-	1	100
	2011/2012 Operation	<0.002	<0.002	<0.002	<0.002	-	1	0	0.0207	0.0207	0.0207	0.0207	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	0.0103	0.0103	0.0103	0.0103	-	1	100	0.219	0.219	0.219	0.219	-	1	100
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	0.0023	-	4	25	0.135	0.0904	0.0431	0.318	0.0630	4	100
	2011/2012 Closure	0.0183	0.0110	0.0079	0.0568	0.00777	6	100	0.402	0.382	0.0987	0.736	0.0933	6	100
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	0.0025	0.00030	5	20	0.237	0.283	0.122	0.314	0.0417	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Antimony, Dissolved (mg/L)							Antimony, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	0.00022	-	4	25	<0.0002	<0.0002	<0.0002	0.00020	-	4	25
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	0	<0.0002	<0.0002	<0.0002	<0.0002	-	4	25
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	6	0	<0.0002	<0.0002	<0.0002	<0.0002	-	6	0
	2014/2015 Operation	0.00024	<0.00020	<0.00020	0.00052	-	5	20	<0.0002	<0.0002	<0.0002	0.00028	-	5	20
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Arsenic, Dissolved (mg/L)							Arsenic, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00386	0.00386	0.00386	0.00386	-	1	100	0.00357	0.00357	0.00357	0.00357	-	1	100
	2011/2012 Closure	0.00080	0.00080	0.00080	0.00080	-	1	100	0.00086	0.00086	0.00086	0.00086	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00373	0.00373	0.00373	0.00373	-	1	100	0.00347	0.00347	0.00347	0.00347	-	1	100
	2011/2012 Closure	0.00091	0.00091	0.00091	0.00091	-	1	100	0.00097	0.00097	0.00097	0.00097	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.00116	0.00124	<0.00020	0.00207	0.000405	4	75	0.00132	0.00119	0.00098	0.00191	0.000206	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	0.00048	0.00048	0.00048	0.00048	-	1	100	0.00045	0.00045	0.00045	0.00045	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.00127	0.00127	0.00127	0.00127	-	1	100	0.00126	0.00126	0.00126	0.00126	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	0.00050	0.00050	0.00050	0.00050	-	1	100	0.00048	0.00048	0.00048	0.00048	-	1	100
	2011/2012 Operation	0.00379	0.00379	0.00379	0.00379	-	1	100	0.00348	0.00348	0.00348	0.00348	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	0.00059	0.00059	0.00059	0.00059	-	1	100	0.00055	0.00055	0.00055	0.00055	-	1	100
	2011/2012 Operation	0.00255	0.00227	0.00193	0.00372	0.000410	4	100	0.00240	0.00229	0.00192	0.00312	0.000274	4	100
	2011/2012 Closure	0.00110	0.00103	0.00094	0.00138	0.000075	6	100	0.00130	0.00121	0.00094	0.00208	0.000169	6	100
	2014/2015 Operation	0.00170	0.00162	0.00148	0.00203	0.000095	5	100	0.00176	0.00173	0.00154	0.00207	0.000089	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Barium, Dissolved (mg/L)							Barium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.0520	0.0520	0.0520	0.0520	-	1	100	0.0591	0.0591	0.0591	0.0591	-	1	100
	2011/2012 Closure	0.0170	0.0170	0.0170	0.0170	-	1	100	0.0174	0.0174	0.0174	0.0174	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.0517	0.0517	0.0517	0.0517	-	1	100	0.0583	0.0583	0.0583	0.0583	-	1	100
	2011/2012 Closure	0.0197	0.0197	0.0197	0.0197	-	1	100	0.0209	0.0209	0.0209	0.0209	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.0397	0.0386	0.0246	0.0569	0.00753	4	100	0.0414	0.0402	0.0236	0.0617	0.00831	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	0.0073	0.0073	0.0073	0.0073	-	1	100	0.0078	0.0078	0.0078	0.0078	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.0253	0.0253	0.0253	0.0253	-	1	100	0.0274	0.0274	0.0274	0.0274	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	0.0075	0.0075	0.0075	0.0075	-	1	100	0.0080	0.0080	0.0080	0.0080	-	1	100
	2011/2012 Operation	0.0486	0.0486	0.0486	0.0486	-	1	100	0.0535	0.0535	0.0535	0.0535	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	0.0092	0.0092	0.0092	0.0092	-	1	100	0.0103	0.0103	0.0103	0.0103	-	1	100
	2011/2012 Operation	0.0464	0.0462	0.0450	0.0482	0.00072	4	100	0.0478	0.0484	0.0438	0.0504	0.00156	4	100
	2011/2012 Closure	0.0198	0.0205	0.0145	0.0237	0.00133	6	100	0.0267	0.0244	0.0178	0.0427	0.00361	6	100
	2014/2015 Operation	0.0403	0.0406	0.0349	0.0463	0.00202	5	100	0.0419	0.0412	0.0364	0.0491	0.00207	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Boron, Dissolved (mg/L)							Boron, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.107	0.107	0.107	0.107	-	1	100	0.113	0.113	0.113	0.113	-	1	100
	2011/2012 Closure	0.065	0.065	0.065	0.065	-	1	100	0.069	0.069	0.069	0.069	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.100	0.100	0.100	0.100	-	1	100	0.107	0.107	0.107	0.107	-	1	100
	2011/2012 Closure	0.054	0.054	0.054	0.054	-	1	100	0.059	0.059	0.059	0.059	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.051	0.051	0.042	0.059	0.0049	4	100	0.048	0.046	0.040	0.061	0.0045	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	<0.010	<0.010	<0.010	<0.010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.047	0.047	0.047	0.047	-	1	100	0.050	0.050	0.050	0.050	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	<0.010	<0.010	<0.010	<0.010	-	1	0
	2011/2012 Operation	0.094	0.094	0.094	0.094	-	1	100	0.106	0.106	0.106	0.106	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	0.014	0.014	0.014	0.014	-	1	100	<0.010	<0.010	<0.010	<0.010	-	1	0
	2011/2012 Operation	0.104	0.102	0.087	0.125	0.0091	4	100	0.111	0.110	0.092	0.131	0.0104	4	100
	2011/2012 Closure	0.046	0.044	0.040	0.055	0.0025	6	100	0.049	0.043	0.033	0.074	0.0063	6	100
	2014/2015 Operation	0.084	0.086	0.072	0.088	0.0029	5	100	0.084	0.086	0.073	0.091	0.0030	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Cadmium, Dissolved (mg/L)							Cadmium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.000039	0.000039	0.000039	0.000039	-	1	100	0.000020	0.000020	0.000020	0.000020	-	1	100
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.000014	0.000014	0.000014	0.000014	-	1	100	0.000011	0.000011	0.000011	0.000011	-	1	100
	2011/2012 Closure	0.000010	0.000010	0.000010	0.000010	-	1	100	0.000012	0.000012	0.000012	0.000012	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	0.000013	-	4	25	<0.000010	<0.000010	<0.000010	0.000016	-	4	25
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2011/2012 Operation	0.000011	0.000011	0.000011	0.000011	-	1	100	0.000011	0.000011	0.000011	0.000011	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	0.000013	-	4	25	<0.000010	<0.000010	<0.000010	0.000011	-	4	25
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	<0.000010	-	6	0	<0.000010	<0.000010	<0.000010	0.000013	0.0000014	6	33
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	5	0	<0.000010	<0.000010	<0.000010	<0.000010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Calcium, Dissolved (mg/L)							Calcium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	45.8	45.8	45.8	45.8	-	1	100	50.6	50.6	50.6	50.6	-	1	100
	2011/2012 Closure	32.2	32.2	32.2	32.2	-	1	100	34.1	34.1	34.1	34.1	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	46.8	46.8	46.8	46.8	-	1	100	49.5	49.5	49.5	49.5	-	1	100
	2011/2012 Closure	30.3	30.3	30.3	30.3	-	1	100	32.9	32.9	32.9	32.9	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	49.2	45.5	32.7	73.2	9.84	4	100	51.5	46.9	29.2	82.9	12.3	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	22.9	22.9	22.9	22.9	-	1	100	27.2	27.2	27.2	27.2	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	30.2	30.2	30.2	30.2	-	1	100	32.9	32.9	32.9	32.9	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	23.3	23.3	23.3	23.3	-	1	100	27.1	27.1	27.1	27.1	-	1	100
	2011/2012 Operation	49.9	49.9	49.9	49.9	-	1	100	51.5	51.5	51.5	51.5	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	25.9	25.9	25.9	25.9	-	1	100	28.8	28.8	28.8	28.8	-	1	100
	2011/2012 Operation	47.7	48.6	39.5	54.2	3.04	4	100	46.6	46.4	44.7	48.9	0.88	4	100
	2011/2012 Closure	30.8	30.3	26.7	36.9	1.58	6	100	33.7	33.0	26.0	43.3	2.36	6	100
	2014/2015 Operation	43.3	42.2	36.5	52.9	2.66	5	100	44.1	42.5	39.7	52.3	2.20	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Chromium, Dissolved (mg/L)							Chromium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	6	0	<0.0010	<0.0010	<0.0010	0.0013	-	6	17
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Copper, Dissolved (mg/L)							Copper, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00050	0.00050	0.00050	0.00050	-	1	100	0.00076	0.00076	0.00076	0.00076	-	1	100
	2011/2012 Closure	0.00049	0.00049	0.00049	0.00049	-	1	100	0.00053	0.00053	0.00053	0.00053	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00045	0.00045	0.00045	0.00045	-	1	100	0.00070	0.00070	0.00070	0.00070	-	1	100
	2011/2012 Closure	0.00038	0.00038	0.00038	0.00038	-	1	100	0.00056	0.00056	0.00056	0.00056	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	0.00031	-	4	25	0.00031	0.00032	0.00022	0.00039	0.000035	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	0.00039	0.00039	0.00039	0.00039	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	0.00021	0.00021	0.00021	0.00021	-	1	100
	2011/2012 Operation	0.00041	0.00041	0.00041	0.00041	-	1	100	0.00057	0.00057	0.00057	0.00057	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	0.00028	0.00028	0.00028	0.00028	-	1	100	0.00037	0.00037	0.00037	0.00037	-	1	100
	2011/2012 Operation	0.00044	0.00043	0.00039	0.00050	0.000024	4	100	0.00071	0.00070	0.00054	0.00088	0.000077	4	100
	2011/2012 Closure	0.00035	0.00032	0.00021	0.00053	0.000047	6	100	0.00113	0.00116	0.00072	0.00174	0.000150	6	100
	2014/2015 Operation	0.00029	0.00034	<0.00020	0.00040	0.000055	5	80	0.00060	0.00057	0.00040	0.00080	0.000067	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Iron, Dissolved (mg/L)							Iron, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.010	<0.010	<0.010	<0.010	-	1	0	0.110	0.110	0.110	0.110	-	1	100
	2011/2012 Closure	<0.010	<0.010	<0.010	<0.010	-	1	0	<0.10	<0.10	<0.10	<0.10	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.010	<0.010	<0.010	<0.010	-	1	0	0.100	0.100	0.100	0.100	-	1	100
	2011/2012 Closure	<0.10	<0.10	<0.10	<0.10	-	1	0	<0.10	<0.10	<0.10	<0.10	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.10	<0.10	<0.010	0.105	0.0211	4	75	<0.10	<0.10	<0.10	0.160	0.0267	4	75
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.10	<0.10	<0.10	<0.10	-	1	0	<0.10	<0.10	<0.10	<0.10	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.10	<0.10	<0.10	<0.10	-	1	0	0.180	0.180	0.180	0.180	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.10	<0.10	<0.10	<0.10	-	1	0	<0.10	<0.10	<0.10	<0.10	-	1	0
	2011/2012 Operation	<0.010	<0.010	<0.010	<0.010	-	1	0	0.021	0.021	0.021	0.021	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.10	<0.10	<0.10	<0.10	-	1	0	0.150	0.150	0.150	0.150	-	1	100
	2011/2012 Operation	<0.10	<0.10	<0.10	0.014	-	4	25	0.089	0.081	0.046	0.150	0.0220	4	100
	2011/2012 Closure	0.028	0.024	<0.10	0.050	0.0047	6	83	0.355	0.350	0.110	0.630	0.0764	6	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	5	0	0.230	0.280	0.120	0.320	0.0415	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Lead, Dissolved (mg/L)							Lead, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000092	0.000092	0.000092	0.000092	-	1	100
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	<0.000090	<0.000090	<0.000090	0.000093	-	4	25
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000123	0.000123	0.000123	0.000123	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000107	0.000118	<0.000090	0.000150	0.0000222	4	75
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	6	0	0.000278	0.000265	0.000157	0.000447	0.0000410	6	100
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	5	0	0.000151	0.000165	0.000095	0.000175	0.0000146	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Magnesium, Dissolved (mg/L)							Magnesium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	43.8	43.8	43.8	43.8	-	1	100	46.7	46.7	46.7	46.7	-	1	100
	2011/2012 Closure	34.0	34.0	34.0	34.0	-	1	100	36.8	36.8	36.8	36.8	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	44.3	44.3	44.3	44.3	-	1	100	40.2	40.2	40.2	40.2	-	1	100
	2011/2012 Closure	28.0	28.0	28.0	28.0	-	1	100	29.0	29.0	29.0	29.0	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	36.5	33.5	17.7	61.4	10.3	4	100	39.0	34.7	19.5	67.2	11.1	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	16.6	16.6	16.6	16.6	-	1	100	23.9	23.9	23.9	23.9	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	20.0	20.0	20.0	20.0	-	1	100	20.6	20.6	20.6	20.6	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	17.3	17.3	17.3	17.3	-	1	100	23.9	23.9	23.9	23.9	-	1	100
	2011/2012 Operation	44.7	44.7	44.7	44.7	-	1	100	48.0	48.0	48.0	48.0	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	17.7	17.7	17.7	17.7	-	1	100	22.5	22.5	22.5	22.5	-	1	100
	2011/2012 Operation	39.0	38.7	33.8	44.7	2.58	4	100	39.1	37.6	33.8	47.3	2.93	4	100
	2011/2012 Closure	18.6	19.1	13.6	22.4	1.28	6	100	20.4	19.5	14.3	29.9	2.12	6	100
	2014/2015 Operation	31.8	31.1	27.8	36.4	1.45	5	100	32.5	32.9	27.2	37.7	1.68	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Manganese, Dissolved (mg/L)							Manganese, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00065	0.00065	0.00065	0.00065	-	1	100	0.0034	0.0034	0.0034	0.0034	-	1	100
	2011/2012 Closure	0.00033	0.00033	0.00033	0.00033	-	1	100	0.0072	0.0072	0.0072	0.0072	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00059	0.00059	0.00059	0.00059	-	1	100	0.0037	0.0037	0.0037	0.0037	-	1	100
	2011/2012 Closure	0.00041	0.00041	0.00041	0.00041	-	1	100	0.0175	0.0175	0.0175	0.0175	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.280	0.228	0.00055	0.666	0.166	4	100	0.276	0.236	0.0116	0.622	0.153	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	0.00432	0.00432	0.00432	0.00432	-	1	100	0.0057	0.0057	0.0057	0.0057	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.0196	0.0196	0.0196	0.0196	-	1	100	0.0639	0.0639	0.0639	0.0639	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	0.00318	0.00318	0.00318	0.00318	-	1	100	0.0049	0.0049	0.0049	0.0049	-	1	100
	2011/2012 Operation	0.0246	0.0246	0.0246	0.0246	-	1	100	0.0313	0.0313	0.0313	0.0313	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	0.00695	0.00695	0.00695	0.00695	-	1	100	0.0108	0.0108	0.0108	0.0108	-	1	100
	2011/2012 Operation	0.00605	0.00455	0.00020	0.0149	0.00316	4	100	0.0205	0.0168	0.0119	0.0363	0.00567	4	100
	2011/2012 Closure	0.00933	0.00810	0.00549	0.0137	0.00141	6	100	0.0425	0.0406	0.0105	0.0839	0.0105	6	100
	2014/2015 Operation	0.00398	0.00230	0.00161	0.01130	0.001835	5	100	0.0171	0.0161	0.0089	0.0260	0.00284	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Mercury, Dissolved (ng/L)							Mercury, Total (ng/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Closure	1.2	1.2	1.2	1.2	-	1	100	-	-	-	-	-	0	-
	2014/2015 Operation	1.2	1.2	<1.0	1.8	0.38	3	67	1.8	1.8	1.2	2.4	0.35	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<25	<25	<25	<25	3.1	3	67	4.7	5.4	2.1	6.5	1.3	3	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	1.6	1.6	1.6	1.6	-	1	100	1.9	1.9	1.9	1.	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	1.3	1.3	1.3	1.3	-	1	100	1.6	1.6	1.6	1.6	-	1	100
	2011/2012 Operation	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Closure	<1.0	<1.0	<1.0	<1.0	-	1	0	-	-	-	-	-	0	-
	2014/2015 Operation	2.0	1.7	1.6	2.6	0.33	3	100	2.0	1.9	1.3	2.9	0.47	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	1.7	1.7	1.7	1.7	-	1	100	2.1	2.1	2.1	2.1	-	1	100
	2011/2012 Operation	<1.0	<1.0	<1.0	2.3	0.45	4	25	1.6	0.8	<1.0	4.2	0.89	4	50
	2011/2012 Closure	1.3	1.2	<1.0	1.7	0.22	5	80	2.0	2.0	1.6	3.0	0.26	5	100
	2014/2015 Operation	1.5	1.5	<1.0	2.3	0.22	7	86	2.1	2.1	<1.0	3.7	0.38	7	86
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Methyl Mercury, Dissolved (ng/L)							Methyl Mercury, Total (ng/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Closure	-	-	-	-	-	0	-	0.246	0.246	0.246	0.246	-	1	100
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	-	3	0	0.054	0.058	<0.050	0.080	0.0160	3	67
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	1.08	1.08	0.140	2.01	0.540	3	100	1.57	1.43	0.175	3.11	0.850	3	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	0.050	0.050	0.050	0.050	-	1	100	0.057	0.057	0.057	0.057	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	0.056	0.056	0.056	0.056	-	1	100
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Closure	-	-	-	-	-	0	-	0.164	0.164	0.164	0.164	-	1	100
	2014/2015 Operation	0.128	0.161	<0.050	0.199	0.0528	3	67	0.360	0.390	0.210	0.481	0.0796	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	0.052	0.052	0.052	0.052	-	1	100	0.067	0.067	0.067	0.067	-	1	100
	2011/2012 Operation	0.230	0.050	<0.050	0.793	0.188	4	50	0.340	0.117	<0.050	1.10	0.254	4	75
	2011/2012 Closure	0.253	0.292	0.120	0.376	0.0503	5	100	0.300	0.359	0.184	0.378	0.0439	5	100
	2014/2015 Operation	0.181	0.170	<0.050	0.452	0.0577	7	71	0.249	0.240	<0.050	0.476	0.0736	7	86
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Molybdenum, Dissolved (mg/L)							Molybdenum, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00251	0.00251	0.00251	0.00251	-	1	100	0.00251	0.00251	0.00251	0.00251	-	1	100
	2011/2012 Closure	0.00114	0.00114	0.00114	0.00114	-	1	100	0.00135	0.00135	0.00135	0.00135	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00236	0.00236	0.00236	0.00236	-	1	100	0.00247	0.00247	0.00247	0.00247	-	1	100
	2011/2012 Closure	0.00093	0.00093	0.00093	0.00093	-	1	100	0.00104	0.00104	0.00104	0.00104	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.00052	0.00039	0.00019	0.00110	0.000209	4	100	0.00053	0.00039	0.00021	0.00113	0.000213	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.00059	0.00059	0.00059	0.00059	-	1	100	0.00059	0.00059	0.00059	0.00059	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0
	2011/2012 Operation	0.00228	0.00228	0.00228	0.00228	-	1	100	0.00224	0.00224	0.00224	0.00224	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0
	2011/2012 Operation	0.00199	0.00205	0.00164	0.00222	0.000127	4	100	0.00203	0.00203	0.00185	0.00220	0.000084	4	100
	2011/2012 Closure	0.00039	0.00038	0.00027	0.00054	0.000045	6	100	0.00065	0.00049	0.00033	0.00173	0.000219	6	100
	2014/2015 Operation	0.00167	0.00159	0.00142	0.00200	0.000106	5	100	0.00171	0.00165	0.00144	0.00209	0.000122	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Nickel, Dissolved (mg/L)							Nickel, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.0031	0.0031	0.0031	0.0031	-	1	100	0.0024	0.0024	0.0024	0.0024	-	1	100
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.0031	0.0031	0.0031	0.0031	-	1	100	0.0023	0.0023	0.0023	0.0023	-	1	100
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	0.0030	0.0030	0.0030	0.0030	-	1	100	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	0.0011	<0.0010	<0.0010	0.0030	-	4	25	<0.0020	<0.0020	<0.0020	<0.0020	-	4	25
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	6	0	<0.0020	<0.0020	<0.0020	<0.0020	-	6	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Potassium, Dissolved (mg/L)							Potassium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	10.3	10.3	10.3	10.3	-	1	100	11.3	11.3	11.3	11.3	-	1	100
	2011/2012 Closure	3.30	3.30	3.30	3.30	-	1	100	3.37	3.37	3.37	3.37	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	10.6	10.6	10.6	10.6	-	1	100	11.0	11.0	11.0	11.0	-	1	100
	2011/2012 Closure	3.53	3.53	3.53	3.53	-	1	100	3.60	3.60	3.60	3.60	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	5.31	5.48	1.68	8.59	1.54	4	100	5.69	5.78	1.76	9.43	1.71	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	0.91	0.91	0.91	0.91	-	1	100	1.10	1.10	1.10	1.10	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	2.73	2.73	2.73	2.73	-	1	100	2.86	2.86	2.86	2.86	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	0.98	0.98	0.98	0.98	-	1	100	0.99	0.99	0.99	0.99	-	1	100
	2011/2012 Operation	11.1	11.1	11.1	11.1	-	1	100	10.9	10.9	10.9	10.9	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	1.18	1.18	1.18	1.18	-	1	100	1.37	1.37	1.37	1.37	-	1	100
	2011/2012 Operation	10.4	10.7	9.33	10.9	0.37	4	100	10.9	10.7	10.3	11.8	0.333	4	100
	2011/2012 Closure	1.99	2.26	0.95	2.55	0.27	6	100	3.20	2.53	1.14	8.85	1.16	6	100
	2014/2015 Operation	8.39	8.14	6.75	10.60	0.65	5	100	8.39	8.32	6.79	10.70	0.647	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Selenium, Dissolved (mg/L)							Selenium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.0018	0.0018	0.0018	0.0018	-	1	100	0.0018	0.0018	0.0018	0.0018	-	1	100
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.0015	0.0015	0.0015	0.0015	-	1	100	0.0016	0.0016	0.0016	0.0016	-	1	100
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	0.0013	0.0013	0.0013	0.0013	-	1	100	0.0011	0.0011	0.0011	0.0011	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	0.0012	-	4	25	0.0014	0.0010	<0.0010	0.0032	0.00063	4	50
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	6	0	<0.0010	<0.0010	<0.0010	<0.0010	-	6	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Silver, Dissolved (mg/L)							Silver, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00004	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	6	0	<0.00010	<0.00010	<0.00010	<0.00010	-	6	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

Site ID	Period	Sodium, Dissolved (mg/L)							Sodium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	132	132	132	132	-	1	100	142	142	142	142	-	1	100
	2011/2012 Closure	30	30	30	30	-	1	100	34	34	34	34	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	134	134	134	134	-	1	100	141	141	141	141	-	1	100
	2011/2012 Closure	27	27	27	27	-	1	100	26	26	26	26	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	61	63	19	100	19.7	4	100	61	61	21	102	19.2	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	4	4	4	4	-	1	100	6	6	6	6	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	24	24	24	24	-	1	100	27	27	27	27	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	4	4	4	4	-	1	100	5	5	5	5	-	1	100
	2011/2012 Operation	140	140	140	140	-	1	100	140	140	140	140	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	6	6	6	6	-	1	100	8	8	8	8	-	1	100
	2011/2012 Operation	129	133	111	139	6.2	4	100	126	131	103	139	8.3	4	100
	2011/2012 Closure	19	21	10	28	2.8	6	100	19	23	11	25	3.1	5	100
	2014/2015 Operation	95	93	87	107	3.5	5	100	98	96	83	117	5.7	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Thallium, Dissolved (mg/L)							Thallium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	0.00026	0.00026	0.00026	0.00026	-	1	100
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.000020	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	6	0	<0.00010	<0.00010	<0.00010	<0.00010	-	6	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Uranium, Dissolved (mg/L)							Uranium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00194	0.00194	0.00194	0.00194	-	1	100	0.00194	0.00194	0.00194	0.00194	-	1	100
	2011/2012 Closure	0.00230	0.00230	0.00230	0.00230	-	1	100	0.00224	0.00224	0.00224	0.00224	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00189	0.00189	0.00189	0.00189	-	1	100	0.00192	0.00192	0.00192	0.00192	-	1	100
	2011/2012 Closure	0.00166	0.00166	0.00166	0.00166	-	1	100	0.00167	0.00167	0.00167	0.00167	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.00040	0.00037	0.00016	0.00070	0.000113	4	100	0.00042	0.00037	0.00023	0.00070	0.000101	4	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	0.00046	0.00046	0.00046	0.00046	-	1	100	0.00045	0.00045	0.00045	0.00045	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0
	2011/2012 Operation	0.00174	0.00174	0.00174	0.00174	-	1	100	0.00174	0.00174	0.00174	0.00174	-	1	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	0.00143	0.00148	0.00107	0.00167	0.000129	4	100	0.00143	0.00148	0.00112	0.00165	0.000117	4	100
	2011/2012 Closure	0.00028	0.00026	0.00014	0.00041	0.000043	6	100	0.00042	0.00027	0.00019	0.00115	0.000148	6	100
	2014/2015 Operation	0.00124	0.00131	0.00096	0.00154	0.000109	5	100	0.00127	0.00124	0.00107	0.00157	0.000094	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 13. Continued.

		Zinc, Dissolved (mg/L)							Zinc, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
EC1	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
EC2	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BBL	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0020	<0.0020	<0.0020	0.0029	-	4	25
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC1	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC2	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
BC3	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0050	<0.0020	<0.0020	0.0054	-	4	25
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	6	0	0.0046	0.0028	<0.0020	0.0160	0.00233	6	67
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0	0.0027	0.0023	<0.0020	0.0063	0.00097	5	60
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 14. Frequency of dissolved oxygen values in the Buffalo Creek watershed below the MWQSOGs and CCME lowest acceptable concentrations for PAL, 2011-2015.

Site ID	Period	Objectives Applicable when Water Temperature is > 5°C						Objectives Applicable when Water Temperature is ≤ 5°C					
		MWQSOGs PAL for Cool Water Early life, and CCME PAL for Early Life Stages of Warm Water Biota; 6.0 mg/L			MWQSOGs PAL for Cold Water Mature Life and CCME PAL for Other Life Stages of Cold Water Biota; 6.5 mg/L			MWQSOGs PAL for Cold Water Early Life, and CCME PAL for Early Life Stages of Cold Water Biota; 9.5 mg/L			MWQSOGs PAL for Cool Water Mature Life, and CCME PAL for Other Life Stages of Warm Water Biota; 5.5 mg/L		
		n	# below	% below	n	# below	% below	n	# below	% below	n	# below	% below
EC1	2011 Flood	0	-	-	0	-	-	0	-	-	0	-	-
	2011/2012 Operation	5	0	0	5	0	0	10	0	0	10	0	0
	2011/2012 Closure	7	0	0	7	0	0	2	1	50	2	0	0
	2014/2015 Operation	8	0	0	8	1	13	2	0	0	2	0	0
	2014/2015 Closure	0	-	-	0	-	-	0	-	-	0	-	-
EC2	2011 Flood	0	-	-	0	-	-	0	-	-	0	-	-
	2011/2012 Operation	5	0	0	5	0	0	5	0	0	5	0	0
	2011/2012 Closure	7	0	0	7	0	0	2	1	50	2	1	50
	2014/2015 Operation	11	1	9	11	2	18	2	0	0	2	0	0
	2014/2015 Closure	3	0	0	3	2	67	0	-	-	0	-	-
BBL	2011 Flood	0	-	-	0	-	-	0	-	-	0	-	-
	2011/2012 Operation	0	-	-	0	-	-	0	-	-	0	-	-
	2011/2012 Closure	8	1	13	8	2	25	4	4	100	4	3	75
	2014/2015 Operation	11	0	0	11	1	9	1	0	0	1	0	0
	2014/2015 Closure	3	2	67	3	2	67	0	-	-	0	-	-
BC1	2011 Flood	5	0	0	5	1	20	1	0	0	1	0	0
	2011/2012 Operation	4	0	0	4	1	25	7	2	29	7	1	14
	2011/2012 Closure	7	1	14	7	3	43	3	2	67	3	1	33
	2014/2015 Operation	11	6	55	11	7	64	1	0	0	1	0	0
	2014/2015 Closure	3	2	67	3	2	67	0	-	-	0	-	-

Table 14. Continued.

Site ID	Period	Objectives Applicable when Water Temperature is > 5°C						Objectives Applicable when Water Temperature is ≤ 5°C					
		MWQSOGs PAL for Cool Water Early life, and CCME PAL for Early Life Stages of Warm Water Biota; 6.0 mg/L			MWQSOGs PAL for Cold Water Mature Life and CCME PAL for Other Life Stages of Cold Water Biota; 6.5 mg/L			MWQSOGs PAL for Cold Water Early Life, and CCME PAL for Early Life Stages of Cold Water Biota; 9.5 mg/L			MWQSOGs PAL for Cool Water Mature Life, and CCME PAL for Other Life Stages of Warm Water Biota; 5.5 mg/L		
		n	# below	% below	n	# below	% below	n	# below	% below	n	# below	% below
BC2	2011 Flood	5	0	0	5	0	0	1	0	0	1	0	0
	2011/2012 Operation	5	1	20	5	1	20	10	1	10	10	1	10
	2011/2012 Closure	7	0	0	7	0	0	3	3	100	3	1	33
	2014/2015 Operation	8	4	50	8	4	50	2	0	0	2	0	0
	2014/2015 Closure	0	-	-	0	-	-	0	-	-	0	-	-
BC3	2011 Flood	5	0	0	5	0	0	1	0	0	1	0	0
	2011/2012 Operation	7	0	0	7	1	14	11	1	9	11	0	0
	2011/2012 Closure	12	0	0	12	1	8	1	1	100	1	0	0
	2014/2015 Operation	16	5	31	16	5	31	3	1	33	3	0	0
	2014/2015 Closure	3	1	33	3	2	67	0	-	-	0	-	-

Table 15. Frequency of exceedance of MWQSOGs and CCME guidelines for PAL for metals and major ions in the Buffalo Creek watershed, 2011-2015. Only metals and major ions for which exceedances occurred within the Study Area are listed.[1] Percent exceedance values greater than zero are indicated in bold. Note: this table does not include 2014/2015 Closure data, because metals were not analysed during this period.

			Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
Site ID	Period		MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
EC1	2011 Flood	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
	2011/2012 Operation	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
	2011/2012 Closure	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	0	-	1	0	0
		% Exceedance	0	0	-	0	-	**100**	0	0
	2014/2015 Operation	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
EC2	2011 Flood	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
	2011/2012 Operation	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
	2011/2012 Closure	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	0	-	1	0	0
		% Exceedance	0	0	-	0	-	**100**	0	0

Table 15. Continued.

Site ID	Period		Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
			MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
EC2	2014/2015 Operation	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
BBL	2011 Flood	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
	2011/2012 Operation	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
	2011/2012 Closure	n	4	4	-	4	-	4	4	4
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**25**	-	**25**	0	0
	2014/2015 Operation	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
BC1	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	0	-	0	0	0
		% Exceedance	0	0	-	0	-	0	0	0
	2011/2012 Operation	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-

Table 15. Continued.

Site ID	Period		Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
			MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
BC1	2011/2012 Closure	n	1	1	-	1	-	1	1	1
		# Exceeded	1	1	-	0	-	0	0	0
		% Exceedance	**100**	**100**	-	0	-	0	0	0
	2014/2015 Operation	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
BC2	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	0	-	0	0	0
		% Exceedance	0	0	-	0	-	0	0	0
	2011/2012 Operation	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
	2011/2012 Closure	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
	2014/2015 Operation	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
BC3	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	1	1	-	0	-	0	0	0
		% Exceedance	**100**	**100**	-	0	-	0	0	0

Table 15. Continued.

Site ID	Period		Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
			MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
BC3	2011/2012 Operation	n	4	4	-	4	-	4	4	4
		# Exceeded	2	2	-	4	-	4	0	0
		% Exceedance	**50**	**50**	-	**100**	-	**100**	0	0
	2011/2012 Closure	n	6	6	-	6	-	6	6	6
		# Exceeded	5	5	-	0	-	0	0	1
		% Exceedance	**83**	**83**	-	0	-	0	0	**17**
	2014/2015 Operation	n	5	5	-	5	-	5	5	5
		# Exceeded	5	5	-	5	-	5	0	0
		% Exceedance	**100**	**100**	-	**100**	-	**100**	0	0

Table 15. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
EC1	2011 Flood	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
	2011/2012 Operation	n	1	1	1	1	1	1
		# Exceeded	0	0	1	1	0	0
		% Exceedance	0	0	**100**	**100**	0	0
	2011/2012 Closure	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2014/2015 Operation	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
EC2	2011 Flood	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
	2011/2012 Operation	n	1	1	1	1	1	1
		# Exceeded	0	0	1	1	0	0
		% Exceedance	0	0	**100**	**100**	0	0
	2011/2012 Closure	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0

Table 15. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
EC2	2014/2015 Operation	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
BBL	2011 Flood	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
	2011/2012 Operation	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
	2011/2012 Closure	n	4	4	4	4	4	4
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2014/2015 Operation	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
BC1	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2011/2012 Operation	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-

Table 15. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
BC1	2011/2012 Closure	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2014/2015 Operation	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
BC2	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2011/2012 Operation	n	1	1	1	1	1	1
		# Exceeded	0	0	1	1	0	0
		% Exceedance	0	0	**100**	**100**	0	0
	2011/2012 Closure	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
	2014/2015 Operation	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
BC3	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0

Table 15. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
BC3	2011/2012 Operation	n	4	4	4	4	4	4
		# Exceeded	0	0	2	2	0	0
		% Exceedance	0	0	**50**	**50**	0	0
	2011/2012 Closure	n	6	6	6	6	6	6
		# Exceeded	3	3	0	0	0	0
		% Exceedance	**50**	**50**	0	0	0	0
	2014/2015 Operation	n	5	5	5	5	5	5
		# Exceeded	1	1	0	0	0	0
		% Exceedance	20	20	0	0	0	0

1 - The following metals where consistently within both the applicable MWQSOGs and CCME PAL guidelines at all sites and times: arsenic; boron; cadmium; dissolved chromium; copper; lead; mercury, methyl mercury; molybdenum; nickel; thallium; uranium; and, zinc.
2 - Long-term guideline. All concentrations were within the short-term guideline at all sites and times.
3 - Interim guideline.
4 - MWQSOGs 4-day objective. All concentrations were within the 1-hour objective.
5 - Based on sample specific hardness.
6 - Analytical detection limit is equal to the PAL guideline.

Table 16. Frequencies of exceedances of MWQSOGs/Health Canada aesthetic objectives for drinking water for metals and major ions measured in the Buffalo Creek watershed, 2011-2015. All parameters with maximum acceptable concentrations were within these guidelines at all sites and times, including: antimony; arsenic; barium; boron; lead; mercury; selenium; and, uranium. Percent exceedance values greater than zero are indicated in bold. Note: this table does not include 2014/2015 Closure data, because metals were not analysed during this period.

Site ID	Period		Chloride, Dissolved	Iron, Total	Manganese, Total	Sodium, Total	Sulphate, Dissolved
MWQSOGs/Health Canada Aesthetic Objective (mg/L)			≤250	≤0.3	≤0.050	≤200	≤500
EC1	2011/2012 Operation	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-
EC2	2011/2012 Operation	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-
BBL	2011/2012 Closure	n	4	4	4	4	4
		# Exceeded	0	0	2	0	0
		% Exceedance	0	0	**50**	0	0
	2014/2015 Operation	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-
BC1	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0

Table 16. Continued.

Site ID	Period		Chloride, Dissolved	Iron, Total	Manganese, Total	Sodium, Total	Sulphate, Dissolved
MWQSOGs/Health Canada Aesthetic Objective (mg/L)			≤250	≤0.3	≤0.050	≤200	≤500
BC1	2011/2012 Operation	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-
	2011/2012 Closure	n	1	1	1	1	1
		# Exceeded	0	0	1	0	0
		% Exceedance	0	0	**100**	0	0
	2014/2015 Operation	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-
BC2	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Operation	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-
	2014/2015 Operation	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-
BC3	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Operation	n	4	4	4	4	4
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	6	6	6	5	6
		# Exceeded	0	3	2	0	0
		% Exceedance	0	**50**	**33**	0	0
	2014/2015 Operation	n	5	5	5	5	5
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**20**	0	0	0

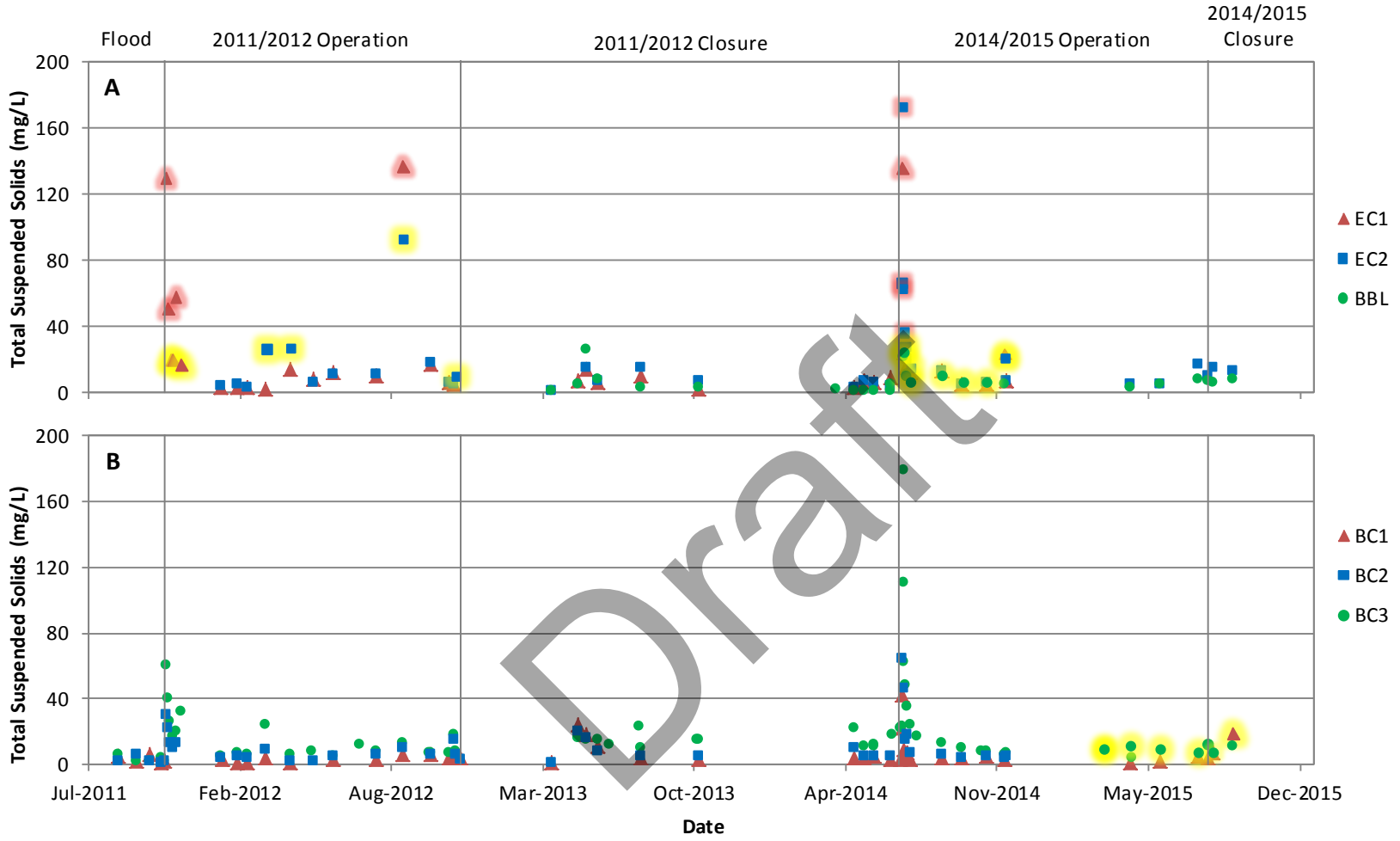

Figure 33. Total suspended solids concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015. Values highlighted in red were more than 25 mg/L above background. Values highlighted in yellow were more than 5 mg/L above background. Plots (C) and (D) show the same data as (A) and (B), respectively, but at a smaller scale such that only values less than or equal to 40 mg/L are shown.

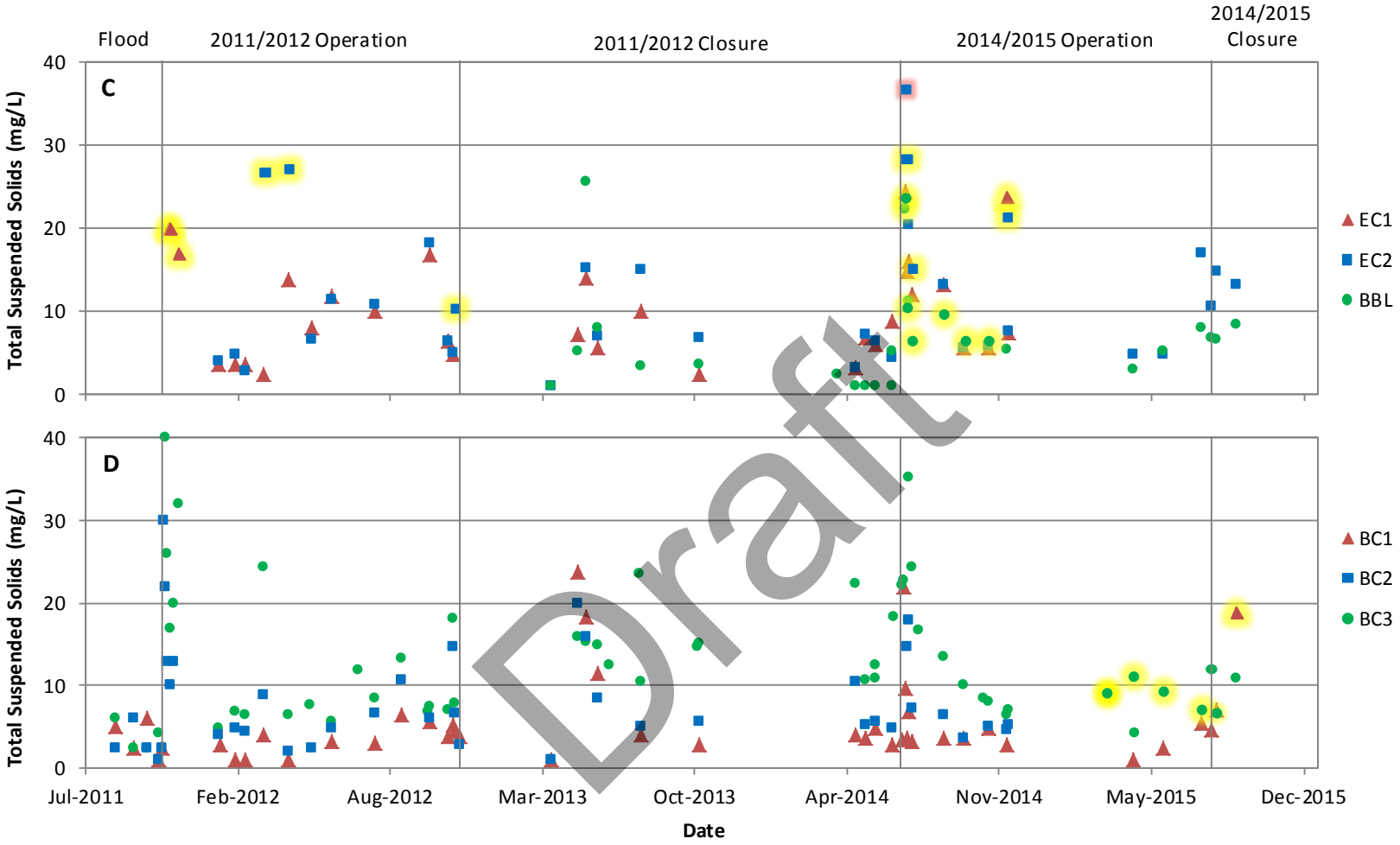

Figure 33. Continued.

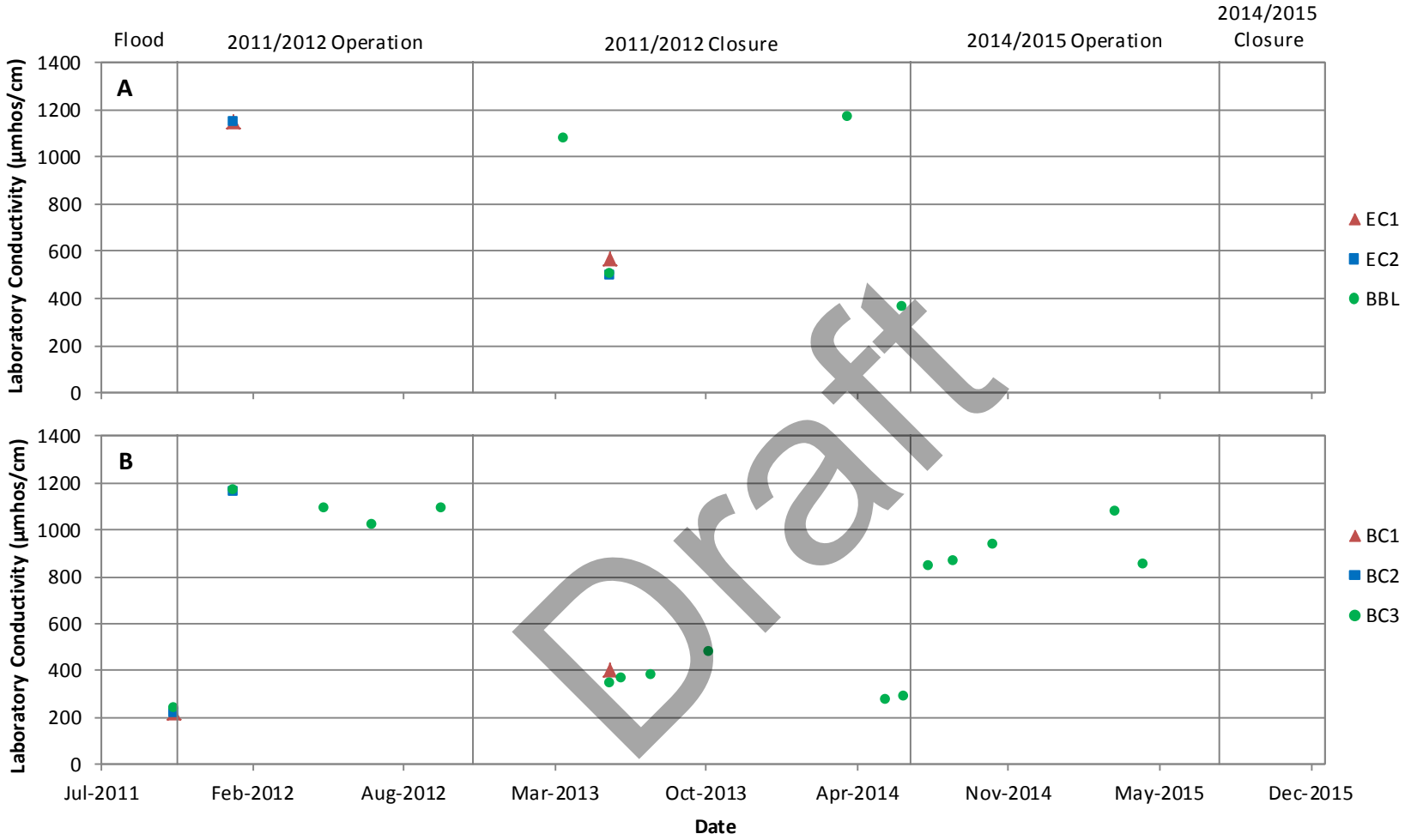

Figure 34. Laboratory conductivity in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015.

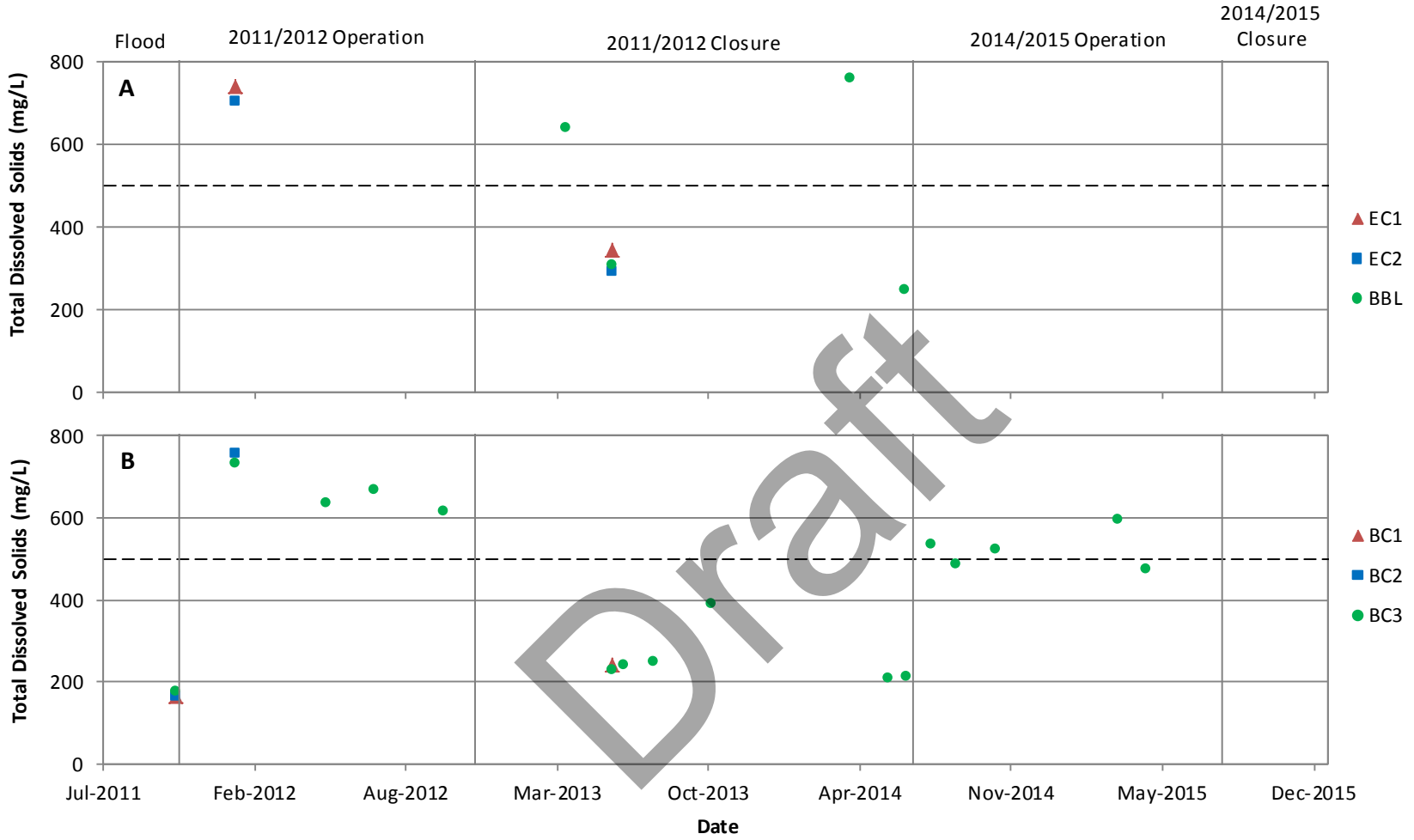

Figure 35. Total dissolved solids concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015. Dashed line represents the MWQSOGs and Health Canada aesthetic objective for drinking water.

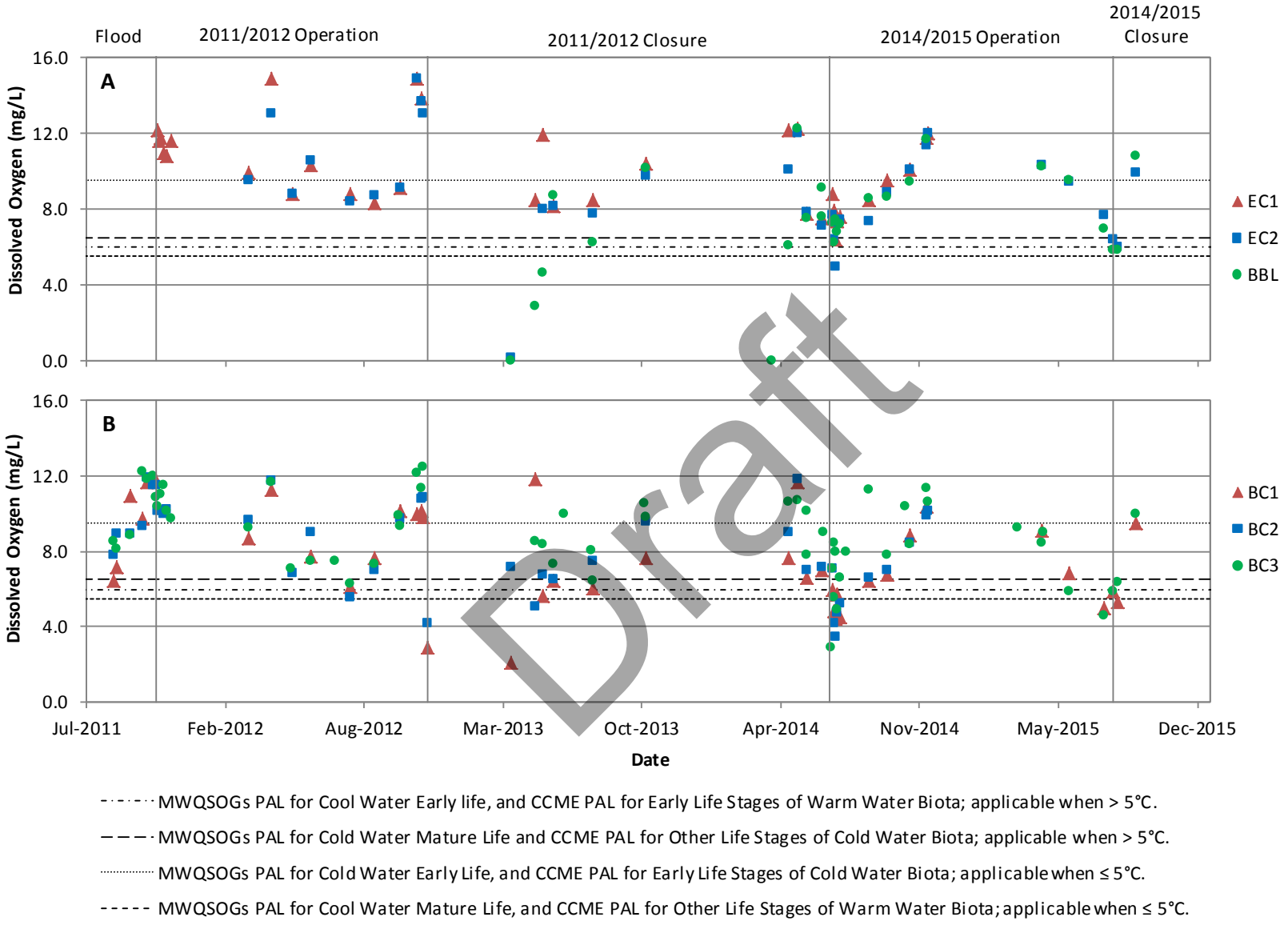

Figure 36. Dissolved oxygen concentrations measured in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015.

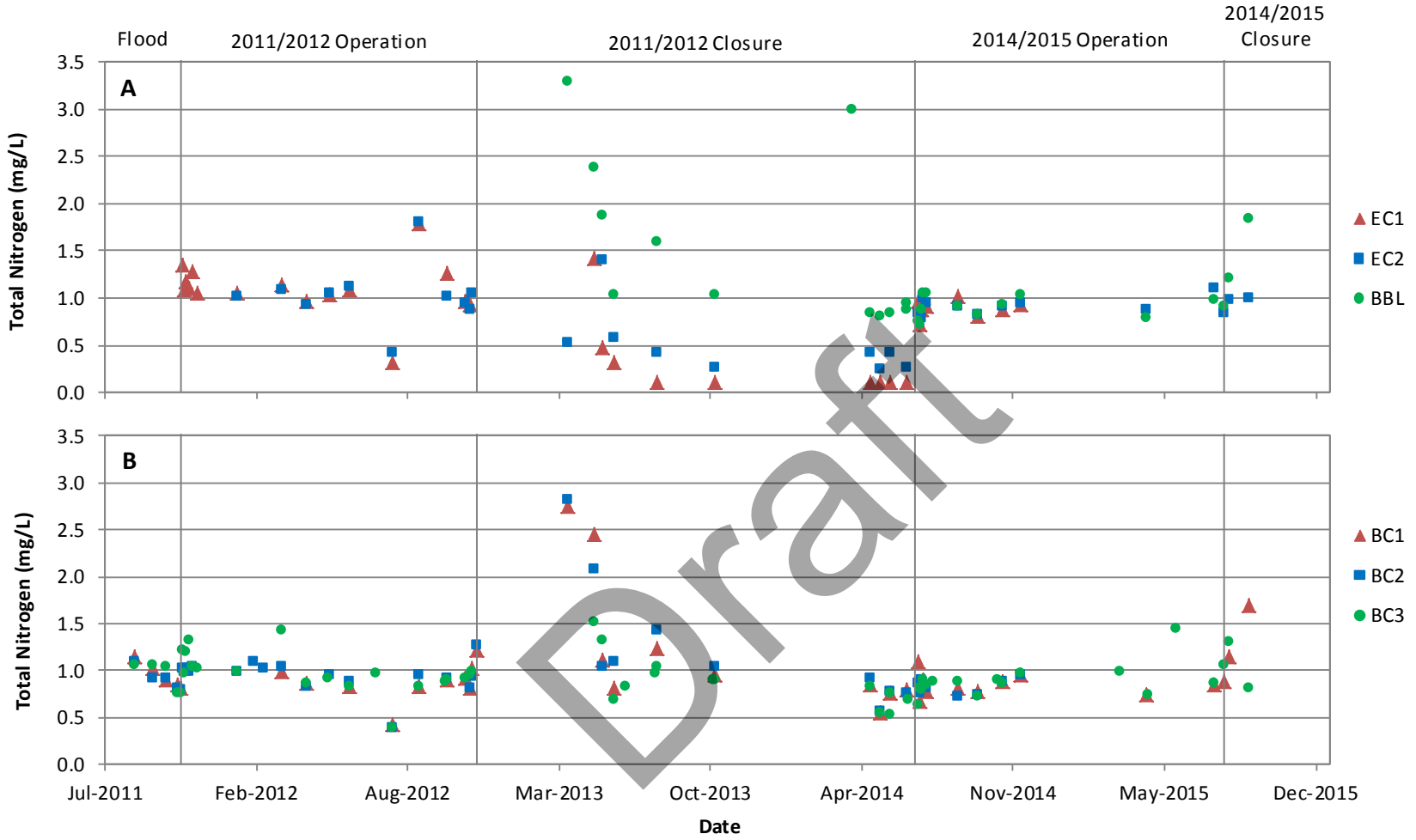

Figure 37. Total nitrogen concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015.

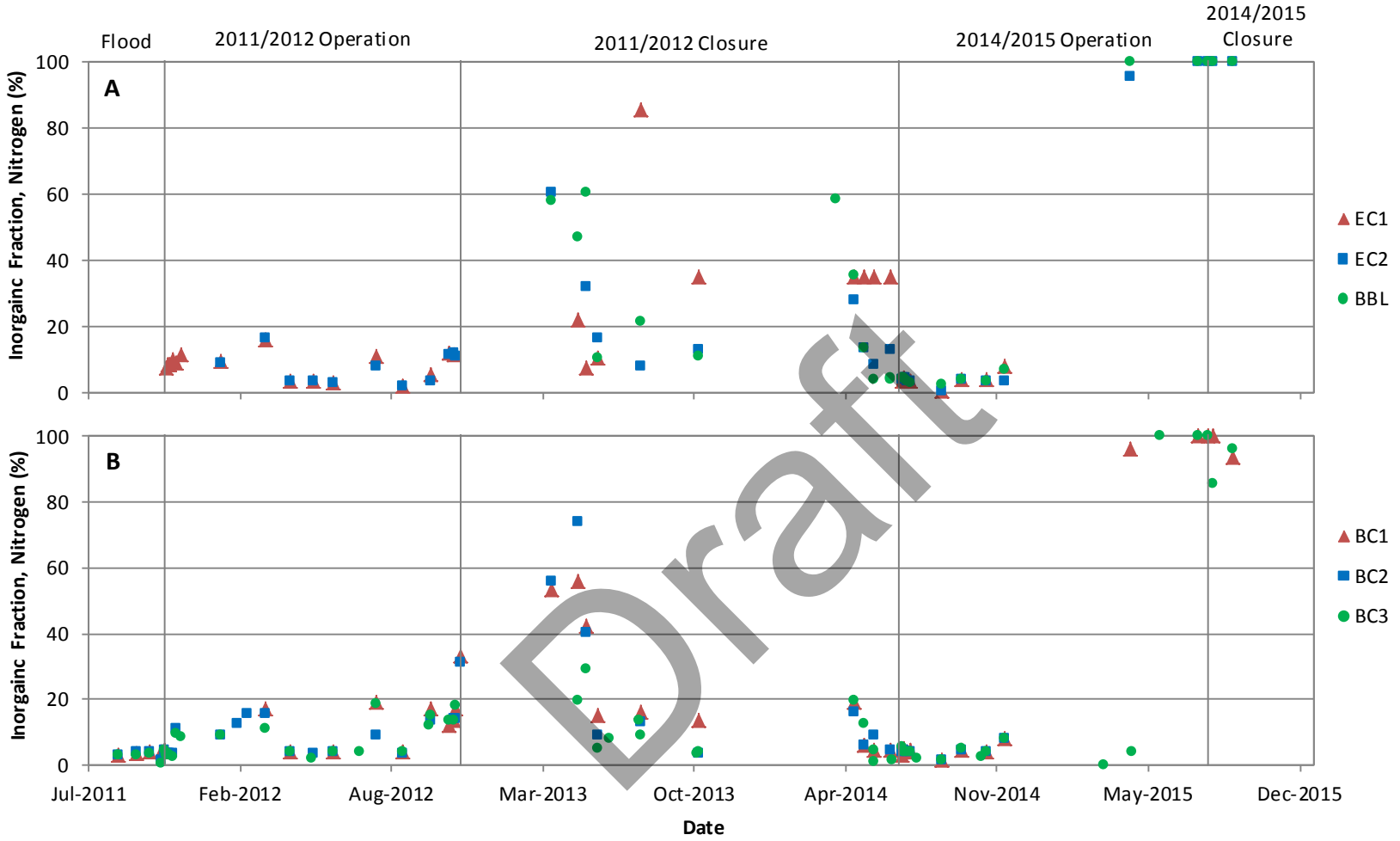

Figure 38. Nitrogen composition in (A) Reach 1, Big Buffalo Lake, and (B) Buffalo Creek, 2011-2015.

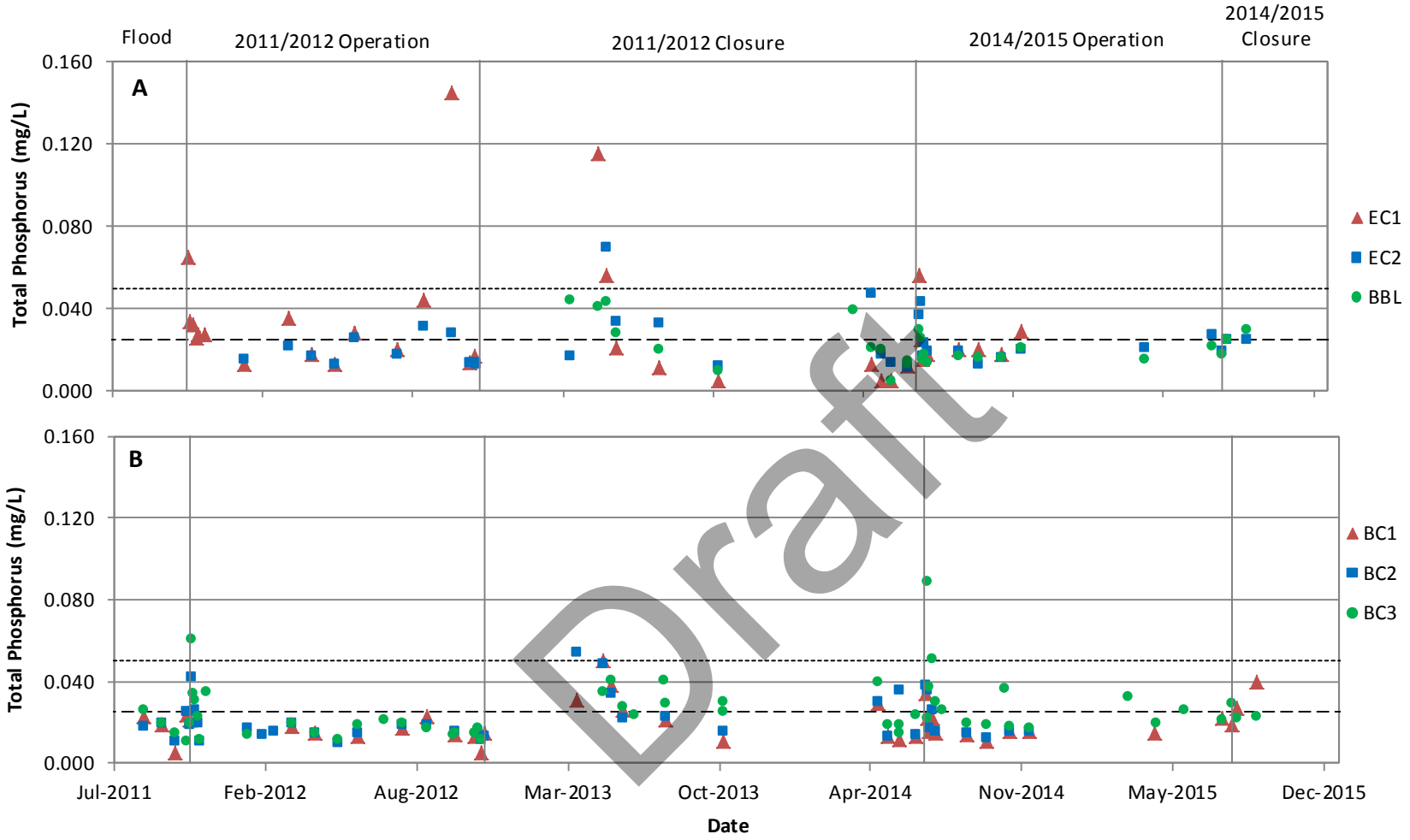

Figure 39. Total phosphorus concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015. Dashed line represents the MWQSOGs narrative guideline for lakes and the dotted line represents the MWQSOGs narrative guideline for streams. Plots (C) and (D) show the same data as (A) and (B), respectively, but at half scale such that only values less than or equal to 0.080 mg/L are shown.

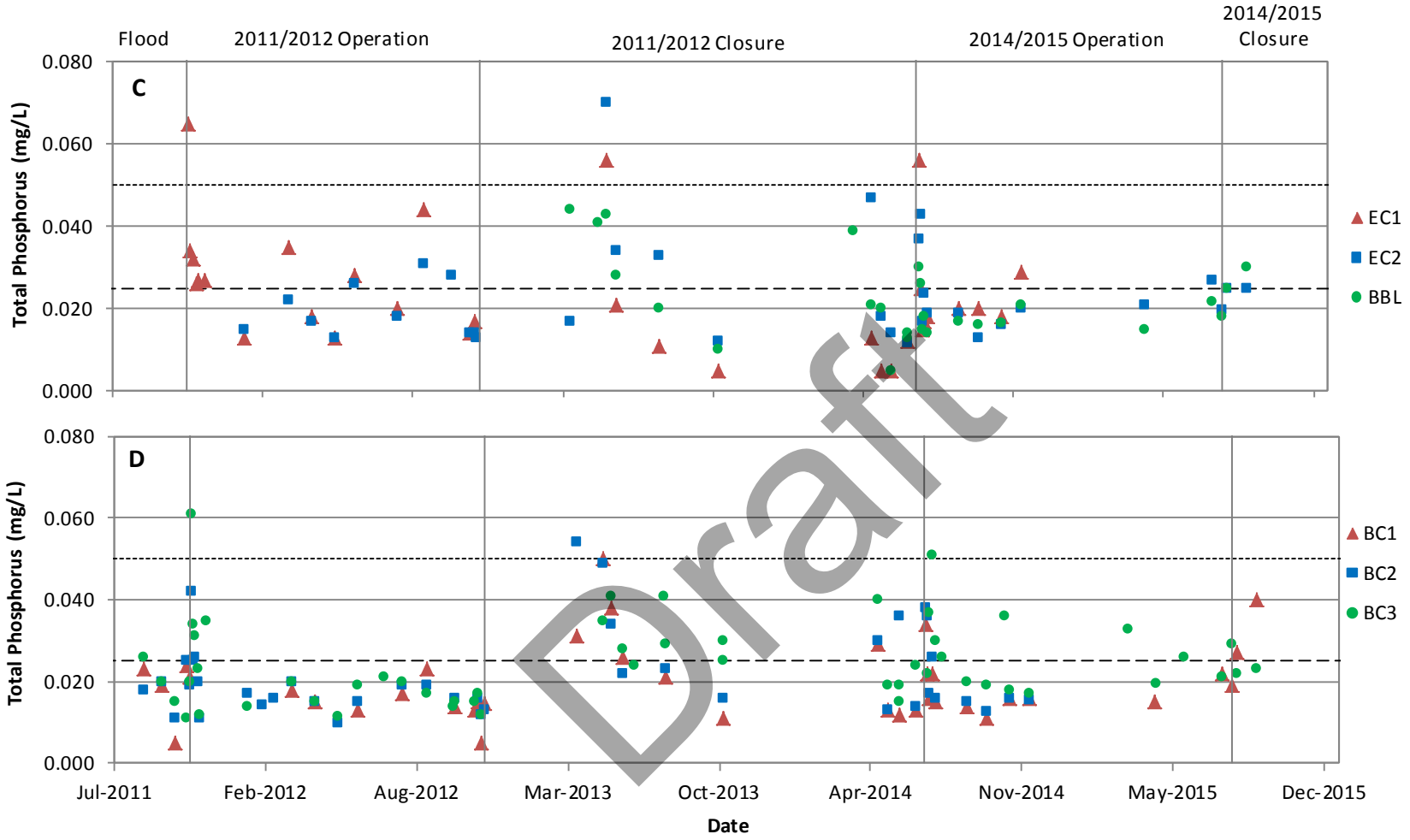

Figure 39. Continued.

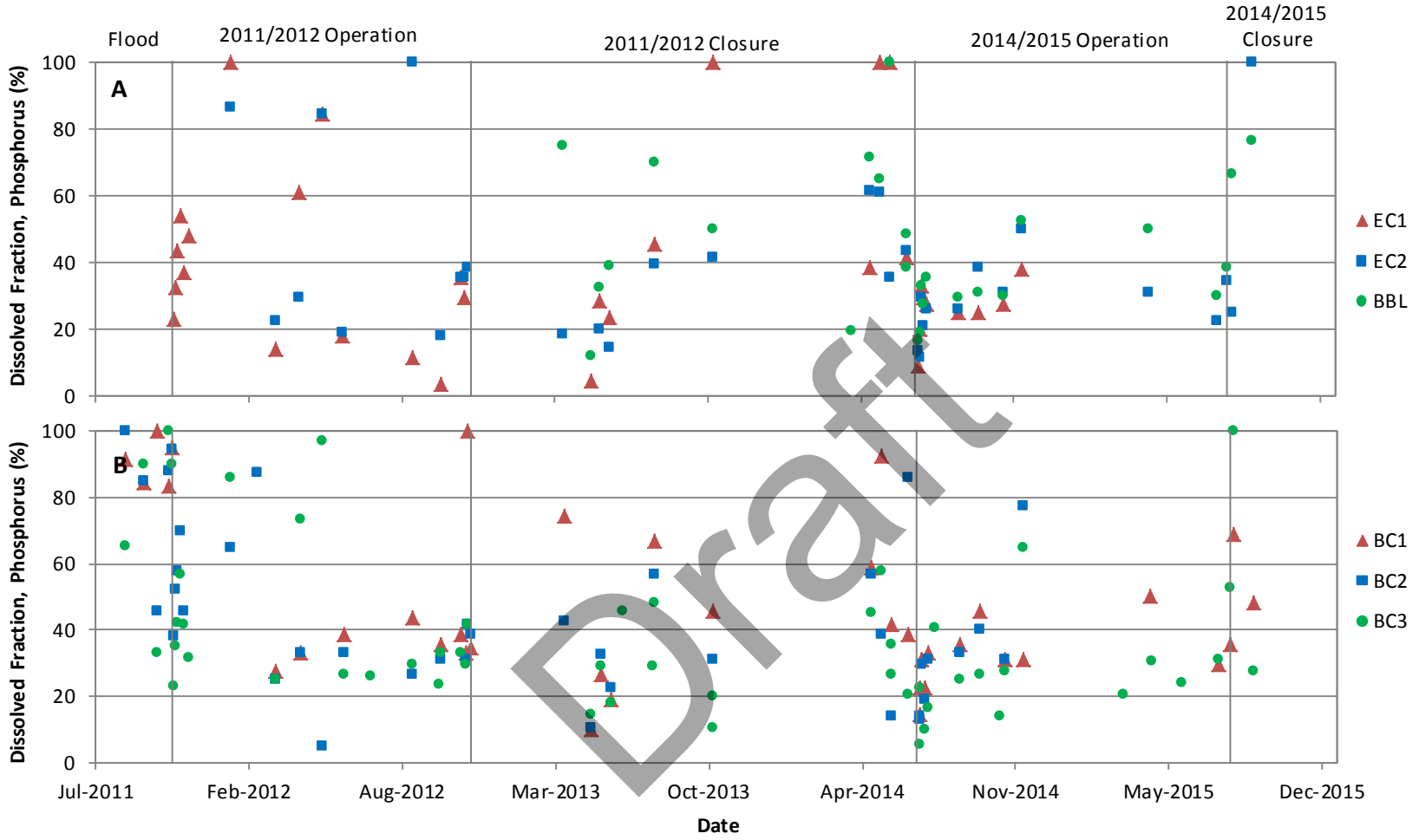

Figure 40. Phosphorus composition in (A) Reach 1, Big Buffalo Lake, and (B) Buffalo Creek, 2011-2015. Percent dissolved phosphorus values greater than 100% are plotted at 100% for the purposes of this figure.

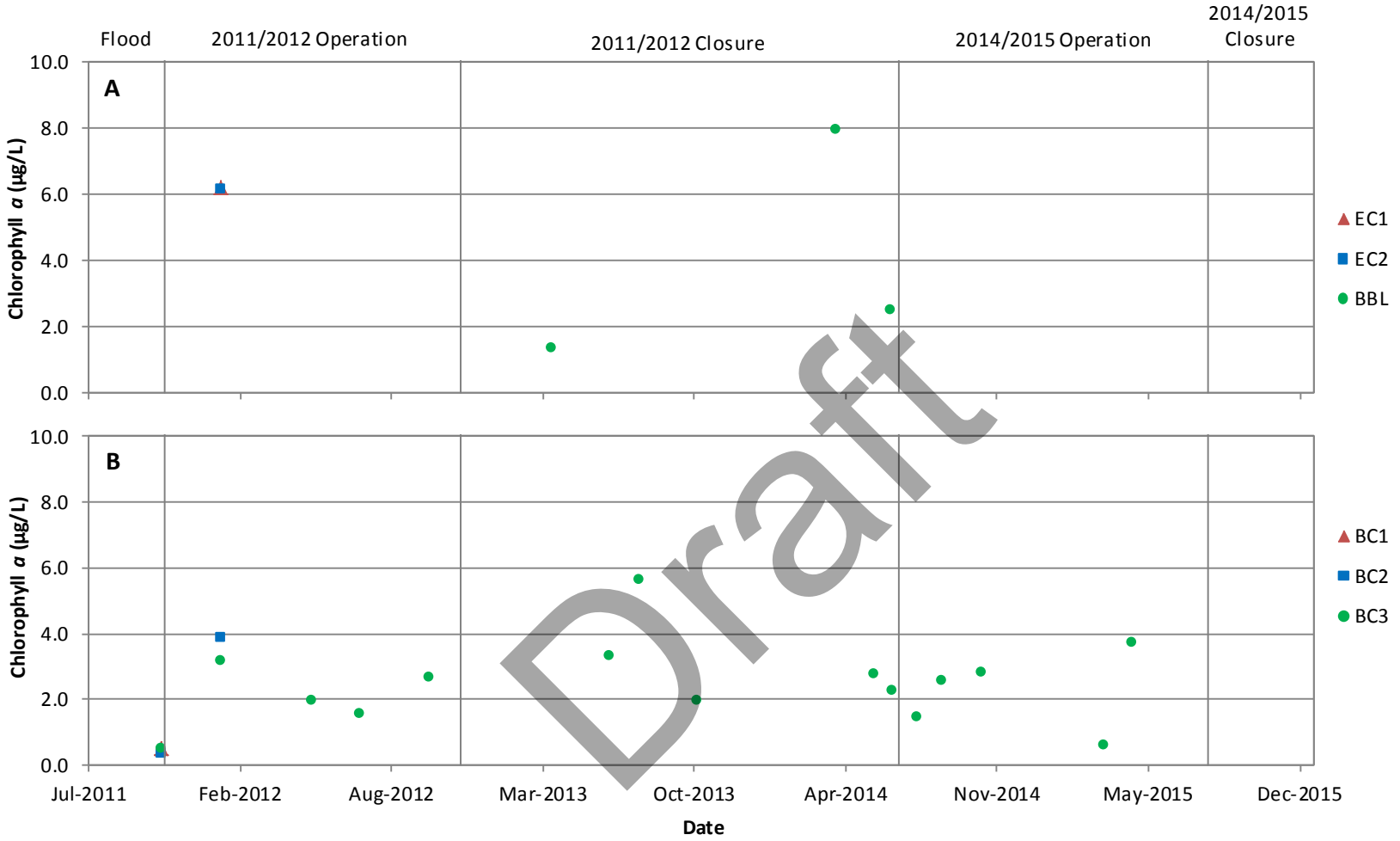

Figure 41. Chlorophyll *a* concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015.

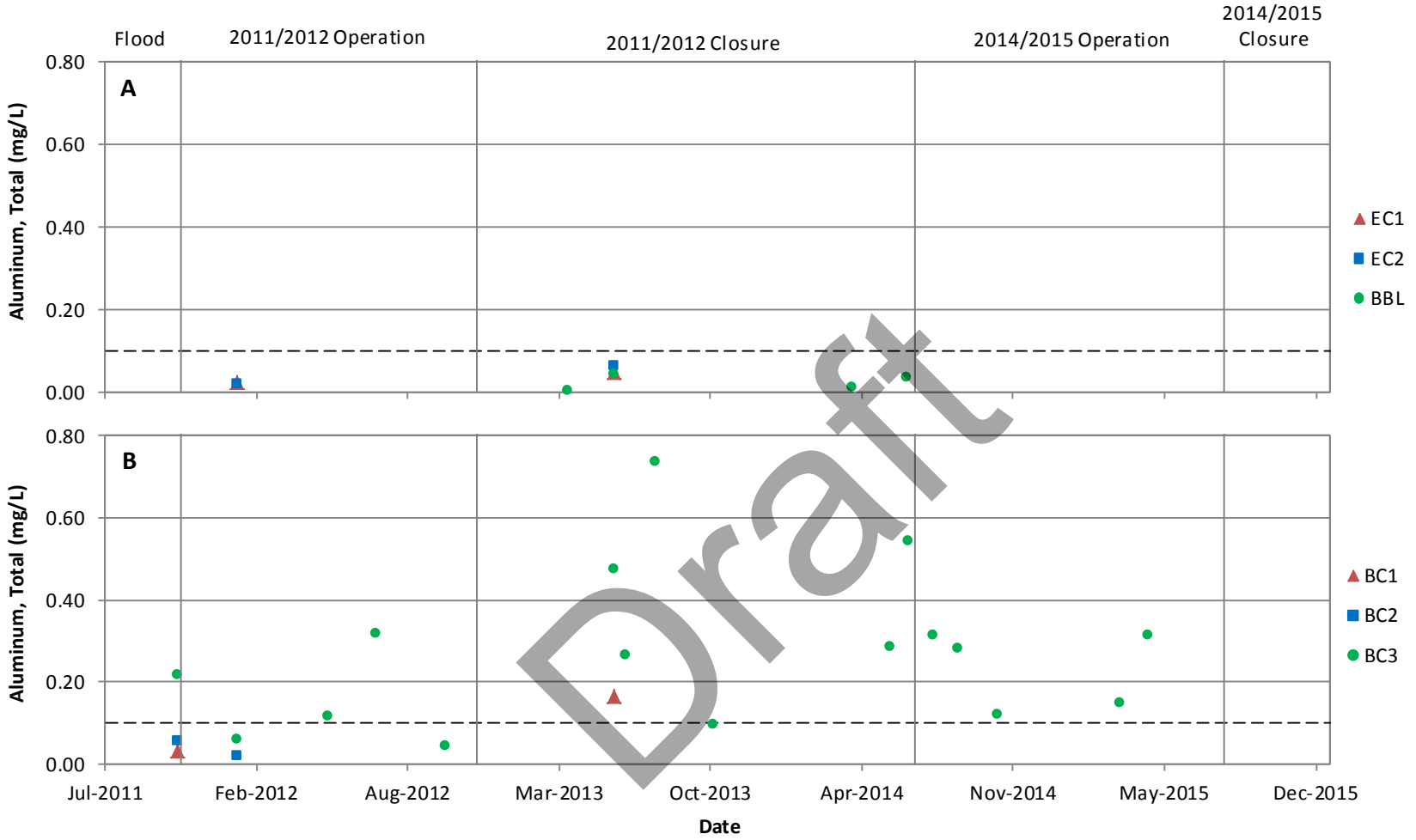

Figure 42. Aluminum concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015. Dashed line represents the MWQSOGs/CCME PAL.

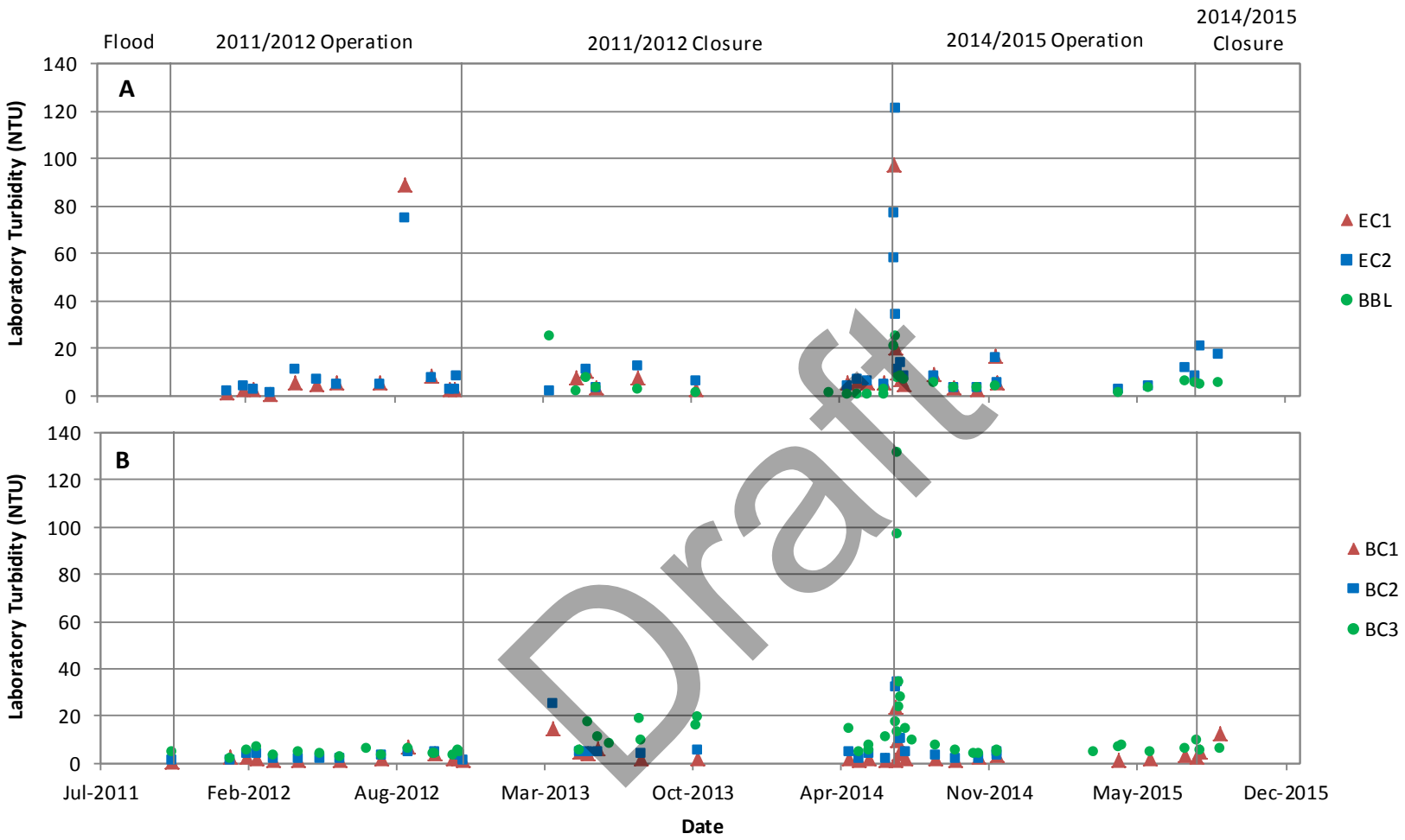

Figure 43. Laboratory turbidity in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015. Plots (C) and (D) show the same data as (A) and (B), respectively, but at a smaller scale such that only values less than or equal to 40 NTU are shown.

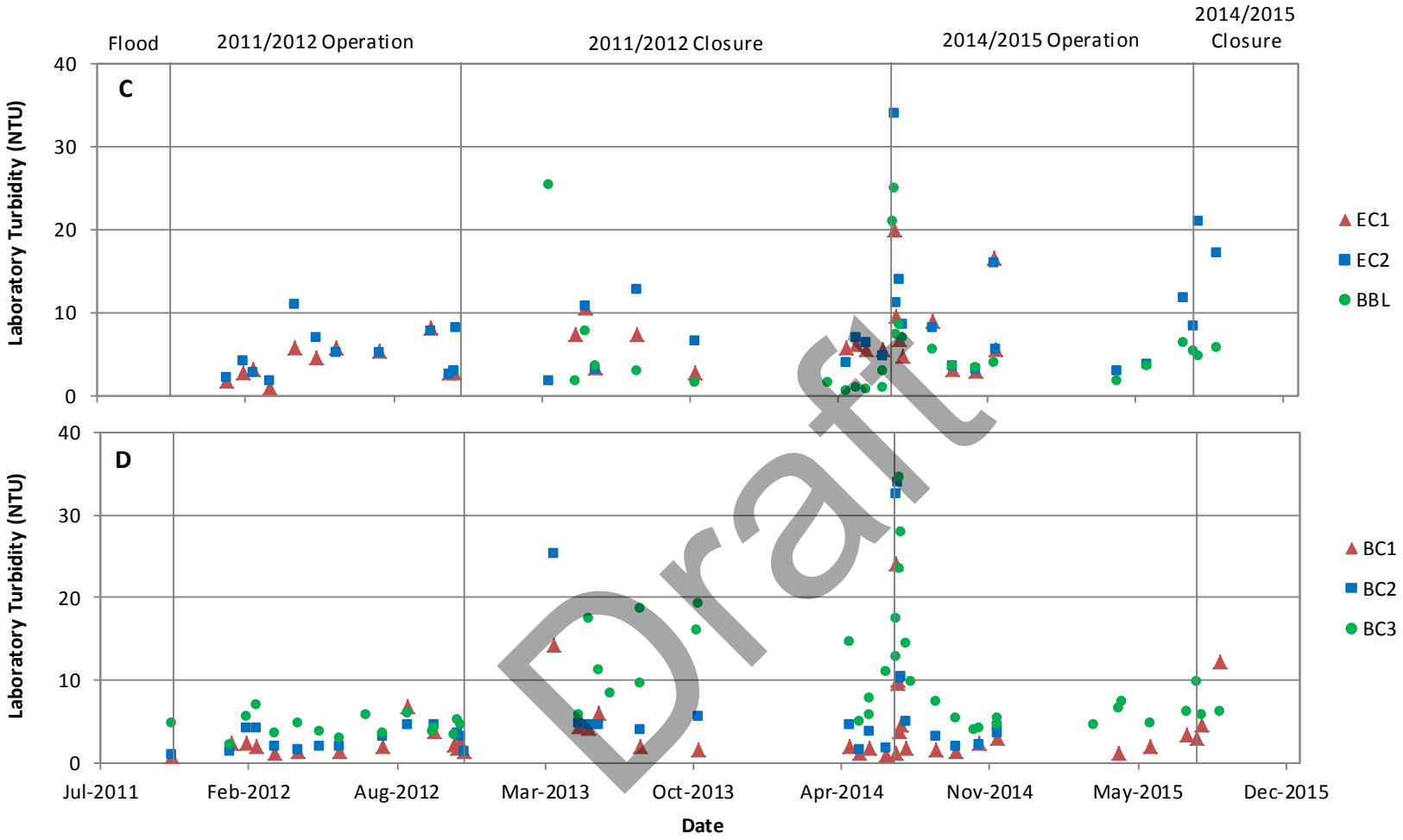

Figure 43. Continued.

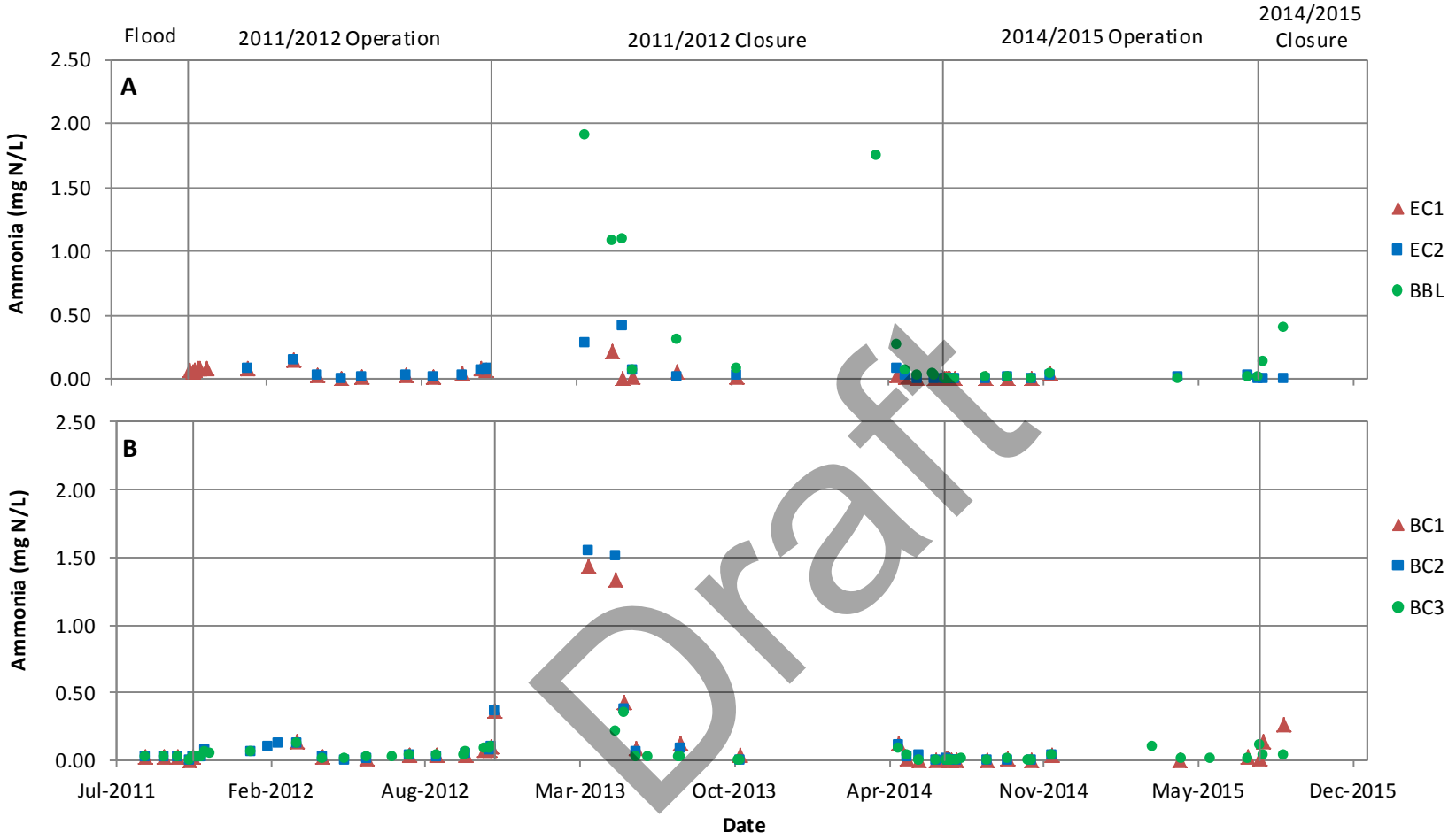

Figure 44. Ammonia concentrations measured in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015. Plots (C) and (D) show the same data as (A) and (B), respectively, but at a smaller scale such that only values less than or equal to 0.50 mg/L are shown.

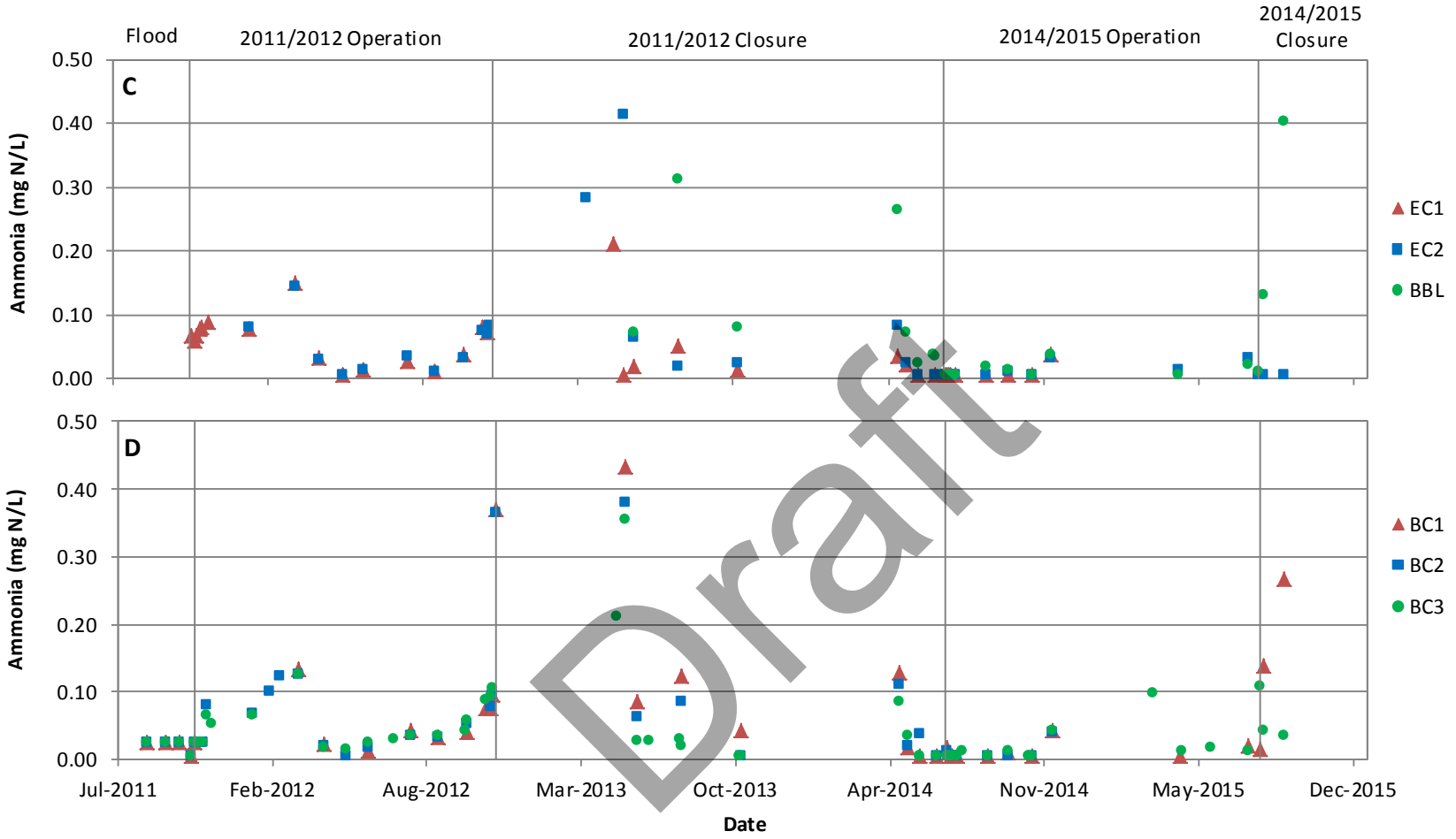

Figure 44. Continued.

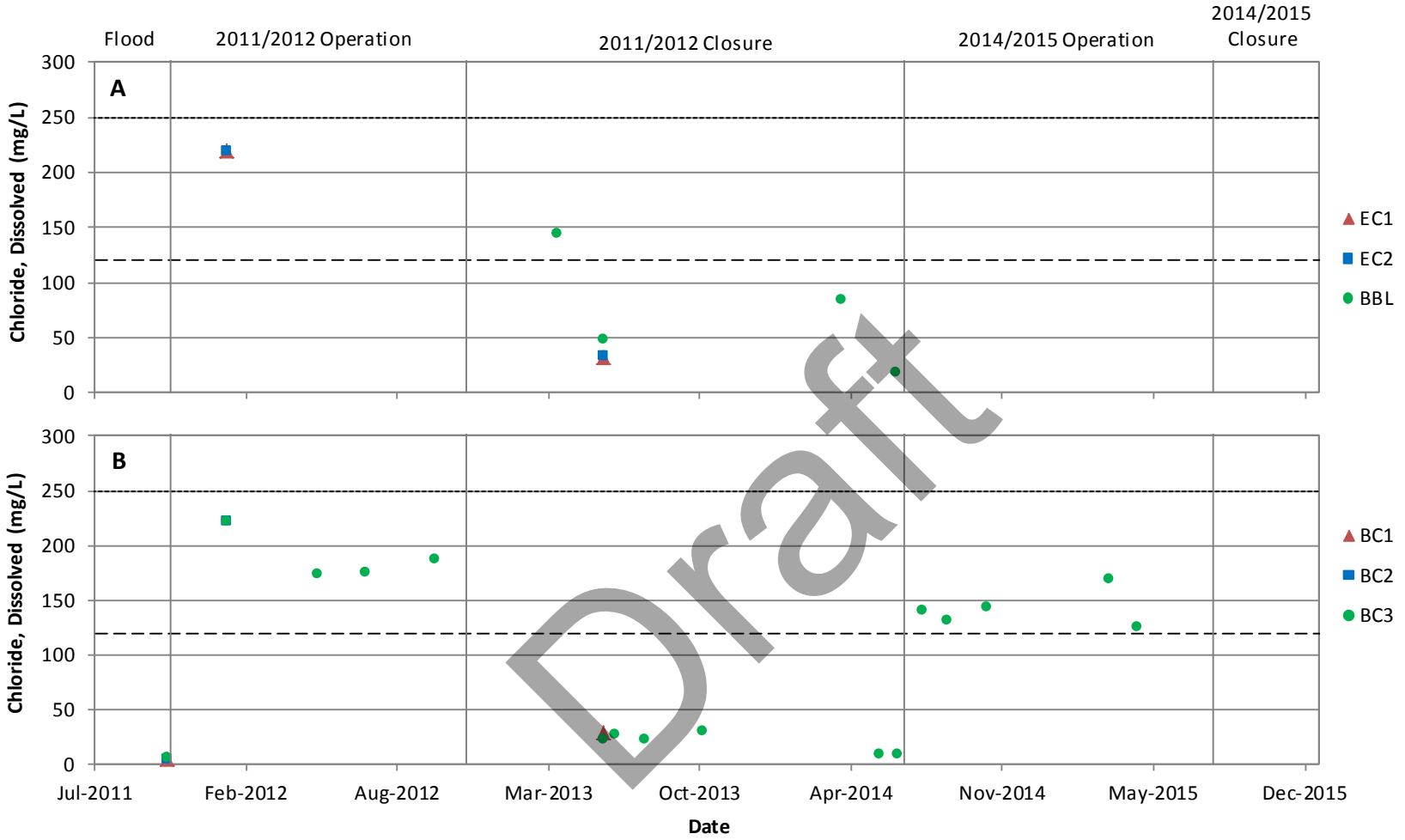

Figure 45. Chloride concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015. Dashed line represents the CCME long-term exposure PAL and the dotted line represents the MWQSOGs/Health Canada aesthetic objective for drinking water.

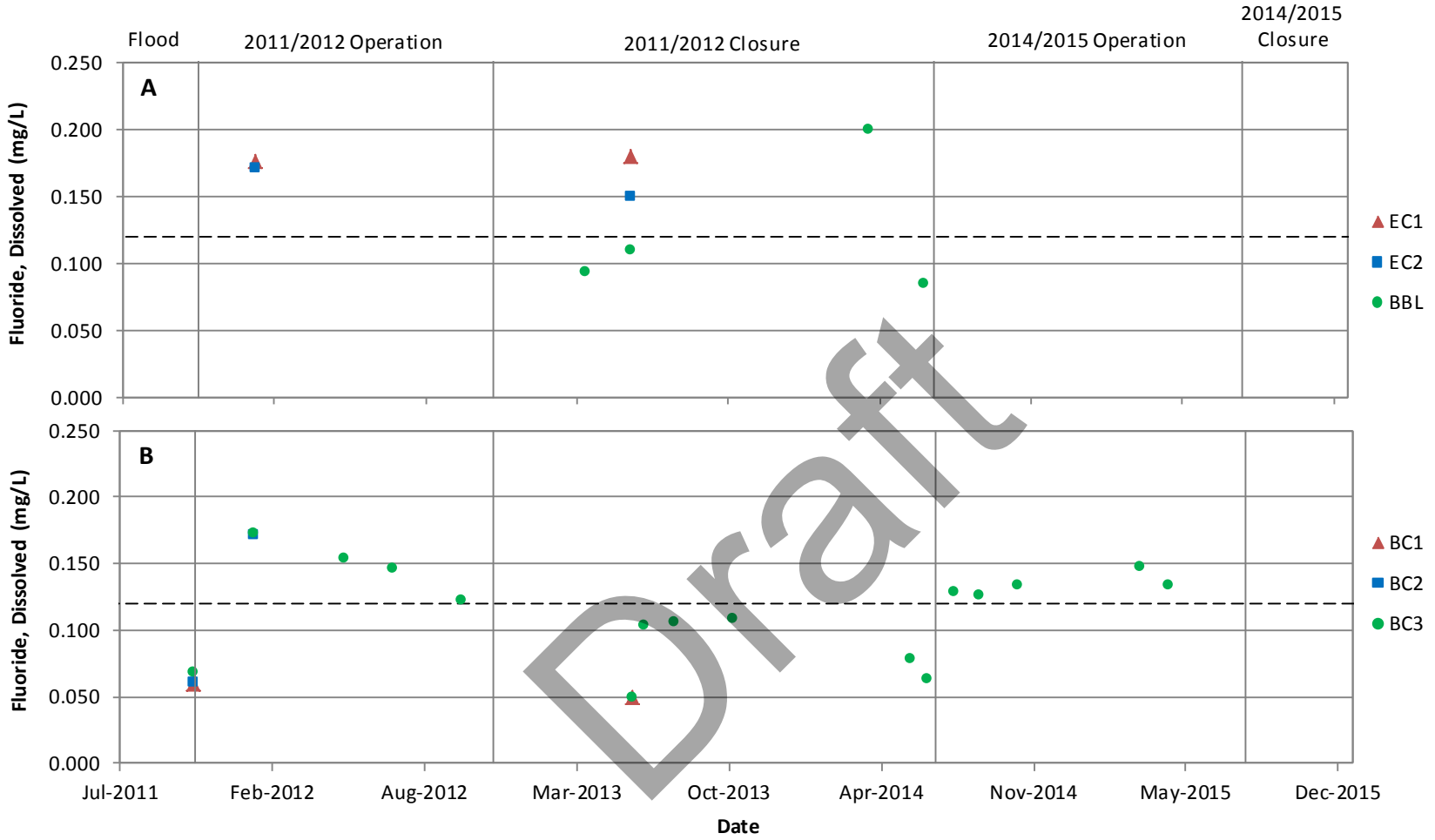

Figure 46. Fluoride concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015. Dashed line represents the CCME interim PAL.

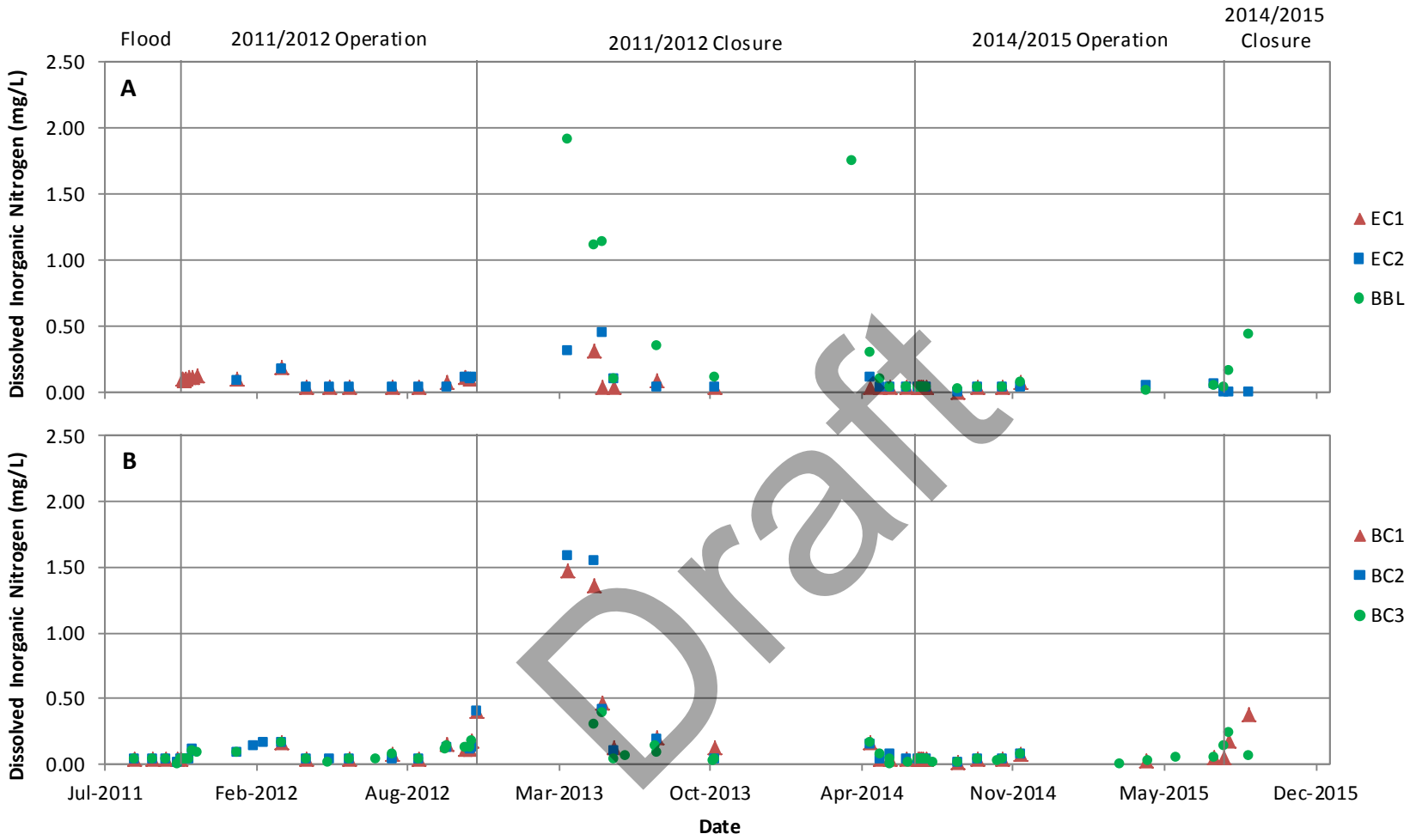

Figure 47. Dissolved inorganic nitrogen concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015.

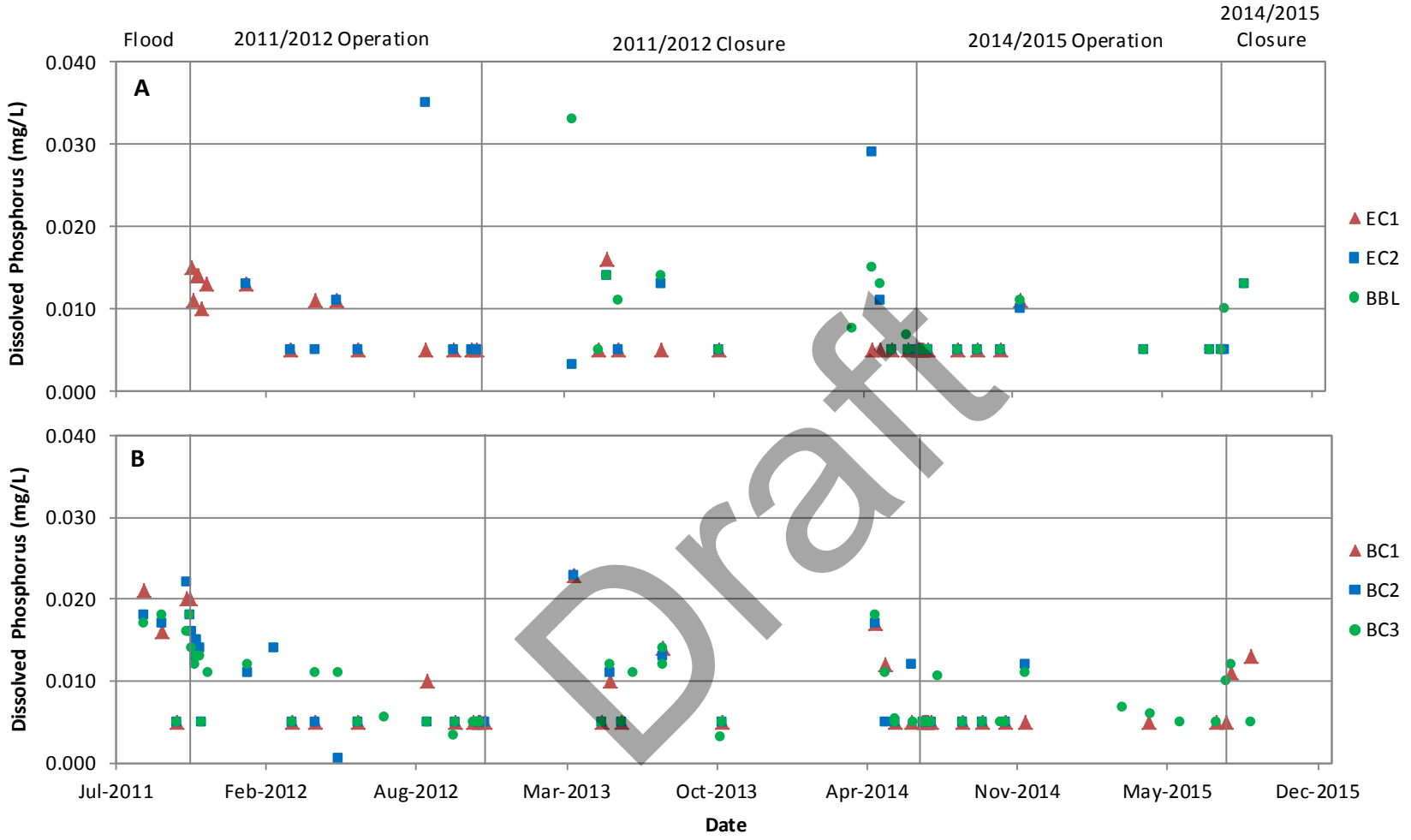

Figure 48. Dissolved phosphorus concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015.

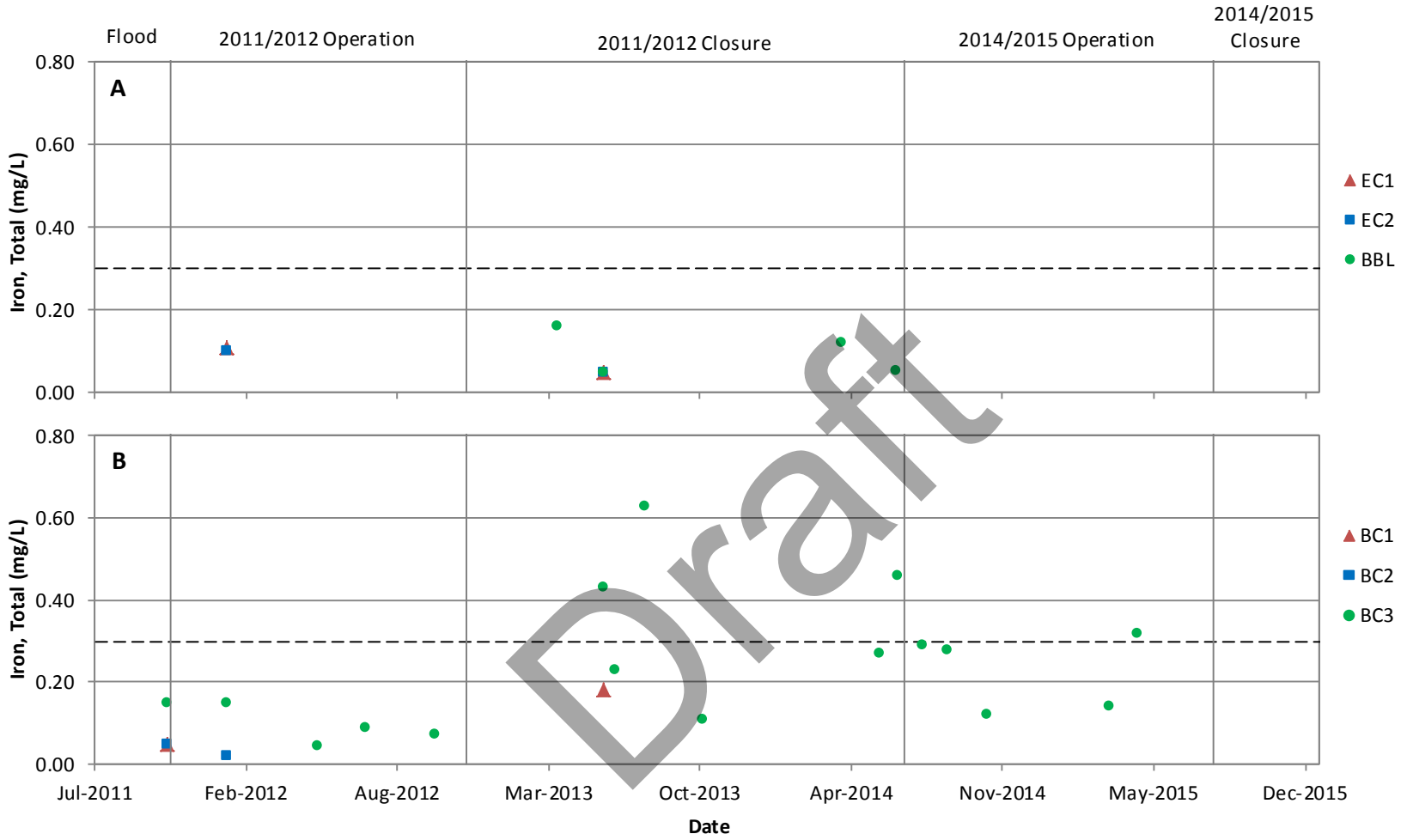

Figure 49. Iron concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015. Dashed line represents both the MWQSOGs/CCME PAL and the MWQSOGs/Health Canada aesthetic objective for drinking water.

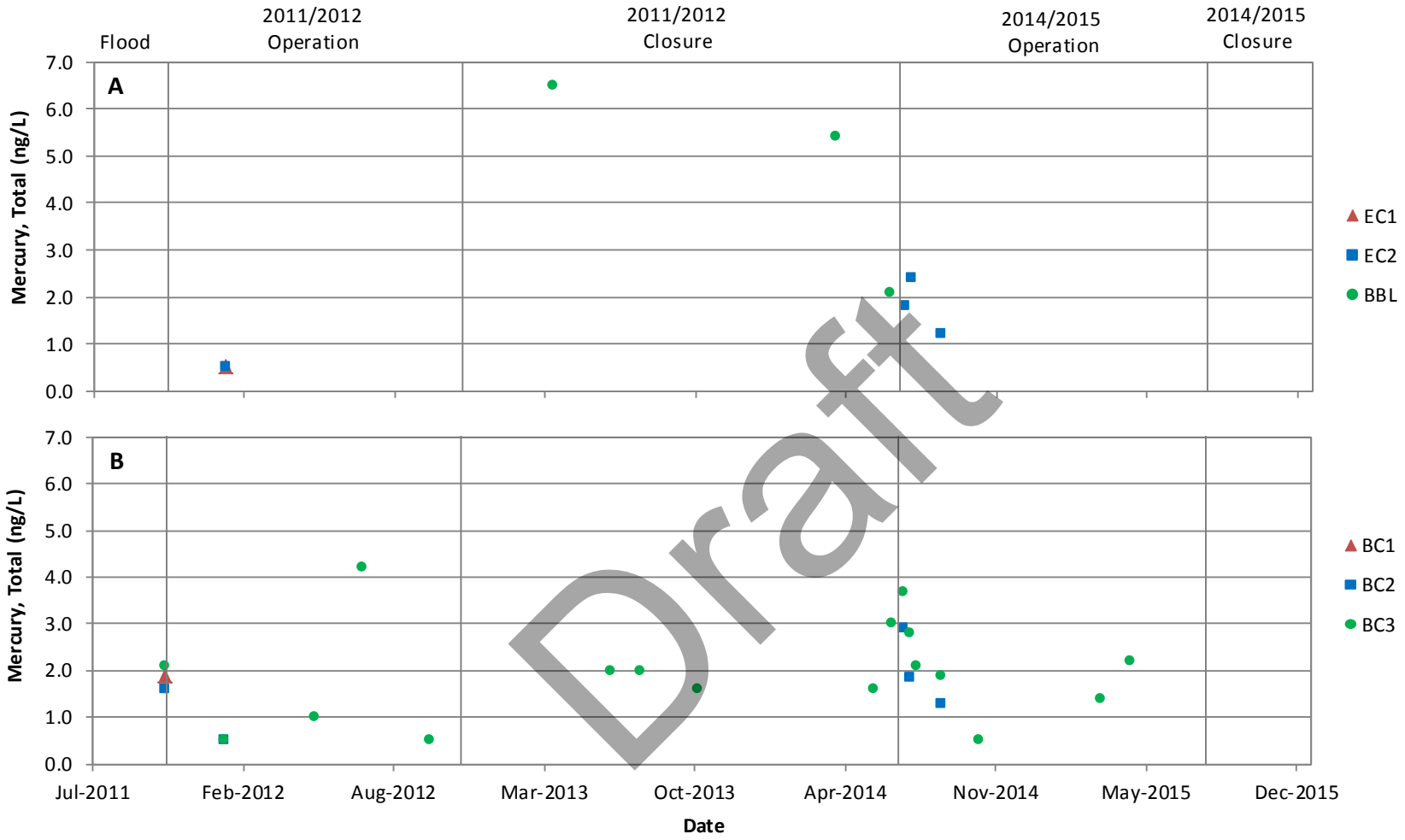

Figure 50. Mercury concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015.

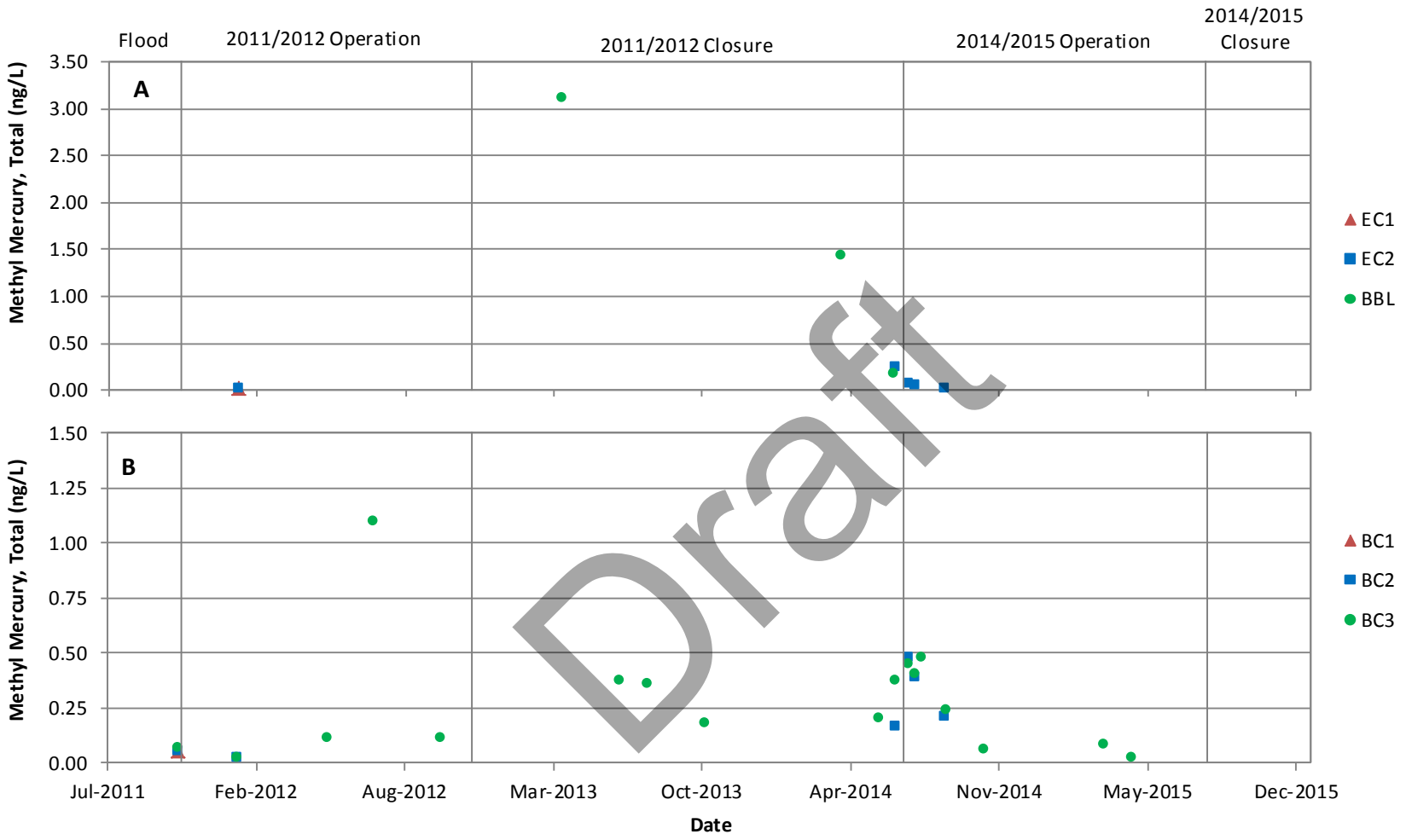

Figure 51. Methyl mercury concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015. Note difference in scale between the two plots.

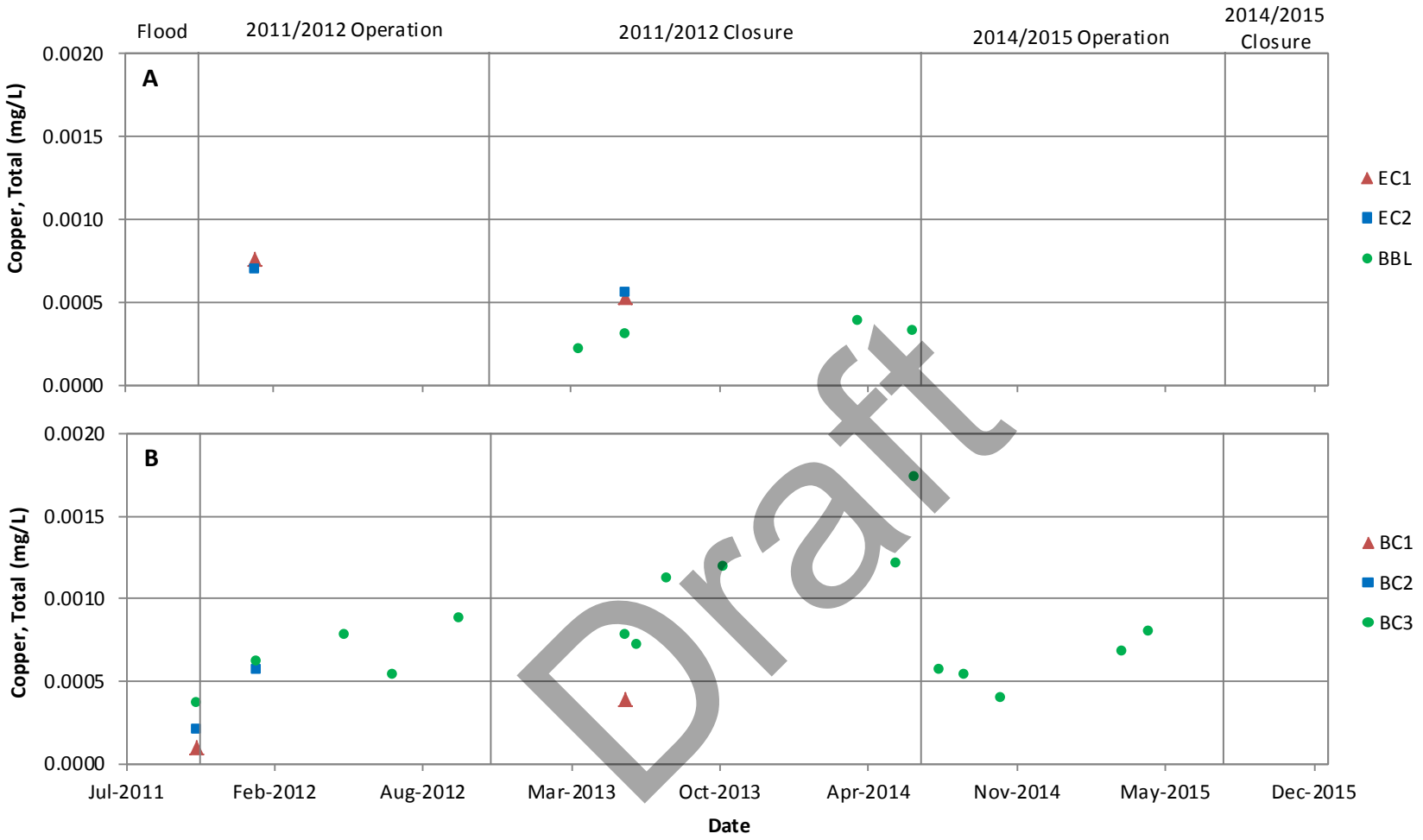

Figure 52. Copper concentrations in (A) Reach1, Big Buffalo Lake, and (B) Buffalo Creek from 2011-2015.

4.3 DAUPHIN RIVER MONITORING RESULTS

This section presents the assessment of change/lack of change to water quality of the Dauphin River from 2011 through 2015. Summary statistics for key water quality parameters for each time period are presented in Table 17. Figures 53to 63 show trends in water quality at the site upstream of the Big Bend (DR-B) from 2004-2014 and Figures 64 to 80 show trends in water quality from 2011 to 2015 throughout the Dauphin River.

4.3.1 Pre-Operation

Water quality data for the Dauphin River prior to the Project include Historic and 2011 Flood data collected by MCWS at a site upstream of the Big Bend (DR-B); as well as those collected at multiple sites along the river in fall 2011 during the 2011 Flood period. Based on these data, the water quality of the Dauphin River could be generally described as moderately nutrient rich, low to moderately turbid, slightly alkaline, very hard, and well-oxygenated (Table 17).

Historically, TSS concentrations ranged from < 5.0 to 16 mg/L (Figure 53) in the Dauphin River upstream of the Big Bend. Laboratory pH ranged from 7.48-8.66 (Figure 54) and true colour ranged from ≤ 5.0 to 17.0 CU (Table 17). Conductivity and TDS in the Dauphin River ranged from 1230-1760 µmhos/cm and 709-978 mg/L, respectively (Figures 55 and 56). Hardness ranged from 225 to 310 mg/L. The Dauphin River was well oxygenated; DO ranged from 7.4 to 11.9 mg/L (Figure 57). TN ranged from 0.95 to 2.51 mg/L and was mostly composed of organic forms, although, DIN tended to increase during the winter (Figures 58 and 59). TP concentrations in the Dauphin River averaged 0.022 mg/L, but ranged from 0.002 to 0.066 mg/L, and were typically composed of a mix of particulate and dissolved forms (Figures 60 and 61). Carbon concentrations were dominated by inorganic forms and organic carbon was primarily dissolved in form (Table 17). On the basis of TN:TP molar ratios, the Dauphin River was phosphorus limited (i.e., TN:TP ratio > 20; Kalff 2002). TOC:ON molar ratios indicate that the organic matter in the Dauphin River was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983). Chlorophyll *a* concentrations indicate that primary productivity was moderate; concentrations ranged from 1.15 to 9.00 µg/L (Figure 62).

During 2011 Flood, water quality of the Dauphin River was generally similar to what it was historically; however, conductivity, TDS, chloride and sodium were lower during 2011 Flood than they were during the Historic period, particularly in fall 2011 (Table 17 and Figures 55, 56, and 63). During 2011 Flood, conductivity and TDS ranged from 1090-1400 µmhos/cm and 656-826 mg/L, respectively. TN was also lower during 2011 Flood than it typically was during the Historic period, but TN had been lower in the Dauphin River since 2009 and did not change during 2011 Flood (Figures 58). During 2011 Flood, TN ranged from 1.02 to 1.56 mg/L. Water quality was generally similar throughout the Dauphin River in fall 2011 (Table 17).

DO was occasionally (2 of 9 measurements) below the MWQSOGs long-term objective/CCME lowest acceptable concentration for cold-water early-life (9.5 mg/L) when water temperatures were ≤ 5°C in the Dauphin River during the Historic period (Table 18). DO was consistently within the

MWQSOGs/CCME PALs at all other times sampled during the Historic period and during 2011 Flood. Ammonia rarely (1 of 21 samples) exceeded the CCME PAL guideline in the Dauphin River during the Historic period. Ammonia concentrations in the Dauphin River were consistently within MWQSOGs PAL during the Historic period and the MWQSOGs and CCME PALs during 2011 Flood. During the Historic period, TP rarely (1 of 22 samples) exceeded the MWQSOGs narrative guideline for streams (0.050 mg/L) in the Dauphin River upstream of the Big Bend (DR-B); TP was consistently below this guideline at all sites during 2011 Flood. TP occasionally (1 of 4 samples) exceeded the MWQSOGs narrative guideline for lakes and river mouths (0.025 mg/L) at the Dauphin River mouth (DR-E) during 2011 Flood. All other routine parameters were within MWQSOGs and CCME guidelines for PAL, including nitrate, nitrite, and pH.

TDS and turbidity consistently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤500 mg/L and 1 NTU, respectively) in the Dauphin River during the Historic and 2011 Flood periods (Table 17 and Figure 56). True colour rarely (1 of 22 samples) exceeded the MWQSOGs/Health Canada aesthetic objectives for drinking water (≤ 15 CU) during the Historic period; true colour was consistently within this objective during 2011 Flood. Laboratory pH was occasionally (5 of 22 samples) above the MWQOSGs/Health Canada aesthetic objective (6.5-8.5) upper limit during the Historic period while pH was consistently within this objective during 2011 Flood (Figures 54). All other routine parameters were within drinking water guidelines, including nitrate/nitrite, nitrate, and nitrite.

Methyl mercury was the only metal or major ion that was not detected in the Dauphin River prior to the Project. Arsenic, barium, boron, calcium, chloride, fluoride, magnesium, manganese, molybdenum, potassium, sodium, and sulphate were consistently detected; and, aluminum, antimony, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, silver, thallium, uranium and zinc were detected in some samples.

Chloride consistently exceeded the CCME long-term exposure guideline for PAL (120 mg/L) during the Historic and 2011 Flood periods (Figure 63). Additionally, chloride frequently exceeded the MWQSOGs/Health Canada aesthetic objective (≤ 250 mg/L) in the Dauphin River upstream of the Big Bend (DR-B). Fluoride consistently exceeded the CCME interim PAL (0.12 mg/L) in the Dauphin River during 2011 Flood (Figure 64); no historical data are available for fluoride. Selenium exceeded the MWQSOGs/CCME PAL (0.001 mg/L) in the Dauphin River downstream of Buffalo Creek during 2011 Flood; however, the selenium concentration was near the analytical detection limit and measurements that are at or near analytical detection limits are associated with relatively high uncertainty and there is low confidence that an actual exceedance of a PAL guideline has occurred. Sodium rarely exceeded the MWSOGs/Health Canada aesthetic objective (≤ 200 mg/L) in the Dauphin River during the Historic period and met this objective during 2011 Flood. All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 19) and drinking water (Table 20).

Petroleum hydrocarbons were not detected in the Dauphin River during the 2011 Flood period.

4.3.2 2011/2012 Operation

4.3.2.1 Routine

Conductivity, TDS, laboratory pH, true colour and hardness showed no change in the Dauphin River as a result of 2011/2012 Operation. Conductivity and TDS concentrations remained lower than they were historically and were similar to those during 2011 Flood; conductivity and TDS ranged from 1020-1210 µmhos/cm and 585-776 mg/L, respectively (Figures 65 and 66). Similarly, laboratory pH, true colour and hardness were within the historical values during 2011/2012 Operation, ranging from 8.26-8.46 pH units, 5.9-10.6 CU, and 251-350 mg/L, respectively (Table 17).

TDS continued to consistently exceed the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 500 mg/L) in the Dauphin River both upstream and downstream of Buffalo Creek. Laboratory pH was consistently within the MWQOSGs/CCME PAL (6.5-9.0) and the MWQSOGs/Health Canada aesthetic objective for drinking water (6.5-8.5). Similarly, true colour was consistently within the MWQSOGs/Health Canada aesthetic objectives for drinking water (≤ 15 CU). There are no MWQSOGs or CCME guidelines for PAL or drinking water for conductivity or hardness.

4.3.2.2 Dissolved Oxygen

In general, the Dauphin River was well oxygenated during 2011/2012 Operation; however, low DO conditions were present in winter 2012, both upstream (DR-B) and downstream (DR-D, DR-E) of Buffalo Creek (Figure 67). DO was frequently below the MWQSOGs long-term objective/CCME lowest acceptable concentration for cold-water early-life (9.5 mg/L) upstream of the Big Bend and occasionally below this objective downstream of Buffalo Creek (DR-D and DR-E) in winter 2012 (Table 18). DO was also occasionally below the cold-water early-life objective in the Dauphin River during the Historic period.

4.3.2.3 TSS and Turbidity

At the onset of 2011/2012 Operation, TSS concentrations increased in the Dauphin River downstream of Buffalo Creek as far as Sturgeon Bay (DR-D and DR-E), such that there was a visible plume of sediment along the left-hand bank of the river as viewed facing upstream (i.e., the Buffalo Creek side). In 2011, starting on 04 November TSS ranged from 16 to 69 mg/L immediately downstream of the creek, and from 11 to 23 mg/L at the river mouth (Figure 68). Concurrently, TSS concentrations upstream of the creek ranged from < 5.0 to 12 mg/L. A direct comparison in TSS concentrations between the two sampling locations downstream of the creek would indicate that a significant amount of settling/mixing occurred in the river between Buffalo Creek and Sturgeon Bay; however, a direct comparison between these data may not be appropriate. The sampling location immediately downstream of the creek was located along the left-hand bank within the sediment plume; whereas, the sampling location near the river mouth was located on the right-hand bank (Figure 69). The sediment plume remained visible along the left-hand bank as far as the river mouth and, therefore, the actual TSS concentrations in the Dauphin River at Sturgeon Bay in November 2011 may be under represented by the data presented.

TSS concentrations exceeded the MWQSOGs 1-day averaging objective/CCME short-term exposure guideline of 25 mg/L above background immediately downstream of Buffalo Creek (DR-D) from 04 to 07 November 2011. TSS concentrations consistently exceeded the MWQSOGs 30-day averaging objective/CCME long-term exposure guideline of 5 mg/L above background immediately downstream of Buffalo Creek (DR-D) from 04 to 25 November 2011, and in the river at Sturgeon Bay from 10 to 17 November 2011.

When sampling resumed in January 2012, TSS concentrations in the Dauphin River were similar upstream and downstream of Buffalo Creek and, with one exception, remained similar for remainder of 2011/2012 Operation (Figure 68). The exception occurred on 19 October 2012 when TSS immediately downstream of Buffalo Creek (DR-D) was more than 5 mg/L higher than was observed upstream of the creek (DR-C; i.e., TSS exceeded the MWQSOGs 30-day averaging objective/CCME long-term exposure guideline). It is unlikely that this elevated TSS concentration was related to the Project as TSS concentrations were not elevated in Buffalo Creek or Reach 1 at the time (Figure 33) and similar TSS concentrations had recently been observed upstream in the Dauphin River (Figure 68) and in the Fairford River (Figure 7).

Water quality was not monitored in the Dauphin River downstream of Buffalo Creek in November 2012 during closure activities; therefore, it is unknown if the increase in TSS that was observed in Buffalo Creek on 19 November (see Section 4.2.3) affected TSS concentrations in the river.

In 2012, trends in laboratory turbidity were similar to those for TSS (Figure 70). Laboratory turbidity was not measured during 2011/2012 Operation in 2011. Turbidity was consistently above the MWQSOGs/Health Canada aesthetic objective for drinking water (1 NTU) in the Dauphin River during 2011/2012 Operation.

4.3.2.4 Nutrients

Nitrogen concentrations in the Dauphin River did not change as a result of 2011/2012 Operation. TN and DIN were similar upstream and downstream of Buffalo Creek throughout the period (Figures 71 and 72); TN ranged from 0.34 mg/L to 1.55 mg/L. Similar to the Historic period, nitrogen was predominantly organic in form and DIN concentrations increased in winter.

At the onset of 2011/2012 Operation, phosphorus concentrations increased in the Dauphin River downstream of Buffalo Creek as far as the river mouth (DR-D and DR-E; Figure 73). Increases were observed for both dissolved and particulate forms of phosphorus. For the remainder of the 2011/2012 Operation, phosphorus concentrations downstream of Buffalo Creek were similar to those upstream of the creek and remained at or below those measured during 2011 Flood. During 2011/2012 Operation, TP ranged from 0.010 to 0.029 mg/L upstream of Buffalo Creek, and from 0.010 to 0.070 mg/L downstream of Buffalo Creek. Based on TN:TP molar ratios the Dauphin River was phosphorus limited throughout.

Like nitrogen, carbon concentrations in the Dauphin River were not affected by 2011/2012 Operation. Similar to pre-Project, carbon concentrations were dominated by inorganic forms; and, organic carbon

was primarily dissolved in form (Table 17). TOC:ON molar ratios indicate that the organic matter in the Dauphin River was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983).

At the onset of 2011/2012 Operation, TP exceeded the MWQSOGs narrative guideline for rivers (0.050 mg/L) in the Dauphin River immediately downstream of Buffalo Creek (DR-D) and TP exceeded the MWQSOGs narrative guideline for lakes and river mouths (0.025 mg/L) at the mouth of the Dauphin River (DR-E). Ammonia was consistently within the MWQSOGs and CCME PAL. Nitrate/nitrite, nitrite and nitrate were consistently within the MWQSOGs/CCME guidelines for PAL and drinking water. There are no MWQSOGs or CCME guidelines for carbon.

4.3.2.5 Chlorophyll *a*

During 2011/2012 Operation, chlorophyll *a* concentrations were similar throughout the Dauphin River and were within range of those measured during the Historic and 2011 Flood periods (Figures 62 and 74). Chlorophyll *a* concentrations ranged from 1.91 to 8.55 µg/L.

4.3.2.6 Metals and Major Ions with MWQSOGs and/or CCME Guidelines

Dissolved forms of antimony, lead, nickel, selenium and zinc, as well as total and dissolved forms of silver and thallium, were not detected in the Dauphin River during 2011/2012 Operation. Total aluminum, arsenic, barium, boron, calcium, total copper, magnesium, manganese, molybdenum, potassium, sodium, and uranium were consistently detected. Dissolved aluminum, total antimony, cadmium, chromium, dissolved copper, iron, total lead, mercury, methyl mercury, total nickel, total selenium, and total zinc were detected in some samples. In general, concentrations of metals and major ions were similar throughout the Dauphin River during 2011/2012 Operation (Table 17).

Aluminum occasionally exceeded the MWQSOGs/CCME PAL (0.1 mg/L) in the Dauphin River during 2011/2012 Operation; concentrations above the guideline were measured both upstream (DR-B and DR-C) and downstream (DR-E) of Buffalo Creek (Figure 75). Chloride consistently exceeded the CCME long-term exposure guideline for PAL (120 mg/L; Figure 76) and fluoride consistently exceeded the CCME interim PAL (0.12 mg/L; Figure 64) throughout the Dauphin River. Selenium occasionally exceeded the MWQSOGs/CCME PAL (0.001 mg/L) in the Dauphin River both upstream and downstream of Buffalo Creek. All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 19) and drinking water (Table 20).

4.3.2.7 Petroleum Hydrocarbons

Petroleum hydrocarbons were not detected in the Dauphin River at the onset of 2011/2012 Operation or during closure activities in November 2012 (Figure 30). Analytical detection limits for sampled hydrocarbon parameters were well below the MWQSOGs/CCME guidelines for PAL and drinking water, as applicable (Table 12).

4.3.3 2011/2012 Closure

4.3.3.1 Routine

During 2011/2012 Closure, conductivity and TDS changed seasonally in response to river discharge, such that they were higher in fall and winter when flows were lower, then decreased as flows increased in the spring (Figures 55 and 65). This pattern of change was observed both upstream and downstream of Buffalo Creek and similar trends have been observed historically. As would be expected, pH also showed a seasonal response such that it was higher during the open-water season than in winter (Figure 77). Laboratory-measured pH in the Dauphin River ranged from 7.90 to 8.59 during 2011/2012 Closure and was similar upstream and downstream of Buffalo Creek. True colour was generally similar throughout the river and was within the historical range during 2011/2012 Closure; true colour ranged from 5.0 CU to 17.3 CU (Table 17).

TDS typically exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 500 mg/L) in the Dauphin River both upstream and downstream of Buffalo Creek. Laboratory pH was consistently within the MWQOSGs/CCME PAL (6.5-9.0), but was frequently above the upper limit of the MWQSOGs/Health Canada aesthetic objective for drinking water (6.5-8.5). True colour was consistently within the MWQSOGs/Health Canada aesthetic objectives for drinking water (≤ 15 CU). There are no MWQSOGs or CCME guidelines for PAL or drinking water for conductivity or hardness.

4.3.3.2 Dissolved Oxygen

In general, the Dauphin River was well oxygenated during 2011/2012 Closure; however, low DO conditions were present in winter both upstream (DR-B) and downstream (DR-D, DR-E) of Buffalo Creek (Figure 67). When water temperatures were less than or equal to 5°C, DO was frequently below the MWQSOGs long-term objective/CCME lowest acceptable concentration for cold-water early-life (9.5 mg/L) immediately upstream of Buffalo Creek (DR-C) and occasionally below the PALs upstream of the Big Bend (DR-B), and at the river mouth (DR-E; Table 18). This is similar to the Historic period when low DO concentrations were occasionally observed upstream of the Big Bend (DR-B). DO was consistently above the MWQSOGs/CCME PAL objectives when water temperatures were greater than 5°C.

4.3.3.3 TSS and Turbidity

In spring 2013, TSS concentrations in the Dauphin River downstream of Buffalo Creek were elevated along the left-hand bank of the river as viewed facing upstream (i.e., the Buffalo Creek side; Figure 69). At the right-hand bank of the river, TSS concentrations were similar to those measured upstream of Buffalo Creek. Following the freshet, TSS concentrations in the Dauphin River were comparable upstream and downstream of Buffalo Creek along both sides of the river. During 2011/2012 Closure, the average (across the river or at mid-channel) TSS concentration in the Dauphin River ranged from < 2 to 12 mg/L upstream of Buffalo Creek, and from 2 to 16 mg/L downstream of the Creek.

On 14 May 2013, TSS concentrations along the left-hand bank of the Dauphin River exceeded the MWQSOGs 30-day averaging objective/CCME long-term exposure guideline of 5 mg/L above background from Buffalo Creek to Sturgeon Bay (DR-D and DR-E; Figure 69); on this date the average TSS

concentration across the river was below the PAL (Figure 68). In 2014, TSS concentrations exceeded the above guideline on 29 May at the right-hand bank near the river mouth (DR-E), and on 20 June at the left-hand bank immediately downstream of Buffalo Creek (DR-D); no other locations across the river channel were sampled on these dates.

During 2011/2012 Closure, trends in laboratory turbidity were similar to those for TSS (Figure 70). Turbidity was consistently above the MWQSOGs/Health Canada aesthetic objective for drinking water (1 NTU) in the Dauphin River during 2011/2012 Closure.

4.3.3.4 Nutrients

During 2011/2012 Closure, TN and DIN were similar upstream and downstream of Buffalo Creek (Figures 71 and 72); TN ranged from 0.56 to 1.22 mg/L. Similar to the Historic period, nitrogen was predominantly organic in form and DIN concentrations increased in winter.

In spring 2013, phosphorus concentrations increased in the Dauphin River downstream of Buffalo Creek as far as the river mouth (DR-D and DR-E; Figure 73). Phosphorus was also higher downstream of the creek in spring of 2014, though to a lesser extent. Following the freshets, phosphorus concentrations in the Dauphin River downstream of Buffalo Creek were similar to those upstream of the creek. During 2011/2012 Closure, TP ranged from 0.008 to 0.025 mg/L upstream of Buffalo Creek, and from 0.008 to 0.036 mg/L downstream of Buffalo Creek. Based on TN:TP molar ratios, the Dauphin River was phosphorus limited throughout.

During 2011/2012 Closure, carbon concentrations showed similar patterns upstream and downstream of Buffalo Creek. Carbon concentrations were dominated by inorganic forms and organic carbon was primarily dissolved in form (Table 17). TOC:ON molar ratios indicate that the organic matter in the Dauphin River was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983).

Ammonia rarely (1 of 17 samples) exceeded the CCME PAL guideline just upstream of Buffalo Creek (DR-C) and was consistently within the MWQSOGs and CCME PAL at all other locations along the Dauphin River. TP was consistently within the MWQSOGs narrative guidelines in the Dauphin River during 2011/2012 Closure. Nitrate/nitrite, nitrite and nitrate were consistently within the MWQSOGs/CCME guidelines for PAL and drinking water. There are no MWQSOGs or CCME guidelines for carbon.

4.3.3.5 Chlorophyll *a*

During 2011/2012 Closure, chlorophyll *a* concentrations were similar throughout the Dauphin River and were within range of those measured during the Historic and 2011 Flood periods (Figures 62 and 74). Chlorophyll *a* concentrations ranged from 0.47 to 7.12 µg/L.

4.3.3.6 Metals and Major Ions with MWQSOGs and/or CCME Guidelines

During 2011/2012 Closure, the following metals and ions were not detected in the Dauphin River: dissolved forms of antimony, cadmium, and methyl mercury; total thallium; and, total and dissolved forms of chromium, nickel, selenium, and silver. Arsenic, barium, boron, calcium, total copper, magnesium, total manganese, molybdenum, potassium, sodium, and uranium were consistently

detected. Total antimony, total cadmium, dissolved copper, iron, lead, dissolved manganese, mercury, total methyl mercury, and zinc were detected in some samples. In general, concentrations of metals and major ions were similar throughout the Dauphin during 2011/2012 Closure (Table 17).

Chloride consistently exceeded the CCME long-term exposure guideline for PAL (120 mg/L; Figure 76) and fluoride frequently exceeded the CCME interim PAL (0.12 mg/L; Figure 64) throughout the Dauphin River. All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 19) and drinking water (Table 20).

4.3.3.7 Petroleum Hydrocarbons

During 2011/2012 Closure, petroleum hydrocarbons were only sampled prior to the onset of 2014/2015 Operation; they were not detected in the Dauphin River at this time (Figure 30). Analytical detection limits for sampled hydrocarbon parameters were well below the MWQSOGs/CCME guidelines for PAL and drinking water, as applicable (Table 12).

4.3.4 2014/2015 Operation

4.3.4.1 Routine

Conductivity, TDS, laboratory pH, true colour and hardness showed no change in the Dauphin River downstream of Buffalo Creek as a result of 2014/2015 Operation. Conductivity and TDS concentrations remained lower than they were during the Historic period and were also lower than they were during 2011 Flood; conductivity and TDS ranged from 862-955 µmhos/cm and 504-559 mg/L, respectively (Figures 65 and 66). Laboratory pH, true colour and hardness were similar to the historical values during 2014/2015 Operation, ranging from 8.33-8.53 pH units, 6.8-23.1 CU, and 207-249 mg/L, respectively (Table 17).

TDS continued to exceed the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 500 mg/L) during most sampling events in the Dauphin River both upstream and downstream of Buffalo Creek. Laboratory pH was consistently within the MWQOSGs/CCME PAL (6.5-9.0). However, pH was occasionally above the upper limit of the MWQSOGs/Health Canada aesthetic objective for drinking water (6.5-8.5) both upstream and downstream of the creek. True colour exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 15 CU) in 1 of 7 samples collected upstream of the Big Bend (DR-B), but was below this objective at all other sites and times during 2014/2015 Operation. There are no MWQSOGs or CCME guidelines for PAL or drinking water for conductivity or hardness.

4.3.4.2 Dissolved Oxygen

The Dauphin River was generally well oxygenated and DO concentrations were similar upstream and downstream of Buffalo Creek during 2014/2015 Operation. However, when water temperatures were ≤ 5°C, DO was below the MWQSOGs long-term objective/CCME lowest acceptable concentration for cold-water early-life (9.5 mg/L) upstream of the Big Bend (DR-B; Table 18; Figure 67); DO was above the PALs at all other sites.

In spring and summer 2015, when water temperatures were > 5°C, DO was below the MWQSOGs PAL for cold water mature life and CCME lowest acceptable concentration for other life stages of cold water biota (6.5 mg/L) on 11 June immediately downstream of the Buffalo Creek confluence (DR-D) and on 30 July upstream and downstream of the confluence (DR-C and DR-D). DO was also below the MWQSOGs PAL for cool water early life/CCME lowest acceptable concentration for early life stages of warm water biota (6.0 mg/L) downstream of the confluence (DR-D) on 30 July.

4.3.4.3 TSS and Turbidity

During 2014/2015 Operation, the average (i.e., across the river or at mid-channel) TSS concentration in the Dauphin River ranged from 5 to 18 mg/L upstream of Buffalo Creek and from 5 to 51 mg/L downstream of the creek (Figure 68; Table 17).

At the onset of 2014/2015 Operation, TSS concentrations in the Dauphin River increased downstream of Buffalo Creek (Figure 68). TSS in the lower Dauphin River returned to background after approximately two weeks; however, TSS increased again in March 2015. Similar to 2011/2012 Operation, there was a visible plume of sediment along the left-hand bank of the river as viewed facing upstream (i.e., the Buffalo Creek side). TSS concentrations along the left-hand bank were considerably higher than those along the right-hand bank, particularly at the site immediately downstream of the creek (DR-D; Figure 69). In the Dauphin River at Sturgeon Bay (DR-E), TSS concentrations at the left-hand bank remained higher than those at the right-hand bank; however, concentrations at mid-channel had also increased, indicating that some mixing had occurred.

TSS concentrations exceeded the MWQSOGs 1-day averaging objective/CCME short-term exposure objective of 25 mg/L above background, as follows:

- At the left-hand bank immediately downstream of Buffalo Creek (DR-D) from 06-11 July 2014 (this site was not sampled on 05 July);
- At the left-hand bank and at mid-channel in the Dauphin River at Sturgeon Bay (DR-E) on 05 and 06 July 2014;
- On average (i.e., across the river) immediately downstream of Buffalo Creek (DR-D) on 06 July 2014; and,
- On average (i.e., across the river) in the Dauphin River at Sturgeon Bay (DR-E) on 05 and 06 July 2014.

TSS concentrations exceeded the MWQSOGs 30-day averaging objective/CCME long-term exposure objective of 5 mg/L above background, as follows:

- At the left-hand bank immediately downstream of Buffalo Creek (DR-D) from 06-16 July 2014 (this site was not sampled on 05 July), May 1, 2015, and June 11, 2015);
- At mid-channel immediately downstream of Buffalo Creek (DR-D) on 08 and 16 July 2014;
- At the left-hand bank in the Dauphin River at Sturgeon Bay (DR-E) from 05-16 July 2014;
- At the mid-channel in the Dauphin River at Sturgeon Bay (DR-E) from 05-11 July 2014;
- At the right-hand bank in the Dauphin River at Sturgeon Bay (DR-E) on 05 July;

- On average (i.e., across the river) immediately downstream of Buffalo Creek (DR-D) from 06-16 July 2014;
- On average (i.e., across the river) in the river at Sturgeon Bay (DR-E) from 05-16 July, and,
- At the left-hand bank in the Dauphin River at Sturgeon Bay (DR-E) on March 27, 2015.

TSS concentrations were consistently within the MWQSOGs/CCME PAL guidelines at the right-hand bank immediately downstream of Buffalo Creek (DR-D) during 2014/2015 Operation. The site immediately downstream of Buffalo Creek (DR-D) was not sampled on 05 July 2014.

By 24 July 2014, TSS concentrations in the Dauphin River downstream of Buffalo Creek were similar to those measured upstream and, with one exception, remained below the MWQSOGs/CCME PAL guidelines for the remainder of 2014 and 2015. The exception occurred on 22 September when the TSS concentration in the Dauphin River at Sturgeon Bay (DR-E) was 5.2 mg/L higher than was observed upstream of Buffalo Creek (DR-C) and therefore above the MWQSOGs 30-day averaging objective/CCME long-term exposure guideline of 5 mg/L above background.

During 2014/2015 Operation, trends in laboratory turbidity were similar to those for TSS (Figure 70). Turbidity was consistently above the MWQSOGs/Health Canada aesthetic objective for drinking water (1 NTU) in the Dauphin River.

4.3.4.4 Nutrients

Similar to 2011/2012 Operation, at the onset of 2014/2015 Operation, phosphorus increased in the Dauphin River downstream of Buffalo Creek, but nitrogen and carbon concentrations showed no change.

Throughout 2014/2015 Operation, TN and DIN were similar upstream and downstream of Buffalo Creek (Figures 71 and 72); TN ranged from 0.70 to 1.01 mg/L (Table 17). Similar to the Historic period, nitrogen was predominantly organic in form.

At the onset of operation in 2014, phosphorus concentrations increased in the Dauphin River downstream of Buffalo Creek as far as the river mouth (DR-D and DR-E; Figure 73). Immediately downstream of the creek, the increase in phosphorus was due primarily to an increase in particulate forms of phosphorus, but dissolved forms accounted for most of the phosphorus at the river mouth (Figure 78). By 24 July 2014, phosphorus concentrations in the Dauphin River downstream of Buffalo Creek were similar to those upstream of the creek. During 2014/2015 Operation, TP ranged from 0.014 to 0.021 mg/L upstream of Buffalo Creek and from 0.016 to 0.044 mg/L downstream of Buffalo Creek. Based on TN:TP molar ratios, the Dauphin River was phosphorus limited throughout.

During 2014/2015 Operation, carbon concentrations were similar upstream and downstream of Buffalo Creek. Carbon concentrations were dominated by inorganic forms and organic carbon was primarily dissolved in form (Table 17). TOC:ON molar ratios indicate that the organic matter in the Dauphin River was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983).

At the onset of 2014/2015 Operation, TP exceeded the MWQSOGs narrative guideline for lakes and river mouths (0.025 mg/L) at the mouth of the Dauphin River (DR-E). Ammonia was consistently within the MWQSOGs and CCME PAL. Nitrate/nitrite, nitrite and nitrate were consistently within the MWQSOGs/CCME guidelines for PAL and drinking water. There are no MWQSOGs or CCME guidelines for carbon.

4.3.4.5 Chlorophyll *a*

During 2014/2015 Operation, chlorophyll *a* concentrations were similar throughout the Dauphin River and were within range of those measured during the Historic period (Figures 62 and 74). Chlorophyll *a* concentrations and ranged from 4.22 to 6.38 µg/L.

4.3.4.6 Metals and Major Ions with MWQSOGs and/or CCME Guidelines

- Chloride exceeded the CCME long-term PAL (120 mg/L) in the Dauphin Rivers, in March and where sampled in May, 2015.
- Fluoride consistently exceeded the CCME long-term PAL (0.12 mg/L) at all sites sampled in March and May, 2015.

During 2014/2015 Operation the following metals and ions were not detected in the Dauphin River: dissolved forms of antimony and lead; and, total and dissolved forms of chromium, nickel, selenium, silver, and thallium. Arsenic, barium, boron, calcium, total copper, magnesium, manganese, molybdenum, potassium, sodium, and uranium were consistently detected. Total antimony, cadmium, dissolved copper, iron, lead, mercury, methyl mercury, and zinc were detected in some samples.

During 2014/2015 Operation, concentrations of metals and major ions were generally similar throughout the Dauphin River (Table 17). However, at the onset of operation in 2014, mercury and methyl mercury concentrations increased downstream of Buffalo Creek (DR-D and DR-E; Figures 79 and 80). Mercury and methyl mercury also increased in Buffalo Creek at this time (Figure 50 and 4.2-19), indicating that the creek was likely the source of the increased mercury concentrations in the river. Both mercury and methyl mercury concentrations remained well below the MWQSOGs/CCME PAL (29 and 4 ng/L, respectively) in the Dauphin River and Buffalo Creek.

Chloride consistently exceeded the CCME long-term exposure guideline for PAL (120 mg/L; Figure 76) and fluoride consistently exceeded the CCME interim PAL (0.12 mg/L; Figure 64) throughout the Dauphin River. All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 19) and drinking water (Table 20).

4.3.4.7 Petroleum Hydrocarbons

Petroleum hydrocarbons were not detected in the Dauphin River at the onset of 2014/2015 Operation in July 2014 or during the Expanded Opening in November 2014 (Figure 30). Analytical detection limits for sampled hydrocarbon parameters were well below the MWQSOGs/CCME guidelines for PAL and drinking water, as applicable (Table 12).

4.3.5 2014/2015 Closure

Water quality data for the Dauphin River during 2014/2015 Closure are limited to measurements of DO, TSS, and nutrients at sites immediately upstream and downstream of the confluence with Buffalo Creek.

4.3.5.1 Dissolved Oxygen

Low DO conditions were present at the end of 2014/2015 Operation and persisted through August in the upstream (DR-B) and downstream (DR-D) reaches of the Dauphin River; however, the sites were well oxygenated by 14 September and concentrations were similar to those measured during the 2011 Flood (Figure 67; Table 17). DO was below the MWQSOGs long-term objective/CCME lowest acceptable concentration for cold-water early-life (6.5 mg/L) on 13 August downstream (DR-D) of the Buffalo Creek confluence and on 19 August upstream of confluence (DR-C; Table 18; Figure 67). DO was also below the MWQSOGs PAL for cool water early life, and CCME PAL for early life stages of warm water biota (6.0 mg/L) immediately following closure downstream of the confluence.

4.3.5.2 TSS and Turbidity

Compared to concentrations measured during 2014/2015 Operation, there was little effect of 2014/2015 Closure on TSS concentrations in the Dauphin River (Figure 68). Specifically, no spike in concentrations was observed as a result of Project activities and average (i.e., across the river or at mid-channel) TSS concentrations in the Dauphin River remained similar upstream and downstream of the confluence (with ranges of 9 to 11 mg/L and 8.1 to 10.4 mg/L, respectively; Figure 68; Table 17). Further, no difference in TSS was observed between the left- and right-hand banks of the river (Figure 69). Average and maximum TSS concentrations in the river were 2 to 4 mg/L higher than those measured during the pre-Project phase, however.

TSS concentrations remained within the MWQSOGs and CCME short- and long-term exposure guidelines (25 mg/L and 5 mg/L above background, respectively) throughout the 2014/2015 Closure.

During 2014/2015 Operation, trends in laboratory turbidity were similar to those for TSS (Figure 70). Turbidity was consistently above the MWQSOGs/Health Canada aesthetic objective for drinking water (1 NTU) in the Dauphin River.

4.3.5.3 Nutrients

At the onset of 2014/2015 Closure, there was little effect of the project on nutrient concentrations in the Dauphin River. Specifically, TN and TP concentrations were similar upstream and downstream of the confluence with Buffalo Creek and were similar, or slightly lower than, concentrations measured during the pre-Project period (Figures 71 and 73). During 2014/2015 Closure, TN ranged from 0.73 to 1.13 mg/L and TP ranged from 0.017 to 0.023 mg/L (Table 17). Similar to previous periods, nitrogen was predominantly organic in form and the river was phosphorus limited on the basis of TN:TP molar ratios.

There was a single exceedance of the MWQSOGs and CCME guidelines for PAL for ammonia (varies with pH and temperature) immediately upstream of the Buffalo Creek confluence (DR-C) immediately

following closure on 13 August. All other routine variables were within MWQSOGs and CCME guidelines for PAL, including: pH (6.5-9.0); nitrate (2.93 mg/L); and, nitrite (0.06 mg/L).

4.3.6 Summary

Temporary changes in some water chemistry parameters in the lower Dauphin River were observed during Project operation and closure periods:

- No changes to routine water quality of the Dauphin River were observed that were attributable to the Project:
    - Conductivity, TDS, laboratory pH, true colour and hardness were similar in the Dauphin River upstream and downstream of Buffalo Creek during baseline, operation, and closure.
    - Although conductivity and TDS in the Dauphin River did not vary as a result of operation, conditions measured during each operation and closure period were lower than those recorded in October 2011.
- The Dauphin River was generally well-oxygenated and DO generally met the Manitoba objectives and CCME guidelines for the protection of cool and cold-water aquatic life, though it declined below the PALs at various points during the monitoring program:
    - A small decrease (<2 mg/L) in DO was observed downstream of Buffalo Creek during operation in 2015.
    - DO concentrations below the MWQSOGs objectives/CCME PAL guidelines were periodically observed both upstream and downstream of Buffalo Creek during both the open-water and ice cover seasons. Reductions below the guidelines were also observed historically in the river during the ice-cover period.

- TSS concentrations increased at various times during both operation and closure:
    - At the onset of operation in 2011 and 2014, TSS increased and a sediment plume was visible along the left shoreline. After approximately one month of operation in 2011 and two weeks of operation in 2014, TSS returned to background (i.e., similar to conditions observed concurrently upstream of Buffalo Creek).
    - During March of the 2014/2015 Operation, TSS was again elevated downstream of Buffalo Creek.
    - TSS increased along the Dauphin River left-hand bank downstream of Buffalo Creek in spring 2013 during closure.
    - At the onset of operation in both 2011 and 2014, TSS concentrations exceeded the MWQSOGs /CCME short-term PAL as far downstream as Sturgeon Bay.
    - TSS was also consistently above the MWQSOGs 30 day/CCME long-term PAL from 04-25 November 2011, 05-16 July 2014, 27 March 2015; and, along the left shoreline downstream of Buffalo Creek 01 May 2015 and 11 June 2015.

- Phosphorous concentrations increased at various points during monitoring but no other changes to nutrient or chlorophyll *a* concentrations can be attributed to Project-related activities:

  - Phosphorus concentrations between the confluence and Sturgeon Bay increased at the onset of operation in 2011 and 2014, in the spring of 2013, and in March of 2015.
  - At the onset of each operation period, TP exceeded the MWQSOGs narrative guidelines.

- There were no observed changes to most metals or major ions, with the exception of mercury and methylmercury, that can be attributed to the Project:
  - Mercury and methylmercury increased downstream of Buffalo Creek at the onset of 2014/2015 Operation. Comparable data were not collected during the 2011/2012 Operation.
  - Both mercury compounds remained well below the MWQSOGs/CCME PAL guidelines (26 and 4 ng/L, respectively) during 2014/2015 Operation.

Table 17. Summary statistics for key water quality parameters measured in the Dauphin River, 2004-2015.

		Ammonia (mg N/L)							Nitrate/Nitrite (mg N/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	0.060	0.060	0.060	0.060	-	1	100	0.027	0.027	0.027	0.027	-	1	100
	2011/2012 Operation	0.018	0.021	0.012	0.022	0.0032	3	100	<0.0051	<0.0051	<0.0051	<0.0051	-	3	0
	2011/2012 Closure	0.071	0.012	<0.010	0.239	0.0395	7	57	0.014	<0.0051	<0.0051	0.053	0.0078	7	29
	2014/2015 Operation	0.059	0.029	<0.010	0.143	0.0426	3	67	0.0293	<0.0051	<0.0051	0.0828	-	3	33
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	0.131	0.050	<0.010	0.590	0.0327	21	95	0.014	<0.010	<0.0060	0.060	0.0037	22	32
	2011 Flood	0.128	0.128	0.069	0.187	0.0590	2	100	<0.05	<0.05	<0.05	<0.05	-	2	50
	2011/2012 Operation	0.076	0.039	<0.010	0.182	0.0204	12	92	<0.05	<0.05	<0.0051	<0.05	-	10	10
	2011/2012 Closure	0.109	0.084	<0.010	0.246	0.0240	17	82	<0.05	<0.05	<0.0051	0.071	0.0073	14	50
	2014/2015 Operation	0.028	<0.010	<0.010	0.175	0.0187	9	33	0.0212	<0.0051	<0.0051	0.0768	-	4	25
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.050	0.057	<0.050	0.069	0.0100	5	60	<0.071	<0.071	<0.071	<0.071	0.0044	5	40
	2011/2012 Operation	0.076	0.076	<0.010	0.216	0.0111	22	95	<0.071	<0.071	<0.0051	<0.071	-	22	5
	2011/2012 Closure	0.111	<0.010	<0.010	0.830	0.0503	17	47	<0.071	<0.071	<0.0051	<0.071	0.0041	17	18
	2014/2015 Operation	0.021	<0.010	<0.010	0.184	0.0119	15	47	<0.071	<0.071	<0.071	0.078	-	15	1
	2014/2015 Closure	0.200	<0.010	<0.010	0.590	0.1950	3	33	<0.070	<0.070	<0.070	<0.070	-	3	0
DR-D	2011 Flood	<0.050	<0.050	<0.050	0.068	0.0111	4	50	<0.071	<0.071	<0.071	<0.071	-	4	25
	2011/2012 Operation	<0.050	<0.050	<0.010	0.164	0.0093	16	63	<0.071	<0.071	<0.071	0.075	-	16	6
	2011/2012 Closure	0.065	<0.010	<0.010	0.240	0.0297	9	44	<0.071	<0.071	<0.071	<0.071	-	9	0
	2014/2015 Operation	0.010	<0.010	<0.010	0.040	0.0033	11	27	<0.071	<0.071	<0.071	<0.071	-	11	9
	2014/2015 Closure	0.017	0.018	<0.010	0.028	0.0037	5	80	<0.070	<0.070	<0.070	<0.070	-	5	0
DR-E	2011 Flood	<0.050	<0.050	<0.050	0.067	0.0107	4	50	<0.071	<0.071	<0.071	<0.071	-	4	25
	2011/2012 Operation	0.052	<0.050	<0.050	0.180	0.0133	15	80	<0.071	<0.071	<0.0051	<0.071	-	15	7
	2011/2012 Closure	0.067	0.015	<0.010	0.255	0.0231	15	53	<0.071	<0.071	<0.0051	<0.071	0.0044	15	13
	2014/2015 Operation	0.018	<0.010	<0.010	0.119	0.0094	12	33	<0.071	<0.071	<0.0051	<0.071	-	12	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Nitrate (mg N/L)							Nitrite (mg N/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	0.025	0.025	0.025	0.025	-	1	100	0.002	0.002	0.002	0.002	-	1	100
	2011/2012 Operation	<0.0050	<0.0050	<0.0050	<0.0050	-	3	0	0.001	<0.0010	<0.0010	0.002	-	3	33
	2011/2012 Closure	0.014	<0.0050	<0.0050	0.051	0.0076	7	29	0.001	<0.0010	<0.0010	0.002	0.0002	7	29
	2014/2015 Operation	0.0285	<0.0050	<0.0050	0.0805	-	3	33	0.0011	<0.0010	<0.0010	0.0023	-	3	33
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	0.013	0.013	0.013	0.013	-	1	100	0.002	0.002	0.002	0.002	-	1	100
	2011/2012 Operation	<0.050	<0.050	<0.0050	<0.050	-	5	20	<0.050	<0.050	<0.0010	<0.050	-	5	40
	2011/2012 Closure	<0.0050	<0.0050	<0.0050	0.048	0.0077	7	29	<0.0010	<0.0010	<0.0010	0.003	0.0003	7	29
	2014/2015 Operation	<0.0050	<0.0050	<0.0050	<0.0050	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	5	40	<0.050	<0.050	<0.050	<0.050	0.0055	5	40
	2011/2012 Operation	<0.050	<0.050	<0.0050	<0.050	-	22	5	<0.050	<0.050	<0.0010	<0.050	-	22	5
	2011/2012 Closure	<0.050	<0.050	<0.0050	0.057	0.0041	17	24	<0.050	<0.050	<0.0010	<0.050	0.0030	17	18
	2014/2015 Operation	<0.050	<0.050	<0.0050	0.0763	-	15	1	<0.050	<0.050	<0.0010	<0.050	-	15	0
	2014/2015 Closure	<0.020	<0.020	<0.020	<0.020	-	3	0	<0.010	<0.010	<0.010	<0.010	-	3	0
DR-D	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	4	25	<0.050	<0.050	<0.050	<0.050	-	4	25
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	16	6	<0.050	<0.050	<0.050	<0.050	-	16	0
	2011/2012 Closure	<0.050	<0.050	<0.050	0.056	0.0045	9	22	<0.050	<0.050	<0.050	<0.050	-	9	0
	2014/2015 Operation	<0.050	<0.050	<0.0050	<0.050	0.0022	11	18	<0.050	<0.050	<0.0010	<0.050	-	11	0
	2014/2015 Closure	<0.020	<0.020	<0.020	<0.020	-	5	0	<0.010	<0.010	<0.010	<0.010	-	5	0
DR-E	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	4	25	<0.050	<0.050	<0.050	<0.050	-	4	25
	2011/2012 Operation	<0.050	<0.050	<0.0050	0.062	0.0034	15	13	<0.050	<0.050	<0.0010	<0.050	0.0026	15	0
	2011/2012 Closure	<0.050	<0.050	<0.0050	0.059	0.0051	15	27	<0.050	<0.050	<0.0010	<0.050	-	15	0
	2014/2015 Operation	<0.050	<0.050	<0.0050	<0.050	-	12	0	<0.050	<0.050	<0.0010	<0.050	-	12	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Dissolved Inorganic Nitrogen (mg/L)							Total Kjeldahl Nitrogen (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	0.087	0.087	0.087	0.087	-	1	100	1.06	1.06	1.06	1.06	-	1	100
	2011/2012 Operation	0.021	0.024	0.015	0.025	0.003	3	100	1.00	0.98	0.96	1.05	0.027	3	100
	2011/2012 Closure	0.085	0.015	<0.010	0.274	0.047	7	57	0.85	0.82	0.66	1.09	0.066	7	100
	2014/2015 Operation	0.018	0.018	<0.010	0.032	-	2	50	0.98	0.97	0.96	1.01	0.015	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	0.145	0.055	<0.010	0.595	0.035	21	95	1.51	1.50	0.91	2.50	0.099	22	100
	2011 Flood	0.148	0.148	0.084	0.212	0.064	2	100	1.08	1.08	1.05	1.10	0.025	2	100
	2011/2012 Operation	0.106	0.101	<0.050	0.215	0.026	10	90	1.05	1.05	0.95	1.18	0.026	12	100
	2011/2012 Closure	0.138	0.147	<0.010	0.302	0.029	16	75	0.94	0.98	0.56	1.13	0.035	17	100
	2014/2015 Operation	0.013	0.010	<0.010	0.037	0.004	8	75	0.90	0.91	0.75	1.05	0.031	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.070	0.086	<0.070	0.093	0.013	5	60	1.19	1.09	0.98	1.52	0.094	5	100
	2011/2012 Operation	0.106	0.112	<0.070	0.252	0.013	22	91	1.00	1.01	0.33	1.51	0.042	22	100
	2011/2012 Closure	0.136	<0.070	<0.010	0.866	0.052	17	41	0.90	0.89	0.63	1.16	0.037	17	100
	2014/2015 Operation	<0.070	<0.070	<0.010	0.076	0.0052	14	21	0.89	0.94	0.71	1.01	0.024	15	100
	2014/2015 Closure	0.212	<0.070	<0.070	0.625	-	3	33	0.98	1.02	0.78	1.13	0.103	3	100
DR-D	2011 Flood	<0.070	<0.070	<0.070	0.093	0.016	4	50	1.14	1.14	1.08	1.22	0.032	4	100
	2011/2012 Operation	<0.070	<0.070	<0.070	0.200	0.012	16	38	0.93	0.98	0.32	1.12	0.049	16	100
	2011/2012 Closure	0.097	<0.070	<0.070	0.275	0.030	9	44	0.91	0.87	0.67	1.14	0.063	9	100
	2014/2015 Operation	<0.071	<0.071	<0.010	0.076	0.0051	11	27	0.82	0.80	0.66	0.97	0.030	11	100
	2014/2015 Closure	<0.070	<0.070	<0.070	<0.070	-	5	0	0.97	1.00	0.73	1.07	0.063	5	100
DR-E	2011 Flood	<0.070	<0.070	<0.070	0.091	0.015	4	50	1.08	1.10	0.99	1.14	0.032	4	100
	2011/2012 Operation	0.070	<0.070	<0.070	0.216	0.016	15	53	0.91	0.99	0.30	1.07	0.049	15	100
	2011/2012 Closure	0.090	<0.070	<0.010	0.281	0.026	15	47	0.90	0.92	0.58	1.18	0.045	15	100
	2014/2015 Operation	<0.070	<0.070	<0.010	<0.070	0.0043	11	18	0.88	0.91	0.72	1.01	0.027	12	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Total Nitrogen (mg/L)							Dissolved Phosphorus (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	1.09	1.09	1.09	1.09	-	1	100	0.003	0.003	0.003	0.003	-	1	100
	2011/2012 Operation	1.00	0.98	0.96	1.05	0.027	3	100	0.006	0.004	0.003	0.011	0.0025	3	100
	2011/2012 Closure	0.87	0.82	0.66	1.13	0.073	7	100	0.007	0.007	0.003	0.010	0.0008	7	100
	2014/2015 Operation	1.01	0.97	0.96	1.09	0.042	3	100	0.007	0.006	0.005	0.008	0.0010	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	1.53	1.51	0.95	2.51	0.098	22	100	0.007	0.007	<0.0010	0.016	0.0008	22	95
	2011 Flood	1.10	1.10	1.08	1.12	0.020	2	100	0.008	0.008	<0.0020	0.014	-	2	50
	2011/2012 Operation	1.06	1.01	0.96	1.22	0.030	10	100	<0.010	<0.010	<0.010	0.015	0.0012	12	92
	2011/2012 Closure	0.97	1.02	0.56	1.16	0.045	14	100	0.005	0.004	0.002	0.015	0.0008	17	100
	2014/2015 Operation	1.01	0.97	0.96	1.13	0.039	4	100	0.006	0.006	0.005	0.007	0.0002	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	1.22	1.11	1.02	1.56	0.096	5	100	<0.010	<0.010	<0.010	0.013	0.0018	5	40
	2011/2012 Operation	1.03	1.04	0.37	1.55	0.042	22	100	<0.010	<0.010	<0.010	0.015	0.0009	20	55
	2011/2012 Closure	0.92	0.93	0.63	1.21	0.039	17	100	<0.010	<0.010	<0.010	0.016	0.0009	17	71
	2014/2015 Operation	0.91	0.94	0.75	1.06	0.024	15	100	<0.010	<0.010	<0.010	0.012	0.0006	15	60
	2014/2015 Closure	0.98	1.02	0.78	1.13	0.103	3	100	<0.010	<0.010	<0.010	<0.010	-	3	0
DR-D	2011 Flood	1.17	1.17	1.10	1.26	0.035	4	100	<0.010	<0.010	<0.010	0.014	0.0025	4	50
	2011/2012 Operation	0.96	1.01	0.36	1.16	0.049	16	100	0.011	0.011	<0.010	0.031	0.0019	15	73
	2011/2012 Closure	0.94	0.91	0.71	1.18	0.063	9	100	<0.010	<0.010	<0.010	0.015	0.0013	9	44
	2014/2015 Operation	0.85	0.84	0.70	1.01	0.030	11	100	<0.010	<0.010	<0.010	0.011	0.0008	11	45
	2014/2015 Closure	0.97	1.00	0.73	1.07	0.063	5	100	<0.010	<0.010	<0.010	<0.010	-	5	0
DR-E	2011 Flood	1.11	1.12	1.03	1.18	0.031	4	100	0.011	0.012	<0.0020	0.018	0.0036	4	75
	2011/2012 Operation	0.94	1.00	0.34	1.11	0.049	15	100	<0.010	<0.010	<0.010	0.017	0.0013	14	71
	2011/2012 Closure	0.93	0.93	0.58	1.22	0.046	15	100	<0.010	<0.010	<0.010	0.016	0.0009	15	60
	2014/2015 Operation	0.91	0.93	0.72	1.08	0.029	12	100	<0.010	<0.010	<0.010	0.031	0.0022	12	67
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Total Particulate Phosphorus (mg/L)							Total Phosphorus (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	0.010	0.010	0.010	0.010	-	1	100	0.013	0.013	0.013	0.013	-	1	100
	2011/2012 Operation	0.015	0.015	<0.010	0.025	0.0058	3	67	0.021	0.019	0.015	0.028	0.0038	3	100
	2011/2012 Closure	0.008	0.006	0.004	0.017	0.0019	7	100	0.015	0.014	0.010	0.020	0.0016	7	100
	2014/2015 Operation	0.009	0.008	0.006	0.013	0.0020	3	100	0.015	0.014	0.011	0.021	0.0029	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	0.014	0.010	<0.0010	0.054	0.0024	22	95	0.021	0.018	0.002	0.066	0.0026	22	100
	2011 Flood	<0.010	<0.010	<0.010	0.013	-	2	50	0.017	0.017	0.014	0.020	0.0030	2	100
	2011/2012 Operation	<0.010	<0.010	<0.010	0.019	0.0015	12	58	0.018	0.017	0.011	0.023	0.0011	12	100
	2011/2012 Closure	<0.010	<0.010	<0.010	0.016	0.0009	17	82	0.015	0.015	0.008	0.025	0.0010	17	100
	2014/2015 Operation	0.012	0.012	0.007	0.014	0.0008	9	100	0.018	0.019	0.012	0.021	0.0009	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	0.012	0.012	0.010	0.017	0.0012	5	100	0.020	0.022	0.017	0.023	0.0014	5	100
	2011/2012 Operation	<0.010	<0.010	<0.010	0.024	0.0013	20	50	0.018	0.019	0.010	0.029	0.0011	22	100
	2011/2012 Closure	0.010	<0.010	<0.010	0.019	0.0011	17	82	0.017	0.017	0.011	0.022	0.0009	17	100
	2014/2015 Operation	0.011	0.012	<0.010	0.016	0.0010	15	75	0.017	0.017	0.012	0.021	0.0007	15	100
	2014/2015 Closure	0.015	0.016	0.012	0.016	0.0013	3	100	0.020	0.021	0.017	0.021	0.0013	3	100
DR-D	2011 Flood	0.012	0.012	0.010	0.015	0.0010	4	100	0.022	0.022	0.017	0.025	0.0018	4	100
	2011/2012 Operation	0.015	0.013	<0.010	0.051	0.0030	15	73	0.025	0.019	0.010	0.070	0.0039	16	100
	2011/2012 Closure	0.012	0.011	<0.010	0.031	0.0026	9	67	0.020	0.017	0.015	0.036	0.0022	9	100
	2014/2015 Operation	0.015	0.014	<0.010	0.039	0.0027	11	91	0.022	0.020	0.016	0.044	0.0024	11	100
	2014/2015 Closure	0.015	0.016	0.012	0.018	0.0010	5	100	0.020	0.021	0.017	0.023	0.0010	5	100
DR-E	2011 Flood	0.012	0.014	<0.010	0.017	0.0026	4	75	0.023	0.025	0.018	0.026	0.0018	4	100
	2011/2012 Operation	0.010	0.011	<0.010	0.015	0.0011	14	86	0.019	0.018	0.012	0.031	0.0013	15	100
	2011/2012 Closure	0.012	0.012	<0.010	0.021	0.0015	15	87	0.018	0.020	0.008	0.025	0.0012	15	100
	2014/2015 Operation	0.013	0.014	<0.010	0.015	0.0009	12	92	0.021	0.020	0.016	0.031	0.0012	12	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Dissolved Fraction, Phosphorus (%)							TN:TP Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	23	23	23	23	-	1	100	185	185	185	185	-	1	100
	2011/2012 Operation	35	20	11	73	19.5	3	100	114	123	78	142	19.1	3	100
	2011/2012 Closure	48	56	17	62	6.8	7	100	144	109	76	261	27.5	7	100
	2014/2015 Operation	43	40	40	50	3.5	3	100	158	160	101	214	32.5	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	41	46	5	100	4.9	22	100	229	181	57	1174	48.1	22	100
	2011 Flood	39	39	7	70	31.4	2	100	148	148	119	176	28.7	2	100
	2011/2012 Operation	52	53	16	94	7.6	12	100	146	140	104	205	11.1	10	100
	2011/2012 Closure	36	32	15	88	4.6	17	100	142	134	0	316	22.7	16	100
	2014/2015 Operation	34	33	28	45	1.7	9	100	62	0	0	206	26.4	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	38	29	23	57	6.8	5	100	134	144	98	157	10.3	5	100
	2011/2012 Operation	47	42	17	120	5.5	20	100	134	123	43	236	9.7	22	100
	2011/2012 Closure	40	32	11	84	5.2	17	100	133	108	80	243	12.6	17	100
	2014/2015 Operation	37	32	25	75	3.5	15	100	119	110	86	192	6.9	15	100
	2014/2015 Closure	35	31	31	42	3.5	3	100	112	107	82	147	18.9	3	100
DR-D	2011 Flood	41	41	25	58	8.2	4	100	123	118	111	143	7.5	4	100
	2011/2012 Operation	47	38	21	100	6.4	15	100	103	103	36	192	11.4	16	100
	2011/2012 Closure	43	33	14	71	6.8	9	100	109	108	72	163	9.9	9	100
	2014/2015 Operation	36	31	11	65	4.8	11	100	91	93	42	123	7.4	11	100
	2014/2015 Closure	33	31	28	42	2.3	5	100	107	113	70	129	10.0	5	100
DR-E	2011 Flood	44	47	6	75	14.4	4	100	108	99	95	139	10.3	4	100
	2011/2012 Operation	47	44	19	83	5.6	14	100	113	110	41	195	9.2	15	100
	2011/2012 Closure	34	29	7	75	5.0	15	100	124	105	76	337	16.9	15	100
	2014/2015 Operation	38	28	25	100	6.2	12	100	100	101	60	135	5.1	12	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		DIN:DP Molar Ratio							DIN:TP Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	64	64	64	64	-	1	100	15	15	15	15	-	1	100
	2011/2012 Operation	10	11	5	14	2.6	3	100	3	3	1	4	0.7	3	100
	2011/2012 Closure	31	6	1	107	17.6	7	100	18	2	1	60	10.3	7	100
	2014/2015 Operation	26	13	1	63	19.1	3	100	13	5	1	32	9.8	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	68	26	3	388	20.2	21	100	35	7	0	388	18.2	21	100
	2011 Flood	110	110	34	186	76.5	2	100	18	18	13	23	5.1	2	100
	2011/2012 Operation	28	18	4	92	8.2	10	100	16	13	2	42	4.5	10	100
	2011/2012 Closure	79	45	1	291	22.5	16	100	26	20	0	77	6.6	16	100
	2014/2015 Operation	11	4	2	61	6.4	9	100	4	1	1	28	2.9	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	23	16	6	38	6.5	5	100	8	9	3	11	1.8	5	100
	2011/2012 Operation	34	23	11	111	6.0	20	100	14	13	3	35	1.8	22	100
	2011/2012 Closure	60	16	2	383	25.2	17	100	23	5	1	137	8.9	17	100
	2014/2015 Operation	13	14	2	66	4.1	15	100	5	4	1	28	1.8	15	100
	2014/2015 Closure	94	2	2	276	91.4	3	100	22	1	1	66	21.7	3	100
DR-D	2011 Flood	19	16	6	38	6.8	4	100	7	6	3	11	1.9	4	100
	2011/2012 Operation	22	15	3	88	6.5	15	100	8	5	1	25	1.7	16	100
	2011/2012 Closure	35	16	7	122	14.2	9	100	10	5	3	30	2.9	9	100
	2014/2015 Operation	12	15	2	24	1.9	11	100	4	4	1	10	0.7	11	100
	2014/2015 Closure	20	23	2	28	4.6	5	100	5	6	1	7	1.1	5	100
DR-E	2011 Flood	53	11	4	185	44.1	4	100	6	5	3	10	1.8	4	100
	2011/2012 Operation	17	16	6	40	2.9	14	100	8	5	3	30	1.9	15	100
	2011/2012 Closure	37	16	1	156	12.3	15	100	15	4	1	80	5.8	15	100
	2014/2015 Operation	12	7	2	54	4.2	12	100	4	3	1	18	1.3	12	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Total Inorganic Carbon (mg/L)							Total Organic Carbon (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	45.8	45.8	45.8	45.8	-	1	100	14.0	14.0	14.0	14.0	-	1	100
	2011/2012 Operation	43.9	43.1	41.4	47.3	1.75	3	100	13.7	14.0	12.9	14.1	0.38	3	100
	2011/2012 Closure	42.0	40.2	32.3	54.4	3.35	7	100	12.6	12.9	9.1	15.2	0.90	7	100
	2014/2015 Operation	43.4	41.9	36.4	52.0	4.57	3	100	12.5	12.7	10.0	14.8	1.39	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	44.1	43.0	38.0	53.0	0.93	22	100	16.1	15.7	9.6	22.0	0.78	22	100
	2011 Flood	47.0	47.0	46.5	47.5	0.50	2	100	14.7	14.7	14.3	15.0	0.35	2	100
	2011/2012 Operation	48.6	47.3	42.1	57.2	1.63	11	100	13.8	13.9	12.1	15.7	0.27	11	100
	2011/2012 Closure	46.1	46.1	35.8	55.8	1.54	17	100	13.9	14.5	11.0	16.3	0.36	17	100
	2014/2015 Operation	40.6	41.1	31.8	51.9	1.81	9	100	13.2	13.5	10.2	15.4	0.58	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	37.5	37.5	37.5	37.5	-	1	100	13.3	13.3	13.3	13.3	-	1	100
	2011/2012 Operation	44.0	43.0	42.1	46.8	1.44	3	100	13.4	13.3	13.2	13.8	0.19	3	100
	2011/2012 Closure	43.9	40.7	37.0	55.0	2.91	7	100	13.7	13.1	11.3	16.4	0.73	7	100
	2014/2015 Operation	41.6	40.3	35.4	50.8	2.54	5	100	11.7	12.4	10.0	12.6	0.52	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	32.3	32.3	32.3	32.3	-	1	100	13.9	13.9	13.9	13.9	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	100	-	-	-	-	-	0	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	40.8	40.8	40.8	40.8	-	1	100	14.7	14.7	14.7	14.7	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	46.5	46.5	46.5	46.5	-	1	100	14.6	14.6	14.6	14.6	-	1	100
	2011/2012 Operation	44.5	43.1	43.1	47.2	1.37	3	100	13.4	13.8	12.7	13.8	0.37	3	100
	2011/2012 Closure	42.7	40.6	35.7	53.0	2.73	7	100	13.0	13.4	10.1	15.1	0.74	7	100
	2014/2015 Operation	40.4	40.9	30.1	50.2	3.20	5	100	12.8	12.4	10.4	15.1	0.83	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Dissolved Organic Carbon (mg/L)							TOC:ON Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	12.8	12.8	12.8	12.8	-	1	100	16	16	16	16	-	1	100
	2011/2012 Operation	12.2	11.9	11.7	13.0	0.40	3	100	16	17	15	17	0.9	3	100
	2011/2012 Closure	12.4	12.9	9.2	14.9	0.87	7	100	19	20	16	21	0.8	7	100
	2014/2015 Operation	12.1	12.4	9.4	14.5	1.48	3	100	16	17	12	18	1.9	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	15	12	7	31	1.3	21	100
	2011 Flood	12.5	12.5	12.5	12.5	-	1	100	18	18	16	20	2.0	2	100
	2011/2012 Operation	12.6	12.5	12.0	13.4	0.32	4	100	17	17	13	21	0.6	11	100
	2011/2012 Closure	13.4	13.1	10.8	16.3	0.79	7	100	20	20	15	24	0.6	17	100
	2014/2015 Operation	12.3	12.1	11.2	13.9	0.60	4	100	18	18	12	23	1.1	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	13.0	13.0	13.0	13.0	-	1	100	15	15	15	15	-	1	100
	2011/2012 Operation	12.4	12.3	12.0	12.9	0.26	3	100	16	15	15	17	0.5	3	100
	2011/2012 Closure	13.4	12.9	11.4	16.5	0.75	7	100	20	19	16	26	1.3	7	100
	2014/2015 Operation	11.7	12.4	9.6	12.8	0.59	5	100	16	16	12	19	1.4	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	13.0	13.0	13.0	13.0	-	1	100	16	16	16	16	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	100	-	-	-	-	-	0	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	13.9	13.9	13.9	13.9	-	1	100	18	18	18	18	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	13.8	13.8	13.8	13.8	-	1	100	16	16	16	16	-	1	100
	2011/2012 Operation	12.4	12.5	12.1	12.5	0.13	3	100	17	16	15	20	1.3	3	100
	2011/2012 Closure	12.5	12.4	9.7	14.6	0.69	7	100	19	19	13	23	1.4	7	100
	2014/2015 Operation	12.6	12.2	11.0	14.0	0.56	5	100	17	18	13	20	1.2	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		TOC:TN Molar Ratio							Laboratory pH						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	15	15	15	15	-	1	100	8.46	8.46	8.46	8.46	-	1	100
	2011/2012 Operation	16	17	14	17	0.9	3	100	8.54	8.55	8.52	8.56	0.012	3	100
	2011/2012 Closure	17	16	15	21	0.9	7	100	8.40	8.45	7.98	8.59	0.084	7	100
	2014/2015 Operation	14	14	12	18	1.7	3	100	8.58	8.56	8.50	8.67	0.050	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	13	12	7	21	1.0	22	100	8.28	8.37	7.48	8.66	0.063	22	100
	2011 Flood	16	16	15	16	0.7	2	100	8.33	8.33	8.25	8.40	0.075	2	100
	2011/2012 Operation	16	16	14	17	0.3	9	100	8.44	8.46	8.26	8.64	0.037	11	100
	2011/2012 Closure	17	16	15	23	0.6	14	100	8.28	8.26	7.90	8.53	0.042	17	100
	2014/2015 Operation	14	13	12	18	1.2	4	100	8.44	8.41	8.33	8.66	0.032	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	14	14	14	14	-	1	100	8.46	8.46	8.46	8.46	-	1	100
	2011/2012 Operation	15	15	15	16	0.5	3	100	8.52	8.53	8.47	8.57	0.029	3	100
	2011/2012 Closure	18	19	16	21	0.7	7	100	8.36	8.42	7.99	8.52	0.074	7	100
	2014/2015 Operation	15	14	12	19	1.3	5	100	8.48	8.46	8.35	8.68	0.057	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	15	15	15	15	-	1	100	8.43	8.43	8.43	8.43	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	100	-	-	-	-	-	0	100
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	18	18	18	18	-	1	100	8.48	8.48	8.48	8.48	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	15	15	15	15	-	1	100	8.40	8.40	8.40	8.40	-	1	100
	2011/2012 Operation	17	16	15	19	1.1	3	100	8.49	8.51	8.44	8.52	0.025	3	100
	2011/2012 Closure	17	17	13	23	1.2	7	100	8.33	8.42	7.92	8.53	0.088	7	100
	2014/2015 Operation	16	18	13	20	1.3	5	100	8.47	8.48	8.31	8.60	0.047	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Laboratory Conductivity (µmhos/cm)							Total Dissolved Solids (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	1080	1080	1080	1080	-	1	100	692	692	692	692	-	1	100
	2011/2012 Operation	1073	1100	1020	1100	26.7	3	100	670	670	616	725	31.5	3	100
	2011/2012 Closure	1053	1030	767	1320	69.9	7	100	618	602	466	761	40.2	7	100
	2014/2015 Operation	1009	955	922	1150	71.1	3	100	571	556	508	648	41.1	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	1508	1510	1230	1760	28.3	22	100	853	870	709	978	16.4	22	100
	2011 Flood	1245	1245	1090	1400	155	2	100	751	751	676	826	75.0	2	100
	2011/2012 Operation	1123	1110	1030	1210	15.9	11	100	690	686	618	776	16.0	11	100
	2011/2012 Closure	1128	1110	847	1390	37.3	17	100	639	600	479	794	29.0	13	100
	2014/2015 Operation	947	925	862	1140	25.6	9	100	549	538	521	645	14.1	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	1060	1060	1060	1060	-	1	100	704	704	704	704	-	1	100
	2011/2012 Operation	1080	1110	1020	1110	30.0	3	100	628	640	585	660	22.4	3	100
	2011/2012 Closure	1068	1020	885	1340	63.1	7	100	618	575	524	787	37.5	7	100
	2014/2015 Operation	955	918	850	1150	51.5	5	100	545	522	489	632	24.5	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	1030	1030	1030	1030	-	1	100	726	726	726	726	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	100	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	924	924	924	924	-	1	100	522	522	522	522	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	1090	1090	1090	1090	-	1	100	656	656	656	656	-	1	100
	2011/2012 Operation	1077	1100	1020	1110	28.5	3	100	650	640	640	670	10.0	3	100
	2011/2012 Closure	1060	1020	889	1340	59.4	7	100	619	593	529	780	33.6	7	100
	2014/2015 Operation	962	949	837	1160	53.6	5	100	531	516	481	602	21.1	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Total Suspended Solids (mg/L)							Laboratory Turbidity (NTU)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	3	3	3	3	-	1	100	3.9	3.9	3.9	3.9	-	1	100
	2011/2012 Operation	11	10	10	13	1.1	3	100	5.5	4.7	4.1	7.6	1.08	3	100
	2011/2012 Closure	5	5	<2.0	11	1.5	7	71	2.6	3.0	0.6	4.8	0.65	7	100
	2014/2015 Operation	5.1	5.4	<2.0	8.8	2.26	3	67	2.6	2.7	1.3	3.9	0.77	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	8	7	<5.0	16	1.0	22	91	3.7	3.4	1.1	6.7	0.40	22	100
	2011 Flood	4	4	3	6	1.6	2	100	2.8	2.8	2.1	3.4	0.65	2	100
	2011/2012 Operation	8	5	<2.0	26	2.3	12	50	4.2	3.3	1.0	10.8	0.95	12	100
	2011/2012 Closure	6	6	<5.0	12	0.8	16	88	2.6	1.9	0.8	6.7	0.45	13	100
	2014/2015 Operation	8.3	8.0	<2.0	14.0	1.16	9	89	4.6	4.6	1.8	7.4	0.66	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	6	8	<5.0	8	1.3	5	60	4.7	4.7	4.7	4.7	-	1	100
	2011/2012 Operation	9	8	<2.0	26	1.3	22	82	4.8	3.8	1.2	14.1	0.91	16	100
	2011/2012 Closure	7	8	<2.0	12	0.9	17	82	3.5	3.7	1.0	5.6	0.39	17	100
	2014/2015 Operation	7.2	6.4	2.2	17.8	0.67	23	100	4.2	3.7	2.6	9.7	0.58	23	100
	2014/2015 Closure	10	10	9	11	0.2	6	100	6.7	6.7	6.6	6.8	0.06	3	100
DR-D	2011 Flood	7	7	5	8	0.6	4	100	4.5	4.5	4.5	4.5	-	1	100
	2011/2012 Operation	19	10	3	69	4.6	18	100	5.0	3.7	1.6	13.5	1.17	11	100
	2011/2012 Closure	10	10	6	16	1.2	9	100	4.9	4.2	3.1	8.6	0.68	9	100
	2014/2015 Operation	10	9	5	24	1.3	16	100	8.6	5.5	3.0	31	0.58	16	100
	2014/2015 Closure	9	10	7	10	0.4	8	100	6.9	6.9	6.2	7.5	0.18	8	100
DR-E	2011 Flood	6	5	3	10	1.9	4	50	5.1	5.1	5.1	5.1	-	1	100
	2011/2012 Operation	11	9	4	23	1.5	17	100	5.3	4.3	2.0	14.0	1.01	12	100
	2011/2012 Closure	9	9	2	15	1.0	15	100	4.1	4.4	1.1	6.7	0.41	15	100
	2014/2015 Operation	15.9	11.2	4.2	46.0	3.31	14	100	11.2	5.4	2.9	38	0.94	14	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

Site ID	Period	True Colour (CU)							Chlorophyll *a* (µg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	8.1	8.1	8.1	8.1	-	1	100	7.93	7.93	7.93	7.93	-	1	100
	2011/2012 Operation	6.4	6.5	6.1	6.7	0.18	3	100	5.03	4.66	3.98	6.44	0.733	3	100
	2011/2012 Closure	7.4	6.6	5.7	11.1	0.75	7	100	4.00	4.52	0.71	7.12	0.885	7	100
	2014/2015 Operation	9.1	7.7	7.7	12.0	1.43	3	100	4.28	5.83	0.62	6.38	1.835	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	6.8	5.0	<5.0	17.0	1.07	22	55	5.52	5.86	1.15	9.00	0.802	12	100
	2011 Flood	8.4	8.4	6.0	10.8	2.40	2	100	4.06	4.06	1.15	6.97	2.91	2	100
	2011/2012 Operation	8.5	8.3	7.0	10.6	0.35	11	100	4.71	4.03	1.91	8.55	0.588	11	100
	2011/2012 Closure	9.3	9.0	5.2	17.3	0.95	13	100	3.23	4.02	0.47	6.44	0.476	17	100
	2014/2015 Operation	11.1	9.7	6.8	23.1	1.86	8	100	4.73	5.35	0.72	5.88	0.518	9	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	8.5	8.5	8.5	8.5	-	1	100	5.83	5.83	5.83	5.83	-	1	100
	2011/2012 Operation	7.0	6.6	6.3	8.1	0.56	3	100	4.22	4.22	4.21	4.22	0.003	3	100
	2011/2012 Closure	8.7	9.0	5.0	13.3	1.06	7	100	3.50	4.11	0.52	5.68	0.797	7	100
	2014/2015 Operation	9.4	10.1	7.3	11.4	0.76	5	100	3.74	4.22	0.80	5.45	0.779	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	10.4	10.4	10.4	10.4	-	1	100	5.98	5.98	5.98	5.98	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	9.7	9.7	9.7	9.7	-	1	100	5.10	5.10	5.10	5.10	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	6.4	6.4	6.4	6.4	-	1	100	5.75	5.75	5.75	5.75	-	1	100
	2011/2012 Operation	8.0	8.7	5.9	9.5	1.09	3	100	4.27	4.23	4.16	4.41	0.074	3	100
	2011/2012 Closure	9.3	9.5	6.0	12.3	0.88	7	100	3.70	4.82	0.56	5.23	0.802	7	100
	2014/2015 Operation	9.7	8.7	7.5	12.1	0.97	5	100	3.89	4.37	0.95	5.45	0.826	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Phaeophytin a (µg/L)							*In Situ* Dissolved Oxygen (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	1.38	1.38	1.38	1.38	-	1	100	12.1	12.1	12.1	12.1	-	1	100
	2011/2012 Operation	1.16	1.40	0.57	1.50	0.295	3	100	10.1	10.4	8.2	11.7	1.02	3	100
	2011/2012 Closure	1.20	1.26	0.55	1.83	0.211	7	100	10.1	9.6	9.0	12.0	0.46	7	100
	2014/2015 Operation	2.63	1.45	0.41	6.04	1.73	3	100	10.5	9.7	9.7	12.0	0.76	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	<0.50	<0.50	<0.50	1.22	0.106	12	17	9.3	9.4	7.4	11.9	0.31	22	100
	2011 Flood	0.96	0.96	<0.60	1.62	-	2	50	11.4	11.4	11.3	11.5	0.09	2	100
	2011/2012 Operation	1.16	1.36	<1.0	1.81	0.151	11	91	9.4	9.1	4.3	12.7	0.67	11	100
	2011/2012 Closure	0.95	0.69	<0.60	2.81	0.175	17	71	9.8	10.1	7.4	12.2	0.40	13	100
	2014/2015 Operation	0.97	1.04	0.30	1.53	0.163	9	78	9.4	9.2	7.3	11.4	0.54	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	1.79	1.79	1.79	1.79	-	1	100	11.1	10.4	8.7	14.1	0.84	7	100
	2011/2012 Operation	0.78	0.86	0.45	1.04	0.175	3	100	11.1	11.0	8.3	15.0	0.44	19	100
	2011/2012 Closure	1.17	1.05	0.51	2.70	0.292	7	100	9.8	9.4	6.3	13.0	0.43	17	100
	2014/2015 Operation	0.99	0.85	0.49	1.56	0.185	5	100	9.5	9.4	6.1	11.9	0.35	20	100
	2014/2015 Closure	-	-	-	-	-	0	-	7.8	6.6	6.5	10.4	1.29	3	100
DR-D	2011 Flood	1.80	1.80	1.80	1.80	-	1	100	9.9	10.1	8.4	11.5	0.50	6	100
	2011/2012 Operation	-	-	-	-	-	0	-	9.6	9.7	7.2	13.3	0.42	15	93
	2011/2012 Closure	-	-	-	-	-	0	-	10.1	9.7	7.8	12.9	0.55	10	100
	2014/2015 Operation	1.36	1.36	1.36	1.36	-	1	100	8.3	8.3	5.2	11.3	0.48	13	100
	2014/2015 Closure	-	-	-	-	-	0	-	7.9	7.2	5.9	10.7	1.41	3	100
DR-E	2011 Flood	2.04	2.04	2.04	2.04	-	1	100	9.8	9.5	7.9	11.8	0.63	6	100
	2011/2012 Operation	0.75	0.83	0.26	1.15	0.260	3	100	10.1	10.5	7.2	13.3	0.51	14	93
	2011/2012 Closure	0.93	0.99	0.57	1.34	0.118	7	100	9.9	9.6	7.5	13.0	0.42	15	100
	2014/2015 Operation	1.19	1.10	0.53	1.81	0.226	5	100	9.2	9.2	7.5	11.5	0.33	14	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Chloride, Dissolved (mg/L)							Fluoride, Dissolved (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	204	204	204	204	-	1	100	0.160	0.160	0.160	0.160	-	1	100
	2011/2012 Operation	184	179	178	196	5.8	3	100	0.152	0.147	0.146	0.162	0.0052	3	100
	2011/2012 Closure	185	183	122	241	15.8	7	100	0.136	0.146	0.108	0.158	0.0078	7	100
	2014/2015 Operation	155	150	146	170	7.4	3	100	0.140	0.130	0.128	0.161	0.0107	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	311	318	223	376	9.6	22	100	-	-	-	-	-	0	-
	2011 Flood	248	248	205	291	43.0	2	100	0.156	0.156	0.156	0.156	-	1	100
	2011/2012 Operation	197	195	174	224	6.1	11	100	0.149	0.148	0.136	0.165	0.0059	4	100
	2011/2012 Closure	195	187	136	245	10.1	13	100	0.134	0.130	0.114	0.152	0.0067	7	100
	2014/2015 Operation	149	147	143	170	3.1	8	100	0.139	0.136	0.125	0.160	0.0076	4	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	206	206	206	206	-	1	100	0.153	0.153	0.153	0.153	-	1	100
	2011/2012 Operation	183	178	177	193	5.2	3	100	0.144	0.139	0.139	0.155	0.0053	3	100
	2011/2012 Closure	187	181	146	243	13.8	7	100	0.144	0.149	0.106	0.177	0.0096	7	100
	2014/2015 Operation	148	147	129	169	6.5	5	100	0.138	0.133	0.129	0.158	0.0052	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	198	198	198	198	-	1	100	0.158	0.158	0.158	0.158	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	143	143	143	143	-	1	100	0.125	0.125	0.125	0.125	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	205	205	205	205	-	1	100	0.153	0.153	0.153	0.153	-	1	100
	2011/2012 Operation	182	177	177	192	5.0	3	100	0.138	0.139	0.124	0.152	0.0081	3	100
	2011/2012 Closure	184	181	145	243	13.5	7	100	0.136	0.137	0.106	0.160	0.0072	7	100
	2014/2015 Operation	147	145	126	170	7.2	5	100	0.136	0.131	0.126	0.157	0.0054	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Sulphate, Dissolved (mg/L)							Hardness, as CaCO3 (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	94.2	94.2	94.2	94.2	-	1	100	319	319	319	319	-	1	100
	2011/2012 Operation	92.7	92.8	83.2	102.0	5.4	3	100	280	276	261	303	12.3	3	100
	2011/2012 Closure	76.7	72.3	57.0	96.5	4.9	7	100	249	242	178	306	17.0	7	100
	2014/2015 Operation	84.6	77.2	76.7	99.8	7.62	3	100	260	248	235	298	19.2	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	94.1	94.1	66.9	120	3.0	22	100	271	271	225	310	5.1	22	100
	2011 Flood	88.7	88.7	83.6	93.7	5.1	2	100	300	300	291	308	8.5	2	100
	2011/2012 Operation	97.1	101	82.6	105	2.3	11	100	296	301	251	350	12.3	7	100
	2011/2012 Closure	78.1	74.0	62.3	95.4	3.0	13	100	252	253	213	292	8.4	10	100
	2014/2015 Operation	76.5	76.1	68.8	97.3	3.27	8	100	241	236	223	290	7.8	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	93.9	93.9	93.9	93.9	-	1	100	358	358	358	358	-	1	100
	2011/2012 Operation	91.4	92.1	82.2	100	5.1	3	100	277	276	254	302	13.9	3	100
	2011/2012 Closure	77.0	73.8	66.1	94.5	3.9	7	100	259	246	211	328	14.5	7	100
	2014/2015 Operation	79.3	76.3	68.6	96.6	4.73	5	100	247	242	228	289	10.9	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	90.6	90.6	90.6	90.6	-	1	100	337	337	337	337	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	68.8	68.8	68.8	68.8	-	1	100	207	207	207	207	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	93.5	93.5	93.5	93.5	-	1	100	332	332	332	332	-	1	100
	2011/2012 Operation	91.1	91.7	81.7	100	5.3	3	100	273	282	254	282	9.3	3	100
	2011/2012 Closure	75.7	71.5	65.7	94.1	3.8	7	100	253	245	220	301	11.1	7	100
	2014/2015 Operation	79.0	76.1	67.8	98.9	5.26	5	100	245	242	222	276	8.7	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Aluminum, Dissolved (mg/L)							Aluminum, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	0.0355	0.0355	0.0355	0.0355	-	1	100
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	0.0427	0.0400	0.0328	0.0552	0.00660	3	100
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	0.0193	0.0199	0.0065	0.0372	0.00397	7	100
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	0.0248	0.0249	0.0130	0.0364	0.00676	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	0.0084	0.0030	<0.0010	0.0450	0.00273	22	86	0.0379	0.0304	0.0120	0.0960	0.00468	22	100
	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	2	0	0.0368	0.0368	0.0291	0.0444	0.00765	2	100
	2011/2012 Operation	0.0020	<0.0020	<0.0020	0.0077	0.00064	11	36	0.0414	0.0280	0.0101	0.133	0.0117	11	100
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	13	0	0.0315	0.0319	0.0109	0.0591	0.00440	13	100
	2014/2015 Operation	0.0027	<0.0020	<0.0020	0.0144	-	8	13	0.0405	0.0329	0.0186	0.0718	0.00653	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	0.0039	0.0039	0.0039	0.0039	-	1	100	0.0621	0.0621	0.0621	0.0621	-	1	100
	2011/2012 Operation	0.0020	<0.0020	<0.0020	0.0040	-	3	33	0.0849	0.110	0.0108	0.134	0.0377	3	100
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	0.0069	-	7	14	0.0389	0.0346	0.0111	0.0595	0.00711	7	100
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0	0.0376	0.0370	0.0298	0.0458	0.00257	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	0.0036	0.0036	0.0036	0.0036	-	1	100	0.0369	0.0369	0.0369	0.0369	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	0.0026	0.0026	0.0026	0.0026	-	1	100	0.0476	0.0476	0.0476	0.0476	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	0.0773	0.0773	0.0773	0.0773	-	1	100
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	0.0958	0.133	0.0103	0.144	0.0429	3	100
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	0.0054	-	7	14	0.0387	0.0397	0.0145	0.0577	0.00568	7	100
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0	0.0754	0.0787	0.0588	0.0860	0.00514	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

Site ID	Period	Antimony, Dissolved (mg/L)							Antimony, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	3	0	<0.0002	<0.0002	<0.0002	<0.0002	-	3	33
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	0.00027	0.000026	7	29
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	0.00020	-	3	33	<0.0002	<0.0002	<0.0002	0.00025	-	3	33
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	0.00043	0.00050	<0.0002	0.00060	0.000036	22	82
	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	2	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	0	<0.0002	<0.0002	<0.0002	<0.0002	-	11	9
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	<0.0002	-	13	0
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	0	<0.0002	<0.0002	<0.0002	0.00038	0.000037	8	25
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	3	0	<0.0002	<0.0002	<0.0002	<0.0002	-	3	33
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	0.00027	0.000027	7	29
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	5	0	<0.0002	<0.0002	<0.0002	0.00024	0.000032	5	40
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	3	0	<0.0002	<0.0002	<0.0002	<0.0002	-	3	33
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	0.00024	-	7	14
	2014/2015 Operation	0.00021	0.00025	<0.00020	0.00029	0.000042	5	40	<0.0002	<0.0002	<0.0002	0.00020	-	5	20
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Arsenic, Dissolved (mg/L)							Arsenic, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	0.00312	0.00312	0.00312	0.00312	-	1	100	0.00262	0.00262	0.00262	0.00262	-	1	100
	2011/2012 Operation	0.00233	0.00218	0.00202	0.00278	0.000231	3	100	0.00214	0.00233	0.00163	0.00247	0.000260	3	100
	2011/2012 Closure	0.00182	0.00189	0.00118	0.00233	0.000140	7	100	0.00192	0.00204	0.00126	0.00265	0.000167	7	100
	2014/2015 Operation	0.00189	0.00173	0.00165	0.00228	0.000198	3	100	0.00196	0.00183	0.00169	0.00235	0.000201	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	0.00212	0.00190	0.00140	0.00396	0.000134	22	100
	2011 Flood	0.00287	0.00287	0.00287	0.00287	-	1	100	0.00301	0.00301	0.00274	0.00328	0.000270	2	100
	2011/2012 Operation	0.00252	0.00246	0.00223	0.00292	0.000156	4	100	0.00229	0.00250	0.00139	0.00279	0.000147	11	100
	2011/2012 Closure	0.00179	0.00191	0.00136	0.00224	0.000126	7	100	0.00190	0.00185	0.00140	0.00225	0.000066	13	100
	2014/2015 Operation	0.00180	0.00170	0.00163	0.00218	0.000128	4	100	0.00178	0.00171	0.00154	0.00216	0.000072	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	0.00293	0.00293	0.00293	0.00293	-	1	100	0.00251	0.00251	0.00251	0.00251	-	1	100
	2011/2012 Operation	0.00244	0.00242	0.00219	0.00272	0.000153	3	100	0.00239	0.00254	0.00203	0.00259	0.000179	3	100
	2011/2012 Closure	0.00179	0.00180	0.00137	0.00237	0.000128	7	100	0.00184	0.00189	0.00142	0.00232	0.000114	7	100
	2014/2015 Operation	0.00181	0.00170	0.00164	0.00220	0.000101	5	100	0.00181	0.00177	0.00166	0.00215	0.000087	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	0.00273	0.00273	0.00273	0.00273	-	1	100	0.00243	0.00243	0.00243	0.00243	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	0.00143	0.00143	0.00143	0.00143	-	1	100	0.00175	0.00175	0.00175	0.00175	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	0.00328	0.00328	0.00328	0.00328	-	1	100	0.00271	0.00271	0.00271	0.00271	-	1	100
	2011/2012 Operation	0.00230	0.00230	0.00194	0.00265	0.000205	3	100	0.00230	0.00225	0.00212	0.00252	0.000118	3	100
	2011/2012 Closure	0.00181	0.00177	0.00138	0.00231	0.000120	7	100	0.00179	0.00194	0.00134	0.00202	0.000103	7	100
	2014/2015 Operation	0.00172	0.00163	0.00155	0.00215	0.000109	5	100	0.00180	0.00167	0.00162	0.00225	0.000116	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Barium, Dissolved (mg/L)							Barium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	0.0495	0.0495	0.0495	0.0495	-	1	100	0.0499	0.0499	0.0499	0.0499	-	1	100
	2011/2012 Operation	0.0459	0.0455	0.0435	0.0487	0.00151	3	100	0.0499	0.0482	0.0478	0.0538	0.00194	3	100
	2011/2012 Closure	0.0413	0.0398	0.0307	0.0502	0.00249	7	100	0.0432	0.0421	0.0304	0.0536	0.00307	7	100
	2014/2015 Operation	0.0441	0.0412	0.0390	0.0520	0.00402	3	100	0.0469	0.0407	0.0401	0.0600	0.00654	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	0.0515	0.0519	0.0360	0.0640	0.00127	22	100
	2011 Flood	0.0495	0.0495	0.0495	0.0495	-	1	100	0.0522	0.0522	0.0505	0.0538	0.00165	2	100
	2011/2012 Operation	0.0482	0.0475	0.0446	0.0533	0.00196	4	100	0.0524	0.0525	0.0453	0.0567	0.00107	11	100
	2011/2012 Closure	0.0406	0.0384	0.0339	0.0497	0.00226	7	100	0.0459	0.0448	0.0337	0.0550	0.00162	13	100
	2014/2015 Operation	0.0442	0.0439	0.0372	0.0520	0.00373	4	100	0.0427	0.0403	0.0380	0.0545	0.00202	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	0.0483	0.0483	0.0483	0.0483	-	1	100	0.0506	0.0506	0.0506	0.0506	-	1	100
	2011/2012 Operation	0.0473	0.0469	0.0428	0.0521	0.00269	3	100	0.0487	0.0464	0.0458	0.0538	0.00257	3	100
	2011/2012 Closure	0.0406	0.0380	0.0335	0.0493	0.00222	7	100	0.0440	0.0421	0.0355	0.0532	0.00238	7	100
	2014/2015 Operation	0.0420	0.0399	0.0370	0.0515	0.00261	5	100	0.0433	0.0411	0.0383	0.0549	0.00297	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	0.0472	0.0472	0.0472	0.0472	-	1	100	0.0486	0.0486	0.0486	0.0486	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	0.0374	0.0374	0.0374	0.0374	-	1	100	0.0371	0.0371	0.0371	0.0371	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	0.0497	0.0497	0.0497	0.0497	-	1	100	0.0530	0.0530	0.0530	0.0530	-	1	100
	2011/2012 Operation	0.0472	0.0476	0.0443	0.0497	0.00157	3	100	0.0476	0.0485	0.0448	0.0495	0.00143	3	100
	2011/2012 Closure	0.0410	0.0398	0.0355	0.0472	0.00172	7	100	0.0436	0.0410	0.0344	0.0561	0.00293	7	100
	2014/2015 Operation	0.0410	0.0398	0.0363	0.0506	0.00250	5	100	0.0428	0.0408	0.0390	0.0513	0.00219	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Boron, Dissolved (mg/L)							Boron, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	0.107	0.107	0.107	0.107	-	1	100	0.112	0.112	0.112	0.112	-	1	100
	2011/2012 Operation	0.108	0.111	0.084	0.129	0.0131	3	100	0.123	0.118	0.102	0.149	0.0138	3	100
	2011/2012 Closure	0.088	0.086	0.069	0.113	0.0055	7	100	0.091	0.091	0.072	0.109	0.0059	7	100
	2014/2015 Operation	0.094	0.096	0.091	0.096	0.00	3	100	0.098	0.098	0.097	0.098	0.0003	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	0.124	0.120	0.100	0.140	0.0023	22	100
	2011 Flood	0.098	0.098	0.098	0.098	-	1	100	0.109	0.109	0.104	0.114	0.0050	2	100
	2011/2012 Operation	0.111	0.111	0.086	0.137	0.0105	4	100	0.109	0.105	0.093	0.141	0.0048	11	100
	2011/2012 Closure	0.089	0.085	0.079	0.110	0.0038	7	100	0.095	0.090	0.079	0.121	0.0041	13	100
	2014/2015 Operation	0.088	0.087	0.081	0.096	0.0034	4	100	0.089	0.087	0.079	0.101	0.0026	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	0.125	0.125	0.125	0.125	-	1	100	0.117	0.117	0.117	0.117	-	1	100
	2011/2012 Operation	0.102	0.106	0.087	0.114	0.0080	3	100	0.114	0.117	0.098	0.127	0.0085	3	100
	2011/2012 Closure	0.093	0.091	0.081	0.117	0.0050	7	100	0.099	0.104	0.073	0.140	0.0090	7	100
	2014/2015 Operation	0.085	0.087	0.078	0.091	0.0024	5	100	0.090	0.088	0.082	0.104	0.0039	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	0.122	0.122	0.122	0.122	-	1	100	0.113	0.113	0.113	0.113	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	0.079	0.079	0.079	0.079	-	1	100	0.075	0.075	0.075	0.075	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	0.097	0.097	0.097	0.097	-	1	100	0.113	0.113	0.113	0.113	-	1	100
	2011/2012 Operation	0.105	0.106	0.093	0.115	0.0064	3	100	0.118	0.121	0.097	0.135	0.0111	3	100
	2011/2012 Closure	0.092	0.090	0.086	0.112	0.0034	7	100	0.097	0.093	0.072	0.126	0.0077	7	100
	2014/2015 Operation	0.087	0.087	0.080	0.097	0.0029	5	100	0.094	0.092	0.084	0.108	0.0040	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Cadmium, Dissolved (mg/L)							Cadmium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0	<0.000010	<0.000010	<0.000010	0.000012	-	3	33
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	<0.000010	-	7	0	<0.000010	<0.000010	<0.000010	0.000012	0.0000011	7	29
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	<0.000040	<0.000040	<0.000010	<0.000040	-	22	5
	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	2	0
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	0.000010	-	4	25	<0.000010	<0.000010	<0.000010	0.000025	0.0000018	11	36
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	<0.000010	-	7	0	<0.000010	<0.000010	<0.000010	0.000010	-	13	8
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	0.000022	-	4	25	<0.000010	<0.000010	<0.000010	<0.000010	-	8	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	0.000013	0.000013	0.000013	0.000013	-	1	100	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0	<0.000010	<0.000010	<0.0000070	0.000012	-	3	33
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	<0.000010	-	7	0	<0.000010	<0.000010	<0.000010	0.000011	-	7	14
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	5	0	<0.000010	<0.000010	<0.000010	<0.000010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0	<0.000010	<0.000010	<0.0000070	0.000011	-	3	33
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	<0.000010	-	7	0	<0.000010	<0.000010	<0.000010	0.000011	-	7	14
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	5	0	<0.000010	<0.000010	<0.000010	0.000032	-	5	20
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

Site ID	Period	Calcium, Dissolved (mg/L)							Calcium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	46.0	46.0	46.0	46.0	-	1	100	45.6	45.6	45.6	45.6	-	1	100
	2011/2012 Operation	47.4	48.6	40.0	53.6	3.97	3	100	48.4	49.0	46.8	49.5	0.83	3	100
	2011/2012 Closure	44.2	47.6	32.1	50.2	2.57	7	100	46.5	44.5	36.6	60.1	2.99	7	100
	2014/2015 Operation	46.5	43.2	40.9	55.3	4.47	3	100	47.9	45.3	44.7	53.8	2.94	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	47.6	47.6	47.6	47.6	-	1	100	49.2	49.2	45.1	53.3	4.10	2	100
	2011/2012 Operation	46.8	48.5	40.0	50.3	2.31	4	100	50.5	49.6	44.6	55.8	1.18	11	100
	2011/2012 Closure	42.9	40.2	34.3	53.2	2.58	7	100	47.0	45.3	39.8	54.7	1.48	13	100
	2014/2015 Operation	43.3	40.6	39.1	52.8	3.20	4	100	43.1	41.5	39.1	52.9	1.60	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	46.4	46.4	46.4	46.4	-	1	100	54.3	54.3	54.3	54.3	-	1	100
	2011/2012 Operation	46.9	49.5	40.1	51.1	3.43	3	100	45.4	46.3	43.7	46.3	0.87	3	100
	2011/2012 Closure	44.8	44.6	38.4	54.3	2.13	7	100	49.2	45.8	39.9	70.3	3.82	7	100
	2014/2015 Operation	45.0	42.6	41.6	53.7	2.23	5	100	43.6	42.1	41.2	50.4	1.72	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	46.5	46.5	46.5	46.5	-	1	100	52.1	52.1	52.1	52.1	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	36.2	36.2	36.2	36.2	-	1	100	37.5	37.5	37.5	37.5	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	45.4	45.4	45.4	45.4	-	1	100	54.7	54.7	54.7	54.7	-	1	100
	2011/2012 Operation	46.5	48.6	41.8	49.1	2.35	3	100	46.1	46.2	44.5	47.7	0.92	3	100
	2011/2012 Closure	42.8	41.4	36.6	51.7	2.13	7	100	47.0	44.7	40.8	63.0	2.89	7	100
	2014/2015 Operation	44.1	42.9	38.3	54.9	2.83	5	100	44.7	42.5	41.6	49.9	1.64	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Chromium, Dissolved (mg/L)							Chromium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	<0.0010	<0.0010	<0.0002	<0.0010	0.00003	22	59
	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	2	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	0.0028	0.00044	4	50	<0.0010	<0.0010	<0.0010	<0.0010	-	11	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	13	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	8	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	0.0020	0.0020	0.0020	0.0020	-	1	100	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Copper, Dissolved (mg/L)							Copper, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	0.00067	0.00067	0.00067	0.00067	-	1	100	0.00054	0.00054	0.00054	0.00054	-	1	100
	2011/2012 Operation	0.00051	0.00044	0.00035	0.00075	0.000121	3	100	0.00080	0.00089	0.00052	0.00100	0.000145	3	100
	2011/2012 Closure	0.00042	0.00047	<0.00020	0.00066	0.000067	7	86	0.00057	0.00056	0.00048	0.00069	0.000028	7	100
	2014/2015 Operation	0.00041	0.00038	0.00035	0.00050	0.000046	3	100	0.00056	0.00054	0.00043	0.00070	0.000078	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	<0.0010	<0.0010	<0.0010	0.00290	0.000104	22	86
	2011 Flood	0.00057	0.00057	0.00057	0.00057	-	1	100	0.00056	0.00056	0.00046	0.00065	0.000095	2	100
	2011/2012 Operation	0.00044	0.00040	0.00030	0.00065	0.000076	4	100	0.00064	0.00060	0.00047	0.00100	0.000043	11	100
	2011/2012 Closure	0.00036	0.00039	<0.00020	0.00052	0.000049	7	86	0.00056	0.00056	0.00033	0.00094	0.000041	13	100
	2014/2015 Operation	0.00039	0.00036	0.00030	0.00052	0.000050	4	100	0.00044	0.00043	0.00023	0.00065	0.000044	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	0.00054	0.00054	0.00054	0.00054	-	1	100	0.00054	0.00054	0.00054	0.00054	-	1	100
	2011/2012 Operation	0.00042	0.00044	0.00026	0.00055	0.000085	3	100	0.00086	0.00083	0.00076	0.00099	0.000068	3	100
	2011/2012 Closure	0.00037	0.00037	<0.00020	0.00062	0.000059	7	86	0.00100	0.00052	0.00044	0.00370	0.000452	7	100
	2014/2015 Operation	0.00035	0.00038	<0.00020	0.00047	0.000068	5	80	0.00048	0.00041	0.00040	0.00060	0.000046	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	0.00062	0.00062	0.00062	0.00062	-	1	100	0.00051	0.00051	0.00051	0.00051	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	0.00027	0.00027	0.00027	0.00027	-	1	100	0.00036	0.00036	0.00036	0.00036	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	0.00066	0.00066	0.00066	0.00066	-	1	100	0.00050	0.00050	0.00050	0.00050	-	1	100
	2011/2012 Operation	0.00034	0.00036	<0.00020	0.00056	0.000133	3	67	0.00098	0.00099	0.00054	0.00140	0.000248	3	100
	2011/2012 Closure	0.00038	0.00042	<0.00020	0.00050	0.000050	7	86	0.00052	0.00051	0.00042	0.00065	0.000033	7	100
	2014/2015 Operation	0.00039	0.00038	0.00031	0.00048	0.000027	5	100	0.00058	0.00052	0.00037	0.00097	0.000105	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Iron, Dissolved (mg/L)							Iron, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	0.045	0.045	0.045	0.045	-	1	100
	2011/2012 Operation	<0.010	<0.010	<0.010	0.011	-	3	33	0.034	0.033	0.016	0.052	0.0104	3	100
	2011/2012 Closure	<0.010	<0.010	<0.010	<0.010	-	7	0	0.017	0.019	<0.010	0.033	0.0038	7	71
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	3	0	0.026	0.026	0.025	0.027	0.0010	3	67
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	0.067	0.060	0.030	0.150	0.0071	22	100
	2011 Flood	0.020	0.020	<0.010	0.034	-	2	50	<0.10	<0.10	<0.10	<0.10	-	2	50
	2011/2012 Operation	0.036	0.024	<0.010	0.105	0.0119	10	70	<0.10	<0.10	<0.10	0.100	0.0070	10	50
	2011/2012 Closure	0.014	<0.010	<0.010	0.048	0.0040	12	42	0.041	0.033	0.011	0.130	0.0132	8	100
	2014/2015 Operation	<0.010	<0.010	<0.010	0.011	-	4	25	0.037	0.031	0.015	0.063	0.0059	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.10	<0.10	<0.10	<0.10	-	1	0	0.120	0.120	0.120	0.120	-	1	100
	2011/2012 Operation	0.010	0.011	<0.010	0.014	0.0026	3	67	0.048	0.043	0.034	0.067	0.0098	3	100
	2011/2012 Closure	<0.010	<0.010	<0.010	<0.010	-	7	0	0.035	0.037	0.012	0.067	0.0069	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	5	0	0.033	0.035	0.026	0.041	0.0027	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<0.10	<0.10	<0.10	<0.10	-	1	0	<0.10	<0.10	<0.10	<0.10	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	1	0	0.041	0.041	0.041	0.041	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	0.120	0.120	0.120	0.120	-	1	100
	2011/2012 Operation	0.011	0.012	<0.010	0.015	0.0030	3	67	0.049	0.040	0.035	0.073	0.0119	3	100
	2011/2012 Closure	<0.010	<0.010	<0.010	<0.010	-	7	0	0.041	0.039	0.023	0.061	0.0053	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	5	0	0.074	0.081	0.054	0.085	0.0057	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Lead, Dissolved (mg/L)							Lead, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000114	0.000114	0.000114	0.000114	-	1	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	3	0	0.000132	0.000138	0.000092	0.000167	0.0000218	3	100
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	<0.000090	<0.000090	<0.000090	0.000127	-	7	29
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	3	0	<0.000090	<0.000090	<0.000090	0.000110	-	3	33
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	<0.00020	<0.00020	<0.000090	0.000300	0.0000171	22	32
	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	<0.000090	<0.000090	<0.000090	0.000095	-	2	50
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000099	0.000100	<0.000090	0.000250	0.0000197	11	55
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	<0.000090	<0.000090	<0.000090	0.000152	0.0000102	13	31
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	<0.000090	<0.000090	<0.000090	0.000158	0.0000167	8	38
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000099	0.000099	0.000099	0.000099	-	1	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	3	0	0.000231	0.000181	0.000117	0.000394	0.0000837	3	100
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	0.000127	-	7	14	0.000110	0.000103	<0.000090	0.000216	0.0000271	7	57
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	5	0	<0.000090	<0.000090	<0.000090	<0.000090	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000107	0.000107	0.000107	0.000107	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000092	0.000092	0.000092	0.000092	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000108	0.000108	0.000108	0.000108	-	1	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	3	0	0.000148	0.000142	0.000117	0.000185	0.0000199	3	100
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	<0.000090	<0.000090	<0.000090	0.000151	0.0000162	7	43
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	5	0	<0.000090	<0.000090	<0.000090	0.000122	0.0000172	5	40
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Magnesium, Dissolved (mg/L)							Magnesium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	43.1	43.1	43.1	43.1	-	1	100	49.7	49.7	49.7	49.7	-	1	100
	2011/2012 Operation	37.3	36.3	34.7	41.0	1.89	3	100	37.1	37.3	35.0	39.0	1.16	3	100
	2011/2012 Closure	32.3	34.0	23.9	38.2	1.87	7	100	33.1	32.4	26.6	40.6	1.90	7	100
	2014/2015 Operation	34.0	31.8	31.4	38.9	2.44	3	100	35.8	32.8	30.1	44.5	4.42	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	40.0	39.8	32.5	49.6	1.09	22	100
	2011 Flood	45.0	45.0	45.0	45.0	-	1	100	43.0	43.0	38.4	47.5	4.55	2	100
	2011/2012 Operation	38.5	37.4	34.9	44.4	2.29	4	100	40.1	40.6	33.9	51.1	1.44	11	100
	2011/2012 Closure	31.8	32.9	26.6	38.3	1.62	7	100	33.4	34.5	27.5	38.7	1.02	13	100
	2014/2015 Operation	32.9	31.8	29.6	38.4	1.91	4	100	32.8	31.4	29.1	41.0	1.43	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	41.1	41.1	41.1	41.1	-	1	100	54.0	54.0	54.0	54.0	-	1	100
	2011/2012 Operation	37.9	36.2	35.0	42.4	2.29	3	100	37.2	39.0	33.6	39.1	1.82	3	100
	2011/2012 Closure	31.9	32.6	25.2	38.3	1.80	7	100	33.5	33.1	27.2	40.1	1.62	7	100
	2014/2015 Operation	32.2	31.7	29.0	37.7	1.55	5	100	34.0	33.2	29.4	42.4	2.23	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	41.5	41.5	41.5	41.5	-	1	100	50.4	50.4	50.4	50.4	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	25.9	25.9	25.9	25.9	-	1	100	27.5	27.5	27.5	27.5	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	42.0	42.0	42.0	42.0	-	1	100	47.4	47.4	47.4	47.4	-	1	100
	2011/2012 Operation	37.3	36.5	36.4	38.9	0.82	3	100	37.0	37.7	33.6	39.6	1.77	3	100
	2011/2012 Closure	31.7	32.1	27.2	37.5	1.35	7	100	32.9	33.5	28.0	37.6	1.29	7	100
	2014/2015 Operation	31.8	30.0	29.4	37.2	1.48	5	100	32.3	32.3	28.8	36.8	1.33	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

Site ID	Period	Manganese, Dissolved (mg/L)							Manganese, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	0.00020	0.00020	0.00020	0.00020	-	1	100	0.0053	0.0053	0.0053	0.0053	-	1	100
	2011/2012 Operation	0.00078	0.00040	0.00018	0.00177	0.000497	3	100	0.0061	0.0059	0.0048	0.0075	0.00078	3	100
	2011/2012 Closure	0.00026	0.00017	<0.00010	0.00065	0.000084	7	71	0.0047	0.0045	0.0030	0.0072	0.00059	7	100
	2014/2015 Operation	0.00068	0.00025	0.00016	0.00163	0.000476	3	100	0.0059	0.0071	0.0032	0.0072	0.00132	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	0.0072	0.0072	0.0036	0.0150	0.00064	22	100
	2011 Flood	0.00030	0.00030	0.00030	0.00030	-	1	100	0.0075	0.0075	0.0057	0.0094	0.00185	2	100
	2011/2012 Operation	0.00029	0.00026	<0.00010	0.00060	0.000123	4	75	0.0093	0.0082	0.0046	0.0177	0.00117	11	100
	2011/2012 Closure	0.00052	0.00022	<0.00010	0.00218	0.000286	7	86	0.0068	0.0068	0.0036	0.0103	0.00062	13	100
	2014/2015 Operation	0.00160	0.00138	0.00017	0.00348	0.000830	4	100	0.0058	0.0057	0.0034	0.0080	0.00066	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	0.00120	0.00120	0.00120	0.00120	-	1	100	0.0067	0.0067	0.0067	0.0067	-	1	100
	2011/2012 Operation	0.00031	0.00024	<0.00010	0.00065	0.000177	3	67	0.0083	0.0083	0.0050	0.0115	0.00188	3	100
	2011/2012 Closure	0.00076	0.00020	0.00013	0.00234	0.000325	7	100	0.0064	0.0066	0.0040	0.0079	0.00045	7	100
	2014/2015 Operation	0.00060	0.00027	0.00016	0.00196	0.000344	5	100	0.0057	0.0057	0.0037	0.0077	0.00078	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	0.00132	0.00132	0.00132	0.00132	-	1	100	0.0065	0.0065	0.0065	0.0065	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	0.00038	0.00038	0.00038	0.00038	-	1	100	0.0059	0.0059	0.0059	0.0059	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	0.00033	0.00033	0.00033	0.00033	-	1	100	0.0068	0.0068	0.0068	0.0068	-	1	100
	2011/2012 Operation	0.00026	0.00019	0.00015	0.00044	0.000091	3	100	0.0097	0.0090	0.0058	0.0144	0.00251	3	100
	2011/2012 Closure	0.00047	0.00026	0.00015	0.00144	0.000172	7	100	0.0062	0.0061	0.0043	0.0081	0.00043	7	100
	2014/2015 Operation	0.00083	0.00030	0.00027	0.00290	0.000518	5	100	0.0080	0.0075	0.0047	0.0118	0.00135	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Mercury, Dissolved (ng/L)							Mercury, Total (ng/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Operation	<1.0	<1.0	<1.0	<1.0	-	3	0	<1.0	<1.0	<1.0	1.10	-	3	33
	2011/2012 Closure	<5	<5	<1.0	<5	0.40	7	29	<5	<5	<1.0	<5	0.32	7	71
	2014/2015 Operation	1.2	1.3	<1.0	1.9	0.41	3	67	1.1	1.1	<1.0	1.8	0.38	3	67
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Operation	<1.0	<1.0	<1.0	<1.0	-	4	0	<1.0	<1.0	<1.0	1.30	-	4	25
	2011/2012 Closure	<1.0	<1.0	<1.0	2.1	0.23	7	29	<5	<5	<1.0	<5	0.26	7	71
	2014/2015 Operation	<1.0	<1.0	<1.0	1.5	0.26	4	50	1.20	1.30	<1.0	2.50	0.47	4	50
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	2	0
	2011/2012 Operation	<1.0	<1.0	<1.0	1.10	-	3	33	1.1	1.2	<1.0	1.5	0.22	4	75
	2011/2012 Closure	<1.0	<1.0	<1.0	1.40	-	8	25	1.2	1.3	<1.0	2.5	0.28	8	75
	2014/2015 Operation	1.1	1.0	<1.0	2.20	2.20	0.26	57	1.3	1.4	<1.0	2.0	0.22	7	71
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	1.00	1.00	1.00	1.00	-	1	100	-	-	-	-	-	0	-
	2014/2015 Operation	1.93	2.10	1.40	2.30	0.27	3	100	2.50	2.50	1.40	3.60	1.10	2	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	1.1	1.1	1.1	1.1	-	1	100
	2011/2012 Operation	<1.0	<1.0	<1.0	1.1	0.20	3	33	1.4	1.2	1.2	1.9	0.23	3	100
	2011/2012 Closure	1.3	1.5	<1.0	1.6	0.15	7	86	1.3	1.3	<1.0	1.7	0.16	7	86
	2014/2015 Operation	1.2	1.2	<1.0	1.5	0.14	6	80	1.6	1.8	<1.0	2.3	0.28	6	80
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Methyl Mercury, Dissolved (ng/L)							Methyl Mercury, Total (ng/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	3	0	<0.050	<0.050	<0.050	0.063	-	3	33
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	7	0	<0.050	<0.050	<0.050	<0.050	-	7	0
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	-	3	0	0.056	0.058	<0.050	0.084	0.0171	3	67
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	4	0	0.053	0.051	<0.050	0.086	0.0164	4	50
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	7	0	<0.050	<0.050	<0.050	0.078	0.0088	7	43
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	-	4	0	0.055	<0.050	<0.050	0.110	0.0201	4	50
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	4	0	0.051	<0.050	<0.050	0.080	0.0149	4	50
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	8	0	<0.050	0.051	<0.050	0.062	0.0057	9	56
	2014/2015 Operation	<0.050	<0.050	<0.050	0.053	-	7	14	0.055	0.053	<0.050	0.096	0.0120	7	57
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	0.136	0.136	0.136	0.136	-	1	100
	2014/2015 Operation	0.172	0.224	<0.050	0.268	0.0748	3	67	0.292	0.401	<0.050	0.450	0.134	3	67
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	0.115	-	3	33	0.115	0.061	<0.050	0.259	0.0727	3	67
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	7	0	<0.050	<0.050	<0.050	0.081	0.0097	7	43
	2014/2015 Operation	0.062	0.058	<0.050	0.138	0.0170	6	67	0.087	0.093	<0.050	0.152	0.0218	6	67
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Molybdenum, Dissolved (mg/L)							Molybdenum, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	0.00224	0.00224	0.00224	0.00224	-	1	100	0.00230	0.00230	0.00230	0.00230	-	1	100
	2011/2012 Operation	0.00213	0.00202	0.00196	0.00240	0.000138	3	100	0.00201	0.00209	0.00186	0.00209	0.000077	3	100
	2011/2012 Closure	0.00189	0.00202	0.00133	0.00243	0.000144	7	100	0.00195	0.00182	0.00137	0.00259	0.000170	7	100
	2014/2015 Operation	0.00180	0.00171	0.00166	0.00203	0.000116	3	100	0.00190	0.00171	0.00171	0.00227	0.000187	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	0.00232	0.00230	0.00190	0.00260	0.000041	22	100
	2011 Flood	0.00219	0.00219	0.00219	0.00219	-	1	100	0.00253	0.00253	0.00247	0.00259	0.000060	2	100
	2011/2012 Operation	0.00217	0.00220	0.00180	0.00248	0.000159	4	100	0.00218	0.00216	0.00184	0.00253	0.000056	11	100
	2011/2012 Closure	0.00173	0.00155	0.00139	0.00239	0.000141	7	100	0.00193	0.00189	0.00149	0.00251	0.000104	13	100
	2014/2015 Operation	0.00169	0.00161	0.00155	0.00197	0.000096	4	100	0.00176	0.00166	0.00155	0.00237	0.000101	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	0.00217	0.00217	0.00217	0.00217	-	1	100	0.00219	0.00219	0.00219	0.00219	-	1	100
	2011/2012 Operation	0.00211	0.00216	0.00187	0.00230	0.000127	3	100	0.00222	0.00227	0.00210	0.00229	0.000060	3	100
	2011/2012 Closure	0.00183	0.00173	0.00156	0.00231	0.000116	7	100	0.00198	0.00179	0.00172	0.00250	0.000134	7	100
	2014/2015 Operation	0.00175	0.00168	0.00156	0.00209	0.000096	5	100	0.00303	0.00183	0.00163	0.00771	0.001174	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	0.00207	0.00207	0.00207	0.00207	-	1	100	0.00211	0.00211	0.00211	0.00211	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	0.00158	0.00158	0.00158	0.00158	-	1	100	0.00161	0.00161	0.00161	0.00161	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	0.00220	0.00220	0.00220	0.00220	-	1	100	0.00240	0.00240	0.00240	0.00240	-	1	100
	2011/2012 Operation	0.00202	0.00208	0.00174	0.00224	0.000147	3	100	0.00207	0.00202	0.00198	0.00222	0.000074	3	100
	2011/2012 Closure	0.00176	0.00161	0.00143	0.00240	0.000131	7	100	0.00190	0.00172	0.00156	0.00246	0.000134	7	100
	2014/2015 Operation	0.00174	0.00171	0.00158	0.00206	0.000088	5	100	0.00181	0.00181	0.00163	0.00209	0.000078	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Nickel, Dissolved (mg/L)							Nickel, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0020	<0.0020	<0.00030	<0.0020	-	3	0
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	<0.0020	<0.0020	<0.0020	0.0020	0.00008	22	86
	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	2	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.00030	<0.0020	0.00008	11	0
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	13	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	8	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0020	<0.0020	<0.0020	<0.0020	-	3	33
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0020	<0.0020	<0.0020	0.0011	-	3	33
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Potassium, Dissolved (mg/L)							Potassium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	10.8	10.8	10.8	10.8	-	1	100	11.0	11.0	11.0	11.0	-	1	100
	2011/2012 Operation	10.2	10.2	9.61	10.7	0.32	3	100	10.8	10.8	10.2	11.3	0.318	3	100
	2011/2012 Closure	8.70	8.88	5.88	10.9	0.58	7	100	8.95	9.28	6.74	11.2	0.579	7	100
	2014/2015 Operation	9.33	8.50	8.48	11.00	0.837	3	100	9.53	8.11	8.09	12.40	1.433	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	11.5	11.5	8.97	13.7	0.267	22	100
	2011 Flood	10.1	10.1	9.94	10.3	0.18	2	100	10.9	10.9	10.9	10.9	-	1	100
	2011/2012 Operation	10.4	10.5	9.35	11.1	0.40	4	100	11.0	11.3	9.75	12.0	0.262	11	100
	2011/2012 Closure	8.34	8.06	6.38	10.5	0.53	7	100	9.32	9.41	7.35	11.3	0.358	13	100
	2014/2015 Operation	8.99	8.63	7.59	11.10	0.748	4	100	8.68	8.12	7.73	11.60	0.484	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	10.6	10.6	10.6	10.6	-	1	100	10.5	10.5	10.5	10.5	-	1	100
	2011/2012 Operation	10.3	10.5	9.48	10.9	0.42	3	100	11.2	10.9	10.4	12.3	0.569	3	100
	2011/2012 Closure	8.37	8.05	6.72	10.7	0.51	7	100	9.30	9.40	7.12	11.5	0.551	7	100
	2014/2015 Operation	8.94	8.61	7.12	11.60	0.737	5	100	9.08	8.61	7.75	11.60	0.662	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	10.3	10.3	10.3	10.3	-	1	100	10.0	10.0	10.0	10.0	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	6.55	6.55	6.55	6.55	-	1	100	7.63	7.63	7.63	7.63	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	10.4	10.4	10.4	10.4	-	1	100	10.6	10.6	10.6	10.6	-	1	100
	2011/2012 Operation	10.4	10.3	9.84	11.1	0.37	3	100	10.9	10.7	10.2	11.7	0.441	3	100
	2011/2012 Closure	8.34	8.11	6.78	10.5	0.46	7	100	9.02	9.33	7.34	11.3	0.532	7	100
	2014/2015 Operation	8.75	8.35	7.40	10.80	0.587	5	100	8.71	8.28	7.54	11.10	0.615	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Selenium, Dissolved (mg/L)							Selenium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0010	<0.0010	<0.0010	0.0018	-	3	33
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	<0.0010	<0.0010	<0.00040	0.0017	0.00009	22	14
	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	2	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	0.0013	-	11	9
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	13	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	8	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	33
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	0.0011	0.0011	0.0011	0.0011	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0010	<0.0010	<0.0010	0.0011	-	3	33
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Silver, Dissolved (mg/L)							Silver, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00004	<0.00010	-	3	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	<0.00010	<0.00010	<0.00002	0.00015	-	22	5
	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	2	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	11	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	13	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	8	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.000040	<0.00010	-	3	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.000040	<0.00010	-	3	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

Site ID	Period	Sodium, Dissolved (mg/L)							Sodium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	134	134	134	134	-	1	100	135	135	135	135	-	1	100
	2011/2012 Operation	126	132	111	134	7.4	3	100	129	124	122	141	6.0	3	100
	2011/2012 Closure	126	123	85	167	11.0	7	100	127	122	87	171	11.2	7	100
	2014/2015 Operation	103	102	95	112	4.9	3	100	110	104	93	133	11.9	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	188	187	152	226	4.0	22	100
	2011 Flood	159	159	131	187	28.0	2	100	136	136	136	136	-	1	100
	2011/2012 Operation	129	131	111	142	6.7	4	100	137	143	118	157	4.3	11	100
	2011/2012 Closure	126	121	94	166	10.7	7	100	135	136	96	173	6.2	13	100
	2014/2015 Operation	104	102	100	111	2.5	4	100	104	99	92	126	4.4	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	140	140	140	140	-	1	100	147	147	147	147	-	1	100
	2011/2012 Operation	125	124	110	142	9.3	3	100	125	126	109	141	9.2	3	100
	2011/2012 Closure	124	125	86	171	11.0	7	100	126	122	93	160	8.7	7	100
	2014/2015 Operation	99	100	88	113	4.2	5	100	105	104	91	125	5.8	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	135	135	135	135	-	1	100	144	144	144	144	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	91	91	91	91	-	1	100	94	94	94	94	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	135	135	135	135	-	1	100	132	132	132	132	-	1	100
	2011/2012 Operation	120	116	109	136	8.1	3	100	127	125	115	140	7.3	3	100
	2011/2012 Closure	122	116	98	166	8.7	7	100	126	131	93	153	8.7	7	100
	2014/2015 Operation	97	96	87	109	3.7	5	100	100	97	91	114	4.1	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Thallium, Dissolved (mg/L)							Thallium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00002	<0.00010	-	3	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	<0.00010	<0.00010	<0.00002	0.00037	0.000016	22	9
	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	2	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.000020	<0.00010	-	11	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	0.00012	-	7	14	<0.00010	<0.00010	<0.00010	<0.00010	-	13	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	8	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.000020	<0.00010	-	3	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.000020	<0.00010	-	3	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

Site ID	Period	Uranium, Dissolved (mg/L)							Uranium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	0.00166	0.00166	0.00166	0.00166	-	1	100	0.00174	0.00174	0.00174	0.00174	-	1	100
	2011/2012 Operation	0.00171	0.00168	0.00156	0.00190	0.000100	3	100	0.00179	0.00180	0.00158	0.00199	0.000118	3	100
	2011/2012 Closure	0.00142	0.00137	0.00108	0.00181	0.000092	7	100	0.00146	0.00141	0.00106	0.00180	0.000099	7	100
	2014/2015 Operation	0.00144	0.00137	0.00120	0.00176	0.000166	3	100	0.00158	0.00143	0.00139	0.00191	0.000167	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	0.00170	0.00172	0.00110	0.00230	0.000066	22	100
	2011 Flood	0.00167	0.00167	0.00167	0.00167	-	1	100	0.00184	0.00184	0.00179	0.00189	0.000050	2	100
	2011/2012 Operation	0.00176	0.00175	0.00156	0.00198	0.000103	4	100	0.00174	0.00175	0.00144	0.00198	0.000048	11	100
	2011/2012 Closure	0.00137	0.00131	0.00107	0.00169	0.000090	7	100	0.00149	0.00146	0.00116	0.00190	0.000073	13	100
	2014/2015 Operation	0.00132	0.00124	0.00103	0.00176	0.000166	4	100	0.00136	0.00134	0.00107	0.00172	0.000070	8	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	0.00162	0.00162	0.00162	0.00162	-	1	100	0.00170	0.00170	0.00170	0.00170	-	1	100
	2011/2012 Operation	0.00162	0.00160	0.00151	0.00176	0.000073	3	100	0.00172	0.00174	0.00142	0.00199	0.000165	3	100
	2011/2012 Closure	0.00141	0.00134	0.00119	0.00172	0.000079	7	100	0.00150	0.00140	0.00122	0.00195	0.000096	7	100
	2014/2015 Operation	0.00139	0.00137	0.00120	0.00170	0.000094	5	100	0.00148	0.00135	0.00133	0.00184	0.000097	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	0.00158	0.00158	0.00158	0.00158	-	1	100	0.00163	0.00163	0.00163	0.00163	-	1	100
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	0.00121	0.00121	0.00121	0.00121	-	1	100	0.00128	0.00128	0.00128	0.00128	-	1	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	0.00167	0.00167	0.00167	0.00167	-	1	100	0.00178	0.00178	0.00178	0.00178	-	1	100
	2011/2012 Operation	0.00155	0.00146	0.00140	0.00180	0.000125	3	100	0.00167	0.00172	0.00150	0.00178	0.000085	3	100
	2011/2012 Closure	0.00141	0.00139	0.00108	0.00177	0.000089	7	100	0.00145	0.00128	0.00120	0.00205	0.000128	7	100
	2014/2015 Operation	0.00137	0.00134	0.00116	0.00171	0.000095	5	100	0.00145	0.00148	0.00117	0.00167	0.000084	5	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 17. Continued.

		Zinc, Dissolved (mg/L)							Zinc, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
DR-A	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	0.0021	0.0021	0.0020	0.0022	0.00006	3	100
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-B	Historic [1]	-	-	-	-	-	0	-	<0.0050	<0.0050	<0.0010	0.0060	0.00036	22	41
	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	2	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0050	<0.0050	<0.0020	<0.0050	-	11	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	0.0041	-	7	14	<0.0020	<0.0020	<0.0020	0.0051	0.00039	13	23
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0050	<0.0050	<0.0020	<0.0050	0.00030	8	38
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-C	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0020	<0.0020	<0.0020	0.0022	-	3	33
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0020	<0.0020	<0.0020	0.0030	-	7	14
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	0.0023	-	5	20	<0.0020	<0.0020	<0.0020	0.0025	-	5	20
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-D	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
DR-E	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0020	<0.0020	<0.0020	<0.0020	-	3	33
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0020	<0.0020	<0.0020	0.0033	-	7	14
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0	<0.0020	<0.0020	<0.0020	0.0044	-	5	20
	2014/2015 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-

1 - Data from the Historic period were only available for the Dauphin River upstream of the Big Bend (DR-B).

Table 18. Frequency of dissolved oxygen values in the Dauphin River below the MWQSOGs and CCME lowest acceptable concentrations for PAL, 2004-2015.

Site ID	Period	Guidelines Applicable when Water Temperature is > 5°C						Guidelines Applicable when Water Temperature is ≤ 5°C					
		MWQSOGs PAL for Cool Water Early life, and CCME PAL for Early Life Stages of Warm Water Biota; 6.0 mg/L			MWQSOGs PAL for Cold Water Mature Life and CCME PAL for Other Life Stages of Cold Water Biota; 6.5 mg/L			MWQSOGs PAL for Cold Water Early Life, and CCME PAL for Early Life Stages of Cold Water Biota; 9.5 mg/L			MWQSOGs PAL for Cool Water Mature Life, and CCME PAL for Other Life Stages of Warm Water Biota; 5.5 mg/L		
		n	# below	% below	n	# below	% below	n	# below	% below	n	# below	% below
DR-A	2011 Flood	1	0	0	1	0	0	0	-	-	0	-	-
	2011/2012 Operation	2	0	0	2	0	0	1	0	0	1	0	0
	2011/2012 Closure	5	0	0	5	0	0	2	0	0	2	0	0
	2014/2015 Operation	2	0	0	2	0	0	1	0	0	1	0	0
	2014/2015 Closure	0	-	-	0	-	-	0	-	-	0	-	-
DR-B	Historic [1]	13	0	0	13	0	0	9	2	22	9	0	0
	2011 Flood	0	-	-	0	-	-	2	0	0	2	0	0
	2011/2012 Operation	6	0	0	6	0	0	5	3	60	5	1	20
	2011/2012 Closure	7	0	0	7	0	0	6	1	17	6	0	0
	2014/2015 Operation	6	0	0	6	0	0	2	1	50	2	0	0
	2014/2015 Closure	0	-	-	0	-	-	0	-	-	0	-	-
DR-C	2011 Flood	5	0	0	5	0	0	2	0	0	2	0	0
	2011/2012 Operation	7	0	0	7	0	0	12	0	0	12	0	0
	2011/2012 Closure	12	0	0	12	1	8	5	2	40	5	0	0
	2014/2015 Operation	17	0	0	17	1	6	3	0	0	3	0	0
	2014/2015 Closure	3	0	0	3	1	33	0	-	-	0	-	-
DR-D	2011 Flood	5	0	0	5	0	0	1	0	0	1	0	0
	2011/2012 Operation	7	0	0	7	0	0	8	1	13	8	0	0
	2011/2012 Closure	8	0	0	8	0	0	2	0	0	2	0	0
	2014/2015 Operation	11	1	9	11	2	18	2	0	0	2	0	0
	2014/2015 Closure	3	1	33	3	1	33	0	-	-	0	-	-

Table 18. Continued.

Site ID	Period	Guidelines Applicable when Water Temperature is > 5°C						Guidelines Applicable when Water Temperature is ≤ 5°C					
		MWQSOGs PAL for Cool Water Early life, and CCME PAL for Early Life Stages of Warm Water Biota; 6.0 mg/L			MWQSOGs PAL for Cold Water Mature Life and CCME PAL for Other Life Stages of Cold Water Biota; 6.5 mg/L			MWQSOGs PAL for Cold Water Early Life, and CCME PAL for Early Life Stages of Cold Water Biota; 9.5 mg/L			MWQSOGs PAL for Cool Water Mature Life, and CCME PAL for Other Life Stages of Warm Water Biota; 5.5 mg/L		
		n	# below	% below	n	# below	% below	n	# below	% below	n	# below	% below
DR-E	2011 Flood	5	0	0	5	0	0	1	0	0	1	0	0
	2011/2012 Operation	7	0	0	7	0	0	7	1	14	7	0	0
	2011/2012 Closure	11	0	0	11	0	0	4	1	25	4	0	0
	2014/2015 Operation	13	0	0	13	0	0	1	-	-	1	-	-
	2014/2015 Closure	0	-	-	0	-	-	0	-	-	0	-	-

1 - Data from the Historic period were only available for the Dauphin River upstream of the Big Bend (DR-B).

Table 19. Frequency of exceedance of MWQSOGs and CCME guidelines for PAL for metals and major ions in the Dauphin River, 2004-2015. Only metals and major ions for which exceedances occurred within the Study Area are listed.[1] Percent exceedance values greater than zero are indicated in bold. Note: this table does not include 2014/2015 Closure data, because metals were not analysed during this period.

			Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
Site ID	Period		MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
DR-A	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
	2011/2012 Operation	n	3	3	-	3	-	3	3	3
		# Exceeded	0	0	-	3	-	3	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	0	0	-	7	-	5	0	0
		% Exceedance	0	0	-	**100**	-	**71**	0	0
	2014/2015 Operation	n	3	3	-	3	-	3	3	3
		# Exceeded	0	0	-	3	-	3	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
DR-B	Historic[10]	n	22	22	-	22	-	0	22	22
		# Exceeded	0	0	-	22	-	-	0	0
		% Exceedance	0	0	-	**100**	-	-	0	0
	2011 Flood	n	2	2	-	2	-	1	2	2
		# Exceeded	0	0	-	2	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
	2011/2012 Operation	n	11	11	-	11	-	4	11	11
		# Exceeded	1	1	-	11	-	4	0	0
		% Exceedance	**9**	**9**	-	**100**	-	**100**	0	0

Table 19. Continued.

Site ID	Period		Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
			MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
DR-B	2011/2012 Closure	n	13	13	-	13	-	7	13	13
		# Exceeded	0	0	-	13	-	4	0	0
		% Exceedance	0	0	-	**100**	-	**57**	0	0
	2014/2015 Operation	n	8	8	-	8	-	4	8	8
		# Exceeded	0	0	-	8	-	4	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
DR-C	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
	2011/2012 Operation	n	3	3	-	3	-	3	3	3
		# Exceeded	2	2	-	3	-	3	0	0
		% Exceedance	**67**	**67**	-	**100**	-	**100**	0	0
	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	0	0	-	7	-	6	0	0
		% Exceedance	0	0	-	**100**	-	**86**	0	0
	2014/2015 Operation	n	5	5	-	5	-	5	5	5
		# Exceeded	0	0	-	5	-	5	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
DR-D	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0

Table 19. Continued.

Site ID	Period		Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
			MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
	2011/2012 Operation	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
	2011/2012 Closure	n	0	0	-	0	-	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
	2014/2015 Operation	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
DR-E	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
	2011/2012 Operation	n	3	3	-	3	-	3	3	3
		# Exceeded	2	2	-	3	-	3	0	0
		% Exceedance	**67**	**67**	-	**100**	-	**100**	0	0
	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	0	0	-	7	-	5	0	0
		% Exceedance	0	0	-	**100**	-	**71**	0	0
	2014/2015 Operation	n	5	5	-	5	-	5	5	5
		# Exceeded	0	0	-	5	-	5	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0

Table 19. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
DR-A	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2011/2012 Operation	n	3	3	3	3	3	3
		# Exceeded	0	0	1	1	0	0
		% Exceedance	0	0	33	33	0	0
	2011/2012 Closure	n	6	6	7	7	7	7
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2014/2015 Operation	n	3	3	3	3	3	3
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
DR-B	Historic [7]	n	22	22	22	22	22	22
		# Exceeded	0	0	2	2	1	1
		% Exceedance	0	0	9	9	5	5
	2011 Flood	n	2	2	2	2	2	2
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2011/2012 Operation	n	10	10	11	11	11	11
		# Exceeded	0	0	1	1	0	0
		% Exceedance	0	0	9	9	0	0
	2011/2012 Closure	n	8	8	13	13	13	13
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0

Table 19. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
	2014/2015 Operation	n	8	8	8	8	8	8
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
DR-C	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2011/2012 Operation	n	3	3	3	3	3	3
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2011/2012 Closure	n	7	7	7	7	7	7
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2014/2015 Operation	n	5	5	5	5	5	5
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
DR-D	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	0	0	1	1	0	0
		% Exceedance	0	0	**100**	**100**	0	0
	2011/2012 Operation	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
	2011/2012 Closure	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-

Table 19. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
	2014/2015 Operation	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
DR-E	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2011/2012 Operation	n	3	3	3	3	3	3
		# Exceeded	0	0	1	1	0	0
		% Exceedance	0	0	**33**	**33**	0	0
	2011/2012 Closure	n	7	7	7	7	7	7
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2014/2015 Operation	n	5	5	5	5	5	5
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0

1 - The following metals where consistently within both the applicable MWQSOGs and CCME PAL guidelines at all sites and times: arsenic; boron; cadmium; dissolved chromium; copper; lead; mercury, methyl mercury; molybdenum; nickel; thallium; uranium; and, zinc.
2 - Long-term guideline. All concentrations were within the short-term guideline at all sites and times.
3 - Interim guideline.
4 - MWQSOGs 4-day objective. All concentrations were within the 1-hour objective.
5 - Based on sample specific hardness.
6 - Analytical detection limit is equal to the PAL guideline.
7 - Data from the Historic period were only available for the Dauphin River upstream of the Big Bend (DR-B).

Table 20. Frequencies of exceedances of MWQSOGs/Health Canada aesthetic objectives for drinking water for metals and major ions measured in the Dauphin River, 2004-2015. All parameters with maximum acceptable concentrations were within these guidelines at all sites and times, including: antimony; arsenic; barium; boron; lead; mercury; selenium; and, uranium. Percent exceedance values greater than zero are indicated in bold. Note: this table does not include 2014/2015 Closure data, because metals were not analysed during this period.

Site ID	Period		Chloride, Dissolved	Iron, Total	Manganese, Total	Sodium, Total	Sulphate, Dissolved
MWQSOGs/Health Canada Aesthetic Objective (mg/L)			≤250	≤0.3	≤0.050	≤200	≤500
DR-A	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Operation	n	3	3	3	3	3
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	7	6	7	7	7
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	3	3	3	3	3
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
DR-B	Historic[1]	n	22	22	22	22	22
		# Exceeded	20	0	0	7	0
		% Exceedance	**91**	0	0	**32**	0
	2011 Flood	n	2	2	2	1	2
		# Exceeded	1	0	0	0	0
		% Exceedance	**50**	0	0	0	0
	2011/2012 Operation	n	11	10	11	11	11
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	13	8	13	13	13
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	8	8	8	8	8
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0

Table 20. Continued.

Site ID	Period		Chloride, Dissolved	Iron, Total	Manganese, Total	Sodium, Total	Sulphate, Dissolved
MWQSOGs/Health Canada Aesthetic Objective (mg/L)			≤250	≤0.3	≤0.050	≤200	≤500
DR-C	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Operation	n	3	3	3	3	3
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	7	7	7	7	7
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	5	5	5	5	5
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
DR-D	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Operation	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-
	2011/2012 Closure	n	0	0	0	0	0
		# Exceeded	-	-	-	-	-
		% Exceedance	-	-	-	-	-
	2014/2015 Operation	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
DR-E	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Operation	n	3	3	3	3	3
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	7	7	7	7	7
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	5	5	5	5	5
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0

1 - Data from the Historic period were only available for FR1; DR-B and Site 68.

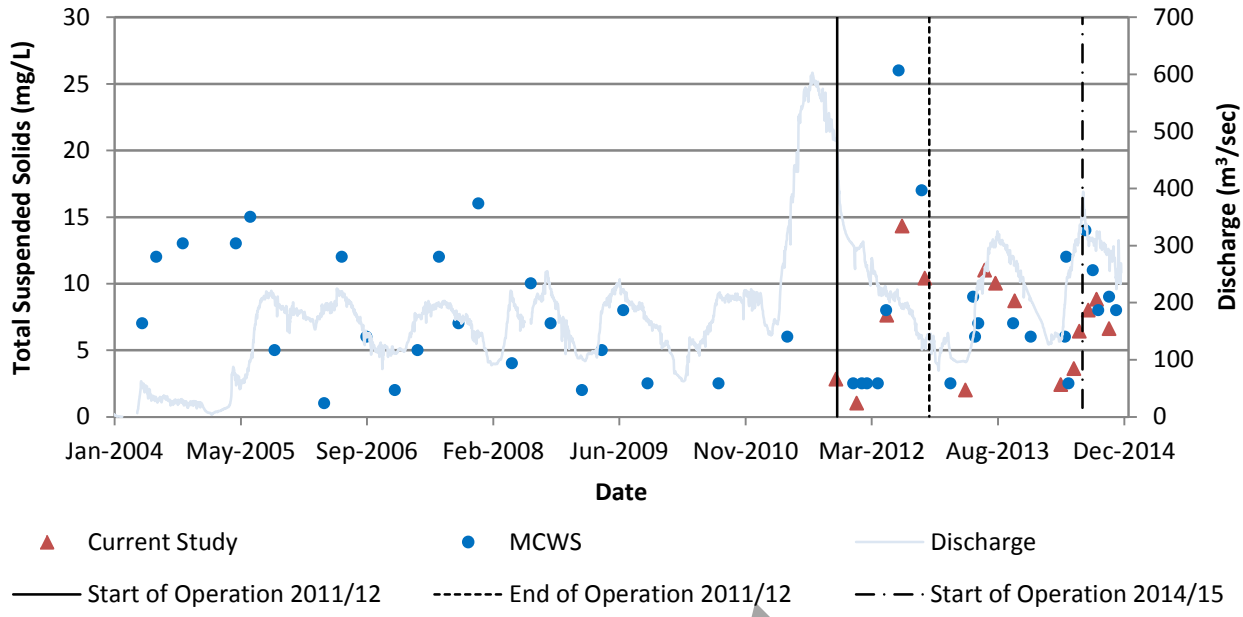

Figure 53. Total suspended solids in the Dauphin River upstream of the Big Bend (DR-B), 2004-2014.

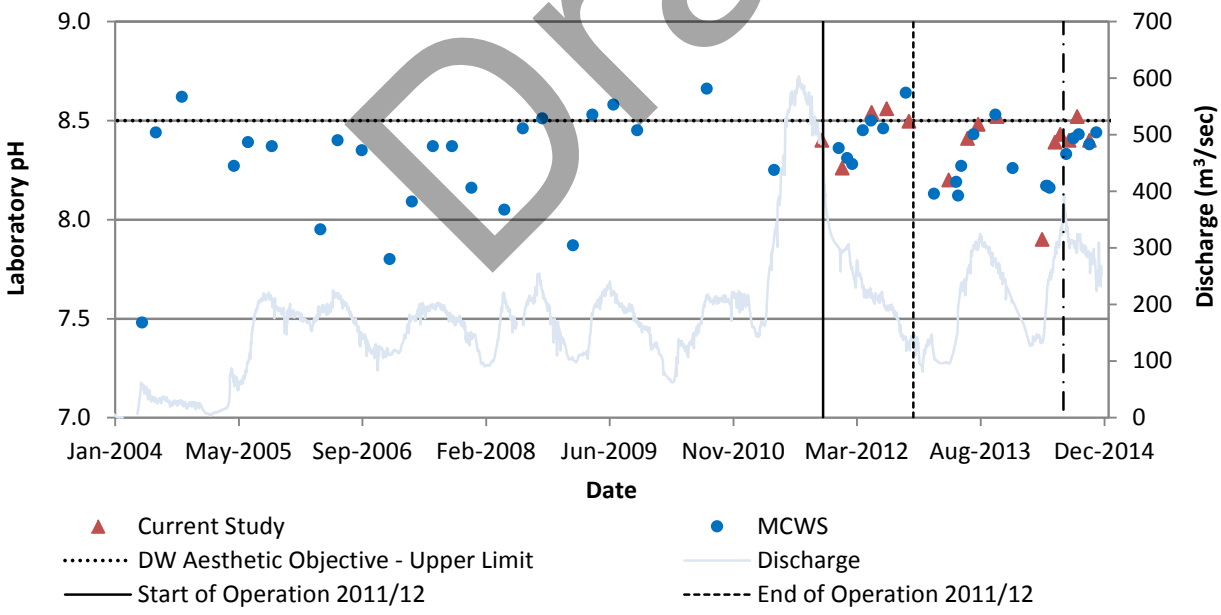

Figure 54. Laboratory measured pH in the Dauphin River upstream of the Big Bend (DR-B), 2004-2014.

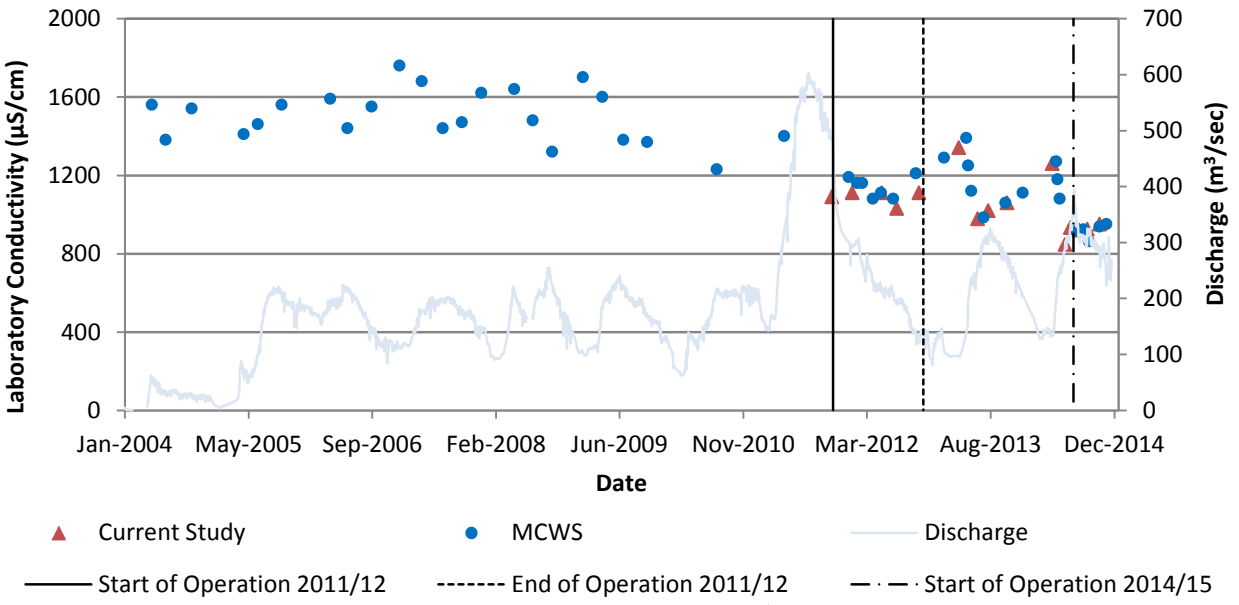

Figure 55. Conductivity in the Dauphin River upstream of the Big Bend (DR-B), 2004-2014.

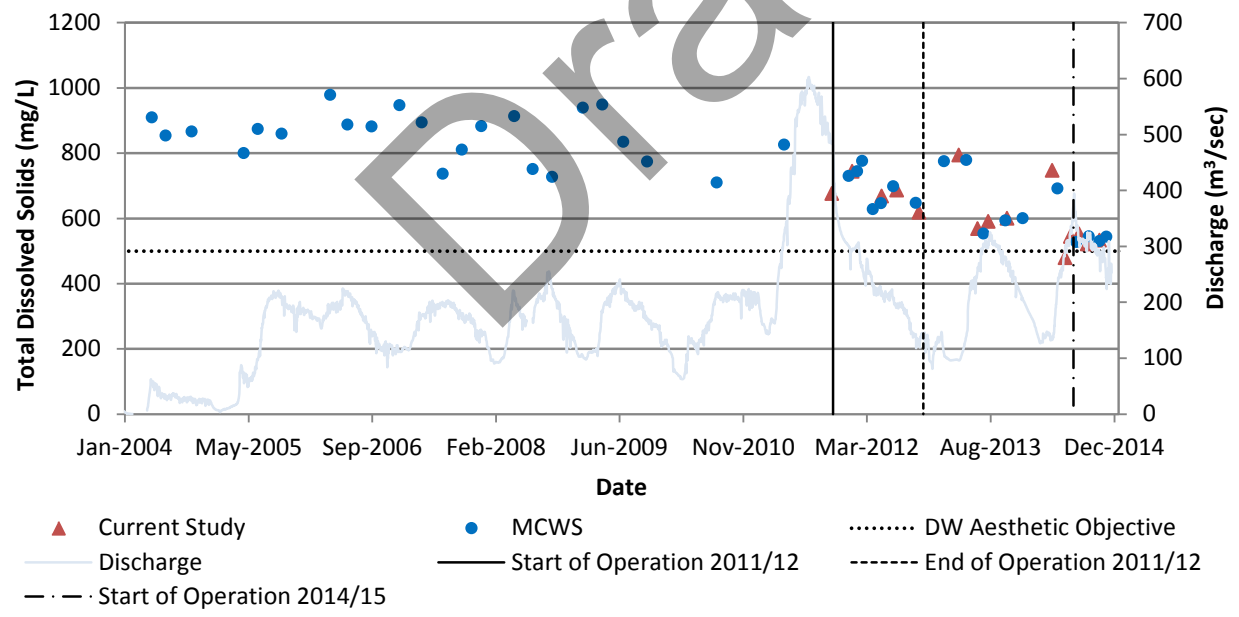

Figure 56. Total dissolved solids in the Dauphin River upstream of the Big Bend (DR-B), 2004-2014.

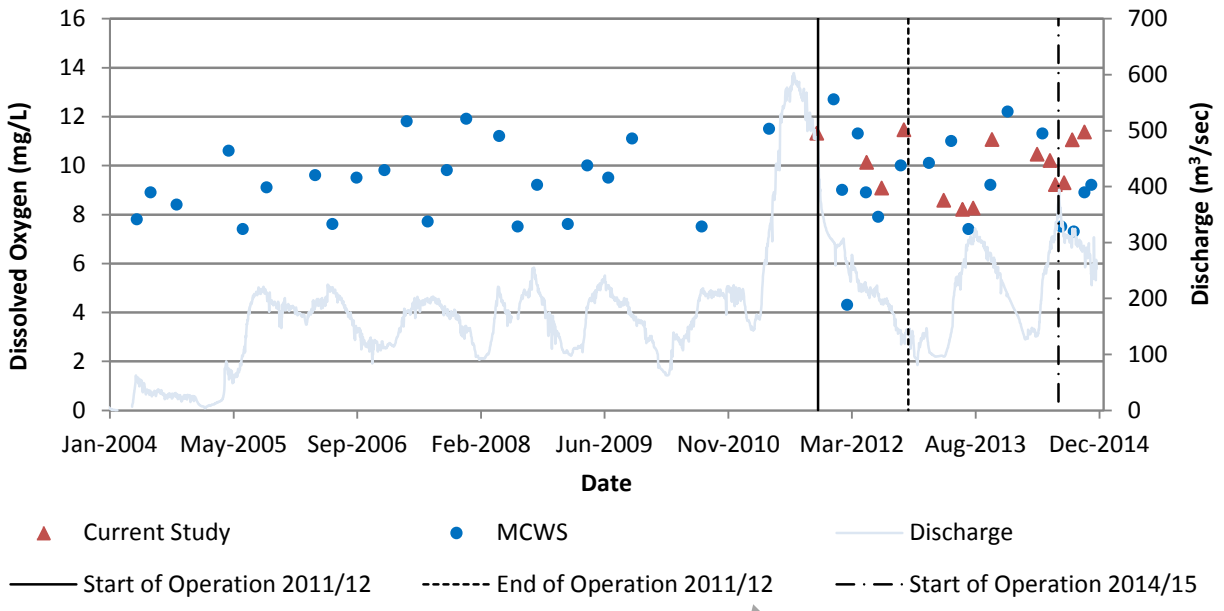

Figure 57. Dissolved oxygen concentrations in the Dauphin River upstream of the Big Bend (DR-B), 2004-2014.

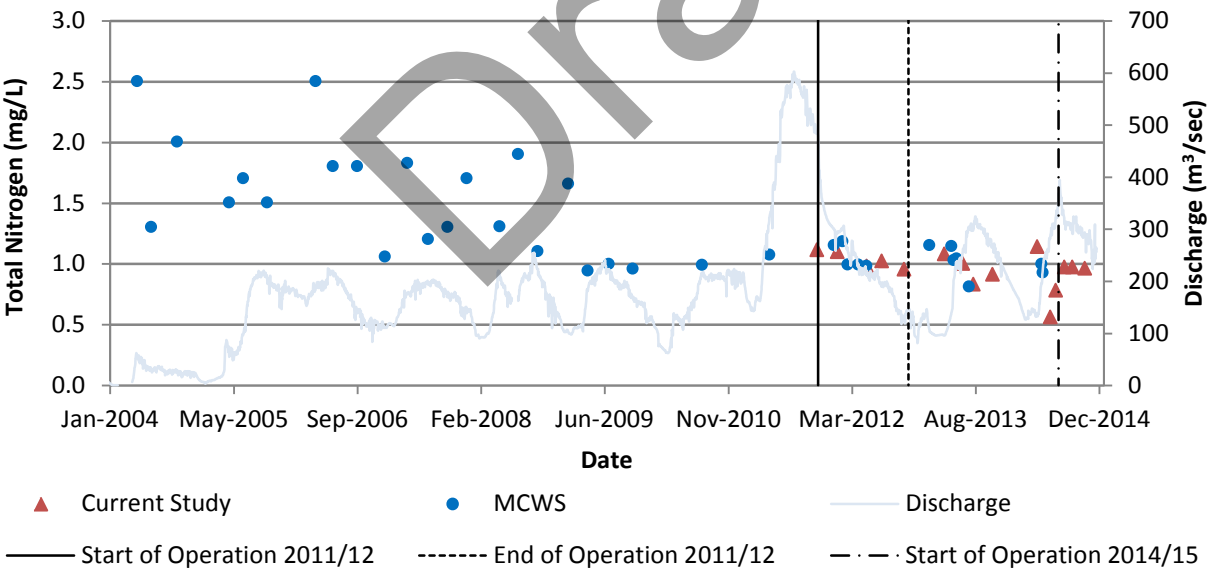

Figure 58. Total nitrogen concentrations in the Dauphin River upstream of the Big Bend (DR-B), 2004-2014.

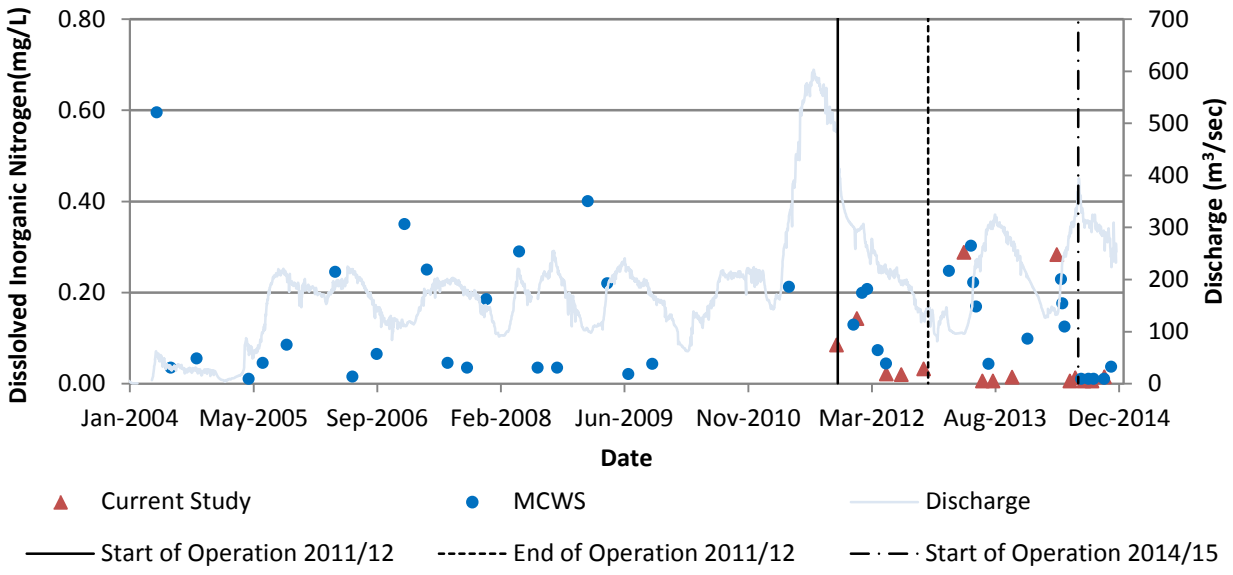

Figure 59. Dissolved inorganic nitrogen concentrations in the Dauphin River upstream of the Big Bend (DR-B), 2004-2014.

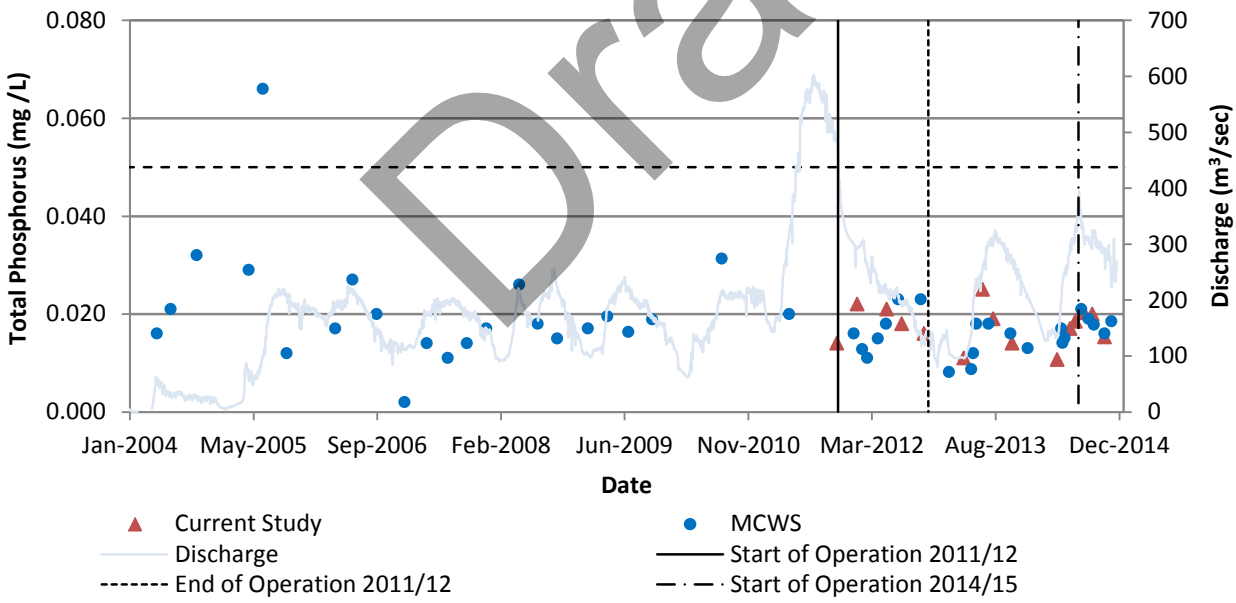

Figure 60. Total phosphorus concentrations in the Dauphin River upstream of the Big Bend (DR-B), 2004-2014. Dashed line represents the MWQSOGs narrative guideline for streams.

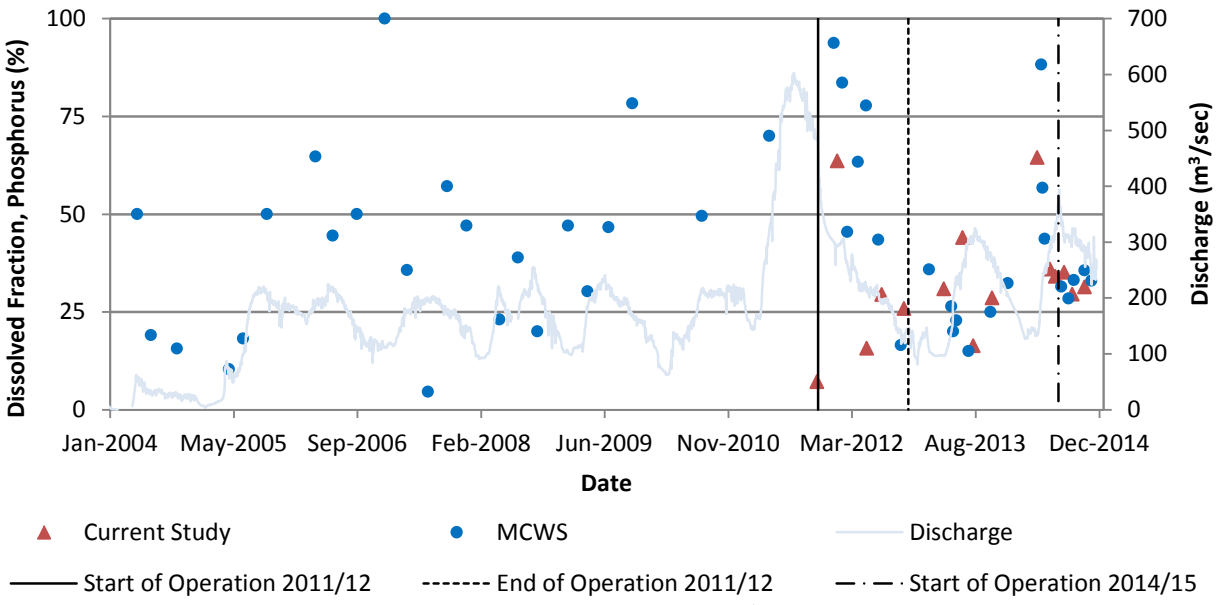

Figure 61. Phosphorus composition in the Dauphin River upstream of the Big Bend (DR-B), 2004-2014.

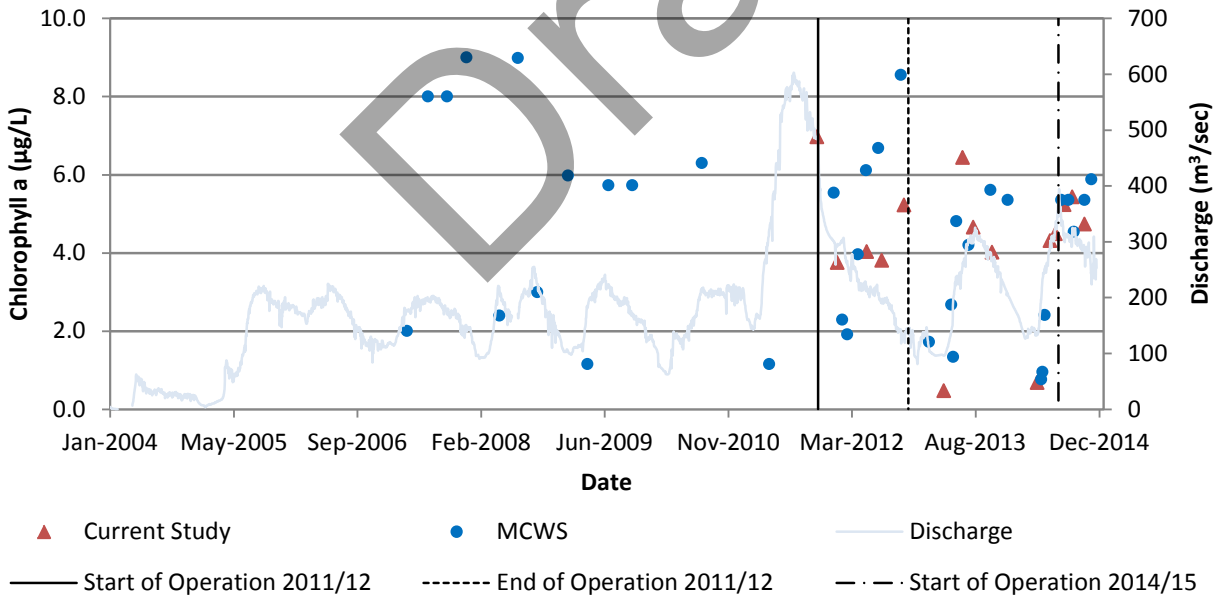

Figure 62. Chlorophyll *a* concentrations in the Dauphin River upstream of the Big Bend (DR-B), 2004-2014.

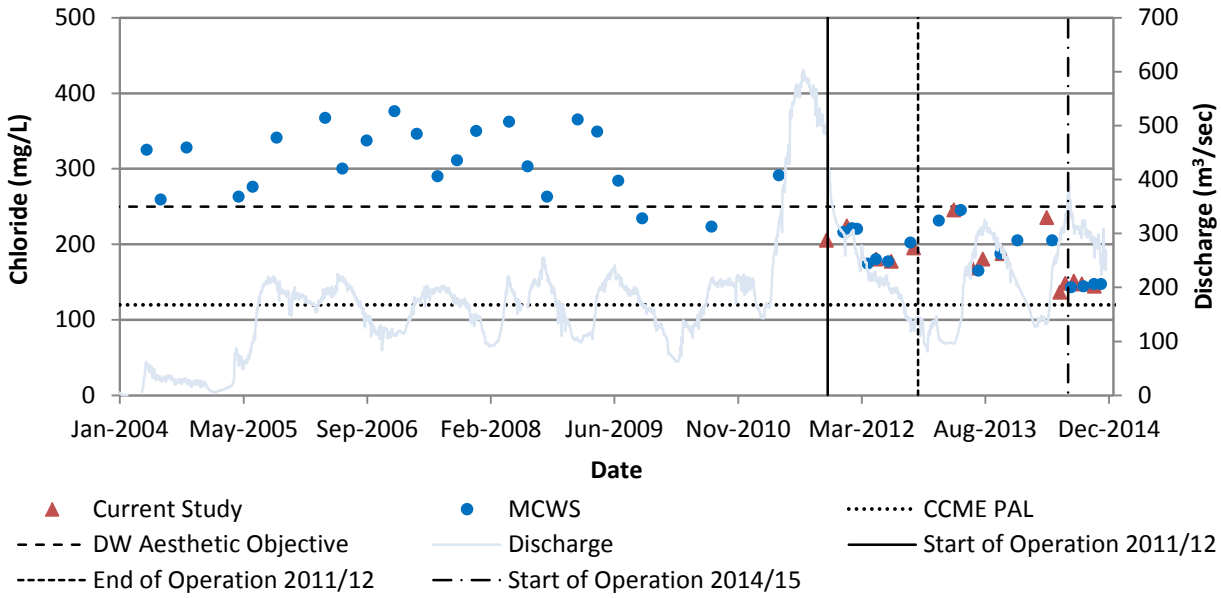

Figure 63. Chloride concentrations in the Dauphin River upstream of the Big Bend (DR-B), 2004-2014.

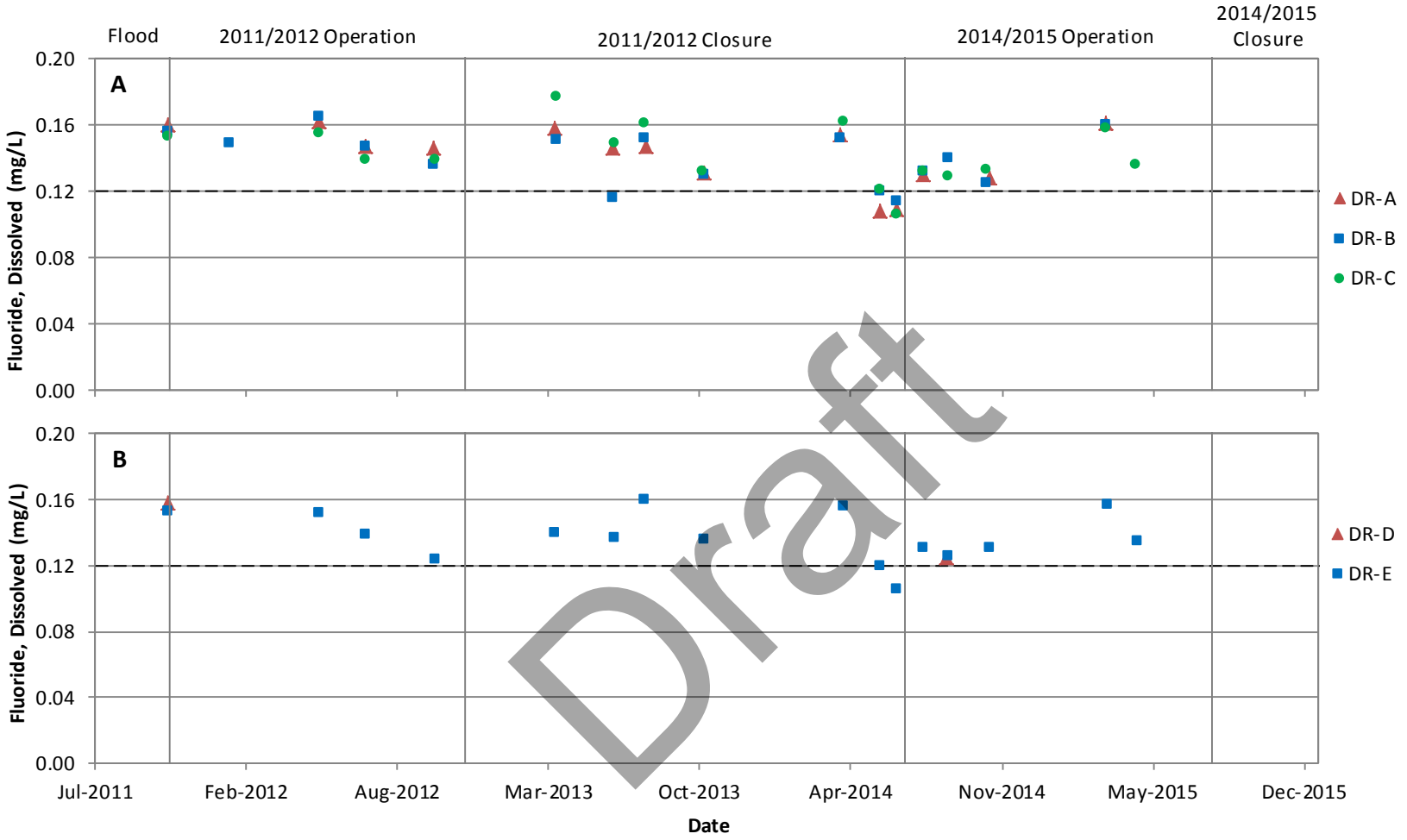

Figure 64. Fluoride concentrations in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015. Dashed line represents the CCME interim PAL.

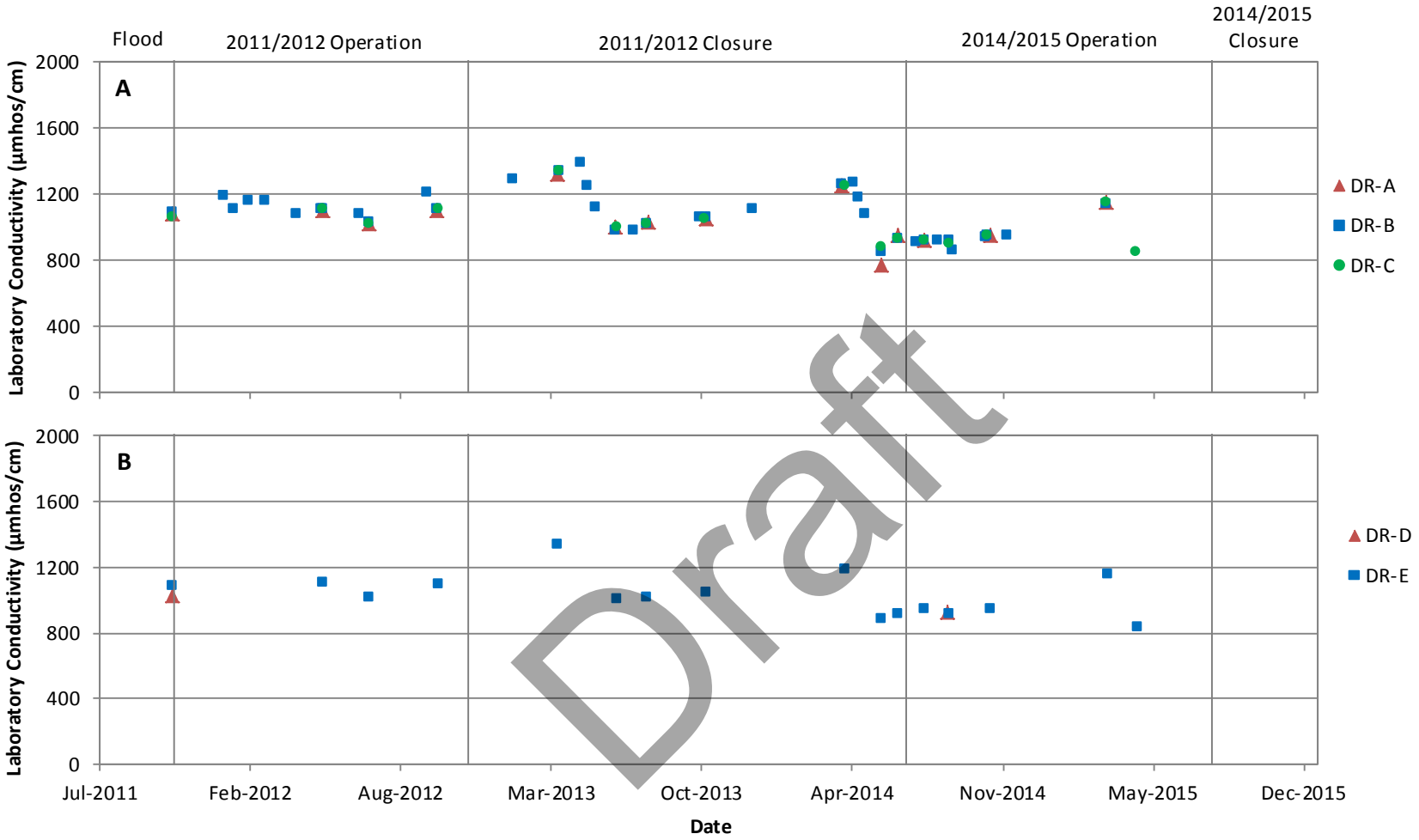

Figure 65. Conductivity in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015.

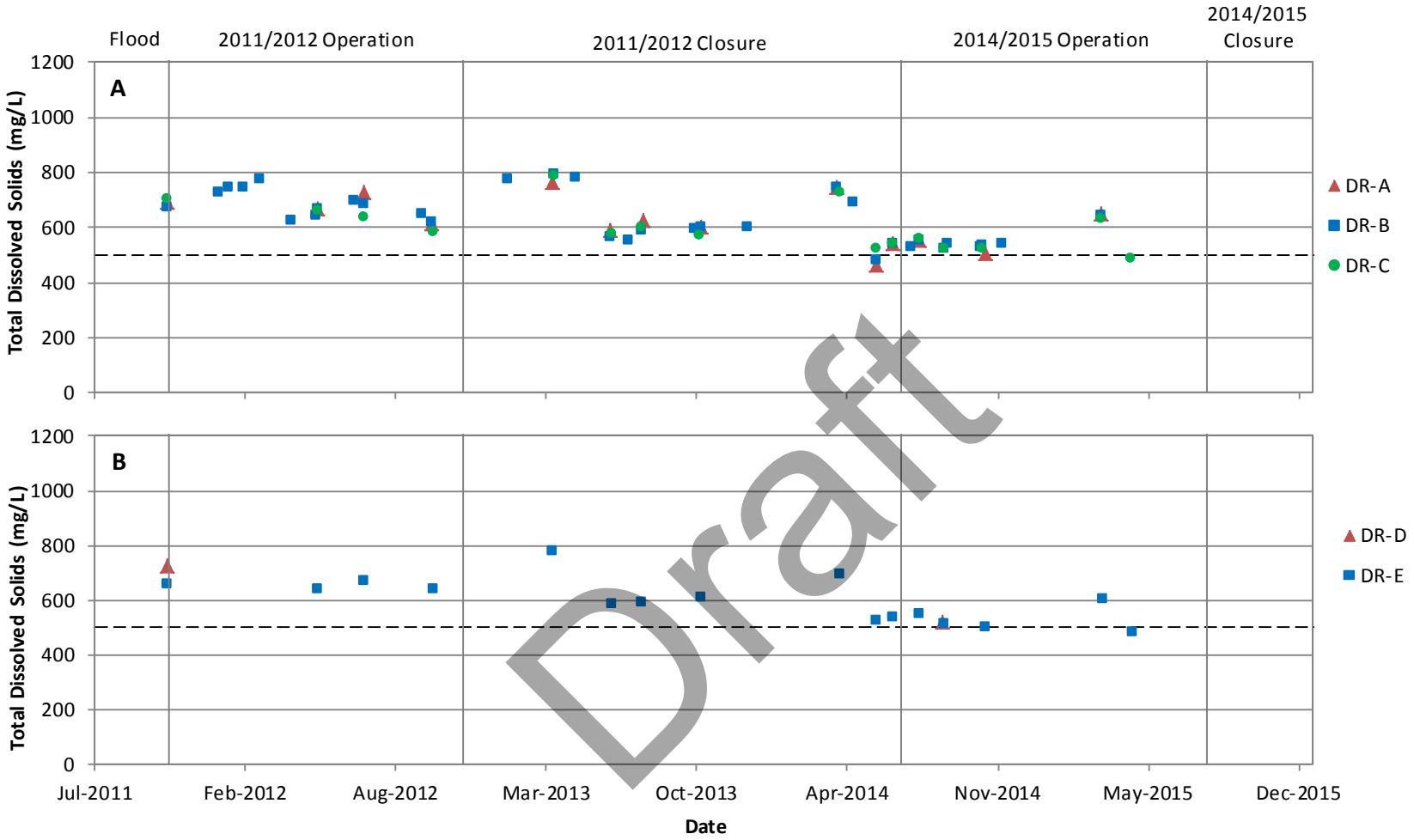

Figure 66. Total dissolved solids in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015. Dashed line represents the MWQSOGs/Health Canada aesthetic objective for drinking water.

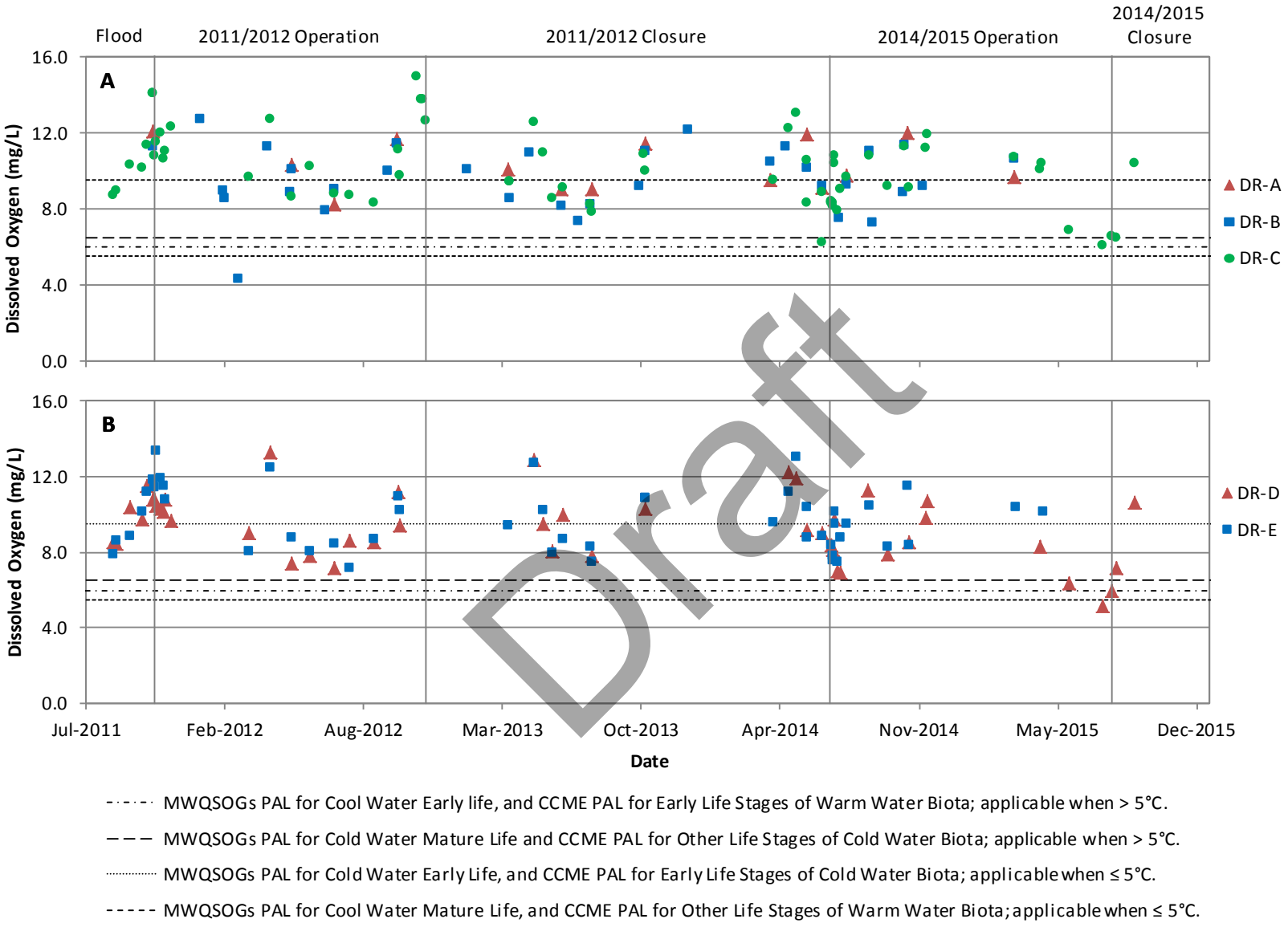

Figure 67. Dissolved oxygen concentrations in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015.

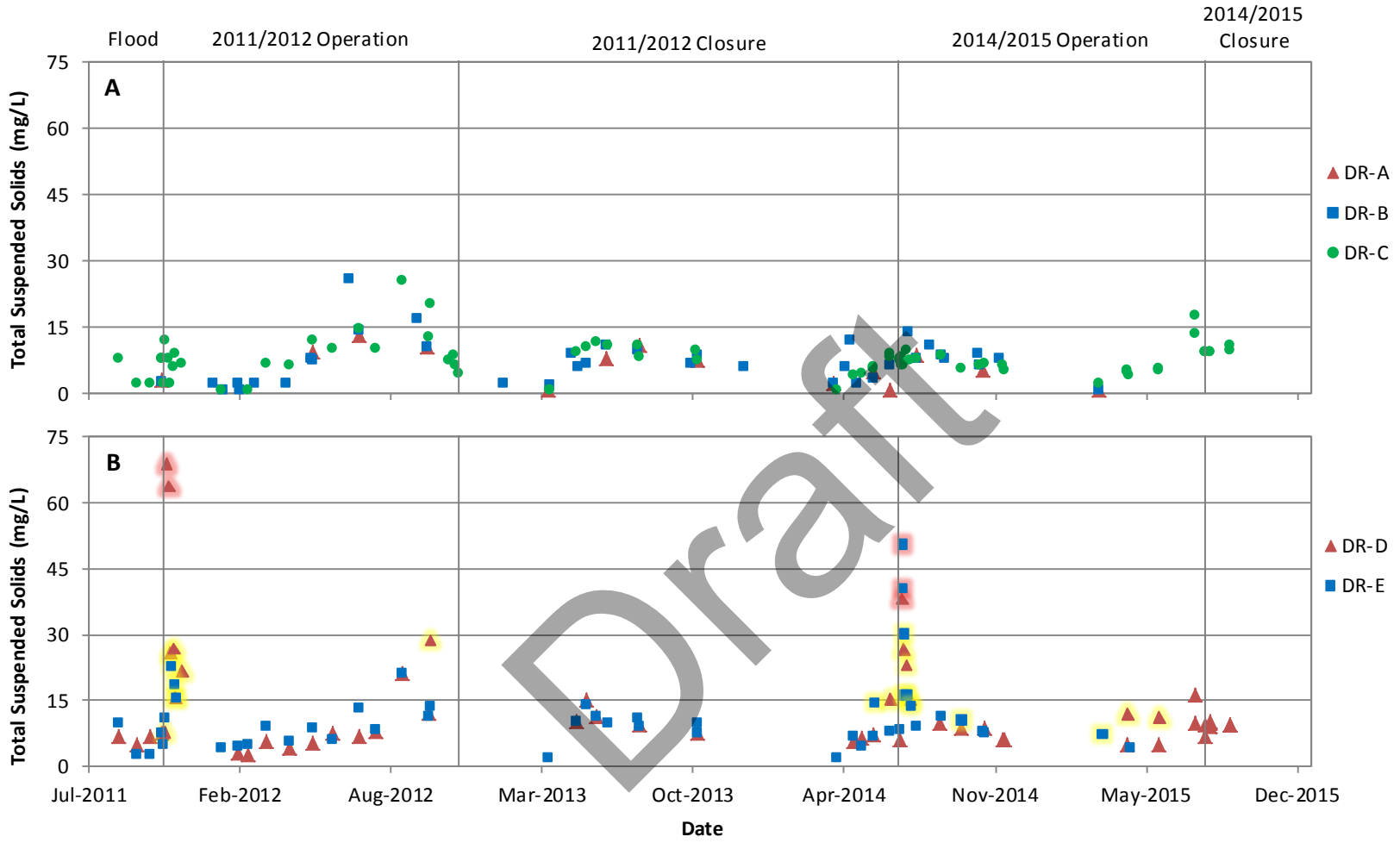

Figure 68. Total suspended solids in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015. Where more than one sample was collected across the river channel, mean concentrations are presented. Values highlighted in red were more than 25 mg/L above background. Values highlighted in yellow were more than 5 mg/L above background.

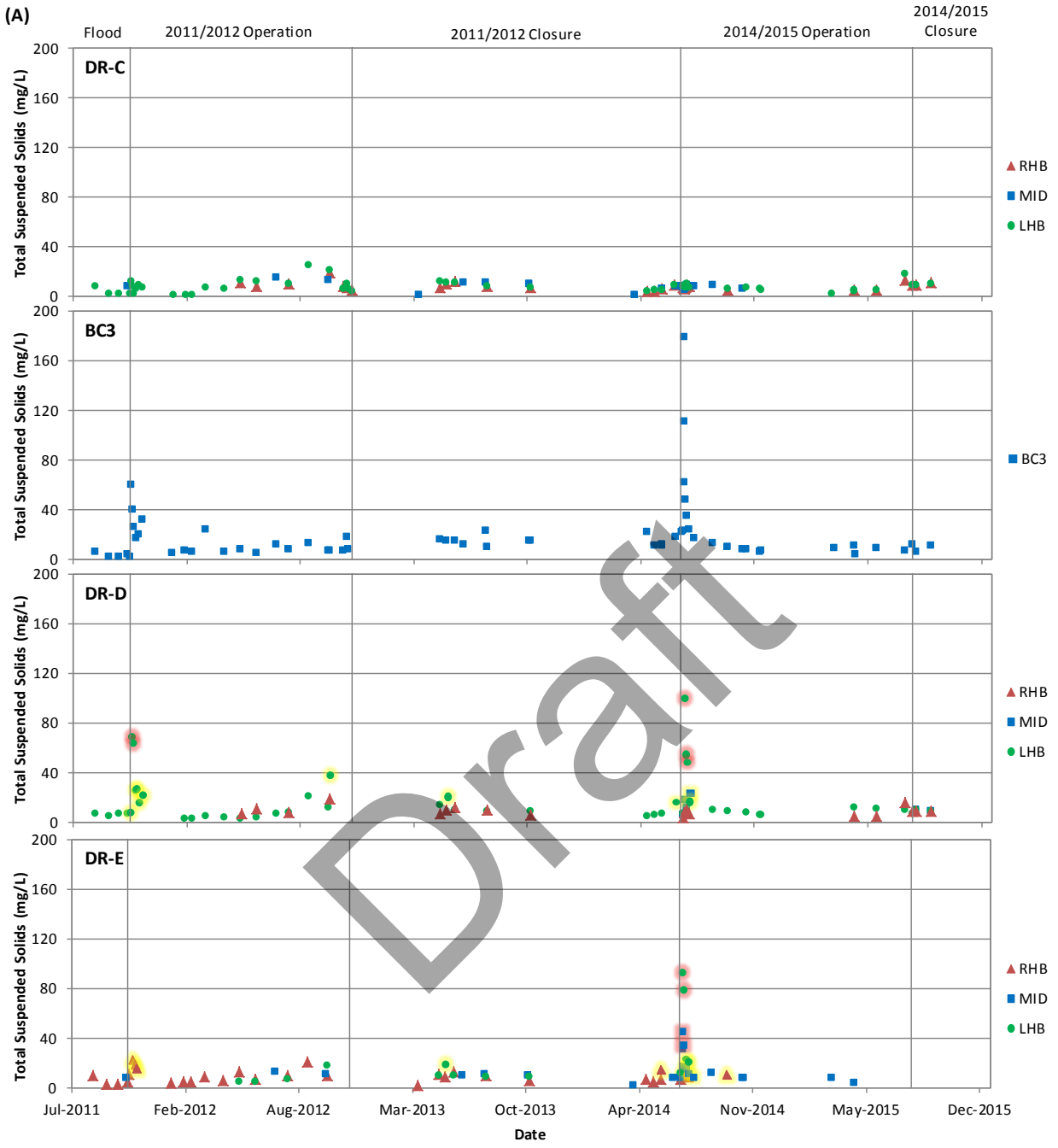

Figure 69. Total suspended solids concentrations measured in the Dauphin River upstream (DR-C) and downstream (DR-D, DR-E) of Buffalo Creek; and, at the downstream end of Buffalo Creek (BC3), 2011-2015. Data for the Dauphin River are plotted to indicate where the samples were collected; i.e., at the left hand bank (LHB), mid-channel (MID) or right-hand bank (RHB). LHB and RHB are described as viewed facing upstream. Dauphin River values are highlighted as follows: in red when more than 25 mg/L above background; and, in yellow when more than 5 mg/L above background. (A) and (B) show the same data plotted at different scales (0-200 and 0-40 mg/L, respectively).

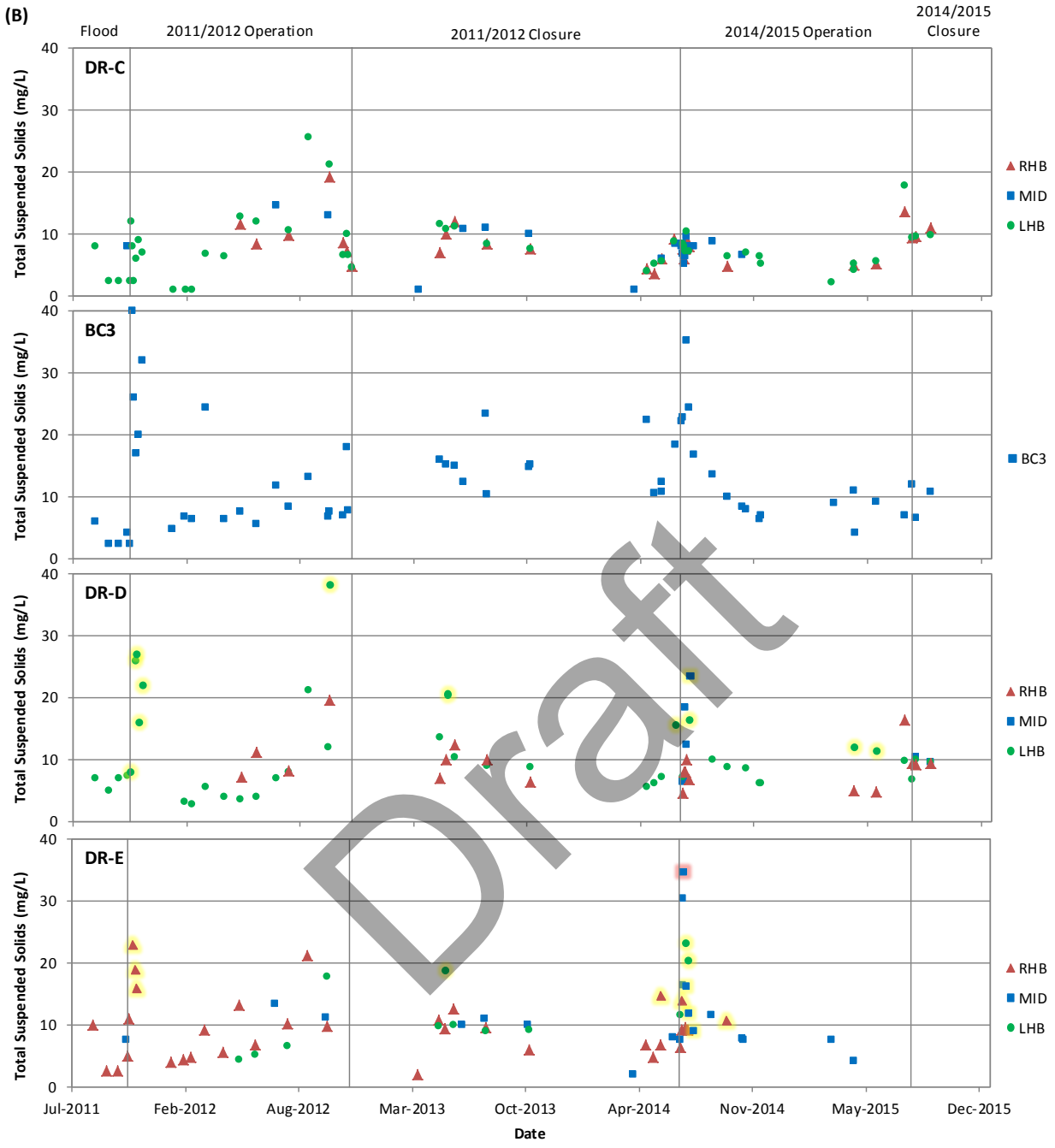

Figure 69. Continued.

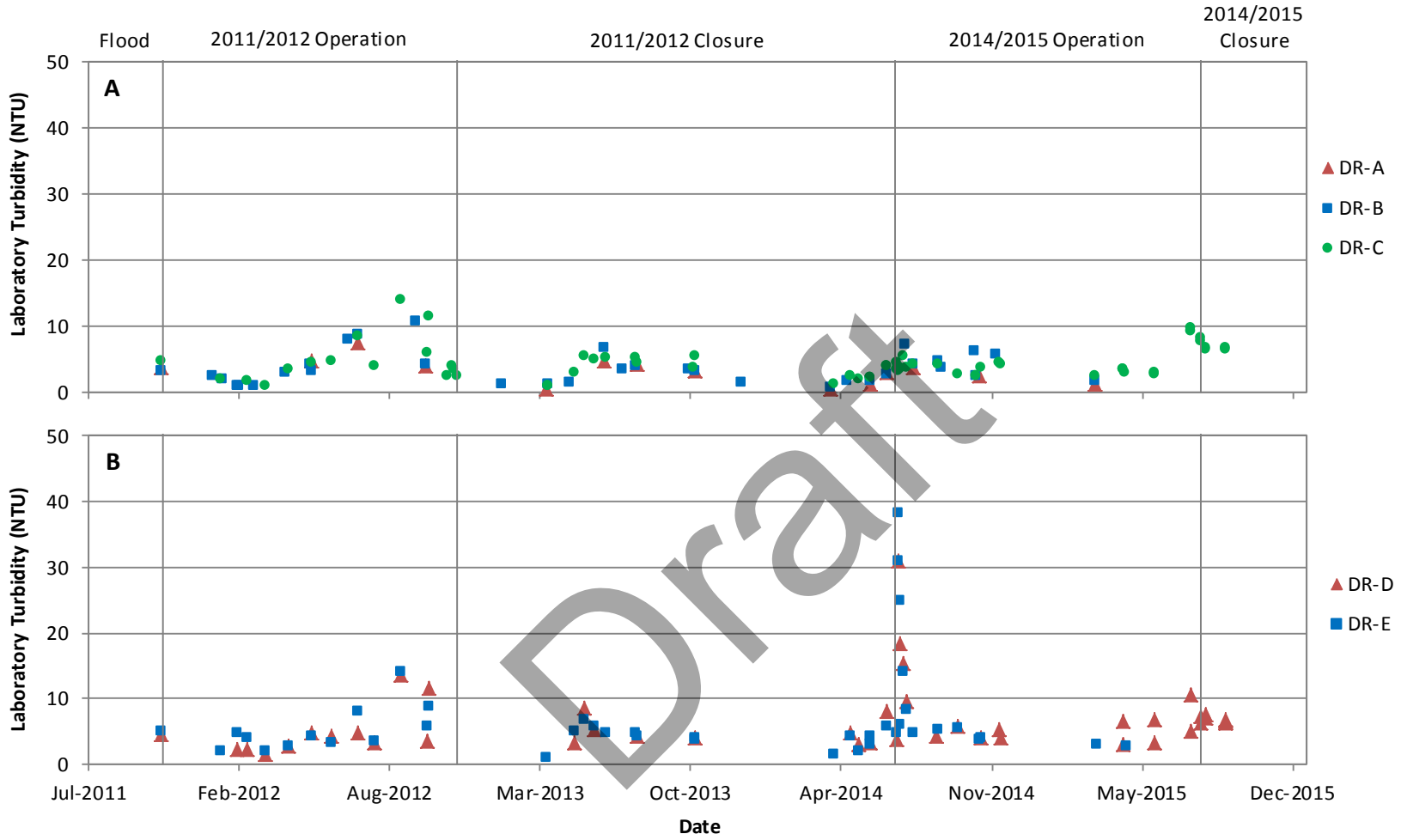

Figure 70. Laboratory turbidity in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015.

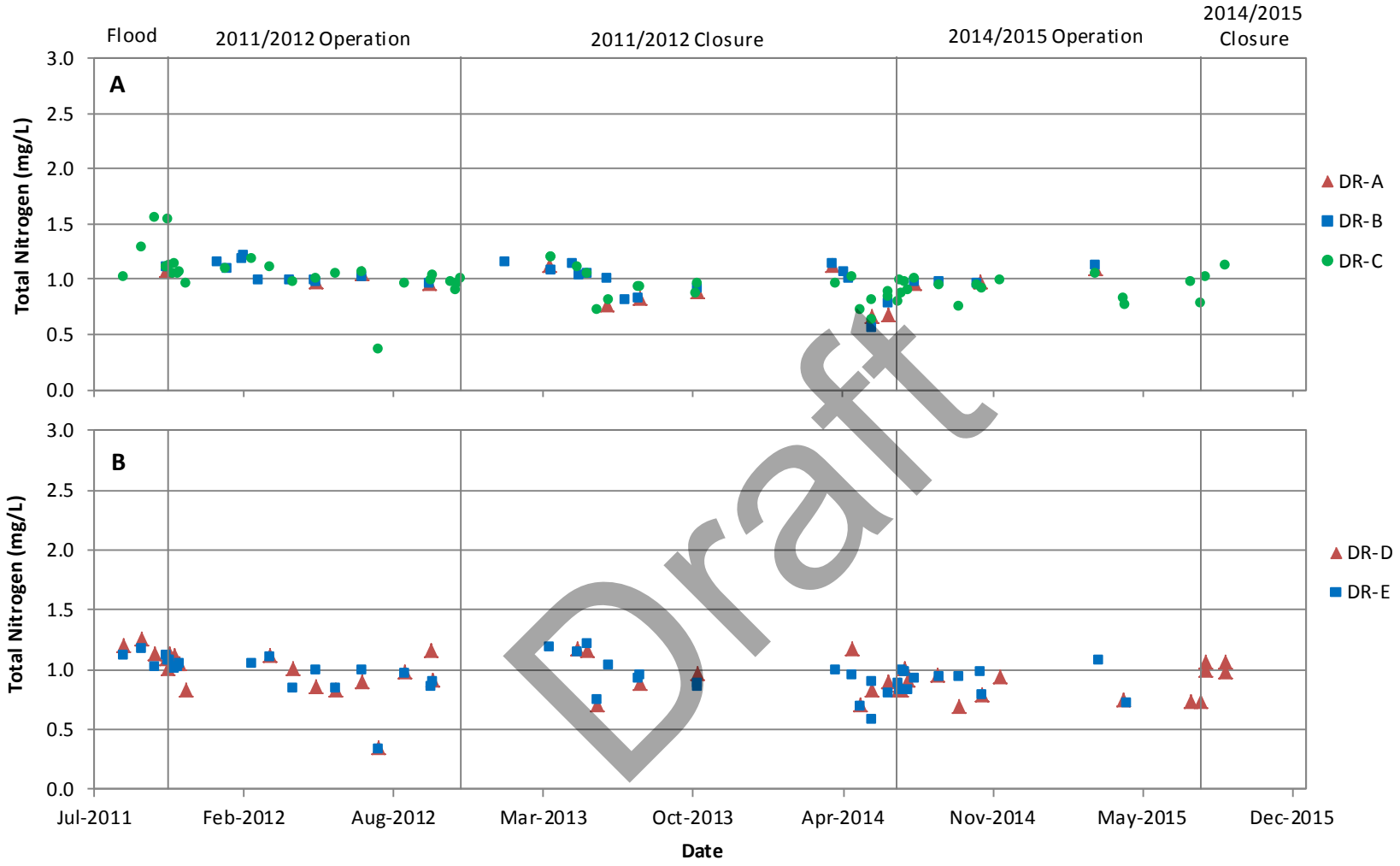

Figure 71. Total nitrogen concentrations in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015.

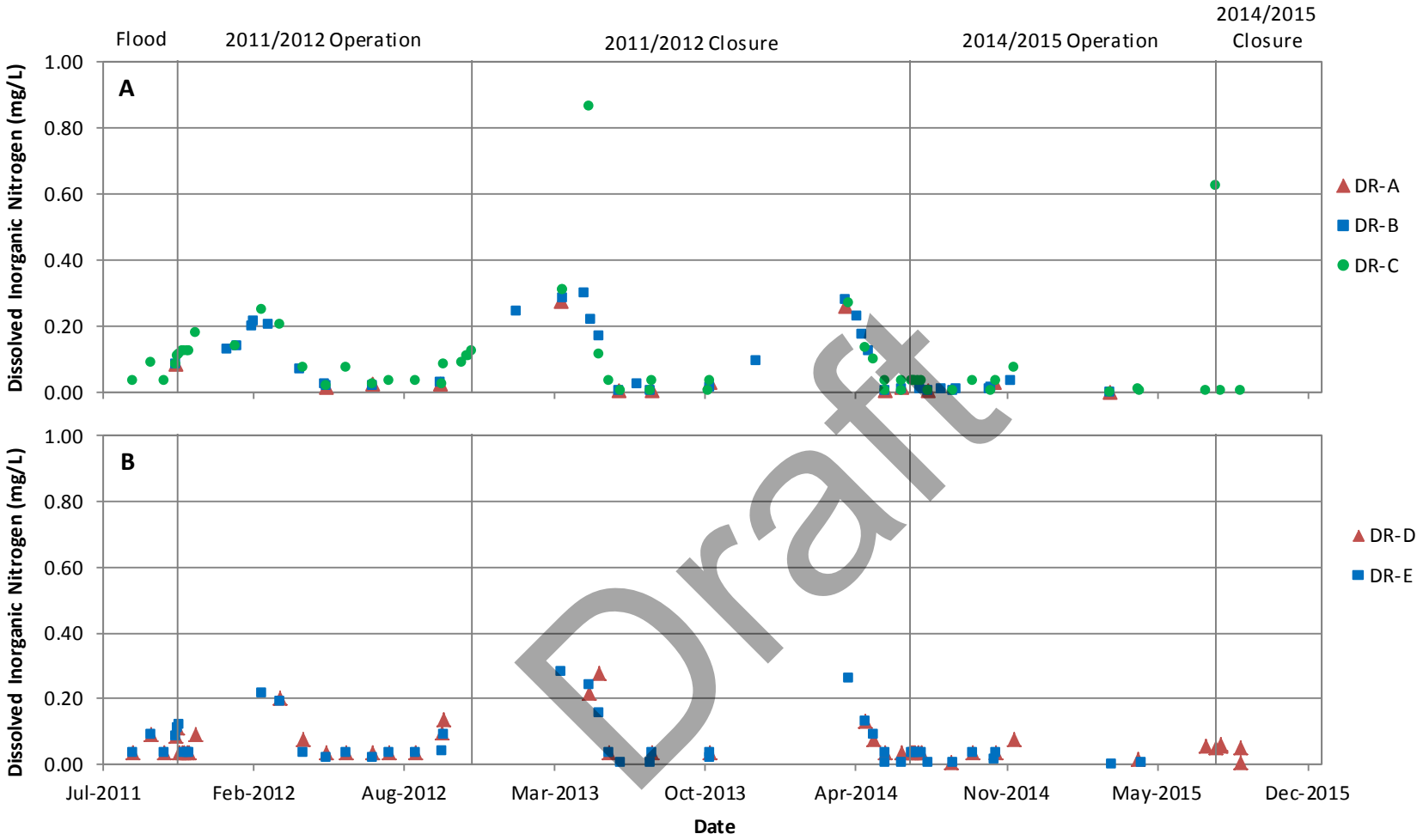

Figure 72. Dissolved inorganic nitrogen concentrations in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015.

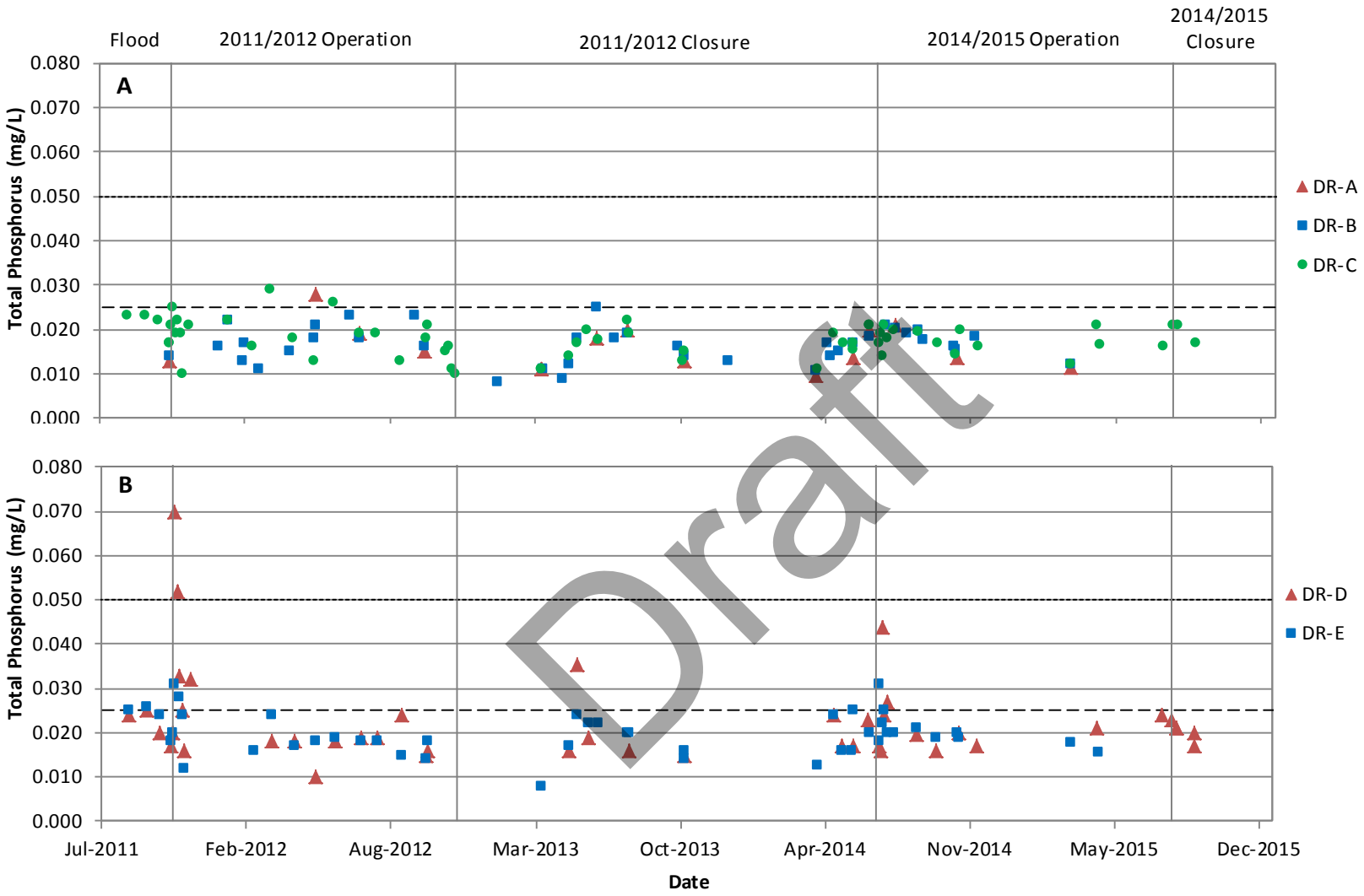

Figure 73. Total phosphorus concentrations in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015. Dotted line indicates MWQSOGs narrative guideline for streams (0.05) and the dashed line represents the MWQSOGs narrative guideline for lakes and river mouths.

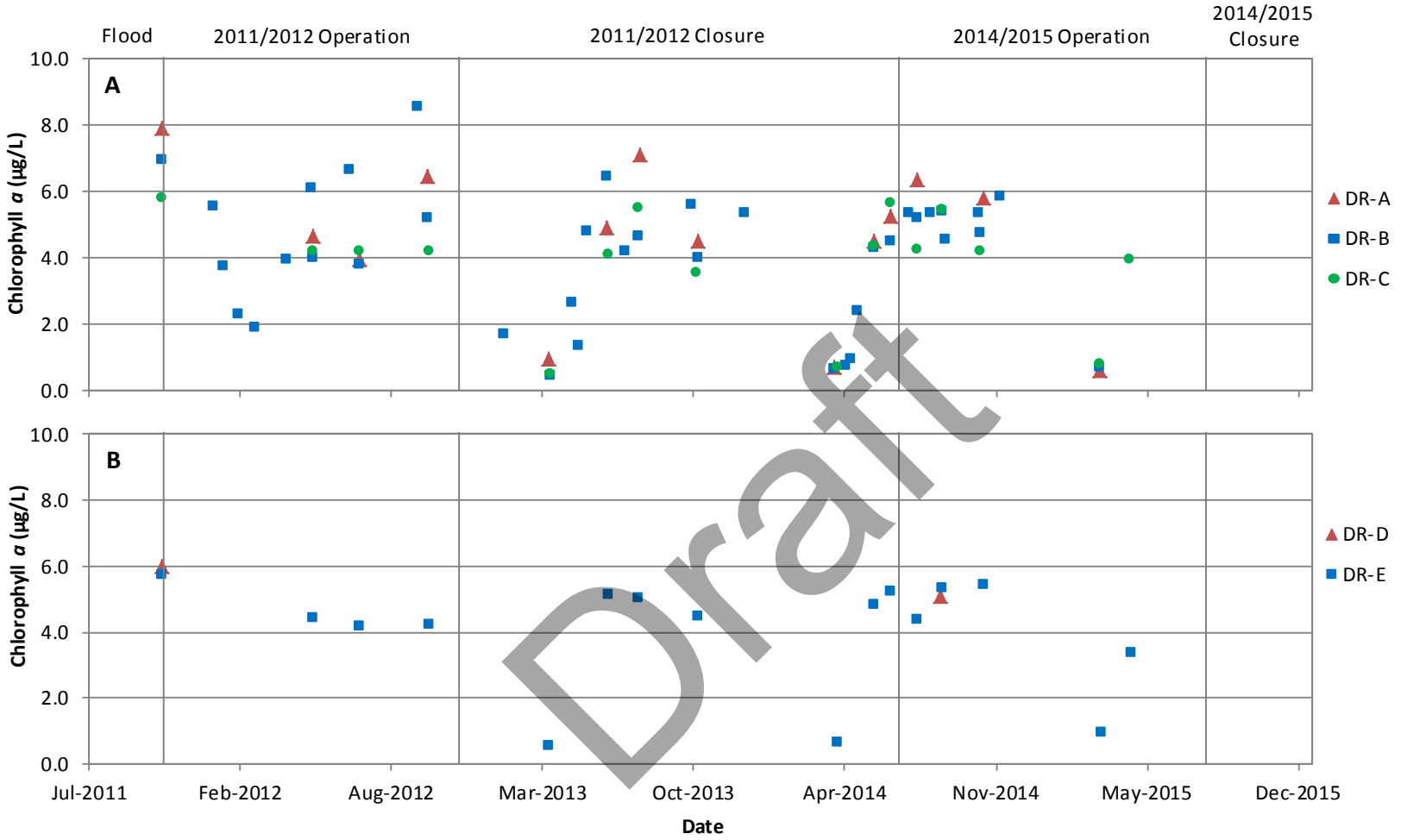

Figure 74. Chlorophyll *a* concentrations in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015.

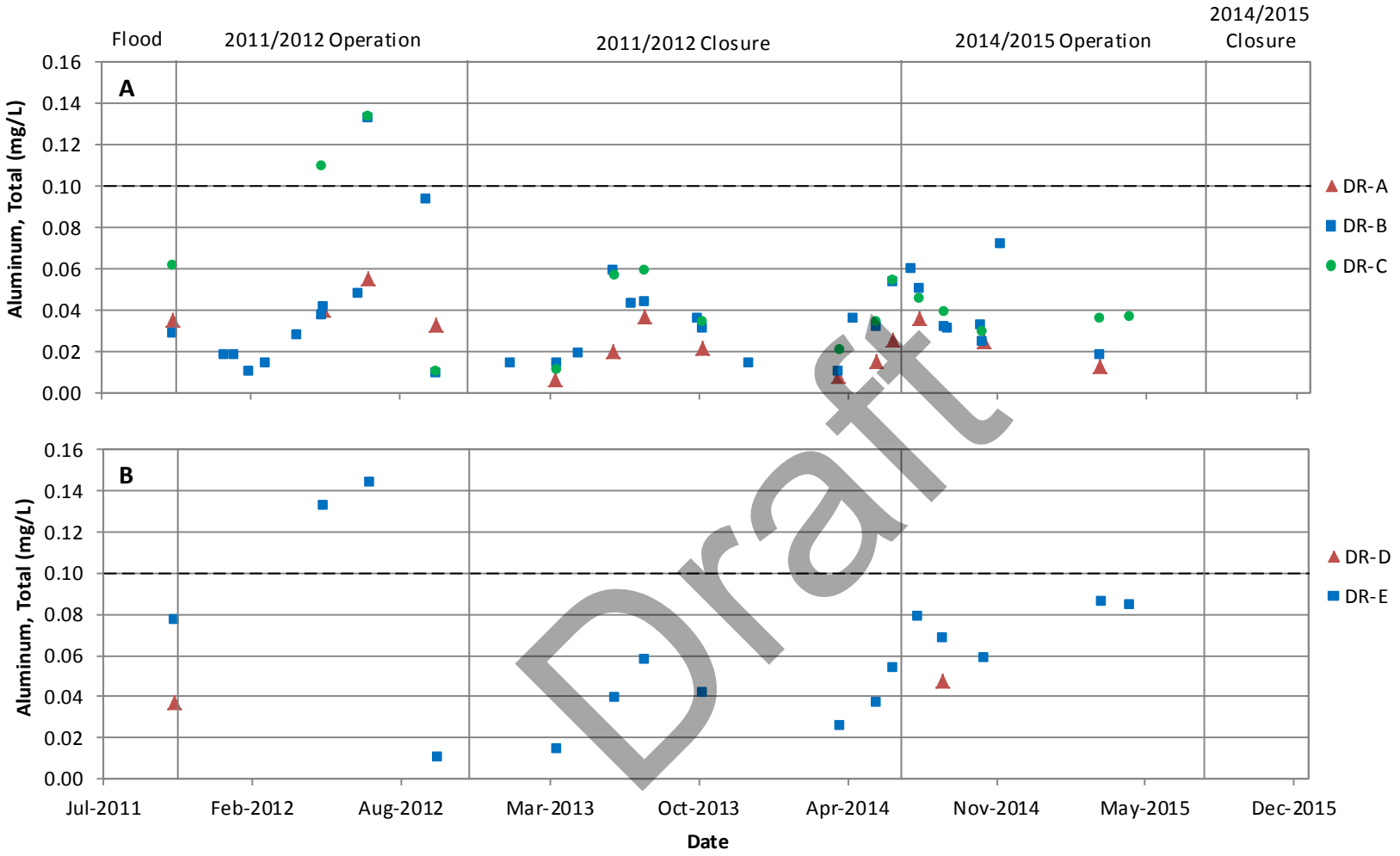

Figure 75. Aluminum concentrations in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015. Dashed line represents the MWQSOGs/CCME PAL.

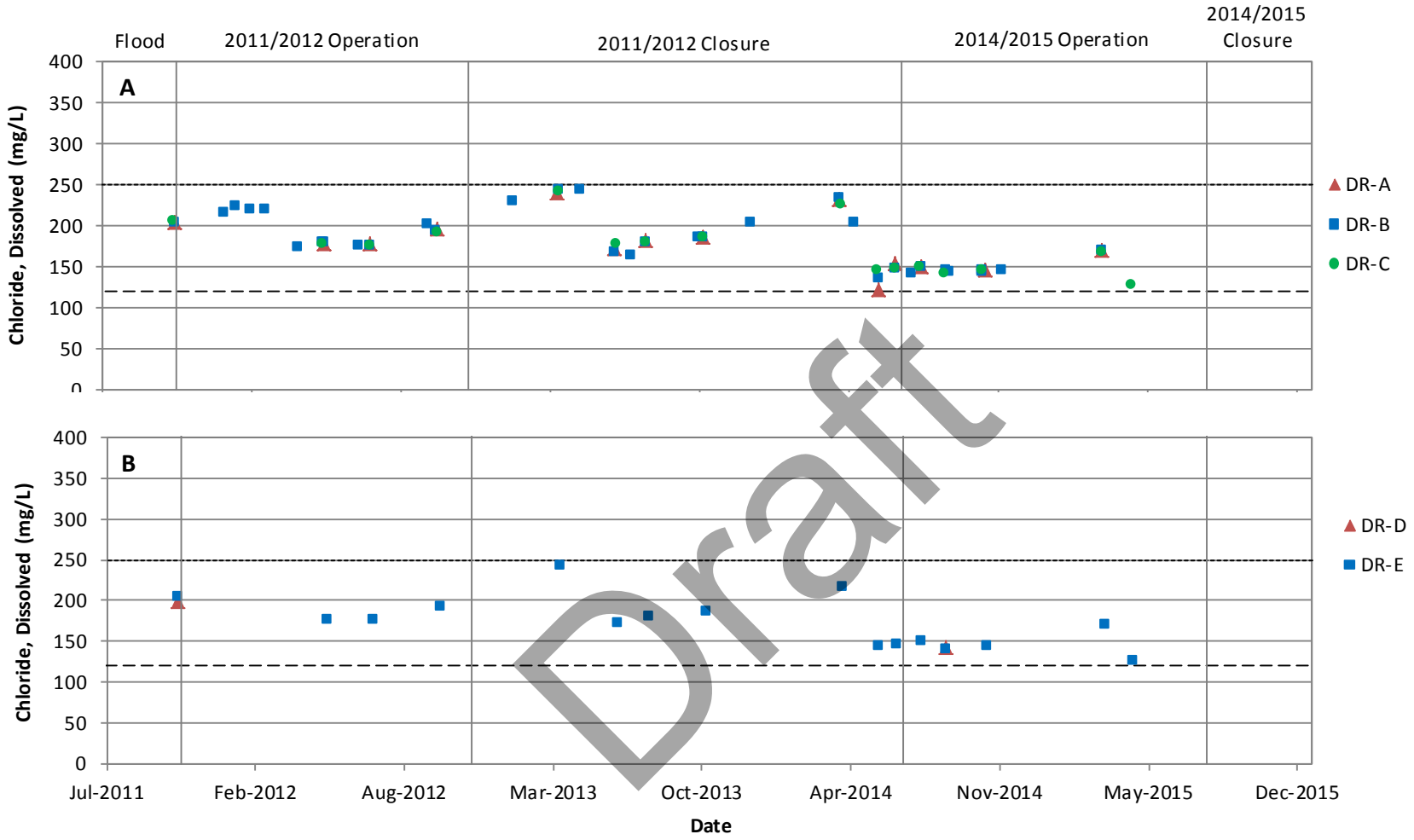

Figure 76. Chloride concentrations in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015. Dashed line represents the CCME long-term exposure PAL and the dotted line represents the MWQSOGs/Health Canada aesthetic objective for drinking water.

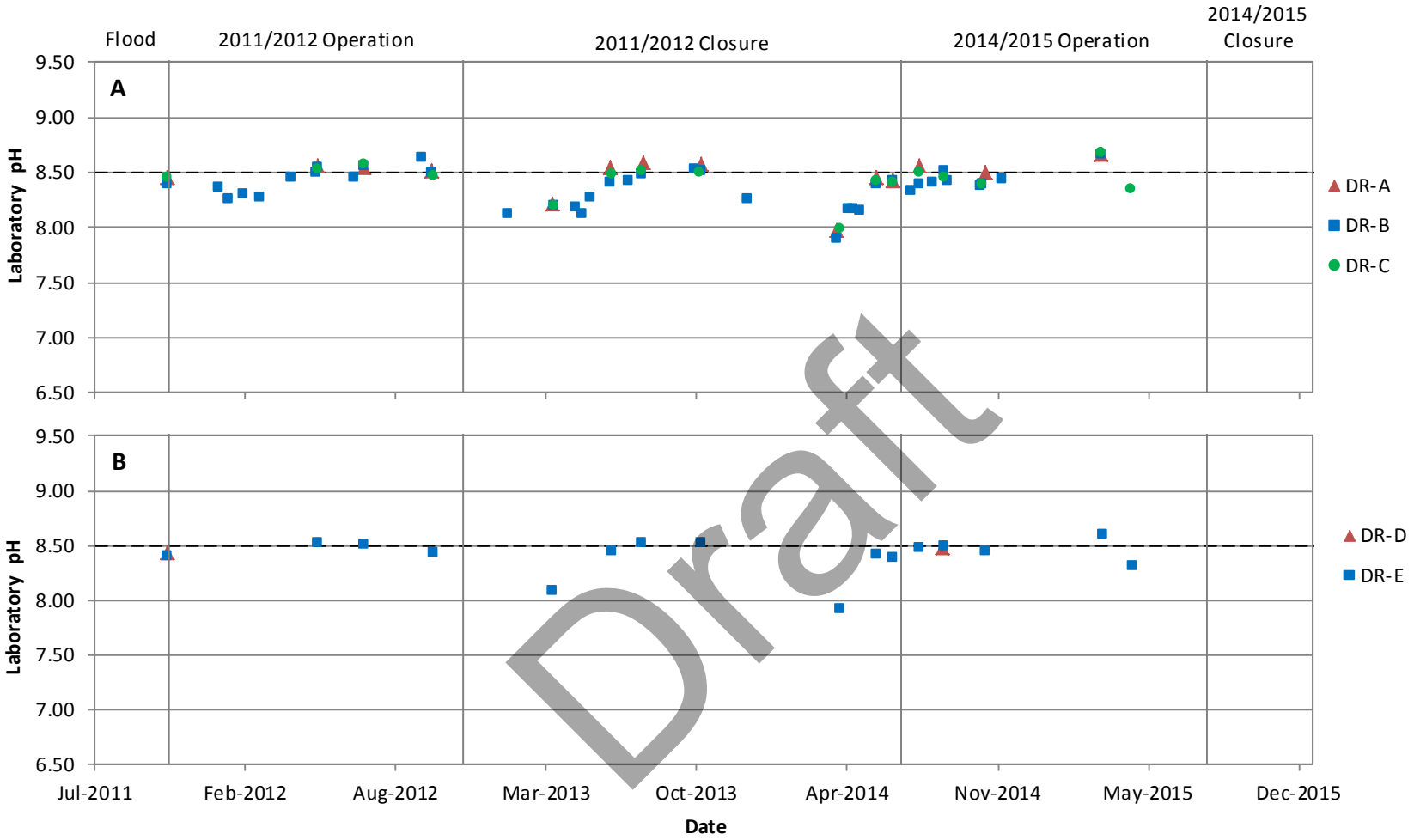

Figure 77. Laboratory measured pH in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015. Dashed line represents the upper bound of the MWQSOGs/Health Canada aesthetic objective for drinking water.

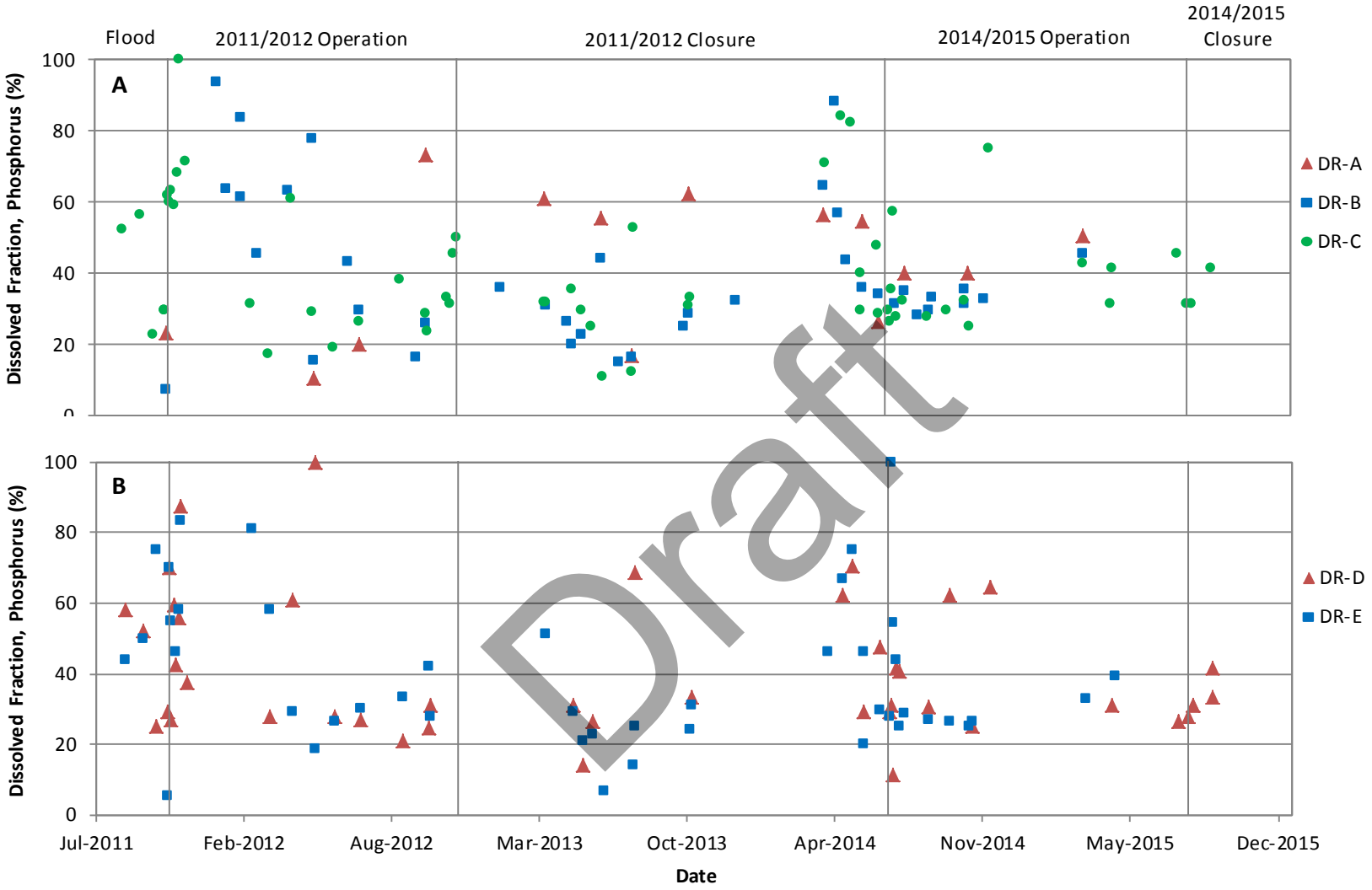

Figure 78. Phosphorus composition in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015. Percent dissolved phosphorus values greater than 100% are plotted at 100% for the purposes of this figure.

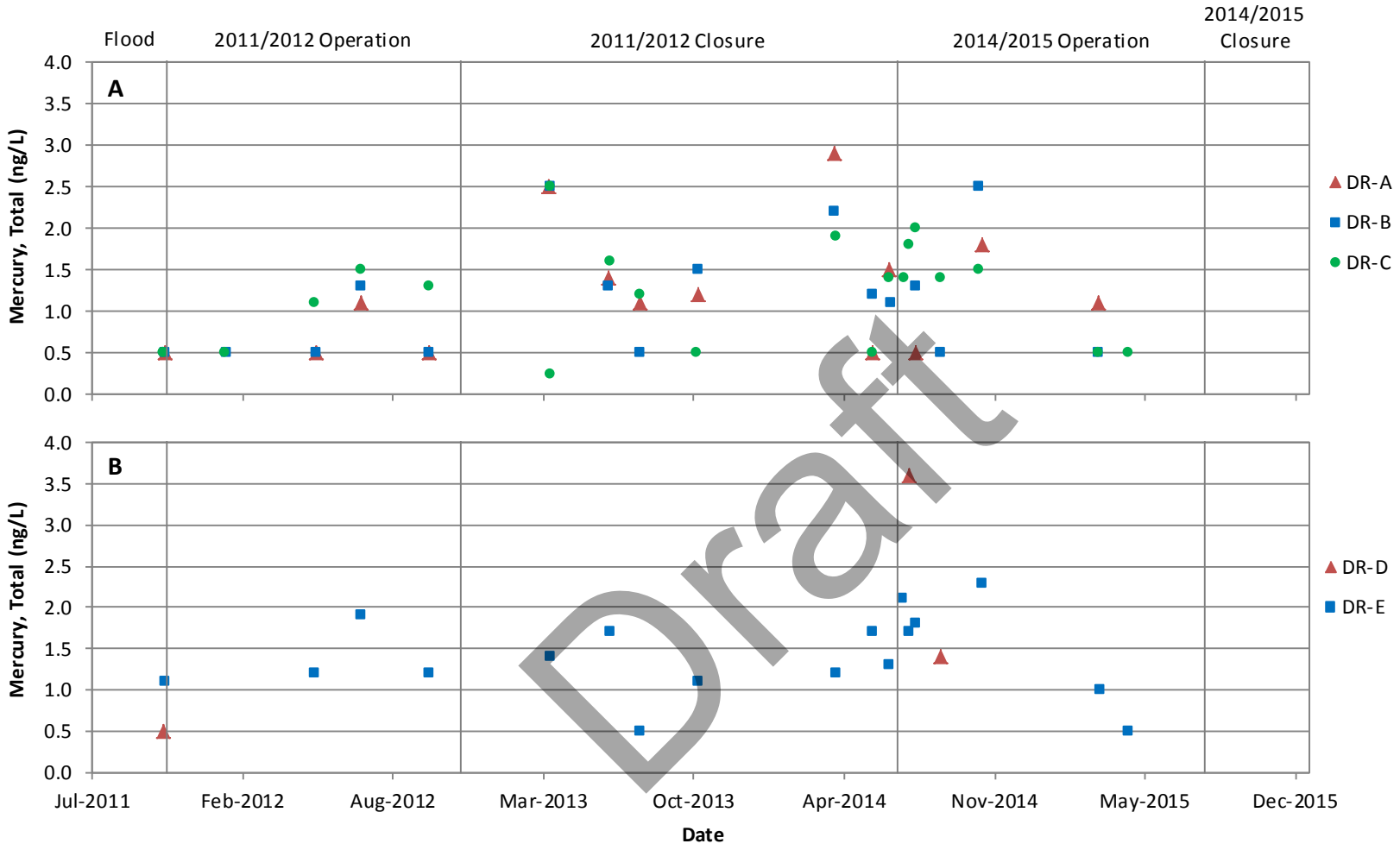

Figure 79. Mercury concentrations in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015.

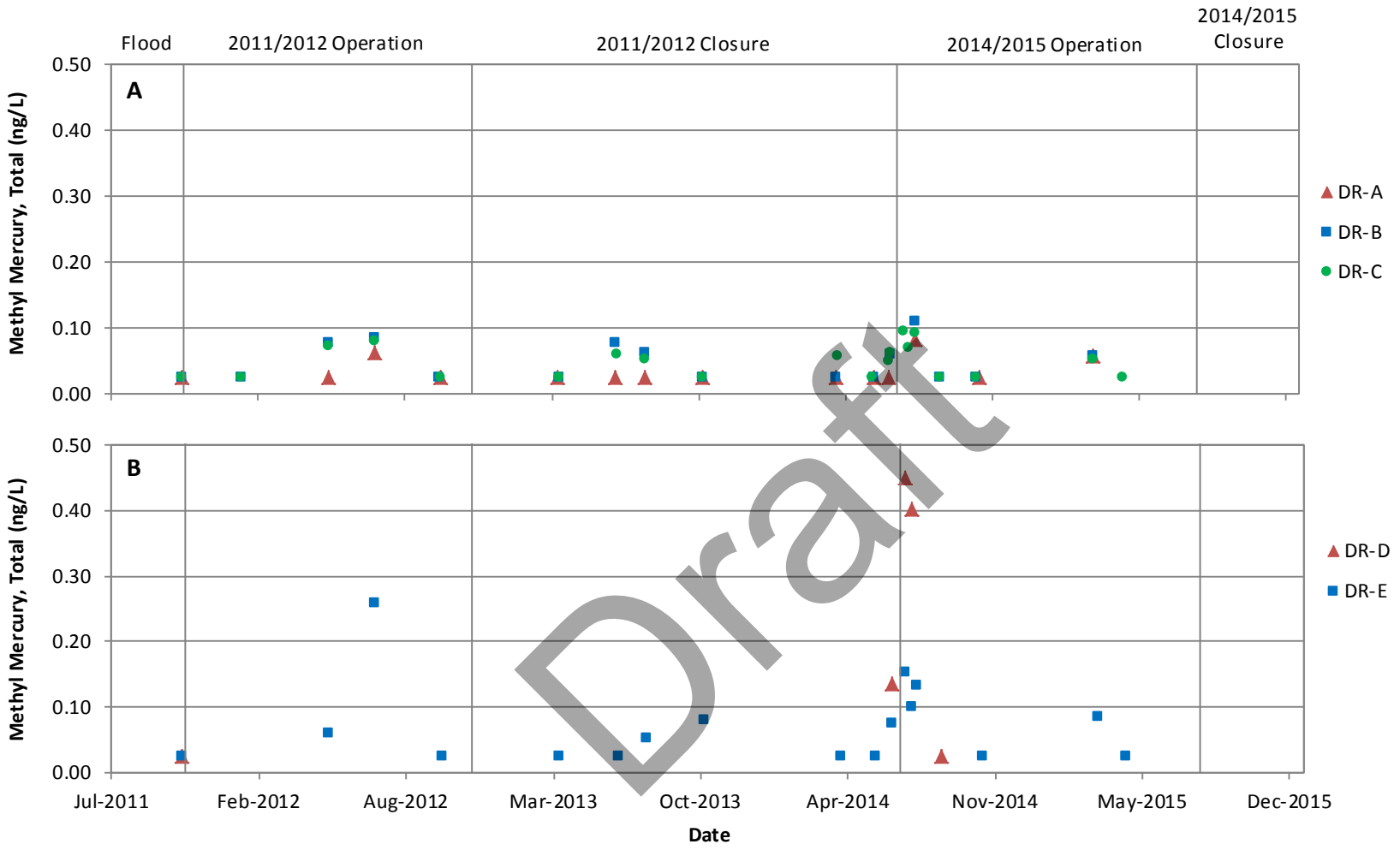

Figure 80. Methyl mercury concentrations in the Dauphin River (A) upstream and (B) downstream of Buffalo Creek, 2011-2015.

4.4 STURGEON BAY MONITORING RESULTS

This section presents the assessment of change/lack of change to water quality of Sturgeon Bay from 2011 through 2015. Sites in Sturgeon Bay were sampled during the 2014/2015 Operation Phase, but not the 2014/2015 Closure Phase. Summary statistics for key water quality parameters for each time period are presented in Table 21. Figures 81 to 97 show trends in water quality from 2011 through 2015 within Sturgeon Bay. Petroleum hydrocarbons were not monitored in Sturgeon Bay and are therefore not discussed in this section, a summary of information for all other key parameters follows.

The data presented in this section include those collected by the Project at seven sites in Sturgeon Bay (Figure 6) from 2011-2015. Data for an eighth sampling site located near the Dauphin River mouth (LKW3B), which was added in May 2012, are also included. Limited data were available from MCWS at a site located farther offshore (MB05SES012; Figure 5); however, because the location of the site is at least 10 km from the nearest Project sampling site, it was felt that little useful information would be gained from these data and they were therefore excluded from this assessment. Summary statistics for the MCWS site are, however, included in Table 21 for those who might be interested.

4.4.1 Pre-Operation

Based on the data collected during 2011 Flood, the water quality of Sturgeon Bay could be generally described as moderately nutrient rich, low to moderately turbid, slightly alkaline, hard to very hard, and well-oxygenated (Table 21).

TSS concentrations and turbidity were higher near Poplar Point (LKW1) than in the rest of the Bay (Figures 81 and 82). TSS ranged from 7 to 11 mg/L in most of the Bay and was 24 mg/L near Poplar Point. Laboratory pH was similar throughout Sturgeon Bay, ranging from 8.35 to 8.42 (Figure 83). True colour increased with increasing distance from the Dauphin River, ranging from 9.0 to 12.5 CU. Conversely, conductivity, TDS, and hardness generally decreased with increasing distance from the Dauphin River (Figures 84 and 85); particularly low conductivity and TDS were observed near Poplar Point (LKW1). Throughout the bay, conductivity ranged from 410-1070 µmhos/cm, TDS ranged from 230-658 mg/L, and hardness ranged from 163-324 mg/L. Sturgeon Bay was well oxygenated; DO ranged from 11.6 to 12.3 mg/L (Figure 86).

TN ranged from 0.62 to 1.09 mg/L and was mostly composed of organic forms (Figures 87 and 88). TP concentrations in the bay ranged from 0.018 to 0.043 mg/L and were predominately composed of particulate forms (Figures 89 and 90). Phosphorus concentrations were higher farther from the Dauphin River than at the sites nearest the river (LKW3 and LKW2). Carbon concentrations were composed of approximately three times more inorganic than organic forms and organic carbon was primarily dissolved in form (Table 21). On the basis of TN:TP molar ratios, Sturgeon Bay was phosphorus limited (i.e., TN:TP ratio > 20; Kalff 2002). TOC:ON molar ratios indicate that the organic matter in Sturgeon Bay was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983). Chlorophyll *a* concentrations indicate that primary productivity in the bay was moderate with concentrations ranging from 7.04 to 14.7 µg/L (Figure 91).

TP exceeded the MWQSOGs narrative guideline for lakes and river mouths (0.025 mg/L) at most sites sampled; the exceptions were the two nearest the Dauphin River (LKW3 and LKW2; Figure 89). All other routine parameters were within MWQSOGs and CCME guidelines for PAL, including ammonia, DO, nitrate, nitrite, and pH. TDS exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 500 mg/L) in Sturgeon Bay near the Dauphin River (LKW3 and LKW2; Figure 85). Turbidity consistently exceeded the MWQSOGs/Health Canada aesthetic objectives for drinking water (1.0 NTU) throughout the bay. All other routine parameters were within drinking water guidelines, including pH, nitrate/nitrite, nitrate and nitrite.

Antimony, dissolved cadmium, dissolved chromium, calcium, dissolved lead, dissolved mercury, methyl mercury, nickel, selenium, silver, thallium, and zinc were not detected in Sturgeon Bay prior to the Project. Aluminum, arsenic, barium, boron, calcium, chloride, copper, fluoride, total iron, total lead, magnesium, manganese, molybdenum, potassium, sodium, sulphate, and uranium were consistently detected; and, total cadmium, total chromium, dissolved iron, and total mercury were detected in some samples.

Several metals and ions were higher near the Dauphin River than in the rest of the bay including: Barium, boron, calcium, chloride, fluoride, magnesium, molybdenum, potassium, sodium, and uranium (Table 21; Figures 92, 93, and 94). Conversely, concentrations of aluminum, copper, and iron were lower nearer the Dauphin River (Figures 95 and 96).

Aluminum exceeded the MWQSOGs /CCME PAL (0.1 mg/L) at most sites in Sturgeon Bay (Figure 95). Chloride exceeded the CCME PAL (120 mg/L) in Sturgeon Bay near the Dauphin River (LKW3 and LKW2; Figure 93). Chloride was consistently below the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 250 mg/L) throughout the bay. Fluoride exceeded the CCME interim PAL (0.12 mg/L) in Sturgeon Bay near the Dauphin River (LKW3 and LKW2) and in the middle of the bay (LKW6; Figure 94). Chromium exceeded the CCME long-term exposure PAL (0.001 mg/L) near Poplar Point (LKW1). Iron exceeded the MWQSOGs/CCME PAL (0.3 mg/L) and the MWQSOGs/Health Canada aesthetic objective for drinking water (≤0.3 mg/L) at most sites in Sturgeon Bay; the exceptions were the two sites nearest the Dauphin River (LKW3 and LKW2; Figure 96). All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 23) and drinking water (Table 24).

4.4.2 2011/2012 Operation

Water quality data for Sturgeon Bay during 2011/2012 Operation are limited to 2012; no data are available for Sturgeon Bay at the onset of operation in November 2011.

4.4.2.1 Routine

Conductivity and TDS concentrations in the water entering Sturgeon Bay from the Dauphin River were not affected by operation; however, the spatial extent of the influence of the Dauphin River outflow in Sturgeon Bay would have been altered as a result of changes to its discharge during the operation of the Project. Near Poplar Point (LKW1), along the northwest shoreline (LKW4), and as far as 15 km east of the river mouth (LKW5), conductivity and TDS were higher in 2012 than in October 2011 (Figures 84 and

85). During 2011/2012 Operation, conductivity and TDS ranged from 569-1100 µmhos/cm and 324-756 mg/L, respectively.

Laboratory measured pH was similar throughout Sturgeon Bay and ranged from 8.15 to 8.58 during 2011/2012 Operation. True colour ranged from 7.1 to 18.5 CU and was highest near Poplar Point. Hardness was similar to 2011 Flood and ranged from 173 to 318 mg/L.

TDS frequently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 500 mg/L) throughout Sturgeon Bay (Figure 85). Laboratory pH occasionally exceeded the upper limit of the MWQSOGs/Health Canada aesthetic objective for drinking water (6.5-8.5) at most sites sampled, but was consistently within the MWQSOGs/CCME PAL (6.5-9.0). True colour occasionally exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 15 CU) at sites away from the Dauphin River (LKW1, LKW6 and LKW7). There are no MWQSOGs or CCME guidelines for PAL or drinking water for conductivity or hardness.

4.4.2.2 Dissolved Oxygen

Sturgeon Bay was well-oxygenated during 2011/2012 Operation (Figure 86). DO concentrations were similar throughout the bay and ranged from 7.2 to 11.0 mg/L. DO was consistently within the MWQSOGs/CCME PAL (Table 22).

4.4.2.3 TSS and Turbidity

In spring 2012, TSS concentrations were higher near the Dauphin River (28.4 mg/L at LKW3B and 17.2 mg/L at LKW3) than in the rest of Sturgeon Bay (3.6 to 8.1 mg/L; Figure 81). Nearest the mouth they were also approximately four times higher than the concentrations measured near the Dauphin River in October 2011 during 2011 Flood (6.8 mg/L at LKW3; LKW3B was not sampled in 2011). For the remainder of 2011/2012 Operation, TSS concentrations were fairly similar throughout Sturgeon Bay. During 2011/2012 Operation, TSS concentrations ranged from < 2 to 28 mg/L near the Dauphin River (LKW3B and LKW3) and from < 2 to 13 mg/L in the rest of Sturgeon Bay.

Turbidity showed similar trends to TSS (Figure 82). As during 2011 Flood, turbidity consistently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (1 NTU).

4.4.2.4 Nutrients

In spring 2012, TN and TP were higher near the Dauphin River mouth than in other areas of Sturgeon Bay (Figures 87 and 89). Additionally, TN concentrations nearest the Dauphin River mouth were higher than were measured at other times sampled (Figure 87), a trend that was not observed at sites upstream in the Dauphin River (Figure 87) or in other locations in Sturgeon Bay.

During the remainder of 2011/2012 Operation, nutrient concentrations were fairly similar throughout Sturgeon Bay. TN ranged from 0.050 to 1.38 mg/L and TP ranged from 0.012 to 0.108 mg/L (Table 21). TN:TP molar ratios indicate that Sturgeon Bay was phosphorus limited. Similar to 2011 Flood, carbon concentrations were predominately composed of inorganic forms and the majority of

organic carbon was dissolved. TOC:ON molar ratios indicate that the organic matter in Sturgeon Bay was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983).

In spring 2012, TP exceeded the MWQSOGs narrative guideline for lakes (0.025 mg/L) in Sturgeon Bay near the Dauphin River (LKW3B and LKW3; Figure 89). Ammonia, nitrate, and nitrite were consistently below the MWQSOGs/CCME PAL and, nitrate, nitrite and nitrate/nitrite were consistently below the MWQSOGs/Health Canada drinking water guidelines. There are no MWQSOGs or CCME guidelines for carbon.

4.4.2.5 Chlorophyll *a*

Chlorophyll *a* concentrations were lower throughout Sturgeon Bay during 2011/2012 Operation than during 2011 Flood (Figure 91). Chlorophyll *a* concentrations in Sturgeon Bay ranged from 1.24 to 6.52 µg/L. In spring 2012, chlorophyll *a* concentrations were higher near the Dauphin River than in the rest of the bay; chlorophyll *a* concentrations were similar throughout the bay at all other times during 2011/2012 Operation. There are no water quality guidelines for PAL or drinking water for chlorophyll *a*.

4.4.2.6 Metals and Major Ions with MWQSOGs and/or CCME guidelines

Thallium and dissolved forms of antimony, cadmium, selenium, and silver were not detected in Sturgeon Bay during 2011/2012 Operation. Aluminum, arsenic, barium, boron, calcium, chloride, copper, fluoride, total iron, magnesium, manganese, molybdenum, potassium, sodium, sulphate, and uranium were consistently detected. Total antimony, total cadmium, chromium, dissolved iron, lead, mercury, methyl mercury, nickel, total selenium, total silver, and zinc were detected in some samples.

Unlike during 2011 Flood, in spring 2012, aluminum and iron concentrations were higher near the Dauphin River than in the rest of the bay (Figures 95 and 96). Additionally, methyl mercury was more frequently detected and at higher concentrations near the Dauphin River than in the rest of Sturgeon Bay during 2011/2012 Operation (Figure 97).

Aluminum frequently exceeded the MWQSOGs /CCME PAL (0.1 mg/L) in Sturgeon Bay similar to 2011 Flood (Figure 95). Chloride frequently exceeded the CCME PAL (120 mg/L; Figure 93) and fluoride frequently exceeded the CCME interim PAL (0.12 mg/L; Figure 94) throughout the bay. Chloride was consistently below the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 250 mg/L). Chromium occasionally exceeded the CCME long-term exposure PAL (0.001 mg/L) at several sites. Iron occasionally or frequently exceeded the MWQSOGs/CCME PAL (0.3 mg/L) and the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 0.3 mg/L) at most sites in Sturgeon Bay (Figure 96). Additionally, selenium and silver each occasionally exceeded the MWQSOGs/CCME PAL (0.001 and 0.0001 mg/L, respectively). However, selenium and silver concentrations were near the analytical detection limits and measurements that are at or near detection limits are associated with relatively high uncertainty and there is subsequently low confidence that an actual exceedance of a PAL guideline has occurred. All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 23) and drinking water (Table 24).

4.4.3 2011/2012 Closure

4.4.3.1 Routine

Conductivity and TDS concentrations declined following closure in November 2012 but the magnitude of change varied with location in the Bay (Figures 84 and 85). During 2011/2012 Closure, conductivity and TDS remained greater than during 2011 Flood near Poplar Point (LKW1) and as far as 15 km east of the river mouth (LKW5), but was similar to 2011 Flood along the northwest shoreline (LKW4) and further out in the bay (LKW6 and LKW7). Conductivity and TDS concentrations in Sturgeon Bay near the Dauphin River (LKW3 and LKW2) were lower during 2011/2012 Closure than during 2011 Flood; a similar trend occurred for the Dauphin River (Figures 84 and 85). During 2011/2012 Closure, conductivity and TDS concentrations in Sturgeon Bay ranged from 530-1020 µmhos/cm and 295-596 mg/L, respectively.

Laboratory measured pH was similar throughout Sturgeon Bay and ranged from 7.80 to 8.60 during 2011/2012 Closure. True colour ranged from 5.4 to 15.7 CU and was highest near Poplar Point. Hardness was similar to 2011 Flood and ranged from 149 to 298 mg/L.

TDS frequently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 500 mg/L) in Sturgeon Bay near the Dauphin River (Figure 85) and occasionally exceeded the objective elsewhere in the bay. Laboratory pH occasionally exceeded the upper limit of the MWQSOGs/Health Canada aesthetic objective for drinking water (6.5-8.5) at most sites sampled, but was consistently within the MWQSOGs/CCME PAL (6.5-9.0). True colour occasionally exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 15 CU) near Poplar Point (LKW1). There are no MWQSOGs or CCME guidelines for PAL or drinking water for conductivity or hardness.

4.4.3.2 Dissolved Oxygen

Sturgeon Bay was well-oxygenated during 2011/2012 Closure (Figure 86). DO concentrations were similar throughout the bay and ranged from 8.3 to 16.7 mg/L. DO was consistently within the MWQSOGs/CCME PALs (Table 22).

4.4.3.3 TSS and Turbidity

TSS concentrations were generally similar throughout Sturgeon Bay during 2011/2012 Closure (Figure 81) and there is no indication that flows from the Dauphin River affected TSS concentrations in the bay. TSS concentrations were similar to those measured during 2011 Flood and ranged from < 2 to 13 mg/L.

Turbidity showed similar trends to TSS (Figure 82). As during 2011 Flood, turbidity consistently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (1 NTU).

4.4.3.4 Nutrients

Nutrient concentrations were generally similar throughout Sturgeon Bay during 2011/2012 Closure. Nutrient concentrations were similar to, or lower than, those measured during 2011 Flood. TN ranged from 0.28 to 0.80 mg/L and TP ranged from 0.012 to 0.035 mg/L. TN:TP molar ratios indicate that Sturgeon Bay was phosphorus limited. Similar to 2011 Flood, carbon concentrations were

predominately composed of inorganic forms and the majority of organic carbon was dissolved. TOC:ON molar ratios indicate that the organic matter in Sturgeon Bay was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983).

During 2011/2012 Closure, TP frequently exceeded the MWQSOGs narrative guideline for lakes and river mouths (0.025 mg/L) in Sturgeon Bay away from the Dauphin River (LKW4, LKW5, LKW6 and LKW7; Figure 89). Ammonia, nitrate, and nitrite were consistently below the MWQSOGs/CCME PAL and nitrate, nitrite and nitrate/nitrite were consistently below the MWQSOGs/Health Canada drinking water guidelines. There are no MWQSOGs or CCME guidelines for carbon.

4.4.3.5 Chlorophyll *a*

Similar to 2012, chlorophyll *a* concentrations were lower in Sturgeon Bay during 2011/2012 Closure than during 2011 Flood (Figure 91). Chlorophyll *a* concentrations were similar throughout bay, ranging from 0.13 to 14.5 µg/L. As would be expected, chlorophyll *a* concentrations were lowest in the winter and increased throughout the open-water season. There are no water quality guidelines for PAL or drinking water for chlorophyll *a*.

4.4.3.6 Metals and Major Ions with MWQSOGs and/or CCME guidelines

Dissolved chromium, dissolved lead, total nickel, selenium, silver, and total thallium were not detected in Sturgeon Bay during 2011/2012 Closure. Total aluminum, arsenic, barium, boron, calcium, chloride, copper, fluoride, total iron, magnesium, manganese, molybdenum, potassium, sodium, sulphate, and uranium were consistently detected. Dissolved aluminum, antimony, cadmium, total chromium, dissolved iron, total lead, mercury, methyl mercury, dissolved nickel, dissolved thallium, and zinc were detected in some samples.

Similar to 2011 Flood, concentrations of several metals and ions were higher near the Dauphin River than in the rest of the bay including, boron, chloride, magnesium, potassium, sodium, and uranium (Table 21; Figures 92, 93, and 94). Aluminum, copper, and iron concentrations were lower nearer the Dauphin River than in the rest of the bay (Figures 95 and 96).

During 2011/2012 Closure, the exceedance frequency of PAL and drinking water guidelines for metals and ions was similar to 2011 Flood. Aluminum frequently exceeded the MWQSOGs /CCME PAL (0.1 mg/L) in Sturgeon Bay (Figure 95). Chloride frequently exceeded the CCME PAL (120 mg/L; Figure 93) near the Dauphin River (LKW3B, LKW3, and LKW2), but only occasionally (LKW4, LKW5 and LKW6) or never (LKW7) exceeded this guideline at sites further away from the Dauphin River. Chloride was consistently below the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 250 mg/L). Fluoride frequently exceeded the CCME interim PAL (0.12 mg/L; Figure 94) throughout the bay. Iron occasionally or frequently exceeded the MWQSOGs/CCME PAL (0.3 mg/L) and the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 0.3 mg/L) away from the Dauphin River (LKW1, LKW6 and LKW7; Figure 96). All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 23) and drinking water (Table 24).

4.4.4 2014/2015 Operation

4.4.4.1 Routine

Conductivity and TDS concentrations in Sturgeon Bay did not change following the onset of 2014/2015 Operation but levels varied between sites, as occurred during the pre-Operation period (Figures 84 and 85). During 2014/2015 Operation, conductivity and TDS concentrations in Sturgeon Bay ranged from 5442-1090 µmhos/cm and 296-587 mg/L, respectively. Laboratory measured pH was similar throughout Sturgeon Bay and ranged from 8.02 to 8.50 during 2014/2015 Operation. True colour ranged from 9.0 to 28.9 CU and was highest near Poplar Point. Hardness was similar throughout the bay ranged from 160 to 292 mg/L.

TDS consistently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 500 mg/L) between Halfway Point and Willow Point (LKW2; Figure 85) and also exceeded this objective near Poplar Point on 26 March; exceedances were not measured elsewhere in the bay. Laboratory pH was consistently within the MWQSOGs/CCME PAL (6.5-9.0) and the aesthetic objective for drinking water (6.5-8.5). Turbidity consistently exceeded the MWQSOGs/Health Canada aesthetic objectives for drinking water (1.0 NTU) throughout the bay. True colour frequently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 15 CU) near the Dauphin River mouth (LKW3B and LKW3), near Poplar Point (LKW1), and along the northwest shore (LKW4). There are no MWQSOGs or CCME guidelines for PAL or drinking water for conductivity or hardness.

4.4.4.2 Dissolved Oxygen

Sturgeon Bay was well-oxygenated during 2014/2015 Operation (Figure 86). DO concentrations were similar throughout the bay and ranged from 7.9 to 15.6 mg/L. In March 2015, DO was below the MWQSOGs PAL for cold water early life/CCME lowest acceptable-concentration for early life stages of cold water biota (9.5 mg/L) at two sites in Sturgeon Bay (LKW2 and at depth at LKW1; Table 22). DO was within the MWQSOGs/CCME PALs at all other sites and other sampling periods.

4.4.4.3 TSS and Turbidity

At the onset of 2014/2015 Operation, TSS concentrations increased in Sturgeon Bay near the Dauphin River mouth (LKW3B; Figure 81). On 06 July 2014 the TSS concentration in Sturgeon Bay nearest the Dauphin River (LKW3B) was 14.4 mg/L, which is an increase of 6.8 mg/L from 20 June 2014 (prior to 201/2015 Operation) when TSS was 7.6 mg/L. By 24 July 2014, the TSS concentration in Sturgeon Bay near the river mouth (LKW3B) had decreased to 9.2 mg/L. However, TSS concentrations remained somewhat higher nearer the Dauphin River than in the rest of Sturgeon Bay and decreased with increasing distance from the river mouth. TSS concentrations were similar throughout Sturgeon Bay for the remainder of 2014 and early 2015.

Turbidity showed comparable trends to TSS (Figure 82). Similar to 2011 Flood, turbidity consistently exceeded the MWQSOGs/Health Canada aesthetic objective for drinking water (1 NTU).

4.4.4.4 Nutrients

There were no observable effects of the Project on nutrient concentrations in Sturgeon Bay during 2014/2015 Operation (Figure 87, 88, 89, and 90). TN and TP concentrations in Sturgeon Bay near the Dauphin River mouth (LKW3B) did not change appreciably at the onset of 2014/2015 Operation and TN and TP were similar throughout Sturgeon Bay in 2014/2015. During 2014/2015 Operation, TN ranged from 0.44 to 1.01 mg/L and TP ranged from 0.011 to 0.044 mg/L (Table 21). TN:TP molar ratios indicate that Sturgeon Bay was phosphorus limited. Carbon concentrations were predominately composed of inorganic forms, and the majority of organic carbon was dissolved. TOC:ON molar ratios indicate that the organic matter in Sturgeon Bay was composed of a mix of autochthonous and allochthonous sources (Wetzel 1983).

During 2014/2015 Operation, TP frequently exceeded the MWQSOGs narrative guideline for lakes and river mouths (0.025 mg/L) throughout Sturgeon Bay (Figure 89). Ammonia, nitrate, and nitrite were consistently below the MWQSOGs/CCME PAL; and, nitrate, nitrite and nitrate/nitrite consistently below the MWQSOGs/Health Canada drinking water guidelines. There are no MWQSOGs or CCME guidelines for carbon.

4.4.4.5 Chlorophyll *a*

Chlorophyll *a* concentrations were, with the exception of October 2014, generally similar throughout Sturgeon Bay during 2014/2015 Operation (Figure 91). In October 2014, chlorophyll *a* concentrations were lower near the Dauphin River mouth (LKW3B; 1.45 µg/L) than they were in the rest of Sturgeon Bay (5.87-8.89 µg/L). It is possible that this is an effect of the project as chlorophyll *a* concentrations near the river mouth were similar to the rest of the bay in fall 2011, 2012 and 2013. Although TSS and turbidity near the river mouth were within range of the rest of the bay in October 2014, it is possible that the increase in TSS/turbidity that was observed near the river mouth at the onset of 2014/2015 Operation may have led to light limitation and therefore a decrease in primary productivity at the river mouth.

4.4.4.6 Metals and Major Ions with MWQSOGs and/or CCME guidelines

Dissolved cadmium, dissolved chromium, dissolved lead, nickel, selenium, silver, and thallium were not detected in Sturgeon Bay during 2014/2015 Operation. Total aluminum, arsenic, barium, boron, calcium, chloride, copper, fluoride, total iron, magnesium, manganese, molybdenum, potassium, sodium, sulphate, and uranium were consistently detected; and, dissolved aluminum, antimony, total cadmium, total chromium, dissolved iron, total lead, mercury, methyl mercury, and zinc were detected in some samples.

Similar to 2011 Flood and 2012/2013 Closure, concentrations of some metals and ions were higher near the Dauphin River than in the rest of the bay including, boron, potassium, sodium, and uranium (Table 21; Figures 92, 93, and 94). However, unlike 2011 Flood and 2011/2012 Closure, aluminum, copper, and iron were not lower nearer the Dauphin River than in the rest of the bay (Figures 95 and 96); an increase in aluminum and iron in Sturgeon Bay near the Dauphin River was also observed during 2011/2012 Operation.

Aluminum generally exceeded the MWQSOGs /CCME PAL (0.1 mg/L) in Sturgeon Bay (Figure 95). Chloride frequently exceeded the CCME PAL (120 mg/L; Figure 93), particularly near the Dauphin River, but was consistently below the MWQSOGs/Health Canada aesthetic objective for drinking water (≤250 mg/L). Similarly, fluoride frequently exceeded the CCME interim PAL (0.12 mg/L; Figure 94) near the Dauphin River, and all sites exceeded this PAL in March 2015. Iron frequently exceeded the MWQSOGs/CCME PAL (0.3 mg/L) and the MWQSOGs/Health Canada aesthetic objective for drinking water (≤ 0.3 mg/L) throughout Sturgeon Bay (Figure 96). Chromium occasionally exceeded the CCME long-term exposure PAL (0.001 mg/L) near Poplar Point and at the two furthest offshore sites (LKW4 and LKW7). All other metals and major ions were within MWQSOGs and CCME guidelines for PAL (Table 23) and drinking water (Table 24).

4.4.5 2014/2015 Closure

Monitoring was not conducted in Sturgeon Bay during the 2014/2015 Closure Period.

4.4.5.1 Routine

The extent of the mixing zone between the Dauphin River and Lake Winnipeg increased during 2011/2012 Operation. During 2011/2012 Closure, the size of the mixing zone decreased, but it remained larger than baseline. As a result of the mixing zone changes, TDS was more frequently above the aesthetic objective for drinking water (≤ 500 mg/L) in areas of Sturgeon Bay away from the Dauphin River than baseline.

No changes to routine water quality in Sturgeon Bay were observed during 2014/2015 Operation that can be attributed to the Project.

4.4.5.2 Dissolved Oxygen

Sturgeon Bay was well-oxygenated during baseline, operation and closure. DO was generally within Manitoba objectives/CCME guidelines for cool and cold-water aquatic life; the exceptions occurred at two sites (LKW2 and at depth at LKW1) in March 2015.

No changes to DO in the Sturgeon Bay were observed that can be attributed to the Project.

4.4.5.3 TSS

In the spring of 2011/2012 Operation, TSS increased in Sturgeon Bay near the Dauphin River and, at the onset of 2014/2015 Operation, TSS increased in Sturgeon Bay near the Dauphin River mouth and remained higher near the river for about a month. No data are available for Sturgeon Bay at the onset of 2011/2012 Operation, so an assessment of effects of operation in 2011 cannot be conducted.

No changes to TSS in Sturgeon Bay were observed during 2011/2012 Closure that can be attributed to the Project.

4.4.5.4 Nutrients

There was a spike in nitrogen and phosphorus near the mouth of the Dauphin River in the spring of 2011/2012 Operation. This resulted in a guideline exceedance for TP; however, TP exceedances were frequently observed in Sturgeon Bay from 2011-2015.

No other changes to nutrient concentrations in Sturgeon Bay were observed that can be attributed to the Project.

4.4.5.5 Chlorophyll *a*

From 2012-2015, chlorophyll *a* was typically lower than baseline. Chlorophyll *a* concentrations near the Dauphin River were higher in spring 2012 and lower in October 2014, compared with the rest of Sturgeon Bay. At other times, chlorophyll *a* was generally similar throughout the bay. There are no MWQSOGs or CCME guidelines for chlorophyll *a*.

Baseline data are too limited to determine if any changes to chlorophyll *a* concentrations that were observed can be attributed to the Project.

4.4.5.6 Metals and Major Ions

During 2011/2012 and 2014/2015 Operation, aluminum and iron increased in Sturgeon Bay near the Dauphin River; however, concentrations remained within the baseline range for Sturgeon Bay. During 2011/2012 Operation, methyl mercury was more frequently detected and at higher concentrations near the Dauphin River than in the rest of Sturgeon Bay. Similarly, In March 2015, during 2014/2015 Operation, methyl mercury was detected near the Dauphin River and Willow Point but not at other sites in Sturgeon Bay; concentrations were well below the MWQSOGs/CCME PAL (4 ng/L). From 2012-2014, chloride concentrations were more frequently above the CCME long-term PAL (120 mg/L) in areas of Sturgeon Bay away from the Dauphin River than during baseline (i.e., the area of high chloride concentrations in the bay increased). There were no other exceedances of MWQSOGs/CCME PAL and/or drinking water for metals or major ions that could be attributed to the Project.

4.4.6 Summary

Some changes in water quality parameters in Sturgeon Bay were observed during Project operation and closure periods.

- Routine water quality parameters were variable during operation and closure periods:
    - Conductivity and TDS concentrations in the water entering Sturgeon Bay from the Dauphin River were not affected by operation; however, the spatial extent of the influence of the Dauphin River outflow in Sturgeon Bay would have been altered as a result of changes to its discharge during the operation and closure of the Project.
    - During 2011/2012 Operation, conductivity and TDS at sites distant from the Dauphin River increased compared to conditions measured during the 2011 Flood.
    - After closure in November 2012, conductivity and TDS at some sites distant from the Dauphin River remained higher compared to October 2011 while conductivity and TDS at sites closer to the Dauphin River were lower than measured during the 2011 Flood.

  - pH, colour, and hardness measured during operation and closure were generally similar to conditions measured in October 2011.
- No changes to DO were observed that can be attributed to the Project.
  - Sturgeon Bay was well-oxygenated during baseline, operation and closure.
  - DO was generally within PAL and objectives for cool and cold-water species; the exceptions occurred at two sites in March 2015.

- Project activities resulted in increases in TSS concentrations during operation periods:
  - During 2011/2012 Operation, TSS increased in spring 2012 near the mouth of the Dauphin River; however, data are not available at the onset of the period, so the duration and magnitude of effects is unknown.
  - At the onset of 2014/2015 Operation, TSS increased near the Dauphin River mouth and remained elevated for about a month.
  - No changes to TSS were observed during the closure from November 2012-July 2014 that can be attributed to the Project.

- Temporary increases in nutrient and chlorophyll *a* concentrations were observed:
  - In the spring of 2011/2012 Operation, nitrogen and phosphorus near the mouth of the Dauphin River increased above October 2011 concentrations.
  - No other changes to nutrient concentrations in Sturgeon Bay were observed that can be attributed to the Project.
  - Chlorophyll *a* concentrations near the Dauphin River were higher in spring 2012 and lower in October 2014, compared with the rest of Sturgeon Bay. At other times, chlorophyll *a* was generally similar throughout the bay. Baseline data are too limited to determine if changes to chlorophyll *a* concentrations occurred as a result of the Project.

- There were no observed changes to most metals or major ions, with the exception of mercury and methylmercury, that can be attributed to the Project:
  - During 2011/2012 Operation, methylmercury was more frequently detected and at higher concentrations near the Dauphin River than in the rest of Sturgeon Bay. Similarly, In March 2015, during 2014/2015 Operation, methylmercury was detected near the Dauphin River and Willow Point but not at other sites in Sturgeon Bay. However, concentrations were consistently well below the MWQSOGs/CCME PAL guideline (4 ng/L).

Table 21. Summary statistics for key water quality parameters measured in the Sturgeon Bay, 2011-2015.

		Ammonia (mg N/L)							Nitrate/Nitrite (mg N/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.011	0.014	<0.010	0.015	0.0032	3	67	<0.0051	<0.0051	<0.0051	0.018	-	3	33
	2011/2012 Closure	0.013	<0.010	<0.010	0.041	0.0056	7	29	0.008	<0.0051	<0.0051	0.026	0.0036	7	29
	2014/2015 Operation	0.021	<0.010	<0.010	0.098	0.0103	9	33	<0.070	<0.070	<0.070	<0.070	-	9	11
LKW3	2011 Flood	0.033	0.033	0.033	0.033	-	1	100	0.017	0.017	0.017	0.017	-	1	100
	2011/2012 Operation	0.012	0.014	<0.010	0.016	0.0024	4	75	<0.0051	<0.0051	<0.0051	0.022	-	4	25
	2011/2012 Closure	0.014	<0.010	<0.010	0.039	0.0056	7	29	0.006	<0.0051	<0.0051	0.018	0.0023	7	29
	2014/2015 Operation	0.012	<0.010	<0.010	0.025	-	3	33	0.0078	<0.0051	<0.0051	0.0183	-	3	33
LKW2	2011 Flood	0.035	0.035	0.035	0.035	-	1	100	0.018	0.018	0.018	0.018	-	1	100
	2011/2012 Operation	0.029	0.014	0.011	0.076	0.0158	4	100	0.011	0.007	<0.0051	0.030	0.0065	4	50
	2011/2012 Closure	0.020	<0.010	<0.010	0.070	0.0091	7	43	0.009	<0.0051	<0.0051	0.044	0.0058	7	29
	2014/2015 Operation	0.046	<0.010	<0.010	0.128	-	3	33	0.028	<0.0051	<0.0051	0.078	-	3	33
LKW1	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	<0.0051	<0.0051	<0.0051	<0.0051	-	1	0
	2011/2012 Operation	0.014	0.013	<0.010	0.026	0.0044	4	75	0.011	<0.0051	<0.0051	0.036	-	4	25
	2011/2012 Closure	0.030	0.024	<0.010	0.077	0.0106	7	57	<0.0051	<0.0051	<0.0051	0.020	0.0031	7	29
	2014/2015 Operation	0.015	<0.010	<0.010	0.046	-	4	25	0.0062	<0.0051	<0.0051	0.017	-	4	25
LKW4	2011 Flood	0.012	0.012	0.012	0.012	-	1	100	0.006	0.006	0.006	0.006	-	1	100
	2011/2012 Operation	0.017	0.017	0.012	0.020	0.0018	4	100	<0.0051	<0.0051	<0.0051	0.006	-	4	25
	2011/2012 Closure	<0.010	<0.010	<0.010	0.023	0.0028	7	29	0.008	<0.0051	<0.0051	0.020	0.0027	7	43
	2014/2015 Operation	0.011	<0.010	<0.010	0.022	-	3	33	<0.0051	<0.0051	<0.0051	0.0064	-	3	33
LKW5	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	<0.0051	<0.0051	<0.0051	<0.0051	-	1	0
	2011/2012 Operation	0.019	0.019	<0.010	0.033	0.0066	4	75	<0.0051	<0.0051	<0.0051	0.009	-	4	25
	2011/2012 Closure	0.013	<0.010	<0.010	0.053	0.0068	7	29	<0.0051	<0.0051	<0.0051	0.021	0.0030	7	43
	2014/2015 Operation	0.019	<0.010	<0.010	0.048	-	3	33	0.0052	<0.0051	<0.0051	0.0104	-	3	33
LKW6	2011 Flood	0.013	0.013	0.013	0.013	-	1	100	0.012	0.012	0.012	0.012	-	1	100
	2011/2012 Operation	0.023	0.024	0.010	0.033	0.0048	4	100	<0.0051	<0.0051	<0.0051	0.007	0.0012	4	50
	2011/2012 Closure	0.016	<0.010	<0.010	0.080	0.0106	7	29	<0.0051	<0.0051	<0.0051	0.013	0.0016	7	29
	2014/2015 Operation	0.028	0.013	<0.010	0.082	0.0183	4	50	0.0079	0.0065	<0.0051	0.016	0.0032	4	50

Table 21. Continued.

		Ammonia (mg N/L)							Nitrate/Nitrite (mg N/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	0.023	0.023	0.023	0.023	-	1	100
	2011/2012 Operation	0.016	0.015	<0.010	0.031	0.0056	4	75	0.008	0.006	<0.0051	0.017	0.0035	4	50
	2011/2012 Closure	<0.010	<0.010	<0.010	0.024	-	7	14	0.019	0.009	<0.0051	0.051	0.0083	7	57
	2014/2015 Operation	<0.010	<0.010	<0.010	0.021	-	4	25	0.013	0.009	<0.0051	0.032	0.0069	4	50
MB05SES012	Historic [1]	0.028	0.020	0.018	0.046	0.0090	3	100	0.018	<0.010	<0.0050	0.068	0.0106	6	33
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.010	<0.010	<0.010	0.011	-	3	33	-	-	-	-	-	0	-
	2011/2012 Closure	0.011	0.011	<0.010	0.016	-	2	50	0.070	0.070	0.070	0.070	-	1	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	2	0	-	-	-	-	-	0	-

Table 21. Continued.

		Nitrate (mg N/L)							Nitrite (mg N/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.0050	<0.0050	<0.0050	0.018	-	3	33	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
	2011/2012 Closure	0.008	<0.0050	<0.0050	0.026	0.0036	7	29	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.050	<0.050	<0.0050	<0.050	-	9	11	<0.050	<0.050	<0.0010	<0.050	-	9	0
LKW3	2011 Flood	0.016	0.016	0.016	0.016	-	1	100	0.001	0.001	0.001	0.001	-	1	100
	2011/2012 Operation	0.007	<0.0050	<0.0050	0.021	-	4	25	<0.0010	<0.0010	<0.0010	<0.0010	-	4	25
	2011/2012 Closure	0.006	<0.0050	<0.0050	0.018	0.0023	7	29	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	0.0069	<0.0050	<0.0050	0.0157	-	3	33	0.0015	<0.0010	<0.0010	0.0034	-	3	33
LKW2	2011 Flood	0.016	0.016	0.016	0.016	-	1	100	0.001	0.001	0.001	0.001	-	1	100
	2011/2012 Operation	0.011	0.007	<0.0050	0.028	0.0061	4	50	<0.0010	<0.0010	<0.0010	0.002	0.0003	4	25
	2011/2012 Closure	0.009	<0.0050	<0.0050	0.042	0.0055	7	29	<0.0010	<0.0010	<0.0010	0.002	-	7	14
	2014/2015 Operation	0.027	<0.0050	<0.0050	0.075	-	3	25	0.0013	<0.0010	<0.0010	0.003	-	3	25
LKW1	2011 Flood	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0050	<0.0050	<0.0050	0.034	-	4	25	<0.0010	<0.0010	<0.0010	0.002	-	4	25
	2011/2012 Closure	<0.0050	<0.0050	<0.0050	0.017	0.0026	7	29	<0.0010	<0.0010	<0.0010	0.003	0.0004	7	29
	2014/2015 Operation	0.0059	<0.0050	<0.0050	0.0160	-	4	25	<0.0010	<0.0010	0.0010	<0.0010	-	4	25
LKW4	2011 Flood	0.006	0.006	0.006	0.006	-	1	100	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0050	<0.0050	<0.0050	0.006	-	4	25	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	0.008	<0.0050	<0.0050	0.020	0.0028	7	43	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0050	<0.0050	<0.0050	0.006	-	3	33	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
LKW5	2011 Flood	0.005	0.005	0.005	0.005	-	1	100	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	0.005	<0.0050	<0.0050	0.009	0.0016	4	50	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	0.008	<0.0050	<0.0050	0.019	0.0028	7	43	<0.0010	<0.0010	<0.0010	<0.0010	-	7	14
	2014/2015 Operation	<0.0050	<0.0050	<0.0050	0.0091	-	3	33	<0.0010	<0.0010	<0.0010	0.0013	-	3	33
LKW6	2011 Flood	0.012	0.012	0.012	0.012	-	1	100	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	0.005	<0.0050	<0.0050	0.007	0.0012	4	50	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	0.005	<0.0050	<0.0050	0.013	0.0017	7	29	<0.0010	<0.0010	<0.0010	<0.0010	0.0000	7	0
	2014/2015 Operation	0.0078	0.0065	<0.0050	0.0159	0.0033	4	50	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0

Table 21. Continued.

		Nitrate (mg N/L)							Nitrite (mg N/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.023	0.023	0.023	0.023	-	1	100	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	0.008	0.006	<0.0050	0.017	0.0035	4	50	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	0.018	0.009	<0.0050	0.050	0.0082	7	57	<0.0010	<0.0010	<0.0010	<0.0010	-	7	14
	2014/2015 Operation	0.0127	0.0092	<0.0050	0.0298	0.00652	4	50	<0.0010	<0.0010	<0.0010	0.0017	-	4	25
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Dissolved Inorganic Nitrogen (mg/L)							Total Kjeldahl Nitrogen (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.018	0.018	<0.010	0.032	0.008	3	67	0.93	0.83	0.57	1.38	0.239	3	100
	2011/2012 Closure	0.019	<0.010	<0.010	0.067	0.010	7	29	0.57	0.54	0.39	0.75	0.048	7	100
	2014/2015 Operation	<0.070	<0.070	<0.010	<0.070	-	8	25	0.73	0.73	0.53	0.89	0.031	9	100
LKW3	2011 Flood	0.050	0.050	0.050	0.050	-	1	100	1.05	1.05	1.05	1.05	-	1	100
	2011/2012 Operation	0.019	0.017	<0.010	0.036	0.006	4	75	0.80	0.75	0.50	1.19	0.144	4	100
	2011/2012 Closure	0.018	<0.010	<0.010	0.049	0.008	7	29	0.61	0.58	0.50	0.78	0.038	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	2	0	0.72	0.74	0.59	0.83	0.070	3	3
LKW2	2011 Flood	0.053	0.053	0.053	0.053	-	1	100	1.07	1.07	1.07	1.07	-	1	100
	2011/2012 Operation	0.040	0.019	0.016	0.106	0.022	4	100	0.88	0.88	0.76	1.01	0.051	4	100
	2011/2012 Closure	0.028	<0.010	<0.010	0.114	0.015	7	43	0.62	0.59	0.46	0.77	0.042	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	3	0	0.92	0.93	0.82	1.00	0.052	3	100
LKW1	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	0.68	0.68	0.68	0.68	-	1	100
	2011/2012 Operation	0.024	0.015	<0.010	0.062	0.013	4	75	0.73	0.72	0.53	0.95	0.086	4	100
	2011/2012 Closure	0.036	0.027	<0.010	0.097	0.013	7	57	0.59	0.58	0.41	0.74	0.039	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	3	0	0.75	0.74	0.62	0.92	0.069	4	100
LKW4	2011 Flood	0.018	0.018	0.018	0.018	-	1	100	0.76	0.76	0.76	0.76	-	1	100
	2011/2012 Operation	0.020	0.021	0.015	0.023	0.002	4	100	0.73	0.74	0.65	0.77	0.026	4	100
	2011/2012 Closure	0.016	<0.010	<0.010	0.043	0.006	7	43	0.52	0.52	0.42	0.60	0.021	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	2	0	0.60	0.55	0.54	0.71	0.055	3	100
LKW5	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	0.62	0.62	0.62	0.62	-	1	100
	2011/2012 Operation	0.023	0.022	<0.010	0.042	0.008	4	75	0.87	0.81	0.77	1.09	0.076	4	100
	2011/2012 Closure	0.020	<0.010	<0.010	0.074	0.010	7	43	0.52	0.50	0.39	0.70	0.038	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	2	0	0.65	0.63	0.63	0.70	0.023	3	100
LKW6	2011 Flood	0.025	0.025	0.025	0.025	-	1	100	0.79	0.79	0.79	0.79	-	1	100
	2011/2012 Operation	0.027	0.028	0.013	0.039	0.005	4	100	0.70	0.73	0.52	0.84	0.067	4	100
	2011/2012 Closure	0.020	<0.010	<0.010	0.093	0.012	7	29	0.53	0.52	0.35	0.80	0.056	7	100
	2014/2015 Operation	0.016	0.021	<0.010	0.023	0.006	3	67	0.63	0.61	0.52	0.78	0.058	4	100

Table 21. Continued.

		Dissolved Inorganic Nitrogen (mg/L)							Total Kjeldahl Nitrogen (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.028	0.028	0.028	0.028	-	1	100	0.72	0.72	0.72	0.72	-	1	100
	2011/2012 Operation	0.024	0.021	<0.010	0.048	0.009	4	75	0.64	0.66	0.55	0.70	0.033	4	100
	2011/2012 Closure	0.025	0.014	<0.010	0.075	0.011	7	57	0.47	0.50	0.28	0.62	0.040	7	100
	2014/2015 Operation	0.010	<0.010	<0.010	0.021	-	3	33	0.58	0.61	0.44	0.66	0.051	4	100
MB05SES012	Historic [1]	0.032	0.025	0.023	0.049	0.008	3	100	0.41	0.44	0.26	0.53	0.046	6	100
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	0.47	0.46	0.44	0.52	0.024	3	100
	2011/2012 Closure	0.086	0.086	0.086	0.086	-	1	100	0.31	0.31	0.10	0.51	-	2	50
	2014/2015 Operation	-	-	-	-	-	0	-	0.56	0.56	0.43	0.68	0.125	2	100

Table 21. Continued.

		Total Nitrogen (mg/L)							Dissolved Phosphorus (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.93	0.85	0.57	1.38	0.238	3	100	0.009	0.011	0.005	0.011	0.0021	3	100
	2011/2012 Closure	0.58	0.54	0.42	0.75	0.046	7	100	0.008	0.007	0.002	0.016	0.0019	7	100
	2014/2015 Operation	0.75	0.77	0.53	0.93	0.035	9	100	<0.010	<0.010	<0.010	0.018	0.0014	9	67
LKW3	2011 Flood	1.07	1.07	1.07	1.07	-	1	100	0.002	0.002	0.002	0.002	-	1	100
	2011/2012 Operation	0.80	0.76	0.50	1.19	0.144	4	100	0.010	0.010	0.004	0.016	0.0024	4	100
	2011/2012 Closure	0.62	0.58	0.50	0.78	0.037	7	100	0.009	0.009	<0.0010	0.020	0.0023	7	86
	2014/2015 Operation	0.73	0.74	0.61	0.83	0.065	3	3	0.0064	0.0066	0.0052	0.0073	0.0006	3	3
LKW2	2011 Flood	1.09	1.09	1.09	1.09	-	1	100	0.004	0.004	0.004	0.004	-	1	100
	2011/2012 Operation	0.89	0.89	0.76	1.04	0.057	4	100	0.007	0.006	0.004	0.011	0.0017	4	100
	2011/2012 Closure	0.63	0.59	0.46	0.77	0.043	7	100	0.010	0.011	0.006	0.014	0.0012	7	100
	2014/2015 Operation	0.94	1.00	0.82	1.01	0.061	3	100	0.006	0.006	0.005	0.006	0.0002	3	100
LKW1	2011 Flood	0.68	0.68	0.68	0.68	-	1	100	0.016	0.016	0.016	0.016	-	1	100
	2011/2012 Operation	0.74	0.72	0.53	0.99	0.093	4	100	0.006	0.005	0.003	0.011	0.0017	4	100
	2011/2012 Closure	0.60	0.58	0.41	0.74	0.040	7	100	0.007	0.006	0.005	0.015	0.0013	7	100
	2014/2015 Operation	0.76	0.74	0.62	0.92	0.070	4	100	0.006	0.006	0.005	0.007	0.0005	4	100
LKW4	2011 Flood	0.77	0.77	0.77	0.77	-	1	100	<0.010	<0.010	<0.010	<0.010	-	1	100
	2011/2012 Operation	0.73	0.74	0.65	0.77	0.027	4	100	0.006	0.005	0.003	0.011	0.0017	4	100
	2011/2012 Closure	0.53	0.52	0.42	0.61	0.022	7	100	0.010	0.012	<0.0010	0.018	0.0023	7	86
	2014/2015 Operation	0.60	0.55	0.55	0.71	0.054	3	100	0.007	0.006	0.006	0.008	0.0008	3	100
LKW5	2011 Flood	0.62	0.62	0.62	0.62	-	1	100	0.012	0.012	0.012	0.012	-	1	100
	2011/2012 Operation	0.87	0.81	0.77	1.10	0.078	4	100	0.009	0.011	0.004	0.011	0.0018	4	100
	2011/2012 Closure	0.53	0.51	0.39	0.72	0.040	7	100	0.010	0.008	0.002	0.021	0.0022	7	100
	2014/2015 Operation	0.66	0.64	0.63	0.70	0.022	3	100	0.006	0.006	0.005	0.008	0.0008	3	100
LKW6	2011 Flood	0.80	0.80	0.80	0.80	-	1	100	0.004	0.004	0.004	0.004	-	1	100
	2011/2012 Operation	0.71	0.73	0.52	0.85	0.068	4	100	0.013	0.011	0.009	0.019	0.0022	4	100
	2011/2012 Closure	0.53	0.53	0.35	0.80	0.056	7	100	0.011	0.010	<0.0010	0.026	0.0030	7	86
	2014/2015 Operation	0.64	0.61	0.52	0.80	0.060	4	100	0.025	0.026	0.023	0.027	0.0009	4	100

Table 21. Continued.

		Total Nitrogen (mg/L)							Dissolved Phosphorus (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.74	0.74	0.74	0.74	-	1	100	0.014	0.014	0.014	0.014	-	1	100
	2011/2012 Operation	0.65	0.66	0.56	0.72	0.034	4	100	0.015	0.016	0.011	0.019	0.0019	4	100
	2011/2012 Closure	0.49	0.50	0.28	0.67	0.046	7	100	0.011	0.009	0.005	0.025	0.0025	7	100
	2014/2015 Operation	0.59	0.63	0.44	0.67	0.052	4	100	0.009	0.009	0.006	0.010	0.0009	4	100
MB05SES012	Historic [1]	0.43	0.44	0.26	0.60	0.053	6	100	0.017	0.016	0.013	0.030	0.0027	6	100
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	0.016	0.017	0.010	0.020	0.0030	3	100
	2011/2012 Closure	0.58	0.58	0.58	0.58	-	1	100	0.008	0.008	<0.0010	0.015	0.0073	2	50
	2014/2015 Operation	-	-	-	-	-	0	-	0.008	0.008	0.006	0.009	0.0015	2	100

Table 21. Continued.

		Total Particulate Phosphorus (mg/L)							Total Phosphorus (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.016	0.016	0.011	0.020	0.0026	3	100	0.025	0.022	0.021	0.031	0.0032	3	100
	2011/2012 Closure	<0.010	<0.010	<0.010	0.015	0.0016	7	71	0.018	0.018	0.015	0.021	0.0009	7	100
	2014/2015 Operation	0.016	0.019	<0.010	0.028	0.0025	9	89	0.023	0.024	0.012	0.033	0.0021	9	100
LKW3	2011 Flood	0.020	0.020	0.020	0.020	-	1	100	0.022	0.022	0.022	0.022	-	1	100
	2011/2012 Operation	0.013	0.016	0.003	0.017	0.0033	4	100	0.023	0.024	0.013	0.033	0.0045	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	0.016	0.0016	7	86	0.017	0.016	0.015	0.020	0.0008	7	100
	2014/2015 Operation	0.020	0.022	0.014	0.024	0.0029	3	100	0.026	0.027	0.021	0.031	0.0029	3	100
LKW2	2011 Flood	0.014	0.014	0.014	0.014	-	1	100	0.018	0.018	0.018	0.018	-	1	100
	2011/2012 Operation	<0.010	0.010	<0.010	0.014	0.0022	4	75	0.016	0.016	0.012	0.018	0.0013	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	0.014	0.0015	7	57	0.018	0.019	0.015	0.020	0.0008	7	100
	2014/2015 Operation	0.023	0.017	0.015	0.038	0.0074	3	100	0.029	0.023	0.020	0.044	0.0075	3	100
LKW1	2011 Flood	0.027	0.027	0.027	0.027	-	1	100	0.043	0.043	0.043	0.043	-	1	100
	2011/2012 Operation	0.014	0.013	<0.010	0.024	0.0040	4	75	0.020	0.018	0.013	0.030	0.0036	4	100
	2011/2012 Closure	0.011	0.011	<0.010	0.018	0.0018	7	86	0.018	0.019	0.012	0.023	0.0016	7	100
	2014/2015 Operation	0.020	0.021	0.016	0.025	0.0019	4	100	0.026	0.026	0.022	0.030	0.0016	4	100
LKW4	2011 Flood	0.026	0.026	0.026	0.026	-	1	100	0.031	0.031	0.031	0.031	-	1	100
	2011/2012 Operation	0.012	0.011	<0.010	0.022	0.0037	4	75	0.018	0.016	0.013	0.028	0.0034	4	100
	2011/2012 Closure	0.011	<0.010	<0.010	0.026	0.0032	7	71	0.020	0.020	0.014	0.029	0.0021	7	100
	2014/2015 Operation	0.021	0.022	0.015	0.025	0.0030	3	100	0.027	0.030	0.021	0.031	0.0032	3	100
LKW5	2011 Flood	0.017	0.017	0.017	0.017	-	1	100	0.029	0.029	0.029	0.029	-	1	100
	2011/2012 Operation	0.013	0.014	<0.010	0.018	0.0028	4	75	0.022	0.022	0.014	0.029	0.0034	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	0.020	0.0026	7	71	0.019	0.017	0.014	0.027	0.0021	7	100
	2014/2015 Operation	0.016	0.018	0.011	0.020	0.0026	3	100	0.023	0.024	0.019	0.025	0.0018	3	100
LKW6	2011 Flood	0.025	0.025	0.025	0.025	-	1	100	0.029	0.029	0.029	0.029	-	1	100
	2011/2012 Operation	0.011	<0.010	<0.010	0.018	0.0033	4	50	0.023	0.022	0.016	0.033	0.0041	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	0.020	0.0024	7	57	0.019	0.020	0.013	0.027	0.0019	7	100
	2014/2015 Operation	0.018	0.018	0.016	0.022	0.0013	4	100	0.025	0.026	0.023	0.027	0.0009	4	100

Table 21. Continued.

		Total Particulate Phosphorus (mg/L)							Total Phosphorus (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.022	0.022	0.022	0.022	-	1	100	0.036	0.036	0.036	0.036	-	1	100
	2011/2012 Operation	0.031	0.015	<0.010	0.089	0.0194	4	75	0.046	0.031	0.015	0.108	0.0209	4	100
	2011/2012 Closure	0.013	0.015	<0.010	0.024	0.0031	7	86	0.023	0.023	0.013	0.035	0.0029	7	100
	2014/2015 Operation	0.018	0.017	0.015	0.025	0.0022	4	100	0.027	0.027	0.025	0.031	0.0014	4	100
MB05SES012	Historic [1]	0.026	0.020	0.009	0.063	0.0078	6	100	0.044	0.035	0.027	0.076	0.0078	6	100
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.017	0.017	0.015	0.018	0.0009	3	100	0.032	0.032	0.027	0.038	0.0032	3	100
	2011/2012 Closure	0.019	0.019	0.018	0.020	0.0013	2	100	0.027	0.027	0.018	0.035	0.0085	2	100
	2014/2015 Operation	0.011	0.011	0.007	0.015	0.0041	2	100	0.018	0.018	0.016	0.021	0.0026	2	100

Table 21. Continued.

		Dissolved Fraction, Phosphorus (%)							TN:TP Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	36	35	23	50	7.8	3	100	82	89	58	99	12.4	3	100
	2011/2012 Closure	43	47	13	82	9.3	7	100	72	69	44	93	6.5	7	100
	2014/2015 Operation	32	24	16	78	6.6	9	100	75	74	52	106	6.1	9	100
LKW3	2011 Flood	10	10	10	10	-	1	100	107	107	107	107	-	1	100
	2011/2012 Operation	47	44	23	76	11.2	4	100	86	94	34	121	18.5	4	100
	2011/2012 Closure	55	50	3	105	12.5	7	100	82	81	70	98	3.3	7	100
	2014/2015 Operation	25	23	19	32	3.6	3	100	63	68	43	78	10.4	3	100
LKW2	2011 Flood	21	21	21	21	-	1	100	134	134	134	134	-	1	100
	2011/2012 Operation	47	37	22	92	16.4	4	100	132	121	94	192	21.2	4	100
	2011/2012 Closure	55	58	29	74	6.5	7	100	79	87	51	105	7.4	7	100
	2014/2015 Operation	21	25	13	26	4.0	3	100	80	79	51	111	17.3	3	100
LKW1	2011 Flood	36	36	36	36	-	1	100	35	35	35	35	-	1	100
	2011/2012 Operation	33	22	20	69	11.8	4	100	95	90	39	163	25.6	4	100
	2011/2012 Closure	42	35	22	79	7.2	7	100	76	71	56	130	9.5	7	100
	2014/2015 Operation	23	22	17	29	3.0	4	100	65	68	46	79	6.8	4	100
LKW4	2011 Flood	15	15	15	15	-	1	100	55	55	55	55	-	1	100
	2011/2012 Operation	37	27	20	73	12.4	4	100	97	99	61	129	14.3	4	100
	2011/2012 Closure	53	44	2	92	12.8	7	100	62	68	32	81	6.8	7	100
	2014/2015 Operation	24	27	18	28	3.0	3	100	50	51	40	58	5.2	3	100
LKW5	2011 Flood	42	42	42	42	-	1	100	48	48	48	48	-	1	100
	2011/2012 Operation	45	41	21	79	12.2	4	100	96	96	59	133	15.2	4	100
	2011/2012 Closure	52	49	11	82	10.4	7	100	65	68	40	102	7.9	7	100
	2014/2015 Operation	29	25	21	41	6.2	3	100	65	62	59	73	4.4	3	100
LKW6	2011 Flood	14	14	14	14	-	1	100	62	62	62	62	-	1	100
	2011/2012 Operation	57	63	32	69	8.5	4	100	77	81	35	112	18.3	4	100
	2011/2012 Closure	58	62	3	113	12.9	7	100	63	69	39	89	6.2	7	100
	2014/2015 Operation	28	29	20	33	2.9	4	100	55	52	50	68	4.3	4	100

Table 21. Continued.

		Dissolved Fraction, Phosphorus (%)							TN:TP Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	39	39	39	39	-	1	100	46	46	46	46	-	1	100
	2011/2012 Operation	48	50	18	73	11.7	4	100	50	43	15	101	18.1	4	100
	2011/2012 Closure	50	35	25	96	10.9	7	100	51	40	27	95	8.9	7	100
	2014/2015 Operation	33	35	21	41	4.3	4	100	48	50	39	53	3.3	4	100
MB05SES012	Historic [1]	45	49	17	65	6.7	6	100	24	26	9	33	3.6	6	100
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	48	53	37	53	5.3	3	100	-	-	-	-	-	0	-
	2011/2012 Closure	23	23	3	43	20.0	2	100	37	37	37	37	-	1	100
	2014/2015 Operation	45	45	30	59	14.3	2	100	-	-	-	-	-	0	-

Table 21. Continued.

		DIN:DP Molar Ratio							DIN:TP Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	6	4	1	15	4.2	3	100	2	1	1	3	0.8	3	100
	2011/2012 Closure	4	3	1	11	1.4	7	100	2	1	1	7	1.0	7	100
	2014/2015 Operation	11	13	2	31	3.2	9	100	3	3	0	7	0.7	9	100
LKW3	2011 Flood	53	53	53	53	-	1	100	5	5	5	5	-	1	100
	2011/2012 Operation	7	4	1	18	4.0	4	100	2	2	0	4	0.9	4	100
	2011/2012 Closure	6	2	1	22	2.9	7	100	2	1	1	7	1.1	7	100
	2014/2015 Operation	5	2	2	10	2.8	3	100	1	1	0	2	0.7	3	100
LKW2	2011 Flood	32	32	32	32	-	1	100	6	6	6	6	-	1	100
	2011/2012 Operation	12	11	4	21	3.6	4	100	7	3	2	20	4.3	4	100
	2011/2012 Closure	6	2	1	23	3.1	7	100	4	1	1	17	2.3	7	100
	2014/2015 Operation	21	2	2	60	19	3	100	3	1	0	8	2.4	3	100
LKW1	2011 Flood	1	1	1	1	-	1	100	0	0	0	0	-	1	100
	2011/2012 Operation	15	5	2	49	11.3	4	100	4	2	0	10	2.2	4	100
	2011/2012 Closure	12	7	2	35	5.0	7	100	5	3	0	18	2.5	7	100
	2014/2015 Operation	5	2	2	16	3.5	4	100	1	0	0	3	0.6	4	100
LKW4	2011 Flood	9	9	9	9	-	1	100	1	1	1	1	-	1	100
	2011/2012 Operation	9	9	3	15	2.6	4	100	3	3	2	4	0.4	4	100
	2011/2012 Closure	15	2	1	89	12.4	7	100	2	1	0	6	0.8	7	100
	2014/2015 Operation	2	2	2	3	0.5	3	100	1	1	0	1	0.2	3	100
LKW5	2011 Flood	1	1	1	1	-	1	100	0	0	0	0	-	1	100
	2011/2012 Operation	5	4	3	8	1.4	4	100	2	2	1	4	0.6	4	100
	2011/2012 Closure	6	2	1	21	3.1	7	100	3	1	0	12	1.6	7	100
	2014/2015 Operation	4	2	1	7	1.8	3	100	1	1	0	2	0.4	3	100
LKW6	2011 Flood	14	14	14	14	-	1	100	2	2	2	2	-	1	100
	2011/2012 Operation	5	5	3	8	1.3	4	100	3	2	2	5	0.8	4	100
	2011/2012 Closure	6	2	1	22	3.2	7	100	2	1	0	10	1.4	7	100
	2014/2015 Operation	6	6	2	9	1.6	4	100	1	2	0	2	0.3	4	100

Table 21. Continued.

Site ID	Period	DIN:DP Molar Ratio							DIN:TP Molar Ratio						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	4	4	4	4	-	1	100	2	2	2	2	-	1	100
	2011/2012 Operation	3	3	1	6	1.1	4	100	1	1	1	2	0.3	4	100
	2011/2012 Closure	5	2	1	13	1.8	7	100	3	2	0	11	1.4	7	100
	2014/2015 Operation	5	3	1	13	2.8	4	100	2	1	0	5	1.2	4	100
MB05SES012	Historic [1]	5	4	4	6	0.7	3	100	2	1	1	4	1.0	3	100
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	13	13	13	13	-	1	100	5	5	5	5	-	1	100
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Total Inorganic Carbon (mg/L)							Total Organic Carbon (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	41.8	43.0	35.0	47.3	3.60	3	100	11.8	12.6	9.3	13.5	1.28	3	100
	2011/2012 Closure	38.5	38.6	35.2	41.4	0.97	7	100	11.5	11.8	9.7	13.7	0.59	7	100
	2014/2015 Operation	36.8	35.0	31.4	47.0	2.70	5	100	10.0	9.2	8.1	12.6	0.82	5	100
LKW3	2011 Flood	44.5	44.5	44.5	44.5	-	1	100	13.8	13.8	13.8	13.8	-	1	100
	2011/2012 Operation	39.8	40.5	33.4	44.8	2.47	4	100	11.3	11.8	8.5	13.1	1.01	4	100
	2011/2012 Closure	37.5	36.2	34.6	40.8	0.95	7	100	10.6	10.2	9.8	13.0	0.42	7	100
	2014/2015 Operation	35.3	37.2	30.9	37.8	2.22	3	100	10.5	9.8	8.6	13.2	1.39	3	100
LKW2	2011 Flood	45.4	45.4	45.4	45.4	-	1	100	14.5	14.5	14.5	14.5	-	1	100
	2011/2012 Operation	45.8	45.3	40.9	51.8	2.40	4	100	12.9	12.6	11.6	14.9	0.70	4	100
	2011/2012 Closure	41.3	40.3	35.5	49.3	2.22	7	100	11.5	11.3	9.7	13.1	0.48	7	100
	2014/2015 Operation	42.3	41.1	36.6	49.2	3.69	3	100	12.2	12.3	9.2	15.1	1.70	3	100
LKW1	2011 Flood	25.7	25.7	25.7	25.7	-	1	100	8.9	8.9	8.9	8.9	-	1	100
	2011/2012 Operation	41.1	41.8	32.5	48.4	3.28	4	100	11.3	11.2	9.2	13.6	0.91	4	100
	2011/2012 Closure	39.1	38.4	34.6	45.1	1.50	7	100	11.0	10.7	9.6	13.0	0.41	7	100
	2014/2015 Operation	35.5	33.7	25.5	49.0	4.94	4	100	12.1	11.9	9.8	15.1	1.12	4	100
LKW4	2011 Flood	33.2	33.2	33.2	33.2	-	1	100	10.8	10.8	10.8	10.8	-	1	100
	2011/2012 Operation	39.9	40.0	37.5	42.2	1.03	4	100	11.5	11.3	10.8	12.5	0.36	4	100
	2011/2012 Closure	33.9	34.1	29.2	38.3	1.33	7	100	9.2	9.4	7.6	10.5	0.42	7	100
	2014/2015 Operation	34.6	35.4	31.7	36.7	1.50	3	100	9.6	8.6	8.2	11.9	1.17	3	100
LKW5	2011 Flood	29.9	29.9	29.9	29.9	-	1	100	9.7	9.7	9.7	9.7	-	1	100
	2011/2012 Operation	41.6	41.4	36.8	46.7	2.04	4	100	11.6	10.9	10.1	14.6	1.01	4	100
	2011/2012 Closure	37.0	36.1	32.3	43.3	1.64	7	100	10.2	10.6	8.4	11.7	0.43	7	100
	2014/2015 Operation	35.8	34.8	34.3	38.2	1.23	3	100	10.0	9.3	9.0	11.6	0.82	3	100
LKW6	2011 Flood	34.0	34.0	34.0	34.0	-	1	100	10.6	10.6	10.6	10.6	-	1	100
	2011/2012 Operation	39.2	40.2	31.4	44.9	2.86	4	100	10.7	10.5	7.9	13.7	1.21	4	100
	2011/2012 Closure	35.7	33.9	27.5	43.6	2.00	7	100	9.8	9.9	7.7	11.4	0.55	7	100
	2014/2015 Operation	33.7	35.1	25.0	39.6	3.14	4	100	10.3	10.1	8.3	12.6	1.08	4	100

Table 21. Continued.

		Total Inorganic Carbon (mg/L)							Total Organic Carbon (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	28.9	28.9	28.9	28.9	-	1	100	9.3	9.3	9.3	9.3	-	1	100
	2011/2012 Operation	35.3	35.5	31.5	38.6	1.48	4	100	9.8	9.7	8.3	11.6	0.71	4	100
	2011/2012 Closure	31.8	29.3	24.0	42.9	2.44	7	100	8.9	9.5	6.9	11.0	0.55	7	100
	2014/2015 Operation	33.2	35.1	22.5	40.0	3.85	4	100	9.9	10.2	7.4	11.9	1.04	4	100
MB05SES012	Historic [1]	25.9	24.3	22.2	36.0	2.09	6	100	7.1	8.3	<1.0	9.4	1.36	6	83
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	31.2	31.0	30.9	31.6	0.22	3	100	8.7	8.7	8.2	9.3	0.32	3	100
	2011/2012 Closure	30.9	30.9	28.7	33.1	2.20	2	100	10.3	10.3	9.8	10.8	0.50	2	100
	2014/2015 Operation	15.9	15.9	1.5	30.3	14.4	2	100	7.7	7.7	6.0	9.3	1.65	2	100

Table 21. Continued.

		Dissolved Organic Carbon (mg/L)							TOC:ON Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	11.0	11.5	8.6	12.8	1.24	3	100	16	18	12	19	2.4	3	100
	2011/2012 Closure	11.2	11.7	9.2	12.9	0.53	7	100	25	22	21	32	1.7	7	100
	2014/2015 Operation	10.1	9.5	8.0	12.6	0.77	5	100	17	16	14	19	0.9	5	100
LKW3	2011 Flood	12.0	12.0	12.0	12.0	-	1	100	16	16	16	16	-	1	100
	2011/2012 Operation	10.7	11.3	7.9	12.2	0.96	4	100	18	18	13	21	1.8	4	100
	2011/2012 Closure	10.6	10.6	9.4	12.8	0.42	7	100	21	21	17	24	0.9	7	100
	2014/2015 Operation	10.2	9.8	8.2	12.5	1.25	3	100	17	18	16	19	0.9	3	100
LKW2	2011 Flood	12.7	12.7	12.7	12.7	-	1	100	16	16	16	16	-	1	100
	2011/2012 Operation	12.1	11.6	10.9	14.2	0.74	4	100	18	18	17	19	0.4	4	100
	2011/2012 Closure	11.2	11.1	9.3	13.4	0.51	7	100	23	23	17	29	1.6	7	100
	2014/2015 Operation	11.8	12.3	9.2	13.9	1.38	3	100	16	18	13	18	1.5	3	100
LKW1	2011 Flood	8.4	8.4	8.4	8.4	-	1	100	15	15	15	15	-	1	100
	2011/2012 Operation	10.7	10.7	8.0	13.3	1.10	4	100	19	18	17	20	0.7	4	100
	2011/2012 Closure	10.8	10.4	9.4	12.9	0.44	7	100	23	23	17	30	1.6	7	100
	2014/2015 Operation	11.7	11.7	9.2	14.3	1.10	4	100	19	19	17	21	0.8	4	100
LKW4	2011 Flood	9.8	9.8	9.8	9.8	-	1	100	17	17	17	17	-	1	100
	2011/2012 Operation	10.9	10.6	9.3	12.9	0.75	4	100	19	19	17	20	0.6	4	100
	2011/2012 Closure	9.1	9.3	7.2	10.7	0.47	7	100	21	21	16	27	1.3	7	100
	2014/2015 Operation	9.5	8.7	8.0	11.7	1.13	3	100	19	19	18	20	0.7	3	100
LKW5	2011 Flood	8.7	8.7	8.7	8.7	-	1	100	18	18	18	18	-	1	100
	2011/2012 Operation	11.0	10.3	9.4	13.9	1.00	4	100	16	16	15	17	0.3	4	100
	2011/2012 Closure	9.9	10.2	8.3	10.9	0.35	7	100	24	23	18	28	1.4	7	100
	2014/2015 Operation	10.0	9.4	9.1	11.4	0.72	3	100	18	18	17	19	0.6	3	100
LKW6	2011 Flood	9.9	9.9	9.9	9.9	-	1	100	16	16	16	16	-	1	100
	2011/2012 Operation	10.0	9.9	7.4	13.0	1.15	4	100	18	19	16	20	0.8	4	100
	2011/2012 Closure	9.8	10.4	7.7	11.1	0.54	7	100	23	24	16	26	1.2	7	100
	2014/2015 Operation	10.3	10.1	8.3	12.7	1.09	4	100	20	20	19	21	0.5	4	100

Table 21. Continued.

		Dissolved Organic Carbon (mg/L)							TOC:ON Molar Ratio						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	8.5	8.5	8.5	8.5	-	1	100	15	15	15	15	-	1	100
	2011/2012 Operation	9.2	9.2	7.4	11.1	0.79	4	100	18	19	16	20	1.1	4	100
	2011/2012 Closure	8.9	9.2	6.9	10.9	0.59	7	100	23	22	20	29	1.2	7	100
	2014/2015 Operation	9.8	9.8	7.8	11.7	0.91	4	100	20	20	19	22	0.5	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	24	18	2	51	14.5	3	100
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	22	21	21	23	0.7	3	100
	2011/2012 Closure	-	-	-	-	-	0	-	73	73	26	120	47.4	2	100
	2014/2015 Operation	-	-	-	-	-	0	-	16	16	16	16	0.2	2	100

Table 21. Continued.

		TOC:TN Molar Ratio							Laboratory pH						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	16	17	11	19	2.3	3	100	8.46	8.41	8.41	8.56	0.050	3	100
	2011/2012 Closure	24	22	21	27	1.1	7	100	8.36	8.38	8.02	8.58	0.066	7	100
	2014/2015 Operation	16	15	14	19	1.0	5	100	8.37	8.38	8.18	8.47	0.051	5	100
LKW3	2011 Flood	15	15	15	15	-	1	100	8.39	8.39	8.39	8.39	-	1	100
	2011/2012 Operation	17	18	13	20	1.7	4	100	8.44	8.41	8.38	8.56	0.041	4	100
	2011/2012 Closure	20	21	17	23	0.9	7	100	8.39	8.41	8.26	8.56	0.041	7	100
	2014/2015 Operation	17	16	15	18	0.9	3	100	8.43	8.41	8.37	8.50	0.037	3	100
LKW2	2011 Flood	16	16	16	16	-	1	100	8.42	8.42	8.42	8.42	-	1	100
	2011/2012 Operation	17	17	16	18	0.3	4	100	8.41	8.43	8.18	8.58	0.085	4	100
	2011/2012 Closure	22	22	17	28	1.4	7	100	8.40	8.41	8.20	8.58	0.048	7	100
	2014/2015 Operation	15	14	13	18	1.4	3	100	8.27	8.37	8.02	8.41	0.124	3	100
LKW1	2011 Flood	15	15	15	15	-	1	100	8.37	8.37	8.37	8.37	-	1	100
	2011/2012 Operation	18	18	16	20	0.8	4	100	8.39	8.43	8.15	8.56	0.089	4	100
	2011/2012 Closure	22	21	17	30	1.5	7	100	8.38	8.39	8.27	8.54	0.044	7	100
	2014/2015 Operation	19	18	17	21	0.8	4	100	8.38	8.38	8.30	8.45	0.034	4	100
LKW4	2011 Flood	16	16	16	16	-	1	100	8.38	8.38	8.38	8.38	-	1	100
	2011/2012 Operation	18	19	17	19	0.6	4	100	8.39	8.43	8.19	8.52	0.071	4	100
	2011/2012 Closure	20	19	16	27	1.3	7	100	8.31	8.39	8.02	8.53	0.075	7	100
	2014/2015 Operation	18	18	17	19	0.6	3	100	8.34	8.33	8.32	8.37	0.015	3	100
LKW5	2011 Flood	18	18	18	18	-	1	100	8.36	8.36	8.36	8.36	-	1	100
	2011/2012 Operation	16	15	15	16	0.2	4	100	8.42	8.43	8.31	8.50	0.040	4	100
	2011/2012 Closure	23	21	18	28	1.4	7	100	8.38	8.37	8.26	8.50	0.034	7	100
	2014/2015 Operation	18	17	16	19	0.9	3	100	8.38	8.38	8.35	8.41	0.017	3	100
LKW6	2011 Flood	16	16	16	16	-	1	100	8.38	8.38	8.38	8.38	-	1	100
	2011/2012 Operation	18	18	16	19	0.7	4	100	8.42	8.40	8.34	8.52	0.041	4	100
	2011/2012 Closure	22	23	16	25	1.1	7	100	8.38	8.36	8.23	8.60	0.050	7	100
	2014/2015 Operation	19	19	17	21	0.8	4	100	8.41	8.39	8.36	8.50	0.031	4	100

Table 21. Continued.

		TOC:TN Molar Ratio							Laboratory pH						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	15	15	15	15	-	1	100	8.35	8.35	8.35	8.35	-	1	100
	2011/2012 Operation	18	18	15	19	0.9	4	100	8.39	8.41	8.29	8.46	0.037	4	100
	2011/2012 Closure	22	21	19	28	1.3	7	100	8.23	8.23	7.80	8.52	0.094	7	100
	2014/2015 Operation	19	20	17	21	0.7	4	100	8.37	8.35	8.30	8.48	0.039	4	100
MB05SES012	Historic [1]	20	18	2	42	5.4	6	100	8.33	8.31	8.27	8.46	0.031	6	100
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	8.49	8.42	8.39	8.66	0.085	3	100
	2011/2012 Closure	-	-	-	-	-	0	100	8.37	8.37	8.33	8.40	0.035	2	100
	2014/2015 Operation	-	-	-	-	-	0	-	8.46	8.46	8.44	8.47	0.015	2	100

Table 21. Continued.

		Laboratory Conductivity (µmhos/cm)							Total Dissolved Solids (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	922	971	716	1080	108	3	100	551	621	377	654	87.4	3	100
	2011/2012 Closure	816	826	591	1020	49.7	7	100	473	481	356	596	28.0	7	100
	2014/2015 Operation	762	803	542	947	70.6	5	100	409	403	296	485	34.5	5	100
LKW3	2011 Flood	1040	1040	1040	1040	-	1	100	614	614	614	614	-	1	100
	2011/2012 Operation	825	822	645	1010	85.7	4	100	518	519	433	600	44.8	4	100
	2011/2012 Closure	790	759	593	990	46.3	7	100	460	449	347	574	28.2	7	100
	2014/2015 Operation	770	766	690	854	47.3	3	100	432	432	367	497	37.5	3	100
LKW2	2011 Flood	1070	1070	1070	1070	-	1	100	658	658	658	658	-	1	100
	2011/2012 Operation	1032	1046	934	1100	41.3	4	100	659	663	556	756	47.1	4	100
	2011/2012 Closure	849	833	705	963	36.8	7	100	481	474	406	574	25.6	7	100
	2014/2015 Operation	973	931	897	1090	59.5	3	100	539	515	514	587	24.2	3	100
LKW1	2011 Flood	410	410	410	410	-	1	100	230	230	230	230	-	1	100
	2011/2012 Operation	868	926	610	1010	88.3	4	100	539	551	358	694	71.6	4	100
	2011/2012 Closure	793	786	721	888	24.0	7	100	460	465	406	519	16.2	7	100
	2014/2015 Operation	776	778	580	967	83.7	4	100	448	455	330	550	48.3	4	100
LKW4	2011 Flood	678	678	678	678	-	1	100	380	380	380	380	-	1	100
	2011/2012 Operation	847	869	728	921	46.4	4	100	530	539	470	571	23.0	4	100
	2011/2012 Closure	677	679	546	784	32.5	7	100	386	386	299	441	21.9	7	100
	2014/2015 Operation	683	693	647	709	18.6	3	100	398	398	387	410	6.6	3	100
LKW5	2011 Flood	546	546	546	546	-	1	100	310	310	310	310	-	1	100
	2011/2012 Operation	860	871	796	902	23.4	4	100	536	559	419	608	40.8	4	100
	2011/2012 Closure	758	727	700	906	26.6	7	100	450	434	399	594	25.5	7	100
	2014/2015 Operation	730	717	658	815	45.8	3	100	416	412	368	468	28.9	3	100
LKW6	2011 Flood	706	706	706	706	-	1	100	398	398	398	398	-	1	100
	2011/2012 Operation	796	859	569	897	76.2	4	100	490	512	324	611	65.8	4	100
	2011/2012 Closure	731	707	627	999	46.6	7	100	419	406	375	533	20.2	7	100
	2014/2015 Operation	698	678	631	806	37.7	4	100	399	392	356	457	21.1	4	100

Table 21. Continued.

		Laboratory Conductivity (µmhos/cm)							Total Dissolved Solids (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	540	540	540	540	-	1	100	286	286	286	286	-	1	100
	2011/2012 Operation	706	686	597	855	54.0	4	100	453	461	338	552	44.7	4	100
	2011/2012 Closure	609	617	530	689	21.6	7	100	344	358	295	379	13.8	7	100
	2014/2015 Operation	662	669	576	733	37.9	4	100	371	375	328	408	20.6	4	100
MB05SES012	Historic [1]	418	405	338	520	31.9	6	100	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	560	572	532	577	14.2	3	100	-	-	-	-	-	0	-
	2011/2012 Closure	567	567	510	624	57.0	2	100	-	-	-	-	-	0	-
	2014/2015 Operation	633	633	517	748	116	2	100	-	-	-	-	-	0	-

Table 21. Continued.

		Total Suspended Solids (mg/L)							Laboratory Turbidity (NTU)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	16	11	10	28	6.0	3	100	13.5	15.9	7.2	17.5	3.21	3	100
	2011/2012 Closure	5	5	<2.0	8	1.1	7	71	3.3	2.7	2.2	4.9	0.45	7	100
	2014/2015 Operation	9.1	9.8	<2.0	15.8	1.55	10	80	8.0	8.9	2.3	12.9	1.89	10	100
LKW3	2011 Flood	7	7	7	7	-	1	100	6.6	6.6	6.6	6.6	-	1	100
	2011/2012 Operation	8	6	<2.0	17	3.4	4	75	7.3	7.2	3.0	11.9	2.36	4	100
	2011/2012 Closure	4	4	<2.0	8	1.0	7	71	3.2	3.0	2.2	4.7	0.36	7	100
	2014/2015 Operation	7.4	8.3	<2.0	13.0	3.49	3	100	6.3	5.7	3.1	10.1	2.05	3	100
LKW2	2011 Flood	7	7	7	7	-	1	100	5.6	5.6	5.6	5.6	-	1	100
	2011/2012 Operation	8	8	3	12	1.7	4	100	5.2	5.9	2.6	6.5	0.91	4	100
	2011/2012 Closure	5	5	<2.0	13	1.6	7	71	3.9	3.5	1.4	6.7	0.70	7	100
	2014/2015 Operation	6.9	7.6	<2.0	12.0	3.20	3	67	4.7	6.1	1.9	6.1	1.39	3	100
LKW1	2011 Flood	24	24	24	24	-	1	100	30.0	30.0	30.0	30.0	-	1	100
	2011/2012 Operation	8	8	5	11	1.3	4	100	8.0	6.4	4.2	15.3	2.51	4	100
	2011/2012 Closure	6	5	<2.0	15	2.0	7	71	5.4	3.3	1.8	11.5	1.50	7	100
	2014/2015 Operation	9.1	8.3	<2.0	19	3.89	4	75	9.8	9.5	3.4	16.8	2.84	4	100
LKW4	2011 Flood	10	10	10	10	-	1	100	14.1	14.1	14.1	14.1	-	1	100
	2011/2012 Operation	6	5	<2.0	13	2.4	4	75	5.7	4.6	3.2	10.5	1.62	4	100
	2011/2012 Closure	4	5	<2.0	7	0.8	7	86	4.2	3.0	2.4	7.4	0.85	7	100
	2014/2015 Operation	5.3	4.0	<2.0	10.8	2.90	3	67	7.1	7.1	2.9	11.4	2.46	3	100
LKW5	2011 Flood	9	9	9	9	-	1	100	16.5	16.5	16.5	16.5	-	1	100
	2011/2012 Operation	7	7	4	11	1.4	4	100	6.8	7.2	3.5	9.2	1.24	4	100
	2011/2012 Closure	5	4	<2.0	13	1.5	7	71	4.0	3.3	2.0	8.1	0.79	7	100
	2014/2015 Operation	5.4	5.2	<2.0	10.0	2.60	3	67	6.5	5.4	3.5	10.5	2.09	3	100
LKW6	2011 Flood	11	11	11	11	-	1	100	14.9	14.9	14.9	14.9	-	1	100
	2011/2012 Operation	6	5	3	10	1.5	4	100	7.4	7.0	3.6	12.2	1.98	4	100
	2011/2012 Closure	5	4	<2.0	10	1.5	7	71	4.2	3.7	2.0	9.5	0.95	7	100
	2014/2015 Operation	6.7	6.8	<2.0	12.0	2.45	4	75	8.5	9.1	3.6	12.2	1.69	4	100

Table 21. Continued.

		Total Suspended Solids (mg/L)							Laboratory Turbidity (NTU)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	9	9	9	9	-	1	100	19.3	19.3	19.3	19.3	-	1	100
	2011/2012 Operation	7	7	3	11	1.8	4	100	8.0	7.7	3.5	13.1	2.26	4	100
	2011/2012 Closure	4	5	<2.0	10	1.3	7	57	6.0	4.3	2.4	12.3	1.48	7	100
	2014/2015 Operation	8.4	8.8	<2.0	14.8	2.94	3	75	9.8	10.6	3.4	14.7	2.03	4	100
MB05SES012	Historic [1]	8	10	<5.0	14	1.9	6	67	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	61	20	11	153	45.9	3	100	-	-	-	-	-	0	-
	2011/2012 Closure	8	8	8	8	0.0	2	100	-	-	-	-	-	0	-
	2014/2015 Operation	7	7	5	8	1.5	2	100	-	-	-	-	-	0	-

Table 21. Continued.

		True Colour (CU)							Chlorophyll *a* (µg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	10.0	10.3	9.3	10.4	0.35	3	100	5.06	5.27	3.39	6.52	0.910	3	100
	2011/2012 Closure	11.1	11.7	6.8	14.8	0.99	7	100	3.62	4.39	0.59	6.11	0.788	7	100
	2014/2015 Operation	10.5	9.8	6.8	16.9	1.70	5	100	3.56	2.37	1.45	6.78	1.00	5	100
LKW3	2011 Flood	9.5	9.5	9.5	9.5	-	1	100	7.04	7.04	7.04	7.04	-	1	100
	2011/2012 Operation	10.3	9.9	7.1	14.4	1.57	4	100	4.11	4.14	2.29	5.88	0.835	4	100
	2011/2012 Closure	10.0	9.7	6.9	13.1	0.77	7	100	3.25	2.86	0.50	6.31	0.818	7	100
	2014/2015 Operation	11.6	10.1	9.6	15.1	1.75	3	100	5.91	5.08	4.23	8.42	1.28	3	100
LKW2	2011 Flood	9.0	9.0	9.0	9.0	-	1	100	7.33	7.33	7.33	7.33	-	1	100
	2011/2012 Operation	11.2	11.0	10.2	12.5	0.48	4	100	3.72	3.48	3.20	4.71	0.338	4	100
	2011/2012 Closure	9.9	10.3	5.4	14.5	1.09	7	100	3.05	3.31	0.55	5.88	0.730	7	100
	2014/2015 Operation	9.6	9.0	5.9	13.8	2.30	3	100	4.20	5.04	1.69	5.87	1.278	3	100
LKW1	2011 Flood	9.5	9.5	9.5	9.5	-	1	100	14.7	14.7	14.7	14.7	-	1	100
	2011/2012 Operation	12.8	11.4	9.8	18.5	1.98	4	100	3.29	3.39	2.76	3.64	0.205	4	100
	2011/2012 Closure	10.9	9.3	6.8	15.7	1.28	7	100	2.42	2.58	0.13	4.58	0.617	7	100
	2014/2015 Operation	18.1	16.6	10.2	28.9	3.99	4	100	4.94	4.00	3.35	8.41	1.167	4	100
LKW4	2011 Flood	11.8	11.8	11.8	11.8	-	1	100	13.3	13.3	13.3	13.3	-	1	100
	2011/2012 Operation	11.5	11.5	9.1	13.8	0.96	4	100	3.51	3.03	2.73	5.27	0.593	4	100
	2011/2012 Closure	9.0	8.5	8.2	10.1	0.33	7	100	2.97	3.09	0.46	5.95	0.707	7	100
	2014/2015 Operation	12.5	10.7	9.9	16.8	2.18	3	100	4.35	3.17	2.80	7.08	1.37	3	100
LKW5	2011 Flood	10.5	10.5	10.5	10.5	-	1	100	11.0	11.0	11.0	11.0	-	1	100
	2011/2012 Operation	11.3	10.7	9.1	14.6	1.21	4	100	3.62	3.75	2.35	4.63	0.472	4	100
	2011/2012 Closure	9.4	9.9	7.1	12.3	0.78	7	100	2.34	2.48	0.40	3.73	0.550	7	100
	2014/2015 Operation	12.5	12.7	10.1	14.8	1.36	3	100	4.09	3.58	1.95	6.75	1.41	3	100
LKW6	2011 Flood	11.1	11.1	11.1	11.1	-	1	100	8.62	8.62	8.62	8.62	-	1	100
	2011/2012 Operation	11.2	9.9	9.7	15.4	1.38	4	100	3.30	3.13	1.24	5.68	0.923	4	100
	2011/2012 Closure	8.9	8.9	5.5	11.6	0.74	7	100	1.97	2.59	0.46	2.91	0.386	7	100
	2014/2015 Operation	13.6	11.5	10.6	20.7	2.40	4	100	4.37	3.98	2.11	7.42	1.27	4	100

Table 21. Continued.

Site ID	Period	True Colour (CU)							Chlorophyll *a* (µg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	12.5	12.5	12.5	12.5	-	1	100	10.6	10.6	10.6	10.6	-	1	100
	2011/2012 Operation	11.0	9.7	8.9	15.7	1.58	4	100	3.31	3.00	2.25	4.99	0.603	4	100
	2011/2012 Closure	8.8	7.7	5.9	11.9	0.92	7	100	3.88	2.61	0.43	14.5	1.83	7	100
	2014/2015 Operation	11.3	11.9	9.0	12.6	0.80	4	100	4.35	3.30	1.92	8.89	1.56	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	4.87	3.44	1.15	10.7	1.68	6	100
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	5.26	4.28	4.01	7.48	1.11	3	100
	2011/2012 Closure	-	-	-	-	-	0	-	4.01	4.01	1.72	6.30	2.29	2	100
	2014/2015 Operation	-	-	-	-	-	0	-	3.25	3.25	2.10	4.39	1.15	2	100

Table 21. Continued.

		Phaeophytin *a* (µg/L)							*In Situ* Dissolved Oxygen (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	1.10	0.90	0.69	1.71	0.311	3	100	9.0	9.0	7.3	10.6	0.98	3	100
	2011/2012 Closure	0.74	0.63	0.39	1.21	0.124	7	100	11.1	10.7	8.5	14.5	0.84	7	100
	2014/2015 Operation	1.10	1.19	0.58	1.53	0.200	5	100	10.4	10.1	8.3	14.2	0.58	10	100
LKW3	2011 Flood	1.60	1.60	1.60	1.60	-	1	100	11.6	11.6	11.6	11.6	-	1	100
	2011/2012 Operation	1.10	1.19	0.66	1.35	0.161	4	100	9.1	9.0	7.4	10.9	0.99	3	100
	2011/2012 Closure	0.70	0.61	0.36	1.19	0.115	7	100	11.4	10.7	8.6	14.7	0.87	7	100
	2014/2015 Operation	1.18	1.02	1.00	1.53	0.173	3	100	11.7	11.6	8.0	15.6	2.19	3	100
LKW2	2011 Flood	1.95	1.95	1.95	1.95	-	1	100	12.1	12.1	12.1	12.1	-	1	100
	2011/2012 Operation	0.95	0.82	0.44	1.70	0.274	4	100	9.0	8.7	7.3	11.0	1.09	3	100
	2011/2012 Closure	1.23	0.64	0.37	4.54	0.559	7	100	11.2	10.8	8.5	15.4	0.87	7	100
	2014/2015 Operation	1.02	1.22	0.61	1.23	0.205	3	100	9.9	9.3	8.7	11.7	0.94	3	100
LKW1	2011 Flood	2.61	2.61	2.61	2.61	-	1	100	12.3	12.3	12.3	12.3	-	1	100
	2011/2012 Operation	0.99	0.99	0.68	1.30	0.143	4	100	9.5	9.5	7.9	11.0	0.90	3	100
	2011/2012 Closure	0.83	0.81	0.26	1.91	0.204	7	100	11.3	10.6	8.4	14.5	0.88	7	100
	2014/2015 Operation	1.23	1.31	0.64	1.65	0.229	4	100	10.8	10.4	7.9	14.4	1.46	4	100
LKW4	2011 Flood	1.90	1.90	1.90	1.90	-	1	100	12.0	12.0	12.0	12.0	-	1	100
	2011/2012 Operation	0.98	1.05	0.58	1.25	0.149	4	100	9.0	8.9	7.3	10.8	0.99	3	100
	2011/2012 Closure	0.79	0.60	0.23	1.36	0.171	7	100	11.6	10.5	8.4	15.0	0.96	7	100
	2014/2015 Operation	1.02	1.09	0.68	1.29	0.180	3	100	11.9	11.7	8.8	15.2	1.85	3	100
LKW5	2011 Flood	1.32	1.32	1.32	1.32	-	1	100	11.9	11.9	11.9	11.9	-	1	100
	2011/2012 Operation	0.89	0.90	0.69	1.07	0.083	4	100	9.2	8.8	7.9	10.8	0.87	3	100
	2011/2012 Closure	0.74	0.55	0.34	1.67	0.186	7	100	11.8	11.3	8.3	16.5	1.09	7	100
	2014/2015 Operation	0.91	0.96	0.64	1.14	0.146	3	100	12.0	11.7	9.5	14.9	1.55	3	100
LKW6	2011 Flood	1.75	1.75	1.75	1.75	-	1	100	11.8	11.8	11.8	11.8	-	1	100
	2011/2012 Operation	1.22	1.00	0.54	2.36	0.417	4	100	9.0	8.9	7.2	10.7	1.02	3	100
	2011/2012 Closure	0.65	0.45	0.36	1.04	0.109	7	100	12.1	11.0	8.3	16.7	1.15	7	100
	2014/2015 Operation	1.16	1.15	0.64	1.71	0.223	4	100	11.5	10.9	9.1	15.1	1.31	4	100

Table 21. Continued.

Site ID	Period	Phaeophytin *a* (µg/L)							*In Situ* Dissolved Oxygen (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	1.48	1.48	1.48	1.48	-	1	100	12.0	12.0	12.0	12.0	-	1	100
	2011/2012 Operation	0.75	0.74	0.65	0.86	0.046	4	100	8.9	8.7	7.3	10.8	1.03	3	100
	2011/2012 Closure	0.60	0.62	0.30	0.94	0.083	7	100	11.9	11.3	8.9	14.8	0.87	7	100
	2014/2015 Operation	1.16	1.18	0.68	1.62	0.202	4	100	11.6	11.3	9.3	14.6	1.10	4	100
MB05SES012	Historic [1]	1.05	1.14	<0.50	1.74	0.276	6	67	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	1.49	1.52	1.07	1.87	0.232	3	100	-	-	-	-	-	0	-
	2011/2012 Closure	0.88	0.88	<0.60	1.45	0.575	2	50	-	-	-	-	-	0	-
	2014/2015 Operation	0.63	0.63	<0.60	0.95	0.325	2	50	-	-	-	-	-	0	-

Table 21. Continued.

		Chloride, Dissolved (mg/L)							Fluoride, Dissolved (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	144	161	98	174	23.6	3	100	0.130	0.130	0.103	0.158	0.0159	3	100
	2011/2012 Closure	123	132	61	168	12.6	7	100	0.118	0.115	0.105	0.134	0.0039	7	100
	2014/2015 Operation	100	104	58	127	12.8	5	100	0.121	0.120	0.113	0.133	0.0035	5	100
LKW3	2011 Flood	194	194	194	194	-	1	100	0.152	0.152	0.152	0.152	-	1	100
	2011/2012 Operation	126	132	82	161	18.0	4	100	0.123	0.129	0.098	0.138	0.0087	4	100
	2011/2012 Closure	115	117	56	163	13.0	7	100	0.118	0.118	0.098	0.136	0.0045	7	100
	2014/2015 Operation	104	111	72	129	16.8	3	100	0.122	0.121	0.115	0.130	0.0042	3	100
LKW2	2011 Flood	201	201	201	201	-	1	100	0.158	0.158	0.158	0.158	-	1	100
	2011/2012 Operation	178	170	150	222	15.5	4	100	0.140	0.142	0.119	0.156	0.0077	4	100
	2011/2012 Closure	132	130	94	158	9.6	7	100	0.121	0.121	0.102	0.136	0.0047	7	100
	2014/2015 Operation	149	141	139	168	9.4	3	100	0.135	0.129	0.128	0.149	0.0068	3	100
LKW1	2011 Flood	41	41	41	41	-	1	100	0.100	0.100	0.100	0.100	-	1	100
	2011/2012 Operation	140	146	75	196	25.0	4	100	0.129	0.139	0.097	0.143	0.0108	4	100
	2011/2012 Closure	117	116	102	144	5.4	7	100	0.120	0.126	0.105	0.132	0.0041	7	100
	2014/2015 Operation	104	109	64	134	16.6	4	100	0.125	0.118	0.108	0.155	0.0104	4	100
LKW4	2011 Flood	104	104	104	104	-	1	100	0.119	0.119	0.119	0.119	-	1	100
	2011/2012 Operation	131	131	113	148	8.2	4	100	0.124	0.126	0.110	0.134	0.0052	4	100
	2011/2012 Closure	88	92	48	121	9.6	7	100	0.113	0.112	0.101	0.124	0.0032	7	100
	2014/2015 Operation	84	88	67	98	9.2	3	100	0.119	0.115	0.112	0.130	0.0056	3	100
LKW5	2011 Flood	73	73	73	73	-	1	100	0.109	0.109	0.109	0.109	-	1	100
	2011/2012 Operation	142	146	117	159	9.1	4	100	0.133	0.133	0.107	0.160	0.0114	4	100
	2011/2012 Closure	108	104	90	148	7.5	7	100	0.115	0.118	0.103	0.128	0.0041	7	100
	2014/2015 Operation	95	84	80	121	13.1	3	100	0.120	0.116	0.110	0.134	0.0072	3	100
LKW6	2011 Flood	110	110	110	110	-	1	100	0.121	0.121	0.121	0.121	-	1	100
	2011/2012 Operation	121	136	65	149	19.3	4	100	0.125	0.133	0.093	0.142	0.0109	4	100
	2011/2012 Closure	99	99	57	164	12.6	7	100	0.117	0.114	0.104	0.136	0.0043	7	100
	2014/2015 Operation	89	84	74	115	9.6	4	100	0.121	0.120	0.112	0.131	0.0048	4	100

Table 21. Continued.

Site ID	Period	Chloride, Dissolved (mg/L)							Fluoride, Dissolved (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	72	72	72	72	-	1	100	0.105	0.105	0.105	0.105	-	1	100
	2011/2012 Operation	99	98	71	128	11.7	4	100	0.116	0.121	0.095	0.128	0.0073	4	100
	2011/2012 Closure	74	72	57	93	5.1	7	100	0.108	0.104	0.092	0.137	0.0060	7	100
	2014/2015 Operation	79	75	69	99	6.7	4	100	0.116	0.112	0.104	0.137	0.0072	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Sulphate, Dissolved (mg/L)							Hardness, as CaCO3 (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	81.7	85.8	61.6	97.7	10.6	3	100	242	245	192	288	27.8	3	100
	2011/2012 Closure	63.7	63.9	54.9	74.5	2.4	7	100	214	217	200	224	3.0	7	100
	2014/2015 Operation	63.0	63.0	54.2	79.5	4.61	5	100	207	205	178	247	12.0	5	100
LKW3	2011 Flood	87.5	87.5	87.5	87.5	-	1	100	324	324	324	324	-	1	100
	2011/2012 Operation	74.5	75.2	57.7	90.0	7.3	4	100	242	255	185	273	19.7	4	100
	2011/2012 Closure	62.2	64.0	54.7	72.3	2.4	7	100	207	208	197	219	3.5	7	100
	2014/2015 Operation	64.8	64.7	64.2	65.5	0.38	3	100	212	214	206	215	2.8	3	100
LKW2	2011 Flood	90.5	90.5	90.5	90.5	-	1	100	300	300	300	300	-	1	100
	2011/2012 Operation	90.5	90.1	75.9	106	6.8	4	100	269	264	242	308	13.8	4	100
	2011/2012 Closure	64.1	66.5	49.7	72.4	3.1	7	100	224	218	196	298	13.5	7	100
	2014/2015 Operation	78.9	73.6	68.6	94.4	7.90	3	100	243	242	223	265	12.1	3	100
LKW1	2011 Flood	38.2	38.2	38.2	38.2	-	1	100	163	163	163	163	-	1	100
	2011/2012 Operation	77.1	80.8	53.0	93.9	8.6	4	100	240	240	183	297	24.2	4	100
	2011/2012 Closure	60.9	57.1	53.2	72.2	2.9	7	100	209	213	169	248	10.3	7	100
	2014/2015 Operation	60.0	57.3	43.7	81.8	8.27	4	100	229	220	183	292	23.1	4	100
LKW4	2011 Flood	57.6	57.6	57.6	57.6	-	1	100	218	218	218	218	-	1	100
	2011/2012 Operation	73.4	72.7	66.9	81.2	3.7	4	100	245	251	208	270	13.2	4	100
	2011/2012 Closure	56.0	56.4	50.0	63.7	1.7	7	100	191	196	167	211	5.6	7	100
	2014/2015 Operation	58.1	57.2	54.2	62.9	2.55	3	100	204	208	192	213	6.3	3	100
LKW5	2011 Flood	47.6	47.6	47.6	47.6	-	1	100	193	193	193	193	-	1	100
	2011/2012 Operation	79.0	81.8	65.1	87.2	4.9	4	100	254	244	209	318	23.9	4	100
	2011/2012 Closure	60.1	57.0	53.1	70.2	2.7	7	100	203	199	181	234	7.6	7	100
	2014/2015 Operation	60.5	60.0	55.5	66.0	3.0	3	100	213	213	190	236	13.3	3	100
LKW6	2011 Flood	59.7	59.7	59.7	59.7	-	1	100	230	230	230	230	-	1	100
	2011/2012 Operation	71.6	76.5	52.5	80.9	6.6	4	100	230	227	173	293	27.4	4	100
	2011/2012 Closure	59.5	56.2	52.2	70.5	2.6	7	100	200	195	174	238	7.7	7	100
	2014/2015 Operation	57.4	56.8	52.8	63.3	2.5	4	100	204	202	188	223	8.5	4	100

Table 21. Continued.

		Sulphate, Dissolved (mg/L)							Hardness, as CaCO3 (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	46.3	46.3	46.3	46.3	-	1	100	185	185	185	185	-	1	100
	2011/2012 Operation	63.1	63.4	54.3	71.3	3.5	4	100	198	199	175	221	9.6	4	100
	2011/2012 Closure	52.7	49.6	44.9	66.4	2.9	7	100	179	174	149	223	9.0	7	100
	2014/2015 Operation	56.5	54.0	48.8	69.2	4.5	4	100	197	191	160	245	17.7	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Aluminum, Dissolved (mg/L)							Aluminum, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.0697	0.0233	0.0059	0.180	0.0554	3	100	0.464	0.486	0.375	0.531	0.0464	3	100
	2011/2012 Closure	0.0073	0.0032	<0.0020	0.0176	0.00278	7	57	0.104	0.0764	0.0584	0.192	0.0191	7	100
	2014/2015 Operation	0.0080	0.0082	0.0048	0.0104	0.00092	5	100	0.246	0.168	0.085	0.572	0.089	5	100
LKW3	2011 Flood	0.0029	0.0029	0.0029	0.0029	-	1	100	0.169	0.169	0.169	0.169	-	1	100
	2011/2012 Operation	0.0395	0.0232	0.0027	0.109	0.0239	4	100	0.343	0.311	0.175	0.575	0.0879	4	100
	2011/2012 Closure	0.0132	0.0061	<0.0020	0.0278	0.00469	7	86	0.111	0.105	0.0558	0.152	0.0130	7	100
	2014/2015 Operation	0.0087	0.0057	0.0041	0.0163	0.00382	3	100	0.232	0.183	0.141	0.371	0.0707	3	100
LKW2	2011 Flood	0.0023	0.0023	0.0023	0.0023	-	1	100	0.0949	0.0949	0.0949	0.0949	-	1	100
	2011/2012 Operation	0.0033	0.0027	0.0020	0.0058	0.00086	4	100	0.198	0.132	0.0553	0.473	0.0940	4	100
	2011/2012 Closure	0.0067	0.0039	<0.0020	0.0160	0.00209	7	86	0.125	0.104	0.0772	0.241	0.0215	7	100
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	0.0026	-	3	33	0.141	0.170	0.038	0.214	0.0530	3	100
LKW1	2011 Flood	0.117	0.117	0.117	0.117	-	1	100	1.10	1.10	1.10	1.10	-	1	100
	2011/2012 Operation	0.0087	0.0074	0.0029	0.0172	0.00310	4	100	0.336	0.286	0.075	0.698	0.136	4	100
	2011/2012 Closure	0.0135	0.0125	0.0021	0.0266	0.00367	7	100	0.208	0.129	0.0507	0.502	0.0621	7	100
	2014/2015 Operation	0.0107	0.0105	0.0051	0.0169	0.00255	4	50	0.390	0.415	0.135	0.595	0.1169	4	100
LKW4	2011 Flood	0.0629	0.0629	0.0629	0.0629	-	1	100	0.519	0.519	0.519	0.519	-	1	100
	2011/2012 Operation	0.0167	0.0106	0.0032	0.0422	0.00909	4	100	0.253	0.248	0.152	0.363	0.0556	4	100
	2011/2012 Closure	0.0186	0.0217	0.0020	0.0351	0.00488	7	100	0.190	0.140	0.107	0.374	0.0415	7	100
	2014/2015 Operation	0.0128	0.0140	0.0068	0.0177	0.00320	3	100	0.321	0.336	0.145	0.482	0.0976	3	100
LKW5	2011 Flood	0.101	0.101	0.101	0.101	-	1	100	0.710	0.710	0.710	0.710	-	1	100
	2011/2012 Operation	0.0167	0.0062	0.0043	0.0501	0.0112	4	100	0.285	0.158	0.112	0.712	0.143	4	100
	2011/2012 Closure	0.0157	0.0146	0.0035	0.0285	0.00370	7	100	0.148	0.139	0.0586	0.262	0.0259	7	100
	2014/2015 Operation	0.0145	0.0104	0.0071	0.0260	0.00583	3	100	0.291	0.256	0.168	0.449	0.0830	3	100
LKW6	2011 Flood	0.0467	0.0467	0.0467	0.0467	-	1	100	0.515	0.515	0.515	0.515	-	1	100
	2011/2012 Operation	0.0165	0.0078	0.0031	0.0474	0.0105	4	100	0.403	0.358	0.141	0.753	0.154	4	100
	2011/2012 Closure	0.0166	0.0125	0.0032	0.0462	0.00578	7	100	0.175	0.124	0.0811	0.514	0.0571	7	100
	2014/2015 Operation	0.0208	0.0195	0.0078	0.0363	0.00627	4	100	0.380	0.415	0.153	0.536	0.0827	4	100

Table 21. Continued.

		Aluminum, Dissolved (mg/L)							Aluminum, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.172	0.172	0.172	0.172	-	1	100	0.903	0.903	0.903	0.903	-	1	100
	2011/2012 Operation	0.0211	0.0093	0.0049	0.0608	0.0133	4	100	0.406	0.290	0.104	0.941	0.190	4	100
	2011/2012 Closure	0.0264	0.0283	0.0068	0.0606	0.00682	7	100	0.275	0.221	0.0944	0.553	0.0691	7	100
	2014/2015 Operation	0.0294	0.0287	0.0100	0.0500	0.0083	4	100	0.478	0.524	0.178	0.688	0.1083	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Antimony, Dissolved (mg/L)							Antimony, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	3	0	<0.0002	<0.0002	<0.0002	<0.0002	-	3	0
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	0.00024	-	7	14	<0.0002	<0.0002	<0.0002	0.00032	-	7	14
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	0.00021	0.000026	5	40	<0.0002	<0.0002	<0.0002	0.00042	-	5	20
LKW3	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	0	<0.0002	<0.0002	<0.0002	<0.0002	-	4	0
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	<0.0002	-	7	0
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	3	0	0.0003	0.0003	<0.0002	0.0004	0.00008	3	67
LKW2	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	0	<0.0002	<0.0002	<0.0002	<0.0002	-	4	25
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	0.00021	-	7	14
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	0.00029	-	3	33	<0.0002	<0.0002	<0.0002	0.00024	-	3	33
LKW1	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	0	<0.0002	<0.0002	<0.0002	<0.0002	-	4	25
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	<0.0002	-	7	0
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	0.00034	-	4	25	<0.0002	<0.0002	<0.0002	0.00027	-	4	25
LKW4	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	0	<0.0002	<0.0002	<0.0002	<0.0002	-	4	25
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	<0.0002	-	7	0
	2014/2015 Operation	<0.00020	0.00022	<0.00020	0.00025	0.000046	3	66	<0.0002	<0.0002	<0.0002	<0.0002	-	3	0
LKW5	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	0	<0.0002	<0.0002	<0.0002	<0.0002	-	4	25
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	<0.0002	-	7	0
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	0.00022	-	3	33	<0.0002	<0.0002	<0.0002	0.00025	-	3	33
LKW6	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	0	<0.0002	<0.0002	<0.0002	<0.0002	-	4	25
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	<0.0002	-	7	0
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	0.00020	-	4	33	<0.0002	<0.0002	<0.0002	0.00021	-	4	25

Table 21. Continued.

		Antimony, Dissolved (mg/L)							Antimony, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<0.00020	<0.00020	<0.00020	<0.00020	-	1	0	<0.0002	<0.0002	<0.0002	<0.0002	-	1	0
	2011/2012 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	0	<0.0002	<0.0002	<0.0002	<0.0002	-	4	25
	2011/2012 Closure	<0.00020	<0.00020	<0.00020	<0.00020	-	7	0	<0.0002	<0.0002	<0.0002	0.00028	-	7	14
	2014/2015 Operation	<0.00020	<0.00020	<0.00020	<0.00020	-	4	0	<0.0002	<0.0002	<0.0002	0.00026	-	4	25
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Arsenic, Dissolved (mg/L)							Arsenic, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00229	0.00223	0.00209	0.00256	0.000139	3	100	0.00225	0.00236	0.00202	0.00236	0.000113	3	100
	2011/2012 Closure	0.00179	0.00191	0.00140	0.00227	0.000127	7	100	0.00178	0.00186	0.00138	0.00213	0.000125	7	100
	2014/2015 Operation	0.00167	0.00155	0.00124	0.00247	0.000208	5	100	0.00179	0.00163	0.00125	0.00273	0.000249	5	100
LKW3	2011 Flood	0.00286	0.00286	0.00286	0.00286	-	1	100	0.00254	0.00254	0.00254	0.00254	-	1	100
	2011/2012 Operation	0.00236	0.00237	0.00211	0.00259	0.000129	4	100	0.00220	0.00222	0.00188	0.00246	0.000124	4	100
	2011/2012 Closure	0.00175	0.00179	0.00132	0.00222	0.000128	7	100	0.00167	0.00165	0.00126	0.00213	0.000122	7	100
	2014/2015 Operation	0.00176	0.00159	0.00158	0.00213	0.000181	3	100	0.00178	0.00167	0.00159	0.00207	0.000148	3	100
LKW2	2011 Flood	0.00275	0.00275	0.00275	0.00275	-	1	100	0.00255	0.00255	0.00255	0.00255	-	1	100
	2011/2012 Operation	0.00236	0.00226	0.00183	0.00307	0.000285	4	100	0.00234	0.00232	0.00195	0.00277	0.000168	4	100
	2011/2012 Closure	0.00176	0.00184	0.00136	0.00218	0.000118	7	100	0.00182	0.00185	0.00131	0.00220	0.000126	7	100
	2014/2015 Operation	0.00176	0.00159	0.00156	0.00213	0.000185	3	100	0.00186	0.00179	0.00169	0.00211	0.000127	3	100
LKW1	2011 Flood	0.00163	0.00163	0.00163	0.00163	-	1	100	0.00173	0.00173	0.00173	0.00173	-	1	100
	2011/2012 Operation	0.00221	0.00220	0.00158	0.00288	0.000331	4	100	0.00217	0.00220	0.00181	0.00248	0.000162	4	100
	2011/2012 Closure	0.00172	0.00175	0.00130	0.00219	0.000138	7	100	0.00178	0.00189	0.00128	0.00216	0.000138	7	100
	2014/2015 Operation	0.00162	0.00152	0.00147	0.00197	0.000119	4	100	0.00172	0.00165	0.00152	0.00205	0.000119	4	100
LKW4	2011 Flood	0.00212	0.00212	0.00212	0.00212	-	1	100	0.00205	0.00205	0.00205	0.00205	-	1	100
	2011/2012 Operation	0.00221	0.00225	0.00156	0.00279	0.000263	4	100	0.00220	0.00222	0.00192	0.00243	0.000106	4	100
	2011/2012 Closure	0.00167	0.00171	0.00134	0.00209	0.000095	7	100	0.00166	0.00177	0.00140	0.00190	0.000072	7	100
	2014/2015 Operation	0.00149	0.00151	0.00135	0.00162	0.000078	3	100	0.00158	0.00156	0.00153	0.00166	0.000039	3	100
LKW5	2011 Flood	0.00191	0.00191	0.00191	0.00191	-	1	100	0.00191	0.00191	0.00191	0.00191	-	1	100
	2011/2012 Operation	0.00218	0.00220	0.00148	0.00284	0.000309	4	100	0.00216	0.00210	0.00177	0.00268	0.000199	4	100
	2011/2012 Closure	0.00178	0.00171	0.00135	0.00236	0.000140	7	100	0.00171	0.00178	0.00132	0.00226	0.000136	7	100
	2014/2015 Operation	0.00166	0.00174	0.00147	0.00177	0.000095	3	100	0.00169	0.00163	0.00161	0.00184	0.000074	3	100
LKW6	2011 Flood	0.00246	0.00246	0.00246	0.00246	-	1	100	0.00210	0.00210	0.00210	0.00210	-	1	100
	2011/2012 Operation	0.00222	0.00218	0.00167	0.00284	0.000248	4	100	0.00211	0.00203	0.00180	0.00256	0.000166	4	100
	2011/2012 Closure	0.00174	0.00157	0.00131	0.00220	0.000125	7	100	0.00169	0.00161	0.00133	0.00200	0.000101	7	100
	2014/2015 Operation	0.00167	0.00166	0.00138	0.00197	0.000130	4	100	0.00173	0.00166	0.00154	0.00208	0.000126	4	100

Table 21. Continued.

		Arsenic, Dissolved (mg/L)							Arsenic, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.00209	0.00209	0.00209	0.00209	-	1	100	0.00194	0.00194	0.00194	0.00194	-	1	100
	2011/2012 Operation	0.00190	0.00183	0.00151	0.00245	0.000197	4	100	0.00193	0.00185	0.00169	0.00232	0.000138	4	100
	2011/2012 Closure	0.00164	0.00152	0.00123	0.00215	0.000120	7	100	0.00160	0.00151	0.00128	0.00193	0.000107	7	100
	2014/2015 Operation	0.00157	0.00160	0.00126	0.00180	0.000128	4	100	0.00165	0.00163	0.00134	0.00199	0.000142	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Barium, Dissolved (mg/L)							Barium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.0469	0.0458	0.0414	0.0536	0.00357	3	100	0.0510	0.0513	0.0473	0.0545	0.00208	3	100
	2011/2012 Closure	0.0398	0.0397	0.0333	0.0471	0.00163	7	100	0.0415	0.0402	0.0347	0.0524	0.00243	7	100
	2014/2015 Operation	0.0405	0.0409	0.0361	0.0461	0.00176	5	100	0.0445	0.0431	0.0401	0.0495	0.00176	5	100
LKW3	2011 Flood	0.0478	0.0478	0.0478	0.0478	-	1	100	0.0501	0.0501	0.0501	0.0501	-	1	100
	2011/2012 Operation	0.0447	0.0440	0.0405	0.0502	0.00202	4	100	0.0512	0.0504	0.0498	0.0543	0.00105	4	100
	2011/2012 Closure	0.0414	0.0396	0.0321	0.0518	0.00241	7	100	0.0437	0.0418	0.0351	0.0552	0.00275	7	100
	2014/2015 Operation	0.0427	0.0403	0.0384	0.0493	0.00337	3	100	0.0438	0.0402	0.0400	0.0511	0.00368	3	100
LKW2	2011 Flood	0.0493	0.0493	0.0493	0.0493	-	1	100	0.0510	0.0510	0.0510	0.0510	-	1	100
	2011/2012 Operation	0.0481	0.0472	0.0445	0.0534	0.00214	4	100	0.0524	0.0521	0.0445	0.0610	0.00363	4	100
	2011/2012 Closure	0.0408	0.0399	0.0332	0.0502	0.00198	7	100	0.0437	0.0422	0.0368	0.0545	0.00256	7	100
	2014/2015 Operation	0.0425	0.0426	0.0396	0.0453	0.00165	3	100	0.0427	0.0417	0.0405	0.0458	0.00160	3	100
LKW1	2011 Flood	0.0317	0.0317	0.0317	0.0317	-	1	100	0.0406	0.0406	0.0406	0.0406	-	1	100
	2011/2012 Operation	0.0445	0.0458	0.0366	0.0499	0.00283	4	100	0.0498	0.0511	0.0434	0.0537	0.00228	4	100
	2011/2012 Closure	0.0403	0.0399	0.0322	0.0487	0.00216	7	100	0.0434	0.0466	0.0357	0.0495	0.00240	7	100
	2014/2015 Operation	0.0411	0.0403	0.0326	0.0513	0.00389	4	100	0.0437	0.0426	0.0383	0.0511	0.00268	4	100
LKW4	2011 Flood	0.0397	0.0397	0.0397	0.0397	-	1	100	0.0430	0.0430	0.0430	0.0430	-	1	100
	2011/2012 Operation	0.0442	0.0442	0.0425	0.0457	0.00077	4	100	0.0503	0.0492	0.0457	0.0571	0.00250	4	100
	2011/2012 Closure	0.0405	0.0407	0.0344	0.0512	0.00224	7	100	0.0429	0.0397	0.0366	0.0532	0.00242	7	100
	2014/2015 Operation	0.0449	0.0466	0.0381	0.0499	0.00351	3	100	0.0445	0.0434	0.0396	0.0506	0.00323	3	100
LKW5	2011 Flood	0.0355	0.0355	0.0355	0.0355	-	1	100	0.0428	0.0428	0.0428	0.0428	-	1	100
	2011/2012 Operation	0.0461	0.0460	0.0425	0.0501	0.00166	4	100	0.0522	0.0540	0.0443	0.0567	0.00278	4	100
	2011/2012 Closure	0.0411	0.0401	0.0345	0.0486	0.00213	7	100	0.0419	0.0394	0.0345	0.0522	0.00245	7	100
	2014/2015 Operation	0.0440	0.0425	0.0414	0.0482	0.00211	3	100	0.0438	0.0435	0.0403	0.0477	0.00214	3	100
LKW6	2011 Flood	0.0397	0.0397	0.0397	0.0397	-	1	100	0.0452	0.0452	0.0452	0.0452	-	1	100
	2011/2012 Operation	0.0457	0.0466	0.0398	0.0498	0.00222	4	100	0.0506	0.0508	0.0463	0.0546	0.00199	4	100
	2011/2012 Closure	0.0420	0.0411	0.0335	0.0570	0.00285	7	100	0.0448	0.0415	0.0371	0.0583	0.00292	7	100
	2014/2015 Operation	0.0400	0.0388	0.0364	0.0462	0.00214	4	100	0.0436	0.0428	0.0417	0.0471	0.00124	4	100

Table 21. Continued.

Site ID	Period	Barium, Dissolved (mg/L)							Barium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.0374	0.0374	0.0374	0.0374	-	1	100	0.0412	0.0412	0.0412	0.0412	-	1	100
	2011/2012 Operation	0.0408	0.0415	0.0353	0.0449	0.00212	4	100	0.0485	0.0483	0.0460	0.0516	0.00116	4	100
	2011/2012 Closure	0.0384	0.0355	0.0334	0.0529	0.00269	7	100	0.0421	0.0397	0.0348	0.0563	0.00308	7	100
	2014/2015 Operation	0.0420	0.0386	0.0366	0.0541	0.00409	4	100	0.0454	0.0428	0.0405	0.0555	0.00342	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Boron, Dissolved (mg/L)							Boron, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.088	0.095	0.066	0.102	0.0110	3	100	0.085	0.087	0.065	0.104	0.0113	3	100
	2011/2012 Closure	0.069	0.068	0.045	0.088	0.0051	7	100	0.068	0.067	0.056	0.081	0.0032	7	100
	2014/2015 Operation	0.068	0.077	0.044	0.082	0.0070	5	100	0.069	0.077	0.043	0.084	0.0074	5	100
LKW3	2011 Flood	0.098	0.098	0.098	0.098	-	1	100	0.113	0.113	0.113	0.113	-	1	100
	2011/2012 Operation	0.078	0.076	0.059	0.099	0.0100	4	100	0.072	0.071	0.051	0.095	0.0100	4	100
	2011/2012 Closure	0.065	0.064	0.047	0.084	0.0053	7	100	0.065	0.064	0.053	0.078	0.0036	7	100
	2014/2015 Operation	0.070	0.076	0.052	0.084	0.0096	3	100	0.085	0.082	0.052	0.121	0.0201	3	100
LKW2	2011 Flood	0.099	0.099	0.099	0.099	-	1	100	0.103	0.103	0.103	0.103	-	1	100
	2011/2012 Operation	0.092	0.091	0.085	0.100	0.0031	4	100	0.095	0.090	0.086	0.113	0.0060	4	100
	2011/2012 Closure	0.073	0.075	0.056	0.087	0.0038	7	100	0.073	0.069	0.054	0.109	0.0066	7	100
	2014/2015 Operation	0.088	0.088	0.084	0.092	0.00231	3	100	0.085	0.085	0.085	0.086	0.0003	3	100
LKW1	2011 Flood	0.045	0.045	0.045	0.045	-	1	100	0.034	0.034	0.034	0.034	-	1	100
	2011/2012 Operation	0.077	0.082	0.045	0.100	0.0116	4	100	0.077	0.079	0.048	0.103	0.0119	4	100
	2011/2012 Closure	0.068	0.067	0.062	0.075	0.0019	7	100	0.064	0.064	0.055	0.072	0.0024	7	100
	2014/2015 Operation	0.070	0.070	0.050	0.090	0.0084	4	100	0.071	0.074	0.051	0.084	0.0073	4	100
LKW4	2011 Flood	0.070	0.070	0.070	0.070	-	1	100	0.061	0.061	0.061	0.061	-	1	100
	2011/2012 Operation	0.076	0.073	0.057	0.101	0.0092	4	100	0.080	0.080	0.049	0.111	0.0139	4	100
	2011/2012 Closure	0.058	0.057	0.040	0.077	0.0046	7	100	0.056	0.053	0.042	0.075	0.0043	7	100
	2014/2015 Operation	0.059	0.059	0.050	0.068	0.0052	3	100	0.061	0.064	0.052	0.066	0.0044	3	100
LKW5	2011 Flood	0.052	0.052	0.052	0.052	-	1	100	0.048	0.048	0.048	0.048	-	1	100
	2011/2012 Operation	0.081	0.076	0.072	0.098	0.0060	4	100	0.084	0.082	0.068	0.105	0.0087	4	100
	2011/2012 Closure	0.065	0.065	0.055	0.077	0.0024	7	100	0.059	0.058	0.052	0.071	0.0024	7	100
	2014/2015 Operation	0.065	0.056	0.055	0.083	0.0092	3	100	0.064	0.057	0.057	0.077	0.0067	3	100
LKW6	2011 Flood	0.073	0.073	0.073	0.073	-	1	100	0.063	0.063	0.063	0.063	-	1	100
	2011/2012 Operation	0.074	0.071	0.053	0.100	0.0099	4	100	0.071	0.073	0.051	0.088	0.0095	4	100
	2011/2012 Closure	0.063	0.058	0.047	0.085	0.0045	7	100	0.057	0.054	0.044	0.076	0.0037	7	100
	2014/2015 Operation	0.060	0.061	0.051	0.069	0.0041	4	100	0.061	0.060	0.052	0.072	0.0045	4	100

Table 21. Continued.

Site ID	Period	Boron, Dissolved (mg/L)							Boron, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.055	0.055	0.055	0.055	-	1	100	0.046	0.046	0.046	0.046	-	1	100
	2011/2012 Operation	0.064	0.066	0.053	0.072	0.0042	4	100	0.068	0.060	0.052	0.100	0.0107	4	100
	2011/2012 Closure	0.051	0.054	0.040	0.057	0.0024	7	100	0.049	0.048	0.038	0.063	0.0031	7	100
	2014/2015 Operation	0.056	0.055	0.052	0.061	0.0019	4	100	0.055	0.054	0.051	0.062	0.0024	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Cadmium, Dissolved (mg/L)							Cadmium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0	0.000010	0.000011	<0.000010	0.000015	0.0000029	3	67
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	0.000019	-	7	14	<0.000010	<0.000010	<0.000010	0.000018	0.0000019	7	29
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	5	0	<0.000010	<0.000010	<0.000010	<0.000010	-	5	0
LKW3	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	0.000010	0.000010	0.000010	0.000010	-	1	100
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0	0.000011	0.000012	<0.000010	0.000016	0.0000023	4	75
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	0.000010	-	7	14	0.000011	<0.000010	<0.000010	0.000036	0.0000043	7	43
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0
LKW2	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	0.000010	0.000010	0.000010	0.000010	-	1	100
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0	0.000010	<0.000010	<0.000010	0.000017	0.0000030	4	50
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	<0.000010	-	7	0	<0.000010	<0.000010	<0.000010	0.000016	0.0000017	7	29
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0	<0.000010	<0.000010	<0.000010	<0.000010	-	3	100
LKW1	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	0.000011	0.000011	0.000011	0.000011	-	1	100
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0	0.000011	0.000012	<0.000010	0.000014	0.0000020	4	75
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	0.000012	-	7	14	<0.000010	<0.000010	<0.000010	0.000012	-	7	14
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0
LKW4	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0	0.000014	0.000014	0.000011	0.000015	0.0000010	4	100
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	<0.000010	-	7	0	<0.000010	<0.000010	<0.000010	0.000010	-	7	14
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0
LKW5	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	0.000012	0.000012	0.000012	0.000012	-	1	100
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0	0.000012	0.000013	0.000010	0.000015	0.0000011	4	100
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	<0.000010	-	7	0	<0.000010	<0.000010	<0.000010	0.000012	-	7	14
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0	<0.000010	<0.000010	<0.000010	<0.000010	-	3	0
LKW6	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0	0.000013	0.000013	0.000011	0.000015	0.0000008	4	100
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	0.000015	0.0000016	7	29	<0.000010	<0.000010	<0.000010	0.000012	0.0000013	7	29
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0

Table 21. Continued.

Site ID	Period	Cadmium, Dissolved (mg/L)							Cadmium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<0.000010	<0.000010	<0.000010	<0.000010	-	1	0	0.000010	0.000010	0.000010	0.000010	-	1	100
	2011/2012 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0	0.000011	0.000012	0.000009	0.000013	0.0000010	4	100
	2011/2012 Closure	<0.000010	<0.000010	<0.000010	0.000016	0.0000017	7	29	<0.000010	<0.000010	<0.000010	0.000018	-	7	14
	2014/2015 Operation	<0.000010	<0.000010	<0.000010	<0.000010	-	4	0	<0.000010	<0.000010	<0.000010	0.000010	-	4	25
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Calcium, Dissolved (mg/L)							Calcium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	42.5	44.3	35.0	48.1	3.89	3	100	43.6	43.4	36.3	51.0	4.24	3	100
	2011/2012 Closure	39.5	39.3	34.7	47.0	1.59	7	100	41.7	40.4	37.1	52.3	1.94	7	100
	2014/2015 Operation	40.0	38.9	33.8	48.1	2.34	5	100	39.9	37.3	36.8	47.1	2.00	5	100
LKW3	2011 Flood	47.2	47.2	47.2	47.2	-	1	100	54.2	54.2	54.2	54.2	-	1	100
	2011/2012 Operation	42.6	44.8	34.8	46.0	2.65	4	100	42.9	43.9	36.3	47.5	2.36	4	100
	2011/2012 Closure	39.4	40.3	35.2	43.0	1.19	7	100	40.7	41.0	35.3	49.6	1.73	7	100
	2014/2015 Operation	42.8	41.2	40.4	46.9	2.04	3	100	42.3	43.7	39.3	43.9	1.48	3	100
LKW2	2011 Flood	48.5	48.5	48.5	48.5	-	1	100	44.0	44.0	44.0	44.0	-	1	100
	2011/2012 Operation	47.3	48.7	38.6	53.1	3.08	4	100	47.9	47.0	43.9	53.7	2.17	4	100
	2011/2012 Closure	39.7	38.0	33.4	49.0	2.11	7	100	44.2	41.7	35.8	66.8	4.03	7	100
	2014/2015 Operation	44.8	41.1	39.7	53.7	4.45	3	100	43.8	42.5	40.0	49.0	2.68	3	100
LKW1	2011 Flood	30.9	30.9	30.9	30.9	-	1	100	34.6	34.6	34.6	34.6	-	1	100
	2011/2012 Operation	44.1	45.7	33.4	51.6	4.01	4	100	45.8	47.9	37.0	50.3	3.03	4	100
	2011/2012 Closure	39.2	38.8	34.1	47.2	1.72	7	100	40.7	39.6	31.9	48.6	2.01	7	100
	2014/2015 Operation	42.7	40.4	35.6	54.4	4.21	4	100	44.8	41.3	36.9	59.6	5.13	4	100
LKW4	2011 Flood	36.7	36.7	36.7	36.7	-	1	100	39.4	39.4	39.4	39.4	-	1	100
	2011/2012 Operation	43.3	44.2	36.7	48.1	2.48	4	100	45.4	44.3	40.6	52.3	2.48	4	100
	2011/2012 Closure	36.6	38.3	30.9	40.3	1.43	7	100	38.9	38.9	32.2	42.4	1.33	7	100
	2014/2015 Operation	40.7	39.5	36.9	45.7	2.61	3	100	42.7	41.4	36.7	50.0	3.89	3	100
LKW5	2011 Flood	32.5	32.5	32.5	32.5	-	1	100	38.1	38.1	38.1	38.1	-	1	100
	2011/2012 Operation	44.9	45.6	36.3	52.1	3.44	4	100	46.2	45.9	41.1	51.9	2.27	4	100
	2011/2012 Closure	39.1	38.7	32.6	48.1	1.83	7	100	39.9	39.7	33.4	48.5	1.88	7	100
	2014/2015 Operation	41.4	39.9	35.6	48.8	3.89	3	100	42.1	38.7	36.7	50.9	4.44	3	100
LKW6	2011 Flood	36.1	36.1	36.1	36.1	-	1	100	42.0	42.0	42.0	42.0	-	1	100
	2011/2012 Operation	43.9	44.8	33.3	52.8	4.26	4	100	41.8	42.9	35.2	46.2	2.45	4	100
	2011/2012 Closure	39.0	38.3	34.4	46.6	1.74	7	100	40.2	41.5	32.9	45.2	1.84	7	100
	2014/2015 Operation	39.2	37.6	36.6	45.1	1.97	4	100	40.0	38.9	36.4	46.0	2.15	4	100

Table 21. Continued.

		Calcium, Dissolved (mg/L)							Calcium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	33.0	33.0	33.0	33.0	-	1	100	35.9	35.9	35.9	35.9	-	1	100
	2011/2012 Operation	39.7	40.2	33.0	45.5	2.57	4	100	38.8	39.9	34.6	40.8	1.42	4	100
	2011/2012 Closure	35.2	33.8	29.8	43.3	1.91	7	100	37.1	36.2	30.2	46.2	2.01	7	100
	2014/2015 Operation	39.5	35.5	35.3	51.7	4.07	4	100	39.6	37.3	32.5	51.3	4.07	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Chromium, Dissolved (mg/L)							Chromium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0010	<0.0010	<0.0010	0.0010	-	3	33
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0
LKW3	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
LKW2	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	0.0024	-	4	25	<0.0010	<0.0010	<0.0010	0.0016	-	4	25
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
LKW1	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	0.0015	0.0015	0.0015	0.0015	-	1	100
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0010	<0.0010	<0.0010	0.0013	-	4	25
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	0.0010	-	7	14
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0010	<0.0010	<0.0010	0.0011	-	4	25
LKW4	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	0.0012	<0.0010	<0.0010	0.0033	-	4	25
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	0.0011	<0.0010	0.0022	<0.0010	-	3	33
LKW5	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
LKW6	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0010	<0.0010	<0.0010	0.0011	-	4	25
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0010	<0.0020	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0

Table 21. Continued.

Site ID	Period	Chromium, Dissolved (mg/L)							Chromium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0010	<0.0010	<0.0010	0.0016	-	4	25
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0010	<0.0010	<0.0010	0.0011	-	4	25
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Copper, Dissolved (mg/L)							Copper, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00079	0.00073	0.00065	0.00100	0.000106	3	100	0.00141	0.00148	0.00100	0.00174	0.000217	3	100
	2011/2012 Closure	0.00078	0.00068	0.00042	0.00134	0.000133	7	100	0.00091	0.00085	0.00025	0.00146	0.000175	7	100
	2014/2015 Operation	0.00069	0.00072	0.00053	0.00082	0.000048	5	100	0.00112	0.00114	0.00068	0.00150	0.000131	5	100
LKW3	2011 Flood	0.00067	0.00067	0.00067	0.00067	-	1	100	0.00065	0.00065	0.00065	0.00065	-	1	100
	2011/2012 Operation	0.00105	0.00093	0.00066	0.00168	0.000242	4	100	0.00152	0.00158	0.00100	0.00191	0.000226	4	100
	2011/2012 Closure	0.00089	0.00071	0.00059	0.00151	0.000140	7	100	0.00100	0.00107	0.00033	0.00159	0.000162	7	100
	2014/2015 Operation	0.00068	0.00062	0.00052	0.00090	0.000114	3	100	0.00112	0.00091	0.00065	0.00179	0.000346	3	100
LKW2	2011 Flood	0.00064	0.00064	0.00064	0.00064	-	1	100	0.00055	0.00055	0.00055	0.00055	-	1	100
	2011/2012 Operation	0.00070	0.00064	0.00051	0.00100	0.000109	4	100	0.00118	0.00098	0.00083	0.00193	0.000259	4	100
	2011/2012 Closure	0.00084	0.00072	0.00061	0.00147	0.000111	7	100	0.00099	0.00094	0.00040	0.00164	0.000146	7	100
	2014/2015 Operation	0.00041	0.00042	<0.00020	0.00070	-	3	66	0.00078	0.00058	0.00057	0.00119	0.000205	3	100
LKW1	2011 Flood	0.00136	0.00136	0.00136	0.00136	-	1	100	0.00221	0.00221	0.00221	0.00221	-	1	100
	2011/2012 Operation	0.00093	0.00088	0.00067	0.00130	0.000144	4	100	0.00170	0.00154	0.00120	0.00252	0.000297	4	100
	2011/2012 Closure	0.00093	0.00082	0.00066	0.00148	0.000107	7	100	0.00132	0.00098	0.00087	0.00262	0.000239	7	100
	2014/2015 Operation	0.00068	0.00067	0.00053	0.00086	0.000069	4	100	0.00108	0.00111	0.00072	0.00140	0.000139	4	100
LKW4	2011 Flood	0.00112	0.00112	0.00112	0.00112	-	1	100	0.00137	0.00137	0.00137	0.00137	-	1	100
	2011/2012 Operation	0.00100	0.00079	0.00071	0.00173	0.000245	4	100	0.00152	0.00155	0.00109	0.00189	0.000169	4	100
	2011/2012 Closure	0.00106	0.00103	0.00065	0.00148	0.000122	7	100	0.00127	0.00123	0.00077	0.00181	0.000141	7	100
	2014/2015 Operation	0.00102	0.00082	0.00065	0.00158	0.000286	3	100	0.00141	0.00121	0.00098	0.00203	0.000319	3	100
LKW5	2011 Flood	0.00132	0.00132	0.00132	0.00132	-	1	100	0.00176	0.00176	0.00176	0.00176	-	1	100
	2011/2012 Operation	0.00095	0.00090	0.00076	0.00126	0.000108	4	100	0.00169	0.00172	0.00149	0.00182	0.000073	4	100
	2011/2012 Closure	0.00100	0.00083	0.00080	0.00154	0.000116	7	100	0.00124	0.00124	0.00072	0.00214	0.000176	7	100
	2014/2015 Operation	0.00081	0.00063	0.00063	0.00116	0.000177	3	100	0.00113	0.00117	0.00073	0.00150	0.000223	3	100
LKW6	2011 Flood	0.00112	0.00112	0.00112	0.00112	-	1	100	0.00138	0.00138	0.00138	0.00138	-	1	100
	2011/2012 Operation	0.00106	0.00095	0.00079	0.00156	0.000178	4	100	0.00194	0.00162	0.00152	0.00301	0.000358	4	100
	2011/2012 Closure	0.00106	0.00100	0.00056	0.00164	0.000150	7	100	0.00128	0.00115	0.00100	0.00180	0.000115	7	100
	2014/2015 Operation	0.00086	0.00081	0.00063	0.00118	0.000117	4	100	0.00124	0.00127	0.00104	0.00139	0.000083	4	100

Table 21. Continued.

Site ID	Period	Copper, Dissolved (mg/L)							Copper, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.00154	0.00154	0.00154	0.00154	-	1	100	0.00185	0.00185	0.00185	0.00185	-	1	100
	2011/2012 Operation	0.00102	0.00102	0.00081	0.00124	0.000088	4	100	0.00168	0.00172	0.00139	0.00188	0.000103	4	100
	2011/2012 Closure	0.00116	0.00115	0.00082	0.00165	0.000120	7	100	0.00144	0.00129	0.00102	0.00191	0.000123	7	100
	2014/2015 Operation	0.00097	0.00090	0.00070	0.00137	0.000146	4	100	0.00153	0.00152	0.00126	0.00182	0.000143	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Iron, Dissolved (mg/L)							Iron, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.010	<0.010	<0.010	0.015	-	3	33	0.302	0.270	0.087	0.550	0.135	3	100
	2011/2012 Closure	<0.010	<0.010	<0.010	<0.010	-	7	0	0.072	0.062	0.036	0.130	0.0143	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	5	0	0.202	0.110	0.069	0.510	0.084	5	100
LKW3	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	0.180	0.180	0.180	0.180	-	1	100
	2011/2012 Operation	<0.010	<0.010	<0.010	<0.010	-	4	0	0.242	0.245	0.056	0.420	0.0879	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	<0.010	-	7	0	0.077	0.058	0.044	0.150	0.0152	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	3	0	0.173	0.117	0.071	0.330	0.080	3	100
LKW2	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	0.130	0.130	0.130	0.130	-	1	100
	2011/2012 Operation	<0.010	<0.010	<0.010	0.016	-	4	25	0.160	0.147	0.089	0.258	0.0384	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	<0.010	-	7	0	0.094	0.070	0.030	0.170	0.0219	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	3	0	0.135	0.130	0.054	0.220	0.0480	3	100
LKW1	2011 Flood	0.010	0.010	0.010	0.010	-	1	100	0.840	0.840	0.840	0.840	-	1	100
	2011/2012 Operation	<0.010	<0.010	<0.010	0.016	-	4	25	0.261	0.163	0.097	0.620	0.123	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	<0.010	-	7	0	0.164	0.095	0.030	0.380	0.0572	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	0.013	-	4	25	0.334	0.330	0.071	0.607	0.1274	4	100
LKW4	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	0.340	0.340	0.340	0.340	-	1	100
	2011/2012 Operation	0.013	0.011	<0.010	0.025	0.0048	4	50	0.169	0.142	0.120	0.270	0.0354	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	<0.010	-	7	0	0.122	0.067	0.041	0.280	0.0373	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	3	0	0.236	0.200	0.089	0.420	0.097	3	100
LKW5	2011 Flood	0.013	0.013	0.013	0.013	-	1	100	0.470	0.470	0.470	0.470	-	1	100
	2011/2012 Operation	0.011	0.011	<0.010	0.018	0.0036	4	50	0.114	0.115	0.053	0.171	0.0242	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	<0.010	-	7	0	0.116	0.088	0.039	0.220	0.0281	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	3	0	0.210	0.160	0.090	0.380	0.087	3	100
LKW6	2011 Flood	<0.010	<0.010	<0.010	<0.010	-	1	0	0.337	0.337	0.337	0.337	-	1	100
	2011/2012 Operation	<0.010	<0.010	<0.010	0.013	0.0022	4	50	0.221	0.151	0.133	0.450	0.0765	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	0.015	-	7	14	0.134	0.097	0.044	0.430	0.0505	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	<0.010	-	4	0	0.291	0.315	0.075	0.460	0.0798	4	100

Table 21. Continued.

Site ID	Period	Iron, Dissolved (mg/L)							Iron, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.021	0.021	0.021	0.021	-	1	100	0.540	0.540	0.540	0.540	-	1	100
	2011/2012 Operation	0.013	0.012	<0.010	0.023	0.0047	4	50	0.200	0.184	0.060	0.370	0.0654	4	100
	2011/2012 Closure	<0.010	<0.010	<0.010	0.021	-	7	14	0.194	0.120	0.058	0.440	0.0600	7	100
	2014/2015 Operation	<0.010	<0.010	<0.010	0.016	-	4	25	0.364	0.380	0.097	0.600	0.1038	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Lead, Dissolved (mg/L)							Lead, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.000104	<0.000090	<0.000090	0.000223	-	3	33	0.000230	0.000192	0.000171	0.000328	0.0000492	3	100
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	<0.000090	<0.000090	<0.000090	0.000166	0.0000176	7	29
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	5	0	0.000149	0.000094	<0.000090	0.000294	0.0000547	5	60
LKW3	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000137	0.000137	0.000137	0.000137	-	1	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	0.000151	-	4	25	0.000147	0.000156	<0.000090	0.000230	0.0000459	4	75
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	<0.000090	<0.000090	<0.000090	0.000136	0.0000151	7	29
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	3	0	0.000129	0.000124	<0.000090	0.000219	0.0000503	2	67
LKW2	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000174	0.000174	0.000174	0.000174	-	1	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000173	0.000161	0.000106	0.000262	0.0000340	4	100
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	0.000102	<0.000090	<0.000090	0.000316	0.0000375	7	43
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	3	0	0.000101	0.000105	<0.000090	0.000153	-	3	33
LKW1	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000416	0.000416	0.000416	0.000416	-	1	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000188	0.000175	0.000095	0.000308	0.0000448	4	100
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	0.000110	<0.000090	<0.000090	0.000355	0.0000457	7	29
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000188	0.000193	<0.000090	0.000321	0.0000649	4	75
LKW4	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000210	0.000210	0.000210	0.000210	-	1	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000141	0.000138	<0.000090	0.000244	0.0000427	4	75
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	0.000111	<0.000090	<0.000090	0.000325	0.0000392	7	43
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	3	0	0.000131	0.000105	<0.000090	0.000244	0.0000589	3	67
LKW5	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000241	0.000241	0.000241	0.000241	-	1	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000198	0.000170	0.000142	0.000310	0.0000381	4	100
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	<0.000090	<0.000090	<0.000090	0.000266	0.0000314	7	29
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	3	0	0.000103	0.000098	0.000098	0.000166	0.0000350	3	67
LKW6	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000212	0.000212	0.000212	0.000212	-	1	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000224	0.000211	0.000169	0.000304	0.0000287	4	100
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	0.000103	0.000091	<0.000090	0.000211	0.0000262	7	57
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000216	0.000204	<0.000090	0.000412	0.0000798	4	75

Table 21. Continued.

Site ID	Period	Lead, Dissolved (mg/L)							Lead, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<0.000090	<0.000090	<0.000090	<0.000090	-	1	0	0.000267	0.000267	0.000267	0.000267	-	1	100
	2011/2012 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000172	0.000182	<0.000090	0.000278	0.0000528	4	75
	2011/2012 Closure	<0.000090	<0.000090	<0.000090	<0.000090	-	7	0	0.000114	0.000091	<0.000090	0.000256	0.0000327	7	57
	2014/2015 Operation	<0.000090	<0.000090	<0.000090	<0.000090	-	4	0	0.000251	0.000245	0.000157	0.000357	0.0000417	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Magnesium, Dissolved (mg/L)							Magnesium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	30.2	32.7	24.3	33.7	2.98	3	100	32.7	34.6	24.5	38.9	4.27	3	100
	2011/2012 Closure	25.8	25.9	20.9	30.2	1.28	7	100	26.7	26.9	21.3	29.6	1.05	7	100
	2014/2015 Operation	25.9	25.4	21.3	33.4	2.13	5	100	25.8	27.1	20.3	31.3	1.87	5	100
LKW3	2011 Flood	44.3	44.3	44.3	44.3	-	1	100	45.7	45.7	45.7	45.7	-	1	100
	2011/2012 Operation	28.5	29.2	21.9	33.6	2.59	4	100	32.6	34.9	23.0	37.5	3.42	4	100
	2011/2012 Closure	26.0	26.1	22.7	29.8	0.99	7	100	25.2	25.8	20.5	28.3	0.96	7	100
	2014/2015 Operation	26.5	26.9	24.9	27.7	0.85	3	100	25.8	25.5	23.5	28.5	1.45	3	100
LKW2	2011 Flood	47.7	47.7	47.7	47.7	-	1	100	46.2	46.2	46.2	46.2	-	1	100
	2011/2012 Operation	36.2	33.7	31.8	45.8	3.25	4	100	35.7	34.6	31.3	42.2	2.30	4	100
	2011/2012 Closure	27.1	26.5	24.5	29.9	0.76	7	100	27.7	27.8	24.2	32.0	0.93	7	100
	2014/2015 Operation	32.1	30.0	28.8	37.4	2.69	3	100	32.5	32.9	30.0	34.7	1.37	3	100
LKW1	2011 Flood	18.8	18.8	18.8	18.8	-	1	100	18.6	18.6	18.6	18.6	-	1	100
	2011/2012 Operation	29.6	31.1	21.4	35.0	2.98	4	100	31.6	31.3	22.0	41.7	4.51	4	100
	2011/2012 Closure	26.0	25.7	23.8	29.8	0.71	7	100	26.4	26.3	21.6	30.7	1.31	7	100
	2014/2015 Operation	27.4	27.6	19.6	34.9	3.13	4	100	29.5	28.4	22.2	39.0	3.51	4	100
LKW4	2011 Flood	27.6	27.6	27.6	27.6	-	1	100	29.0	29.0	29.0	29.0	-	1	100
	2011/2012 Operation	28.4	27.6	25.8	32.7	1.50	4	100	31.8	33.5	25.9	34.2	1.97	4	100
	2011/2012 Closure	22.5	22.3	18.4	28.0	1.33	7	100	23.0	22.7	20.3	27.8	0.96	7	100
	2014/2015 Operation	24.3	23.9	23.8	25.2	0.45	3	100	25.1	25.4	24.3	25.5	0.38	3	100
LKW5	2011 Flood	21.2	21.2	21.2	21.2	-	1	100	23.8	23.8	23.8	23.8	-	1	100
	2011/2012 Operation	31.1	31.8	26.0	35.0	2.07	4	100	33.5	31.1	25.9	45.8	4.63	4	100
	2011/2012 Closure	25.2	25.1	22.9	27.2	0.51	7	100	25.3	24.5	22.7	29.1	0.86	7	100
	2014/2015 Operation	26.8	26.3	22.7	31.3	2.49	3	100	26.7	27.7	24.0	28.4	1.37	3	100
LKW6	2011 Flood	26.3	26.3	26.3	26.3	-	1	100	30.4	30.4	30.4	30.4	-	1	100
	2011/2012 Operation	28.4	29.9	20.0	33.7	3.23	4	100	30.5	29.1	20.7	43.2	5.27	4	100
	2011/2012 Closure	24.2	24.0	21.6	28.2	0.84	7	100	24.3	23.7	21.7	30.7	1.17	7	100
	2014/2015 Operation	23.2	23.2	20.4	26.1	1.25	4	100	25.2	25.0	23.4	27.4	0.97	4	100

Table 21. Continued.

		Magnesium, Dissolved (mg/L)							Magnesium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	21.7	21.7	21.7	21.7	-	1	100	23.3	23.3	23.3	23.3	-	1	100
	2011/2012 Operation	25.9	25.1	21.5	31.9	2.18	4	100	25.2	24.8	21.4	29.6	1.97	4	100
	2011/2012 Closure	20.2	19.7	17.1	23.2	0.98	7	100	21.2	20.3	17.8	26.1	1.01	7	100
	2014/2015 Operation	22.2	22.2	19.4	25.1	1.42	4	100	23.8	23.8	19.1	28.4	1.90	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Manganese, Dissolved (mg/L)							Manganese, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00495	0.00019	0.00017	0.0145	0.00477	3	100	0.0164	0.0211	0.0062	0.0219	0.00511	3	100
	2011/2012 Closure	0.00025	0.00020	0.00012	0.00050	0.000055	7	100	0.0048	0.0039	0.0016	0.0093	0.00114	7	100
	2014/2015 Operation	0.00071	0.00027	0.00016	0.00234	0.000416	5	100	0.0080	0.0086	0.0040	0.0117	0.00133	5	100
LKW3	2011 Flood	0.00022	0.00022	0.00022	0.00022	-	1	100	0.0074	0.0074	0.0074	0.0074	-	1	100
	2011/2012 Operation	0.00360	0.00025	0.00018	0.0137	0.00337	4	100	0.0115	0.0120	0.0015	0.0204	0.00425	4	100
	2011/2012 Closure	0.00022	0.00020	<0.00010	0.00034	0.000040	7	86	0.0050	0.0044	0.0012	0.0123	0.00146	7	100
	2014/2015 Operation	0.00030	0.00026	0.00017	0.00047	0.000089	3	100	0.0068	0.0085	0.0017	0.0104	0.00266	3	100
LKW2	2011 Flood	0.00026	0.00026	0.00026	0.00026	-	1	100	0.0068	0.0068	0.0068	0.0068	-	1	100
	2011/2012 Operation	0.00106	0.00027	0.00016	0.00353	0.000825	4	100	0.0132	0.0120	0.0064	0.0223	0.00333	4	100
	2011/2012 Closure	0.00025	0.00019	<0.00010	0.00049	0.000060	7	86	0.0059	0.0042	0.0016	0.0133	0.00150	7	100
	2014/2015 Operation	0.00302	0.00021	0.00017	0.00868	0.002830	3	100	0.0112	0.0110	0.0085	0.0141	0.00163	3	100
LKW1	2011 Flood	0.00047	0.00047	0.00047	0.00047	-	1	100	0.0174	0.0174	0.0174	0.0174	-	1	100
	2011/2012 Operation	0.00027	0.00022	0.00017	0.00045	0.000063	4	100	0.0125	0.0098	0.0031	0.0272	0.00522	4	100
	2011/2012 Closure	0.00025	0.00020	<0.00010	0.00060	0.000066	7	86	0.0074	0.0057	0.0011	0.0170	0.00241	7	100
	2014/2015 Operation	0.00057	0.00030	0.00014	0.00154	0.000329	4	100	0.0107	0.0097	0.0037	0.0197	0.00333	4	100
LKW4	2011 Flood	0.00045	0.00045	0.00045	0.00045	-	1	100	0.0089	0.0089	0.0089	0.0089	-	1	100
	2011/2012 Operation	0.00035	0.00034	0.00022	0.00051	0.000063	4	100	0.0161	0.0079	0.0020	0.0464	0.0102	4	100
	2011/2012 Closure	0.00037	0.00028	0.00012	0.00094	0.000106	7	100	0.0050	0.0062	0.0012	0.0089	0.00112	7	100
	2014/2015 Operation	0.00025	0.00022	0.00012	0.00040	0.000082	3	100	0.0062	0.0076	0.0020	0.0090	0.00215	3	100
LKW5	2011 Flood	0.00047	0.00047	0.00047	0.00047	-	1	100	0.0099	0.0099	0.0099	0.0099	-	1	100
	2011/2012 Operation	0.00027	0.00023	0.00018	0.00043	0.000057	4	100	0.0101	0.0075	0.0034	0.0221	0.00413	4	100
	2011/2012 Closure	0.00030	0.00028	<0.00010	0.00059	0.000072	7	86	0.0059	0.0039	0.0013	0.0144	0.00201	7	100
	2014/2015 Operation	0.00037	0.00031	0.00014	0.00066	0.000153	3	100	0.0067	0.0076	0.0029	0.0097	0.00200	3	100
LKW6	2011 Flood	0.00034	0.00034	0.00034	0.00034	-	1	100	0.0082	0.0082	0.0082	0.0082	-	1	100
	2011/2012 Operation	0.00025	0.00026	<0.00010	0.00043	0.000079	4	75	0.0079	0.0078	0.0029	0.0129	0.00209	4	100
	2011/2012 Closure	0.00024	0.00019	<0.00010	0.00041	0.000045	7	86	0.0050	0.0037	0.0011	0.0109	0.00153	7	100
	2014/2015 Operation	0.00028	0.00031	<0.00010	0.00045	0.000083	4	75	0.0079	0.0084	0.0017	0.0133	0.00239	4	100

Table 21. Continued.

Site ID	Period	Manganese, Dissolved (mg/L)							Manganese, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.00066	0.00066	0.00066	0.00066	-	1	100	0.0093	0.0093	0.0093	0.0093	-	1	100
	2011/2012 Operation	0.00023	0.00021	0.00017	0.00035	0.000041	4	100	0.0072	0.0071	0.0038	0.0109	0.00176	4	100
	2011/2012 Closure	0.00029	0.00026	0.00019	0.00047	0.000038	7	100	0.0045	0.0046	0.0014	0.0077	0.00101	7	100
	2014/2015 Operation	0.00052	0.00029	0.00012	0.00138	0.000289	4	100	0.0084	0.0089	0.0033	0.0123	0.00218	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Mercury, Dissolved (ng/L)							Mercury, Total (ng/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<1.0	<1.0	<1.0	1.4	-	3	33	1.50	1.50	<1.0	2.50	0.58	3	67
	2011/2012 Closure	<1.0	<1.0	<1.0	1.1	-	7	14	1.11	1.20	<1.0	1.40	0.12	7	86
	2014/2015 Operation	1.0	1.1	<1.0	1.4	0.14	7	71	1.61	1.70	<1.0	2.60	0.27	7	86
LKW3	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	1.10	1.10	1.10	1.10	-	1	100
	2011/2012 Operation	<1.0	<1.0	<1.0	<1.0	-	4	0	1.08	<1.0	<1.0	2.00	0.36	4	50
	2011/2012 Closure	<5	<5	<1.0	<5	0.32	7	43	1.39	1.40	<1.0	2.10	0.18	7	86
	2014/2015 Operation	1.1	1.1	<1.0	1.4	0.18	3	100	1.6	1.3	1.2	2.3	0.34	3	100
LKW2	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Operation	1.10	<1.0	<1.0	2.10	0.38	4	50	3.82	<1.0	<1.0	13.0	3.06	4	50
	2011/2012 Closure	<1.0	<1.0	<1.0	1.30	0.15	7	43	1.09	1.30	<1.0	1.70	0.21	7	57
	2014/2015 Operation	<1.0	1.0	<1.0	1.30	-	3	33	1.2	1.2	1.2	1.3	0.03	3	100
LKW1	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Operation	1.25	<1.0	<1.0	2.90	0.57	4	50	<1.0	<1.0	<1.0	1.60	0.27	4	50
	2011/2012 Closure	<1.0	<1.0	<1.0	2.00	0.21	7	29	1.33	1.20	<1.0	2.60	0.28	7	71
	2014/2015 Operation	1.2	1.2	<1.0	2.0	0.31	4	75	1.2	1.0	<1.0	2.2	0.41	4	50
LKW4	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	1.10	1.10	1.10	1.10	-	1	100
	2011/2012 Operation	<1.0	<1.0	<1.0	2.20	-	4	25	<1.0	<1.0	<1.0	2.40	-	4	25
	2011/2012 Closure	<5	<5	<1.0	<5	0.33	7	43	1.54	1.50	<1.0	3.00	0.34	7	71
	2014/2015 Operation	1.1	<1.0	<1.0	2.20	-	3	33	<1.0	<1.0	<1.0	<1.0	-	3	0
LKW5	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Operation	<1.0	<1.0	<1.0	<1.0	-	4	0	<1.0	<1.0	<1.0	<1.0	-	4	0
	2011/2012 Closure	<1.0	<1.0	<1.0	1.30	0.14	7	29	1.13	1.10	<1.0	2.20	0.26	7	57
	2014/2015 Operation	1.1	1.2	<1.0	1.5	0.30	3	67	1.2	<1.0	<1.0	2.5	-	3	33
LKW6	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Operation	<1.0	<1.0	<1.0	1.40	-	4	25	<1.0	<1.0	<1.0	2.20	-	4	25
	2011/2012 Closure	<1.0	<1.0	<1.0	<5	-	7	14	1.49	1.00	<1.0	5.60	0.70	7	57
	2014/2015 Operation	1.1	1.2	<1.0	1.4	0.20	4	25	1.00	0.50	<1.0	1.60	0.29	4	50

Table 21. Continued.

		Mercury, Dissolved (ng/L)							Mercury, Total (ng/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<1.0	<1.0	<1.0	<1.0	-	1	0	<1.0	<1.0	<1.0	<1.0	-	1	0
	2011/2012 Operation	<1.0	<1.0	<1.0	<1.0	-	4	0	<1.0	<1.0	<1.0	1.70	0.29	4	50
	2011/2012 Closure	1.23	<1.0	<1.0	2.80	0.37	7	43	<5	<5	<1.0	<5	0.44	7	43
	2014/2015 Operation	1.2	1.1	<1.0	1.9	0.29	4	75	1.2	1.4	<1.0	1.7	0.26	4	75
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Methyl Mercury, Dissolved (ng/L)							Methyl Mercury, Total (ng/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.093	0.093	<0.050	0.160	-	2	50	0.159	0.088	<0.050	0.364	0.1041	3	67
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	7	0	<0.050	<0.050	<0.050	0.068	0.0069	7	29
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	-	7	0	0.055	0.066	<0.050	0.088	0.0107	7	57
LKW3	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	0.053	-	4	25	0.056	<0.050	<0.050	0.147	-	4	25
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	7	0	<0.050	<0.050	<0.050	<0.050	-	7	0
	2014/2015 Operation	<0.050	<0.050	<0.050	0.069	-	3	33	0.052	<0.050	<0.050	0.106	-	3	25
LKW2	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	4	0	0.055	<0.050	<0.050	0.096	0.0178	4	50
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	7	0	<0.050	<0.050	<0.050	0.054	0.0041	7	14
	2014/2015 Operation	0.055	0.052	<0.050	0.088	0.0182	3	67	0.080	0.079	<0.050	0.135	0.0318	3	67
LKW1	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	4	0	<0.050	<0.050	<0.050	0.094	0.0173	4	25
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	7	0	<0.050	<0.050	<0.050	<0.050	-	7	0
	2014/2015 Operation	<0.050	<0.050	<0.050	0.066	0.0112	4	50	0.060	0.057	<0.050	0.102	0.0205	4	50
LKW4	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	0.050	-	4	25	0.050	<0.050	<0.050	0.098	0.0172	4	50
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	7	0	<0.050	<0.050	<0.050	<0.050	-	7	0
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	-	3	0	<0.050	<0.050	<0.050	<0.050	-	3	0
LKW5	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	4	0	<0.050	<0.050	<0.050	<0.050	-	4	0
	2011/2012 Closure	<0.050	<0.050	<0.050	0.064	-	7	14	<0.050	<0.050	<0.050	0.058	-	7	14
	2014/2015 Operation	<0.050	0.055	<0.050	0.085	-	3	33	<0.050	<0.050	<0.050	0.077	-	3	33
LKW6	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	4	0	<0.050	<0.050	<0.050	<0.050	-	4	0
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	7	0	<0.050	<0.050	<0.050	<0.050	-	7	0
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	-	4	0	<0.050	<0.050	<0.050	<0.050	-	4	0

Table 21. Continued.

Site ID	Period	Methyl Mercury, Dissolved (ng/L)							Methyl Mercury, Total (ng/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<0.050	<0.050	<0.050	<0.050	-	1	0	<0.050	<0.050	<0.050	<0.050	-	1	0
	2011/2012 Operation	<0.050	<0.050	<0.050	<0.050	-	4	0	<0.050	<0.050	<0.050	<0.050	-	4	0
	2011/2012 Closure	<0.050	<0.050	<0.050	<0.050	-	7	0	<0.050	<0.050	<0.050	<0.050	-	7	0
	2014/2015 Operation	<0.050	<0.050	<0.050	<0.050	-	4	0	<0.050	<0.050	<0.050	<0.050	-	4	0
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Molybdenum, Dissolved (mg/L)							Molybdenum, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00172	0.00184	0.00145	0.00186	0.000133	3	100	0.00180	0.00190	0.00128	0.00223	0.000278	3	100
	2011/2012 Closure	0.00144	0.00145	0.00115	0.00171	0.000083	7	100	0.00153	0.00143	0.00130	0.00192	0.000078	7	100
	2014/2015 Operation	0.00138	0.00135	0.00108	0.00172	0.000104	5	100	0.00138	0.00134	0.00107	0.00180	0.000118	5	100
LKW3	2011 Flood	0.00203	0.00203	0.00203	0.00203	-	1	100	0.00207	0.00207	0.00207	0.00207	-	1	100
	2011/2012 Operation	0.00162	0.00163	0.00132	0.00189	0.000124	4	100	0.00167	0.00170	0.00122	0.00205	0.000179	4	100
	2011/2012 Closure	0.00140	0.00136	0.00127	0.00166	0.000057	7	100	0.00150	0.00148	0.00128	0.00191	0.000081	7	100
	2014/2015 Operation	0.00139	0.00140	0.00127	0.00150	0.000068	3	100	0.00140	0.00142	0.00131	0.00146	0.000045	3	100
LKW2	2011 Flood	0.00221	0.00221	0.00221	0.00221	-	1	100	0.00207	0.00207	0.00207	0.00207	-	1	100
	2011/2012 Operation	0.00204	0.00197	0.00183	0.00239	0.000129	4	100	0.00203	0.00201	0.00178	0.00232	0.000133	4	100
	2011/2012 Closure	0.00146	0.00148	0.00099	0.00198	0.000116	7	100	0.00159	0.00161	0.00120	0.00212	0.000109	7	100
	2014/2015 Operation	0.00172	0.00161	0.00157	0.00197	0.000127	3	100	0.00177	0.00171	0.00151	0.00208	0.000167	3	100
LKW1	2011 Flood	0.00086	0.00086	0.00086	0.00086	-	1	100	0.00088	0.00088	0.00088	0.00088	-	1	100
	2011/2012 Operation	0.00162	0.00169	0.00115	0.00196	0.000172	4	100	0.00169	0.00184	0.00111	0.00195	0.000193	4	100
	2011/2012 Closure	0.00136	0.00132	0.00119	0.00157	0.000055	7	100	0.00145	0.00141	0.00121	0.00172	0.000067	7	100
	2014/2015 Operation	0.00135	0.00136	0.00097	0.00170	0.000186	4	100	0.00138	0.00133	0.00105	0.00181	0.000179	4	100
LKW4	2011 Flood	0.00135	0.00135	0.00135	0.00135	-	1	100	0.00130	0.00130	0.00130	0.00130	-	1	100
	2011/2012 Operation	0.00168	0.00169	0.00156	0.00180	0.000051	4	100	0.00156	0.00151	0.00142	0.00180	0.000085	4	100
	2011/2012 Closure	0.00119	0.00118	0.00094	0.00140	0.000059	7	100	0.00127	0.00119	0.00110	0.00147	0.000058	7	100
	2014/2015 Operation	0.00121	0.00124	0.00109	0.00130	0.000062	3	100	0.00127	0.00124	0.00121	0.00135	0.000043	3	100
LKW5	2011 Flood	0.00105	0.00105	0.00105	0.00105	-	1	100	0.00110	0.00110	0.00110	0.00110	-	1	100
	2011/2012 Operation	0.00176	0.00177	0.00158	0.00193	0.000072	4	100	0.00175	0.00186	0.00140	0.00189	0.000118	4	100
	2011/2012 Closure	0.00141	0.00136	0.00120	0.00184	0.000084	7	100	0.00138	0.00133	0.00122	0.00157	0.000049	7	100
	2014/2015 Operation	0.00126	0.00133	0.00106	0.00138	0.000099	3	100	0.00127	0.00132	0.00117	0.00133	0.000052	3	100
LKW6	2011 Flood	0.00137	0.00137	0.00137	0.00137	-	1	100	0.00143	0.00143	0.00143	0.00143	-	1	100
	2011/2012 Operation	0.00156	0.00160	0.00114	0.00189	0.000168	4	100	0.00157	0.00170	0.00108	0.00181	0.000170	4	100
	2011/2012 Closure	0.00133	0.00130	0.00116	0.00146	0.000042	7	100	0.00139	0.00135	0.00124	0.00177	0.000069	7	100
	2014/2015 Operation	0.00123	0.00123	0.00102	0.00142	0.000082	4	100	0.00127	0.00122	0.00118	0.00147	0.000067	4	100

Table 21. Continued.

Site ID	Period	Molybdenum, Dissolved (mg/L)							Molybdenum, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.00106	0.00106	0.00106	0.00106	-	1	100	0.00105	0.00105	0.00105	0.00105	-	1	100
	2011/2012 Operation	0.00146	0.00140	0.00121	0.00184	0.000135	4	100	0.00142	0.00144	0.00105	0.00177	0.000147	4	100
	2011/2012 Closure	0.00112	0.00106	0.00091	0.00140	0.000062	7	100	0.00123	0.00117	0.00103	0.00150	0.000068	7	100
	2014/2015 Operation	0.00119	0.00120	0.00099	0.00136	0.000083	4	100	0.00120	0.00122	0.00102	0.00134	0.000080	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Nickel, Dissolved (mg/L)							Nickel, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0020	<0.0020	<0.0020	0.0021	-	3	33
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0
LKW3	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	0.0010	-	7	14	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0
LKW2	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	4	25
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0
LKW1	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	0.0010	-	4	25	<0.0020	<0.0020	<0.0020	0.0014	-	4	25
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0
LKW4	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	4	25
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	0.0011	0.00010	7	29	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0
LKW5	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	4	25
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	0.0010	-	7	14	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0
LKW6	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	4	25
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	0.0010	0.00010	7	43	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0

Table 21. Continued.

Site ID	Period	Nickel, Dissolved (mg/L)							Nickel, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	4	25
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	0.0011	-	7	29	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Potassium, Dissolved (mg/L)							Potassium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	8.04	8.56	5.86	9.69	1.14	3	100	9.27	10.3	5.90	11.6	1.72	3	100
	2011/2012 Closure	6.52	6.34	4.62	8.43	0.46	7	100	6.80	6.88	5.23	7.93	0.318	7	100
	2014/2015 Operation	6.51	6.57	4.75	9.15	0.76	5	100	6.60	7.14	4.59	8.35	0.654	5	100
LKW3	2011 Flood	10.3	10.3	10.3	10.3	-	1	100	9.65	9.65	9.65	9.65	-	1	100
	2011/2012 Operation	7.44	7.76	5.33	8.90	0.85	4	100	8.61	9.14	5.75	10.4	1.00	4	100
	2011/2012 Closure	6.42	6.32	4.94	8.21	0.38	7	100	6.64	6.53	5.17	7.74	0.322	7	100
	2014/2015 Operation	6.53	6.76	5.78	7.06	0.385	3	100	6.55	6.68	5.58	7.39	0.528	3	100
LKW2	2011 Flood	10.9	10.9	10.9	10.9	-	1	100	9.80	9.80	9.80	9.80	-	1	100
	2011/2012 Operation	9.81	9.32	8.20	12.4	0.94	4	100	10.0	9.96	9.37	10.7	0.319	4	100
	2011/2012 Closure	6.77	6.49	5.88	7.96	0.30	7	100	7.21	7.16	5.70	8.63	0.370	7	100
	2014/2015 Operation	8.64	8.34	7.09	10.50	0.996	3	100	8.96	8.62	8.05	10.20	0.643	3	100
LKW1	2011 Flood	3.63	3.63	3.63	3.63	-	1	100	4.29	4.29	4.29	4.29	-	1	100
	2011/2012 Operation	7.78	8.44	5.20	9.02	0.88	4	100	8.86	9.33	5.79	11.0	1.12	4	100
	2011/2012 Closure	6.34	6.45	5.31	7.07	0.25	7	100	6.81	6.73	5.82	8.45	0.364	7	100
	2014/2015 Operation	6.56	5.93	4.91	9.45	1.042	4	100	7.19	6.60	5.16	10.40	1.191	4	100
LKW4	2011 Flood	6.24	6.24	6.24	6.24	-	1	100	6.96	6.96	6.96	6.96	-	1	100
	2011/2012 Operation	7.67	7.54	6.75	8.85	0.46	4	100	8.77	8.71	7.64	10.0	0.487	4	100
	2011/2012 Closure	5.40	5.60	4.38	6.83	0.34	7	100	5.69	5.37	4.71	6.57	0.282	7	100
	2014/2015 Operation	5.95	5.79	5.54	6.51	0.291	3	100	6.29	6.33	6.19	6.34	0.048	3	100
LKW5	2011 Flood	4.69	4.69	4.69	4.69	-	1	100	5.71	5.71	5.71	5.71	-	1	100
	2011/2012 Operation	8.09	8.41	6.43	9.12	0.58	4	100	8.43	8.35	7.39	9.65	0.522	4	100
	2011/2012 Closure	6.13	6.00	5.25	7.37	0.24	7	100	6.39	6.03	5.73	8.39	0.349	7	100
	2014/2015 Operation	6.52	6.64	5.60	7.32	0.500	3	100	6.55	6.76	5.83	7.06	0.370	3	100
LKW6	2011 Flood	6.32	6.32	6.32	6.32	-	1	100	7.74	7.74	7.74	7.74	-	1	100
	2011/2012 Operation	7.30	7.97	4.54	8.74	0.97	4	100	8.34	8.94	5.12	10.4	1.24	4	100
	2011/2012 Closure	5.81	5.81	5.01	7.23	0.27	7	100	6.21	5.82	5.15	8.85	0.459	7	100
	2014/2015 Operation	5.60	5.50	5.16	6.23	0.249	4	100	6.18	6.05	5.82	6.78	0.220	4	100

Table 21. Continued.

Site ID	Period	Potassium, Dissolved (mg/L)							Potassium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	4.92	4.92	4.92	4.92	-	1	100	5.57	5.57	5.57	5.57	-	1	100
	2011/2012 Operation	6.60	6.53	4.85	8.51	0.80	4	100	6.82	7.20	5.10	7.79	0.593	4	100
	2011/2012 Closure	4.76	4.66	4.01	5.62	0.21	7	100	5.18	5.02	4.43	5.82	0.184	7	100
	2014/2015 Operation	5.32	5.34	4.53	6.09	0.343	4	100	5.92	5.94	4.81	6.99	0.452	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Selenium, Dissolved (mg/L)							Selenium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0	<0.0010	<0.0010	<0.0010	<0.0010	-	5	0
LKW3	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	100
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
LKW2	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	0.0037	-	4	25
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
LKW1	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	0.0011	-	4	25
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
LKW4	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	0.0011	<0.0010	<0.0010	0.0029	-	4	25
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
LKW5	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0	<0.0010	<0.0010	<0.0010	<0.0010	-	3	0
LKW6	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0

Table 21. Continued.

Site ID	Period	Selenium, Dissolved (mg/L)							Selenium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0	<0.0010	<0.0010	<0.0010	<0.0010	-	1	0
	2011/2012 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
	2011/2012 Closure	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0	<0.0010	<0.0010	<0.0010	<0.0010	-	7	0
	2014/2015 Operation	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0	<0.0010	<0.0010	<0.0010	<0.0010	-	4	0
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Silver, Dissolved (mg/L)							Silver, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0
LKW3	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
LKW2	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	0.00023	-	4	25
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
LKW1	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00011	<0.00010	0.00035	-	4	25
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0
LKW4	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	0.00032	-	4	25
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
LKW5	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	0.00033	-	4	25
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
LKW6	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	0.00034	-	4	25
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0

Table 21. Continued.

Site ID	Period	Silver, Dissolved (mg/L)							Silver, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	0.00034	-	4	25
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Sodium, Dissolved (mg/L)							Sodium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	102	103	77	125	13.9	3	100	102	99	76	130	15.6	3	100
	2011/2012 Closure	84	85	48	107	7.2	7	100	83	84	46	117	8.2	7	100
	2014/2015 Operation	71	67	43	93	8.4	5	100	72	73	45	91	8.4	5	100
LKW3	2011 Flood	122	122	122	122	-	1	100	128	128	128	128	-	1	100
	2011/2012 Operation	89	89	65	112	10.0	4	100	88	82	70	119	11.5	4	100
	2011/2012 Closure	79	81	44	101	6.7	7	100	78	74	41	110	8.3	7	100
	2014/2015 Operation	71	77	51	87	10.7	3	100	70	71	54	85	9.0	3	100
LKW2	2011 Flood	122	122	122	122	-	1	100	130	130	130	130	-	1	100
	2011/2012 Operation	127	125	94	162	13.8	4	100	116	116	89	142	11.5	4	100
	2011/2012 Closure	89	89	71	104	4.3	7	100	88	89	66	107	5.9	7	100
	2014/2015 Operation	98	93	92	109	5.5	3	100	104	103	96	113	5.0	3	100
LKW1	2011 Flood	30	30	30	30	-	1	100	31	31	31	31	-	1	100
	2011/2012 Operation	95	97	60	126	13.5	4	100	86	89	58	107	10.7	4	100
	2011/2012 Closure	79	78	70	93	3.0	7	100	79	83	68	89	3.2	7	100
	2014/2015 Operation	72	76	44	90	10.4	4	100	77	76	50	106	12.8	4	100
LKW4	2011 Flood	68	68	68	68	-	1	100	70	70	70	70	-	1	100
	2011/2012 Operation	96	97	78	111	6.7	4	100	90	94	70	102	7.0	4	100
	2011/2012 Closure	64	62	43	87	6.4	7	100	61	64	41	78	5.1	7	100
	2014/2015 Operation	62	66	51	70	5.8	3	100	64	66	56	69	4.1	3	100
LKW5	2011 Flood	47	47	47	47	-	1	100	52	52	52	52	-	1	100
	2011/2012 Operation	99	97	83	121	8.4	4	100	92	93	85	100	3.1	4	100
	2011/2012 Closure	75	72	67	95	3.4	7	100	74	70	65	92	3.4	7	100
	2014/2015 Operation	70	58	57	94	12.0	3	100	70	66	61	83	6.7	3	100
LKW6	2011 Flood	74	74	74	74	-	1	100	75	75	75	75	-	1	100
	2011/2012 Operation	83	91	53	97	10.1	4	100	78	81	55	94	9.1	4	100
	2011/2012 Closure	69	67	46	102	6.7	7	100	69	68	47	106	7.0	7	100
	2014/2015 Operation	61	56	49	81	7.1	4	100	67	63	59	83	5.6	4	100

Table 21. Continued.

		Sodium, Dissolved (mg/L)							Sodium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	51	51	51	51	-	1	100	51	51	51	51	-	1	100
	2011/2012 Operation	74	72	55	96	10.2	4	100	68	66	58	82	5.0	4	100
	2011/2012 Closure	54	56	41	69	3.9	7	100	53	55	42	64	3.1	7	100
	2014/2015 Operation	56	52	48	73	5.6	4	100	60	60	49	70	4.6	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Thallium, Dissolved (mg/L)							Thallium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0	<0.00010	<0.00010	<0.00010	<0.00010	-	5	0
LKW3	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
LKW2	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.000020	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
LKW1	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.000020	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0
LKW4	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.000020	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
LKW5	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00011	<0.00010	<0.000020	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0	<0.00010	<0.00010	<0.00010	<0.00010	-	3	0
LKW6	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.000020	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	0.00011	-	7	14	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0

Table 21. Continued.

		Thallium, Dissolved (mg/L)							Thallium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0	<0.00010	<0.00010	<0.00010	<0.00010	-	1	0
	2011/2012 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.000020	<0.00010	-	4	0
	2011/2012 Closure	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0	<0.00010	<0.00010	<0.00010	<0.00010	-	7	0
	2014/2015 Operation	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0	<0.00010	<0.00010	<0.00010	<0.00010	-	4	0
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Uranium, Dissolved (mg/L)							Uranium, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	0.00132	0.00127	0.00104	0.00165	0.000178	3	100	0.00145	0.00148	0.00126	0.00162	0.000105	3	100
	2011/2012 Closure	0.00126	0.00126	0.00113	0.00137	0.000034	7	100	0.00123	0.00119	0.00101	0.00147	0.000066	7	100
	2014/2015 Operation	0.00117	0.00113	0.00098	0.00158	0.000108	5	100	0.00118	0.00118	0.00097	0.00151	0.000093	5	100
LKW3	2011 Flood	0.00154	0.00154	0.00154	0.00154	-	1	100	0.00156	0.00156	0.00156	0.00156	-	1	100
	2011/2012 Operation	0.00129	0.00132	0.00097	0.00154	0.000119	4	100	0.00141	0.00143	0.00125	0.00152	0.000059	4	100
	2011/2012 Closure	0.00123	0.00123	0.00103	0.00138	0.000044	7	100	0.00122	0.00121	0.00102	0.00153	0.000069	7	100
	2014/2015 Operation	0.00119	0.00117	0.00115	0.00124	0.000026	3	100	0.00125	0.00123	0.00121	0.00131	0.000031	3	100
LKW2	2011 Flood	0.00163	0.00163	0.00163	0.00163	-	1	100	0.00160	0.00160	0.00160	0.00160	-	1	100
	2011/2012 Operation	0.00157	0.00154	0.00132	0.00190	0.000136	4	100	0.00162	0.00165	0.00131	0.00187	0.000140	4	100
	2011/2012 Closure	0.00120	0.00127	0.00075	0.00146	0.000087	7	100	0.00128	0.00122	0.00098	0.00180	0.000105	7	100
	2014/2015 Operation	0.00135	0.00129	0.00125	0.00151	0.000081	3	100	0.00139	0.00131	0.00128	0.00158	0.000095	3	100
LKW1	2011 Flood	0.00078	0.00078	0.00078	0.00078	-	1	100	0.00084	0.00084	0.00084	0.00084	-	1	100
	2011/2012 Operation	0.00133	0.00137	0.00096	0.00160	0.000135	4	100	0.00145	0.00153	0.00110	0.00165	0.000121	4	100
	2011/2012 Closure	0.00119	0.00117	0.00106	0.00138	0.000053	7	100	0.00120	0.00118	0.00103	0.00150	0.000075	7	100
	2014/2015 Operation	0.00116	0.00115	0.00077	0.00157	0.000175	4	100	0.00121	0.00116	0.00078	0.00173	0.000202	4	100
LKW4	2011 Flood	0.00110	0.00110	0.00110	0.00110	-	1	100	0.00109	0.00109	0.00109	0.00109	-	1	100
	2011/2012 Operation	0.00130	0.00135	0.00114	0.00137	0.000054	4	100	0.00138	0.00134	0.00129	0.00155	0.000059	4	100
	2011/2012 Closure	0.00111	0.00109	0.00098	0.00129	0.000039	7	100	0.00115	0.00110	0.00093	0.00150	0.000066	7	100
	2014/2015 Operation	0.00109	0.00104	0.00101	0.00123	0.000069	3	100	0.00117	0.00108	0.00107	0.00135	0.000092	3	100
LKW5	2011 Flood	0.00091	0.00091	0.00091	0.00091	-	1	100	0.00100	0.00100	0.00100	0.00100	-	1	100
	2011/2012 Operation	0.00139	0.00136	0.00113	0.00170	0.000123	4	100	0.00146	0.00144	0.00125	0.00173	0.000122	4	100
	2011/2012 Closure	0.00112	0.00109	0.00091	0.00140	0.000071	7	100	0.00116	0.00112	0.00099	0.00145	0.000068	7	100
	2014/2015 Operation	0.00112	0.00108	0.00103	0.00126	0.000070	3	100	0.00117	0.00115	0.00099	0.00138	0.000113	3	100
LKW6	2011 Flood	0.00110	0.00110	0.00110	0.00110	-	1	100	0.00119	0.00119	0.00119	0.00119	-	1	100
	2011/2012 Operation	0.00130	0.00132	0.00095	0.00160	0.000133	4	100	0.00135	0.00135	0.00118	0.00152	0.000071	4	100
	2011/2012 Closure	0.00117	0.00113	0.00097	0.00135	0.000051	7	100	0.00120	0.00110	0.00106	0.00153	0.000076	7	100
	2014/2015 Operation	0.00108	0.00105	0.00100	0.00124	0.000055	4	100	0.00113	0.00111	0.00106	0.00126	0.000044	4	100

Table 21. Continued.

Site ID	Period	Uranium, Dissolved (mg/L)							Uranium, Total (mg/L)						
		Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	0.00094	0.00094	0.00094	0.00094	-	1	100	0.00098	0.00098	0.00098	0.00098	-	1	100
	2011/2012 Operation	0.00123	0.00121	0.00098	0.00153	0.000115	4	100	0.00128	0.00127	0.00110	0.00146	0.000086	4	100
	2011/2012 Closure	0.00107	0.00098	0.00090	0.00136	0.000067	7	100	0.00111	0.00097	0.00093	0.00151	0.000092	7	100
	2014/2015 Operation	0.00106	0.00098	0.00093	0.00134	0.000095	4	100	0.00112	0.00106	0.00098	0.00139	0.000092	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

Table 21. Continued.

		Zinc, Dissolved (mg/L)							Zinc, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW3B	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	5	0	0.0021	0.0027	<0.0020	0.0029	0.00044	5	60
LKW3	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0020	<0.0020	<0.0020	<0.0050	-	4	25
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0020	<0.0020	<0.0020	0.0026	0.00029	7	29
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	0.0022	0.0024	<0.0020	0.0033	0.00067	3	67
LKW2	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0050	<0.0020	<0.0020	<0.0050	-	4	25
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	14	<0.0020	<0.0020	<0.0020	0.0027	0.00030	7	29
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	0.0021	-	3	33	0.0022	0.0026	<0.0020	0.0029	0.00059	3	67
LKW1	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0050	<0.0050	<0.0020	<0.0050	0.00048	4	50
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0020	<0.0020	<0.0020	0.0036	-	7	14
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	0.0020	<0.0020	<0.0020	0.0035	0.00060	4	50
LKW4	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	0.0022	-	4	25	0.0020	<0.0020	<0.0020	0.0036	-	4	25
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	0.0023	<0.0020	<0.0020	0.0100	-	7	14
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	0.0024	0.0028	<0.0020	0.0033	0.00070	3	67
LKW5	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	0.0030	-	4	25	<0.0050	<0.0050	<0.0020	<0.0050	0.00034	4	50
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	0.0020	<0.0020	<0.0020	0.0055	0.00070	7	29
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	3	0	0.0030	0.0033	<0.0020	0.0048	0.00115	3	33
LKW6	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	0.0020	<0.0020	<0.0020	0.0051	-	4	25	0.0032	0.0027	<0.0020	0.0064	0.00115	4	75
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	0.0024	-	7	14	<0.0020	<0.0020	<0.0020	0.0031	-	7	29
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	0.0021	0.0027	<0.0020	0.0038	0.00069	4	50

Table 21. Continued.

		Zinc, Dissolved (mg/L)							Zinc, Total (mg/L)						
Site ID	Period	Mean	Median	Min	Max	SE	n	%>DL	Mean	Median	Min	Max	SE	n	%>DL
LKW7	2011 Flood	<0.0020	<0.0020	<0.0020	<0.0020	-	1	0	<0.0050	<0.0050	<0.0050	<0.0050	-	1	0
	2011/2012 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	<0.0050	<0.0050	<0.0020	<0.0050	0.00035	4	50
	2011/2012 Closure	<0.0020	<0.0020	<0.0020	<0.0020	-	7	0	<0.0020	<0.0020	<0.0020	0.0044	0.00049	7	29
	2014/2015 Operation	<0.0020	<0.0020	<0.0020	<0.0020	-	4	0	0.0034	0.0028	0.0026	0.0054	0.00068	4	100
MB05SES012	Historic [1]	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011 Flood	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2011/2012 Closure	-	-	-	-	-	0	-	-	-	-	-	-	0	-
	2014/2015 Operation	-	-	-	-	-	0	-	-	-	-	-	-	0	-

1 - Data from the Historic period were only available for Sturgeon Bay at the MCWS site (MB05SES012).

Table 22. Frequency of dissolved oxygen values in the Sturgeon Bay below the MWQSOGs and CCME lowest acceptable concentrations for PAL, 2011-2015.

Site ID	Period	Guidelines Applicable when Water Temperature is > 5°C						Guidelines Applicable when Water Temperature is ≤ 5°C					
		MWQSOGs PAL for Cool Water Early life, and CCME PAL for Early Life Stages of Warm Water Biota; 6.0 mg/L			MWQSOGs PAL for Cold Water Mature Life and CCME PAL for Other Life Stages of Cold Water Biota; 6.5 mg/L			MWQSOGs PAL for Cold Water Early Life, and CCME PAL for Early Life Stages of Cold Water Biota; 9.5 mg/L			MWQSOGs PAL for Cool Water Mature Life, and CCME PAL for Other Life Stages of Warm Water Biota; 5.5 mg/L		
Site ID	Period	MWQSOGs PAL for Cool			MWQSOGs PAL for Cold			MWQSOGs PAL for Cold			MWQSOGs PAL for Cool		
		n	# below	% below	n	# below	% below	n	# below	% below	n	# below	% below
LKW1	2011 Flood	1	0	0	1	0	0	0	-	-	0	-	-
	2011/2012 Operation	2	0	0	2	0	0	1	0	0	1	0	0
	2011/2012 Closure	5	0	0	5	0	0	2	0	0	2	0	0
	2014/2015 Operation	3	0	0	3	0	0	1	0	0	1	0	0
LKW2	2011 Flood	0	-	-	0	-	-	1	0	0	1	0	0
	2011/2012 Operation	2	0	0	2	0	0	1	0	0	1	0	0
	2011/2012 Closure	5	0	0	5	0	0	2	0	0	2	0	0
	2014/2015 Operation	2	0	0	2	0	0	1	1	100	1	0	0
LKW3	2011 Flood	1	0	0	1	0	0	0	-	-	0	-	-
	2011/2012 Operation	3	0	0	3	0	0	0	-	-	0	-	-
	2011/2012 Closure	5	0	0	5	0	0	2	0	0	2	0	0
	2014/2015 Operation	2	0	0	2	0	0	1	0	0	1	0	0
LKW3B	2011/2012 Operation	3	0	0	3	0	0	0	-	-	0	-	-
	2011/2012 Closure	5	0	0	5	0	0	2	0	0	2	0	0
	2014/2015 Operation	9	0	0	9	0	0	1	0	0	1	0	0
LKW4	2011 Flood	1	0	0	1	0	0	0	-	-	0	-	-
	2011/2012 Operation	3	0	0	3	0	0	0	-	-	0	-	-
	2011/2012 Closure	5	0	0	5	0	0	2	0	0	2	0	0
	2014/2015 Operation	2	0	0	2	0	0	1	0	0	1	0	0

Table 22. Continued.

Site ID	Period	Guidelines Applicable when Water Temperature is > 5°C						Guidelines Applicable when Water Temperature is ≤ 5°C					
		MWQSOGs PAL for Cool Water Early life, and CCME PAL for Early Life Stages of Warm Water Biota; 6.0 mg/L			MWQSOGs PAL for Cold Water Mature Life and CCME PAL for Other Life Stages of Cold Water Biota; 6.5 mg/L			MWQSOGs PAL for Cold Water Early Life, and CCME PAL for Early Life Stages of Cold Water Biota; 9.5 mg/L			MWQSOGs PAL for Cool Water Mature Life, and CCME PAL for Other Life Stages of Warm Water Biota; 5.5 mg/L		
Site ID	Period	MWQSOGs PAL for Cool			MWQSOGs PAL for Cold			MWQSOGs PAL for Cold			MWQSOGs PAL for Cool		
		n	# below	% below	n	# below	% below	n	# below	% below	n	# below	% below
LKW5	2011 Flood	1	0	0	1	0	0	0	-	-	0	-	-
	2011/2012 Operation	3	0	0	3	0	0	0	-	-	0	-	-
	2011/2012 Closure	5	0	0	5	0	0	2	0	0	2	0	0
	2014/2015 Operation	2	0	0	2	0	0	1	0	0	1	0	0
LKW6	2011 Flood	1	0	0	1	0	0	0	-	-	0	-	-
	2011/2012 Operation	3	0	0	3	0	0	0	-	-	0	-	-
	2011/2012 Closure	5	0	0	5	0	0	2	0	0	2	0	0
	2014/2015 Operation	3	0	0	3	0	0	1	0	0	1	0	0
LKW7	2011 Flood	1	0	0	1	0	0	0	-	-	0	-	-
	2011/2012 Operation	3	0	0	3	0	0	0	-	-	0	-	-
	2011/2012 Closure	4	0	0	4	0	0	3	0	0	3	0	0
	2014/2015 Operation	3	0	0	3	0	0	1	0	0	1	0	0

Table 23. Frequency of exceedance of MWQSOGs and CCME guidelines for PAL for metals and major ions in the Sturgeon Bay, 2011-2015. Only metals and major ions for which exceedances occurred within the Study Area are listed.[1] Percent exceedance values greater than zero are indicated in bold.

			Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
Site ID	Period		MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
LKW1	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	1	1	-	0	-	0	0	1
		% Exceedance	**100**	**100**	-	0	-	0	0	**100**
	2011/2012 Operation	n	4	4	-	4	-	4	4	4
		# Exceeded	3	3	-	3	-	3	0	1
		% Exceedance	**75**	**75**	-	**75**	-	**75**	0	**25**
	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	6	6	-	2	-	4	0	0
		% Exceedance	**86**	**86**	-	**29**	-	**57**	0	0
	2014/2015 Operation	n	4	4	-	4	-	**4**	4	4
		# Exceeded	4	4	-	2	-	**1**	0	1
		% Exceedance	**100**	**100**	-	**50**	-	**25**	0	**25**
LKW2	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	0	0	-	1	-	1	0	0
		% Exceedance	0	0	-	**100**	-	**100**	0	0
	2011/2012 Operation	n	4	4	-	4	-	4	4	4
		# Exceeded	3	3	-	4	-	3	0	1
		% Exceedance	**75**	**75**	-	**100**	-	**75**	0	**25**
	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	4	4	-	5	-	4	0	0
		% Exceedance	**57**	**57**	-	**71**	-	**57**	0	0

Table 23. Continued.

Site ID	Period		Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
			MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
LKW2	2014/2015 Operation	n	3	3	-	3	-	3	3	3
		# Exceeded	2	2	-	3	-	3	0	0
		% Exceedance	**67**	**67**	-	**100**	-	**100**	0	0
LKW3	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	1	1	-	1	-	1	0	0
		% Exceedance	**100**	**100**	-	**100**	-	**100**	0	0
	2011/2012 Operation	n	4	4	-	4	-	4	4	4
		# Exceeded	4	4	-	2	-	3	0	0
		% Exceedance	**100**	**100**	-	**50**	-	**75**	0	0
	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	5	5	-	3	-	3	0	0
		% Exceedance	**71**	**71**	-	**43**	-	**43**	0	0
	2014/2015 Operation	n	3	3	-	3	-	3	3	3
		# Exceeded	3	3	-	1	-	2	0	0
		% Exceedance	**100**	**100**	-	**33**	-	**67**	0	0
LKW3B	2011 Flood	n	0	0	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-	-	-
	2011/2012 Operation	n	3	3	-	3	-	3	3	3
		# Exceeded	3	3	-	2	-	2	0	0
		% Exceedance	**100**	**100**	-	**67**	-	**67**	0	0

Table 23. Continued.

Site ID	Period		Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
			MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
LKW3B	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	3	3	-	4	-	3	0	0
		% Exceedance	**43**	**43**	-	**57**	-	**43**	0	0
	2014/2015 Operation	n	5	5	-	5	-	5	5	5
		# Exceeded	4	4	-	2	-	2	0	0
		% Exceedance	**80**	**80**	-	**40**	-	**40**	0	0
LKW4	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	1	1	-	0	-	0	0	0
		% Exceedance	**100**	**100**	-	0	-	0	0	0
	2011/2012 Operation	n	4	4	-	4	-	4	4	4
		# Exceeded	4	4	-	3	-	3	0	1
		% Exceedance	**100**	**100**	-	**75**	-	**75**	0	**25**
	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	7	7	-	1	-	2	0	0
		% Exceedance	**100**	**100**	-	**14**	-	**29**	0	0
	2014/2015 Operation	n	3	3	-	3	-	3	3	3
		# Exceeded	3	3	-	0	-	1	0	1
		% Exceedance	**100**	**100**	-	0	-	**33**	0	**33**
LKW5	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	1	1	-	0	-	0	0	0
		% Exceedance	**100**	**100**	-	0	-	0	0	0

Table 23. Continued.

Site ID	Period		Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
			MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
LKW5	2011/2012 Operation	n	4	4	-	4	-	4	4	4
		# Exceeded	4	4	-	3	-	3	0	0
		% Exceedance	**100**	**100**	-	**75**	-	**75**	0	0
	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	5	5	-	1	-	3	0	0
		% Exceedance	**71**	**71**	-	**14**	-	**43**	0	0
	2014/2015 Operation	n	3	3	-	3	-	3	3	3
		# Exceeded	3	3	-	1	-	1	0	0
		% Exceedance	**100**	**100**	-	**33**	-	**33**	0	0
LKW6	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	1	1	-	0	-	1	0	0
		% Exceedance	**100**	**100**	-	0	-	**100**	0	0
	2011/2012 Operation	n	4	4	-	4	-	4	4	4
		# Exceeded	4	4	-	3	-	3	0	1
		% Exceedance	**100**	**100**	-	**75**	-	**75**	0	**25**
	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	6	6	-	1	-	3	0	0
		% Exceedance	**86**	**86**	-	**14**	-	**43**	0	0
	2014/2015 Operation	n	4	4	-	4	-	4	4	4
		# Exceeded	4	4	-	0	-	2	0	0
		% Exceedance	**100**	**100**	-	0	-	**50**	0	0

Table 23. Continued.

Site ID	Period		Aluminum, Total		Chloride, Dissolved		Fluoride, Dissolved		Chromium, Total	
			MWQSOGs	CCME	MWQSOGs	CCME [2]	MWQSOGs	CCME [3]	MWQSOGs [4,5]	CCME [2]
MWQSOGs/CCME PAL (mg/L)			0.1	0.1	-	120	-	0.12	0.103-0.316	0.001
LKW7	2011 Flood	n	1	1	-	1	-	1	1	1
		# Exceeded	1	1	-	0	-	0	0	0
		% Exceedance	**100**	**100**	-	0	-	0	0	0
	2011/2012 Operation	n	4	4	-	4	-	4	4	4
		# Exceeded	4	4	-	1	-	2	0	1
		% Exceedance	**100**	**100**	-	**25**	-	**50**	0	**25**
	2011/2012 Closure	n	7	7	-	7	-	7	7	7
		# Exceeded	6	6	-	0	-	1	0	0
		% Exceedance	**86**	**86**	-	0	-	**14**	0	0
	2014/2015 Operation	n	4	4	-	4	-	4	4	4
		# Exceeded	4	4	-	0	-	1	0	1
		% Exceedance	**100**	**100**	-	0	-	**25**	0	**25**

Table 23. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [9]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
LKW1	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	1	1	0	0	0	0
		% Exceedance	**100**	**100**	0	0	0	0
	2011/2012 Operation	n	4	4	4	4	4	4
		# Exceeded	1	1	1	1	1	1
		% Exceedance	**25**	**25**	**25**	**25**	**25**	**25**
	2011/2012 Closure	n	7	7	7	7	7	7
		# Exceeded	2	2	0	0	0	0
		% Exceedance	**29**	**29**	0	0	0	0
	2014/2015 Operation	n	4	4	4	4	4	4
		# Exceeded	2	2	0	0	0	0
		% Exceedance	**50**	**50**	0	0	0	0
LKW2	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2011/2012 Operation	n	4	4	4	4	4	4
		# Exceeded	0	0	1	1	1	1
		% Exceedance	0	0	**25**	**25**	**25**	**25**
	2011/2012 Closure	n	7	7	7	7	7	7
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0

Table 23. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
LKW2	2014/2015 Operation	n	3	3	3	3	3	3
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
LKW3	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2011/2012 Operation	n	4	4	4	4	4	4
		# Exceeded	2	2	0	0	0	0
		% Exceedance	**50**	**50**	0	0	0	0
	2011/2012 Closure	n	7	7	7	7	7	7
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2014/2015 Operation	n	3	3	3	3	3	3
		# Exceeded	1	1	0	0	0	0
		% Exceedance	**33**	**33**	0	0	0	0
LKW3B	2011 Flood	n	0	0	0	0	0	0
		# Exceeded	-	-	-	-	-	-
		% Exceedance	-	-	-	-	-	-
	2011/2012 Operation	n	3	3	3	3	3	3
		# Exceeded	1	1	0	0	0	0
		% Exceedance	**33**	**33**	0	0	0	0

Table 23. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
LKW3B	2011/2012 Closure	n	7	7	7	7	7	7
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2014/2015 Operation	n	5	5	5	5	5	5
		# Exceeded	1	1	0	0	0	0
		% Exceedance	**20**	**20**	0	0	0	0
LKW4	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	1	1	0	0	0	0
		% Exceedance	**100**	**100**	0	0	0	0
	2011/2012 Operation	n	4	4	4	4	4	4
		# Exceeded	0	0	1	1	1	1
		% Exceedance	0	0	**25**	**25**	**25**	**25**
	2011/2012 Closure	n	7	7	7	7	7	7
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2014/2015 Operation	n	3	3	3	3	3	3
		# Exceeded	1	1	0	0	0	0
		% Exceedance	**33**	**33**	0	0	0	0
LKW5	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	1	1	0	0	0	0
		% Exceedance	**100**	**100**	0	0	0	0

Table 23. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
	2011/2012 Operation	n	4	4	4	4	4	4
		# Exceeded	0	0	0	0	1	1
		% Exceedance	0	0	0	0	**25**	**25**
	2011/2012 Closure	n	7	7	7	7	7	7
		# Exceeded	0	0	0	0	0	0
		% Exceedance	0	0	0	0	0	0
	2014/2015 Operation	n	3	3	3	3	3	3
		# Exceeded	1	1	0	0	0	0
		% Exceedance	**33**	**33**	0	0	0	0
LKW6	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	1	1	0	0	0	0
		% Exceedance	**100**	**100**	0	0	0	0
	2011/2012 Operation	n	4	4	4	4	4	4
		# Exceeded	1	1	0	0	1	1
		% Exceedance	**25**	**25**	0	0	**25**	**25**
	2011/2012 Closure	n	7	7	7	7	7	7
		# Exceeded	1	1	0	0	0	0
		% Exceedance	**25**	**25**	0	0	0	0
	2014/2015 Operation	n	4	4	4	4	4	4
		# Exceeded	3	3	0	0	0	0
		% Exceedance	**75**	**75**	0	0	0	0

Table 23. Continued.

Site ID	Period		Iron, Total		Selenium, Total		Silver, Total	
			MWQSOGs	CCME	MWQSOGs [6]	CCME [6]	MWQSOGs [6]	CCME [6]
MWQSOGs/CCME PAL (mg/L)			0.3	0.3	0.001	0.001	0.0001	0.0001
LKW7	2011 Flood	n	1	1	1	1	1	1
		# Exceeded	1	1	0	0	0	0
		% Exceedance	**100**	**100**	0	0	0	0
	2011/2012 Operation	n	4	4	4	4	4	4
		# Exceeded	1	1	0	0	1	1
		% Exceedance	**25**	**25**	0	0	**25**	**25**
	2011/2012 Closure	n	7	7	7	7	7	7
		# Exceeded	2	2	0	0	0	0
		% Exceedance	**29**	**29**	0	0	0	0
	2014/2015 Operation	n	4	4	4	4	4	4
		# Exceeded	3	3	0	0	0	0
		% Exceedance	**75**	**75**	0	0	0	0

1 - The following metals where consistently within both the applicable MWQSOGs and CCME PAL guidelines at all sites and times: arsenic; boron; cadmium; dissolved chromium; copper; lead; mercury, methyl mercury; molybdenum; nickel; thallium; uranium; and, zinc.
2 - Long-term guideline. All concentrations were within the short-term guideline at all sites and times.
3 - Interim guideline.
4 - MWQSOGs 4-day objective. All concentrations were within the 1-hour objective.
5 - Based on sample specific hardness.
6 - Analytical detection limit is equal to the PAL guideline.

Table 24. Frequencies of exceedances of MWQSOGs/Health Canada aesthetic objectives for drinking water for metals and major ions measured in the Sturgeon Bay, 2011-2015. All parameters with maximum acceptable concentrations were within these guidelines at all sites and times, including: antimony; arsenic; barium; boron; lead; mercury; selenium; and, uranium. Percent exceedance values greater than zero are indicated in bold.

Site ID	Period		Chloride, Dissolved	Iron, Total	Manganese, Total	Sodium, Total	Sulphate, Dissolved
MWQSOGs/Health Canada Aesthetic Objective (mg/L)			≤250	≤0.3	≤0.050	≤200	≤500
LKW1	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**100**	0	0	0
	2011/2012 Operation	n	4	4	4	4	4
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**25**	0	0	0
	2011/2012 Closure	n	7	7	7	7	7
		# Exceeded	0	2	0	0	0
		% Exceedance	0	**29**	0	0	0
	2014/2015 Operation	n	4	4	4	4	4
		# Exceeded	0	2	0	0	0
		% Exceedance	0	**50**	0	0	0
LKW2	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Operation	n	4	4	4	4	4
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	7	7	7	7	7
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	3	3	3	3	3
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
LKW3	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0

Table 24. Continued.

Site ID	Period		Chloride, Dissolved	Iron, Total	Manganese, Total	Sodium, Total	Sulphate, Dissolved
MWQSOGs/Health Canada Aesthetic Objective (mg/L)			≤250	≤0.3	≤0.050	≤200	≤500
LKW3	2011/2012 Operation	n	4	4	4	4	4
		# Exceeded	0	2	0	0	0
		% Exceedance	0	**50**	0	0	0
	2011/2012 Closure	n	7	7	7	7	7
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	3	3	3	3	3
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**33**	0	0	0
LKW3B	2011/2012 Operation	n	12	3	3	5	3
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**33**	0	0	0
	2011/2012 Closure	n	7	7	7	7	7
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	5	5	5	5	5
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**20**	0	0	0
LKW4	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**100**	0	0	0
	2011/2012 Operation	n	4	4	4	4	4
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	7	7	7	7	7
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	3	3	3	3	3
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**33**	0	0	0
LKW5	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**100**	0	0	0

Table 24. Continued.

Site ID	Period		Chloride, Dissolved	Iron, Total	Manganese, Total	Sodium, Total	Sulphate, Dissolved
MWQSOGs/Health Canada Aesthetic Objective (mg/L)			≤250	≤0.3	≤0.050	≤200	≤500
LKW5	2011/2012 Operation	n	4	4	4	4	4
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2011/2012 Closure	n	7	7	7	7	7
		# Exceeded	0	0	0	0	0
		% Exceedance	0	0	0	0	0
	2014/2015 Operation	n	3	3	3	3	3
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**33**	0	0	0
LKW6	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**100**	0	0	0
	2011/2012 Operation	n	4	4	4	4	4
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**25**	0	0	0
	2011/2012 Closure	n	7	7	7	7	7
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**14**	0	0	0
	2014/2015 Operation	n	4	4	4	4	4
		# Exceeded	0	3	0	0	0
		% Exceedance	0	**75**	0	0	0
LKW7	2011 Flood	n	1	1	1	1	1
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**100**	0	0	0
	2011/2012 Operation	n	4	4	4	4	4
		# Exceeded	0	1	0	0	0
		% Exceedance	0	**25**	0	0	0
	2011/2012 Closure	n	7	7	7	7	7
		# Exceeded	0	2	0	0	0
		% Exceedance	0	**29**	0	0	0
	2014/2015 Operation	n	4	4	4	4	4
		# Exceeded	0	3	0	0	0
		% Exceedance	0	**75**	0	0	0

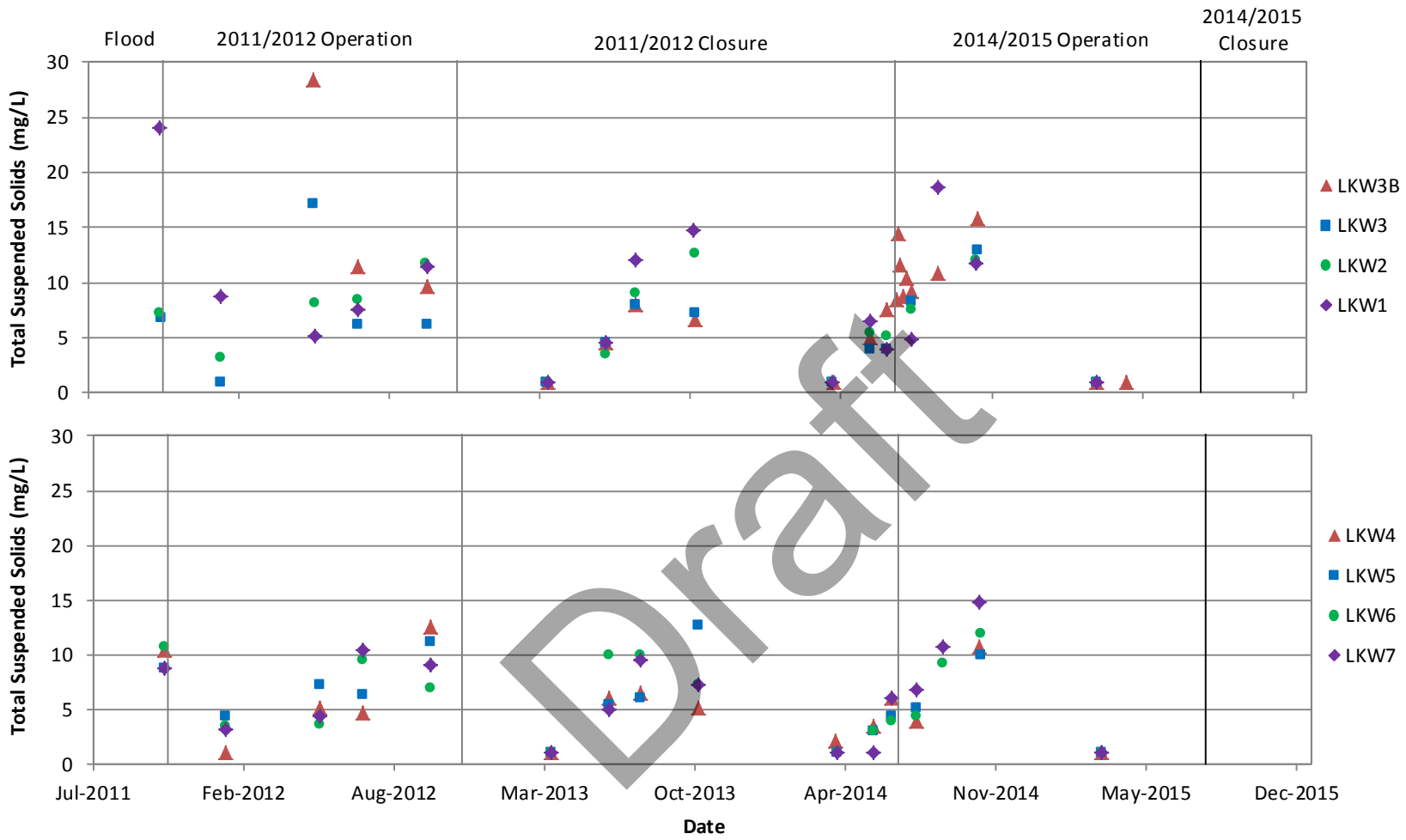

Figure 81. Total suspended solids in Sturgeon Bay, 2011-2015.

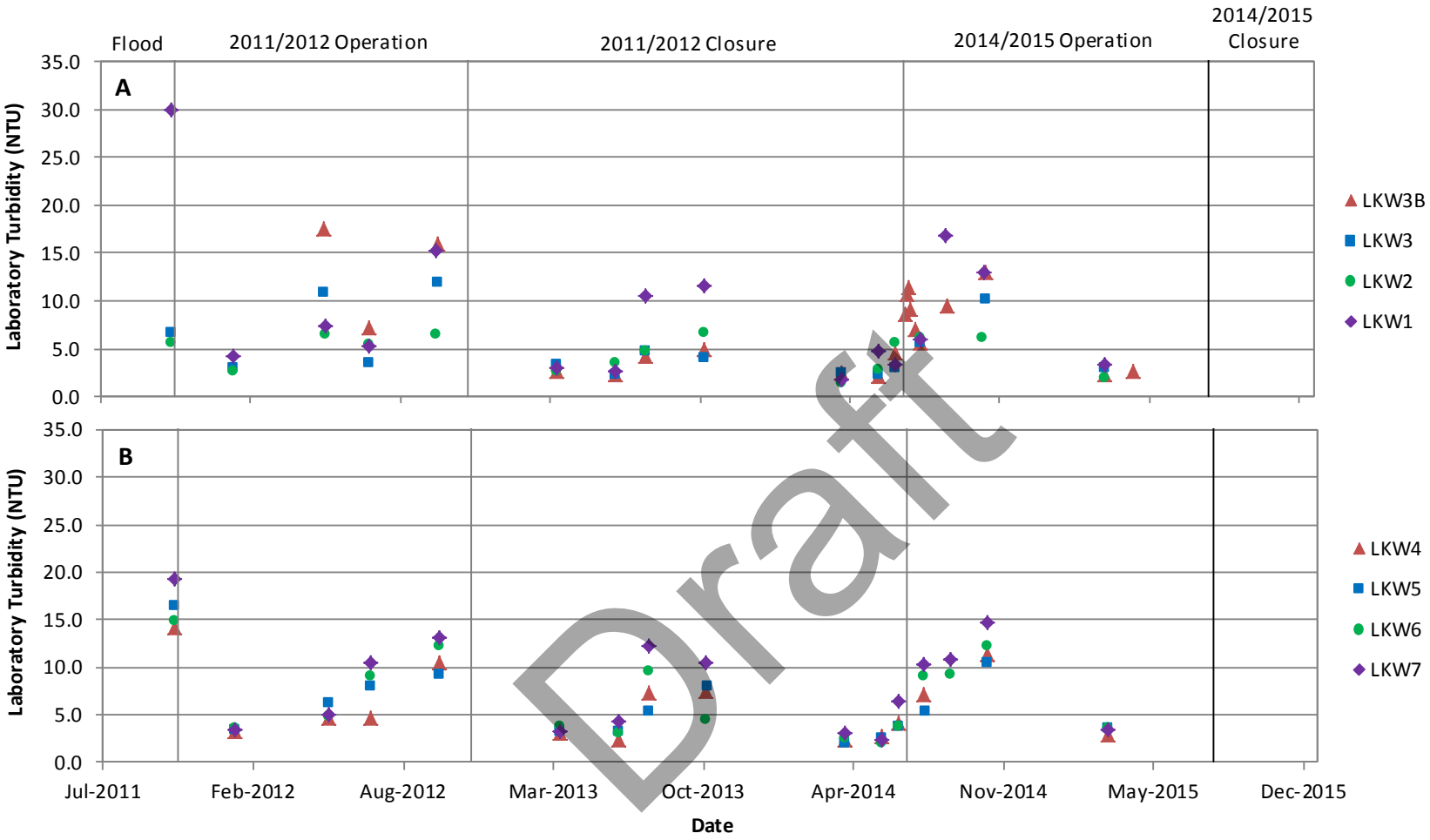

Figure 82. Turbidity in Sturgeon Bay, 2011-2015.

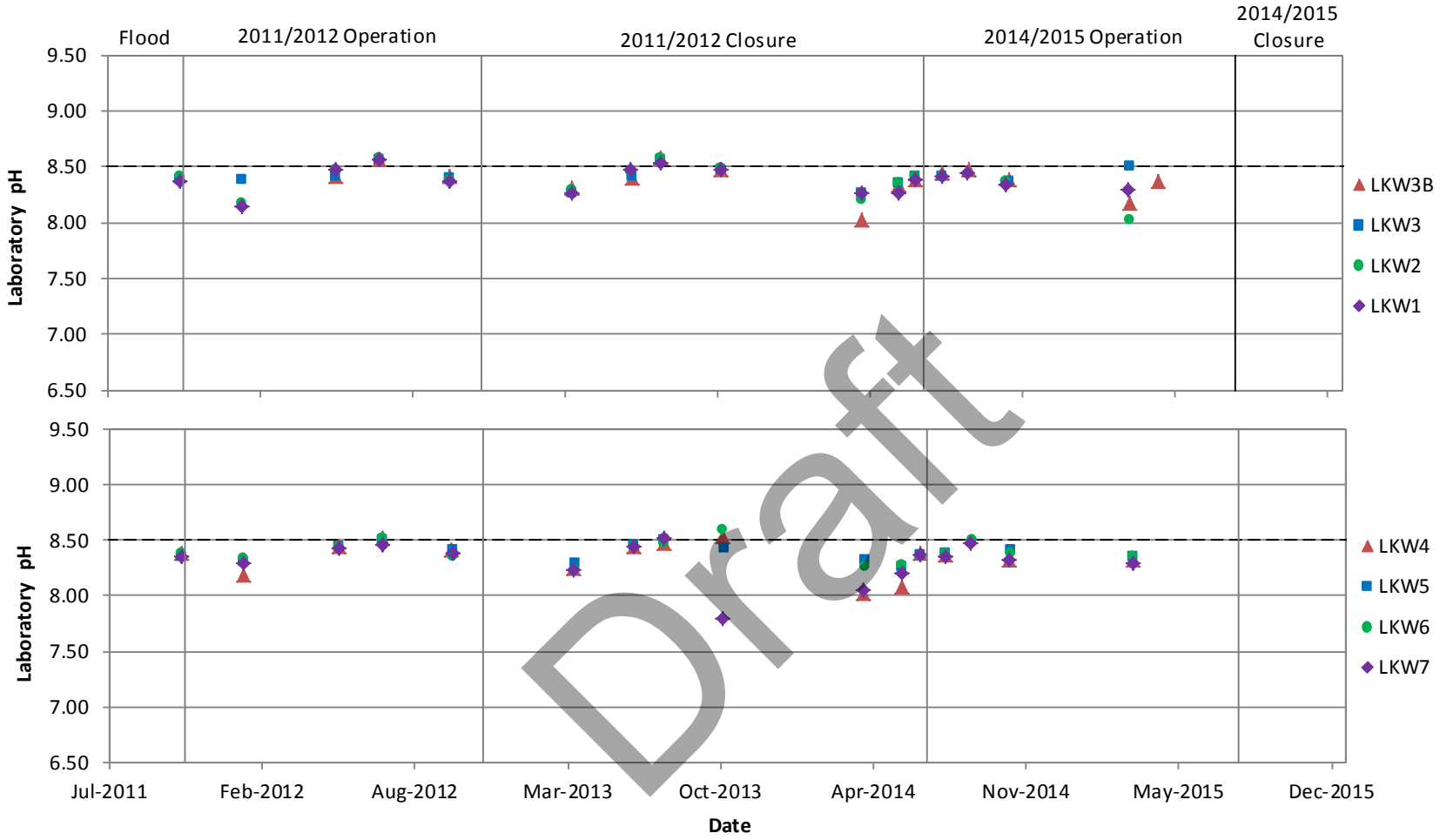

Figure 83. Laboratory measured pH in Sturgeon Bay, 2011-2015. Dashed line represents the upper limit of the MWQSOGs/ Health Canada aesthetic objective for drinking water.

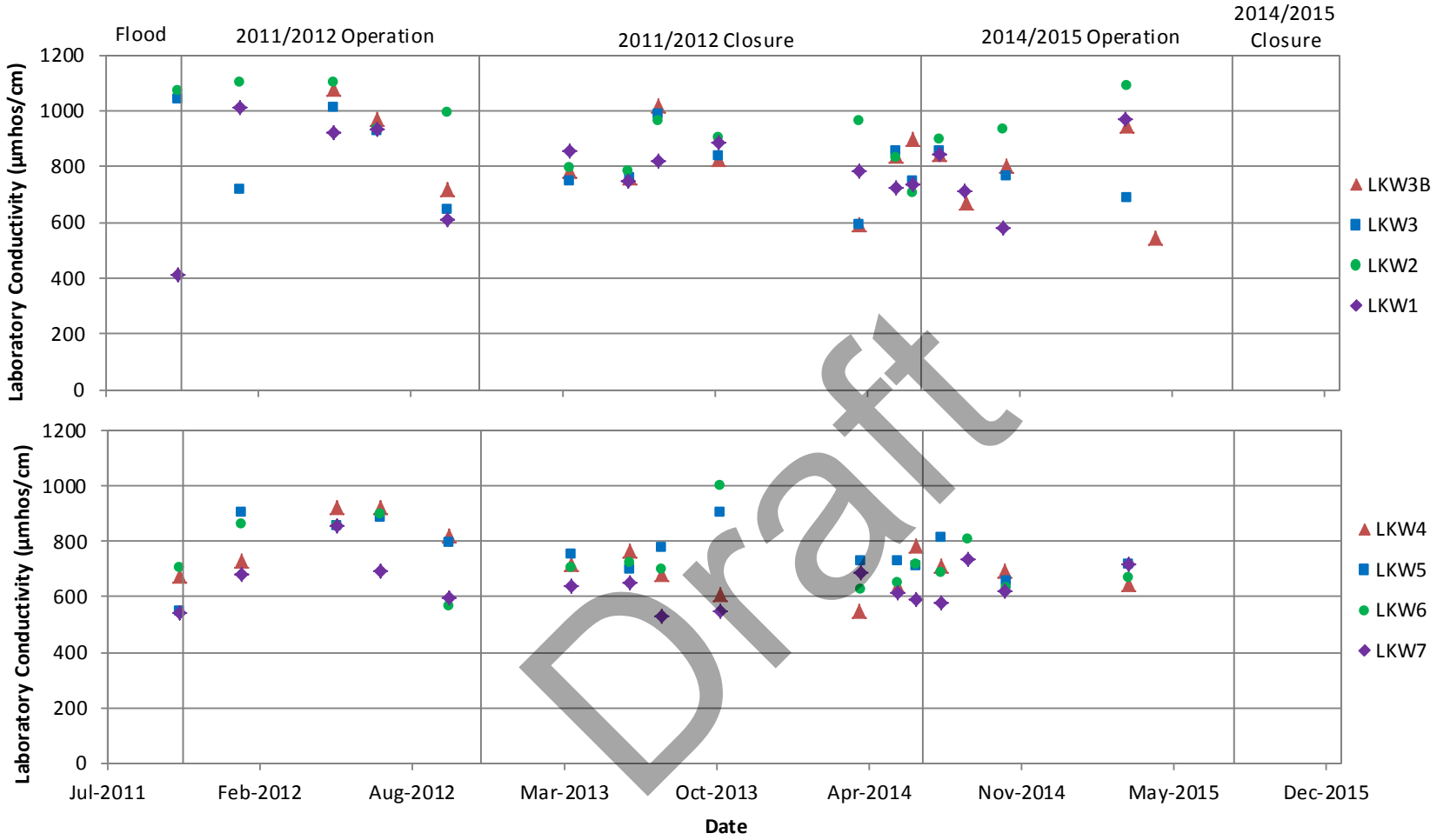

Figure 84. Conductivity in Sturgeon Bay, 2011-2015.

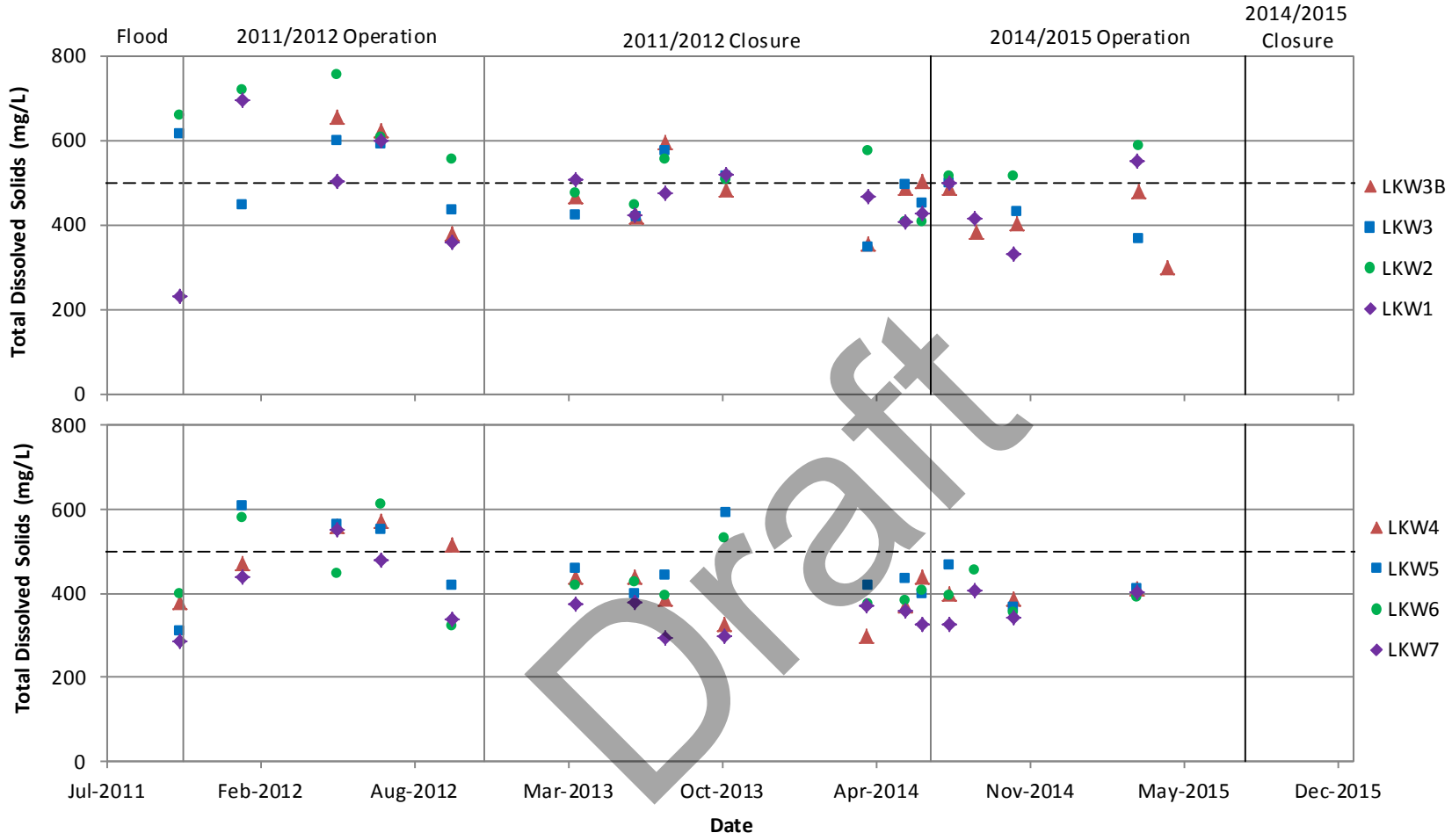

Figure 85. Total dissolved solid concentrations in Sturgeon Bay, 2011-2015. Dashed line represents the MWQSOGs/Health Canada aesthetic objective for drinking water.

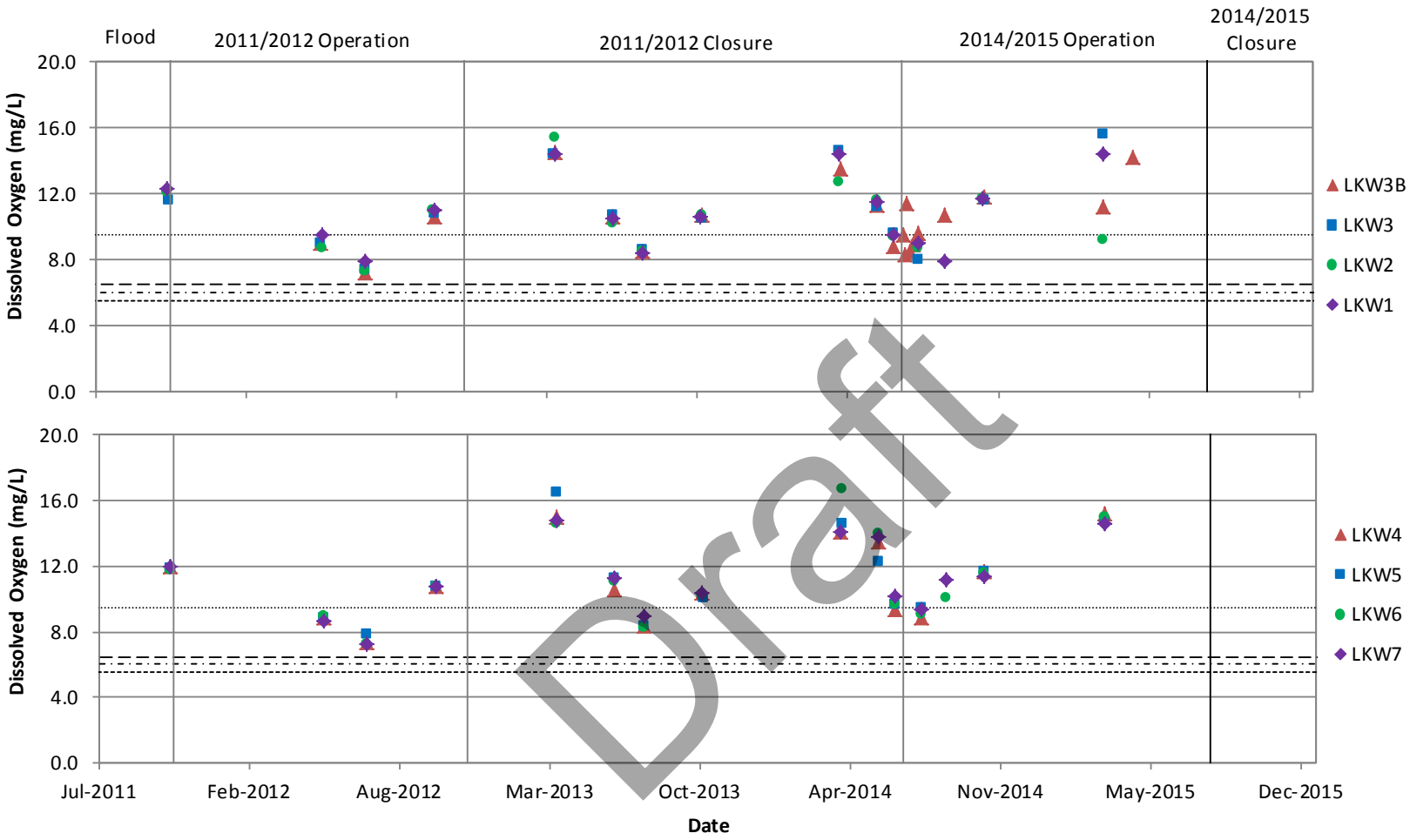

Figure 86. Dissolved oxygen concentrations in Sturgeon Bay, 2011-2015.

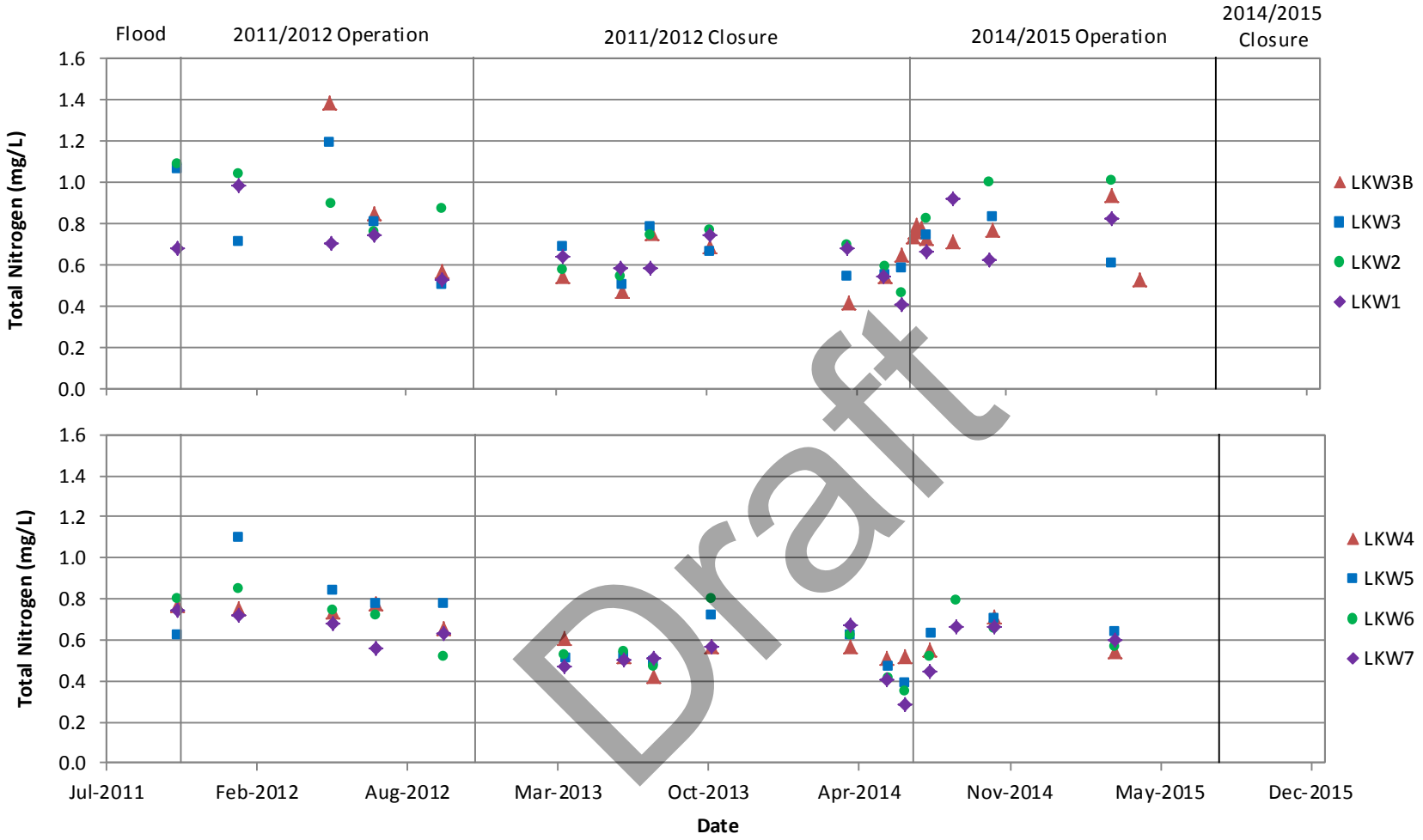

Figure 87. Total nitrogen concentrations in Sturgeon Bay, 2011-2015.

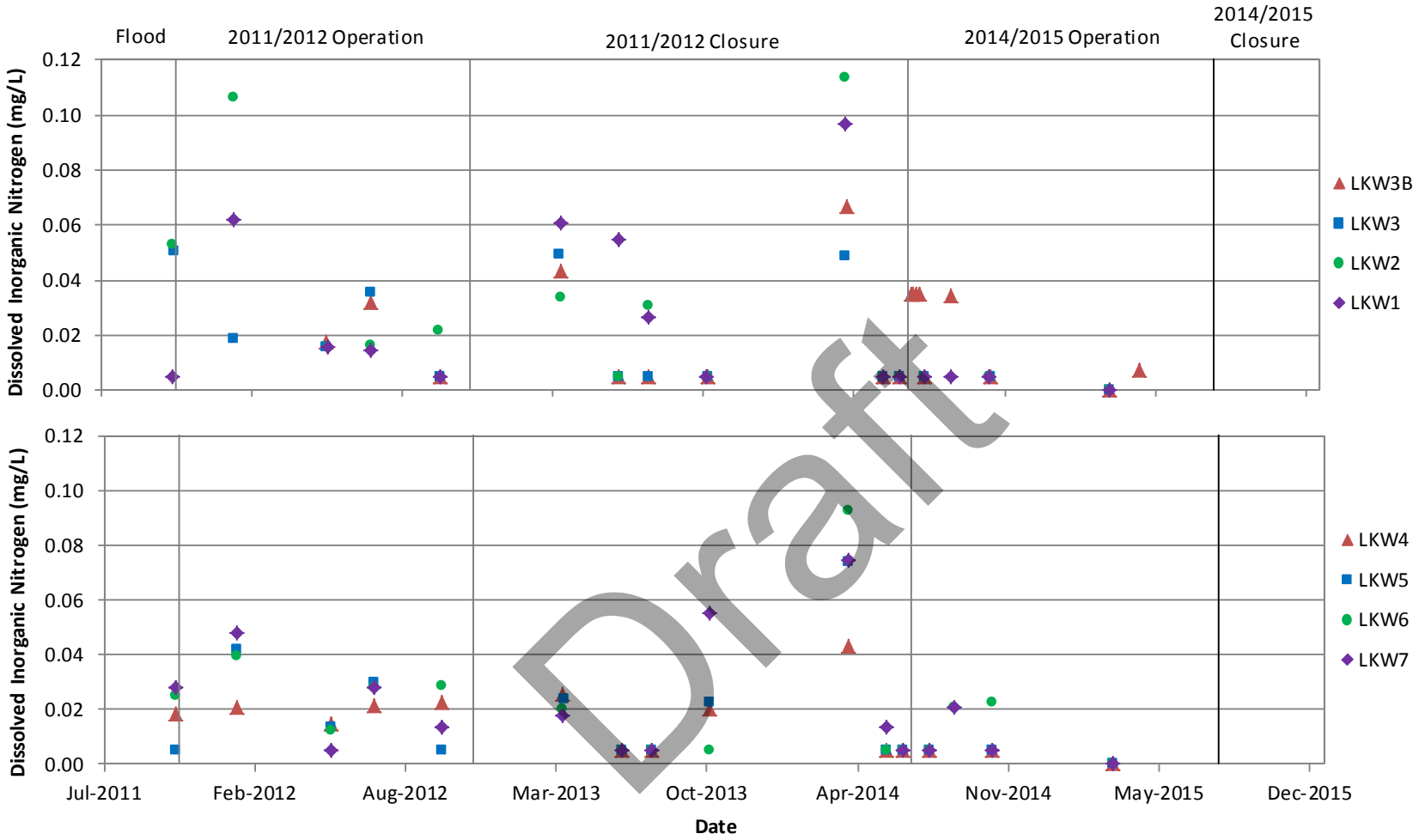

Figure 88. Dissolved inorganic nitrogen concentrations in Sturgeon Bay, 2011-2015.

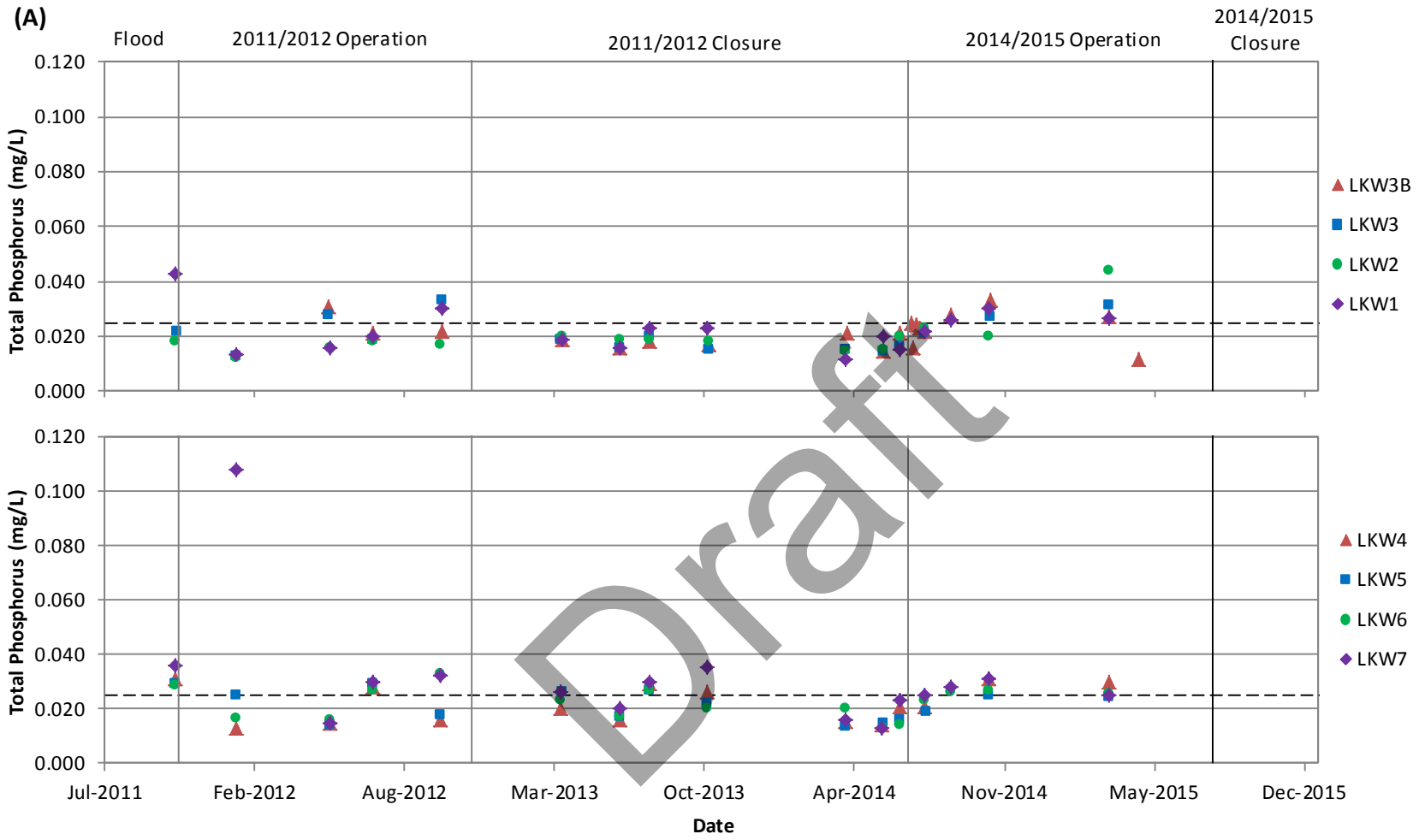

Figure 89. Total phosphorus concentrations in Sturgeon Bay, 2011-2015. Dashed line represents the MWQSOGs narrative guideline for lakes and river mouths. Plot (B) shows the same data as plot (A) at half the scale.

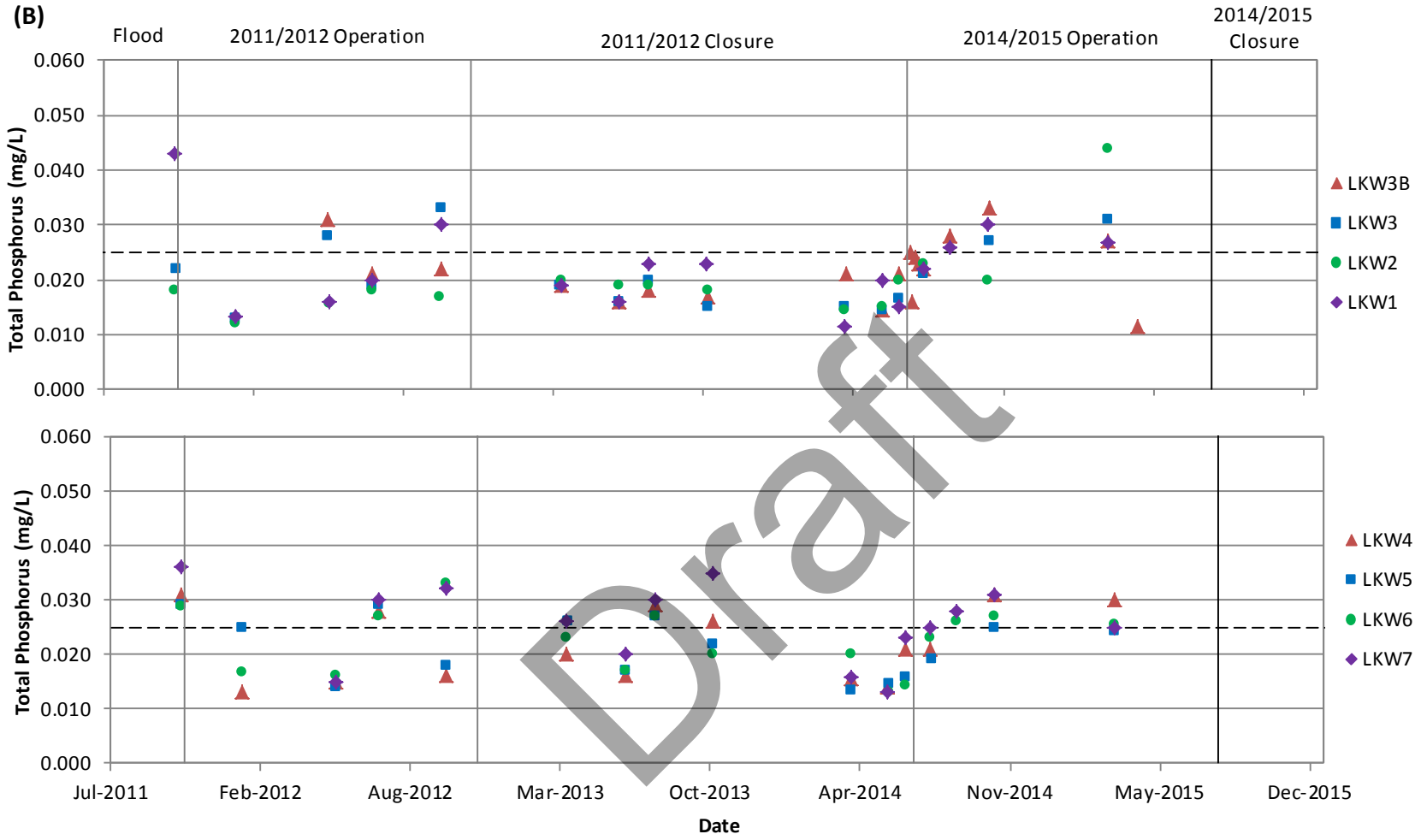

Figure 89. Continued.

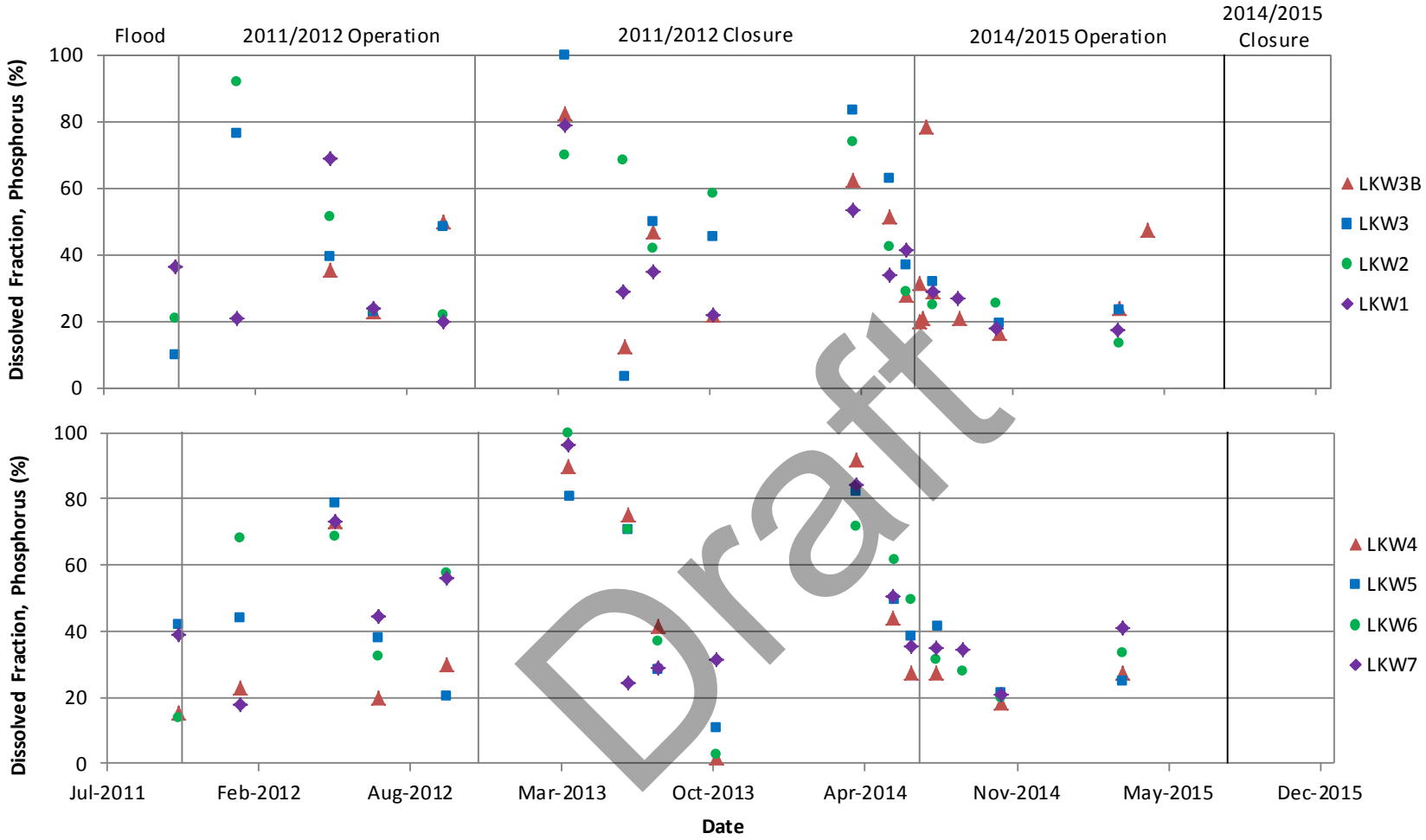

Figure 90. Phosphorous composition in Sturgeon Bay, 2011-2015. Values greater than 100% were plotted at 100%.

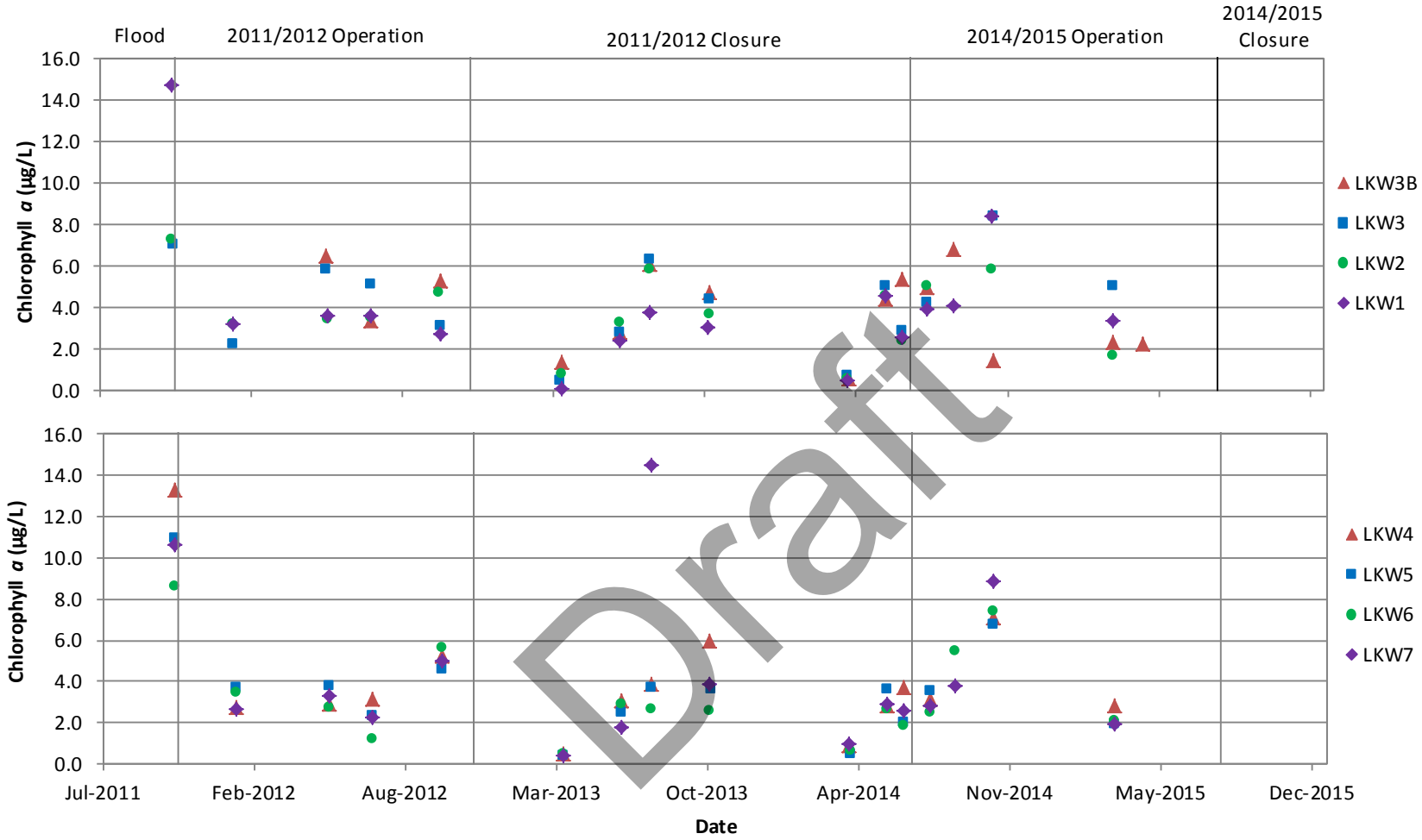

Figure 91. Chlorophyll *a* concentrations in Sturgeon Bay, 2011-2015.

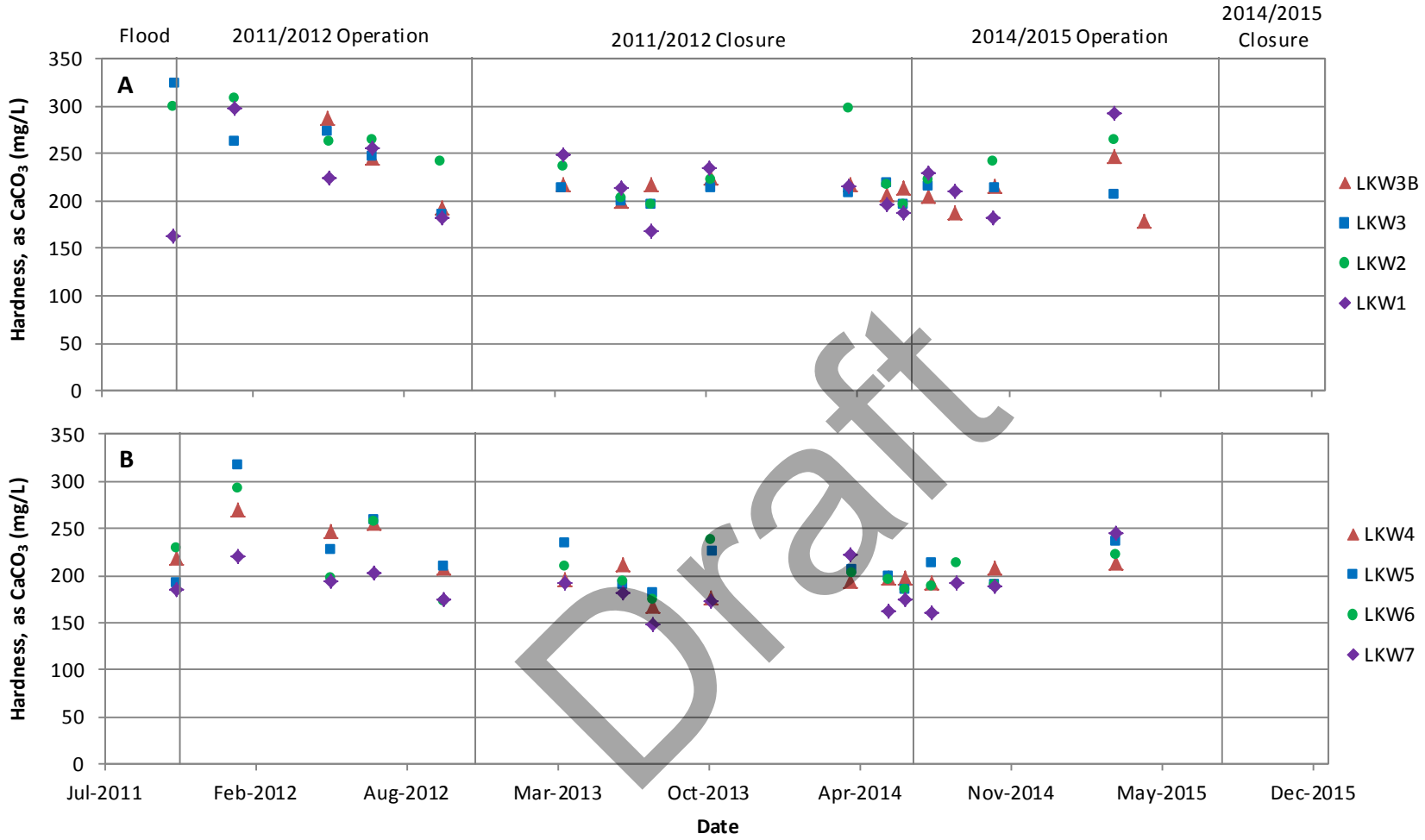

Figure 92. Hardness in Sturgeon Bay, 2011-2015.

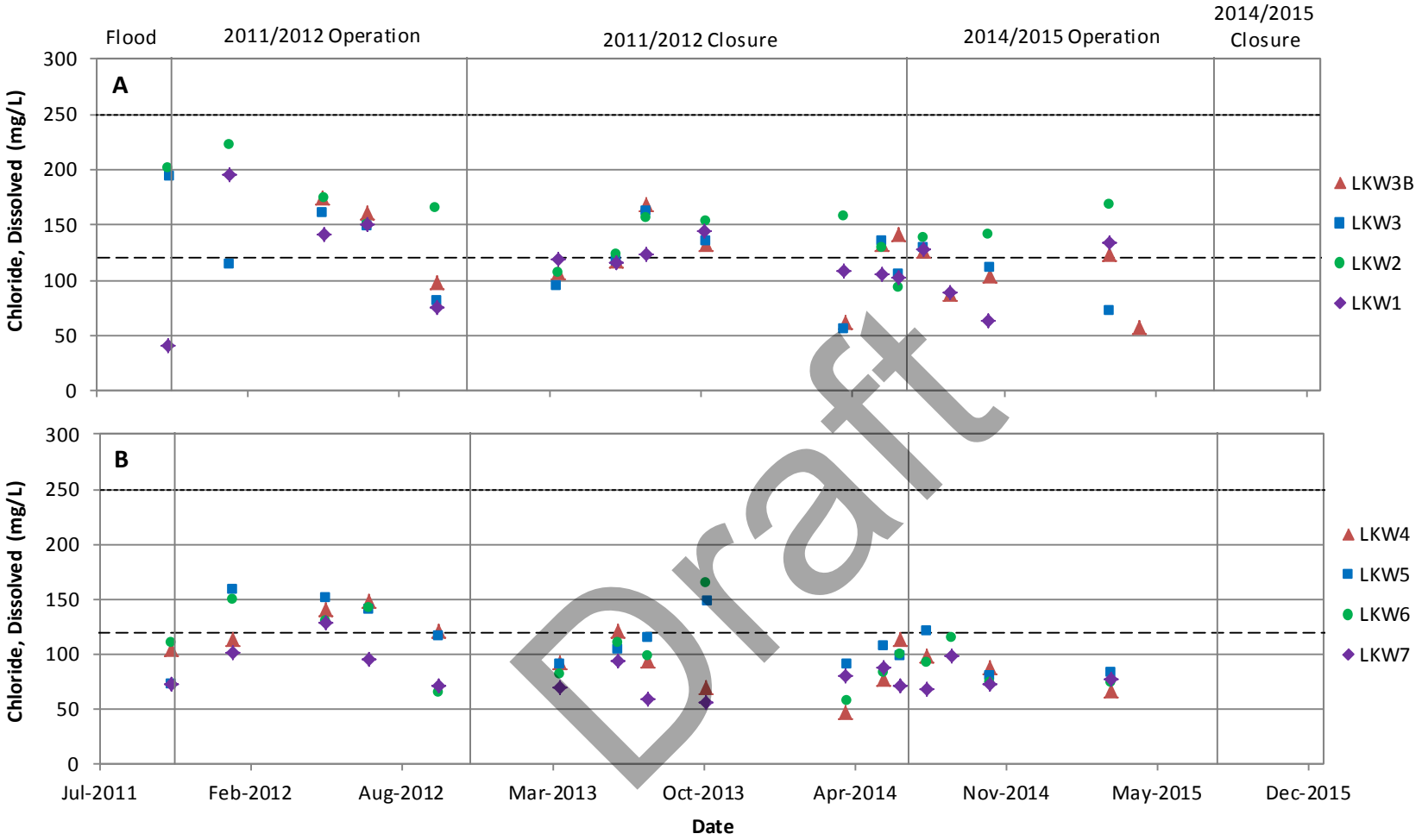

Figure 93. Chloride concentrations in Sturgeon Bay, 2011-2015. Dashed line represents the CCME PAL and the dotted line represents the MWQSOGs/Health Canada aesthetic objective for drinking water.

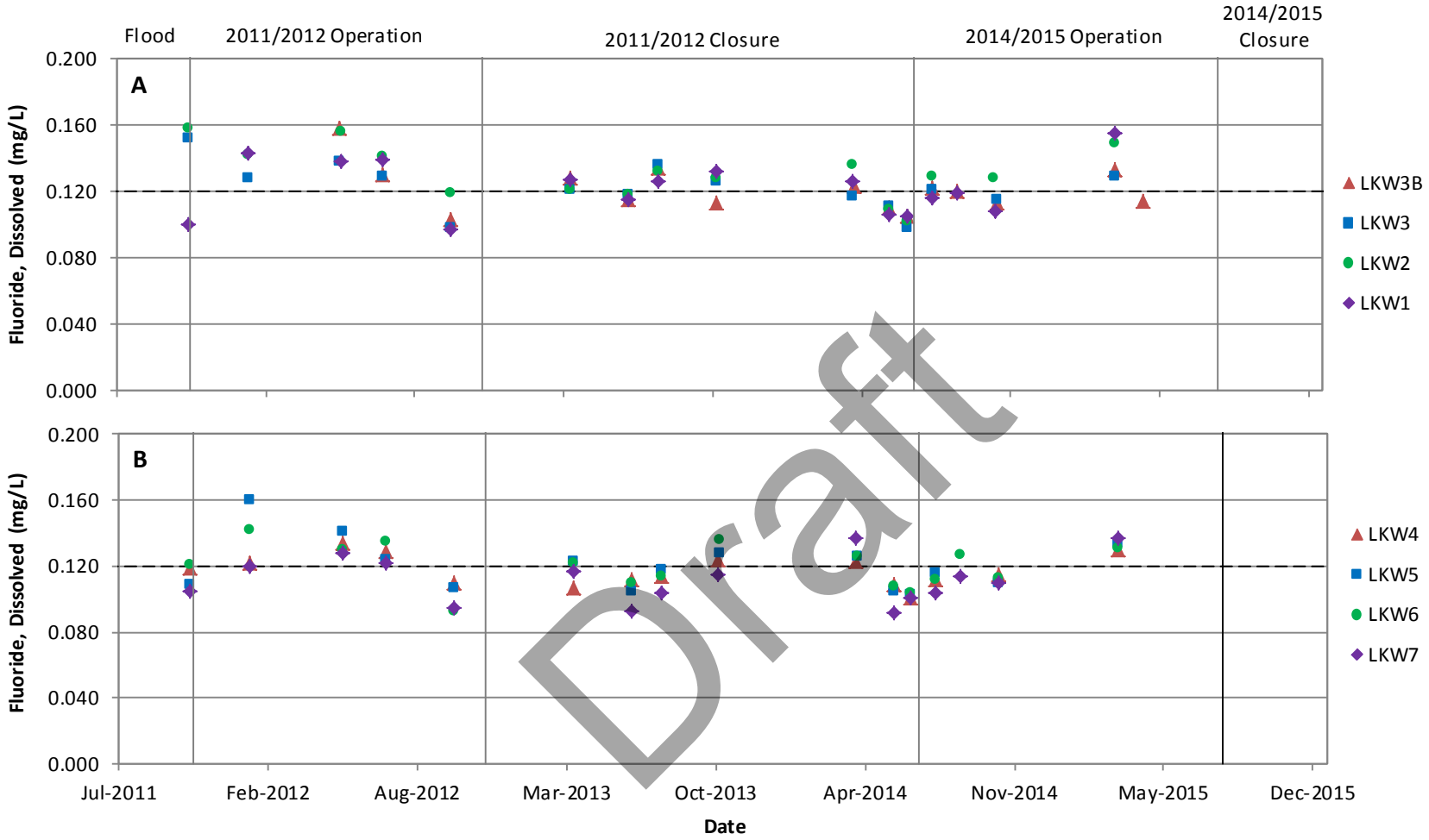

Figure 94. Fluoride concentrations in Sturgeon Bay, 2011-2015. Dashed line represents the CCME interim PAL.

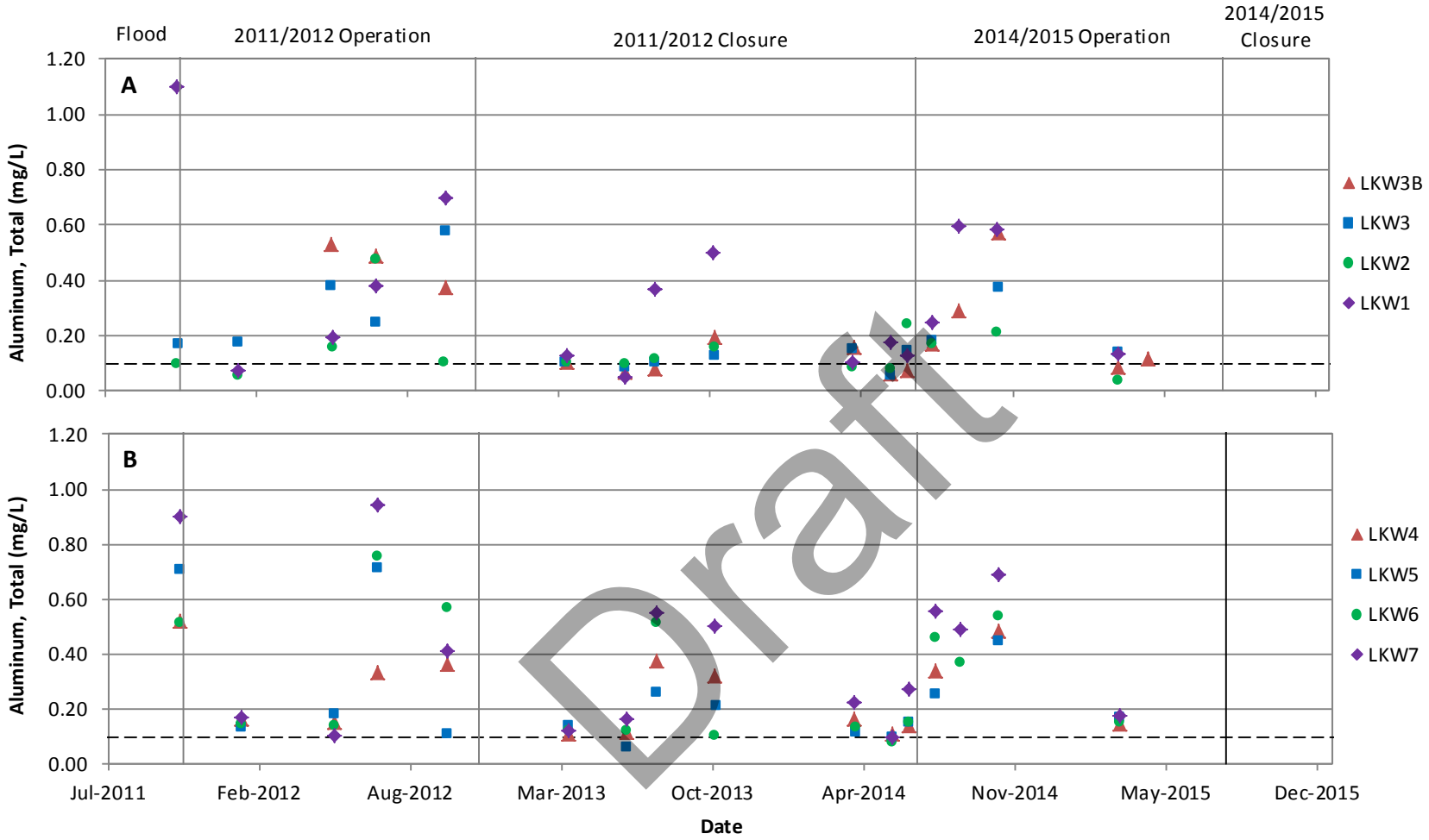

Figure 95. Aluminum concentrations in Sturgeon Bay, 2011-2015. Dashed line represents the MWQSOGs/CCME PAL.

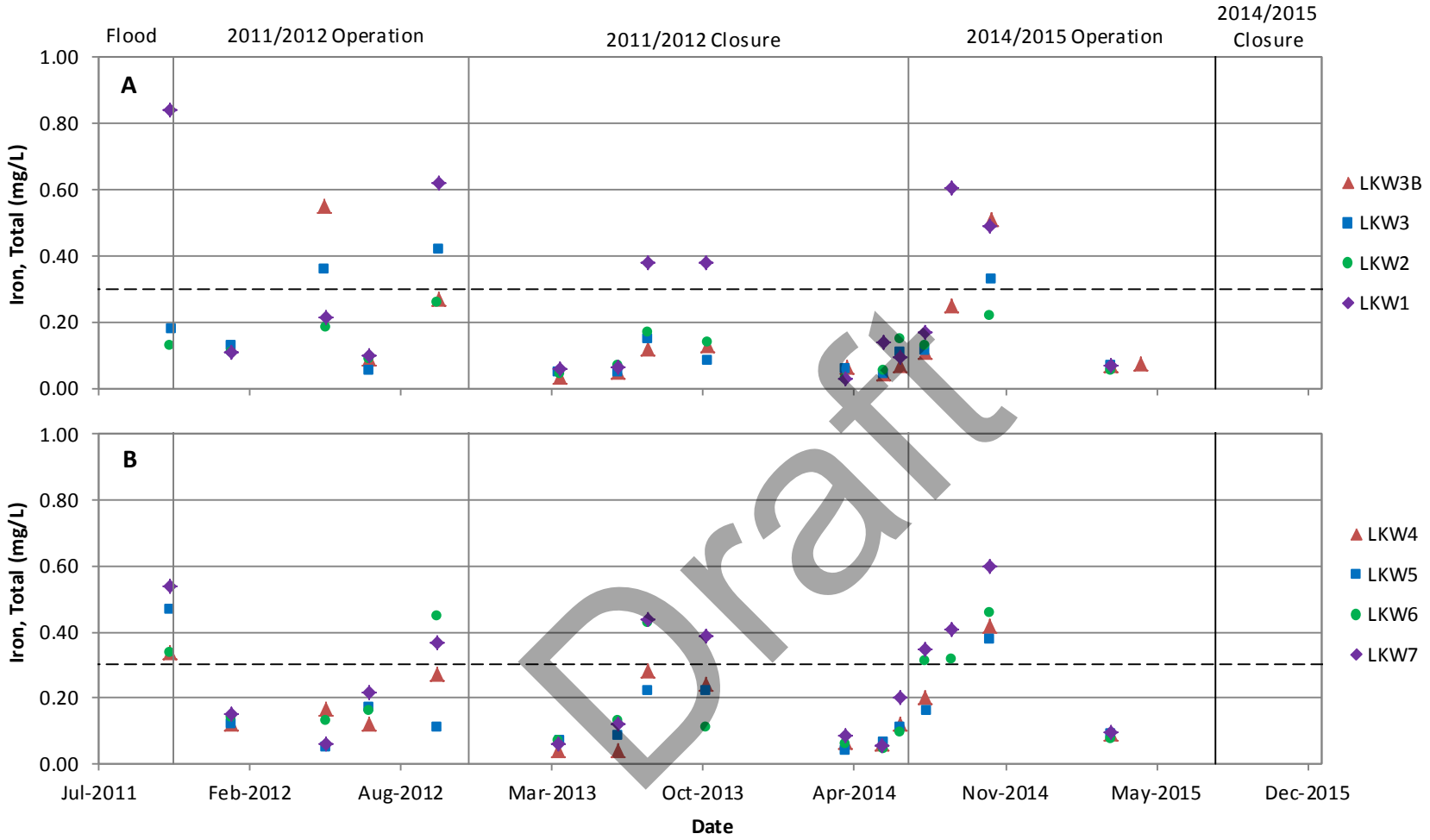

Figure 96. Iron concentrations in Sturgeon Bay, 2011-2015. Dashed line represents the MWQSOGs/CCME PAL and the MWQSOGs/Health Canada aesthetic objective for drinking water.

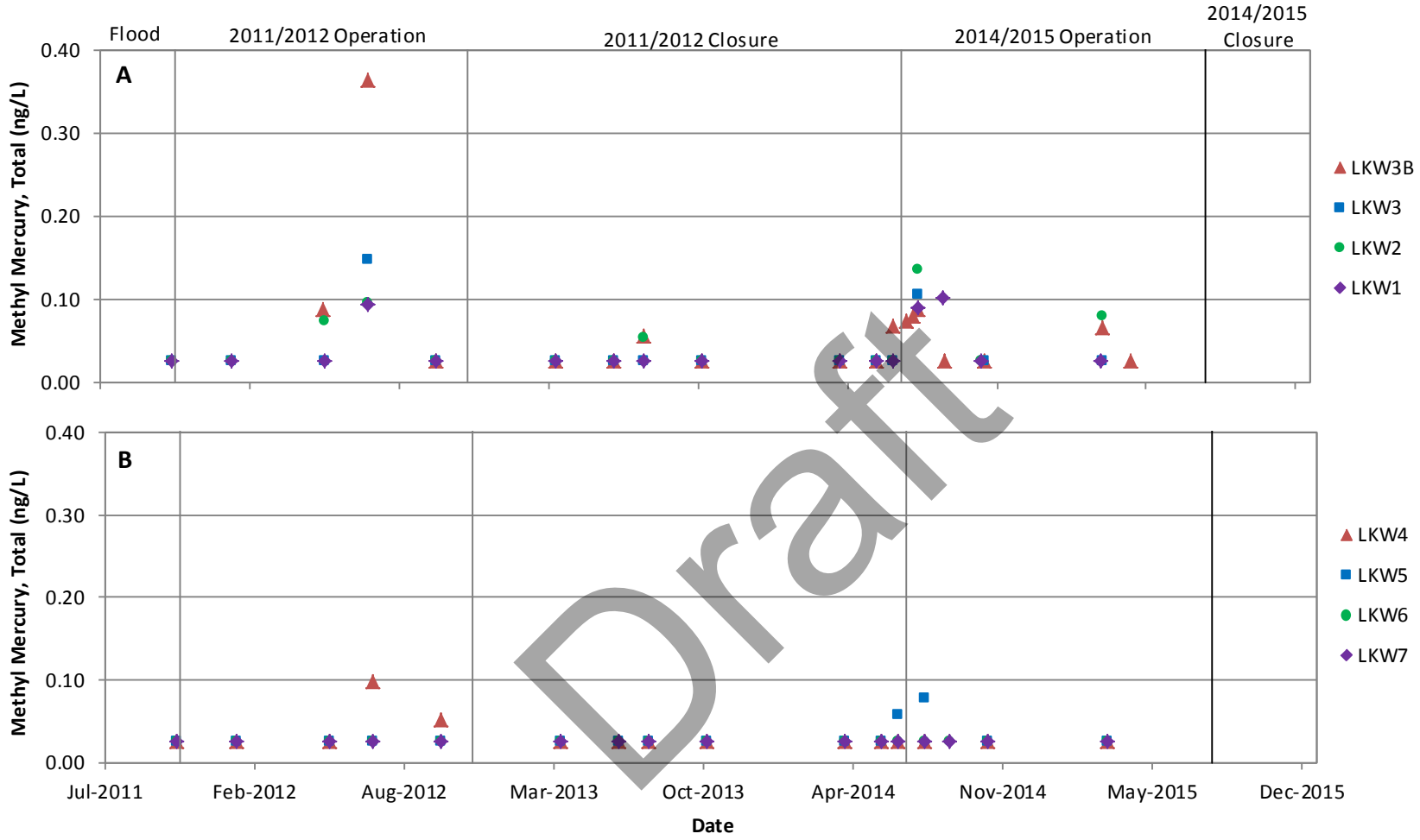

Figure 97. Methyl mercury concentrations in Sturgeon Bay, 2011-2015.

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Appendix A. Water Quality Objectives and Guidelines

A1.0 WATER QUALITY OBJECTIVES AND GUIDELINES

The following is a summary of applicable water quality objectives and guidelines for evaluation of water chemistry data collected in the study area, including: the Manitoba Water Quality Standards, Objectives, and Guidelines (MWQSOGs) for the protection of aquatic life (MWS 2011); the Canadian Council of Ministers for the Environment (CCME) guidelines for the protection of freshwater aquatic life (CCME 1999, updated to 2015); and, the MWQSOGs for drinking water (MWS 2011).

A1.1 AMMONIA

Both MWQ objectives and CCME guidelines for PAL exist for ammonia; these criteria are dependent upon water temperature and pH. A representative range of Manitoba water quality objectives and CCME guidelines for ammonia appropriate for the range of pH and temperature measured in the study area (i.e., site-specific objectives) from 2011 to 2015 are presented in Tables A-1 and A-2, respectively. There are no MWQSOGs for drinking water for ammonia.

Table A-1. Range of applicable Manitoba Water Quality Objectives for ammonia, for the protection of cool-water and cold-water aquatic life and wildlife. Values calculated from algorithms provided in MWS (2011) and the range of pH and water temperature measured in the study area from 2011 to 2015. The most stringent objective is indicated in red.

Water Use	pH (laboratory)	Temperature (°C)	Water Quality Objective (mg/L)		
			30-day	4-day	1-hour
Cool water aquatic life, early life stages present	7.31	0.0	5.04	12.61	25.88
		26.0	2.41	6.02	25.88
	8.68	0.0	0.80	2.01	2.29
		26.0	0.38	0.96	2.29
Cool water aquatic life, early life stages absent	7.31	0.0	8.19	20.48	25.88
		26.0	2.41	6.02	25.88
	8.68	0.0	1.31	2.29	2.29
		26.0	0.38	2.29	2.29
Cold water aquatic life, early life stages present	7.31	0.0	5.04	12.61	17.29
		26.0	2.41	6.02	17.29
	8.68	0.0	0.80	1.53	1.53
		26.0	0.38	0.96	1.53
Cold water aquatic life, early life stages absent	7.31	0.0	8.19	17.29	17.29
		26.0	2.41	6.02	17.29
	8.68	0.0	1.31	1.53	1.53
		26.0	0.38	0.96	1.53

Table A-2. CCME water quality guidelines for total ammonia (mg N/L) for the protection of freshwater aquatic life (CCME 1999, updated to 2015), guidelines presented are for the range of pH and water temperature measured in the study area from 2011 to 2015. The most stringent guideline is indicated in red.

Temperature (°C)	pH				
	7.0	7.5	8.0	8.5	9.0
0	19.0	6.02	1.92	0.616	0.206
5	12.6	3.98	1.27	0.413	0.141
10	8.47	2.68	0.855	0.282	0.100
15	5.74	1.83	0.588	0.197	0.073
20	3.96	1.27	0.410	0.141	0.055
25	2.77	0.89	0.291	0.103	0.044

A1.2 DISSOLVED OXYGEN

Manitoba objectives for dissolved oxygen (DO) are dependent upon water temperature, the presence of early life stages, and the presence of sensitive fish species (e.g., cool-water fish such as Northern Pike and Walleye or cold-water fish species such as Lake Whitefish, MWS 2011). Objectives, which are specific for early life stages and mature life stages and vary according to the averaging duration, are presented in Table A-3.

Table A-3. Manitoba Water Quality Objectives for dissolved oxygen (MWS 2011).

Conditions	Dissolved Oxygen Objective (mg/L)			
	Averaging Duration			
	Instantaneous Minimum	7 Day Minimum	7 Days	30 Days
Cold-Water Aquatic Life and Wildlife				
When Water Temperature ≤ 5°C and Early Life Stages Present	8.0	-	9.5	-
When Water Temperature > 5°C and Mature Life Stages	4.0	5.0	-	6.5
Cool-Water Aquatic Life and Wildlife				
When Water Temperature ≤ 5°C and Mature Life Stages	3.0	4.0	-	5.5
When Water Temperature > 5°C and Early Life Stages Present	5.0	-	6.0	-

Similarly, the CCME lowest acceptable level of dissolved oxygen varies by warm/cold water biota and life stage, as shown in Table A-4. There are no drinking water criteria for dissolved oxygen.

Table A-4. CCME lowest acceptable concentration of dissolved oxygen for the protection of freshwater aquatic life, from CCME (1999, updated to 2015).

Ecosystem	Guideline Value (mg/L)	
	Early life stages	Other life stages
Warm	6.0	5.5
Cold	9.5	6.5

A1.3 TOTAL SUSPENDED SOLIDS (TSS) AND TURBIDITY

MWQSOGs (MWS 2011) and CCME objectives (CCME 1999, updated to 2015) for PAL for TSS are similar and allow the following: a maximum increase of 25 mg/L from background for short term exposure (up to 24 hrs.); an average increase of 5 mg/L from background for long term exposure (i.e., 1 to 30 days); a maximum increase of 25 mg/L from background when background TSS is between 25 mg/L and 250 mg/L; and a maximum change of 10% from background when TSS > 250 mg/L.

There are different criteria for turbidity for the MWQSOGs and CCME objectives for PAL. The Manitoba objective for turbidity for PAL is for "equivalent induced levels of change as calculated from site-specific or regional-specific correlation between total suspended solids and turbidity" (MWS 2011). The CCME guideline is more definitive and allows for the following (CCME 1999, updated to 2015): a maximum increase of 8 NTU from background for short term exposure (up to 24 hrs.); an average increase of 2 NTU from background for long term exposure (i.e., 1 to 30 days); a maximum increase of 8 NTU from background when background TSS is between 8 NTU and 80 NTU; and a maximum change of 10% from background when background is >80 NTU.

There is also a MWQSOGs maximum acceptable concentration of 1.0 NTU for drinking water. However, this guideline, as with all drinking water guidelines/objectives, is to be applied to finished drinking water; and, since the majority of natural surface waters will exceed this guideline it has not been included in this assessment.

A1.4 PHOSPHORUS

MWQSOGs include narrative guidelines for phosphorus (TP) which state: "[TP] should not exceed 0.025 mg/L in any reservoir, lake, or pond, or in a tributary at the point where it enters such bodies of water. In other streams, [TP] should not exceed 0.05 mg/L" (MWS 2011).

CCME guidelines for the protection of freshwater aquatic life provide a guidance framework for the development of site-specific guidelines (CCME 1999, updated to 2015); this is a detailed process that requires sufficient baseline data for guideline development and is beyond the scoop of this report.

There are no drinking water guidelines/objectives for phosphorus (MWS 2011).

A1.5 OTHER ROUTINE PARAMETERS

Table A-5 presents water quality criteria for other routine parameters not discussed above.

A1.6 METALS AND MAJOR IONS

Table A-6 presents water quality criteria for select metals and major ions.

A1.7 PESTICIDES

Table A-7 presents water quality criteria for select pesticides.

A1.8 PETROLEUM HYDROCARBONS

Table A-8 presents water quality criteria for select hydrocarbons.

Table A-5. Provincial and federal guidelines for the protection of aquatic life and drinking water for other routine parameters measured.

Parameter	Guidelines/Objectives for PAL			MWQSOGs for Drinking Water[1]	
	MWQSOGs[1]	CCME[2]		Maximum Acceptable Concentration	Aesthetic Objective
		Short Term	Long Term		
Colour	-	-	-	-	≤ 15 TCU
Nitrate	2.93 mg N/L[3]	124 mg N/L	2.93 mg N/L	10 mg N/L	-
Nitrite	0.060 mg N/L	-	0.060 mg N/L	1 mg N/L	-
Nitrate/Nitrate	-	-	-	10 mg N/L	-
pH	6.5 to 9.0		6.5 to 9.0		6.5 - 8.5
Total dissolved solids					≤ 500 mg/L

1 - Manitoba Water Quality Standards, Objectives, and Guidelines (MWS 2011).

2 - CCME guidelines for the protection of freshwater aquatic life (CCME 1999, updated to 2015).

3 - The Manitoba PAL guideline for nitrate indicated in MWS (2011) was incorrectly identified as 13 mg N/L. The PAL guideline should read 2.93 mg N/L (N. Armstrong, Pers. Comm.).

4 - As updated by Health Canada in 2013. Since the intent of the MWQSOGs is to use the Health Canada guidelines, the updated guideline has been applied.

Table A-6. Provincial and federal guidelines for the protection of aquatic life and drinking water for metals and major ions measured.

	Guidelines/Objectives for PAL (mg/L)				MWQSOGs for Drinking Water[1] (mg/L)	
	MWQSOGs[1]		CCME[2]			
Parameter	Total	Dissolved	Short-term	Long-term	Maximum Acceptable Concentration	Aesthetic Objective
Aluminum	0.1[3]	-	-	0.1[3]	-	-
Antimony	-	-	-	-	0.006	-
Arsenic	-	0.15	-	0.005	0.01	-
Barium	-	-	-	-	1	-
Boron	1.5	-	29	1.5	5	-
Cadmium	0.00292– 0.00849[4,5]	0.00262 – 0.00716[4,5]	0.00261 – 0.0104[4]	0.000189 – 0.000587[4]	0.005	-
Chloride	-	-	640	120	-	≤250
Chromium	-	-	-	-	0.050	-
Chromium (III)	0.103 – 0.314[4,5]	0.0884 –0.270[4,5]	-	0.0089	-	-
Chromium (VI)	-	0.011[5]	-	0.001	-	-
Copper	0.0112 – 0.0359[4,5]	0.0108 – 0.0345[4,5]	-	0.00284 – 0.004[4,6]	-	≤1
Fluoride	-	-	-	0.12[7]	-	-
Iron	0.3	-	-	0.3	-	≤0.3
Lead	0.00418 – 0.0237[4,5]	0.00318 – 0.0133[4,5]	-	0.00418 – 0.007[4,6]	0.010	-
Manganese	-	-	-	-	-	≤0.050
Mercury	26 ng/L as inorganic Hg	-	-	26 ng/L	1000 ng/L	-
Methyl Mercury	4 ng/L	-	-	4 ng/L	-	-
Molybdenum	0.073	-	-	0.073[7]	-	-
Nickel	0.0626 – 0.198[4,5]	0.0624 – 0.197[4,5]	-	0.113 – 0.150[4,6]	-	-
Selenium	0.001	-	-	0.001	0.05[8]	-
Silver	0.0001	-	-	0.0001	-	-
Sodium	-	-	-	-	-	≤200
Sulphate	-	-	-	-	-	≤500
Thallium	0.0008	-	-	0.0008	-	-
Uranium	0.015	-	0.033	0.015	-	0.02
Zinc	0.144 – 0.456[4,5]	0.142–0.449[4,5]	-	0.030	-	≤5

1 - Manitoba Water Quality Standards, Objectives, and Guidelines (MWS 2011).
2 - CCME guidelines for the protection of freshwater aquatic life (CCME 1999, updated to 2015).
3 - Value represents the guideline where pH > 6.5.
4 - Based on the range of water hardness (124 mg/L to 484 mg/L) measured in the study area.
5 - The 4-day averaging duration objective.
6 - At hardness >180 mg/L the CCME PAL guidelines for copper, lead and nickel are 0.004 mg/L, 0.007 mg/L and 0.150 mg/L, respectively
7 - Interim guideline.
8 - As updated by Health Canada in 2014. Since the intent of the MWQSOGs is to use the Health Canada guidelines, the updated guideline has been applied.

Table A-7. Provincial and federal guidelines for the protection of aquatic life and drinking water for pesticides measured.

	Guidelines/Objectives for PAL (µg/L)			MWQSOGs for Drinking Water[1] (µg/L)	
		CCME[2]			
Parameter	MWQSOGs[1]	Short-term	Long-term	Maximum Acceptable Concentration	Aesthetic Objective
Atrazine	1.8	-	1.8	5	-
Azinphos methyl	-	-	-	20	-
Bromacil	5	-	5	-	-
Bromoxynil	5	-	5	5	-
Captan	1.3	-	1.3	-	-
Carbofuran	1.8	-	1.8	90	-
Chlorothalonil	0.18	-	0.18	-	-
Chlorpyrifos-ethyl	0.02 short-term; 0.0002 long-term	0.02	0.002	90	-
Cyanazine	2	-	2	10	-
Deltamethrin	0.0004	-	0.0004	-	-
Diazinon	-	-	-	20	-
Dicamba	10	-	10	120	-
2,4-D	4	-	4	100	-
Diclofop-methyl	6.1	-	6.1	9	-
Dimethoate	6.2	-	6.2	20	-
Dinoseb	0.05	-	0.05	10	-
Glyphosate	65	27,000	800	280	-
Lindane	0.01	-	0.01	-	-
MCPA	2.6	-	2.6	-	-
Malathion	-	-	-	190	-
Methoxychlor	-	-	-	900	-
Metribuzin	1	-	1	80	-
Parathion ethyl	-	-	-	50	-
Pentachlorophenol (PCP)	0.5	-	0.5	60	≤30
Picloram	29	-	29	-	-
Simazine	10	-	10	-	-
Terbofos	-	-	-	1	-
Triallate	0.24	-	0.24	-	-
Trifluralin	0.2	-	0.2	-	-

1 - Manitoba Water Quality Standards, Objectives, and Guidelines (MWS 2011).

2 - CCME guidelines for the protection of freshwater aquatic life (CCME 1999, updated to 2015).

3 - "Some glyphosate formulations, including Roundup, currently contain a surfactant that may be considerably more toxic than glyphosate itself. This should be taken into consideration in any spill of this substance directly to surface water and in the evaluation of monitoring data." (CCME 1999, updated to 2015).

Table A-8. Provincial and federal guidelines for the protection of aquatic life and drinking water for selected petroleum hydrocarbons.

Parameter	Protection of Aquatic Life (PAL)		Drinking Water[1]	
	MWQSOGs[1]	CCME[2] Interim	Maximum Acceptable Concentration	Aesthetic Objective
Benzene	0.370 mg/L	0.370 mg/L	0.005 mg/L	-
Ethylbenzene	0.090 mg/L	0.090 mg/L	0.14 mg/L[3]	0.0016 mg/L[3]
Toluene	0.0020 mg/L	0.0020 mg/L	0.06 mg/L[3]	0.024 mg/L
Xylene	-	-	0.09 mg/L[3]	0.02 mg/L[3]

1 - Manitoba Water Quality Standards, Objectives, and Guidelines (MWS 2011).
2 - Canadian Council of Ministers of the Environment guidelines for the protection of freshwater aquatic life (CCME 1999, updated to 2015).
3 - As updated by Health Canada in 2014. Since the intent of the MWQSOGs is to use the Health Canada guidelines, the updated guideline/objective has been applied.

Appendix B. Regional Water Quality Monitoring Program Methods and Results – Fall 2011

B1.0 INTRODUCTION

During the conduct of the RWQMP in Fall 2011, water quality information was collected from all major waterbodies and waterways within the study area that were affected by flooding and encompassed the major inputs to the north basin of Lake Manitoba (i.e., Waterhen River and at the Lake Manitoba Narrows) downstream to and including Sturgeon Bay on Lake Winnipeg. The objectives of the program were to:

- provide baseline water quality information to assist with operational and post-Project monitoring, to provide information from locations where water quality data were lacking;
- supplement data sets at sites within the study area where Manitoba Conservation and Water Stewardship (MCWS) Water Quality Management Section has conducted long term water quality monitoring; and
- evaluate spatial differences in water quality within the study area.

Monitoring in fall 2011 was comprised of a single sampling event that included *in situ* water quality measurements and the collection of water samples for laboratory analysis. Detailed methods and results from the fall 2011 sampling event are provided below.

B2.0 METHODS

B2.1 SAMPLING SITES

Water quality samples and *in situ* measurements were collected at 13 sites throughout area, including the following:

- Waterhen River - one site at the bridge on PR # 328 (MWS site MB05LHS002);
- Lake Manitoba - one site at Lake Manitoba Narrows (MWS site MB05LKS009);
- Fairford River - one site at or near the PTH # 6 bridge (MWS site MB05LMS001);
- Lake St. Martin - one site in the north basin;
- Dauphin River - two sites, including one site at or near the existing MWS site (MWS Site MB05LMS003), and one site at or near the outflow from Lake St. Martin; and,
- Sturgeon Bay - seven sites, including one at or near the existing MWS site (MWS Site MB05SES012).

Additionally, seven sites were sampled in conjunction with the LSMEOC monitoring program, including:

- Lake St. Martin - one site near the Reach 1 inlet;
- Buffalo Creek - three sites along the creek; and,
- Dauphin River - three sites; including one upstream of the confluence of Buffalo Creek, one immediately downstream of the confluence of Buffalo Creek, and one site in the mouth of the Dauphin River and upstream of Sturgeon Bay.

Sampling for the RWQMP and one of the LSMEOC monitoring program sampling sessions were conducted concurrently. On that occasion, effort was made to ensure that sampling methods and water quality parameters sampled for were the same at all sites; on other sampling dates, the LSMEOC monitoring program included different parameters than the RWQMP. A list of all sampling sites and locations are provided in Table B-1 and illustrated in Figure B-1.

B2.2 SAMPLING METHODS

Water quality sampling was conducted on 28 and 29 October 2011 following RWQMP sampling methods. Insufficient sample volume was collected for pesticide analysis on 28 and 29 October; therefore, additional samples were collected from the Fairford and Dauphin rivers on 6 November to supplement pesticide samples collected on 28 and 29 October.

In situ measurements of water quality parameters were collected at all sampling sites using a Horiba® W22-XD water quality meter.

In addition to the usual list of parameters sampled by the RWQMP, samples for the analysis of pesticides and *E. coli* were collected from selected sites. These parameters were included based on consultation with Manitoba Conservation and Water Stewardship, Water Management Section. A full list of pesticide parameters is provided in Table B-2; this list is consistent with those measured by MCWS in their current water quality monitoring programs in southern/central Manitoba.

B3.0 RESULTS

B3.1 ROUTINE VARIABLES AND LIMNOLOGY

Results of the fall 2011 RWQMP for routine water quality parameters are presented in Tables B-3 and B-4, and Figures B-2 and B-3.

Based on the results of the RWQMP sampling, water quality of the study area can be generally described as moderately nutrient-rich, low to moderately turbid, slightly alkaline, hard to very hard, and well-oxygenated. Not unexpectedly, both Lake St. Martin and Sturgeon Bay were isothermal in fall 2011. Other *in situ* variables, including DO, turbidity, pH, and specific conductance, were relatively consistent across depth in both lakes.

Total phosphorus (TP) concentrations in the study area were, with the exception of Buffalo Creek, composed primarily of particulate forms. Conversely, at the two upstream sites in Buffalo Creek (BC1 and BC2), TP was composed primarily of dissolved forms. The majority of total nitrogen (TN) was present in organic form at all sites, with ammonia generally comprising a greater amount of dissolved inorganic nitrogen (DIN) than nitrate/nitrite except at the two upstream sites on Buffalo Creek where the reverse was true. On the basis of TN:TP molar ratios, all waterbodies sampled were phosphorus limited in fall 2011.

The water quality of Buffalo Creek differed from the other waterbodies sampled. Buffalo Creek had lower turbidity/TSS, lower conductivity and total dissolved solids (TDS), lower chlorophyll *a*, higher concentrations of organic carbon, greater colour, and a higher amount of phosphorus in dissolved form than the other waterbodies in the study area.

The water quality of Sturgeon Bay was influenced by the Dauphin River; sites closest to the mouth (i.e., LKW2 and 3) exhibited higher alkalinity, higher conductivity and TDS, higher concentrations of DIN and TN, dissolved and total organic carbon; and, lower turbidity/TSS and colour, and concentrations of TP and chlorophyll *a* than other sites sampled in Sturgeon Bay.

TP exceeded the MWQSOGs narrative guideline for phosphorus for lakes (i.e., 0.025 mg/L) at Lake Manitoba Narrows, and in Sturgeon Bay at all but the two sites closest to the Dauphin River mouth (i.e. LKW2 and 3). Additionally, the TP concentration at the downstream end of Buffalo Creek (BC3) exceeded the narrative guideline for streams (0.050 mg/L) in one of the replicate samples collected; however, the results for this sample are considered suspect. The TP concentration measured in the other sample collected at BC3 was well below the guideline. All other routine water quality variables for which there are MWQSOGs and CCME guidelines, including dissolved oxygen, pH, ammonia, nitrate and nitrite were within PAL objectives and guidelines in fall 2011.

Colour exceeded the MWQSOGs aesthetic objective for drinking water (≤15 TCU) at all three sites in Buffalo Creek. The MWQSOGs aesthetic objective for drinking water for TDS (500 mg/L) was exceeded at the Waterhen River, Lake Manitoba Narrows, the Fairford River, Lake St. Martin, the Dauphin River, and in Sturgeon Bay at the two sites closest to the Dauphin River mouth (i.e., LKW2 and 3). Additionally,

laboratory measured pH at Lake Manitoba Narrows and the Fairford River was above the range for the aesthetic objective for drinking water (6.5-8.5). All other routine water quality variables for which there are MWQSOGs for drinking water, including nitrate, nitrite, and nitrate/nitrite were within allowable limits. As discussed in Appendix A, an assessment of the maximum acceptable concentration for drinking water for turbidity was not conducted.

B3.2 METALS AND MAJOR IONS

Metal and major ion concentrations measured in the study area in fall 2011 are presented in Table B-5. A number of metals (total and dissolved forms) were not detected at any site, including: beryllium; bismuth; nickel; silver; tellurium; thallium; tin; tungsten; and, zinc.

Additionally, several metals were not detected in dissolved form at any site, including: cesium; cobalt; lead; thorium; and, zirconium. Aluminum (total), arsenic, barium, calcium, chloride, fluoride, lithium, magnesium, manganese, potassium, rubidium, silicon, sodium, strontium, sulphate, titanium, and vanadium were consistently detected; the remaining metals and major ions were detected in some samples.

Concentrations of major ions and metals were generally lower in Buffalo Creek, compared to other waterbodies in the study area. Conversely, mercury and methyl mercury concentrations were higher, and were consistently detected, at sites in Buffalo Creek than at other sites sampled.

Additionally, concentrations of the major ions (i.e., calcium, chloride, magnesium, potassium, sodium, and sulphate) and hardness were higher at the sites closest to the Dauphin River outflow (LKW2 and 3) than at the other sites sampled in Sturgeon Bay, reflecting the higher concentration of these substances at upstream waterbodies in the region relative to Lake Winnipeg. Conversely, the Dauphin River contained lower concentrations of total aluminum, copper, iron, manganese, titanium, and uranium than sites in Sturgeon Bay most distant from the Dauphin River mouth.

Aluminum exceeded the MWQSOGs and CCME guideline for PAL (0.1 mg/L) at all but one site (LKW2) in Sturgeon Bay, and at one site in Buffalo Creek (BC3), but remained within guidelines in all other waterbodies sampled. Similarly, iron concentrations were above the MWQSOGs and CCME guideline for PAL (0.3 mg/L) at most sites in Sturgeon Bay (LKW1, LKW4 to 7). At most sites chloride concentrations exceeded the CCME long-term guideline for PAL (120 mg/L), including: the Waterhen River; Lake Manitoba Narrows; the Fairford River; Lake St. Martin; all sites on the Dauphin River; and, two sites in Sturgeon Bay (LKW2 and LKW3). Chloride concentrations in Buffalo Creek were consistently below the guideline. Chloride concentrations were well below the CCME short-term guideline for PAL (640 mg/L) at all sites. Fluoride concentrations exceeded the CCME guideline for PAL at the same locations as chloride. In addition, one sample collected at the mouth of the Dauphin River (DR1.1) was above the MWQSOGs and CCME guideline for PAL for selenium and the sample collected in Sturgeon bay nearest the Dauphin River (LK3) was at the PAL guideline; however, the analytical detection limit for selenium (0.001 mg/L) is equal to the guideline and these exceedances should be viewed with caution. All other metals and major ions for which there are MWQSOGs or CCME guidelines for PAL were within objectives and guidelines at each of the sampling sites in fall 2011.

Iron concentrations exceeded the MWQSOGs aesthetic objective for drinking water (0.3 mg/L) at most sites in Sturgeon Bay (LKW1, LKW4 to 7). All other metals and major ions for were within the existing MWQSOGs for drinking water.

B3.3 PESTICIDES

Pesticides were only measured at selected sites, including: the Fairford River (FR1), Dauphin River (DR1 and DR3) and Sturgeon Bay (LKW7). The results of this analysis are presented in Table B-6. Glyphosate was detected at all sites sampled on 28 and 29 October; all other pesticides, for which sufficient sample was collected to conduct the analysis, were below analytical detection limits on these dates. Pesticides were consistently below the analytical detection limits in samples collected from the Fairford and Dauphin rivers on November 6, after Reach 1 was in operation. Glyphosate concentrations did not exceed the MWQSOGs or CCME guideline for PAL, or the MWQSOGs for drinking water in any samples collected in fall 2011.

B3.4 QA/QC

Quality assurance and quality control results are presented in Tables B-7 and B-8.

B3.4.1 Field and Trip Blanks

Field and trip blank results indicate high precision and no sample contamination. Measurements for all parameters (metals, dissolved metals and routine parameters) were below the threshold of five times the detection limit.

B3.4.2 Replicate Samples

PRSD and RPMD were not derived for several parameters due to low concentrations (i.e., concentrations less than five times the DL). In general, the results indicate good agreement between samples and acceptable levels of precision. The RPMD exceeded threshold values (25% RPMD) for three parameters including: total aluminum (36%); total titanium (26%); and dissolved organic carbon (28%). The PRSD exceeded threshold values (18% PRSD) for two parameters including: dissolved aluminum (41%) and phaeophytin *a* (30%). Additionally, although an RPMD value was not derived, TP and TPP concentrations measured in the duplicate samples collected at BC3 were quite different (e.g., TP = 0.116 mg/L and 0.011 mg/L), and based on values for other parameters measured (e.g., TSS, TKN, and total metals) the TP and TPP results for Replicate 1 are considered suspect.

Table B-1. Location of sites sampled as part of the RWQMP conducted during fall 2011.

Waterbody	Location Description	Site ID	MWS Site	Location [1]	
				Easting	Northing
Waterhen River	at PR #328	WHR1	MB05LHS002	462204	5742368
Lake Manitoba	at Lake Manitoba Narrows	NARR1	MB05LKS009	515348	5658969
Fairford River	near PTH #6	FR1	MB05LMS001	518838	5715229
Lake St. Martin	North basin	LSM1	-	550136	5736730
	Near the inlet to Reach 1	LSM2[2]	-	552303	5738143
Buffalo Creek [2]		BC1	-	562544	5745653
		BC2	-	564247	5747173
		BC3	-	562318	5454770
Dauphin River	River inlet at Lake St. Martin	DR1.1	-	547332	5741774
	Between Gypsumville and Anama Bay	DR1.3	MB05LMS003	546106	5757242
		DR1[2]	-	561896	5754959
		DR3[2]	-	562432	5754831
	River mouth at Lake Winnipeg	DR02[2]	-	564025	5756392
Sturgeon Bay		LKW1	-	578400	5750390
		LKW2	-	571480	5754215
		LKW3	-	569032	5759095
		LKW4	-	566327	5765369
		LKW5	-	577144	5758612
		LKW6	-	573290	5762611
		LKW7	MB05SES012	574055	5771081

1 - UTM coordinates; Datum NAD 83, Zone 14U

2 - Sample collected as part of the LSMEOC monitoring program. LSM2 is known as site LM01 in the 2011 LSMEOC program (AECOM 2012).

Table B-2. Pesticide parameters analyzed from selected sites as part of the RWQMP conducted during fall 2011.

Parameter	
2,4,6-Tribromophenol	Eptam
2,4-D	Ethalfluralin
2,4-DB	Fenoxaprop
2,4-Dichlorophenylacetic Acid	g-chlordane
2,4-DP	Glyphosate
2-Fluorobiphenyl	Imazamethabenz-methyl
2-Fluorobiphenyl	Lindane
a-chlordane	Malathion
Alachlor	MCPA
alpha-BHC	Mecoprop
Atrazine	Methoxychlor
Atrazine Desethyl	Methyl Parathion
Azinphos-methyl	Metribuzin
Benomyl	Metsulfuron-methyl
beta-BHC	Parathion
Bromacil	Pentachlorophenol
Bromoxynil	Picloram
Carbofuran	Propachlor
Carboxin	Propanil
Chlorothalonil	Propoxur
Chlorpyrifos	Quizalofop
Cyanazine	Sethoxydim
d14-Terphenyl	Simazine
d14-Terphenyl	Terbufos
delta-BHC	Thifensulfuron-methyl
Deltamethrin	Tralkoxydim
Diazinon	Triallate
Dicamba	Tribenuron-methyl
Diclofop-methyl	Triclopyr
Dimethoate	Trifluralin
Dinoseb	Trifluralin
Diuron	

Table B-3. *In situ* water quality measurements recorded as part of the RWQMP conducted in fall 2011.

Sample Location	Location ID	Sample Date	Water Depth (m)	Measurement Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH
Waterhen River	WHR1	28-Oct-11	-	0.3	4.4	11.87	1290	20.4	7.75
Lake Manitoba Narrows	NARR1	28-Oct-11	-	0.3	4.7	10.76	1290	39.0	7.88
Fairford River	FR1	28-Oct-11	-	0.3	5.5	11.46	1310	70.4	8.04
Lake St. Martin	LSM1	29-Oct-11	3.6	0.3	5.2	11.98	1360	17.3	8.18
		29-Oct-11	-	3.3	5.2	11.97	1360	17.8	8.18
	LSM2	29-Oct-11	-	0.3	4.6	13.09	1190	4.82	8.49
Dauphin River	DR1.1	29-Oct-11	3.1	0.3	5.1	12.08	136.0	18.9	8.18
				2.8	5.0	11.90	136.0	19.4	8.18
		6-Nov-11	-	0.3	3.8	12.17	130.0	23.0	8.18
	DR1.3	29-Oct-11	-	0.3	4.7	11.32	1370	18.5	8.07
	DR1	29-Oct-11	-	0.3	4.8	14.10	1200	5.86	8.38
	DR3	29-Oct-11	-	0.3	4.6	10.81	1140	5.49	8.32
	DR02	29-Oct-11	3.0	0.3	4.7	11.84	1370	31.5	8.16
		6-Nov-11	-	0.3	3.5	11.66	1300	18.4	8.05
Sturgeon Bay	LKW1	28-Oct-11	4.7	0.3	5.3	12.32	418	88.1	8.14
				4.4	5.3	12.36	417	93.2	8.14
	LKW2	28-Oct-11	4.4	0.3	4.9	12.12	1340	23.0	8.11
				4.1	4.9	12.90	1340	26.4	8.12
	LKW3	28-Oct-11	7.1	0.3	5.1	11.60	1300	25.1	8.06
				6.8	5.1	11.67	1300	25.9	8.07
	LKW4	28-Oct-11	7.8	0.3	5.5	12.02	702	37.2	7.87
				7.5	5.5	11.97	705	36.3	8.02

Table B-3. Continued.

Sample Location	Location ID	Sample Date	Water Depth (m)	Measurement Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH
Sturgeon Bay	LKW5	28-Oct-11	8.4	0.3	5.6	11.89	558	56.2	8.05
				8.0	5.1	11.83	700	58.3	7.00
	LKW6	28-Oct-11	9.1	0.3	5.5	11.78	734	37.0	8.11
				8.8	5.4	11.60	749	40.1	8.09
	LKW7	28-Oct-11	6.7	0.3	5.9	11.96	555	47.4	8.01
				6.4	5.8	11.93	559	50.0	8.03
Buffalo Creek	BC1	29-Oct-11	-	0.3	3.5	11.96	186	0.79	7.42
	BC2	29-Oct-11	-	0.3	3.1	11.56	194	2.96	7.84
	BC3	29-Oct-11	-	0.3	2.6	11.99	254	5.93	7.77

Table B-4. Laboratory results for routine water quality parameters analyzed as part of the RWQMP conducted in fall 2011.

Sample Location	Location ID	Sample Date	Lab pH	Alkalinity			
				as Bicarbonate (HCO_3^-) (mg/L)	as $CaCO_3$ (mg/L)	as Carbonate (CO_3^{2-}) (mg/L)	as Hydroxide (OH^-) (mg/L)
Analytical Detection Limits			*0.10*	*2.0*	*1.0*	*0.60*	*0.40*
Waterhen River	WHR1	28-Oct-11	8.29	217	178	<0.60	<0.40
Lake Manitoba Narrows	NARR1	28-Oct-11	8.54	246	218	8.97	<0.40
Fairford River	FR1	28-Oct-11	8.51	225	199	7.33	<0.40
Lake St. Martin	LSM1	29-Oct-11	8.47	230	201	6.42	<0.40
	LSM2	29-Oct-11	8.46	234	204	6.22	<0.40
Dauphin River	DR1.1	29-Oct-11	8.46	232	202	5.96	<0.40
	DR1.3	29-Oct-11	8.40	236	203	4.38	<0.40
	DR1	29-Oct-11	8.46	233	203	6.15	<0.40
	DR3	29-Oct-11	8.43	231	200	5.17	<0.40
	DR02	29-Oct-11	8.40	236	203	4.32	<0.40
Sturgeon Bay	LKW1	28-Oct-11	8.37	136	117	2.42	<0.40
	LKW2	28-Oct-11	8.42	232	200	4.45	<0.40
	LKW3	28-Oct-11	8.39	228	195	3.73	<0.40
	LKW4	28-Oct-11	8.38	173	148	2.88	<0.40
	LKW5	28-Oct-11	8.36	154	132	2.29	<0.40
	LKW6	28-Oct-11	8.38	177	151	2.99	<0.40
	LKW7	28-Oct-11	8.35	152	129	2.16	<0.40
Buffalo Creek	BC1	29-Oct-11	8.12	151	124	<0.60	<0.40
	BC2	29-Oct-11	8.19	152	124	<0.60	<0.40
	BC3	29-Oct-11	8.19	160	131.5	<0.60	<0.40

Table B-4. Continued.

Sample Location	Location ID	Sample Date	Nitrogen					Phosphorus		
			Dissolved Ammonia (mg/L N)	Nitrate/ nitrite (mg/L N)	Nitrate-N (mg/L N)	Nitrite-N (mg/L N)	TKN (mg/L N)	Total (mg/L P)	Dissolved (mg/L P)	Total Particulate (mg/L P)
Analytical Detection Limits			*0.010*	*0.0051*	*0.0050*	*0.0010*	*0.20*	*0.010*	*0.0020/0.010*	*0.010/0.014*
Waterhen River	WHR1	28-Oct-11	0.016	0.0054	0.0054	<0.0010	0.83	0.014	<0.0020	0.012
Lake Manitoba	NARR-1	28-Oct-11	0.017	<0.0051	<0.0050	<0.0010	1.13	0.028	0.0049	0.023
Fairford River	FR1	28-Oct-11	0.023	<0.0051	<0.0050	<0.0010	1.31	0.029	0.0039	0.025
Lake St. Martin	LSM1	29-Oct-11	0.052	0.0139	0.0122	0.0017	1.14	0.013	<0.0020	0.012
	LSM2	29-Oct-11	0.044	0.0086	0.0086	<0.0010	1.11	0.016	<0.010	<0.014
Dauphin River	DR1.1	29-Oct-11	0.060	0.0272	0.0251	0.0021	1.06	0.013	0.003	0.01
	DR1.3	29-Oct-11	0.069	0.0152	0.0130	0.0022	1.10	0.014	<0.0020	0.012
	DR1	29-Oct-11	0.069	0.0174	0.0148	0.0026	1.09	0.017	<0.010	<0.014
	DR3	29-Oct-11	0.068	0.0168	0.0146	0.0022	1.08	0.017	<0.010	<0.014
	DR02	29-Oct-11	0.067	0.0166	0.0141	0.0025	1.11	0.018	<0.0020	0.017
Sturgeon Bay	LKW1	28-Oct-11	<0.010	<0.0051	<0.0050	<0.0010	0.68	0.043	0.0156	0.027
	LKW2	28-Oct-11	0.035	0.0177	0.0164	0.0013	1.07	0.018	0.0037	0.014
	LKW3	28-Oct-11	0.033	0.0173	0.0161	0.0012	1.05	0.022	0.0021	0.020
	LKW4	28-Oct-11	0.012	0.0063	0.0063	<0.0010	0.76	0.031	0.0047	0.027
	LKW5	28-Oct-11	<0.010	<0.0051	0.0050	<0.0010	0.62	0.029	0.0122	0.016
	LKW6	28-Oct-11	0.013	0.0119	0.0116	<0.0010	0.79	0.029	0.0039	0.025
	LKW7	28-Oct-11	<0.010	0.0230	0.0230	<0.0010	0.72	0.036	0.0140	0.022
Buffalo Creek	BC1	29-Oct-11	<0.010	0.0308	0.0308	<0.0010	0.81	0.024	0.020	<0.014
	BC2	29-Oct-11	<0.010	0.0063	0.0063	<0.0010	0.80	0.025	0.022	<0.014
	BC3	29-Oct-11	<0.010	<0.0051	<0.0050	<0.0010	0.76	0.064	0.016	0.051

Table B-4. Continued.

Sample Location	Location ID	Sample Date	Carbon			Conductivity (µmhos/cm)	TDS (mg/L)
			Total Inorganic (mg/L)	Total Organic (mg/L)	Dissolved Organic (mg/L)		
Analytical Detection Limits			*1.0*	*1.0*	*1.0*	*20*	*5.0*
Waterhen River	WHR1	28-Oct-11	39.3	12.5	12.6	1040	646
Lake Manitoba	LMBNARR1	28-Oct-11	47.6	13.4	13.2	1030	696
Fairford River	FR1	28-Oct-11	43.3	14.9	13.4	1060	676
Lake St. Martin	LSM1	29-Oct-11	45.0	13.5	12.0	1080	652
	LSM2	29-Oct-11	30.2	14.8	13.7	1060	704
Dauphin River	DR1.1	29-Oct-11	45.8	14.0	12.8	1080	692
	DR1.3	29-Oct-11	46.5	14.3	12.5	1090	676
	DR1	29-Oct-11	37.5	13.3	13.0	1060	704
	DR3	29-Oct-11	32.3	13.9	13.0	1030	726
	DR02	29-Oct-11	46.5	14.6	13.8	1090	656
Sturgeon Bay	LKW1	28-Oct-11	25.7	8.9	8.4	410	230
	LKW2	28-Oct-11	45.4	14.5	12.7	1070	658
	LKW3	28-Oct-11	44.5	13.8	12.0	1040	614
	LKW4	28-Oct-11	33.2	10.8	9.8	678	380
	LKW5	28-Oct-11	29.9	9.7	8.7	546	310
	LKW6	28-Oct-11	34.0	10.6	9.9	706	398
	LKW7	28-Oct-11	28.9	9.3	8.5	540	286
Buffalo Creek	BC1	29-Oct-11	22.3	20.7	20.8	217	164
	BC2	29-Oct-11	23.5	19.1	16.9	217	166
	BC3	29-Oct-11	21.3	19.6	17.3	237	177

Table B-4. Continued.

Sample Location	Location ID	Sample Date	Water Clarity			Algal Pigments	
			TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Phaeophyton a (µg/L)
Analytical Detection Limits			*2.0*	*0.10*	*5.0*	*0.10*	*0.10*
Waterhen River	WHR1	28-Oct-11	2.4	2.5	6.4	3.37	1.42
Lake Manitoba	NARR1	28-Oct-11	13.2	8.8	7.4	9.16	2.37
Fairford River	FR1	28-Oct-11	26.4	21.0	7.4	11.4	1.95
Lake St. Martin	LSM1	29-Oct-11	4.0	3.8	6.9	6.85	1.83
	LSM2	29-Oct-11	5.8	3.3	8.4	6.98	1.92
Dauphin River	DR1.1	29-Oct-11	2.9	3.9	8.1	7.93	1.38
	DR1.3	29-Oct-11	2.8	3.4	10.8	6.97	1.62
	DR1	29-Oct-11	8.0	4.7	8.5	5.83	1.79
	DR3	29-Oct-11	7.5	4.5	10.4	5.98	1.80
	DR02	29-Oct-11	7.6	5.1	6.4	5.75	2.04
Sturgeon Bay	LKW1	28-Oct-11	24.0	30.0	9.5	14.7	2.61
	LKW2	28-Oct-11	7.2	5.6	9.0	7.33	1.95
	LKW3	28-Oct-11	6.8	6.6	9.5	7.04	1.60
	LKW4	28-Oct-11	10.4	14.1	11.8	13.3	1.90
	LKW5	28-Oct-11	8.8	16.5	10.5	11.0	1.32
	LKW6	28-Oct-11	10.7	14.9	11.1	8.62	1.75
	LKW7	28-Oct-11	8.8	19.3	12.5	10.6	1.48
Buffalo Creek	BC1	29-Oct-11	<2.0	0.7	52.3	0.51	0.57
	BC2	29-Oct-11	<2.0	0.9	51.5	0.37	0.61
	BC3	29-Oct-11	4.2	4.8	53.2	0.52	0.77

Table B-5. Concentrations of metals and major ions measured as part of the RWQMP conducted in fall 2011. Units are mg/L unless otherwise indicated.

Sample Location	Location ID	Sample Date	Hardness as $CaCO_3$	Aluminum		Antimony		Arsenic	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.30*	*0.0020*	*0.0050*	*0.00020*	*0.00020*	*0.00020*	*0.00020*
Waterhen River	WHR1	28-Oct-11	260	<0.0020	0.0124	<0.00020	<0.00020	0.00187	0.00207
Lake Manitoba	NARR1	28-Oct-11	296	0.0023	0.0528	0.00020	0.00021	0.00383	0.0037
Fairford River	FR1	28-Oct-11	323	<0.0020	0.0651	<0.00020	<0.00020	0.00283	0.00289
Lake St. Martin	LSM1	29-Oct-11	341	<0.0020	0.0388	<0.00020	<0.00020	0.00296	0.00275
	LSM2	29-Oct-11	328	0.0041	0.0346	<0.00020	<0.00020	0.00269	0.00260
Dauphin River	DR1.1	29-Oct-11	319	<0.0020	0.0355	<0.00020	<0.00020	0.00312	0.00262
	DR1.3	29-Oct-11	308	<0.0020	0.0291	<0.00020	<0.00020	0.00287	0.00274
	DR1	29-Oct-11	358	0.0039	0.0621	<0.00020	<0.00020	0.00293	0.00251
	DR3	29-Oct-11	337	0.0036	0.0369	<0.00020	<0.00020	0.00273	0.00243
	DR02	29-Oct-11	332	<0.0020	0.0773	<0.00020	<0.00020	0.00328	0.00271
Sturgeon Bay	LKW1	28-Oct-11	163	0.117	1.1000	<0.00020	<0.00020	0.00163	0.00173
	LKW2	28-Oct-11	300	0.0023	0.0949	<0.00020	<0.00020	0.00275	0.00255
	LKW3	28-Oct-11	324	0.0029	0.1690	<0.00020	<0.00020	0.00286	0.00254
	LKW4	28-Oct-11	218	0.0629	0.5190	<0.00020	<0.00020	0.00212	0.00205
	LKW5	28-Oct-11	193	0.101	0.7100	<0.00020	<0.00020	0.00191	0.00191
	LKW6	28-Oct-11	230	0.0578	0.5150	<0.00020	<0.00020	0.00246	0.00210
	LKW7	28-Oct-11	185	0.172	0.9030	<0.00020	<0.00020	0.00209	0.00194
Buffalo Creek	BC1	29-Oct-11	166	0.0052	0.0307	<0.00020	<0.00020	0.00048	0.00045
	BC2	29-Oct-11	166	0.0043	0.0550	<0.00020	<0.00020	0.00050	0.00048
	BC3	29-Oct-11	159	0.0103	0.2185	<0.00020	<0.00020	0.00059	0.00055

Table B-5. Continued.

Sample Location	Location ID	Sample Date	Barium		Beryllium		Bismuth	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*
Waterhen River	WHR1	28-Oct-11	0.0366	0.0387	<0.00020	<0.00020	<0.00020	<0.00020
Lake Manitoba	NARR1	28-Oct-11	0.0635	0.0690	<0.00020	<0.00020	<0.00020	<0.00020
Fairford River	FR1	28-Oct-11	0.0491	0.0539	<0.00020	<0.00020	<0.00020	<0.00020
Lake St. Martin	LSM1	29-Oct-11	0.0498	0.0535	<0.00020	<0.00020	<0.00020	<0.00020
	LSM2	29-Oct-11	0.0482	0.0508	<0.00020	<0.00020	<0.00020	<0.00020
Dauphin River	DR1.1	29-Oct-11	0.0495	0.0499	<0.00020	<0.00020	<0.00020	<0.00020
	DR1.3	29-Oct-11	0.0495	0.0538	<0.00020	<0.00020	<0.00020	<0.00020
	DR1	29-Oct-11	0.0483	0.0506	<0.00020	<0.00020	<0.00020	<0.00020
	DR3	29-Oct-11	0.0472	0.0486	<0.00020	<0.00020	<0.00020	<0.00020
	DR02	29-Oct-11	0.0497	0.0530	<0.00020	<0.00020	<0.00020	<0.00020
Sturgeon Bay	LKW1	28-Oct-11	0.0317	0.0406	<0.00020	<0.00020	<0.00020	<0.00020
	LKW2	28-Oct-11	0.0493	0.0510	<0.00020	<0.00020	<0.00020	<0.00020
	LKW3	28-Oct-11	0.0478	0.0501	<0.00020	<0.00020	<0.00020	<0.00020
	LKW4	28-Oct-11	0.0397	0.0430	<0.00020	<0.00020	<0.00020	<0.00020
	LKW5	28-Oct-11	0.0355	0.0428	<0.00020	<0.00020	<0.00020	<0.00020
	LKW6	28-Oct-11	0.0397	0.0452	<0.00020	<0.00020	<0.00020	<0.00020
	LKW7	28-Oct-11	0.0374	0.0412	<0.00020	<0.00020	<0.00020	<0.00020
Buffalo Creek	BC1	29-Oct-11	0.00734	0.00780	<0.00020	<0.00020	<0.00020	<0.00020
	BC2	29-Oct-11	0.00751	0.00804	<0.00020	<0.00020	<0.00020	<0.00020
	BC3	29-Oct-11	0.00922	0.01032	<0.00020	<0.00020	<0.00020	<0.00020

Table B-5. Continued.

Sample Location	Location ID	Sample Date	Boron		Cadmium		Calcium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.010*	*0.010*	*0.000010*	*0.000010*	*0.050*	*0.10*
Waterhen River	WHR1	28-Oct-11	0.086	0.076	<0.000010	<0.000010	51.2	49.8
Lake Manitoba	NARR1	28-Oct-11	0.098	0.113	<0.000010	0.000012	47.6	47.2
Fairford River	FR1	28-Oct-11	0.115	0.096	<0.000010	0.000010	44.2	48.0
Lake St. Martin	LSM1	29-Oct-11	0.119	0.106	<0.000010	0.000049	44.7	54.8
	LSM2	29-Oct-11	0.089	0.096	0.000016	<0.000010	46.0	53.7
Dauphin River	DR1.1	29-Oct-11	0.107	0.112	<0.000010	<0.000010	46.0	45.6
	DR1.3	29-Oct-11	0.098	0.114	<0.000010	<0.000010	47.6	45.1
	DR1	29-Oct-11	0.125	0.117	0.000013	<0.000010	46.4	54.3
	DR3	29-Oct-11	0.122	0.113	<0.000010	<0.000010	46.5	52.1
	DR02	29-Oct-11	0.097	0.113	<0.000010	<0.000010	45.4	54.7
Sturgeon Bay	LKW1	28-Oct-11	0.045	0.034	<0.000010	0.000011	30.9	34.6
	LKW2	28-Oct-11	0.099	0.103	<0.000010	0.000010	48.5	44.0
	LKW3	28-Oct-11	0.098	0.113	<0.000010	0.000010	47.2	54.2
	LKW4	28-Oct-11	0.070	0.061	<0.000010	<0.000010	36.7	39.4
	LKW5	28-Oct-11	0.052	0.048	<0.000010	0.000012	32.5	38.1
	LKW6	28-Oct-11	0.073	0.063	<0.000010	<0.000010	36.1	42.0
	LKW7	28-Oct-11	0.055	0.046	<0.000010	0.000010	33.0	35.9
Buffalo Creek	BC1	29-Oct-11	<0.010	<0.010	<0.000010	<0.000010	22.9	27.2
	BC2	29-Oct-11	<0.010	<0.010	<0.000010	<0.000010	23.3	27.1
	BC3	29-Oct-11	0.014	<0.010	<0.000010	<0.000010	25.9	28.8

Table B-5. Continued.

Sample Location	Location ID	Sample Date	Cesium		Chloride	Chromium		Cobalt	
			Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00010*	*0.20*	*0.0020*	*0.0010*	*0.00020*	*0.00020*
Waterhen River	WHR1	28-Oct-11	<0.00010	<0.00010	216	<0.0020	<0.0010	<0.00020	<0.00020
Lake Manitoba	NARR1	28-Oct-11	<0.00010	<0.00010	154	<0.0020	<0.0010	<0.00020	<0.00020
Fairford River	FR1	28-Oct-11	<0.00010	<0.00010	197	<0.0020	<0.0010	<0.00020	<0.00020
Lake St. Martin	LSM1	29-Oct-11	<0.00010	<0.00010	205	<0.0020	<0.0010	<0.00020	<0.00020
	LSM2	29-Oct-11	<0.00010	<0.00010	209	<0.0020	<0.0010	<0.00020	<0.00020
Dauphin River	DR1.1	29-Oct-11	<0.00010	<0.00010	204	<0.0020	<0.0010	<0.00020	<0.00020
	DR1.3	29-Oct-11	<0.00010	<0.00010	205	<0.0020	<0.0010	<0.00020	<0.00020
	DR1	29-Oct-11	<0.00010	<0.00010	206	<0.0020	<0.0010	<0.00020	<0.00020
	DR3	29-Oct-11	<0.00010	<0.00010	198	<0.0020	<0.0010	<0.00020	<0.00020
	DR02	29-Oct-11	<0.00010	<0.00010	205	0.0020	<0.0010	<0.00020	<0.00020
Sturgeon Bay	LKW1	28-Oct-11	<0.00010	0.00010	41.3	<0.0020	0.0015	<0.00020	0.00041
	LKW2	28-Oct-11	<0.00010	<0.00010	201	<0.0020	<0.0010	<0.00020	<0.00020
	LKW3	28-Oct-11	<0.00010	<0.00010	194	<0.0020	<0.0010	<0.00020	<0.00020
	LKW4	28-Oct-11	<0.00010	<0.00010	104	<0.0020	<0.0010	<0.00020	<0.00020
	LKW5	28-Oct-11	<0.00010	<0.00010	72.6	<0.0020	<0.0010	<0.00020	0.00025
	LKW6	28-Oct-11	<0.00010	<0.00010	110	0.0022	<0.0010	<0.00020	<0.00020
	LKW7	28-Oct-11	<0.00010	<0.00010	72.3	<0.0020	<0.0010	<0.00020	0.00029
Buffalo Creek	BC1	29-Oct-11	<0.00010	<0.00010	4.07	<0.0020	<0.0010	<0.00020	<0.00020
	BC2	29-Oct-11	<0.00010	<0.00010	4.00	<0.0020	<0.0010	<0.00020	<0.00020
	BC3	29-Oct-11	<0.00010	<0.00010	6.11	<0.0020	<0.0010	<0.00020	<0.00020

Table B-5. Continued.

Sample Location	Location ID	Sample Date	Copper		Fluoride	Iron		Lead	
			Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00020*	*0.00020*	*0.020*	*0.010/0.10*	*0.010/0.10*	*0.000090*	*0.000090*
Waterhen River	WHR1	28-Oct-11	0.00054	0.00041	0.138	<0.010	0.026	<0.000090	<0.000090
Lake Manitoba	NARR1	28-Oct-11	0.00077	0.00071	0.166	<0.010	0.11	<0.000090	0.00018
Fairford River	FR1	28-Oct-11	0.00063	0.00063	0.154	<0.010	0.13	<0.000090	0.000295
Lake St. Martin	LSM1	29-Oct-11	0.00055	0.00050	0.159	<0.010	0.040	<0.000090	0.000288
	LSM2	29-Oct-11	0.00048	0.00051	0.160	<0.10	<0.10	<0.000090	0.000095
Dauphin River	DR1.1	29-Oct-11	0.00067	0.00054	0.160	<0.010	0.045	<0.000090	0.000114
	DR1.3	29-Oct-11	0.00057	0.00046	0.156	<0.010	0.024	<0.000090	0.000095
	DR1	29-Oct-11	0.00054	0.00054	0.153	<0.10	0.12	<0.000090	0.000099
	DR3	29-Oct-11	0.00062	0.00051	0.158	<0.10	<0.10	<0.000090	0.000107
	DR02	29-Oct-11	0.00066	0.00050	0.153	<0.010	0.12	<0.000090	0.000108
Sturgeon Bay	LKW1	28-Oct-11	0.00136	0.00221	0.100	0.010	0.84	<0.000090	0.000416
	LKW2	28-Oct-11	0.00064	0.00055	0.158	<0.010	0.13	<0.000090	0.000174
	LKW3	28-Oct-11	0.00067	0.00065	0.152	<0.010	0.18	<0.000090	0.000137
	LKW4	28-Oct-11	0.00112	0.00137	0.119	<0.010	0.34	<0.000090	0.000210
	LKW5	28-Oct-11	0.00132	0.00176	0.109	0.013	0.47	<0.000090	0.000241
	LKW6	28-Oct-11	0.00112	0.00138	0.121	<0.010	0.34	<0.000090	0.000212
	LKW7	28-Oct-11	0.00154	0.00185	0.105	0.021	0.54	<0.000090	0.000267
Buffalo Creek	BC1	29-Oct-11	<0.00020	<0.00020	0.060	<0.10	<0.10	<0.000090	<0.000090
	BC2	29-Oct-11	<0.00020	0.00021	0.061	<0.10	<0.10	<0.000090	<0.000090
	BC3	29-Oct-11	0.00028	0.000365	0.069	<0.10	0.15	<0.000090	<0.000090

Table B-5. Continued.

Sample Location	Location ID	Sample Date	Lithium		Magnesium		Manganese	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.0020*	*0.0020*	*0.010*	*0.010*	*0.00010*	*0.00030*
Waterhen River	WHR1	28-Oct-11	0.0265	0.0289	26.0	32.9	0.00038	0.00707
Lake Manitoba	NARR1	28-Oct-11	0.0495	0.0510	45.8	43.3	0.00036	0.00764
Fairford River	FR1	28-Oct-11	0.0361	0.0385	37.7	49.3	0.00019	0.01110
Lake St. Martin	LSM1	29-Oct-11	0.0361	0.0411	41.7	49.5	0.00018	0.00491
	LSM2	29-Oct-11	0.0363	0.0371	40.2	47.1	0.00036	0.00540
Dauphin River	DR1.1	29-Oct-11	0.0383	0.0353	43.1	49.7	0.00020	0.00526
	DR1.3	29-Oct-11	0.0386	0.0413	45.0	47.5	0.00030	0.00569
	DR1	29-Oct-11	0.0387	0.0379	41.1	54.0	0.00120	0.00666
	DR3	29-Oct-11	0.0371	0.0355	41.5	50.4	0.00132	0.00648
	DR02	29-Oct-11	0.0363	0.0386	42.0	47.4	0.00033	0.00682
Sturgeon Bay	LKW1	28-Oct-11	0.0141	0.0134	18.8	18.6	0.00047	0.01740
	LKW2	28-Oct-11	0.0382	0.0358	47.7	46.2	0.00026	0.00684
	LKW3	28-Oct-11	0.0375	0.0341	44.3	45.7	0.00022	0.00743
	LKW4	28-Oct-11	0.0218	0.0224	27.6	29.0	0.00045	0.00894
	LKW5	28-Oct-11	0.0170	0.0173	21.2	23.8	0.00047	0.00985
	LKW6	28-Oct-11	0.0219	0.0233	26.3	30.4	0.00034	0.00823
	LKW7	28-Oct-11	0.0162	0.0175	21.7	23.3	0.00066	0.00925
Buffalo Creek	BC1	29-Oct-11	0.0081	0.0059	16.6	23.9	0.00432	0.00574
	BC2	29-Oct-11	0.0071	0.0059	17.3	23.9	0.00318	0.00491
	BC3	29-Oct-11	0.0072	0.0064	17.7	22.5	0.00695	0.01080

Table B-5. Continued.

Sample Location	Location ID	Sample Date	Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*1.0*	*1.0*	*0.050*	*0.050*	*0.00010*	*0.00020*
Waterhen River	WHR1	28-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00189	0.00206
Lake Manitoba	NARR1	28-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00255	0.00272
Fairford River	FR1	28-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00216	0.00226
Lake St. Martin	LSM1	29-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00226	0.00242
	LSM2	29-Oct-11	<1.0	1.5	<0.050	<0.050	0.00219	0.00229
Dauphin River	DR1.1	29-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00224	0.00230
	DR1.3	29-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00219	0.00247
	DR1	29-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00217	0.00219
	DR3	29-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00207	0.00211
	DR02	29-Oct-11	<1.0	1.1	<0.050	<0.050	0.00220	0.00240
Sturgeon Bay	LKW1	28-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00086	0.00088
	LKW2	28-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00221	0.00207
	LKW3	28-Oct-11	<1.0	1.1	<0.050	<0.050	0.00203	0.00207
	LKW4	28-Oct-11	<1.0	1.1	<0.050	<0.050	0.00135	0.00130
	LKW5	28-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00105	0.00110
	LKW6	28-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00137	0.00143
	LKW7	28-Oct-11	<1.0	<1.0	<0.050	<0.050	0.00106	0.00105
Buffalo Creek	BC1	29-Oct-11	1.6	1.9	0.050	0.057	<0.00010	<0.00020
	BC2	29-Oct-11	1.3	1.6	<0.050	0.056	<0.00010	<0.00020
	BC3	29-Oct-11	1.7	2.1	0.052	0.067	<0.00010	<0.00020

Table B-5. Continued.

Sample Location	Location ID	Sample Date	Nickel		Potassium		Rubidium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.0010*	*0.0020*	*0.020*	*0.020*	*0.00020*	*0.00020*
Waterhen River	WHR1	28-Oct-11	<0.0010	<0.0020	7.51	9.40	0.00347	0.00393
Lake Manitoba	NARR1	28-Oct-11	<0.0010	<0.0020	12.2	12.9	0.00358	0.00372
Fairford River	FR1	28-Oct-11	<0.0010	<0.0020	10.2	10.4	0.00335	0.00411
Lake St. Martin	LSM1	29-Oct-11	<0.0010	<0.0020	10.2	10.8	0.00361	0.00409
	LSM2	29-Oct-11	<0.0010	<0.0020	10.4	10.5	0.00359	0.00406
Dauphin River	DR1.1	29-Oct-11	<0.0010	<0.0020	10.8	11.0	0.00357	0.00385
	DR1.3	29-Oct-11	<0.0010	<0.0020	9.94	10.9	0.00361	0.00412
	DR1	29-Oct-11	<0.0010	<0.0020	10.6	10.5	0.00354	0.00391
	DR3	29-Oct-11	<0.0010	<0.0020	10.3	10.0	0.00352	0.00377
	DR02	29-Oct-11	<0.0010	<0.0020	10.4	10.6	0.00362	0.00417
Sturgeon Bay	LKW1	28-Oct-11	<0.0010	<0.0020	3.63	4.29	0.00148	0.00355
	LKW2	28-Oct-11	<0.0010	<0.0020	10.9	9.80	0.00364	0.00384
	LKW3	28-Oct-11	<0.0010	<0.0020	10.3	9.65	0.00346	0.00391
	LKW4	28-Oct-11	<0.0010	<0.0020	6.24	6.96	0.00227	0.00317
	LKW5	28-Oct-11	<0.0010	<0.0020	4.69	5.71	0.00180	0.00301
	LKW6	28-Oct-11	<0.0010	<0.0020	6.32	7.74	0.00229	0.00330
	LKW7	28-Oct-11	<0.0010	<0.0020	4.92	5.57	0.00199	0.00324
Buffalo Creek	BC1	29-Oct-11	<0.0010	<0.0020	0.91	1.10	0.00164	0.00177
	BC2	29-Oct-11	<0.0010	<0.0020	0.98	0.994	0.00164	0.00177
	BC3	29-Oct-11	<0.0010	<0.0020	1.18	1.37	0.00146	0.00187

Table B-5. Continued.

Sample Location	Location ID	Sample Date	Selenium		Silicon		Silver		Sodium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.001*	*0.0010*	*0.05*	*0.050*	*0.0001*	*0.00010*	*0.020*	*0.030*
Waterhen River	WHR1	28-Oct-11	<0.0010	<0.0010	4.28	4.29	<0.00010	<0.00010	122	135
Lake Manitoba	NARR1	28-Oct-11	<0.0010	<0.0010	4.81	3.49	<0.00010	<0.00010	105	110
Fairford River	FR1	28-Oct-11	<0.0010	<0.0010	3.56	4.63	<0.00010	<0.00010	121	125
Lake St. Martin	LSM1	29-Oct-11	<0.0010	<0.0010	5.01	4.93	<0.00010	<0.00010	132	132
	LSM2	29-Oct-11	<0.0010	<0.0010	5.01	4.75	<0.00010	<0.00010	138	131
Dauphin River	DR1.1	29-Oct-11	<0.0010	<0.0010	5.17	4.99	<0.00010	<0.00010	134	135
	DR1.3	29-Oct-11	<0.0010	<0.0010	5.02	4.70	<0.00010	<0.00010	131	136
	DR1	29-Oct-11	<0.0010	<0.0010	5.00	5.59	<0.00010	<0.00010	140	147
	DR3	29-Oct-11	<0.0010	0.0011	4.93	5.80	<0.00010	<0.00010	135	144
	DR02	29-Oct-11	<0.0010	<0.0010	5.00	4.73	<0.00010	<0.00010	135	132
Sturgeon Bay	LKW1	28-Oct-11	<0.0010	<0.0010	1.14	2.77	<0.00010	<0.00010	29.5	30.5
	LKW2	28-Oct-11	<0.0010	<0.0010	4.80	4.53	<0.00010	<0.00010	122	130
	LKW3	28-Oct-11	<0.0010	0.0010	5.03	4.87	<0.00010	<0.00010	122	128
	LKW4	28-Oct-11	<0.0010	<0.0010	2.88	3.29	<0.00010	<0.00010	68.1	70.1
	LKW5	28-Oct-11	<0.0010	<0.0010	2.27	3.23	<0.00010	<0.00010	46.8	51.8
	LKW6	28-Oct-11	<0.0010	<0.0010	3.09	3.51	<0.00010	<0.00010	74.3	74.5
	LKW7	28-Oct-11	<0.0010	<0.0010	3.22	4.05	<0.00010	<0.00010	51.2	51.3
Buffalo Creek	BC1	29-Oct-11	<0.0010	<0.0010	7.33	7.72	<0.00010	<0.00010	3.53	5.67
	BC2	29-Oct-11	<0.0010	<0.0010	7.32	7.66	<0.00010	<0.00010	3.62	4.57
	BC3	29-Oct-11	<0.0010	<0.0010	6.67	6.74	<0.00010	<0.00010	6.02	7.59

Table B-5. Continued.

Sample Location	Location ID	Sample Date	Strontium		Sulphate Dissolved	Tellurium		Thallium	
			Dissolved	Total		Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00010*	*0.50*	*0.00020*	*0.00020*	*0.00010*	*0.00010*
Waterhen River	WHR1	28-Oct-11	0.274	0.291	59.2	<0.00020	<0.00020	<0.00010	<0.00010
Lake Manitoba	NARR1	28-Oct-11	0.307	0.325	138	<0.00020	<0.00020	<0.00010	<0.00010
Fairford River	FR1	28-Oct-11	0.292	0.318	93.5	<0.00020	<0.00020	<0.00010	<0.00010
Lake St. Martin	LSM1	29-Oct-11	0.302	0.315	93.9	<0.00020	<0.00020	<0.00010	<0.00010
	LSM2	29-Oct-11	0.289	0.301	91.9	<0.00020	<0.00020	<0.00010	<0.00010
Dauphin River	DR1.1	29-Oct-11	0.300	0.301	94.2	<0.00020	<0.00020	<0.00010	<0.00010
	DR1.3	29-Oct-11	0.304	0.323	93.7	<0.00020	<0.00020	<0.00010	<0.00010
	DR1	29-Oct-11	0.293	0.300	93.9	<0.00020	<0.00020	<0.00010	<0.00010
	DR3	29-Oct-11	0.283	0.287	90.6	<0.00020	<0.00020	<0.00010	<0.00010
	DR02	29-Oct-11	0.302	0.315	93.5	<0.00020	<0.00020	<0.00010	<0.00010
Sturgeon Bay	LKW1	28-Oct-11	0.143	0.141	38.2	<0.00020	<0.00020	<0.00010	<0.00010
	LKW2	28-Oct-11	0.300	0.283	90.5	<0.00020	<0.00020	<0.00010	<0.00010
	LKW3	28-Oct-11	0.290	0.285	87.5	<0.00020	<0.00020	<0.00010	<0.00010
	LKW4	28-Oct-11	0.204	0.190	57.6	<0.00020	<0.00020	<0.00010	<0.00010
	LKW5	28-Oct-11	0.167	0.174	47.6	<0.00020	<0.00020	<0.00010	<0.00010
	LKW6	28-Oct-11	0.206	0.213	59.7	<0.00020	<0.00020	<0.00010	<0.00010
	LKW7	28-Oct-11	0.171	0.163	46.3	<0.00020	<0.00020	<0.00010	<0.00010
Buffalo Creek	BC1	29-Oct-11	0.0332	0.0323	1.44	<0.00020	<0.00020	<0.00010	<0.00010
	BC2	29-Oct-11	0.0336	0.0322	1.42	<0.00020	<0.00020	<0.00010	<0.00010
	BC3	29-Oct-11	0.0438	0.0418	4.95	<0.00020	<0.00020	<0.00010	<0.00010

Table B-5. Continued.

Sample Location	Location ID	Sample Date	Thorium		Tin		Titanium		Tungsten	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00010*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.0010*
Waterhen River	WHR1	28-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	0.00034	<0.00020	<0.0010
Lake Manitoba	NARR1	28-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00063	0.00140	<0.00020	<0.0010
Fairford River	FR1	28-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00032	0.00204	<0.00020	<0.0010
Lake St. Martin	LSM1	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00054	0.00098	<0.00020	<0.0010
	LSM2	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00034	0.00085	<0.00020	<0.0010
Dauphin River	DR1.1	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00041	0.00117	<0.00020	<0.0010
	DR1.3	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00048	0.00089	<0.00020	<0.0010
	DR1	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00046	0.00413	<0.00020	<0.0010
	DR3	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00037	0.00142	<0.00020	<0.0010
	DR02	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00064	0.00248	<0.00020	<0.0010
Sturgeon Bay	LKW1	28-Oct-11	<0.00010	0.00028	<0.00020	<0.00020	0.00221	0.04030	<0.00020	<0.0010
	LKW2	28-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00038	0.00360	<0.00020	<0.0010
	LKW3	28-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00042	0.00619	<0.00020	<0.0010
	LKW4	28-Oct-11	<0.00010	0.00013	<0.00020	<0.00020	0.00147	0.01780	<0.00020	<0.0010
	LKW5	28-Oct-11	<0.00010	0.00018	<0.00020	<0.00020	0.00207	0.02410	<0.00020	<0.0010
	LKW6	28-Oct-11	<0.00010	0.00012	<0.00020	<0.00020	0.00139	0.01707	<0.00020	<0.0010
	LKW7	28-Oct-11	<0.00010	0.00020	<0.00020	<0.00020	0.00369	0.02730	<0.00020	<0.0010
Buffalo Creek	BC1	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	0.00098	<0.00020	<0.0010
	BC2	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00021	0.00168	<0.00020	<0.0010
	BC3	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	0.00057	0.00735	<0.00020	<0.0010

Table B-5. Continued.

Sample Location	Location ID	Sample Date	Uranium		Vanadium		Zinc		Zirconium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00010*	*0.00020*	*0.00020*	*0.0020*	*0.0050*	*0.00040*	*0.00040*
Waterhen River	WHR1	28-Oct-11	0.00136	0.00145	0.00110	0.00092	<0.0020	<0.0050	<0.00040	<0.00040
Lake Manitoba	NARR1	28-Oct-11	0.00235	0.00231	0.00265	0.00251	0.0089	<0.0050	<0.00040	<0.00040
Fairford River	FR1	28-Oct-11	0.00164	0.00168	0.00164	0.00181	<0.0020	<0.0050	<0.00040	<0.00040
Lake St. Martin	LSM1	29-Oct-11	0.00169	0.00177	0.00220	0.00270	<0.0020	<0.0050	<0.00040	<0.00040
	LSM2	29-Oct-11	0.00157	0.00166	0.00165	0.00135	<0.0020	<0.0050	<0.00040	<0.00040
Dauphin River	DR1.1	29-Oct-11	0.00166	0.00174	0.00200	0.00250	<0.0020	<0.0050	<0.00040	<0.00040
	DR1.3	29-Oct-11	0.00167	0.00179	0.00210	0.00240	<0.0020	<0.0050	<0.00040	<0.00040
	DR1	29-Oct-11	0.00162	0.00170	0.00202	0.00260	<0.0020	<0.0050	<0.00040	<0.00040
	DR3	29-Oct-11	0.00158	0.00163	0.00165	0.00134	<0.0020	<0.0050	<0.00040	<0.00040
	DR02	29-Oct-11	0.00167	0.00178	0.00220	0.00260	<0.0020	<0.0050	<0.00040	<0.00040
Sturgeon Bay	LKW1	28-Oct-11	0.00078	0.00084	0.00134	0.00282	<0.0020	<0.0050	<0.00040	0.00063
	LKW2	28-Oct-11	0.00163	0.00160	0.00176	0.00154	<0.0020	<0.0050	<0.00040	<0.00040
	LKW3	28-Oct-11	0.00154	0.00156	0.00190	0.00230	<0.0020	<0.0050	<0.00040	<0.00040
	LKW4	28-Oct-11	0.00110	0.00109	0.00169	0.00197	<0.0020	<0.0050	<0.00040	<0.00040
	LKW5	28-Oct-11	0.00091	0.00100	0.00147	0.00228	<0.0020	<0.0050	<0.00040	0.00043
	LKW6	28-Oct-11	0.00110	0.00119	0.00170	0.00233	<0.0020	<0.0050	<0.00040	<0.00040
	LKW7	28-Oct-11	0.00094	0.00098	0.00172	0.00263	<0.0020	<0.0050	<0.00040	0.00043
Buffalo Creek	BC1	29-Oct-11	<0.00010	<0.00010	0.00028	0.00023	<0.0020	<0.0050	<0.00040	<0.00040
	BC2	29-Oct-11	<0.00010	<0.00010	0.00040	0.00025	<0.0020	<0.0050	<0.00040	<0.00040
	BC3	29-Oct-11	<0.00010	<0.00010	0.00040	0.00058	<0.0020	<0.0050	<0.00040	<0.00040

Table B-6. Concentrations of pesticides measured at selected sites as part of the RWQMP conducted in fall 2011.

Location	Location ID	Sample Date	Bromacil (µg/L)	Glyphosate and AMPA		Carboxin (µg/L)	Diuron (µg/L)	Eptam (µg/L)	Fenoxaprop (µg/L)	Imazamethabenz-methyl (µg/L)
				AMPA (µg/L)	Glyphosate (µg/L)					
Analytical Detection Limit			*0.10*	*0.20*	*0.20*	*0.10*	*0.018*	*0.20*	*0.10*	*0.010*
Fairford River	FR1	28-Oct-11	-	<0.20	0.45	<0.10	<0.018	<0.20	<0.10	<0.020
		06-Nov-11	<0.10	<0.20	<0.20	<0.10	<0.018	<0.20	<0.10	<0.010
Dauphin River	DR1.1	29-Oct-11	-	<0.20	0.42	<0.10	<0.018	<0.20	<0.10	<0.010
		06-Nov-11	<0.10	<0.20	<0.20	<0.10	<0.018	<0.20	<0.10	<0.010
	DR02	29-Oct-11	-	<0.20	0.39	<0.10	<0.018	<0.20	<0.10	<0.010
		06-Nov-11	<0.10	<0.20	<0.20	<0.10	<0.018	<0.20	<0.10	<0.010
Sturgeon Bay	LKW7	29-Oct-11	-	<0.20	0.23	<0.10	<0.018	<0.20	<0.10	<0.010

Table B-6. Continued.

Location	Location ID	Sample Date	Metsulfuron-methyl (µg/L)	Propachlor (µg/L)	Propanil (µg/L)	Propoxur (µg/L)	Quizalofop (µg/L)	Sethoxydim (µg/L)	Thifensulfuron-methyl (µg/L)
Analytical Detection Limit			*0.010*	*0.20*	*0.20*	*0.20*	*0.10*	*0.10*	*0.010*
Fairford River	FR1	28-Oct-11	<0.010	<0.20	<0.20	<0.20	<0.10	<0.10	<0.010
		06-Nov-11	<0.010	<0.20	<0.20	<0.20	<0.10	<0.10	<0.010
Dauphin River	DR1.1	29-Oct-11	<0.010	<0.20	<0.20	<0.20	<0.10	<0.10	<0.010
		06-Nov-11	<0.010	<0.20	<0.20	<0.20	<0.10	<0.10	<0.010
	DR02	29-Oct-11	<0.010	<0.20	<0.20	<0.20	<0.10	<0.10	<0.010
		06-Nov-11	<0.010	<0.20	<0.20	<0.20	<0.10	<0.10	<0.010
Sturgeon Bay	LKW7	29-Oct-11	<0.010	<0.20	<0.20	<0.20	<0.10	<0.10	<0.010

Table B-6. Continued.

Location	Location ID	Sample Date	Tralkoxydim (µg/L)	Chlorothalonil (µg/L)	Triclopyr (µg/L)	Benomyl (µg/L)	Deltamethrin (µg/L)	Tribenuron-methyl (µg/L)	Ethalfluralin (µg/L)
Analytical Detection Limit			*0.10*	*0.060*	*0.050*	*0.10*	*0.040*	*0.010*	*0.020*
Fairford River	FR1	28-Oct-11	<0.10	<0.060	<0.050	<0.10	<0.040	<0.010	<0.020
		06-Nov-11	<0.10	<0.060	<0.050	<0.10	<0.040	<0.010	<0.020
Dauphin River	DR1.1	29-Oct-11	<0.10	<0.060	<0.050	<0.10	<0.040	<0.010	<0.020
		06-Nov-11	<0.10	<0.060	<0.050	<0.10	<0.040	<0.010	<0.020
	DR02	29-Oct-11	<0.10	<0.060	<0.050	<0.10	<0.040	<0.010	<0.020
		06-Nov-11	<0.10	<0.060	<0.050	<0.10	<0.040	<0.010	<0.020
Sturgeon Bay	LKW7	29-Oct-11	<0.10	<0.060	<0.050	<0.10	<0.040	<0.010	<0.020

Table B-6. Continued.

Location	Location ID	Sample Date	Trifluralin (µg/L)	Alachlor (µg/L)	Atrazine (µg/L)	Atrazine Desethyl (µg/L)	Azinphos-methyl (µg/L)	Carbofuran (µg/L)	Chlorpyrifos (µg/L)	Cyanazine (µg/L)
Analytical Detection Limit			*0.030*	*0.10*	*0.10*	*0.10*	*0.10*	*0.20*	*0.020*	*0.10*
Fairford River	FR1	28-Oct-11	<0.030	-	-	-	-	-	-	-
		06-Nov-11	<0.030	<0.10	<0.10	<0.10	<0.10	<0.20	<0.020	<0.10
Dauphin River	DR1.1	29-Oct-11	<0.030	-	-	-	-	-	-	-
		06-Nov-11	<0.030	<0.10	<0.10	<0.10	<0.10	<0.20	<0.020	<0.10
	DR02	29-Oct-11	<0.030	-	-	-	-	-	-	-
		06-Nov-11	<0.030	<0.10	<0.10	<0.10	<0.10	<0.20	<0.020	<0.10
Sturgeon Bay	LKW7	29-Oct-11	<0.030	-	-	-	-	-	-	-

Table B-6. Continued.

Location	Location ID	Sample Date	Diazinon (µg/L)	Diclofop-methyl (µg/L)	Dimethoate (µg/L)	Malathion (µg/L)	Methyl Parathion (µg/L)	Metribuzin (µg/L)	Parathion (µg/L)	Simazine (µg/L)
Analytical Detection Limit			*0.030*	*0.10*	*0.10*	*0.10*	*0.10*	*0.20*	*0.10*	*0.10*
Fairford River	FR1	28-Oct-11	-	-	-	-	-	-	-	-
		06-Nov-11	<0.030	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	<0.10
Dauphin River	DR1.1	29-Oct-11	-	-	-	-	-	-	-	-
		06-Nov-11	<0.030	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	<0.10
	DR02	29-Oct-11	-	-	-	-	-	-	-	-
		06-Nov-11	<0.030	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	<0.10
Sturgeon Bay	LKW7	29-Oct-11	-	-	-	-	-	-	-	-

Table B-6. Continued.

Location	Location ID	Sample Date	Terbufos (µg/L)	Triallate (µg/L)	Trifluralin (µg/L)	Organochlorine Pesticides				
						alpha-BHC (µg/L)	beta-BHC (µg/L)	delta-BHC (µg/L)	a-chlordane (µg/L)	g-chlordane (µg/L)
Analytical Detection Limit			*0.10*	*0.10*	*0.030*	*0.10*	*0.10*	*0.10*	*0.010*	*0.010*
Fairford River	FR1	28-Oct-11	-	-	-	-	-	-	-	-
		06-Nov-11	<0.10	<0.10	<0.030	<0.10	<0.10	<0.10	<0.010	<0.010
Dauphin River	DR1.1	29-Oct-11	-	-	-	-	-	-	-	-
		06-Nov-11	<0.10	<0.10	<0.030	<0.10	<0.10	<0.10	<0.010	<0.010
	DR02	29-Oct-11	-	-	-	-	-	-	-	-
		06-Nov-11	<0.10	<0.10	<0.030	<0.10	<0.10	<0.10	<0.010	<0.010
Sturgeon Bay	LKW7	29-Oct-11	-	-	-	-	-	-	-	-

Table B-6. Continued.

Location	Location ID	Sample Date	Organochlorine Pesticides		Pentachlorophenol (µg/L)	Phenoxy Acid Herbicides			
			Lindane (µg/L)	Methoxychlor (µg/L)		2,4-D (µg/L)	2,4-DB (µg/L)	2,4-DP (µg/L)	Bromoxynil (µg/L)
Analytical Detection Limit			*0.10*	*0.010*	*0.020*	*0.050*	*0.050*	*0.050*	*0.020*
Fairford River	FR1	28-Oct-11	-	-	-	-	-	-	-
		06-Nov-11	<0.10	<0.010	<0.020	<0.050	<0.050	<0.050	<0.020
Dauphin River	DR1.1	29-Oct-11	-	-	-	-	-	-	-
		06-Nov-11	<0.10	<0.010	<0.020	<0.050	<0.050	<0.050	<0.020
	DR02	29-Oct-11	-	-	-	-	-	-	-
		06-Nov-11	<0.10	<0.010	<0.020	<0.050	<0.050	<0.050	<0.020
Sturgeon Bay	LKW7	29-Oct-11	-	-	-	-	-	-	-

Table B-6. Continued.

Location	Location ID	Sample Date	Phenoxy Acid Herbicides			Mecoprop (µg/L)	Picloram (µg/L)
			Dicamba (µg/L)	Dinoseb (µg/L)	MCPA (µg/L)		
Analytical Detection Limit			*0.0060*	*0.050*	*0.025*	*0.050*	*0.20*
Fairford River	FR1	28-Oct-11	-	-	-	-	-
		06-Nov-11	<0.0060	<0.050	<0.025	<0.050	<0.20
Dauphin River	DR1.1	29-Oct-11	-	-	-	-	-
		06-Nov-11	<0.0060	<0.050	<0.025	<0.050	<0.20
	DR02	29-Oct-11	-	-	-	-	-
		06-Nov-11	<0.0060	<0.050	<0.025	<0.050	<0.20
Sturgeon Bay	LKW7	29-Oct-11	-	-	-	-	-

Table B-7. Quality assurance/quality control results for routine water chemistry variables measured in the laboratory. Percent relative standard deviations (PRSD) and relative percent mean difference (RPMD) values above 18% and 25%, respectively are indicated in red. Field and trip blank measurements greater than five times the analytical detection limits are also indicated in red. Measurements in blue italics are considered suspect.

			Alkalinity			
Sample Location	**Location ID**	**Sample Date**	**as Bicarbonate (HCO_3^-) (mg/L)**	**as $CaCO_3$ (mg/L)**	**as Carbonate (CO_3^{2-}) (mg/L)**	**as Hydroxide (OH^-) (mg/L)**
Analytical Detection Limits			*2.0*	*1.0*	*0.60*	*0.40*
DUPLICATE SAMPLES						
Buffalo Creek	BC3 REP 1	29-Oct-11	160	132	<0.60	<0.40
	BC3 REP 2	29-Oct-11	160	131	<0.60	<0.40
		Mean	160	132	<0.60	<0.40
		SD	-	0.707	-	-
		RPMD	-	1	-	-
TRIPLICATE SAMPLES						
Lake Winnipeg	LKW6 REP 1	28-Oct-11	177	151	2.94	<0.40
	LKW6 REP 2	28-Oct-11	177	151	3.01	<0.40
	LKW6 REP 3	28-Oct-11	177	152	3.01	<0.40
		Mean	177	151	2.99	<0.40
		SD	0	0.58	0.04	-
		PRSD	0	0	-	-
BLANKS						
Field	FIELD BLANK	28-Oct-11	2.5	2.1	<0.60	<0.40
	FIELD BLANK	29-Oct-11	2.6	2.1	<0.60	<0.40
Trip	TRIP BLANK	28-Oct-11	2.3	1.9	<0.60	<0.40
	TRIP BLANK	28-Oct-11	2.1	1.7	<0.60	<0.40
	TRIP BLANK	29-Oct-11	2.2	1.8	<0.60	<0.40

Table B-7. Continued.

Sample Location	Location ID	Sample Date	Nitrogen				
			Dissolved Ammonia (mg/L N)	Dissolved Nitrate/ nitrite (mg/L N)	Nitrate-N (mg/L N)	Nitrite-N (mg/L N)	TKN (mg/L N)
Analytical Detection Limits			*0.010*	*0.0051*	*0.0050*	*0.0010*	*0.20*
DUPLICATE SAMPLES							
Buffalo Creek	BC3 REP 1	29-Oct-11	<0.010	<0.0051	<0.0050	<0.0010	0.77
	BC3 REP 2	29-Oct-11	<0.010	<0.0051	<0.0050	<0.0010	0.74
		Mean	<0.010	<0.0051	<0.0050	<0.0010	0.76
		SD	-	-	-	-	0.02
		RPMD	-	-	-	-	-
TRIPLICATE SAMPLES							
Lake Winnipeg	LKW6 REP 1	28-Oct-11	0.017	0.0106	0.0106	<0.0010	0.79
	LKW6 REP 2	28-Oct-11	0.010	0.0125	0.0125	<0.0010	0.83
	LKW6 REP 3	28-Oct-11	0.013	0.0127	0.0116	0.0011	0.74
		Mean	0.013	0.0119	0.0116	<0.0010	0.79
		SD	0.0035	0.00116	0.0010	-	0.05
		PRSD	-	10	8	-	-
BLANKS							
Field	FIELD BLANK	28-Oct-11	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	FIELD BLANK	29-Oct-11	<0.010	<0.0051	<0.0050	<0.0010	<0.20
Trip	TRIP BLANK	28-Oct-11	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	TRIP BLANK	28-Oct-11	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	TRIP BLANK	29-Oct-11	<0.010	<0.0051	<0.0050	<0.0010	<0.20

Table B-7. Continued.

Sample Location	Location ID	Sample Date	Phosphorus			Carbon		
			Total (mg/L P)	Dissolved (mg/L P)	Total Particulate (mg/L P)	Total Inorganic (mg/L)	Total Organic (mg/L)	Dissolved Organic (mg/L)
Analytical Detection Limits			*0.0020/0.010*	*0.0020/0.010*	*0.010/0.014/0.028*	*1.0*	*1.0*	*1.0*
DUPLICATE SAMPLES								
Buffalo Creek	BC3 REP 1	29-Oct-11	0.116	0.021	0.095	22.1	19.5	19.7
	BC3 REP 2	29-Oct-11	0.011	0.011	<0.014	20.5	19.6	14.9
		Mean	0.064	0.016	0.051	21.3	19.6	17.3
		SD	0.074	0.007	0.062	1.13	0.07	3.4
		RPMD	-	-	-	8	1	**28**
TRIPLICATE SAMPLES								
Lake Winnipeg	LKW6 REP 1	28-Oct-11	0.028	0.0051	0.023	34.5	10.9	10.1
	LKW6 REP 2	28-Oct-11	0.030	0.0037	0.026	33.5	10.5	9.7
	LKW6 REP 3	28-Oct-11	0.028	0.0030	0.025	33.9	10.5	9.8
		Mean	0.029	0.004	0.025	34.0	10.6	9.9
		SD	0.001	0.001	0.002	0.50	0.23	0.21
		PRSD	-	-	-	1	2	2
BLANKS								
Field	FIELD BLANK	28-Oct-11	0.002	<0.0020	<0.0028	<1.0	<1.0	<1.0
	FIELD BLANK	29-Oct-11	<0.0020	<0.010	<0.014	<1.0	<1.0	<1.0
Trip	TRIP BLANK	28-Oct-11	<0.0020	<0.0020	<0.0028	<1.0	<1.0	<1.0
	TRIP BLANK	28-Oct-11	0.0027	0.0020	<0.0028	<1.0	<1.0	<1.0
	TRIP BLANK	29-Oct-11	<0.010	<0.010	<0.014	<1.0	1.1	1.1

Table B-7. Continued.

Sample Location	Location ID	Sample Date	Conductivity (µmhos/cm)	TDS (mg/L)	Water Clarity			Lab pH	Algal Pigments	
					TSS (mg/L)	Turbidity (NTU)	True Colour (CU)		Chlorophyll *a* (µg/L)	Pheopigments (µg/L)
Analytical Detection Limits			*0.40/20*	*5.0*	*2.0*	*0.10*	*5.0*	*0.10*	*0.10*	*0.10*
DUPLICATE SAMPLES										
Buffalo Creek	BC3 REP 1	29-Oct-11	237	174	4	5.1	53.2	8.21	0.49	0.78
	BC3 REP 2	29-Oct-11	237	180	4.4	4.5	53.1	8.17	0.54	0.75
		Mean	237	177	4.2	4.8	53.2	8.19	0.52	0.77
		SD	0	4.24	0.28	0.42	0.07	0.03	0.04	0.02
		RPMD	0	3	-	13	0	0	-	4
TRIPLICATE SAMPLES										
Lake Winnipeg	LKW6 REP 1	28-Oct-11	705	376	10.8	14.2	12.7	8.37	9.45	1.16
	LKW6 REP 2	28-Oct-11	706	414	10.4	14.2	10.3	8.38	7.51	1.96
	LKW6 REP 3	28-Oct-11	707	404	10.8	16.3	10.3	8.38	8.90	2.13
		Mean	706	398	10.7	14.9	11.1	8.38	8.62	1.75
		SD	1	19.70	0.23	1.21	1.39	0.006	1.00	0.52
		PRSD	0	5	2	8	-	0	12	**30**
BLANKS										
Field	FIELD BLANK	28-Oct-11	1.05	<5.0	<2.0	<0.10	<5.0	6.25	0.14	<0.10
	FIELD BLANK	29-Oct-11	1.2	<5.0	<2.0	<0.10	<5.0	6.03	<0.10	<0.10
Trip	TRIP BLANK	28-Oct-11	0.75	<5.0	<2.0	<0.10	<5.0	5.94	0.35	<0.10
	TRIP BLANK	28-Oct-11	0.73	<5.0	<2.0	<0.10	<5.0	5.86	<0.10	<0.10
	TRIP BLANK	29-Oct-11	0.67	<5.0	<2.0	<0.10	<5.0	5.95	<0.10	<0.10

Table B-8. Quality assurance/quality control results for major ions and metals measured in the laboratory. Percent relative standard deviations (PRSD) and relative percent mean difference (RPMD) values above 18% and 25%, respectively are indicated in red. Field and trip blank measurements greater than five times the analytical detection limits are also indicated in red. Measurements in blue italics are considered suspect.

Sample Location	Location ID	Sample Date	Hardness as CaCO3 (mg/L)	Aluminum (mg/L)		Antimony (mg/L)		Arsenic (mg/L)		Barium (mg/L)	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.30*	*0.0020*	*0.0050*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*
DUPLICATE SAMPLES											
Buffalo Creek	BC3 REP 1	29-Oct-11	179	0.0101	0.258	<0.00020	<0.00020	0.00059	0.00057	0.00904	0.0108
	BC3 REP 2	29-Oct-11	139	0.0105	0.179	<0.00020	<0.00020	0.00059	0.00052	0.00940	0.0098
		Mean	159	0.0103	0.219	<0.00020	<0.00020	0.00059	0.00055	0.00922	0.0103
		SD	28	0.0003	0.056	-	-	-	0.00004	0.00025	0.0007
		RPMD	25	4	36	-	-	-	-	4	9
TRIPLICATE SAMPLES											
Lake Winnipeg	LKW6 REP 1	28-Oct-11	224	0.0564	0.5	<0.00020	<0.00020	0.00240	0.00205	0.0403	0.043
	LKW6 REP 2	28-Oct-11	235	0.0591	0.549	<0.00020	<0.00020	0.00251	0.00215	0.0394	0.047
	LKW6 REP 3	28-Oct-11	230	0.0245	0.496	<0.00020	<0.00020	0.00247	0.00211	0.0395	0.045
		Mean	230	0.0467	0.515	<0.00020	<0.00020	0.00246	0.00210	0.0397	0.045
		SD	5.51	0.0192	0.030	-	-	0.00006	0.00005	0.0005	0.002
		PRSD	2	41	6	-	-	2	2	1	5
BLANK											
Field	FIELD BLANK	28-Oct-11	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	FIELD BLANK	29-Oct-11	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Trip	TRIP BLANK	28-Oct-11	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TRIP BLANK	28-Oct-11	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TRIP BLANK	29-Oct-11	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table B-8. Continued.

Sample Location	Location ID	Sample Date	Beryllium (mg/L)		Bismuth (mg/L)		Boron (mg/L)		Cadmium (mg/L)		Calcium (mg/L)	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.010*	*0.010*	*0.000010*	*0.000010*	*0.050*	*0.10*
DUPLICATE SAMPLES												
Buffalo Creek	BC3 REP 1	29-Oct-11	<0.00020	<0.00020	<0.00020	<0.00020	0.012	0.012	<0.000010	<0.000010	25.9	30.8
	BC3 REP 2	29-Oct-11	<0.00020	<0.00020	<0.00020	<0.00020	0.016	<0.010	<0.000010	<0.000010	25.8	26.7
		Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.014	<0.010	<0.000010	<0.000010	25.9	28.8
		SD	-	-	-	-	0.003	0.0049	-	-	0.07	2.90
		RPMD	-	-	-	-	-	-	-	-	0	14
TRIPLICATE SAMPLES												
Lake Winnipeg	LKW6 REP 1	28-Oct-11	<0.00020	<0.00020	<0.00020	<0.00020	0.073	0.061	<0.000010	<0.000010	36.2	40.9
	LKW6 REP 2	28-Oct-11	<0.00020	<0.00020	<0.00020	<0.00020	0.074	0.067	<0.000010	0.00001	35.9	43.2
	LKW6 REP 3	28-Oct-11	<0.00020	<0.00020	<0.00020	<0.00020	0.071	0.062	<0.000010	<0.000010	36.1	42.0
		Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.073	0.063	<0.000010	<0.000010	36.1	42.0
		SD	-	-	-	-	0.002	0.003	-	0.000003	0.15	1.15
		PRSD	-	-	-	-	2	5	-	-	0	3
BLANK												
Field	FIELD BLANK	28-Oct-11	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10
	FIELD BLANK	29-Oct-11	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10
Trip	TRIP BLANK	28-Oct-11	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10
	TRIP BLANK	28-Oct-11	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10
	TRIP BLANK	29-Oct-11	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10

Table B-8. Continued.

Sample Location	Location ID	Sample Date	Cesium (mg/L)		Dissolved Chloride (mg/L)	Chromium (mg/L)		Cobalt (mg/L)		Copper (mg/L)	
			Dissolved	Total		Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00010*	*0.20*	*0.0020*	*0.0010*	*0.00020*	*0.00020*	*0.00020*	*0.00020*
DUPLICATE SAMPLES											
Buffalo Creek	BC3 REP 1	29-Oct-11	<0.00010	<0.00010	5.61	<0.0020	<0.0010	<0.00020	<0.00020	0.00026	0.00039
	BC3 REP 2	29-Oct-11	<0.00010	<0.00010	6.61	<0.0020	<0.0010	<0.00020	<0.00020	0.00030	0.00034
		Mean	<0.00010	<0.00010	6.11	<0.0020	<0.0010	<0.00020	<0.00020	0.00028	0.00037
		SD	-	-	0.71	-	-	-	-	0.00003	0.00004
		RPMD	-	-	16	-	-	-	-	-	-
TRIPLICATE SAMPLES											
Lake Winnipeg	LKW6 REP 1	28-Oct-11	<0.00010	<0.00010	110	<0.0020	<0.0010	<0.00020	<0.00020	0.00111	0.00134
	LKW6 REP 2	28-Oct-11	<0.00010	<0.00010	110	0.0022	<0.0010	<0.00020	0.00022	0.00111	0.00147
	LKW6 REP 3	28-Oct-11	<0.00010	<0.00010	111	0.0021	<0.0010	<0.00020	0.00021	0.00114	0.00134
		Mean	<0.00010	<0.00010	110	0.0022	<0.0010	<0.00020	<0.00020	0.00112	0.00138
		SD	-	-	0.58	0.0007	-	-	0.000067	0.00002	0.00008
		PRSD	-	-	1	-	-	-	-	2	5
BLANK											
Field	FIELD BLANK	28-Oct-11	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	FIELD BLANK	29-Oct-11	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
Trip	TRIP BLANK	28-Oct-11	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	TRIP BLANK	28-Oct-11	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	TRIP BLANK	29-Oct-11	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020

Table B-8. Continued.

Sample Location	Location ID	Sample Date	Dissolved Fluoride (mg/L)	Iron (mg/L)		Lead (mg/L)		Lithium (mg/L)		Magnesium (mg/L)	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.020*	*0.010/0.10*	*0.01/0.10*	*0.000090*	*0.000090*	*0.0020*	*0.0020*	*0.010*	*0.010*
DUPLICATE SAMPLES											
Buffalo Creek	BC3 REP 1	29-Oct-11	0.069	<0.10	0.17	<0.000090	<0.000090	0.0071	0.0078	17.2	24.9
	BC3 REP 2	29-Oct-11	0.069	<0.10	0.13	<0.000090	<0.000090	0.0073	0.0050	18.1	20.1
		Mean	0.069	<0.10	0.15	<0.000090	<0.000090	0.0072	0.0064	17.7	22.5
		SD	0	-	0.028	-	-	0.0001	0.0020	0.64	3.39
		RPMD	-	-	-	-	-	-	-	5	21
TRIPLICATE SAMPLES											
Lake Winnipeg	LKW6 REP 1	28-Oct-11	0.12	0.012	0.29	<0.000090	0.000189	0.0215	0.0227	27.2	29.7
	LKW6 REP 2	28-Oct-11	0.123	<0.010	0.37	<0.000090	0.000228	0.0228	0.0244	25.8	30.9
	LKW6 REP 3	28-Oct-11	0.121	<0.010	0.35	<0.000090	0.000220	0.0214	0.0228	25.9	30.5
		Mean	0.121	<0.010	0.34	<0.000090	0.000212	0.0219	0.0233	26.3	30.4
		SD	0.002	0.0040	0.042	-	0.000021	0.0008	0.0010	0.78	0.61
		PRSD	1	-	-	-	-	4	4	3	2
BLANK											
Field	FIELD BLANK	28-Oct-11	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010
	FIELD BLANK	29-Oct-11	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010
Trip	TRIP BLANK	28-Oct-11	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010
	TRIP BLANK	28-Oct-11	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010
	TRIP BLANK	29-Oct-11	<0.020	<0.10	<0.10	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010

Table B-8. Continued.

Sample Location	Location ID	Sample Date	Manganese (mg/L)		Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum (mg/L)		Nickel (mg/L)	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00030*	*1.0*	*1.0*	*0.050*	*0.050*	*0.00010*	*0.00020*	*0.0010*	*0.0020*
DUPLICATE SAMPLES												
Buffalo Creek	BC3 REP 1	29-Oct-11	0.00698	0.0114	1.8	2.2	<0.050	0.053	<0.00010	<0.00020	<0.0010	<0.0020
	BC3 REP 2	29-Oct-11	0.00692	0.0102	1.6	2.0	0.079	0.081	<0.00010	<0.00020	<0.0010	<0.0020
		Mean	0.00695	0.0108	1.7	2.1	0.052	0.067	<0.00010	<0.00020	<0.0010	<0.0020
		SD	0.00004	0.0008	0.14	0.14	0.038	0.020	-	-	-	-
		RPMD	1	11	-	-	-	-	-	-	-	-
TRIPLICATE SAMPLES												
Lake Winnipeg	LKW6 REP 1	28-Oct-11	0.00030	0.00784	<1.0	<1.0	<0.050	<0.050	0.00135	0.0014	<0.0010	<0.0020
	LKW6 REP 2	28-Oct-11	0.00038	0.00861	<1.0	<1.0	<0.050	<0.050	0.00138	0.0015	<0.0010	<0.0020
	LKW6 REP 3	28-Oct-11	0.00033	0.00825	<1.0	<1.0	<0.050	<0.050	0.00139	0.0014	<0.0010	<0.0020
		Mean	0.00034	0.00823	<1.0	<1.0	<0.050	<0.050	0.00137	0.0014	<0.0010	<0.0020
		SD	0.00004	0.00039	-	-	-	-	0.00002	0.00007	-	-
		PRSD	12	5	-	-	-	-	2	5	-	-
BLANK												
Field	FIELD BLANK	28-Oct-11	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050	<0.00010	<0.00020	<0.0010	<0.0020
	FIELD BLANK	29-Oct-11	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050	<0.00010	<0.00020	<0.0010	<0.0020
Trip	TRIP BLANK	28-Oct-11	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050	<0.00010	<0.00020	<0.0010	<0.0020
	TRIP BLANK	28-Oct-11	<0.00010	<0.00030	-	-	-	-	<0.00010	<0.00020	<0.0010	<0.0020
	TRIP BLANK	29-Oct-11	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050	<0.00010	<0.00020	<0.0010	<0.0020

Table B-8. Continued.

			Potassium (mg/L)		Rubidium (mg/L)		Selenium (mg/L)		Silicon (mg/L)	
Sample Location	Location ID	Sample Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.020*	*0.020*	*0.00020*	*0.00020*	*0.0010*	*0.0010*	*0.050*	*0.050*
DUPLICATE SAMPLES										
Buffalo Creek	BC3 REP 1	29-Oct-11	1.17	1.46	0.00145	0.00194	<0.0010	<0.0010	6.69	7.26
	BC3 REP 2	29-Oct-11	1.19	1.28	0.00146	0.0018	<0.0010	<0.0010	6.64	6.21
		Mean	1.18	1.37	0.00146	0.0019	<0.0010	<0.0010	6.67	6.74
		SD	0.01	0.13	0.00001	0.0001	-	-	0.04	0.742
		RPMD	2	13	1	7	-	-	1	16
TRIPLICATE SAMPLES										
Lake Winnipeg	LKW6 REP 1	28-Oct-11	6.33	7.36	0.00227	0.00305	<0.0010	<0.0010	3.18	3.57
	LKW6 REP 2	28-Oct-11	6.27	8.08	0.00230	0.00351	<0.0010	<0.0010	3.17	3.57
	LKW6 REP 3	28-Oct-11	6.36	7.79	0.00229	0.00334	<0.0010	<0.0010	2.92	3.38
		Mean	6.32	7.74	0.00229	0.00330	<0.0010	<0.0010	3.09	3.51
		SD	0.05	0.36	0.00002	0.00023	-	-	0.15	0.11
		PRSD	1	5	1	7	-	-	5	3
BLANK										
Field	FIELD BLANK	28-Oct-11	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.050	<0.050
	FIELD BLANK	29-Oct-11	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.050	<0.050
Trip	TRIP BLANK	28-Oct-11	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.050	<0.050
	TRIP BLANK	28-Oct-11	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.050	<0.050
	TRIP BLANK	29-Oct-11	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.050	<0.050

Table B-8. Continued.

Sample Location	Location ID	Sample Date	Silver (mg/L)		Sodium (mg/L)		Strontium (mg/L)		Dissolved Sulfate (mg/L)	Tellurium (mg/L)	
			Dissolved	Total	Dissolved	Total	Dissolved	Total		Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00010*	*0.020*	*0.030*	*0.00010*	*0.00010*	*0.50*	*0.00020*	*0.00020*
DUPLICATE SAMPLES											
Buffalo Creek	BC3 REP 1	29-Oct-11	<0.00010	<0.00010	5.82	8.35	0.0432	0.0424	4.72	<0.00020	<0.00020
	BC3 REP 2	29-Oct-11	<0.00010	<0.00010	6.22	6.82	0.0444	0.0412	5.17	<0.00020	<0.00020
		Mean	<0.00010	<0.00010	6.02	7.59	0.0438	0.0418	4.95	<0.00020	<0.00020
		SD	-	-	0.28	1.08	0.0008	0.0008	0.318	-	-
		RPMD	-	-	7	20	3	3	9	-	-
TRIPLICATE SAMPLES											
Lake Winnipeg	LKW6 REP 1	28-Oct-11	<0.00010	<0.00010	73.3	75	0.207	0.205	59.7	<0.00020	<0.00020
	LKW6 REP 2	28-Oct-11	<0.00010	<0.00010	75.1	76.1	0.205	0.222	59.7	<0.00020	<0.00020
	LKW6 REP 3	28-Oct-11	<0.00010	<0.00010	74.5	72.5	0.206	0.211	59.7	<0.00020	<0.00020
		Mean	<0.00010	<0.00010	74.3	74.5	0.206	0.213	59.7	<0.00020	<0.00020
		SD	-	-	0.92	1.84	0.001	0.009	-	-	-
		PRSD	-	-	1	2	0	4	-	-	-
BLANK											
Field	FIELD BLANK	28-Oct-11	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020
	FIELD BLANK	29-Oct-11	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020
Trip	TRIP BLANK	28-Oct-11	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020
	TRIP BLANK	28-Oct-11	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020
	TRIP BLANK	29-Oct-11	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020

Table B-8. Continued.

Sample Location	Location ID	Sample Date	Thallium (mg/L)		Thorium (mg/L)		Tin (mg/L)		Titanium (mg/L)		Tungsten (mg/L)	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.0010*
DUPLICATE SAMPLES												
Buffalo Creek	BC3 REP 1	29-Oct-11	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00048	0.00830	<0.00020	<0.0010
	BC3 REP 2	29-Oct-11	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00066	0.00640	<0.00020	<0.0010
		Mean	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00057	0.00735	<0.00020	<0.0010
		SD	-	-	-	-	-	-	0.00013	0.0013	-	-
		RPMD	-	-	-	-	-	-	-	**26**	-	-
TRIPLICATE SAMPLES												
Lake Winnipeg	LKW6 REP 1	28-Oct-11	<0.00010	<0.00010	<0.00010	0.00012	<0.00020	<0.00020	0.00112	0.016	<0.00020	<0.0010
	LKW6 REP 2	28-Oct-11	<0.00010	<0.00010	<0.00010	0.00013	<0.00020	<0.00020	0.00166	0.0181	<0.00020	<0.0010
	LKW6 REP 3	28-Oct-11	<0.00010	<0.00010	<0.00010	0.00012	<0.00020	<0.00020	0.00073	0.0171	<0.00020	<0.0010
		Mean	<0.00010	<0.00010	<0.00010	0.00012	<0.00020	<0.00020	0.00117	0.0171	<0.00020	<0.0010
		SD	-	-	-	0.00001	-	-	0.00047	0.0011	-	-
		PRSD	-	-	-	-	-	-	-	6	-	-
BLANK												
Field	FIELD BLANK	28-Oct-11	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010
	FIELD BLANK	29-Oct-11	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010
Trip	TRIP BLANK	28-Oct-11	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010
	TRIP BLANK	28-Oct-11	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010
	TRIP BLANK	29-Oct-11	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010

Table B-8. Continued.

Sample Location	Location ID	Sample Date	Uranium (mg/L)		Vanadium (mg/L)		Zinc (mg/L)		Zirconium (mg/L)	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00010*	*0.00020*	*0.00020*	*0.0020*	*0.0050*	*0.00040*	*0.00040*
DUPLICATE SAMPLES										
Buffalo Creek	BC3 REP 1	29-Oct-11	<0.00010	<0.00010	0.00041	0.00064	<0.0020	<0.0050	<0.00040	<0.00040
	BC3 REP 2	29-Oct-11	<0.00010	<0.00010	0.00039	0.00052	<0.0020	<0.0050	<0.00040	<0.00040
		Mean	<0.00010	<0.00010	0.00040	0.00058	<0.0020	<0.0050	<0.00040	<0.00040
		SD	-	-	0.00001	0.00008	-	-	-	-
		RPMD	-	-	-	21	-	-	-	-
TRIPLICATE SAMPLES										
Lake Winnipeg	LKW6 REP 1	28-Oct-11	0.00112	0.00116	0.0016	0.0024	<0.0020	<0.0050	<0.00040	<0.00040
	LKW6 REP 2	28-Oct-11	0.00109	0.00119	0.0017	0.0026	<0.0020	<0.0050	<0.00040	<0.00040
	LKW6 REP 3	28-Oct-11	0.00109	0.00121	0.0018	0.00199	<0.0020	<0.0050	<0.00040	<0.00040
		Mean	0.00110	0.001186667	0.0017	0.00233	<0.0020	<0.0050	<0.00040	<0.00040
		SD	0.00002	0.00003	0.0001	0.00031	-	-	-	-
		PRSD	2	2	6	13	-	-	-	-
BLANK										
Field	FIELD BLANK	28-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0050	<0.00040	<0.00040
	FIELD BLANK	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0050	<0.00040	<0.00040
Trip	TRIP BLANK	28-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0050	<0.00040	<0.00040
	TRIP BLANK	28-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0050	<0.00040	<0.00040
	TRIP BLANK	29-Oct-11	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0050	<0.00040	<0.00040

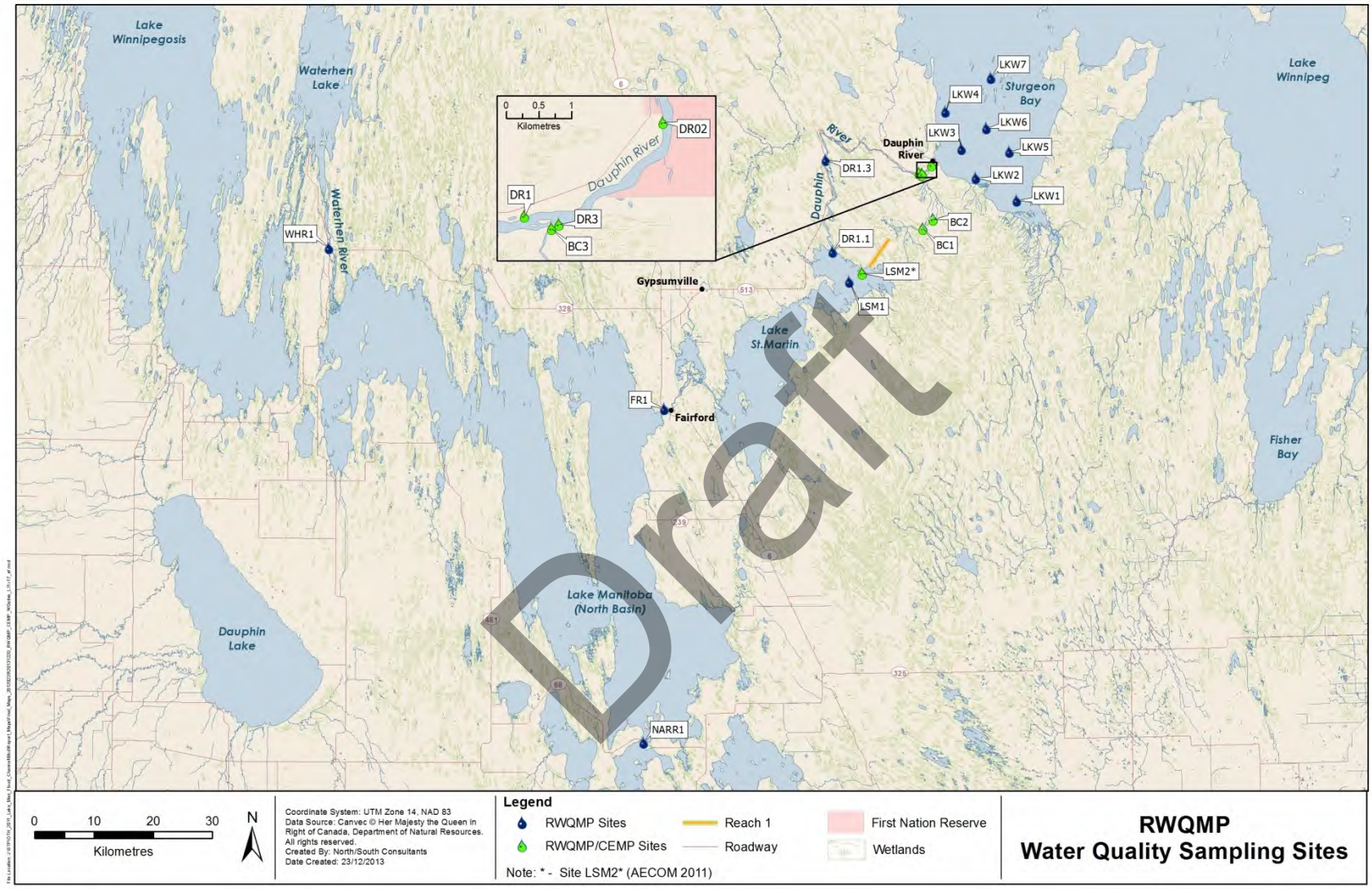

Figure B-1. Location of sites sampled as part of the RWQMP during fall 2011.

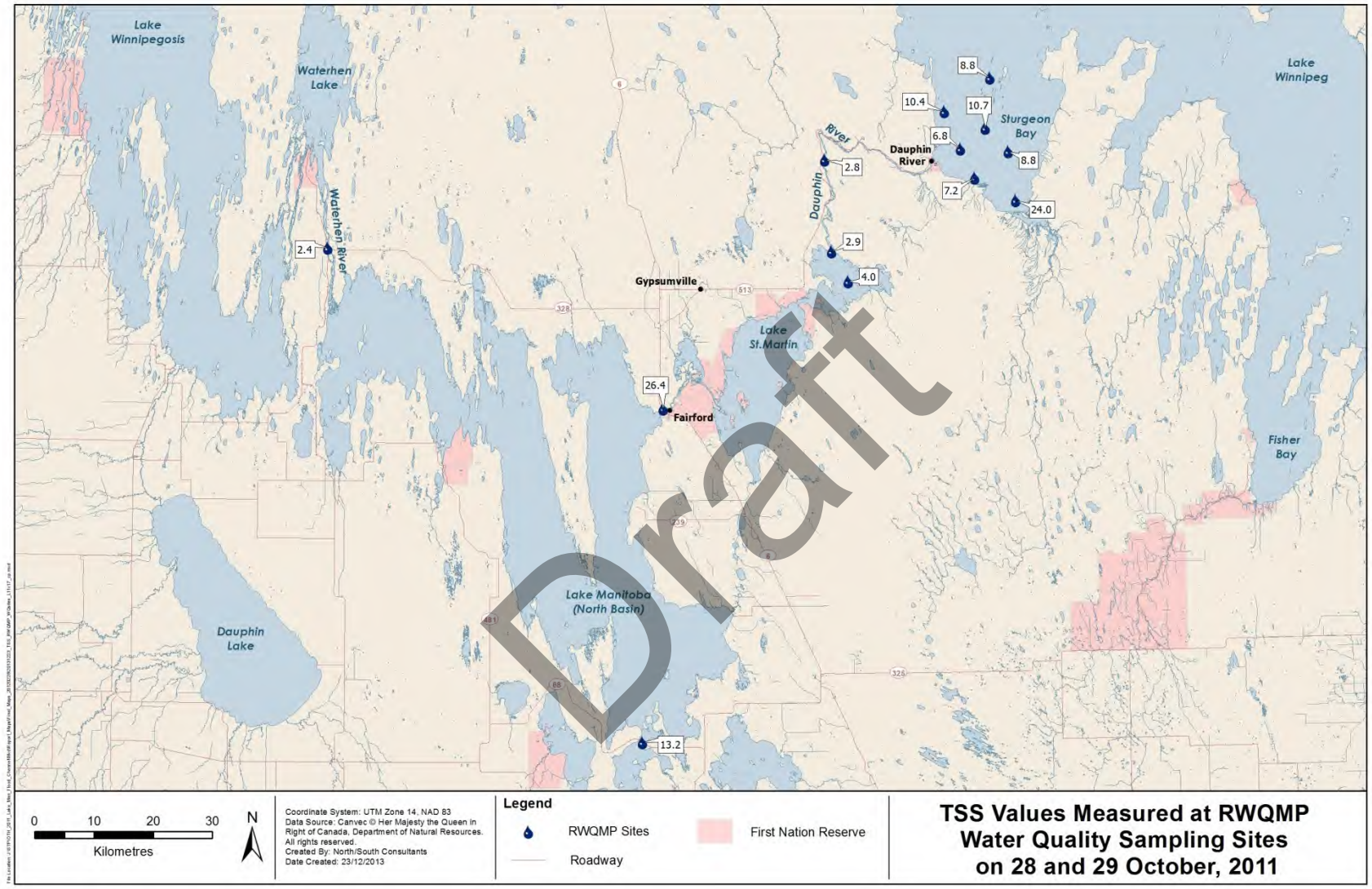

Figure B-2. Total suspended solids (TSS) values (mg/L) measured at RWQMP sites on 28 and 29 October, 2011.

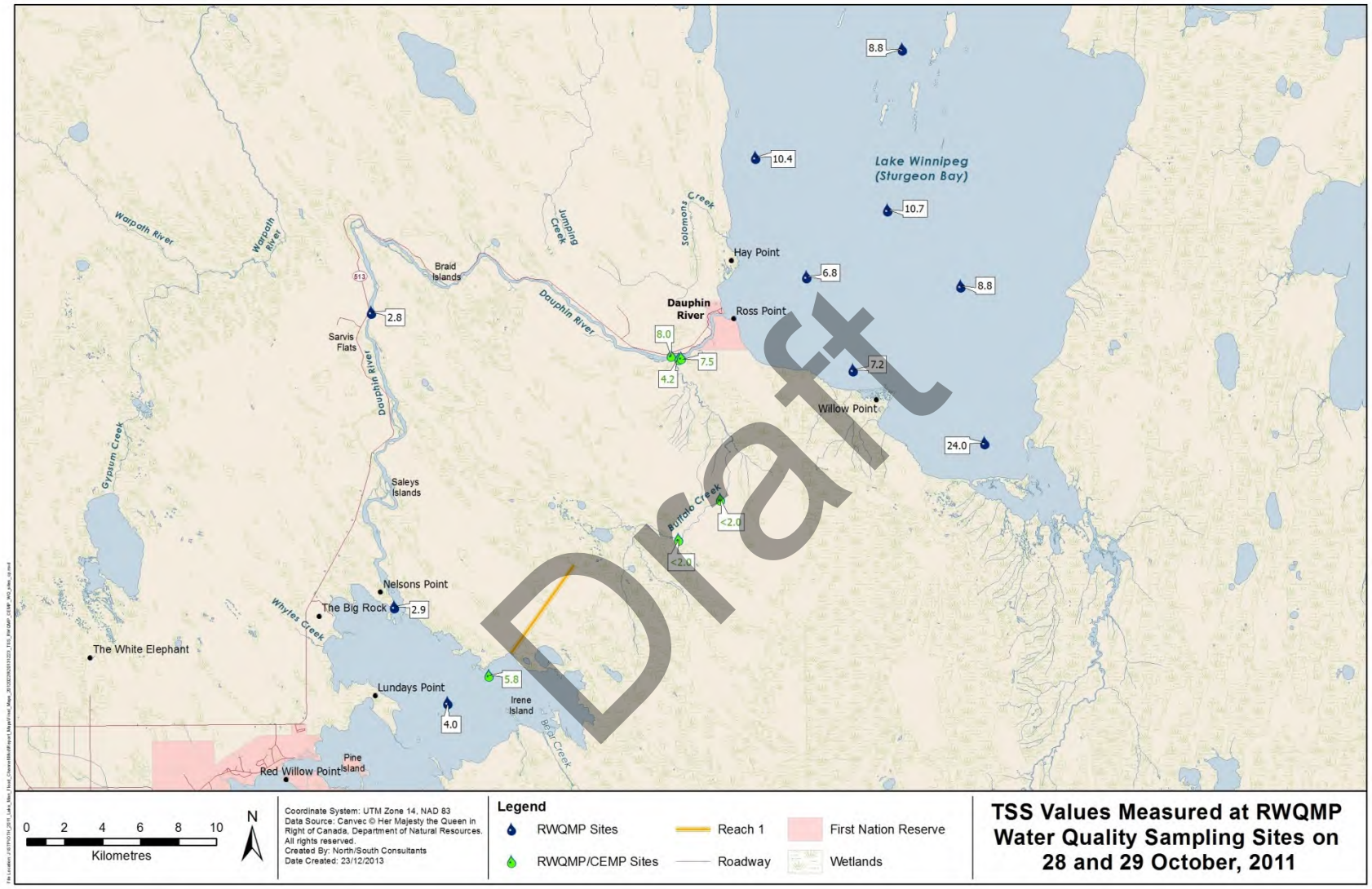

Figure B-3. Total suspended solids (TSS) values (mg/L) measured at RWQMP and RWQMP/LSMEOC sites on 28 and 29 October, 2011.

Appendix C. Regional Water Quality Monitoring Program Methods and Results – 2011/2012 Operation

C1.0 INTRODUCTION

During the conduct of the RWQMP during 2011/2012 Operation, water quality information was collected from all major waterbodies and waterways within the study area that were affected by flooding and encompassed the major inputs to the north basin of Lake Manitoba (i.e., Waterhen River and at the Lake Manitoba Narrows) downstream to and including Sturgeon Bay on Lake Winnipeg. The objectives of the program were:

- to monitor water quality conditions during channel operation;
- to supplement data sets at sites within the study area where Manitoba Water Stewardship, Water Quality Management Branch (MWS) conducts water quality monitoring; and,
- to evaluate spatial differences in water quality within the study area.

Monitoring during operation was comprised of three sampling events, as follows: January; May; and, July, 2012. Each sampling event included *in situ* water quality measurements and the collection of water samples for laboratory analysis. Detailed methods and results are provided below.

C2.0 METHODS

C2.1 SAMPLING SITES

Water quality samples and *in situ* measurements were collected at 17 sites throughout area, including the following:

- Waterhen River - one site at the bridge on PTH # 328 (MWS site MB05LHS002);
- Lake Manitoba - one site at Lake Manitoba Narrows (MWS site MB05LKS009);
- Fairford River - one site at or near the PTH # 6 bridge (MWS site MB05LMS001);
- Lake St. Martin - one site in the north basin;
- Dauphin River - four sites; including one site at or near the outflow from Lake St. Martin, one site at or near the existing MWS site (MWS Site MB05LMS003); one site upstream of the confluence of Buffalo Creek, and one site in the mouth of the Dauphin River and upstream of Sturgeon Bay;
- Buffalo Creek - one site upstream of the confluence with the Dauphin River; and,
- Sturgeon Bay - eight sites, including one near the existing MWS site (MWS Site MB05SES012).

A list of all sampling sites and locations are provided in Table C-1 and illustrated in Figure C-1.

C2.2 SAMPLING METHODS

Water quality sampling was conducted 16-19 January 2012, 16-21 May 2012, and 16-17 July 2012 following RWQMP sampling methods.

In situ measurements were taken using either a Horiba® W22-XD water quality meter, or a combination of YSI handheld meters (either a YSI 63 [temperature, pH and conductivity] and a YSI 550 [DO], or a YSI 85 [temperature, specific conductance and DO] and a YSI 60 [pH]) plus an Analite turbidity meter.

In addition to the usual list of parameters sampled by the RWQMP, samples for the analysis of pesticides and *E. coli* were collected from selected sites during the July sampling period. These parameters were included based on consultation with Manitoba Conservation and Water Stewardship, Water Management Section. A full list of pesticide parameters is provided in Table C-2; this list is consistent with those measured by MCWS in their current water quality monitoring programs in southern/central Manitoba.

Table C-1. Location of sites sampled as part of the RWQMP conducted during channel operation 2012.

Water body	Location Description	Site ID	MWS Site	Sample Period(s)	UTM (Zone 14U)[1]	
					Easting	Northing
Waterhen River	at PTH #328	WHR1	MB05LHS002	Jan/May/July	462204	5742368
Lake Manitoba	at Lake Manitoba Narrows	NARR1	MB05LKS009	Jan/May/July	515348	5658969
Fairford River	near PTH #6	FR1	MB05LMS001	Jan/May/July	518838	5715229
Lake St. Martin	North basin	LSM1	-	Jan	548960	5738247
			-	May/July	550136	5736730
Buffalo Creek		BC3	-	Jan/May/July	562318	5454770
Dauphin River	River inlet at Lake St. Martin	DR1.1	-	May/July	547332	5741774
		DR1.2	-	Jan	546956	5750488
	Between Gypsumville and Anama Bay	DR1.3	MB05LMS003	May/July	546106	5757242
		DR1(Note 2)	-	May/July	561756	5754788
	River mouth at Lake Winnipeg	DR2C	-	May/July	564697	5757098
Sturgeon Bay		LKW1	-	Jan/May/July	578400	5750390
		LKW2	-	Jan/May/July	571480	5754215
		LKW3	-	Jan/May/July	569032	5759095
		LKW3B	-	May/July	567174	5757504
		LKW4	-	Jan/May/July	566327	5765369
		LKW5	-	Jan/May/July	577144	5758612
		LKW6	-	Jan/May/July	573290	5762611
		LKW7	MB05SES012	Jan/May/July	574055	5771081

Table C-2. Pesticide parameters analyzed from selected sites as part of the RWQMP conducted during July 2012.

Parameter	
2,4,6-Tribromophenol	Eptam
2,4-D	Ethalfluralin
2,4-DB	Fenoxaprop
2,4-Dichlorophenylacetic Acid	g-chlordane
2,4-DP	Glyphosate
2-Fluorobiphenyl	Imazamethabenz-methyl
2-Fluorobiphenyl	Lindane
a-chlordane	Malathion
Alachlor	MCPA
alpha-BHC	Mecoprop
Atrazine	Methoxychlor
Atrazine Desethyl	Methyl Parathion
Azinphos-methyl	Metribuzin
Benomyl	Metsulfuron-methyl
beta-BHC	Parathion
Bromacil	Pentachlorophenol
Bromoxynil	Picloram
Carbofuran	Propachlor
Carboxin	Propanil
Chlorothalonil	Propoxur
Chlorpyrifos	Quizalofop
Cyanazine	Sethoxydim
d14-Terphenyl	Simazine
d14-Terphenyl	Terbufos
delta-BHC	Thifensulfuron-methyl
Deltamethrin	Tralkoxydim
Diazinon	Triallate
Dicamba	Tribenuron-methyl
Diclofop-methyl	Triclopyr
Dimethoate	Trifluralin
Dinoseb	Trifluralin
Diuron	

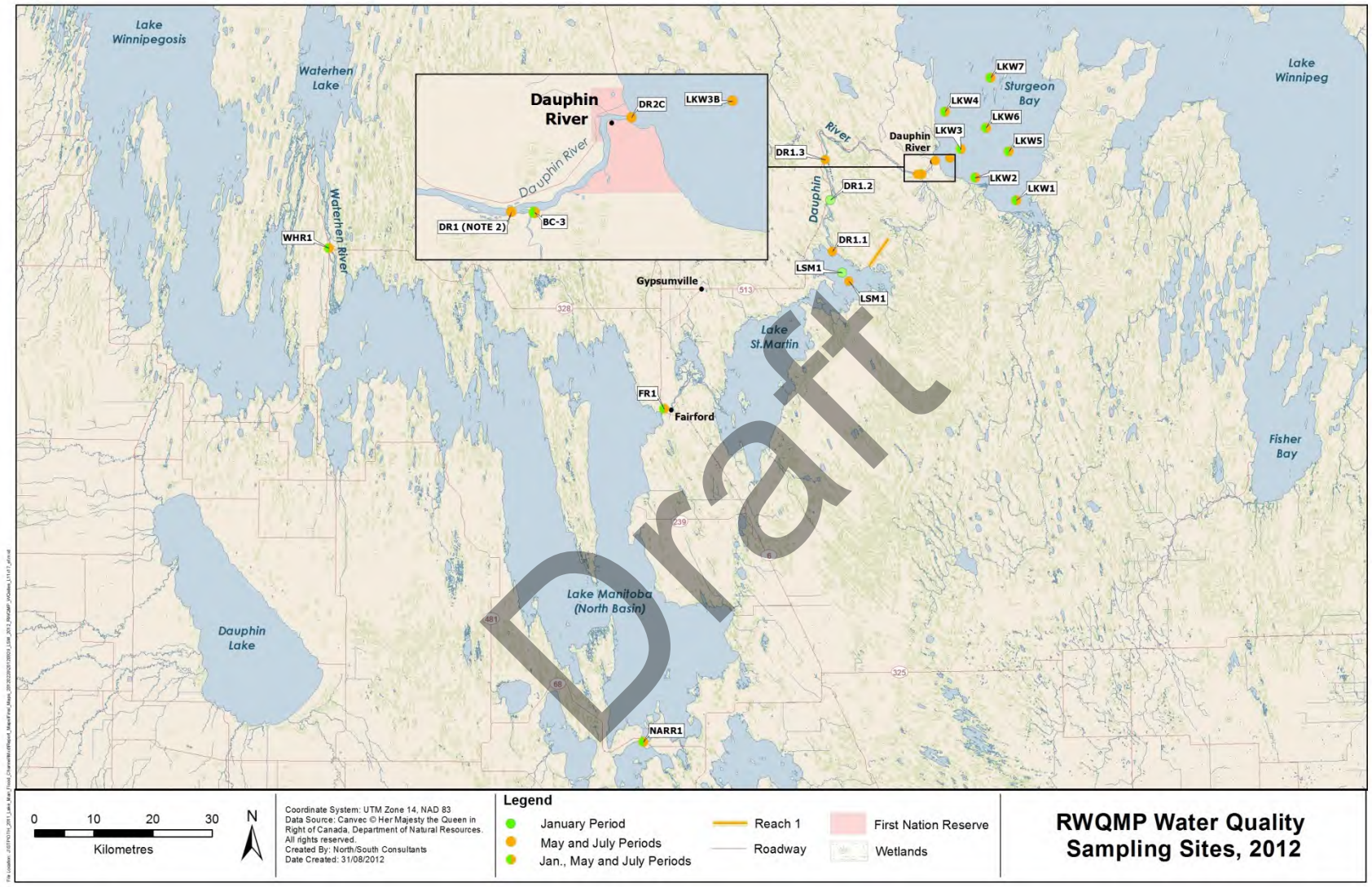

Figure C-1. Location of sites sampled as part of the RWQMP in 2012.

C3.0 RESULTS

Results discussed in this section are presented in Tables C-3 to C-7 and Figures C-4 to C-6. Extremely cold air temperatures during winter sampling caused the Horiba® W22-XD water quality meter to malfunction; as a result, all *in situ* measurements collected in January are suspect. These *in situ* data are therefore not discussed in this report, but are presented in Table C-8. Additionally, all turbidity measurements taken with the Horiba® W22-XD are known to be invalid as this sensor was damaged by the cold and needed to be replaced. The Horiba® W22-XD was used at all sites in January and at sites accessed by helicopter in May, including: DR2C; DR1 (NOTE2); and BC3. These data have not been reported for winter and have been identified as suspect for May.

C3.1 ROUTINE VARIABLES AND LIMNOLOGY

Results for routine water quality parameters are presented in Tables C-3 to C-5.

Water quality of the study area can be generally described as moderately nutrient-rich, low to moderately turbid, slightly alkaline, hard to very hard, and well-oxygenated. Both Lake St. Martin and Sturgeon Bay were isothermal during each sampling period in 2012. Other *in situ* variables, including DO, turbidity, pH, and specific conductance, were relatively consistent across depth in both lakes.

Total phosphorus (TP) concentrations in the study area were composed of a mix of dissolved and particulate forms with the proportions varying by site and sampling period (Figure C-2). Generally, in January much of the TP was present in dissolved form, where as in July, the majority of the TP was in particulate form; the dominant form varied by site in May. The majority of total nitrogen was present in organic form at all sites, with ammonia generally comprising a greater amount of dissolved inorganic nitrogen than nitrate/nitrite. On the basis of TN:TP molar ratios, all waterbodies sampled were phosphorus limited (i.e., TN:TP ratio > 20).

The water quality of Sturgeon Bay was influenced by the Dauphin River; such that, sites closest to the mouth exhibited routine water quality similar to upstream sites, including: higher alkalinity; higher conductivity and TDS; higher total nitrogen; lower carbon concentrations and, higher chlorophyll *a* (e.g., Figure C-3). This trend was particularly evident during the open-water season.

TP exceeded the MWQSOGs narrative guideline for phosphorus for lakes (i.e., 0.025 mg/L) in Sturgeon Bay near the mouth of the Dauphin River (LKW3B and LKW3) in May, and at four sites in Sturgeon Bay in July (LKW4, 5, 6 and 7). Additionally, TP exceeded this guideline at LKW7 in January (0.108 mg/L); however, this result is considered suspect. All applicable measurements were within the narrative guideline for streams (0.050 mg/L). DO concentrations were below the MWQSOGs for PAL 30 day averaging objective for the protection of cold water aquatic life (6.5 mg/L) and the CCME lowest acceptable concentration for the protection of cold-water aquatic life (6.5 mg/L) in Sturgeon Bay near the Dauphin River mouth (LKW3 and LKW3B) within the lower 2 m of the water column during the July sampling period. DO measurements taken in January, 2012 are considered suspect, therefore adherence to the MWQSOGs objectives and CCME guidelines for PAL for DO were not assessed for this sampling

period. All other DO measurements were within applicable MWQSOGs and CCME guidelines. All other routine water quality variables for which there are MWQSOGs and CCME guidelines, including pH, ammonia, nitrate and nitrite were within PAL objectives and guidelines.

Colour exceeded the MWQSOGs aesthetic objective for drinking water (≤15 TCU) at Buffalo Creek in July and at three sites in Lake Winnipeg; two in January (LKW6 and LKW7) and one in May (LKW1). The MWQSOGs aesthetic objective for drinking water for TDS was exceeded at the Waterhen River, Lake Manitoba Narrows, the Fairford River, Lake St. Martin, the Dauphin River, Buffalo Creek and at most sites and times in Sturgeon. Additionally, laboratory measured pH was above the range for the aesthetic objective for drinking water at Lake Manitoba Narrrows, the Fairford River, Lake St. Martin, and at all sites sampled in the Dauphin River in May and July; and, at the Waterhen River, and most sites in Sturgeon Bay (LKW1, 2, 3, 3B, 4 and 6) in July. All other routine water quality variables for which there are MWQSOGs, including nitrate, nitrite, and nitrate/nitrite were within guidelines for drinking water.

C3.2 METALS AND MAJOR IONS

Metal and major ion concentrations measured in the study area in 2012 are presented in Table C-7. Cesium (total and dissolved forms) was not detected at any site. Additionally, several metals were not detected in dissolved form at any site, including: beryllium; bismuth; silver; tellurium; thallium; thorium; and, tungsten. Barium, calcium, chloride, fluoride, lithium, magnesium, total manganese, potassium, rubidium, silicon, sodium, strontium, sulphate, and total uranium were consistently detected; the remaining metals and major ions were detected in some samples.

Concentrations of the major ions (i.e., calcium, chloride, magnesium, potassium, sodium, and sulphate) tended to be higher at sites closer to the Dauphin River outflow (LKW3B, LKW3 and LKW2) than at the other sites sampled in Sturgeon Bay, reflecting the higher concentration of these substances at upstream waterbodies in the region relative to Lake Winnipeg (e.g., Figure C-4). Additionally, total iron concentrations were typically high in Sturgeon Bay relative to the rest of the study area. However, iron concentrations similar to Sturgeon Bay were measured at Lake Manitoba Narrows and Buffalo Creek in January and July and at Fairford River in July.

Mercury concentrations well above the analytical detection limit (1.0 ng/L) were measured in Sturgeon Bay in May; as well as, at most sites upstream of Lake Winnipeg and in Sturgeon Bay at the sites closest to the mouth of the Dauphin River in July (Figure C-5). Particularly high concentrations of total mercury were measured at LKW2 in May (13.0 ng/L) and at Buffalo Creek in July (4.2 ng/L). Methyl mercury was typically near or below analytical detection limits; however, methyl mercury concentrations well above the analytical detection limit (0.1 ng/L) were measured at Buffalo Creek, the mouth of the Dauphin River and at sites near the river mouth in Sturgeon Bay in July (Figure C-6). Both mercury and methyl-mercury were below analytical detection limits at all sites sampled in January.

Aluminum exceeded the MWQSOGs and CCME guideline for PAL (0.1 mg/L) at Lake Manitoba Narrows in May 2012; at Buffalo Creek and two sites on the Dauphin River (DR1 (NOTE 2) and DR2C) upstream and downstream of Buffalo Creek in May and July 2012; and, at all sites in Sturgeon Bay on at least one occasion. Cadmium concentrations exceeded the CCME guideline for PAL at Waterhen River, Lake

Manitoba Narrows, and the Fairford River in July. At the majority of sites and times chloride concentrations exceeded the CCME long-term guideline for PAL (120 mg/L), the exceptions were LKW3, 4, and 7 in January, and LKW7 in July. Chloride concentrations were well below the CCME short-term guideline for PAL (640 mg/L) at all sites and times sampled. Fluoride concentrations exceeded the CCME guideline for PAL (0.12 mg/L) at most sites and times, the exception was the Waterhen River in July. Iron concentrations were above the MWQSOGs and CCME guideline for PAL (0.3 mg/L) at two sites in Sturgeon Bay (LKW3 and LKW3B) during the May sampling period; iron concentrations were below these guidelines in all other samples collected. The selenium concentrations in the samples collected at the mouth of Buffalo Creek (BC3) and at site one in Sturgeon Bay (LKW1) in January; and, the samples collected at the Waterhen River, Lake Manitoba Narrows, the Fairford River, the inlet (DR1.1) and the mouth (DR2C) of the Dauphin River, the mouth of Buffalo Creek (BC3) and at site two sites in Sturgeon Bay (LKW2 and LKW4) in May were above the MWQSOG and CCME guideline for PAL. Silver concentrations were above the MWQSOGs and CCME guideline for PAL (0.0001 mg/L) in at all but two sites in Sturgeon Bay (LKW3 and LKW3B) in May. The analytical detection limits for selenium (0.001 mg/L) and silver (0.0001 mg/L) are equal to the guidelines therefore exceedances for these parameters should be viewed with caution. All other metals and major ions for which there are MWQSOGs or CCME guidelines for PAL were within objectives and guidelines at all other sites and times sampled in 2012.

Iron concentrations exceeded the MWQSOGs aesthetic objective for drinking water (0.3 mg/L) at two sites in Sturgeon Bay (LKW3 and LKW7) during the May sampling period. All other metals and major ions for were within the existing MWQSOGs for drinking water.

C3.3 PESTICIDES

Pesticides were measured at selected sites in July, including: the Fairford River (FR1), Dauphin River (DR1.1 and DR2C) and Sturgeon Bay (LKW7). The results of this analysis are presented in Table C-8. Glyphosate was measured at concentrations above the analytical detection limit (0.20 µg/L) at all sites sampled; and, 2,4-D was measured at a concentration equal to the analytical detection limit (0.050 µg/L) at the mouth of the Dauphin River (DR1.1). All other pesticides were below analytical detection limits. Glyphosate concentrations did not exceed the MWQSOGs or CCME guideline for PAL, or the MWQSOGs for drinking water in any samples collected in July 2012. Additionally, the concentration of 2,4-D measured at DR1.1 was well below all applicable provincial and CCME guidelines.

C3.4 QA/QC

Quality assurance and quality control results are presented in Tables C-9 to C-11.

C3.4.1 Field and Trip Blanks

Field and trip blank results generally indicate high precision and no sample contamination. The concentrations of dissolved and total methyl-mercury were reported to be greater than five times the detection limit in one of three field blanks submitted to the analytical laboratory in January. Additionally, TP was reported to be greater than five times the detection limit in one of three field

blanks submitted in May. Measurements for all other parameters (metals, dissolved metals and routine parameters) were below the threshold of five times the detection limit.

C3.4.2 Replicate Samples

PRSD values were not derived for several parameters due to low concentrations (i.e., concentrations less than five times the DL). In general, the results indicate good agreement between samples and acceptable levels of precision. The PRSD exceeded threshold values (18%) for thirteen parameters including: ammonia; TP; dissolved phosphorus; TSS; chlorophyll *a*; pheophytin *a*; aluminum; arsenic; boron; copper; silicon; titanium; and, vanadium.

Table C-3. *In situ* water quality measurements recorded as part of the RWQMP in May, 2012. Values in blue italics are considered suspect.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Waterhen River	WHR1	16-May-12	15:16	-	0.3	14.80	10.13	100	858	7.0	8.01	-
Lake Manitoba	NARR1	16-May-12	10:30	-	0.3	14.10	10.76	103	1114	15.4	7.84	-
Fairford River	FR1	16-May-12	12:48	-	0.3	14.90	10.99	109	1134	9.81	8.38	-
Lake St. Martin	LSM1	17-May-12	11:25	2.5	0.3	13.40	10.4	101	1134	5.38	8.41	-
					0.5	13.30	10.5	100	1135	5.49	8.45	
					1.0	12.70	10.6	101	1135	5.82	8.41	
					1.5	12.70	10.7	101	1135	5.84	8.36	
					2.0	12.60	10.7	101	1137	4.59	8.34	
Buffalo Creek	BC3	16-May-12	14:10	-		14.26	7.12	70	1200	*93.1*	7.70	-
Dauphin River	DR1.1	17-May-12	9:40	1.90	0.3	13.10	10.37	99	1115	6.37	8.26	1.40
Dauphin River	DR1.3	17-May-12	15:00	1.20	0.3	15.20	10.12	101	1133	6.56	8.28	-
Dauphin River	DR1 (NOTE 2)	16-May-12	10:50	-	0.3	14.26	8.70	86	1290	*69.2*	8.27	-
Dauphin River	DR2C	16-May-12	10:25	-	0.3	14.15	8.80	87	1220	*62.5*	8.06	-
Lake Winnipeg	LKW1	21-May-12	8:40	4.3	0.3	12.20	9.51	89	917	11.0	8.73	1.9
					0.5	12.30	8.89	86	916	11.1	8.72	
					1.0	12.30	9.19	86	918	10.5	8.69	
					1.5	12.30	8.92	85	917	10.9	8.65	
					2.0	12.30	9.04	86	918	11.5	8.63	
					2.5	12.30	9.08	85	915	11.7	8.62	
					3.0	12.30	9.02	85	918	11.3	8.64	
					3.5	12.30	8.60	80	918	11.6	8.62	
					4.0	12.30	8.92	84	917	11.2	8.60	

Table C-3. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Lake Winnipeg	LKW2	21-May-12	7:43	4.2	0.3	12.60	8.67	82	1098	8.93	8.33	2.25
					0.5	12.60	8.71	81	1098	9.06	8.33	
					1.0	12.60	8.59	81	1098	9.07	8.32	
					1.5	12.60	8.59	84	1098	8.86	8.32	
					2.0	12.60	8.69	82	1097	9.27	8.31	
					2.5	12.60	8.56	80	1097	9.01	8.31	
					3.0	12.60	8.52	81	1097	9.25	8.30	
					3.5	12.60	8.49	81	1098	9.00	8.29	
					4.0	12.60	8.48	81	1098	9.50	8.29	
Lake Winnipeg	LKW3	19-May-12	11:10	6.7	0.3	12.40	8.98	86	1007	15.4	8.51	0.65
					1.0	12.40	8.70	81	1007	15.3	8.51	
					2.0	12.40	8.53	81	1008	15.5	8.44	
					3.0	12.40	8.44	80	1008	15.0	8.45	
					4.0	12.40	8.82	84	1008	17.6	8.45	
					5.0	12.40	8.94	81	1007	17.8	8.47	
					6.0	12.40	8.93	86	1007	18.8	8.46	
Lake Winnipeg	LKW3B	19-May-12	-	5.3	0.3	13.00	8.97	85	1079	25.3	8.20	0.45
					1.0	13.00	8.89	85	1081	24.8	8.24	
					2.0	13.00	8.83	85	1079	24.9	8.24	
					3.0	13.00	8.81	84	1079	24.8	8.25	
					4.0	13.00	8.78	83	1078	24.7	8.25	
					5.0	13.00	8.67	83	1079	25.4	8.24	
Lake Winnipeg	LKW4	21-May-12	11:00	7.0	0.3	12.10	8.89	83	914	6.29	8.93	1.40
					1.0	12.00	8.51	80	913	6.36	8.77	
					2.0	11.90	8.65	81	913	6.72	8.68	
					3.0	11.70	8.75	81	914	6.68	8.61	
					4.0	11.70	8.88	81	916	6.84	8.6	
					5.0	11.70	8.52	80	916	7.13	8.51	
					6.0	11.70	8.43	78	916	6.79	8.49	

Table C-3. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
					6.5	11.70	8.20	77	917	6.78	8.48	
Lake Winnipeg	LKW5	21-May-12	9:15	7.2	0.3	12.10	8.83	83	961	9.40	8.94	1.10
					1.0	12.10	8.79	82	961	8.84	8.32	
					2.0	12.10	8.52	80	961	9.55	8.79	
					3.0	12.10	8.45	80	961	8.76	8.63	
					4.0	12.10	8.70	82	961	9.30	8.65	
					5.0	12.10	8.78	82	968	9.60	8.64	
					6.0	12.10	8.63	81	970	9.31	8.61	
					7.0	12.10	7.92	80	970	9.30	8.58	
Lake Winnipeg	LKW6	21-May-12	9:45	8.1	0.3	11.40	8.94	82	852	6.95	8.79	1.25
					1.0	11.40	8.91	82	852	6.87	8.71	
					2.0	11.40	8.87	81	853	7.02	8.61	
					3.0	11.40	8.75	81	857	7.01	8.57	
					4.0	11.30	8.77	81	855	7.23	8.54	
					5.0	11.30	8.62	80	855	7.35	8.53	
					6.0	11.30	8.73	80	856	7.37	8.54	
					7.0	11.30	8.56	80	857	7.38	8.54	
					8.0	11.30	8.62	80	857	7.60	8.53	
Lake Winnipeg	LKW7	21-May-12	10:20	6.5	0.3	11.30	8.66	79	848	6.45	8.73	1.50
					1.0	11.30	8.62	79	848	6.67	8.54	
					2.0	11.00	8.67	79	844	7.12	8.22	
					3.0	10.90	8.63	80	841	7.10	8.34	
					4.0	10.90	8.55	78	842	7.50	8.37	
					5.0	10.90	8.76	79	842	7.36	8.29	
					6.0	10.80	8.79	79	840	7.34	8.30	

Table C-4. *In situ* water quality measurements recorded as part of the RWQMP in July, 2012.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Waterhen River	WHR-1	16-Jul-12	15:55	-	0.3	23.20	8.30	97	1071	1.40	7.85	-
Lake Manitoba	NARR2	16-Jul-12	10:02	-	0.3	23.20	7.01	83	1102	7.80	8.32	-
Fairford River	FR1	16-Jul-12	13:00	-	0.3	23.30	8.22	97	1069	9.09	8.42	-
Lake St. Martin	LSM1	17-Jul-12	10:30	2.4	0.3	21.80	8.17	93	1097	15.4	8.33	0.80
					0.5	21.80	8.13	92	1033	16.1	8.34	
					1.0	21.90	8.17	93	1035	15.3	8.32	
					1.5	21.90	8.10	93	1037	15.3	8.29	
					2.0	22.00	8.19	93	1103	14.9	8.31	
					2.5	21.90	8.23	94	1106	14.4	8.29	
Buffalo Creek	BC3	17-Jul-12	18:40	-	0.3	23.60	7.46	87	1096	12.8	8.06	-
Dauphin River	DR1.1	17-Jul-12	11:40	1.9	0.3	22.00	8.22	94	1103	13.0	8.43	1.10
					0.5	22.00	7.99	91	1097	12.8	8.38	
					1.0	22.00	8.13	93	1094	13.0	8.37	
					1.5	22.00	8.29	95	1096	11.4	8.37	
Dauphin River	DR1.3	17-Jul-12	13:30	-	0.3	23.10	9.08	106	1084	15.3	8.36	-
Dauphin River	DR1 (NOTE 2)	17-Jul-12	18:00	-	0.3	23.40	8.80	104	1089	16.4	8.39	-
Dauphin River	DR2C	17-Jul-12	16:08	-	0.3	23.40	8.43	99	1089	13.8	8.38	-
Lake Winnipeg	LKW1	17-Jul-12	11:46	4.5	0.3	23.20	7.90	91	972	8.86	8.39	0.85
					1.0	23.20	7.76	91	972	9.39	8.23	
					1.5	23.20	7.78	91	972	9.97	8.22	
					2.0	23.20	7.75	91	973	9.26	8.19	
					2.5	23.10	7.76	91	972	9.97	8.14	
					3.0	23.10	7.72	90	972	9.65	8.11	

Table C-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
					3.5	23.00	7.65	90	971	9.52	8.07	
					4.0	22.90	7.52	88	971	9.12	8.03	
Lake Winnipeg	LKW2	17-Jul-12	12:37	4.2	0.3	23.40	7.27	86	975	9.30	8.34	1.00
					1.0	23.40	7.31	86	976	10.5	8.29	
					1.5	23.30	7.37	87	975	9.47	8.26	
					2.0	23.30	7.31	86	976	9.56	8.23	
					2.5	23.10	7.20	84	974	9.62	8.18	
					3.0	23.10	7.16	84	975	10.0	8.13	
					3.5	22.80	7.17	84	976	9.45	8.11	
					4.0	22.80	7.03	82	976	10.3	8.06	
Lake Winnipeg	LKW3	17-Jul-12	13:12	6.6	0.3	23.40	7.44	88	964	5.56	8.45	1.50
					1.0	23.20	7.37	86	964	5.14	8.28	
					2.0	22.70	6.93	81	963	5.69	8.17	
					3.0	22.70	6.85	79	965	5.77	8.10	
					4.0	22.70	6.75	78	967	-	8.01	
					5.0	22.50	6.40	75	957	-	7.79	
					6.0	22.40	6.31	73	956	-	7.71	
Lake Winnipeg	LKW3B	17-Jul-12	14:05	5.6	0.3	23.10	7.25	85	1011	-	8.39	0.65
					1.0	23.00	7.17	84	1012	-	8.28	
					2.0	22.90	7.14	84	1033	-	8.12	
					3.0	22.80	6.74	78	1045	-	8.03	
					4.0	22.50	6.25	72	1065	-	7.86	
					5.0	22.40	6.18	72	1068	-	7.75	
Lake Winnipeg	LKW4	17-Jul-12	8:20	7.0	0.3	22.50	7.32	85	957	6.37	8.25	1.50
					1.0	22.50	7.31	86	959	6.85	8.09	
					2.0	22.50	7.37	85	958	6.31	8.02	
					3.0	22.50	7.38	85	958	7.11	7.93	
					4.0	22.50	7.33	85	958	7.16	7.87	

Table C-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
					5.0	22.50	7.32	85	958	7.22	7.80	
					6.0	22.50	7.31	85	958	7.31	7.62	
Lake Winnipeg	LKW5	17-Jul-12	11:07	7.3	0.3	22.70	7.86	91	924	12.9	8.18	1.05
					1.0	22.60	7.89	92	923	11.1	8.11	
					2.0	22.60	7.87	91	922	11.2	8.07	
					3.0	22.60	7.71	90	920	11.8	7.99	
					4.0	22.50	7.77	90	919	12.1	7.93	
					5.0	22.50	7.63	88	919	11.7	7.85	
					6.0	22.50	7.65	88	923	11.1	7.78	
Lake Winnipeg	LKW6	17-Jul-12	10:12	9.0	0.3	22.70	7.22	82	933	16.9	8.12	0.65
					1.0	22.60	7.08	82	932	17.0	8.09	
					2.0	22.60	7.00	83	929	17.1	8.03	
					3.0	22.50	7.05	84	927	18.1	7.97	
					4.0	22.50	7.01	83	928	17.6	7.91	
					5.0	22.50	7.06	82	926	17.7	7.85	
					6.0	22.50	7.16	84	923	17.7	7.78	
					7.0	22.50	7.25	84	918	17.9	7.74	
					8.0	22.50	7.15	83	898	17.9	7.65	
Lake Winnipeg	LKW7	17-Jul-12	9:22	6.6	0.3	21.60	7.29	83	712	20.1	8.11	0.50
					1.0	21.60	7.06	81	713	20.7	8.04	
					2.0	21.60	7.12	80	712	21.1	7.96	
					3.0	21.60	7.02	80	713	21.0	7.88	
					4.0	21.60	7.12	80	712	22.0	7.81	
					5.0	21.60	7.09	80	712	21.0	7.72	

Table C-5. Laboratory results for routine water quality parameters at RWQMP sites during channel operation, 2012. Values in blue italics are considered suspect.

				Alkalinity				Nitrogen		
Sample Location	**Location ID**	**Sample Date**	**Lab pH**	**Total, as CaCO3 (mg/L)**	**as Bicarbonate (HCO3-) (mg/L)**	**as Carbonate (CO32-) (mg/L)**	**as Hydroxide (OH-) (mg/L)**	**Ammonia (mg N/L)**	**Nitrate/nitrite (mg N/L)**	**Nitrate-N (mg N/L)**
Analytical Detection Limits			*0.10*	*1.0*	*1.2/2*	*0.60*	*0.34/0.4/6.8*	*0.010*	*0.0051*	*0.0050*
Waterhen River	WHR1	16-Jan-12	7.95	166	203	<0.60	<0.40	0.088	0.0168	0.0154
		16-May-12	8.37	173	204	<12.0	<6.80	0.012	<0.0051	<0.0050
		16-Jul-12	8.52	154	181	<12	<6.8	0.011	<0.0051	<0.0050
Lake Manitoba	NARR1	16-Jan-12	8.38	233	272	4.04	<0.40	0.039	<0.0051	0.0051
		16-May-12	8.55	203	229	<12.0	<6.80	0.017	<0.0051	<0.0050
		16-Jul-12	8.65	202	223	<12	<6.8	0.043	0.0053	0.0053
Fairford River	FR1	16-Jan-12	8.46	219	250	6.28	<0.40	0.04	0.0092	0.0073
		16-May-12	8.59	208	232	<12.0	<6.80	0.025	<0.0051	<0.0050
		16-Jul-12	8.63	177	194	<12	<6.8	0.017	<0.0051	<0.0050
Lake St. Martin	LSM1	19-Jan-12	8.36	225	264	2.95	<0.40	0.093	0.020	0.0184
		17-May-12	8.55	207	235	<12.0	<6.80	0.013	<0.0051	<0.0050
		17-Jul-12	8.57	192	215	<12	<6.8	0.014	<0.0051	<0.0050
Buffalo Creek	BC3	17-Jan-12	8.24	226	275	<0.60	<0.40	0.065	0.0253	0.0241
		16-May-12	8.35	206	246	<12.0	<6.80	0.001	<0.0051	<0.0050
		17-Jul-12	8.32	194	231	<12	<6.8	0.030	0.0091	0.0091
Dauphin River	DR1.1	17-May-12	8.56	206	233	<12.0	<6.80	0.012	<0.0051	<0.0050
		17-Jul-12	8.55	192	216	<12	<6.8	0.021	<0.0051	<0.0050
	DR1.2	19-Jan-12	8.26	229	280	<0.60	<0.40	0.114	0.0285	0.0257
	DR1.3	17-May-12	8.54	207	237	<12.0	<6.80	0.018	<0.0051	<0.0050
		17-Jul-12	8.56	189	213	<12	<6.8	0.017	<0.0051	<0.0050
	DR1 (NOTE 2)	16-May-12	8.53	207	235	<12.0	<6.80	0.016	<0.0051	<0.0050
		17-Jul-12	8.57	188	211	<12	<6.8	0.022	<0.0051	<0.0050

Table C-5. Continued.

Sample Location	Location ID	Sample Date	Lab pH	Alkalinity				Nitrogen		
				Total, as CaCO3 (mg/L)	as Bicarbonate (HCO3-) (mg/L)	as Carbonate (CO32-) (mg/L)	as Hydroxide (OH-) (mg/L)	Ammonia (mg N/L)	Nitrate/nitrite (mg N/L)	Nitrate-N (mg N/L)
	DR2C	16-May-12	8.52	206	235	<12.0	<6.80	0.018	<0.0051	<0.0050
		17-Jul-12	8.51	189	216	<12	<6.8	0.019	<0.0051	<0.0050
Lake Winnipeg	LKW1	18-Jan-12	8.15	213	260	<0.60	<0.40	0.026	0.0359	0.0339
		21-May-12	8.48	178	206	<12	<6.8	0.013	<0.0051	<0.0050
		17-Jul-12	8.56	186	207	<12	<6.8	0.012	<0.0051	<0.0050
	LKW2	18-Jan-12	8.18	228	278	<0.60	<0.40	0.076	0.0301	0.0283
		21-May-12	8.47	206	239	<12	<6.8	0.013	<0.0051	<0.0050
		17-Jul-12	8.58	188	208	<12	<6.8	0.014	<0.0051	<0.0050
	LKW3	18-Jan-12	8.38	173	201	3.21	<0.40	0.016	<0.0051	<0.0050
		19-May-12	8.42	191	225	<12.0	<6.80	0.013	<0.0051	<0.0050
		17-Jul-12	8.56	183	204	<12	<6.8	0.014	0.0218	0.0208
	LKW3B	19-May-12	8.41	203	239	<12.0	<6.80	0.015	<0.0051	<0.0050
		17-Jul-12	8.56	187	209	<12	<6.8	0.014	0.0177	0.0177
	LKW4	18-Jan-12	8.19	172	210	<0.60	<0.40	0.015	0.0057	0.0057
		21-May-12	8.45	177	206	<12	<6.8	0.012	<0.0051	<0.0050
		17-Jul-12	8.52	182	205	<12	<6.8	0.019	<0.0051	<0.0050
	LKW5	18-Jan-12	8.31	207	246	1.64	<0.40	0.033	0.0091	0.0091
		21-May-12	8.44	166	195	<12	<6.8	0.011	<0.0051	<0.0050
		17-Jul-12	8.50	178	202	<12	<6.8	0.027	<0.0051	0.0050
	LKW6	18-Jan-12	8.34	198	233	2.55	<0.40	0.033	0.0062	0.0062
		21-May-12	8.44	167	196	<12	<6.8	0.01	<0.0051	<0.0050
		17-Jul-12	8.52	180	203	<12	<6.8	0.021	0.0070	0.0070
	LKW7	18-Jan-12	8.29	163	198	<0.60	<0.40	0.031	0.0171	0.0171
		21-May-12	8.43	166	195	<12	<6.8	<0.010	<0.0051	<0.0050
		17-Jul-12	8.46	150	172	<12	<6.8	0.018	0.0103	0.0103

Table C-5. Continued.

Sample Location	Location ID	Sample Date	Nitrogen				Phosphorus			
			Nitrite-N (mg N/L)	Dissolved Inorganic N (mg/L)	Total Kjeldahl N (mg/L)	Total N (mg/L)	Total P (mg/L)	Dissolved P (mg/L)	Total Particulate (mg/L)	Dissolved Fraction (%)
Analytical Detection Limits			*0.0010*	-	*0.20*	-	*0.010/0.0010*	*0.0010/0.0020/0.010*	*0.010/0.014*	-
Waterhen River	WHR1	16-Jan-12	0.0014	0.105	0.87	0.89	0.014	0.012	<0.014	86
		16-May-12	<0.0010	0.015	0.81	0.81	0.015	0.011	<0.014	73
		16-Jul-12	<0.0010	0.014	0.82	0.82	0.016	0.0034	0.013	21
Lake Manitoba	NARR1	16-Jan-12	<0.0010	0.042	1.08	1.08	0.021	0.009	<0.014	43
		16-May-12	<0.0010	0.020	0.94	0.94	0.025	0.011	0.014	44
		16-Jul-12	<0.0010	0.048	1.04	1.05	0.021	0.0041	0.017	20
Fairford River	FR1	16-Jan-12	0.0019	0.049	0.96	0.97	0.014	0.010	<0.014	71
		16-May-12	<0.0010	0.027	0.92	0.93	0.013	0.0110	<0.014	83
		16-Jul-12	<0.0010	0.020	0.85	0.85	0.012	0.0037	<0.010	31
Lake St. Martin	LSM1	19-Jan-12	0.0016	0.113	1.04	1.06	0.012	0.012	<0.014	100
		17-May-12	0.0012	0.049	0.99	0.99	0.019	0.0033	0.0152	17
		17-Jul-12	<0.0010	0.016	0.92	0.93	0.016	0.0039	0.012	25
Buffalo Creek	BC3	17-Jan-12	0.0012	0.090	0.97	1.00	0.014	0.012	<0.014	86
		16-May-12	<0.0010	0.026	0.91	0.94	0.011	0.0110	<0.014	97
		17-Jul-12	<0.0010	0.039	0.97	0.98	0.021	0.0055	0.015	26
Dauphin River	DR1.1	17-May-12	0.0017	0.015	0.98	0.98	0.028	0.003	0.0253	11
		17-Jul-12	<0.0010	0.024	1.05	1.05	0.019	0.0038	0.015	20
	DR1.2	19-Jan-12	0.0028	0.143	1.07	1.10	0.022	0.014	<0.014	64
	DR1.3	17-May-12	0.0010	0.021	0.98	0.98	0.021	0.0033	0.0179	16
		17-Jul-12	<0.0010	0.020	1.02	1.02	0.018	0.0053	0.013	29
	DR1 (NOTE 2)	16-May-12	<0.0010	0.019	1.01	1.01	0.013	0.0038	0.0096	29
		17-Jul-12	<0.0010	0.025	1.06	1.06	0.019	0.0050	0.014	26

Table C-5. Continued.

Sample Location	Location ID	Sample Date	Nitrogen				Phosphorus			
			Nitrite-N (mg N/L)	Dissolved Inorganic N (mg/L)	Total Kjeldahl N (mg/L)	Total N (mg/L)	Total P (mg/L)	Dissolved P (mg/L)	Total Particulate (mg/L)	Dissolved Fraction (%)
	DR2C	16-May-12	<0.0010	0.043	1.00	1.00	0.018	0.0034	0.0144	19
		17-Jul-12	<0.0010	0.022	0.99	0.99	0.018	0.0054	0.013	30
Lake Winnipeg	LKW1	18-Jan-12	0.002	0.062	0.95	0.99	0.013	0.0028	0.011	21
		21-May-12	<0.0010	0.016	0.70	0.70	0.016	0.011	<0.014	69
		17-Jul-12	<0.0010	0.015	0.74	0.74	0.020	0.0048	0.015	24
	LKW2	18-Jan-12	0.0018	0.106	1.01	1.04	0.012	0.011	<0.014	92
		21-May-12	<0.0010	0.016	0.90	0.90	0.016	0.008	0.009	51
		17-Jul-12	<0.0010	0.017	0.76	0.76	0.018	0.0042	0.014	23
	LKW3	18-Jan-12	<0.0010	0.019	0.71	0.71	0.013	0.0099	<0.010	76
		19-May-12	<0.0010	0.016	1.19	1.19	0.028	0.011	0.017	39
		17-Jul-12	0.0010	0.036	0.79	0.81	0.019	0.0043	0.015	23
	LKW3B	19-May-12	<0.0010	0.018	1.38	1.38	0.031	0.011	0.020	35
		17-Jul-12	<0.0010	0.032	0.83	0.85	0.021	0.0048	0.016	23
	LKW4	18-Jan-12	<0.0010	0.021	0.75	0.76	0.013	0.003	0.01	23
		21-May-12	<0.0010	0.015	0.73	0.73	0.015	0.011	<0.014	73
		17-Jul-12	<0.0010	0.022	0.77	0.77	0.028	0.0056	0.023	20
	LKW5	18-Jan-12	<0.0010	0.042	1.09	1.10	0.025	0.011	<0.014	44
		21-May-12	<0.0010	0.014	0.84	0.84	0.014	0.011	<0.014	79
		17-Jul-12	<0.0010	0.030	0.77	0.77	0.029	0.0110	0.018	38
	LKW6	18-Jan-12	<0.0010	0.039	0.84	0.85	0.017	0.011	<0.014	68
		21-May-12	<0.0010	0.013	0.74	0.74	0.016	0.011	<0.014	69
		17-Jul-12	<0.0010	0.028	0.71	0.72	0.027	0.0087	0.018	32
	LKW7	18-Jan-12	<0.0010	0.048	0.7	0.72	***0.108***	0.019	0.089	18
		21-May-12	<0.0010	<0.001	0.68	0.68	0.015	0.011	<0.014	73
		17-Jul-12	<0.0010	0.028	0.55	0.56	0.030	0.0134	0.017	45

Table C-5. Continued.

Sample Location	Location ID	Sample Date	N:P Molar Ratios			Carbon			C:N Molar Ratios	
			TN:TP	DIN:DP	DIN:TP	Total Inorganic C (mg/L)	Total Organic C (mg/L)	Dissolved Organic C (mg/L)	TOC:ON	TOC:TN
Analytical Detection Limits			-	-	-	*1.0*	*1.0*	*1.0*	-	-
Waterhen River	WHR1	16-Jan-12	140	19.3	16.6	45.3	13.2	11.9	19.7	17.4
		16-May-12	120	2.9	2.1	39.9	12.6	11.8	18.4	18.1
		16-Jul-12	114	8.8	1.9	38.3	12.3	12.4	17.7	17.4
Lake Manitoba	NARR1	16-Jan-12	112	10.0	4.3	61.0	13.5	12.4	15.2	14.6
		16-May-12	83	3.9	1.7	45.9	13.7	12.2	17.3	17.0
		16-Jul-12	110	26.1	5.1	48.0	11.9	11.6	13.9	13.3
Fairford River	FR1	16-Jan-12	153	10.9	7.8	47.3	14.0	12.5	17.8	16.9
		16-May-12	154	5.5	4.5	47.0	13.7	12.5	17.7	17.2
		16-Jul-12	43	11.8	1.0	41.5	12.1	11.7	17.0	16.6
Lake St. Martin	LSM1	19-Jan-12	196	20.9	20.9	51.1	15.4	14.1	19.0	16.9
		17-May-12	120	32.5	5.7	47.1	13.9	12.5	16.6	15.8
		17-Jul-12	131	9.3	2.3	43.4	12.7	11.7	16.3	16.0
Buffalo Creek	BC3	17-Jan-12	157	16.7	14.3	52.0	14.7	13.9	19.0	17.2
		16-May-12	183	5.1	5.0	48.1	13.3	12.9	17.0	16.5
		17-Jul-12	103	15.7	4.1	45.0	13.1	11.9	16.3	15.6
Dauphin River	DR1.1	17-May-12	78	10.7	1.2	47.3	14.1	13	17.0	16.7
		17-Jul-12	123	13.7	2.7	43.1	12.9	11.9	14.6	14.3
	DR1.2	19-Jan-12	111	22.5	14.3	52.6	15.7	13.4	19.2	16.7
	DR1.3	17-May-12	104	13.8	2.2	47.7	14.1	12.8	17.1	16.7
		17-Jul-12	126	8.2	2.4	43.0	13.1	12.0	15.2	14.9
	DR1 (NOTE 2)	16-May-12	172	10.8	3.2	46.8	13.2	12.9	15.5	15.2
		17-Jul-12	124	10.9	2.9	43.0	13.3	12.3	14.9	14.6
	DR2C	16-May-12	126	28.0	5.3	47.2	13.8	12.5	16.4	15.7
		17-Jul-12	122	8.8	2.7	43.1	12.7	12.5	15.3	14.9

Table C-5. Continued.

Sample Location	Location ID	Sample Date	N:P Molar Ratios			Carbon			C:N Molar Ratios	
			TN:TP	DIN:DP	DIN:TP	Total Inorganic C (mg/L)	Total Organic C (mg/L)	Dissolved Organic C (mg/L)	TOC:ON	TOC:TN
Lake Winnipeg	LKW1	18-Jan-12	163	49.0	10.2	48.4	13.6	13.3	17.2	16.1
		21-May-12	97	3.1	2.2	41.2	10.9	10.2	18.5	18.1
		17-Jul-12	82	6.7	1.6	42.4	11.4	11.2	18.3	17.9
	LKW2	18-Jan-12	192	21.4	19.6	51.8	14.9	14.2	18.6	16.7
		21-May-12	127	4.3	2.2	47.4	12.6	11.9	16.7	16.4
		17-Jul-12	94	8.7	2.0	43.2	11.6	10.9	18.1	17.7
	LKW3	18-Jan-12	121	4.1	3.2	38.7	12.4	11.6	20.8	20.3
		19-May-12	94	3.1	1.2	44.8	13.1	12.2	13.0	12.8
		17-Jul-12	95	18.4	4.2	42.3	11.2	11.0	16.8	16.1
	LKW3B	19-May-12	99	3.5	1.3	47.3	13.5	12.8	11.5	11.4
		17-Jul-12	89	14.6	3.3	43.0	12.6	11.5	18.0	17.3
	LKW4	18-Jan-12	129	15.3	3.5	39.1	12.5	12.9	19.8	19.3
		21-May-12	108	2.9	2.1	40.9	11.4	10.4	18.5	18.2
		17-Jul-12	61	8.5	1.7	42.2	11.2	10.8	17.4	16.9
	LKW5	18-Jan-12	97	8.5	3.7	46.7	14.6	13.9	16.1	15.5
		21-May-12	133	2.7	2.1	42.0	11.1	10.5	15.6	15.4
		17-Jul-12	59	5.9	2.3	40.8	10.7	10.1	16.8	16.2
	LKW6	18-Jan-12	112	7.7	5.2	44.9	13.7	13.0	19.9	18.9
		21-May-12	103	2.5	1.7	39.0	10	9.8	16.0	15.7
		17-Jul-12	59	7.1	2.3	41.4	11.0	9.9	18.6	17.9
	LKW7	18-Jan-12	15	5.6	1.0	36.2	11.6	11.1	20.2	18.9
		21-May-12	101	0.1	0.1	38.6	10.2	9.7	17.6	17.4
		17-Jul-12	41	4.7	2.1	34.8	9.2	8.6	20.2	19.2

Table C-5. Continued.

Sample Location	Location ID	Sample Date	Conductivity (µmhos/cm)	TDS (mg/L)	Water Clarity			Algal Pigments	
					TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Phaeophytin *a* (µg/L)
Analytical Detection Limits			*1/20*	*5.0*	*2.0*	*0.10*	*5.0*	*0.10*	*0.10*
Waterhen River	WHR1	16-Jan-12	946	702	<2.0	1.09	<5.0	2.64	1.69
		16-May-12	1050	568	8.8	4.54	8.8	3.83	1.52
		16-Jul-12	1030	599	3.3	1.77	10.8	2.07	1.51
Lake Manitoba	NARR1	16-Jan-12	1000	733	3.1	5.03	12.7	4.30	1.63
		16-May-12	1090	630	17.2	10.9	7.2	7.93	1.46
		16-Jul-12	1050	648	16.2	6.05	<5.0	5.44	2.35
Fairford River	FR1	16-Jan-12	1090	700	14.0	2.70	8.4	6.71	2.39
		16-May-12	1110	661	10.1	6.71	8.5	3.80	0.55
		16-Jul-12	1023	604	11.6	6.90	<5.0	2.16	0.63
Lake St. Martin	LSM1	19-Jan-12	1090	744	<2.0	1.34	9.9	4.29	1.94
		17-May-12	1100	672	8.0	33.6	6.3	3.48	0.64
		17-Jul-12	1027	687	12.5	8.37	6.1	4.53	0.94
Buffalo Creek	BC3	17-Jan-12	1170	732	4.8	2.20	10.3	3.20	1.73
		16-May-12	1090	635	7.7	3.78	11.7	1.94	0.82
		17-Jul-12	1020	670	11.8	5.75	15.2	1.54	1.09
Dauphin River	DR1.1	17-May-12	1100	670	9.6	4.72	6.7	4.66	1.50
		17-Jul-12	1020	725	13.2	7.64	6.1	3.98	1.40
	DR1.2	19-Jan-12	1110	744	<2.0	1.95	10.6	3.75	1.81
	DR1.3	17-May-12	1110	668	7.6	3.39	7.9	4.03	0.80
		17-Jul-12	1030	686	14.3	8.78	8.3	3.81	0.59
	DR1 (NOTE 2)	16-May-12	1110	660	12.8	4.87	8.1	4.22	1.04
		17-Jul-12	1020	640	14.7	8.55	6.3	4.22	0.86
	DR2C	16-May-12	1110	640	13.2	4.72	8.7	4.41	1.15
		17-Jul-12	1020	670	13.3	7.99	9.5	4.16	0.83

Table C-5. Continued.

Sample Location	Location ID	Sample Date	Conductivity (µmhos/cm)	TDS (mg/L)	Water Clarity			Algal Pigments	
					TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Phaeophytin *a* (µg/L)
Lake Winnipeg	LKW1	18-Jan-12	1010	694	8.8	4.17	10.5	3.18	1.30
		21-May-12	921	504	5.2	7.36	18.5	3.59	0.82
		17-Jul-12	931	598	7.6	5.36	9.8	3.64	1.15
	LKW2	18-Jan-12	1100	720	3.2	2.59	10.9	3.20	1.70
		21-May-12	1100	756	8.1	6.50	11.1	3.43	0.97
		17-Jul-12	934	605	8.4	5.38	12.5	3.53	0.68
	LKW3	18-Jan-12	718	448	<2.0	2.96	14.4	2.29	1.05
		19-May-12	1010	600	17.2	10.8	8.8	5.88	1.35
		17-Jul-12	925	590	6.2	3.50	7.1	5.12	1.33
	LKW3B	19-May-12	1080	654	28.4	17.5	10.3	6.52	1.71
		17-Jul-12	971	621	11.4	7.17	9.3	3.39	0.90
	LKW4	18-Jan-12	728	470	<2.0	3.24	13.8	2.73	1.16
		21-May-12	920	560	5.2	4.62	11.4	2.88	0.58
		17-Jul-12	921	571	4.7	4.63	9.1	3.17	1.25
	LKW5	18-Jan-12	902	608	4.4	3.49	14.6	3.68	1.07
		21-May-12	855	564	7.2	6.26	9.9	3.81	0.83
		17-Jul-12	886	553	6.3	8.07	9.1	2.35	0.97
	LKW6	18-Jan-12	861	579	3.5	3.62	15.4	3.50	1.33
		21-May-12	858	446	3.6	4.77	9.9	2.77	0.54
		17-Jul-12	897	611	9.5	9.13	9.7	1.24	2.36
	LKW7	18-Jan-12	679	440	3.2	3.50	15.7	2.66	0.78
		21-May-12	855	552	4.4	4.93	9.8	3.33	0.70
		17-Jul-12	693	481	10.5	10.4	8.9	2.25	0.86

Table C-6. Concentrations of metals and major ions measured as part of the RWQMP during channel operation, 2012. Units are mg/L unless otherwise indicated.

Sample Location	Location ID	Sample Date	Hardness, as $CaCO_3$	Aluminum		Antimony		Arsenic	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.30*	*0.0020 /0.020*	*0.0030/ 0.005/ 0.050*	*0.000050/ 0.00020 /0.0020*	*0.000050/ 0.0002/ 0.0020*	*0.000060/ 0.00020/ 0.0020*	*0.000060 /0.00020/ 0.0020*
Waterhen River	WHR1	16-Jan-12	250	<0.0020	0.0077	<0.00020	<0.00020	0.00252	0.00212
		16-May-12	226	<0.0020	0.0762	<0.00020	0.000132	0.00152	0.00167
		16-Jul-12	235	<0.0020	0.0074	0.000131	<0.00020	0.00155	0.00161
Lake Manitoba	NARR1	16-Jan-12	365	0.0081	0.0856	0.00025	<0.00020	0.00407	0.00409
		16-May-12	261	<0.0020	0.123	<0.00020	0.000137	0.00224	0.00228
		16-Jul-12	317	0.0039	0.0217	0.000211	0.00021	0.00317	0.00323
Fairford River	FR1	16-Jan-12	287	<0.0020	0.0094	<0.00020	<0.00020	0.00251	0.00233
		16-May-12	282	<0.0020	0.0976	<0.00020	0.00013	0.00248	0.00251
		16-Jul-12	274	0.0032	0.0280	0.00017	<0.00020	0.00166	0.00229
Lake St. Martin	LSM1	18-Jan-12	294	<0.0020	0.0198	<0.00020	<0.00020	0.00281	0.00275
		17-May-12	291	<0.0020	0.0259	<0.00020	<0.00020	0.00238	0.00214
		17-Jul-12	296	0.0048	0.0763	<0.00020	<0.00020	0.00281	0.00250
Buffalo Creek	BC3	17-Jan-12	306	0.0023	0.0617	<0.00020	<0.00020	0.00372	0.00312
		16-May-12	277	<0.0020	0.1190	<0.00020	0.00014	0.00203	0.00203
		17-Jul-12	308	<0.0020	0.318	<0.00020	<0.00020	0.00251	0.00254
Dauphin River	DR1.1	17-May-12	276	<0.0020	0.04	<0.00020	0.000141	0.00218	0.00163
		17-Jul-12	303	<0.0020	0.0552	<0.00020	<0.00020	0.00278	0.00247
Dauphin River	DR1.2	18-Jan-12	301	<0.0020	0.0188	<0.00020	<0.00020	0.00292	0.00279
Dauphin River	DR1.3	17-May-12	267	<0.0020	0.0417	<0.00020	0.000156	0.00231	0.0016
		17-Jul-12	285	<0.0020	0.133	<0.00020	<0.00020	0.0026	0.00269
Dauphin River	DR1 (NOTE 2)	16-May-12	276	<0.0020	0.11	<0.00020	0.000139	0.00242	0.00259
		17-Jul-12	302	<0.0020	0.134	<0.00020	<0.00020	0.00272	0.00254

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Hardness, as $CaCO_3$	Aluminum		Antimony		Arsenic	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Dauphin River	DR2C	16-May-12	282	<0.0020	0.133	<0.00020	0.000159	0.0023	0.00225
		17-Jul-12	282	<0.0020	0.144	<0.00020	<0.00020	0.00265	0.00252
Lake Winnipeg	LKW1	18-Jan-12	297	0.0091	0.0752	<0.00020	<0.00020	0.00288	0.00241
		21-May-12	224	0.0056	0.191	<0.00020	0.000118	0.00171	0.00199
		17-Jul-12	256	0.0029	0.38	<0.00020	<0.00020	0.00268	0.00248
Lake Winnipeg	LKW2	18-Jan-12	308	0.002	0.0553	<0.00020	<0.00020	0.00307	0.00277
		21-May-12	263	0.0030	0.1593	<0.00020	0.00016	0.00183	0.00231
		17-Jul-12	264	0.0023	0.473	<0.00020	<0.00020	0.00256	0.00233
Lake Winnipeg	LKW3	18-Jan-12	263	0.015	0.175	<0.00020	<0.00020	0.00257	0.00246
		19-May-12	273	0.109	0.377	<0.00020	<0.00020	0.00216	0.0023
		17-Jul-12	247	0.0027	0.245	<0.00020	<0.00020	0.00259	0.00214
Lake Winnipeg	LKW3B	19-May-12	288	0.18	0.531	<0.00020	<0.00020	0.00223	0.00236
		17-Jul-12	245	0.0059	0.486	<0.00020	<0.00020	0.00256	0.00236
Lake Winnipeg	LKW4	18-Jan-12	270	0.0171	0.162	<0.00020	<0.00020	0.00243	0.00226
		21-May-12	246	0.0032	0.152	<0.00020	0.00015	0.00156	0.00218
		17-Jul-12	255	0.0041	0.334	<0.00020	<0.00020	0.00279	0.00243
Lake Winnipeg	LKW5	18-Jan-12	318	0.0076	0.132	<0.00020	<0.00020	0.00284	0.00268
		21-May-12	228	0.0047	0.183	<0.00020	0.000127	0.00148	0.00195
		17-Jul-12	260	0.0043	0.712	<0.00020	<0.00020	0.00253	0.00225
Lake Winnipeg	LKW6	18-Jan-12	293	0.0113	0.1470	<0.00020	<0.00020	0.00284	0.00256
		21-May-12	197	0.0043	0.141	<0.00020	0.000143	0.00167	0.0018
		17-Jul-12	257	0.0031	0.753	<0.00020	<0.00020	0.00232	0.00212
Lake Winnipeg	LKW7	18-Jan-12	221	0.0123	0.169	<0.00020	<0.00020	0.00245	0.00232
		21-May-12	194	0.0049	0.104	<0.00020	0.000123	0.00151	0.00169
		17-Jul-12	203	0.0062	0.941	<0.00020	<0.00020	0.00185	0.00179

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Barium		Beryllium		Bismuth		Boron	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.000080/ 0.00020/ 0.0020*	*0.00020/ 0.0020*	*0.00020*	*0.0002*	*0.000040/ 0.00020*	*0.000040/ 0.00020*	*0.0040/ 0.010*	*0.0050/ 0.010*
Waterhen River	WHR1	16-Jan-12	0.037	0.0402	<0.00020	<0.00020	<0.00020	<0.00020	0.073	0.074
		16-May-12	0.0355	0.0345	<0.00020	<0.00020	<0.00020	<0.000040	0.079	0.099
		16-Jul-12	0.035	0.0364	<0.00020	<0.00020	<0.000040	<0.00020	0.055	0.083
Lake Manitoba	NARR1	16-Jan-12	0.07700	0.07700	<0.00020	<0.00020	<0.00020	<0.00020	0.124	0.128
		16-May-12	0.0488	0.0479	<0.00020	<0.00020	<0.00020	<0.000040	0.101	0.116
		16-Jul-12	0.0601	0.068	<0.00020	<0.00020	<0.000040	<0.00020	0.105	0.12
Fairford River	FR1	16-Jan-12	0.0515	0.046	<0.00020	<0.00020	<0.00020	<0.00020	0.097	0.09
		16-May-12	0.04907	0.04863	<0.00020	<0.00020	<0.00020	<0.000040	0.108	0.128
		16-Jul-12	0.04363	0.05170	<0.00020	<0.00020	<0.000040	<0.00020	0.067	0.103
Lake St. Martin	LSM1	18-Jan-12	0.0492	0.056	<0.00020	<0.00020	<0.00020	<0.00020	0.092	0.081
		17-May-12	0.0487	0.0528	<0.00020	<0.00020	<0.00020	<0.00020	0.11	0.095
		17-Jul-12	0.04623	0.05037	<0.00020	<0.00020	<0.00020	<0.00020	0.119	0.135
Buffalo Creek	BC3	17-Jan-12	0.0469	0.0504	<0.00020	<0.00020	<0.00020	<0.00020	0.091	0.093
		16-May-12	0.04817	0.04673	<0.00020	<0.00020	<0.00020	<0.000040	0.114	0.131
		17-Jul-12	0.0455	0.0501	<0.00020	<0.00020	<0.00020	<0.00020	0.125	0.126
Dauphin River	DR1.1	17-May-12	0.0487	0.0538	<0.00020	<0.00020	<0.00020	<0.000040	0.111	0.118
		17-Jul-12	0.0455	0.0482	<0.00020	<0.00020	<0.00020	<0.00020	0.129	0.149
Dauphin River	DR1.2	18-Jan-12	0.0533	0.0567	<0.00020	<0.00020	<0.00020	<0.00020	0.137	0.141
Dauphin River	DR1.3	17-May-12	0.0492	0.0522	<0.00020	<0.00020	<0.00020	<0.000040	0.109	0.105
		17-Jul-12	0.0446	0.0484	<0.00020	<0.00020	<0.00020	<0.00020	0.112	0.132
Dauphin River	DR1 (NOTE 2)	16-May-12	0.0521	0.0464	<0.00020	<0.00020	<0.00020	<0.000040	0.114	0.127
		17-Jul-12	0.0428	0.0538	<0.00020	<0.00020	<0.00020	<0.00020	0.106	0.117

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Barium		Beryllium		Bismuth		Boron	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Dauphin River	DR2C	16-May-12	0.0497	0.0495	<0.00020	<0.00020	<0.00020	<0.000040	0.106	0.135
		17-Jul-12	0.0443	0.0485	<0.00020	<0.00020	<0.00020	<0.00020	0.115	0.121
Lake Winnipeg	LKW1	18-Jan-12	0.0499	0.0537	<0.00020	<0.00020	<0.00020	<0.00020	0.083	0.070
		21-May-12	0.045	0.0523	<0.00020	0.00027	<0.00020	0.000079	0.081	0.089
		17-Jul-12	0.0465	0.0499	<0.00020	<0.00020	<0.00020	<0.00020	0.100	0.103
Lake Winnipeg	LKW2	18-Jan-12	0.0496	0.0554	<0.00020	<0.00020	<0.00020	<0.00020	0.093	0.089
		21-May-12	0.05343	0.06100	<0.00020	0.00039	<0.00020	0.00007	0.090	0.113
		17-Jul-12	0.0447	0.0487	<0.00020	<0.00020	<0.00020	<0.00020	0.100	0.091
Lake Winnipeg	LKW3	18-Jan-12	0.044	0.0498	<0.00020	<0.00020	<0.00020	<0.00020	0.059	0.051
		19-May-12	0.0502	0.0501	<0.00020	<0.00020	<0.00020	<0.00020	0.09	0.081
		17-Jul-12	0.044	0.0506	<0.00020	<0.00020	<0.00020	<0.00020	0.099	0.095
Lake Winnipeg	LKW3B	19-May-12	0.0536	0.0545	<0.00020	<0.00020	<0.00020	<0.00020	0.095	0.087
		17-Jul-12	0.0458	0.0513	<0.00020	<0.00020	<0.00020	<0.00020	0.102	0.104
Lake Winnipeg	LKW4	18-Jan-12	0.0452	0.0476	<0.00020	<0.00020	<0.00020	<0.00020	0.057	0.049
		21-May-12	0.0457	0.0571	<0.00020	0.00021	<0.00020	<0.000040	0.072	0.111
		17-Jul-12	0.0432	0.0507	<0.00020	<0.00020	<0.00020	<0.00020	0.101	0.094
Lake Winnipeg	LKW5	18-Jan-12	0.0501	0.0567	<0.00020	<0.00020	<0.00020	<0.00020	0.072	0.072
		21-May-12	0.0474	0.0553	<0.00020	<0.00020	<0.00020	0.000079	0.079	0.105
		17-Jul-12	0.0445	0.0526	<0.00020	<0.00020	<0.00020	<0.00020	0.098	0.092
Lake Winnipeg	LKW6	18-Jan-12	0.04977	0.05330	<0.00020	<0.00020	<0.00020	<0.00020	0.066	0.059
		21-May-12	0.0448	0.0482	<0.00020	<0.00020	<0.00020	0.000077	0.075	0.088
		17-Jul-12	0.0483	0.0546	<0.00020	<0.00020	<0.00020	<0.00020	0.100	0.087
Lake Winnipeg	LKW7	18-Jan-12	0.0449	0.0484	<0.00020	<0.00020	<0.00020	<0.00020	0.072	0.058
		21-May-12	0.0432	0.0481	<0.00020	<0.00020	<0.00020	0.000074	0.069	0.100
		17-Jul-12	0.0353	0.0516	<0.00020	<0.00020	<0.00020	<0.00020	0.063	0.062

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Cadmium		Calcium		Cesium		Chloride
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Analytical Detection Limits			*0.0000050/ 0.000010*	*0.0000070/ 0.000010*	*0.030/ 0.050/ 0.50*	*0.040/ 0.10/ 1.0*	*0.000040/ 0.00010*	*0.000030/ 0.00010*	*0.20*
Waterhen River	WHR1	16-Jan-12	0.000013	<0.000010	52.7	56.1	<0.00010	<0.00010	246
		16-May-12	<0.000010	<0.0000070	48.3	47.5	<0.00010	<0.000030	197
		16-Jul-12	0.0000146	0.000161	41.3	49.4	<0.000040	<0.00010	205
Lake Manitoba	NARR1	16-Jan-12	0.000016	<0.000010	53.9	55.2	<0.00010	<0.00010	159
		16-May-12	0.000013	0.0000085	48.5	46.1	<0.00010	<0.000030	178
		16-Jul-12	0.0000125	0.00012	42.4	49.9	<0.000040	<0.00010	156
Fairford River	FR1	16-Jan-12	<0.000010	<0.000010	49.4	44.8	<0.00010	<0.00010	208
		16-May-12	<0.000010	0.000020	48.6	47.9	<0.00010	<0.000030	177
		16-Jul-12	0.000023	0.000089	38.1	48.5	<0.000040	<0.00010	178
Lake St. Martin	LSM1	18-Jan-12	<0.000010	0.00001	45.6	52.5	<0.00010	<0.00010	220
		17-May-12	<0.000010	0.000011	48.7	50.8	<0.00010	<0.00010	179
		17-Jul-12	<0.000010	<0.000010	51.8	47.8	<0.00010	<0.00010	178
Buffalo Creek	BC3	17-Jan-12	0.000013	<0.000010	48.8	48.9	<0.00010	<0.00010	222
		16-May-12	<0.000010	0.000011	48.3	46.8	<0.00010	<0.000030	174
		17-Jul-12	<0.000010	<0.000010	54.2	44.7	<0.00010	<0.00010	175
Dauphin River	DR1.1	17-May-12	<0.000010	0.0000118	48.6	49.0	<0.00010	<0.000030	179
		17-Jul-12	<0.000010	<0.000010	53.6	49.5	<0.00010	<0.00010	178
Dauphin River	DR1.2	18-Jan-12	0.00001	0.000011	48.4	53.1	<0.00010	<0.00010	224
Dauphin River	DR1.3	17-May-12	<0.000010	0.0000247	50.3	47.1	<0.00010	<0.000030	180
		17-Jul-12	<0.000010	<0.000010	48.5	49.0	<0.00010	<0.00010	177
Dauphin River	DR1 (NOTE 2)	16-May-12	<0.000010	<0.0000070	49.5	46.3	<0.00010	<0.000030	178
		17-Jul-12	<0.000010	<0.000010	51.1	43.7	<0.00010	<0.00010	177

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Cadmium		Calcium		Cesium		Chloride
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Dauphin River	DR2C	16-May-12	<0.000010	<0.0000070	49.1	47.7	<0.00010	<0.000030	177
		17-Jul-12	<0.000010	<0.000010	48.6	44.5	<0.00010	<0.00010	177
Lake Winnipeg	LKW1	18-Jan-12	<0.000010	0.000013	51.6	50.3	<0.00010	<0.00010	196
		21-May-12	<0.000010	0.0000141	42.8	46.5	<0.00010	<0.000030	141
		17-Jul-12	<0.000010	0.000011	48.6	49.3	<0.00010	<0.00010	150
Lake Winnipeg	LKW2	18-Jan-12	<0.000010	0.000013	53.1	53.7	<0.00010	<0.00010	222
		21-May-12	<0.000010	0.000017	48.9	48.6	<0.00010	<0.000030	174
		17-Jul-12	<0.000010	<0.000010	48.6	43.9	<0.00010	<0.00010	150
Lake Winnipeg	LKW3	18-Jan-12	<0.000010	0.000011	45.9	43.5	<0.00010	<0.00010	114
		19-May-12	<0.000010	0.000013	46.0	47.5	<0.00010	<0.00010	161
		17-Jul-12	<0.000010	<0.000010	43.7	44.3	<0.00010	<0.00010	149
Lake Winnipeg	LKW3B	19-May-12	<0.000010	0.000015	48.1	51.0	<0.00010	<0.00010	174
		17-Jul-12	<0.000010	<0.000010	44.3	43.4	<0.00010	<0.00010	161
Lake Winnipeg	LKW4	18-Jan-12	<0.000010	0.000015	45.9	52.3	<0.00010	<0.00010	113
		21-May-12	<0.000010	0.0000151	42.5	43.9	<0.00010	<0.000030	141
		17-Jul-12	<0.000010	0.000013	48.1	44.6	<0.00010	<0.00010	148
Lake Winnipeg	LKW5	18-Jan-12	<0.000010	0.000013	52.1	51.9	<0.00010	<0.00010	159
		21-May-12	<0.000010	0.0000099	42.8	47.2	<0.00010	<0.000030	151
		17-Jul-12	<0.000010	0.000012	48.3	44.6	<0.00010	<0.00010	140
Lake Winnipeg	LKW6	18-Jan-12	<0.000010	0.000013	52.8	46.2	<0.00010	<0.00010	149
		21-May-12	<0.000010	0.0000151	41.2	41.1	<0.00010	<0.000030	130
		17-Jul-12	<0.000010	0.000013	48.3	44.7	<0.00010	<0.00010	142
Lake Winnipeg	LKW7	18-Jan-12	<0.000010	0.000013	45.5	39.8	<0.00010	<0.00010	101
		21-May-12	<0.000010	0.0000089	39.7	40.8	<0.00010	<0.000030	128
		17-Jul-12	<0.000010	0.000013	40.6	40.0	<0.00010	<0.00010	95.7

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Chromium		Cobalt		Copper		Fluoride	Iron	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total
Analytical Detection Limits			*0.00050/ 0.0020*	*0.0010*	*0.000050/ 0.00020*	*0.000050 /0.00020*	*0.00010/ 0.00020*	*0.00010/ 0.00020*	*0.020*	*0.010/ 0.10*	*0.010/ 0.10*
Waterhen River	WHR1	16-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00038	0.00073	0.150	<0.010	0.01
		16-May-12	<0.0020	<0.0010	<0.00020	<0.000050	0.00044	0.0009	0.141	0.016	0.031
		16-Jul-12	<0.00050	<0.0010	0.000096	<0.00020	0.00061	0.0004	0.116	0.022	0.03
Lake Manitoba	NARR1	16-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00093	0.00123	0.198	<0.010	0.16
		16-May-12	<0.0020	<0.0010	<0.00020	0.000093	0.00051	0.00072	0.151	0.012	0.046
		16-Jul-12	0.0009	<0.0010	0.000124	<0.00020	0.00115	0.00073	0.145	0.017	0.078
Fairford River	FR1	16-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00043	0.00061	0.165	<0.010	0.011
		16-May-12	<0.0020	<0.0010	<0.00020	0.000105	0.00073	0.00101	0.155	0.014	0.04
		16-Jul-12	0.0011	<0.0010	0.00011	<0.00020	0.00087	0.00064	0.130	0.015	0.07
Lake St. Martin	LSM1	18-Jan-12	0.0022	<0.0010	<0.00020	<0.00020	0.00061	0.00064	0.155	<0.010	0.01
		17-May-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00049	0.00081	0.170	<0.010	0.022
		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00036	0.00054	0.133	<0.010	0.02
Buffalo Creek	BC3	17-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00042	0.00062	0.173	<0.010	0.15
		16-May-12	<0.0020	<0.0010	<0.00020	0.000099	0.00050	0.00078	0.153	<0.010	0.05
		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00039	0.00054	0.146	0.014	0.087
Dauphin River	DR1.1	17-May-12	<0.0020	<0.0010	<0.00020	<0.000050	0.00044	0.00089	0.162	0.011	0.033
		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00075	0.00052	0.147	<0.010	0.016
Dauphin River	DR1.2	18-Jan-12	0.0021	<0.0010	<0.00020	<0.00020	0.00065	0.0007	0.149	<0.010	0.013
Dauphin River	DR1.3	17-May-12	0.0028	<0.0010	<0.00020	<0.000050	0.00044	0.00058	0.165	0.013	0.044
		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.0003	0.00068	0.147	0.012	0.035
Dauphin River	DR1 (NOTE 2)	16-May-12	<0.0020	<0.0010	<0.00020	0.000135	0.00055	0.00076	0.155	0.011	0.043
		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00026	0.00099	0.139	0.014	0.034

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Chromium		Cobalt		Copper		Fluoride	Iron	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total
Dauphin River	DR2C	16-May-12	<0.0020	<0.0010	<0.00020	0.000128	0.00056	0.00099	0.152	0.015	0.04
		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00054	0.139	0.012	0.035
Lake Winnipeg	LKW1	18-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.0013	0.00133	0.143	<0.010	0.11
		21-May-12	<0.0020	<0.0010	<0.00020	0.000175	0.00074	0.00174	0.138	<0.010	0.215
		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00067	0.0012	0.139	0.016	0.097
Lake Winnipeg	LKW2	18-Jan-12	0.0024	<0.0010	<0.00020	<0.00020	0.001	0.00086	0.142	<0.010	0.11
		21-May-12	<0.0020	0.0016	<0.00020	0.000187	0.00057	0.00193	0.156	<0.010	0.18
		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00071	0.00109	0.141	0.016	0.089
Lake Winnipeg	LKW3	18-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00168	0.00191	0.128	<0.010	0.13
		19-May-12	<0.0020	<0.0010	<0.00020	0.00025	0.00066	0.00127	0.138	<0.010	0.36
		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00068	0.001	0.129	<0.010	0.056
Lake Winnipeg	LKW3B	19-May-12	<0.0020	0.0010	<0.00020	0.00036	0.00073	0.00148	0.158	<0.010	0.55
		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00065	0.001	0.130	0.015	0.087
Lake Winnipeg	LKW4	18-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00173	0.00164	0.122	<0.010	0.12
		21-May-12	<0.0020	0.0033	<0.00020	0.000201	0.00072	0.00189	0.134	<0.010	0.164
		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00071	0.00109	0.129	0.016	0.12
Lake Winnipeg	LKW5	18-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00126	0.00149	0.16	<0.010	0.12
		21-May-12	<0.0020	<0.0010	<0.00020	0.00018	0.00076	0.00182	0.141	<0.010	0.053
		17-Jul-12	<0.0020	<0.0010	<0.00020	0.00022	0.00087	0.00166	0.124	0.018	0.171
Lake Winnipeg	LKW6	18-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00156	0.00172	0.142	<0.010	0.14
		21-May-12	<0.0020	<0.0010	<0.00020	0.000132	0.00079	0.00153	0.130	<0.010	0.133
		17-Jul-12	<0.0020	0.0011	<0.00020	0.00027	0.00082	0.00152	0.135	0.012	0.162
Lake Winnipeg	LKW7	18-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00102	0.00139	0.120	<0.010	0.15
		21-May-12	<0.0020	<0.0010	<0.00020	0.000122	0.00081	0.00171	0.128	<0.010	0.06
		17-Jul-12	<0.0020	0.0016	<0.00020	0.00033	0.00101	0.00188	0.122	0.019	0.218

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Lead		Lithium		Magnesium		Manganese	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.000090/ 0.000050*	*0.000090/ 0.000060*	*0.0020/ 0.020*	*0.00020/ 0.0020/ 0.020*	*0.0070/ 0.010/0.10*	*0.0080/ 0.010/0.10*	*0.00090 0.00010/ 0.0010*	*0.00020/ 0.00030 /0.0030*
Waterhen River	WHR1	16-Jan-12	<0.000090	0.000124	0.0273	0.0268	28.8	27.8	0.00123	0.00627
		16-May-12	<0.000090	0.000114	0.0247	0.029	23.7	26.2	0.00222	0.018
		16-Jul-12	<0.000050	<0.000090	0.0289	0.0233	25.9	27.2	0.000498	0.0163
Lake Manitoba	NARR1	16-Jan-12	<0.000090	0.000164	0.0589	0.0538	55.9	54.3	0.00090	0.00438
		16-May-12	<0.000090	0.000196	0.0358	0.0366	34.7	35.5	0.00031	0.0082
		16-Jul-12	0.000071	0.000139	0.0459	0.0408	44.3	46.7	0.000142	0.0112
Fairford River	FR1	16-Jan-12	<0.000090	<0.000090	0.0395	0.0332	39.7	35.0	0.00049	0.00212
		16-May-12	<0.000090	0.000225	0.0376	0.0399	37.0	39.5	0.00031	0.00559
		16-Jul-12	<0.000050	0.000104	0.0347	0.0317	34.4	37.2	<0.000090	0.00446
Lake St. Martin	LSM1	18-Jan-12	<0.000090	<0.000090	0.034	0.0338	40.3	39.6	0.00016	0.00386
		17-May-12	<0.000090	<0.000090	0.0357	0.0373	34.6	39.8	0.00036	0.00609
		17-Jul-12	<0.000090	0.000105	0.0393	0.0377	40.6	36.2	<0.00010	0.00723
Buffalo Creek	BC3	17-Jan-12	<0.000090	<0.000090	0.0361	0.0385	44.7	47.3	0.0149	0.021
		16-May-12	<0.000090	0.000150	0.0362	0.0388	35.6	38.9	0.00343	0.01260
		17-Jul-12	<0.000090	0.00012	0.0404	0.0386	41.9	36.3	0.0002	0.0363
Dauphin River	DR1.1	17-May-12	<0.000090	0.000138	0.0352	0.0368	34.7	37.3	0.0004	0.0059
		17-Jul-12	<0.000090	0.000092	0.0422	0.0359	41.0	39.0	0.00177	0.0075
Dauphin River	DR1.2	18-Jan-12	<0.000090	<0.000090	0.0365	0.0358	44.4	40.9	0.0006	0.00566
Dauphin River	DR1.3	17-May-12	<0.000090	0.000119	0.035	0.0347	34.9	36.2	0.00038	0.00815
		17-Jul-12	<0.000090	0.000117	0.0388	0.0357	39.9	41.0	<0.00010	0.0101
Dauphin River	DR1 (NOTE 2)	16-May-12	<0.000090	0.000394	0.0372	0.0376	36.2	39.0	0.00024	0.00827
		17-Jul-12	<0.000090	0.000117	0.0396	0.0373	42.4	39.1	<0.00010	0.0115

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Lead		Lithium		Magnesium		Manganese	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Dauphin River	DR2C	16-May-12	<0.000090	0.000185	0.0361	0.0374	36.5	39.6	0.00019	0.00896
		17-Jul-12	<0.000090	0.000117	0.0402	0.0354	38.9	37.7	0.00015	0.0144
Lake Winnipeg	LKW1	18-Jan-12	<0.000090	0.000095	0.0286	0.0266	35.0	41.7	0.00024	0.00311
		21-May-12	<0.000090	0.000193	0.0253	0.0376	29.3	26.3	0.0002	0.00774
		17-Jul-12	<0.000090	0.000157	0.0354	0.0335	32.8	36.3	0.00045	0.0272
Lake Winnipeg	LKW2	18-Jan-12	<0.000090	0.000106	0.0404	0.0355	45.8	42.2	0.00353	0.0113
		21-May-12	<0.000090	0.000262	0.0290	0.0398	32.7	34.4	0.00034	0.01273
		17-Jul-12	<0.000090	0.000136	0.0348	0.0286	34.6	34.8	0.00019	0.0223
Lake Winnipeg	LKW3	18-Jan-12	<0.000090	0.000093	0.0225	0.0204	26.9	37.5	0.00018	0.00147
		19-May-12	0.000151	0.00023	0.0321	0.031	31.4	37.5	0.0137	0.0163
		17-Jul-12	<0.000090	<0.000090	0.0368	0.0302	33.6	32.3	0.00024	0.0204
Lake Winnipeg	LKW3B	19-May-12	0.000223	0.000328	0.0355	0.0345	33.7	38.9	0.0145	0.0211
		17-Jul-12	<0.000090	0.000171	0.0354	0.034	32.7	34.6	0.00017	0.0219
Lake Winnipeg	LKW4	18-Jan-12	<0.000090	<0.000090	0.022	0.0207	28.1	33.9	0.00022	0.002
		21-May-12	<0.000090	0.00017	0.0231	0.0256	25.8	33.1	0.00029	0.00843
		17-Jul-12	<0.000090	0.000106	0.0363	0.0319	32.7	34.2	0.00051	0.0464
Lake Winnipeg	LKW5	18-Jan-12	<0.000090	0.000142	0.0284	0.0304	35.0	45.8	0.00043	0.00335
		21-May-12	<0.000090	0.00018	0.0249	0.0374	29.6	26.8	0.0002	0.00854
		17-Jul-12	<0.000090	0.00016	0.0328	0.0292	33.9	35.3	0.00018	0.0221
Lake Winnipeg	LKW6	18-Jan-12	<0.000090	0.000220	0.0259	0.0248	33.7	43.2	0.00043	0.00293
		21-May-12	<0.000090	0.000169	0.0241	0.0346	26.6	23.0	0.00022	0.00668
		17-Jul-12	<0.000090	0.000203	0.0348	0.0302	33.2	35.1	<0.00010	0.0129
Lake Winnipeg	LKW7	18-Jan-12	<0.000090	<0.000090	0.0285	0.0244	31.9	29.6	0.00023	0.00375
		21-May-12	<0.000090	0.000128	0.0226	0.0296	25.5	22.3	0.00018	0.00473
		17-Jul-12	<0.000090	0.000236	0.024	0.022	24.7	27.3	0.00017	0.0109

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum		Nickel	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*1.0*	*1.0*	*0.050*	*0.050*	*0.000080/ 0.00010*	*0.000080/ 0.00020*	*0.00020/ 0.0010*	*0.00030/ 0.002*
Waterhen River	WHR1	16-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00187	0.00186	0.0027	<0.0020
		16-May-12	1.2	<1.0	0.051	0.088	0.00196	0.00186	<0.0010	0.0011
		16-Jul-12	1.5	1.4	0.108	0.147	0.00139	0.00159	0.00223	<0.0020
Lake Manitoba	NARR1	16-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00320	0.00293	0.0037	<0.0020
		16-May-12	1.5	<1.0	<0.050	<0.050	0.00213	0.00179	<0.0010	0.00129
		16-Jul-12	1.9	1.9	<0.050	<0.050	0.00213	0.00232	0.00228	<0.0020
Fairford River	FR1	16-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00243	0.00225	0.0028	<0.0020
		16-May-12	<1.0	<1.0	<0.050	<0.050	0.00214	0.00203	<0.0010	0.0016
		16-Jul-12	1.2	1.5	<0.050	0.087	0.00187	0.00208	0.0021	<0.0020
Lake St. Martin	LSM1	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00234	0.00234	<0.0010	<0.0020
		17-May-12	<1.0	<1.0	<0.050	<0.050	0.00241	0.00216	<0.0010	<0.0020
		17-Jul-12	<1.0	1.4	<0.050	0.077	0.00190	0.00206	<0.0010	<0.0020
Buffalo Creek	BC3	17-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00212	0.00214	0.003	<0.0020
		16-May-12	<1.0	1.0	0.076	0.116	0.00222	0.00220	<0.0010	0.0010
		17-Jul-12	2.3	4.2	0.793	1.100	0.00164	0.00185	<0.0010	<0.0020
Dauphin River	DR1.1	17-May-12	<1.0	<1.0	<0.050	<0.050	0.0024	0.00186	<0.0010	<0.00030
		17-Jul-12	<1.0	1.1	<0.050	0.063	0.00196	0.00209	<0.0010	<0.0020
Dauphin River	DR1.2	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00248	0.00224	<0.0010	<0.0020
Dauphin River	DR1.3	17-May-12	<1.0	<1.0	<0.050	0.077	0.00238	0.00184	<0.0010	<0.00030
		17-Jul-12	<1.0	1.3	<0.050	0.086	0.0018	0.00208	<0.0010	<0.0020
Dauphin River	DR1 (NOTE 2)	16-May-12	<1.0	1.1	<0.050	0.073	0.0023	0.00229	<0.0010	0.00094
		17-Jul-12	1.1	1.5	<0.050	0.080	0.00187	0.00227	<0.0010	<0.0020

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum		Nickel	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Dauphin River	DR2C	16-May-12	<1.0	1.2	<0.050	0.061	0.00224	0.00222	<0.0010	0.00107
		17-Jul-12	1.1	1.9	0.115	0.259	0.00174	0.00202	<0.0010	<0.0020
Lake Winnipeg	LKW1	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00196	0.00185	<0.0010	<0.0020
		21-May-12	2.9	1.6	<0.050	<0.050	0.00162	0.00183	<0.0010	0.00135
		17-Jul-12	<1.0	<1.0	<0.050	0.094	0.00176	0.00195	<0.0010	<0.0020
Lake Winnipeg	LKW2	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00239	0.00232	<0.0010	<0.0020
		21-May-12	2.1	13.0	<0.050	0.073	0.00208	0.00218	<0.0010	0.0016
		17-Jul-12	1.3	1.3	<0.050	0.096	0.00183	0.00178	<0.0010	<0.0020
Lake Winnipeg	LKW3	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00153	0.00156	<0.0010	<0.0020
		19-May-12	<1.0	1.3	<0.050	<0.050	0.00173	0.00205	<0.0010	<0.0020
		17-Jul-12	<1.0	2	0.053	0.147	0.00189	0.00183	<0.0010	<0.0020
Lake Winnipeg	LKW3B	19-May-12	<1.0	2.5	-	0.088	0.00186	0.00223	<0.0010	0.0021
		17-Jul-12	1.4	1.5	0.160	0.364	0.00184	0.0019	<0.0010	<0.0020
Lake Winnipeg	LKW4	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00156	0.00156	<0.0010	<0.0020
		21-May-12	2.2	2.4	<0.050	<0.050	0.00165	0.00146	<0.0010	0.00176
		17-Jul-12	<1.0	<1.0	0.050	0.098	0.0018	0.0018	<0.0010	<0.0020
Lake Winnipeg	LKW5	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00193	0.00189	<0.0010	<0.0020
		21-May-12	<1.0	<1.0	<0.050	<0.050	0.00175	0.00183	<0.0010	0.00158
		17-Jul-12	<1.0	<1.0	<0.050	<0.050	0.00179	0.00189	<0.0010	<0.0020
Lake Winnipeg	LKW6	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00189	0.00179	<0.0010	<0.0020
		21-May-12	1.4	2.2	<0.050	<0.050	0.00144	0.00161	<0.0010	0.00134
		17-Jul-12	<1.0	<1.0	<0.050	<0.050	0.00176	0.00181	<0.0010	<0.0020
Lake Winnipeg	LKW7	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00184	0.00177	<0.0010	<0.0020
		21-May-12	<1.0	1.7	<0.050	<0.050	0.00144	0.00143	<0.0010	0.00152
		17-Jul-12	<1.0	1.1	<0.050	<0.050	0.00136	0.00144	<0.0010	<0.0020

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Potassium		Rubidium		Selenium		Silicon	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.020/0.20*	*0.020/0.20*	*0.000050/ 0.00020*	*0.000050/ 0.00020*	*0.00090/ 0.0010*	*0.00060/ 0.0010*	*0.050/0.50*	*0.050/0.50*
Waterhen River	WHR1	16-Jan-12	9.90	8.74	0.00419	0.00392	<0.0010	<0.0010	4.64	5.13
		16-May-12	7.36	7.55	0.00325	0.00348	<0.0010	0.00323	2.94	2.47
		16-Jul-12	7.51	7.39	0.00358	0.00383	0.00314	<0.0010	5.38	5.32
Lake Manitoba	NARR1	16-Jan-12	16.1	15.8	0.00431	0.00386	<0.0010	<0.0010	2.45	2.62
		16-May-12	10.5	10.2	0.00331	0.00345	<0.0010	0.0028	3.28	2.95
		16-Jul-12	13.0	12.6	0.00366	0.00391	0.00187	<0.0010	3.72	3.33
Fairford River	FR1	16-Jan-12	11.4	10.5	0.00393	0.00353	<0.0010	<0.0010	4.76	4.27
		16-May-12	11.2	11.3	0.00342	0.00362	<0.0010	0.0021	3.13	2.79
		16-Jul-12	9.6	10.0	0.00332	0.00377	0.0038	<0.0010	3.50	3.43
Lake St. Martin	LSM1	18-Jan-12	10.1	10.1	0.00438	0.00418	<0.0010	<0.0010	4.88	4.98
		17-May-12	10.7	11.8	0.00355	0.00366	<0.0010	<0.0010	2.45	2.65
		17-Jul-12	10.2	11.0	0.00369	0.00380	<0.0010	<0.0010	4.88	4.40
Buffalo Creek	BC3	17-Jan-12	10.9	10.5	0.00434	0.00441	0.0012	0.0015	4.45	4.75
		16-May-12	10.5	10.9	0.00347	0.00377	<0.0010	0.0032	3.08	2.42
		17-Jul-12	10.9	11.8	0.00382	0.00456	<0.0010	<0.0010	5.01	4.82
Dauphin River	DR1.1	17-May-12	10.7	10.2	0.00357	0.00325	<0.0010	0.0018	2.95	2.56
		17-Jul-12	10.2	11.3	0.00376	0.00396	<0.0010	<0.0010	4.92	4.53
Dauphin River	DR1.2	18-Jan-12	11.1	9.75	0.00443	0.00404	<0.0010	<0.0010	5.04	4.94
Dauphin River	DR1.3	17-May-12	10.9	10.0	0.0036	0.00324	<0.0010	<0.00060	3.04	2.28
		17-Jul-12	10.1	11.8	0.00349	0.00428	<0.0010	<0.0010	4.56	4.88
Dauphin River	DR1 (NOTE 2)	16-May-12	10.9	10.9	0.0035	0.00368	<0.0010	0.00085	2.72	2.41
		17-Jul-12	10.5	12.3	0.0037	0.00403	<0.0010	<0.0010	5.6	4.84

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Potassium		Rubidium		Selenium		Silicon	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Dauphin River	DR2C	16-May-12	11.1	10.7	0.00347	0.00353	<0.0010	0.00109	2.7	2.65
		17-Jul-12	10.3	11.7	0.00355	0.00387	<0.0010	<0.0010	5	4.71
Lake Winnipeg	LKW1	18-Jan-12	9.02	9.88	0.00343	0.00313	<0.0010	0.0011	4.43	4.16
		21-May-12	8.18	8.78	0.00267	0.00353	<0.0010	<0.00060	2.51	2.27
		17-Jul-12	8.70	11.0	0.00334	0.00408	<0.0010	<0.0010	4.05	4.88
Lake Winnipeg	LKW2	18-Jan-12	12.4	10.70	0.00445	0.00419	<0.0010	<0.0010	5.69	5.56
		21-May-12	10.0	10.37	0.00335	0.00409	<0.0010	0.0037	2.55	3.11
		17-Jul-12	8.69	9.55	0.00343	0.00396	<0.0010	<0.0010	3.9	4.45
Lake Winnipeg	LKW3	18-Jan-12	6.79	8.88	0.00268	0.00269	<0.0010	<0.0010	2.65	2.88
		19-May-12	8.73	10.4	0.00309	0.00431	<0.0010	<0.0010	3.78	3.63
		17-Jul-12	8.90	9.40	0.00351	0.00348	<0.0010	<0.0010	4.26	4.18
Lake Winnipeg	LKW3B	19-May-12	9.69	11.6	0.00335	0.00475	<0.0010	<0.0010	3.68	3.82
		17-Jul-12	8.56	10.3	0.00351	0.00427	<0.0010	<0.0010	4.31	5.21
Lake Winnipeg	LKW4	18-Jan-12	7.16	8.56	0.00273	0.00258	<0.0010	<0.0010	2.66	2.8
		21-May-12	7.91	8.86	0.00271	0.00327	<0.0010	0.00285	2.51	3.78
		17-Jul-12	8.85	10.0	0.00347	0.00376	<0.0010	<0.0010	4.46	4.86
Lake Winnipeg	LKW5	18-Jan-12	9.12	7.76	0.00349	0.00339	<0.0010	<0.0010	3.61	4.02
		21-May-12	8.46	8.93	0.0028	0.00362	<0.0010	<0.00060	2.44	2.24
		17-Jul-12	8.35	9.65	0.00333	0.00454	<0.0010	<0.0010	4.16	5.45
Lake Winnipeg	LKW6	18-Jan-12	8.51	10.4	0.00329	0.00316	<0.0010	<0.0010	3.15	3.54
		21-May-12	7.42	7.67	0.00246	0.0031	<0.0010	<0.00060	2.49	2.35
		17-Jul-12	8.74	10.2	0.00323	0.00469	<0.0010	<0.0010	3.99	5.67
Lake Winnipeg	LKW7	18-Jan-12	8.51	7.79	0.00342	0.00306	<0.0010	<0.0010	3.55	3.59
		21-May-12	7.21	7.05	0.00238	0.00301	<0.0010	<0.00060	2.5	2.05
		17-Jul-12	5.84	7.34	0.00239	0.00444	<0.0010	<0.0010	2.87	4.82

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Silver		Sodium		Strontium		Sulphate
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Analytical Detection Limits			*0.000040 /0.00010*	*0.000040 /0.00010*	*0.010/ 0.020/ 0.20*	*0.030/ 0.30/ 3.0*	*0.000060 /0.00010 /0.0010*	*0.000070 /0.00010 /0.0010*	*0.50*
Waterhen River	WHR1	16-Jan-12	<0.00010	<0.00010	149	152	0.290	0.302	65.0
		16-May-12	<0.00010	<0.000040	128	132	0.248	0.239	56.9
		16-Jul-12	<0.000040	<0.00010	127	135	0.245	0.271	54.1
Lake Manitoba	NARR1	16-Jan-12	<0.00010	<0.00010	127	124	0.384	0.375	188
		16-May-12	<0.00010	<0.000040	133	122	0.272	0.261	94.0
		16-Jul-12	<0.000040	<0.00010	115	118	0.282	0.323	119
Fairford River	FR1	16-Jan-12	<0.00010	<0.00010	145	123	0.336	0.284	105
		16-May-12	<0.00010	<0.000040	129	130	0.281	0.282	104
		16-Jul-12	<0.000040	<0.00010	114	127	0.250	0.298	84.5
Lake St. Martin	LSM1	18-Jan-12	<0.00010	<0.00010	142	135	0.342	0.334	103
		17-May-12	<0.00010	<0.00010	125	123	0.281	0.276	102
		17-Jul-12	<0.00010	<0.00010	111	118	0.254	0.272	93.2
Buffalo Creek	BC3	17-Jan-12	<0.00010	<0.00010	139	137	0.304	0.318	107
		16-May-12	<0.00010	<0.000040	130	125	0.275	0.261	97
		17-Jul-12	<0.00010	<0.00010	111	103	0.241	0.263	88.3
Dauphin River	DR1.1	17-May-12	<0.00010	<0.000040	132	124	0.277	0.278	102
		17-Jul-12	<0.00010	<0.00010	111	122	0.256	0.282	92.8
Dauphin River	DR1.2	18-Jan-12	<0.00010	<0.00010	142	134	0.357	0.325	105
Dauphin River	DR1.3	17-May-12	<0.00010	<0.000040	126	118	0.283	0.276	101
		17-Jul-12	<0.00010	<0.00010	111	120	0.237	0.277	92.7
Dauphin River	DR1 (NOTE 2)	16-May-12	<0.00010	<0.000040	124	126	0.292	0.259	100
		17-Jul-12	<0.00010	<0.00010	110	109	0.251	0.276	92.1

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Silver		Sodium		Strontium		Sulphate
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Dauphin River	DR2C	16-May-12	<0.00010	<0.000040	116	125	0.287	0.268	100
		17-Jul-12	<0.00010	<0.00010	109	115	0.238	0.269	91.7
Lake Winnipeg	LKW1	18-Jan-12	<0.00010	<0.00010	126	107	0.276	0.261	93.9
		21-May-12	<0.00010	0.000346	99.6	80.8	0.212	0.264	78.8
		17-Jul-12	<0.00010	<0.00010	95.3	97.7	0.240	0.255	82.7
Lake Winnipeg	LKW2	18-Jan-12	<0.00010	<0.00010	162	142	0.344	0.320	106
		21-May-12	<0.00010	0.00023	126	106	0.262	0.310	97.4
		17-Jul-12	<0.00010	<0.00010	94.4	89.2	0.243	0.238	82.7
Lake Winnipeg	LKW3	18-Jan-12	<0.00010	<0.00010	82.5	72	0.241	0.228	67.8
		19-May-12	<0.00010	<0.00010	112	119	0.238	0.278	90.0
		17-Jul-12	<0.00010	<0.00010	96.1	92.6	0.243	0.235	82.6
Lake Winnipeg	LKW3B	19-May-12	<0.00010	<0.00010	125	130	0.256	0.287	97.7
		17-Jul-12	<0.00010	<0.00010	103	99.4	0.235	0.250	85.8
Lake Winnipeg	LKW4	18-Jan-12	<0.00010	<0.00010	78.4	70.1	0.236	0.223	67.2
		21-May-12	<0.00010	0.000323	111	102	0.218	0.255	78.1
		17-Jul-12	<0.00010	<0.00010	98.8	96.8	0.243	0.244	81.2
Lake Winnipeg	LKW5	18-Jan-12	<0.00010	<0.00010	121	99.5	0.294	0.287	87.2
		21-May-12	<0.00010	0.00033	104	84.7	0.223	0.275	84.2
		17-Jul-12	<0.00010	<0.00010	83.1	94.7	0.234	0.242	79.4
Lake Winnipeg	LKW6	18-Jan-12	<0.00010	<0.00010	97	90	0.280	0.263	80.9
		21-May-12	<0.00010	0.00034	89.3	71	0.194	0.235	72.7
		17-Jul-12	<0.00010	<0.00010	92	94.1	0.228	0.242	80.3
Lake Winnipeg	LKW7	18-Jan-12	<0.00010	<0.00010	96.3	81.8	0.261	0.241	63.1
		21-May-12	<0.00010	0.00034	85.5	67.8	0.194	0.232	71.3
		17-Jul-12	<0.00010	<0.00010	58.4	64.6	0.176	0.197	63.7

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Tellurium		Thallium		Thorium		Tin	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00020*	*0.00020*	*0.000020/ 0.00010*	*0.000020/ 0.00010*	*0.000030/ 0.00010*	*0.000040/ 0.00010*	*0.000080/ 0.00020*	*0.00010/ 0.00020*
Waterhen River	WHR1	16-Jan-12	<0.00020	<0.00020	<0.00010	0.00033	<0.00010	<0.00010	<0.00020	<0.00020
		16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040	<0.00020	<0.00010
		16-Jul-12	<0.00020	<0.00020	<0.000020	<0.00010	<0.000030	<0.00010	<0.000080	<0.00020
Lake Manitoba	NARR1	16-Jan-12	<0.00020	<0.00020	<0.00010	0.00011	<0.00010	<0.00010	<0.00020	<0.00020
		16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040	<0.00020	0.00012
		16-Jul-12	<0.00020	<0.00020	<0.000020	<0.00010	<0.000030	<0.00010	0.000184	<0.00020
Fairford River	FR1	16-Jan-12	<0.00020	<0.00020	<0.00010	0.00025	<0.00010	<0.00010	<0.00020	<0.00020
		16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040	<0.00020	<0.00010
		16-Jul-12	<0.00020	<0.00020	<0.000020	<0.00010	<0.000030	<0.00010	0.00012	<0.00020
Lake St. Martin	LSM1	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		17-May-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
Buffalo Creek	BC3	17-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040	<0.00020	<0.00010
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
Dauphin River	DR1.1	17-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040	<0.00020	<0.00010
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
Dauphin River	DR1.2	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
Dauphin River	DR1.3	17-May-12	<0.00020	0.0003	<0.00010	<0.000020	<0.00010	<0.000040	<0.00020	<0.00010
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
Dauphin River	DR1 (NOTE 2)	16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040	<0.00020	<0.00010
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Tellurium		Thallium		Thorium		Tin	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Dauphin River	DR2C	16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040	<0.00020	<0.00010
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
Lake Winnipeg	LKW1	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		21-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	0.000073	<0.00020	<0.00010
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
Lake Winnipeg	LKW2	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		21-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	0.00004	<0.00020	<0.00010
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	0.00022
Lake Winnipeg	LKW3	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		19-May-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00011	<0.00020	<0.00020
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
Lake Winnipeg	LKW3B	19-May-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00016	<0.00020	<0.00020
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
Lake Winnipeg	LKW4	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		21-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040	<0.00020	<0.00010
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
Lake Winnipeg	LKW5	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		21-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	0.000076	<0.00020	<0.00010
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
Lake Winnipeg	LKW6	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		21-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	0.000044	<0.00020	<0.00010
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00011	<0.00020	<0.00020
Lake Winnipeg	LKW7	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		21-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040	<0.00020	<0.00010
		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00012	<0.00020	<0.00020

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Titanium		Tungsten		Uranium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00020/ 0.00050*	*0.00020/ 0.00050*	*0.000060 /0.00010 /0.00020*	*0.000060 /0.00010 /0.0010*	*0.000020 /0.00010*	*0.000020 /0.00010*
Waterhen River	WHR1	16-Jan-12	<0.00020	0.00061	<0.00020	<0.0010	0.00134	0.0013
		16-May-12	<0.00020	0.00275	<0.00010	<0.000060	0.00134	0.00124
		16-Jul-12	0.00208	0.00127	<0.000060	<0.00010	0.000942	0.0008
Lake Manitoba	NARR1	16-Jan-12	0.00077	0.00241	<0.00020	<0.0010	0.00306	0.00272
		16-May-12	0.00157	0.00523	<0.00010	<0.000060	0.00174	0.00162
		16-Jul-12	0.00305	0.00282	<0.000060	<0.00010	0.00213	0.00171
Fairford River	FR1	16-Jan-12	0.00021	0.0008	<0.00020	<0.0010	0.00169	0.00167
		16-May-12	0.00149	0.00415	<0.00010	<0.000060	0.00178	0.00164
		16-Jul-12	0.00258	0.00258	<0.000060	<0.00010	0.00154	0.00146
Lake St. Martin	LSM1	18-Jan-12	0.0003	0.00026	<0.00020	<0.0010	0.00196	0.00194
		17-May-12	0.00105	0.00203	<0.00010	<0.00010	0.00187	0.00176
		17-Jul-12	0.00170	0.00420	<0.00010	<0.00010	0.00159	0.00198
Buffalo Creek	BC3	17-Jan-12	0.00047	0.00292	<0.00020	<0.0010	0.00167	0.00165
		16-May-12	0.00171	0.00576	<0.00010	<0.000060	0.00143	0.00139
		17-Jul-12	0.00161	0.0142	<0.00010	<0.00010	0.00107	0.00112
Dauphin River	DR1.1	17-May-12	0.00174	0.00212	<0.00010	<0.000060	0.0019	0.0018
		17-Jul-12	0.00165	0.00335	<0.00010	<0.00010	0.00156	0.00199
Dauphin River	DR1.2	18-Jan-12	0.00022	0.00037	<0.00020	<0.0010	0.00198	0.00196
Dauphin River	DR1.3	17-May-12	0.00176	0.00194	<0.00010	<0.000060	0.00189	0.00176
		17-Jul-12	0.00149	0.00733	<0.00010	<0.00010	0.00156	0.00183
Dauphin River	DR1 (NOTE 2)	16-May-12	0.00029	0.00564	<0.00010	<0.000060	0.00176	0.00174
		17-Jul-12	0.00166	0.00616	<0.00010	<0.00010	0.0016	0.00199

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Titanium		Tungsten		Uranium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
Dauphin River	DR2C	16-May-12	<0.00020	0.0049	<0.00010	<0.000060	0.0018	0.00172
		17-Jul-12	0.00163	0.0064	<0.00010	<0.00010	0.00146	0.00178
Lake Winnipeg	LKW1	18-Jan-12	0.00032	0.00201	<0.00020	<0.0010	0.0016	0.00155
		21-May-12	0.00162	0.0144	<0.00010	0.000329	0.00142	0.00165
		17-Jul-12	0.00159	0.0161	<0.00010	<0.00010	0.00132	0.0015
Lake Winnipeg	LKW2	18-Jan-12	<0.00020	0.00222	<0.00020	<0.0010	0.0019	0.00185
		21-May-12	0.00203	0.01427	<0.00010	0.0003	0.00169	0.00187
		17-Jul-12	0.00162	0.0156	<0.00010	<0.00010	0.00132	0.00131
Lake Winnipeg	LKW3	18-Jan-12	0.00046	0.00313	<0.00020	<0.0010	0.00136	0.00138
		19-May-12	0.00214	0.0191	<0.00010	<0.00010	0.00154	0.00147
		17-Jul-12	0.00165	0.00753	<0.00010	<0.00010	0.00127	0.00152
Lake Winnipeg	LKW3B	19-May-12	0.00543	0.0279	<0.00010	<0.00010	0.00165	0.00162
		17-Jul-12	0.00154	0.0178	<0.00010	<0.00010	0.00127	0.00148
Lake Winnipeg	LKW4	18-Jan-12	0.00046	0.00352	<0.00020	<0.0010	0.00136	0.00135
		21-May-12	0.00162	0.0197	<0.00010	<0.000060	0.00137	0.00155
		17-Jul-12	0.00143	0.0102	<0.00010	<0.00010	0.00133	0.00132
Lake Winnipeg	LKW5	18-Jan-12	0.00044	0.0032	<0.00020	<0.0010	0.0017	0.00161
		21-May-12	0.00165	0.0144	<0.00010	0.00032	0.00144	0.00173
		17-Jul-12	0.00155	0.0217	<0.00010	<0.00010	0.00127	0.00126
Lake Winnipeg	LKW6	18-Jan-12	0.00037	0.00357	<0.00020	<0.0010	0.00160	0.00152
		21-May-12	0.00155	0.011	<0.00010	0.000314	0.00133	0.00139
		17-Jul-12	0.00146	0.0291	<0.00010	<0.00010	0.0013	0.00131
Lake Winnipeg	LKW7	18-Jan-12	0.00034	0.00356	<0.00020	<0.0010	0.00153	0.00146
		21-May-12	0.00137	0.00678	<0.00010	0.00033	0.00126	0.00138
		17-Jul-12	0.00113	0.0338	<0.00010	<0.00010	0.00115	0.0011

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Vanadium		Zinc		Zirconium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00020*	*0.00020*	*0.0010/0.0020*	*0.0020/0.0050*	*0.00010/0.00040*	*0.00010/0.00040*
Waterhen River	WHR1	16-Jan-12	0.00152	0.00149	<0.0020	<0.0050	<0.00040	<0.00040
		16-May-12	0.00118	0.00069	<0.0020	0.0081	<0.00040	0.000109
		16-Jul-12	0.00156	0.00075	0.0019	<0.0020	<0.00010	<0.00040
Lake Manitoba	NARR1	16-Jan-12	0.0026	0.0027	0.0022	<0.0050	<0.00040	<0.00040
		16-May-12	0.00145	0.00108	<0.0020	0.0021	<0.00040	0.000176
		16-Jul-12	0.00198	0.00163	0.0101	<0.0020	0.00012	<0.00040
Fairford River	FR1	16-Jan-12	0.002	0.0018	<0.0020	<0.0050	<0.00040	<0.00040
		16-May-12	0.0014	0.0010	<0.0020	<0.0020	<0.00040	0.000157
		16-Jul-12	0.0020	0.0014	0.0023	<0.0020	<0.00010	<0.00040
Lake St. Martin	LSM1	18-Jan-12	0.0017	0.00158	<0.0020	<0.0050	<0.00040	0.00089
		17-May-12	0.00088	0.00116	<0.0020	0.0034	<0.00040	<0.00040
		17-Jul-12	0.0014	0.0016	<0.0020	<0.0020	<0.00040	<0.00040
Buffalo Creek	BC3	17-Jan-12	0.0019	0.0017	<0.0020	<0.0050	<0.00040	<0.00040
		16-May-12	0.0013	0.0007	<0.0020	0.0054	<0.00040	0.000156
		17-Jul-12	0.00079	0.00144	<0.0020	<0.0020	<0.00040	<0.00040
Dauphin River	DR1.1	17-May-12	0.00101	0.00084	<0.0020	<0.0020	<0.00040	0.000081
		17-Jul-12	0.00128	0.0015	<0.0020	<0.0020	<0.00040	<0.00040
Dauphin River	DR1.2	18-Jan-12	0.0017	0.00171	<0.0020	<0.0050	<0.00040	<0.00040
Dauphin River	DR1.3	17-May-12	0.00115	0.00091	<0.0020	<0.0020	<0.00040	0.000078
		17-Jul-12	0.0012	0.00175	<0.0020	<0.0020	<0.00040	<0.00040
Dauphin River	DR1 (NOTE 2)	16-May-12	0.00148	0.00073	<0.0020	0.0022	<0.00040	0.000214
		17-Jul-12	0.00136	0.00176	<0.0020	<0.0020	<0.00040	<0.00040

Table C-6. Continued.

Sample Location	Location ID	Sample Date	Vanadium		Zinc		Zirconium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
Dauphin River	DR2C	16-May-12	0.00134	0.00082	<0.0020	0.0021	<0.00040	0.000226
		17-Jul-12	0.00114	0.00155	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW1	18-Jan-12	0.0015	0.00158	<0.0020	<0.0050	<0.00040	<0.00040
		21-May-12	0.0012	0.00184	<0.0020	0.0032	<0.00040	0.000181
		17-Jul-12	0.00127	0.00189	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW2	18-Jan-12	0.0016	0.00152	<0.0020	<0.0050	<0.00040	<0.00040
		21-May-12	0.0016	0.0026	<0.0020	0.0037	<0.00040	0.000214
		17-Jul-12	0.00127	0.00192	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW3	18-Jan-12	0.0016	0.00199	<0.0020	<0.0050	<0.00040	<0.00040
		19-May-12	0.00124	0.00171	<0.0020	<0.0020	<0.00040	<0.00040
		17-Jul-12	0.00108	0.00144	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW3B	19-May-12	0.00126	0.00222	<0.0020	<0.0020	<0.00040	0.00048
		17-Jul-12	0.00109	0.00194	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW4	18-Jan-12	0.0014	0.00172	<0.0020	<0.0050	<0.00040	<0.00040
		21-May-12	0.00139	0.00384	<0.0020	0.0036	<0.00040	0.000152
		17-Jul-12	0.00102	0.00163	0.0022	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW5	18-Jan-12	0.0016	0.00197	0.003	<0.0050	<0.00040	<0.00040
		21-May-12	0.00131	0.00183	<0.0020	0.0023	<0.00040	0.000179
		17-Jul-12	0.00135	0.00234	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW6	18-Jan-12	0.0017	0.0020	0.0051	0.0064	<0.00040	<0.00040
		21-May-12	0.00107	0.00176	<0.0020	0.0028	<0.00040	0.000164
		17-Jul-12	0.00149	0.00258	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW7	18-Jan-12	0.0014	0.00155	<0.0020	<0.0050	<0.00040	<0.00040
		21-May-12	0.00112	0.00159	<0.0020	0.0024	<0.00040	0.000115
		17-Jul-12	0.00126	0.00275	<0.0020	<0.0020	<0.00040	<0.00040

Table C-7. Pesticide concentrations (µg/L) measured at selected sites as part of the RWQMP during channel operation, 2012.

			Organochlorine Pesticides							Phenoxy Acid Herbicides		
Location	**Location ID**	**Date Sampled**	**alpha-BHC**	**beta-BHC**	**delta-BHC**	**a-chlordane**	**g-chlordane**	**Lindane**	**Methoxychlor**	**2,4-D**	**2,4-DB**	**2,4-DP**
Analytical Detection Limit			0.100	0.100	0.100	0.010	0.010	0.100	0.010	0.050	0.050	0.050
Fairford River	FR1	16-Jul-12	<0.10	<0.10	<0.10	<0.010	<0.010	<0.10	<0.010	<0.050	<0.050	<0.050
Dauphin River	DR1.1	17-Jul-12	<0.10	<0.10	<0.10	<0.010	<0.010	<0.10	<0.010	0.050	<0.050	<0.050
	DR2C	17-Jul-12	<0.10	<0.10	<0.10	<0.010	<0.010	<0.10	<0.010	<0.050	<0.050	<0.050
Lake Winnipeg	LKW7	17-Jul-12	<0.10	<0.10	<0.10	<0.010	<0.010	<0.10	<0.010	<0.050	<0.050	<0.050

Table C-7. Continued.

			Phenoxy Acid Herbicides						Other Pesticides			
Location	**Location ID**	**Date Sampled**	**Bromoxynil**	**Dicamba**	**Dinoseb**	**MCPA**	**Mecoprop**	**Picloram**	**Alachlor**	**AMPA**	**Atrazine**	**Azinphos-methyl**
Analytical Detection Limit			0.020	0.0060	0.050	0.025	0.050	0.20	0.10	0.20	0.10	0.10
Fairford River	FR1	16-Jul-12	<0.020	<0.0060	<0.050	<0.025	<0.050	<0.20	<0.10	<0.20	<0.10	<0.10
Dauphin River	DR1.1	17-Jul-12	<0.020	<0.0060	<0.050	<0.025	<0.050	<0.20	<0.10	<0.20	<0.10	<0.10
	DR2C	17-Jul-12	<0.020	<0.0060	<0.050	<0.025	<0.050	<0.20	<0.10	<0.20	<0.10	<0.10
Lake Winnipeg	LKW7	17-Jul-12	<0.020	<0.0060	<0.050	<0.025	<0.050	<0.20	<0.10	<0.20	<0.10	<0.10

Table C-7. Continued.

			Other Pesticides								
Location	**Location ID**	**Date Sampled**	**Benomyl**	**Carbofuran**	**Carboxin**	**Chlorothalonil**	**Chlorpyrifos**	**Cyanazine**	**Deltamethrin**	**Diazinon**	**Dimethoate**
Analytical Detection Limit			0.10	0.20	0.10	0.060	0.020	0.10	0.040	0.030	0.10
Fairford River	FR1	16-Jul-12	<0.10	<0.20	<0.10	<0.060	<0.020	<0.10	<0.040	<0.030	<0.10
Dauphin River	DR1.1	17-Jul-12	<0.10	<0.20	<0.10	<0.060	<0.020	<0.10	<0.040	<0.030	<0.10
	DR2C	17-Jul-12	<0.10	<0.20	<0.10	<0.060	<0.020	<0.10	<0.040	<0.030	<0.10
Lake Winnipeg	LKW7	17-Jul-12	<0.10	<0.20	<0.10	<0.060	<0.020	<0.10	<0.040	<0.030	<0.10

Table C-7. Continued.

			Other Pesticides							
Location	**Location ID**	**Date Sampled**	**Diuron**	**Eptam**	**Ethalfluralin**	**Atrazine Desethyl**	**Fenoxaprop**	**Glyphosate**	**Malathion**	**Diclofop-methyl**
Analytical Detection Limit			0.018	0.20	0.020	0.050	0.10	0.20	0.10	0.10
Fairford River	FR1	16-Jul-12	<0.018	<0.20	<0.020	<0.050	<0.10	2.35	<0.10	<0.10
Dauphin River	DR1.1	17-Jul-12	<0.018	<0.20	<0.020	<0.050	<0.10	0.47	<0.10	<0.10
	DR2C	17-Jul-12	<0.018	<0.20	<0.020	<0.050	<0.10	0.41	<0.10	<0.10
Lake Winnipeg	LKW7	17-Jul-12	<0.018	<0.20	<0.020	<0.050	<0.10	0.20	<0.10	<0.10

Table C-7. Continued.

			Other Pesticides							
Location	**Location ID**	**Date Sampled**	**Metsulfuron-methyl**	**Thifensulfuron-methyl**	**Tribenuron-methyl**	**Methyl Parathion**	**Metribuzin**	**Parathion**	**Pentachlorophenol**	**Propanil**
Analytical Detection Limit			0.010	0.010	0.010	0.100	0.20	0.10	0.020	0.20
Fairford River	FR1	16-Jul-12	<0.010	<0.010	<0.010	<0.10	<0.20	<0.10	<0.020	<0.20
Dauphin River	DR1.1	17-Jul-12	<0.010	<0.010	<0.010	<0.10	<0.20	<0.10	<0.020	<0.20
	DR2C	17-Jul-12	<0.010	<0.010	<0.010	<0.10	<0.20	<0.10	<0.020	<0.20
Lake Winnipeg	LKW7	17-Jul-12	<0.010	<0.010	<0.010	<0.10	<0.20	<0.10	<0.020	<0.20

Table C-7. Continued.

			Other Pesticides								
Location	**Location ID**	**Date Sampled**	**Propoxur**	**Quizalofop**	**Sethoxydim**	**Simazine**	**Terbufos**	**Tralkoxydim**	**Triallate**	**Triclopyr**	**Trifluralin**
Analytical Detection Limit			0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.050	0.030
Fairford River	FR1	16-Jul-12	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	<0.030
Dauphin River	DR1.1	17-Jul-12	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	<0.030
	DR2C	17-Jul-12	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	<0.030
Lake Winnipeg	LKW7	17-Jul-12	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	<0.030

Table C-8. *In situ* water quality measurements recorded at RWQMP sites, January 2012. All data are suspect, see text for details.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Ice Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	pH
Waterhen River	WHR1	16-Jan-12	18:00	-	-	0.3	0.00	11.44	85	1300	7.78
Lake Manitoba	NARR1	16-Jan-12	11:00	-	-	0.3	0.70	11.12	83	1410	7.36
Fairford River	FR1	16-Jan-12	15:46	-	-	0.3	-0.10	13.80	102	1360	7.14
Lake St. Martin	LSM1	19-Jan-12	13:39	3.0	0.46	-	-	-	-	-	-
Buffalo Creek	BC3	17-Jan-12	-	-	-	-	-	-	-	-	-
Dauphin River	DR1.2	19-Jan-12	12:11	-	-	-	-	-	-	-	
Lake Winnipeg	LKW1	18-Jan-12	12:17	3.9	0.60	1.0	0.32	8.6	64	1320	7.72
						2.4	0.11	9.28	69	1420	7.72
	LKW2	18-Jan-12	11:02	4.0	0.58	1.0	0.10	10.86	80	1450	7.65
						2.4	0.37	11.08	82	1400	7.59
	LKW3	18-Jan-12	9:51	6.3	0.60	0.5	< 0.0	15.42	-	999	7.56
						4.7	-	-	-	1430	7.52
	LKW4	18-Jan-12	17:09	6.8	0.45	-	-	-	-		-
	LKW5	18-Jan-12	13:26	7.3	0.6	0.9	0.00	14.65	108	1360	7.84
						5.9	0.00	12.61	93	1360	7.64
	LKW6	18-Jan-12	14:31	7.6	0.56	0.9	0.00	8.18	60	980	7.99
						3.4	0.00	0.89	7	1380	7.83
	LKW7	18-Jan-12	16:02	5.3	0.61	0.4	0.23	-	-	897	7.95
						1.4	0.58	-	-	1100	7.89
						3.4	0.53	-	-	1330	7.78

Table C-9. Quality assurance/quality control results for routine water chemistry variables measured in the laboratory. Percent relative standard deviations (PRSD) values above 18% are indicated in red. Field and trip blank measurements greater than five times the analytical detection limits are also indicated in red. Measurements in blue italics are considered suspect.

					Alkalinity			
Sample Location	Field ID	Location ID	Sample Date	Lab pH	Total as $CaCO_3$ (mg/L)	as Bicarbonate (HCO_3^-) (mg/L)	as Carbonate (CO_3^{2-}) (mg/L)	as Hydroxide (OH^-) (mg/L)
Analytical Detection Limits				*0.10*	*1.0*	*1.2/2.0*	*0.60*	*0.34/0.4/6.8*
5x detection limit				*0.50*	*5.0*	*6/10*	*3.0*	*1.7/2.0/34*
TRIPLICATE SAMPLES								
Lake Manitoba	LM-2	NARR1	16-Jan-12	8.37	246	287	4.19	<0.40
	BC-2	NARR1	16-Jan-12	8.37	203	237	3.54	<0.40
	CD-2	NARR1	16-Jan-12	8.39	249	291	4.38	<0.40
			Mean	8.38	233	272	4.04	<0.40
			SD	0.01	25.7	30.1	0.44	-
			PRSD	0	11	11	11	-
Lake Winnipeg	LKW6A	LKW6	18-Jan-12	8.35	195	229	2.81	<0.40
	LKW6B	LKW6	18-Jan-12	8.34	199	234	2.49	<0.40
	LKW6C	LKW6	18-Jan-12	8.33	200	235	2.36	<0.40
			Mean	8.34	198	233	2.55	<0.40
			SD	0.01	2.6	3.2	0.23	-
			PRSD	0	1	1	9	-
Fairford River	FR - 1	FR1	16-May-12	8.60	208	232	<12	<6.8
	BC - 1	FR1	16-May-12	8.59	208	233	<12	<6.8
	CD - 1	FR1	16-May-12	8.59	208	232	<12	<6.8
			Mean	8.59	208	232	<12	<6.8
			SD	0.01	0	1	-	-
			PRSD	0	0	0	-	-
Buffalo Creek	BC3-A	BC3	16-May-12	8.34	207	247	<12	<6.8
	BC3-B	BC3	16-May-12	8.35	206	246	<12	<6.8
	BC3-C	BC3	16-May-12	8.35	206	246	<12	<6.8
			Mean	8.35	206	246	<12	<6.8
			SD	0.01	1	1	-	-

Table C-9. Continued.

Sample Location	Field ID	Location ID	Sample Date	Lab pH	Alkalinity			
					Total as $CaCO_3$ (mg/L)	as Bicarbonate (HCO_3^-) (mg/L)	as Carbonate (CO_3^{2-}) (mg/L)	as Hydroxide (OH^-) (mg/L)
			PRSD	0	0	0	-	-
Lake Winnipeg	LKW2	LKW2	21-May-12	8.47	206	239	<12	<6.8
	LKW2B	LKW2	21-May-12	8.48	206	239	<12	<6.8
	LKW2C	LKW2	21-May-12	8.47	206	239	<12	<6.8
			Mean	8.47	206	239	<12	<6.8
			SD	0.01	0	0	-	-
			PRSD	0	0	0	-	-
Fairford River	FR-1	FR1	16-Jul-12	8.62	177	194	<12	<6.8
	RC-A	FR-1	16-Jul-12	8.62	177	195	<12	<6.8
	RC-B	FR-1	16-Jul-12	8.64	177	194	<12	<6.8
			Mean	8.63	177	194	<12	<6.8
			SD	0.012	0.0	0.6	-	-
			PRSD	0	0	0	-	-
Lake St. Martin	LSM-1	LSM1	17-Jul-12	8.58	192	215	<12	<6.8
	BC-A	LSM1	17-Jul-12	8.56	192	216	<12	<6.8
	BC-B	LSM1	17-Jul-12	8.58	193	215	<12	<6.8
			Mean	8.57	192	215	<12	<6.8
			SD	0.012	0.6	0.6	-	-
			PRSD	0	0	0	-	-
FIELD BLANKS								
	WQ-5		17-Jan-12	5.69	1.9	2.3	<0.60	<0.40
	AB-2		16-Jan-12	5.98	1.9	2.3	<0.60	<0.40
	FIELD BLANK		19-Jan-12	5.80	1.8	2.2	<0.60	<0.40
	BC-10		16-May-12	6.33	2.2	2.7	<0.60	<0.34
	AB - 1		16-May-12	6.36	2.1	2.6	<0.60	<0.34
	JP-002		21-May-12	6.26	2.1	2.6	<0.60	<0.34

Table C-9. Continued.

Sample Location	Field ID	Location ID	Sample Date	Lab pH	Alkalinity			
					Total as $CaCO_3$ (mg/L)	as Bicarbonate (HCO_3^-) (mg/L)	as Carbonate (CO_3^{2-}) (mg/L)	as Hydroxide (OH^-) (mg/L)
	RC-1		16-Jul-12	7.65	2.2	2.7	<0.60	<0.34
	BC-1		17-Jul-12	6.43	2.2	2.6	<0.60	<0.34
TRIP BLANKS								
	TRIP		16-Jan-12	6.07	2	2.4	<0.60	<0.40
	BC-T		17-Jan-12	5.95	1.8	2.2	<0.60	<0.40
	TRIP BLANK		19-Jan-12	6.01	1.9	2.3	<0.60	<0.40
	BC-11		16-May-12	6.09	1.8	2.2	<0.60	<0.34
	DE-1 TRIP BLANK		16-May-12	6.04	1.8	2.3	<0.60	<0.34
	TRIP BLANK		21-May-12	6.11	1.8	2.3	<0.60	<0.34
	RR-1		16-Jul-12	7.54	2.0	2.4	<0.60	<0.34
	TB-1		17-Jul-12	6.13	1.7	2.1	<0.60	<0.34

Table C-9. Continued.

Sample Location	Field ID	Location ID	Sample Date	Nitrogen				
				Ammonia (mg/L N)	Nitrate/ nitrite (mg/L N)	Nitrate-N (mg/L N)	Nitrite-N (mg/L N)	TKN (mg/L N)
Analytical Detection Limits				*0.010*	*0.0051*	*0.0050*	*0.0010*	*0.20*
5x detection limit				*0.050*	*0.026*	*0.025*	*0.005*	*1.0*
TRIPLICATE SAMPLES								
Lake Manitoba	LM-2	NARR1	16-Jan-12	0.038	<0.0051	<0.0050	0.0015	1.08
	BC-2	NARR1	16-Jan-12	0.042	0.0077	0.0077	<0.0010	1.07
	CD-2	NARR1	16-Jan-12	0.037	<0.0051	0.0050	<0.0010	1.08
			Mean	0.039	<0.0051	0.0051	<0.0010	1.08
			SD	0.003	-	-	-	0.01
			PRSD	-	-	-	-	1
Lake Winnipeg	LKW6A	LKW6	18-Jan-12	0.058	<0.0051	<0.0050	<0.0010	0.84
	LKW6B	LKW6	18-Jan-12	0.019	0.0072	0.0072	<0.0010	0.84
	LKW6C	LKW6	18-Jan-12	0.022	0.0089	0.0089	<0.0010	0.84
			Mean	0.033	0.0062	0.0062	<0.0010	0.84
			SD	0.022	-	-	-	0
			PRSD	**66**	-	-	-	0
Fairford River	FR - 1	FR1	16-May-12	0.018	<0.0051	<0.0050	<0.0010	0.94
	BC - 1	FR1	16-May-12	0.021	<0.0051	<0.0050	<0.0010	0.90
	CD - 1	FR1	16-May-12	0.035	<0.0051	<0.0050	<0.0010	0.93
			Mean	0.025	<0.0051	<0.0050	<0.0010	0.92
			SD	0.009	-	-	-	0.02
			PRSD	**37**	-	-	-	2
Buffalo Creek	BC3-A	BC3	16-May-12	0.015	<0.0051	<0.0050	<0.0010	0.87
	BC3-B	BC3	16-May-12	0.016	<0.0051	<0.0050	<0.0010	0.92
	BC3-C	BC3	16-May-12	0.015	<0.0051	<0.0050	<0.0010	0.95
			Mean	0.015	<0.0051	<0.0050	<0.0010	0.91
			SD	0.001	-	-	-	0.04
			PRSD	4	-	-	-	4

Table C-9. Continued.

Sample Location	Field ID	Location ID	Sample Date	Nitrogen				
				Ammonia (mg/L N)	Nitrate/ nitrite (mg/L N)	Nitrate-N (mg/L N)	Nitrite-N (mg/L N)	TKN (mg/L N)
Lake Winnipeg	LKW2	LKW2	21-May-12	0.012	<0.0051	<0.0050	<0.0010	0.88
	LKW2B	LKW2	21-May-12	0.014	<0.0051	<0.0050	<0.0010	0.84
	LKW2C	LKW2	21-May-12	0.013	<0.0051	<0.0050	<0.0010	0.97
			Mean	0.013	<0.0051	<0.0050	<0.0010	0.90
			SD	0.001	-	-	-	0.07
			PRSD	8	-	-	-	7
Fairford River	FR-1	FR1	16-Jul-12	0.015	<0.0051	<0.0050	<0.0010	0.83
	RC-A	FR-1	16-Jul-12	0.017	<0.0051	<0.0050	<0.0010	0.84
	RC-B	FR-1	16-Jul-12	0.020	<0.0051	<0.0050	<0.0010	0.87
			Mean	0.017	<0.0051	<0.0050	<0.0010	0.85
			SD	0.0025	-	-	-	0.021
			PRSD	15	-	-	-	2
Lake St. Martin	LSM-1	LSM1	17-Jul-12	0.014	<0.0051	<0.0050	<0.0010	0.98
	BC-A	LSM1	17-Jul-12	0.014	<0.0051	<0.0050	<0.0010	0.88
	BC-B	LSM1	17-Jul-12	0.013	<0.0051	<0.0050	<0.0010	0.91
			Mean	0.014	<0.0051	<0.0050	<0.0010	0.92
			SD	0.0006	-	-	-	0.051
			PRSD	4	-	-	-	6
FIELD BLANKS								
	WQ-5		17-Jan-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	AB-2		16-Jan-12	0.01	<0.0051	<0.0050	<0.0010	<0.20
	FIELD BLANK		19-Jan-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	BC-10		16-May-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	AB - 1		16-May-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	JP-002		21-May-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	RC-1		16-Jul-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	BC-1		17-Jul-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20

Table C-9. Continued.

Sample Location	Field ID	Location ID	Sample Date	Nitrogen				
				Ammonia (mg/L N)	Nitrate/ nitrite (mg/L N)	Nitrate-N (mg/L N)	Nitrite-N (mg/L N)	TKN (mg/L N)
TRIP BLANKS								
	TRIP		16-Jan-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	BC-T		17-Jan-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	TRIP BLANK		19-Jan-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	BC-11		16-May-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	DE-1 TRIP BLANK		16-May-12	<0.010	<0.0051	<0.0050	0.0018	<0.20
	TRIP BLANK		21-May-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	RR-1		16-Jul-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	TB-1		17-Jul-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20

Table C-9. Continued.

Sample Location	Field ID	Location ID	Sample Date	Phosphorus Total (mg/L P)	Phosphorus Dissolved (mg/L P)	Phosphorus Total Particulate (mg/L P)	Carbon Total Inorganic (mg/L)	Carbon Total Organic (mg/L)	Carbon Dissolved Organic (mg/L)
Analytical Detection Limits				*0.0010/0.0020/0.010*	*0.0010/0.0020/0.010*	*0.010/0.014/0.028*	*1.0*	*1.0*	*1.0*
5x detection limit				*0.0050/0.010/0.050*	*0.0050/0.010/0.050*	*0.050/0.070/0.140*	*5.0*	*5.0*	*5.0*
TRIPLICATE SAMPLES									
Lake Manitoba	LM-2	NARR1	16-Jan-12	0.022	0.011	<0.014	60.3	13.4	12.1
	BC-2	NARR1	16-Jan-12	0.022	0.011	<0.014	60.5	13.4	12.4
	CD-2	NARR1	16-Jan-12	0.020	<0.010	<0.014	62.3	13.7	12.7
			Mean	0.0213	0.009	<0.014	61.0	13.5	12.4
			SD	0.0012	-	-	1.10	0.17	0.30
			PRSD	5	-	-	2	1	2
Lake Winnipeg	LKW6A	LKW6	18-Jan-12	0.022	0.012	<0.014	44.0	13.8	12.7
	LKW6B	LKW6	18-Jan-12	0.013	0.011	<0.014	45.2	13.5	13.0
	LKW6C	LKW6	18-Jan-12	0.015	0.011	<0.014	45.5	13.9	13.3
			Mean	0.017	0.011	<0.014	44.9	13.7	13.0
			SD	0.005	0.001	-	0.8	0.2	0.3
			PRSD	**28**	5	-	2	2	2
Fairford River	FR - 1	FR1	16-May-12	0.011	0.012	<0.014	47.3	13.4	12.7
	BC - 1	FR1	16-May-12	0.012	0.010	<0.014	47.0	13.9	12.4
	CD - 1	FR1	16-May-12	0.0169	0.011	<0.014	46.7	13.7	12.5
			Mean	0.013	0.011	<0.014	47.0	13.7	12.5
			SD	0.003	0.001	-	0.30	0.25	0.15
			PRSD	**24**	9	-	1	2	1
Buffalo Creek	BC3-A	BC3	16-May-12	0.012	0.011	<0.014	47.9	12.7	12.7
	BC3-B	BC3	16-May-12	0.012	0.010	<0.014	48.3	13.7	12.8
	BC3-C	BC3	16-May-12	0.010	0.011	<0.014	48.0	13.5	13.2
			Mean	0.011	0.011	<0.014	48.1	13.3	12.9
			SD	0.001	0.001	-	0.21	0.53	0.26
			PRSD	10	5	-	0	4	2

Table C-9. Continued.

Sample Location	Field ID	Location ID	Sample Date	Phosphorus Total (mg/L P)	Phosphorus Dissolved (mg/L P)	Phosphorus Total Particulate (mg/L P)	Carbon Total Inorganic (mg/L)	Carbon Total Organic (mg/L)	Carbon Dissolved Organic (mg/L)
Lake Winnipeg	LKW2	LKW2	21-May-12	0.015	0.003	0.0124	46.9	12.8	11.9
	LKW2B	LKW2	21-May-12	0.016	0.010	<0.014	47.5	12.9	11.9
	LKW2C	LKW2	21-May-12	0.016	0.011	<0.014	47.8	12.2	11.8
			Mean	0.016	0.008	0.009	47.4	12.6	11.9
			SD	0.001	0.004	-	0.5	0.4	0.1
			PRSD	4	**54**	-	1	3	0
Fairford River	FR-1	FR1	16-Jul-12	0.014	0.0029	0.011	41.7	12.2	11.7
	RC-A	FR-1	16-Jul-12	0.013	0.0030	0.010	41.2	12.2	12.0
	RC-B	FR-1	16-Jul-12	0.010	0.0053	<0.010	41.6	11.9	11.3
			Mean	0.012	0.0037	<0.010	41.5	12.1	11.7
			SD	0.0022	0.00136	-	0.26	0.17	0.35
			PRSD	17	**36**	-	1	1	3
Lake St. Martin	LSM-1	LSM1	17-Jul-12	0.014	0.0036	0.010	43.3	12.4	12.0
	BC-A	LSM1	17-Jul-12	0.016	0.0050	0.011	43.4	12.7	11.4
	BC-B	LSM1	17-Jul-12	0.017	0.0030	0.014	43.4	13.0	11.8
			Mean	0.016	0.0039	0.012	43.4	12.7	11.7
			SD	0.0015	0.00103	0.0021	0.06	0.30	0.31
			PRSD	10	**27**	18	0	2	3
FIELD BLANKS									
	WQ-5		17-Jan-12	<0.010	<0.010	<0.010	<1.0	<1.0	<1.0
	AB-2		16-Jan-12	<0.010	<0.010	<0.010	<1.0	<1.0	<1.0
	FIELD BLANK		19-Jan-12	<0.0020	<0.0020	<0.0028	<1.0	<1.0	<1.0
	BC-10		16-May-12	<0.0010	<0.0010	<0.0014	<1.0	<1.0	<1.0
	AB - 1		16-May-12	<0.0010	-	<0.0014	<1.0	<1.0	<1.0
	JP-002		21-May-12	**0.0052**	<0.0010	<0.0014	<1.0	<1.0	<1.0
	RC-1		16-Jul-12	<0.0010	<0.0010	<0.0014	<1.0	<1.0	<1.0
	BC-1		17-Jul-12	<0.0010	<0.0010	<0.0014	<1.0	<1.0	<1.0

Table C-9. Continued.

Sample Location	Field ID	Location ID	Sample Date	Phosphorus			Carbon		
				Total (mg/L P)	Dissolved (mg/L P)	Total Particulate (mg/L P)	Total Inorganic (mg/L)	Total Organic (mg/L)	Dissolved Organic (mg/L)
TRIP BLANKS									
	TRIP		16-Jan-12	<0.010	<0.014	<0.014	<1.0	<1.0	<1.0
	BC-T		17-Jan-12	<0.010	<0.014	<0.014	<1.0	<1.0	<1.0
	TRIP BLANK		19-Jan-12	<0.0010	<0.0020	0.046	<1.0	<1.0	<1.0
	BC-11		16-May-12	<0.0010	<0.0010	<0.0014	<1.0	<1.0	<1.0
	DE-1 TRIP BLANK		16-May-12	<0.0010	<0.0010	<0.0014	<1.0	<1.0	<1.0
	TRIP BLANK		21-May-12	<0.0010	<0.0010	<0.0014	<1.0	<1.0	<1.0
	RR-1		16-Jul-12	0.0019	0.0025	<0.0014	1.1	<1.0	<1.0
	TB-1		17-Jul-12	<0.0010	<0.0010	<0.0014	<1.0	1.1	<1.0

Table C-9. Continued.

Sample Location	Field ID	Location ID	Sample Date	Conductivity (µmhos/cm)	TDS (mg/L)	Water Clarity: TSS (mg/L)	Water Clarity: Turbidity (NTU)	Water Clarity: True Colour (CU)	Algal Pigments: Chlorophyll *a* (µg/L)	Algal Pigments: Pheophytin *a* (µg/L)
Analytical Detection Limits				*0.40/1/20*	*5.0*	*2.0*	*0.10*	*5.0*	*0.10*	*0.10*
5x detection limit				*2.0/5/100*	*25*	*10*	*0.50*	*25*	*0.50*	*0.50*
TRIPLICATE SAMPLES										
Lake Manitoba	LM-2	NARR1	16-Jan-12	1050	682	2.8	4.97	11.5	4.09	1.60
	BC-2	NARR1	16-Jan-12	891	744	3.6	5.24	12.8	4.41	1.75
	CD-2	NARR1	16-Jan-12	1060	774	2.8	4.89	13.8	4.39	1.55
			Mean	1000	733	3.1	5.03	12.7	4.30	1.63
			SD	94.8	47	0.46	0.18	1.15	0.18	0.10
			PRSD	9	6	-	4	-	4	6
Lake Winnipeg	LKW6A	LKW6	18-Jan-12	830	546	2.8	3.86	15.5	3.64	1.35
	LKW6B	LKW6	18-Jan-12	874	596	4.4	3.64	15.1	3.51	1.41
	LKW6C	LKW6	18-Jan-12	878	594	3.2	3.36	15.5	3.34	1.24
			Mean	861	579	3.5	3.62	15.4	3.50	1.33
			SD	27	28	0.8	0.25	0.2	0.15	0.09
			PRSD	3	5	**24**	7	2	4	6
Fairford River	FR - 1	FR1	16-May-12	1110	664	10.4	5.98	8.3	4.42	0.64
	BC - 1	FR1	16-May-12	1110	654	10.0	6.93	8.4	4.31	0.65
	CD - 1	FR1	16-May-12	1110	664	10.0	7.21	8.7	2.67	0.37
			Mean	1110	661	10.1	6.71	8.5	3.80	0.55
			SD	0	6	0.2	0.64	0.2	0.98	0.16
			PRSD	0	1	2	10	-	**26**	**29**
Buffalo Creek	BC3-A	BC3	16-May-12	1090	638	6.8	3.78	11.7	2.05	0.89
	BC3-B	BC3	16-May-12	1090	634	8.4	3.68	12.6	1.72	0.70
	BC3-C	BC3	16-May-12	1090	634	8.0	4.08	12.6	2.06	0.86
			Mean	1090	635	7.7	3.85	12.3	1.94	0.82
			SD	0	2	0.8	0.21	0.52	0.19	0.10
			PRSD	0	0	11	5	4	10	13

Table C-9. Continued.

Sample Location	Field ID	Location ID	Sample Date	Conductivity (µmhos/cm)	TDS (mg/L)	Water Clarity			Algal Pigments	
						TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Pheophytin *a* (µg/L)
Lake Winnipeg	LKW2	LKW2	21-May-12	1100	732	9.2	6.70	12.4	3.08	1.27
	LKW2B	LKW2	21-May-12	1100	658	7.6	6.64	11.5	3.27	0.85
	LKW2C	LKW2	21-May-12	1100	878	7.6	6.17	9.4	3.95	0.78
			Mean	1100	756	8.1	6.50	11.1	3.43	0.97
			SD	0	112	0.9	0.29	1.5	0.46	0.27
			PRSD	0	15	11	4	14	13	**27**
Fairford River	FR-1	FR1	16-Jul-12	1020	606	11.5	7.33	<5.0	1.93	0.40
	RC-A	FR-1	16-Jul-12	1020	601	11.4	6.63	5.6	2.21	0.81
	RC-B	FR-1	16-Jul-12	1030	604	12.0	6.73	5.8	2.33	0.69
			Mean	1023	604	11.6	6.90	<5.0	2.16	0.63
			SD	5.8	2.5	0.32	0.379	-	0.205	0.211
			PRSD	1	0	3	5	-	10	33
Lake St. Martin	LSM-1	LSM1	17-Jul-12	1030	678	12.7	8.17	6.9	5.17	1.06
	BC-A	LSM1	17-Jul-12	1020	696	13.2	8.73	5.6	4.73	1.15
	BC-B	LSM1	17-Jul-12	1030	687	11.7	8.20	5.9	3.70	0.60
			Mean	1027	687	12.5	8.37	6.1	4.53	0.94
			SD	5.8	9.0	0.76	0.315	0.68	0.754	0.295
			PRSD	1	1	6	4	11	17	31
FIELD BLANKS										
	WQ-5		17-Jan-12	1.16	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	AB-2		16-Jan-12	0.96	<5.0	<2.0	0.19	<5.0	<0.10	<0.10
	FIELD BLANK		19-Jan-12	0.75	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	BC-10		16-May-12	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	AB - 1		16-May-12	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	JP-002		21-May-12	<1.0	<5.0	7.6	<0.10	<5.0	<0.10	<0.10
	RC-1		16-Jul-12	<1.0	<5.0	<2.0	<0.10	<5.0	0.11	<0.10
	BC-1		17-Jul-12	<1.0	<5.0	<2.0	0.16	<5.0	<0.10	<0.10

Table C-9. Continued.

Sample Location	Field ID	Location ID	Sample Date	Conductivity (µmhos/cm)	TDS (mg/L)	Water Clarity			Algal Pigments	
						TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Pheophytin *a* (µg/L)
TRIP BLANKS										
	TRIP		16-Jan-12	0.85	<5.0	<2.0	0.12	<5.0	<0.10	<0.10
	BC-T		17-Jan-12	0.85	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	TRIP BLANK		19-Jan-12	0.83	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	BC-11		16-May-12	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	DE-1 TRIP BLANK		16-May-12	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	TRIP BLANK		21-May-12	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	RR-1		16-Jul-12	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	TB-1		17-Jul-12	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10

Table C-10. Quality assurance/quality control results for major ions and metals measured in the laboratory. Percent relative standard deviations (PRSD) above 18% are indicated in red. Field and trip blank measurements greater than five times the analytical detection limits are also indicated in red. Measurements in blue italics are considered suspect.

Sample Location	Field ID	Location ID	Sample Date	Hardness, as $CaCO_3$	Aluminum		Antimony	
					Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.30*	*0.0020/ 0.020*	*0.0030/ 0.005/ 0.050*	*0.000050 /0.00020/ 0.0020*	*0.000050/ 0.0002/ 0.0020*
5x detection limit				*1.50*	*0.010/ 0.10*	*0.015/ 0.025/ 0.25*	*0.00025/ 0.0010/ 0.010*	*0.00025/ 0.0010/ 0.010*
TRIPLICATE SAMPLES								
Lake Manitoba	LM-2	NARR1	16-Jan-12	371	0.0116	0.0872	0.00026	<0.00020
	BC-2	NARR1	16-Jan-12	359	0.0067	0.0765	0.00024	<0.00020
	CD-2	NARR1	16-Jan-12	364	0.0060	0.0931	0.00024	<0.00020
		NARR1	Mean	365	0.0081	0.0856	0.00025	<0.00020
			SD	6	0.00305	0.00841	0.000012	-
			PRSD	2	**38**	10	5	-
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	294	0.0079	0.159	<0.00020	<0.00020
	LKW-6B	LKW6	18-Jan-12	293	0.0120	0.160	<0.00020	<0.00020
	LKW-6C	LKW6	18-Jan-12	292	0.0139	0.122	<0.00020	<0.00020
		LKW6	Mean	293	0.0113	0.1470	<0.00020	<0.00020
			SD	1	0.00307	0.02166	-	-
			PRSD	0	**27**	15	-	-
Fairford River	FR - 1	FR1	16-May-12	277	<0.0020	0.1170	<0.00020	0.000155
	BC - 1	FR1	16-May-12	289	<0.0020	0.0985	<0.00020	0.000109
	CD - 1	FR1	16-May-12	280	0.0022	0.0774	<0.00020	0.000135
		FR1	Mean	282	<0.0020	0.0976	<0.00020	0.00013
			SD	6	0.0007	0.01981	-	0.000023
			PRSD	2	-	**20**	-	17

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Hardness, as $CaCO_3$	Aluminum		Antimony	
					Dissolved	Total	Dissolved	Total
Buffalo Creek	BC3-A	BC3	16-May-12	280	<0.0020	0.131	<0.00020	0.000112
	BC3-B	BC3	16-May-12	270	<0.0020	0.108	<0.00020	0.000155
	BC3-C	BC3	16-May-12	281	0.0032	0.118	<0.00020	0.000158
		BC3	Mean	277	<0.0020	0.1190	<0.00020	0.00014
			SD	6	0.0013	0.01153	-	0.000026
			PRSD	2	-	10	-	18
Lake Winnipeg	LKW-2	LKW2	21-May-12	239	0.0038	0.168	<0.00020	0.000165
	LKW-2B	LKW2	21-May-12	257	0.0022	0.154	<0.00020	0.00016
	LKW-2C	LKW2	21-May-12	293	0.0031	0.156	<0.00020	0.000163
		LKW2	Mean	263	0.0030	0.1593	<0.00020	0.00016
			SD	27	0.00080	0.00757	-	0.000003
			PRSD	10	**26**	5	-	2
Fairford River	FR-1	FR1	16-Jul-12	272	0.0029	0.0227	0.000167	<0.00020
	RC-A	FR1	16-Jul-12	283	0.0038	0.0416	0.000181	<0.00020
	RC-B	FR1	16-Jul-12	267	0.0029	0.0197	0.000157	<0.00020
		FR1	Mean	274	0.0032	0.0280	0.00017	<0.00020
			SD	8	0.00052	0.01187	0.000012	-
			PRSD	3	16	**42**	7	-
Lake St. Martin	LSM-1	LSM1	17-Jul-12	283	<0.0020	0.0632	<0.00020	<0.00020
	BC-A	LSM1	17-Jul-12	309	0.0044	0.1000	<0.00020	0.00021
	BC-B	LSM1	17-Jul-12	296	0.0089	0.0657	<0.00020	<0.00020
		LSM1	Mean	296	0.0048	0.0763	<0.00020	<0.00020
			SD	13	0.0040	0.02056	-	0.000064
			PRSD	4	-	**27**	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Hardness, as $CaCO_3$	Aluminum		Antimony	
					Dissolved	Total	Dissolved	Total
FIELD BLANKS								
	AB-2		16-Jan-12	<0.30	<0.0020	0.0088	<0.00020	<0.00020
	FIELD		17-Jan-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	FIELD		18-Jan-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	BC-10		16-May-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	AB - 1		16-May-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	JP-002		21-May-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	RC-1		16-Jul-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	BC-1		17-Jul-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
TRIP BLANKS								
	TRIP BLANK		16-Jan-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	TRIP		17-Jan-12	0.31	<0.0020	0.0064	<0.00020	<0.00020
	TRIP BLANK		18-Jan-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	BC-11		16-May-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	DE-1 TRIP BLANK		16-May-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	TRIP BLANK		21-May-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	RR-1		16-Jul-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020
	TB-1		17-Jul-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Arsenic		Barium		Beryllium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.000060/ 0.00020/ 0.0020*	*0.000060/ 0.00020/ 0.0020*	*0.000080/ 0.00020/ 0.0020*	*0.00020/ 0.0020*	*0.00020*	*0.0002*
5x detection limit				*0.00030/ 0.0010/ 0.010*	*0.00030/ 0.0010/ 0.010*	*0.00040/ 0.0010/ 0.010*	*0.0010/ 0.010*	*0.0010*	*0.0010*
TRIPLICATE SAMPLES									
Lake Manitoba	LM-2	NARR1	16-Jan-12	0.00423	0.00393	0.0793	0.0759	<0.00020	<0.00020
	BC-2	NARR1	16-Jan-12	0.00393	0.00416	0.0748	0.0754	<0.00020	<0.00020
	CD-2	NARR1	16-Jan-12	0.00405	0.00418	0.0769	0.0797	<0.00020	<0.00020
		NARR1	Mean	0.00407	0.00409	0.07700	0.07700	<0.00020	<0.00020
			SD	0.000151	0.000139	0.002252	0.002352	-	-
			PRSD	4	3	3	3	-	-
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	0.00297	0.00254	0.0491	0.0529	<0.00020	<0.00020
	LKW-6B	LKW6	18-Jan-12	0.00278	0.00257	0.0492	0.0538	<0.00020	<0.00020
	LKW-6C	LKW6	18-Jan-12	0.00278	0.00258	0.051	0.0532	<0.00020	<0.00020
		LKW6	Mean	0.00284	0.00256	0.04977	0.05330	<0.00020	<0.00020
			SD	0.000110	0.000021	0.001069	0.000458	-	-
			PRSD	4	1	2	1	-	-
Fairford River	FR - 1	FR1	16-May-12	0.00252	0.00263	0.0487	0.0485	<0.00020	<0.00020
	BC - 1	FR1	16-May-12	0.00249	0.00223	0.0489	0.0497	<0.00020	<0.00020
	CD - 1	FR1	16-May-12	0.00243	0.00267	0.0496	0.0477	<0.00020	<0.00020
		FR1	Mean	0.00248	0.00251	0.04907	0.04863	<0.00020	<0.00020
			SD	0.000046	0.000243	0.000473	0.001007	-	-
			PRSD	2	10	1	2	-	-
Buffalo Creek	BC3-A	BC3	16-May-12	0.00215	0.00211	0.0486	0.0467	<0.00020	<0.00020
	BC3-B	BC3	16-May-12	0.00184	0.00223	0.0483	0.0463	<0.00020	<0.00020
	BC3-C	BC3	16-May-12	0.00211	0.00176	0.0476	0.0472	<0.00020	<0.00020
		BC3	Mean	0.00203	0.00203	0.04817	0.04673	<0.00020	<0.00020
			SD	0.000169	0.000244	0.000513	0.000451	-	-
			PRSD	8	12	1	1	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Arsenic		Barium		Beryllium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	0.0018	0.002	0.0538	0.0563	<0.00020	0.00031
	LKW-2B	LKW2	21-May-12	0.0018	0.00232	0.0534	0.0601	<0.00020	<0.00020
	LKW-2C	LKW2	21-May-12	0.0019	0.00261	0.0531	0.0666	<0.00020	0.00075
		LKW2	Mean	0.00183	0.00231	0.05343	0.06100	<0.00020	0.00039
			SD	0.000058	0.000305	0.000351	0.005209	-	0.000332
			PRSD	3	13	1	9	-	-
Fairford River	FR-1	FR1	16-Jul-12	0.00141	0.00226	0.043	0.0509	<0.00020	<0.00020
	RC-A	FR1	16-Jul-12	0.0021	0.00237	0.0464	0.0536	<0.00020	<0.00020
	RC-B	FR1	16-Jul-12	0.00147	0.00225	0.0415	0.0506	0.00042	<0.00020
		FR1	Mean	0.00166	0.00229	0.04363	0.05170	<0.00020	<0.00020
			SD	0.000382	0.000067	0.002511	0.001652	-	-
			PRSD	23	3	6	3	-	-
Lake St. Martin	LSM-1	LSM1	17-Jul-12	0.00252	0.00257	0.0456	0.05	<0.00020	<0.00020
	BC-A	LSM1	17-Jul-12	0.00305	0.00251	0.0461	0.0504	<0.00020	<0.00020
	BC-B	LSM1	17-Jul-12	0.00286	0.00242	0.047	0.0507	<0.00020	<0.00020
		LSM1	Mean	0.00281	0.00250	0.04623	0.05037	<0.00020	<0.00020
			SD	0.000269	0.000075	0.000709	0.000351	-	-
			PRSD	10	3	2	1	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Arsenic		Barium		Beryllium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS									
	AB-2		16-Jan-12	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	FIELD		17-Jan-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	FIELD		18-Jan-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	BC-10		16-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	AB - 1		16-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	JP-002		21-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	RC-1		16-Jul-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	BC-1		17-Jul-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
TRIP BLANKS									
	TRIP BLANK		16-Jan-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TRIP		17-Jan-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TRIP BLANK		18-Jan-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	BC-11		16-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	DE-1 TRIP BLANK		16-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TRIP BLANK		21-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	RR-1		16-Jul-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TB-1		17-Jul-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Bismuth		Boron		Cadmium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.000040/ 0.00020*	*0.000040/ 0.00020*	*0.0040/ 0.010*	*0.0050/ 0.010*	*0.0000050/ 0.000010*	*0.0000070/ 0.000010*
5x detection limit				*0.00020/ 0.0010*	*0.00020/ 0.0010*	*0.020/ 0.050*	*0.025/ 0.050*	*0.000025/ 0.000050*	*0.000035/ 0.000050*
TRIPLICATE SAMPLES									
Lake Manitoba	LM-2	NARR1	16-Jan-12	<0.00020	<0.00020	0.126	0.126	0.000015	<0.000010
	BC-2	NARR1	16-Jan-12	<0.00020	<0.00020	0.122	0.127	0.000017	<0.000010
	CD-2	NARR1	16-Jan-12	<0.00020	<0.00020	0.123	0.132	0.000017	<0.000010
		NARR1	Mean	<0.00020	<0.00020	0.124	0.128	0.000016	<0.000010
			SD	-	-	0.0021	0.0032	0.0000012	-
			PRSD	-	-	2	3	7	-
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	<0.00020	<0.00020	0.07	0.059	0.00001	0.000016
	LKW-6B	LKW6	18-Jan-12	<0.00020	<0.00020	0.063	0.055	<0.000010	0.000012
	LKW-6C	LKW6	18-Jan-12	<0.00020	<0.00020	0.066	0.062	<0.000010	0.000011
		LKW6	Mean	<0.00020	<0.00020	0.066	0.059	<0.000010	0.000013
			SD	-	-	0.0035	0.0035	-	0.0000026
			PRSD	-	-	5	6	-	20
Fairford River	FR - 1	FR1	16-May-12	<0.00020	<0.000040	0.106	0.126	<0.000010	0.0000355
	BC - 1	FR1	16-May-12	<0.00020	<0.000040	0.108	0.133	<0.000010	<0.0000070
	CD - 1	FR1	16-May-12	<0.00020	<0.000040	0.11	0.126	<0.000010	0.0000113
		FR1	Mean	<0.00020	<0.000040	0.108	0.128	<0.000010	0.000020
			SD	-	-	0.0020	0.0040	-	-
			PRSD	-	-	2	3	-	-
Buffalo Creek	BC3-A	BC3	16-May-12	<0.00020	<0.000040	0.114	0.134	<0.000010	<0.0000070
	BC3-B	BC3	16-May-12	<0.00020	<0.000040	0.112	0.138	<0.000010	0.0000095
	BC3-C	BC3	16-May-12	<0.00020	<0.000040	0.115	0.121	<0.000010	0.0000212
		BC3	Mean	<0.00020	<0.000040	0.114	0.131	<0.000010	0.000011
			SD	-	-	0.0015	0.0089	-	-
			PRSD	-	-	1	7	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Bismuth		Boron		Cadmium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	<0.00020	0.000101	0.093	0.081	<0.000010	<0.0000070
	LKW-2B	LKW2	21-May-12	<0.00020	0.000084	0.084	0.109	<0.000010	0.0000215
	LKW-2C	LKW2	21-May-12	<0.00020	<0.000040	0.092	0.148	<0.000010	0.0000266
		LKW2	Mean	<0.00020	0.00007	0.090	0.113	<0.000010	0.000017
			SD	-	0.000043	0.0049	0.0337	-	-
			PRSD	-	-	6	30	-	-
Fairford River	FR-1	FR1	16-Jul-12	<0.000040	<0.00020	0.0675	0.1	<0.0000050	0.000093
	RC-A	FR1	16-Jul-12	<0.000040	<0.00020	0.0698	0.108	0.0000217	0.000097
	RC-B	FR1	16-Jul-12	<0.000040	<0.00020	0.0637	0.101	0.0000237	0.000078
		FR1	Mean	<0.000040	<0.00020	0.067	0.103	0.000023	0.000089
			SD	-	-	0.0031	0.0044	0.0000014	0.0000100
			PRSD	-	-	5	4	6	11
Lake St. Martin	LSM-1	LSM1	17-Jul-12	<0.00020	<0.00020	0.106	0.147	<0.000010	<0.000010
	BC-A	LSM1	17-Jul-12	<0.00020	<0.00020	0.122	0.133	<0.000010	<0.000010
	BC-B	LSM1	17-Jul-12	<0.00020	<0.00020	0.128	0.126	<0.000010	<0.000010
		LSM1	Mean	<0.00020	<0.00020	0.119	0.135	<0.000010	<0.000010
			SD	-	-	0.0114	0.0107	-	-
			PRSD	-	-	10	8	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Bismuth		Boron		Cadmium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS									
	AB-2		16-Jan-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	FIELD		17-Jan-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	FIELD		18-Jan-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	BC-10		16-May-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	AB - 1		16-May-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	JP-002		21-May-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	RC-1		16-Jul-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	BC-1		17-Jul-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
TRIP BLANKS									
	TRIP BLANK		16-Jan-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	TRIP		17-Jan-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	TRIP BLANK		18-Jan-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	BC-11		16-May-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	DE-1 TRIP BLANK		16-May-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	TRIP BLANK		21-May-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	RR-1		16-Jul-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	TB-1		17-Jul-12	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Calcium		Cesium		Chloride
				Dissolved	Total	Dissolved	Total	Dissolved
Analytical Detection Limits				*0.030/ 0.050/0.50*	*0.040/ 0.10/1.0*	*0.000040/ 0.00010*	*0.000030/ 0.00010*	*0.20*
5x detection limit				*0.15/ 0.25/2.5*	*0.20/ 0.50/5.0*	*0.00020/ 0.00050*	*0.000150/ 0.00050*	*1.00*
TRIPLICATE SAMPLES								
Lake Manitoba	LM-2	NARR1	16-Jan-12	54.8	54.3	<0.00010	<0.00010	157
	BC-2	NARR1	16-Jan-12	52.6	55.1	<0.00010	<0.00010	159
	CD-2	NARR1	16-Jan-12	54.2	56.3	<0.00010	<0.00010	162
		NARR1	Mean	53.9	55.2	<0.00010	<0.00010	159
			SD	1.14	1.01	-	-	2.5
			PRSD	2	2	-	-	2
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	51.4	45.3	<0.00010	<0.00010	140
	LKW-6B	LKW6	18-Jan-12	54.1	46.5	<0.00010	<0.00010	153
	LKW-6C	LKW6	18-Jan-12	52.8	46.8	<0.00010	<0.00010	154
		LKW6	Mean	52.8	46.2	<0.00010	<0.00010	149
			SD	1.35	0.79	-	-	7.8
			PRSD	3	2	-	-	5
Fairford River	FR - 1	FR1	16-May-12	49.3	46.7	<0.00010	<0.000030	177
	BC - 1	FR1	16-May-12	48.4	49.5	<0.00010	<0.000030	178
	CD - 1	FR1	16-May-12	48.2	47.4	<0.00010	<0.000030	177
		FR1	Mean	48.6	47.9	<0.00010	<0.000030	177
			SD	0.59	1.46	-	-	0.6
			PRSD	1	3	-	-	0
Buffalo Creek	BC3-A	BC3	16-May-12	48.7	47	<0.00010	<0.000030	175
	BC3-B	BC3	16-May-12	48.4	46.7	<0.00010	<0.000030	174
	BC3-C	BC3	16-May-12	47.9	46.6	<0.00010	<0.000030	174
		BC3	Mean	48.3	46.8	<0.00010	<0.000030	174
			SD	0.40	0.21	-	-	0.6
			PRSD	1	0	-	-	0

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Calcium		Cesium		Chloride
				Dissolved	Total	Dissolved	Total	Dissolved
Lake Winnipeg	LKW-2	LKW2	21-May-12	48.9	43.6	<0.00010	0.000043	174
	LKW-2B	LKW2	21-May-12	49.6	52.4	<0.00010	<0.000030	174
	LKW-2C	LKW2	21-May-12	48.1	49.8	<0.00010	<0.000030	174
		LKW2	Mean	48.9	48.6	<0.00010	<0.000030	174
			SD	0.75	4.52	-	-	0.0
			PRSD	2	9	-	-	0
Fairford River	FR-1	FR1	16-Jul-12	38.2	47.9	<0.000040	<0.00010	178
	RC-A	FR1	16-Jul-12	40	50.4	<0.000040	<0.00010	179
	RC-B	FR1	16-Jul-12	36.2	47.2	<0.000040	<0.00010	178
		FR1	Mean	38.1	48.5	<0.000040	<0.00010	178
			SD	1.90	1.68	-	-	0.6
			PRSD	5	3	-	-	0
Lake St. Martin	LSM-1	LSM1	17-Jul-12	49	46.1	<0.00010	<0.00010	178
	BC-A	LSM1	17-Jul-12	53.7	51	<0.00010	<0.00010	178
	BC-B	LSM1	17-Jul-12	52.7	46.3	<0.00010	<0.00010	179
		LSM1	Mean	51.8	47.8	<0.00010	<0.00010	178
			SD	2.48	2.77	-	-	0.6
			PRSD	5	6	-	-	0

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Calcium		Cesium		Chloride
				Dissolved	Total	Dissolved	Total	Dissolved
FIELD BLANKS								
	AB-2		16-Jan-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	FIELD		17-Jan-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	FIELD		18-Jan-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	BC-10		16-May-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	AB - 1		16-May-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	JP-002		21-May-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	RC-1		16-Jul-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	BC-1		17-Jul-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
TRIP BLANKS								
	TRIP BLANK		16-Jan-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	TRIP		17-Jan-12	0.123	<0.10	<0.00010	<0.00010	<0.20
	TRIP BLANK		18-Jan-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	BC-11		16-May-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	DE-1 TRIP BLANK		16-May-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	TRIP BLANK		21-May-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	RR-1		16-Jul-12	<0.050	<0.10	<0.00010	<0.00010	<0.20
	TB-1		17-Jul-12	<0.050	<0.10	<0.00010	<0.00010	<0.20

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Chromium		Cobalt		Copper	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00050/ 0.0020*	*0.0010*	*0.000050/ 0.00020*	*0.000050/ 0.00020*	*0.00010/ 0.00020*	*0.00010/ 0.00020*
5x detection limit				*0.00250/ 0.010*	*0.0050*	*0.000250/ 0.0010*	*0.000250/ 0.0010*	*0.00050/ 0.0010*	*0.00050/ 0.0010*
TRIPLICATE SAMPLES									
Lake Manitoba	LM-2	NARR1	16-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00089	0.00121
	BC-2	NARR1	16-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00095	0.00119
	CD-2	NARR1	16-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00094	0.00128
		NARR1	Mean	<0.0020	<0.0010	<0.00020	<0.00020	0.00093	0.00123
			SD	-	-	-	-	0.000032	0.000047
			PRSD	-	-	-	-	3	4
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00155	0.00182
	LKW-6B	LKW6	18-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00159	0.00166
	LKW-6C	LKW6	18-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00154	0.00167
		LKW6	Mean	<0.0020	<0.0010	<0.00020	<0.00020	0.00156	0.00172
			SD	-	-	-	-	0.000026	0.000090
			PRSD	-	-	-	-	2	5
Fairford River	FR - 1	FR1	16-May-12	<0.0020	<0.0010	<0.00020	0.000099	0.00052	0.00116
	BC - 1	FR1	16-May-12	<0.0020	<0.0010	<0.00020	0.000109	0.00115	0.00089
	CD - 1	FR1	16-May-12	<0.0020	<0.0010	<0.00020	0.000106	0.00051	0.00099
		FR1	Mean	<0.0020	<0.0010	<0.00020	0.000105	0.00073	0.00101
			SD	-	-	-	0.0000051	0.000367	0.000137
			PRSD	-	-	-	-	**50**	13
Buffalo Creek	BC3-A	BC3	16-May-12	<0.0020	<0.0010	<0.00020	0.000096	0.00046	0.00073
	BC3-B	BC3	16-May-12	<0.0020	<0.0010	<0.00020	0.000069	0.00058	0.00077
	BC3-C	BC3	16-May-12	<0.0020	<0.0010	<0.00020	0.000133	0.00047	0.00085
		BC3	Mean	<0.0020	<0.0010	<0.00020	0.000099	0.00050	0.00078
			SD	-	-	-	0.0000321	0.000067	0.000061
			PRSD	-	-	-	-	13	8

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Chromium		Cobalt		Copper	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	<0.0020	0.0011	<0.00020	0.000097	0.00056	0.00168
	LKW-2B	LKW2	21-May-12	<0.0020	<0.0010	<0.00020	0.000146	0.00063	0.00186
	LKW-2C	LKW2	21-May-12	<0.0020	0.0031	<0.00020	0.000318	0.00053	0.00226
		LKW2	Mean	<0.0020	0.0016	<0.00020	0.000187	0.00057	0.00193
			SD	-	-	-	0.0001161	0.000051	0.000297
			PRSD	-	-	-	-	9	15
Fairford River	FR-1	FR1	16-Jul-12	0.00131	<0.0010	0.000109	<0.00020	0.00086	0.00064
	RC-A	FR1	16-Jul-12	0.00138	<0.0010	0.000126	<0.00020	0.00099	0.00073
	RC-B	FR1	16-Jul-12	0.0006	<0.0010	0.000102	<0.00020	0.00075	0.00056
		FR1	Mean	0.0011	<0.0010	0.00011	<0.00020	0.00087	0.00064
			SD	0.00043	-	0.000012	-	0.000120	0.000085
			PRSD	-	-	-	-	14	13
Lake St. Martin	LSM-1	LSM1	17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00034	0.00049
	BC-A	LSM1	17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00043	0.00065
	BC-B	LSM1	17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	0.00032	0.00049
		LSM1	Mean	<0.0020	<0.0010	<0.00020	<0.00020	0.00036	0.00054
			SD	-	-	-	-	0.000059	0.000092
			PRSD	-	-	-	-	16	17

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Chromium		Cobalt		Copper	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS									
	AB-2		16-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	FIELD		17-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	FIELD		18-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	BC-10		16-May-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	AB - 1		16-May-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	JP-002		21-May-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	RC-1		16-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	BC-1		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
TRIP BLANKS									
	TRIP BLANK		16-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	TRIP		17-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00039
	TRIP BLANK		18-Jan-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	BC-11		16-May-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	DE-1 TRIP BLANK		16-May-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	TRIP BLANK		21-May-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	RR-1		16-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	TB-1		17-Jul-12	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Fluoride	Iron		Lead	
				Dissolved	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.020*	*0.010/ 0.10*	*0.010/ 0.10*	*0.000090/ 0.000050*	*0.000090/ 0.000060*
5x detection limit				*0.10*	*0.050/ 0.50*	*0.050/ 0.50*	*0.00045/ 0.00025*	*0.00045/ 0.00030*
TRIPLICATE SAMPLES								
Lake Manitoba	LM-2	NARR1	16-Jan-12	0.197	<0.010	0.15	<0.000090	0.000159
	BC-2	NARR1	16-Jan-12	0.196	<0.010	0.13	<0.000090	0.000163
	CD-2	NARR1	16-Jan-12	0.202	<0.010	0.20	<0.000090	0.000169
		NARR1	Mean	0.198	<0.010	0.16	<0.000090	0.000164
			SD	0.0032	-	0.036	-	0.0000050
			PRSD	2	-	-	-	-
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	0.142	<0.010	0.16	<0.000090	0.000522
	LKW-6B	LKW6	18-Jan-12	0.142	<0.010	0.13	<0.000090	<0.000090
	LKW-6C	LKW6	18-Jan-12	0.142	<0.010	0.13	<0.000090	0.000092
		LKW6	Mean	0.142	<0.010	0.14	<0.000090	0.000220
			SD	0.0000	-	0.017	-	-
			PRSD	0	-	-	-	-
Fairford River	FR - 1	FR1	16-May-12	0.155	0.012	0.032	<0.000090	0.000351
	BC - 1	FR1	16-May-12	0.155	0.018	0.034	<0.000090	0.000139
	CD - 1	FR1	16-May-12	0.154	0.011	0.062	<0.000090	0.000184
		FR1	Mean	0.155	0.014	0.04	<0.000090	0.000225
			SD	0.0006	0.0038	0.017	-	0.0001117
			PRSD	0	-	-	-	-
Buffalo Creek	BC3-A	BC3	16-May-12	0.151	<0.010	0.044	<0.000090	0.00015
	BC3-B	BC3	16-May-12	0.154	<0.010	0.048	<0.000090	0.000188
	BC3-C	BC3	16-May-12	0.155	0.013	0.045	<0.000090	0.000111
		BC3	Mean	0.153	<0.010	0.05	<0.000090	0.000150
			SD	0.0021	-	0.002	-	0.0000385
			PRSD	1	-	-	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Fluoride	Iron		Lead	
				Dissolved	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	0.154	<0.010	0.179	<0.000090	0.000261
	LKW-2B	LKW2	21-May-12	0.157	<0.010	0.208	<0.000090	0.000297
	LKW-2C	LKW2	21-May-12	0.158	<0.010	0.165	<0.000090	0.000227
		LKW2	Mean	0.156	<0.010	0.18	<0.000090	0.000262
			SD	0.0021	-	0.022	-	0.0000350
			PRSD	1	-	12	-	-
Fairford River	FR-1	FR1	16-Jul-12	0.131	0.015	0.064	<0.000050	0.000117
	RC-A	FR1	16-Jul-12	0.129	0.015	0.066	0.000096	0.000090
	RC-B	FR1	16-Jul-12	0.130	0.016	0.066	<0.000050	<0.000090
		FR1	Mean	0.130	0.015	0.07	<0.000050	0.000104
			SD	0.0010	0.0006	0.001	-	0.0000191
			PRSD	1	-	2	-	-
Lake St. Martin	LSM-1	LSM1	17-Jul-12	0.142	0.01	0.028	<0.000090	0.000101
	BC-A	LSM1	17-Jul-12	0.123	<0.010	0.017	<0.000090	0.000122
	BC-B	LSM1	17-Jul-12	0.135	0.011	0.015	<0.000090	0.000091
		LSM1	Mean	0.133	<0.010	0.02	<0.000090	0.000105
			SD	0.0096	-	0.007	-	0.0000158
			PRSD	7	-	-	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Fluoride	Iron		Lead	
				Dissolved	Dissolved	Total	Dissolved	Total
FIELD BLANKS								
	AB-2		16-Jan-12	<0.020	<0.010	0.011	<0.000090	<0.000090
	FIELD		17-Jan-12	<0.020	<0.010	<0.010	<0.000090	<0.000090
	FIELD		18-Jan-12	<0.020	<0.010	<0.010	<0.000090	<0.000090
	BC-10		16-May-12	<0.020	<0.010	<0.010	<0.000090	<0.000090
	AB - 1		16-May-12	<0.020	<0.01	<0.010	<0.000090	<0.000090
	JP-002		21-May-12	<0.020	<0.010	<0.010	<0.000090	<0.000090
	RC-1		16-Jul-12	<0.020	<0.01	<0.010	<0.000090	<0.000090
	BC-1		17-Jul-12	<0.020	<0.010	<0.01	<0.000090	<0.000090
TRIP BLANKS								
	TRIP BLANK		16-Jan-12	<0.020	<0.010	<0.010	<0.000090	<0.000090
	TRIP		17-Jan-12	<0.020	<0.010	<0.010	<0.000090	<0.000090
	TRIP BLANK		18-Jan-12	<0.020	<0.010	<0.010	<0.000090	<0.000090
	BC-11		16-May-12	<0.020	<0.010	<0.010	<0.000090	<0.000090
	DE-1 TRIP BLANK		16-May-12	<0.020	<0.010	<0.010	<0.000090	<0.000090
	TRIP BLANK		21-May-12	<0.020	<0.010	<0.010	<0.000090	<0.000090
	RR-1		16-Jul-12	<0.020	<0.01	<0.010	<0.000090	<0.000090
	TB-1		17-Jul-12	<0.020	<0.010	<0.01	<0.000090	<0.000090

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Lithium		Magnesium		Manganese	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.0020/ 0.020*	*0.00020/ 0.0020/ 0.020*	*0.0070/ 0.010/ 0.10*	*0.0080/ 0.010/ 0.10*	*0.000090/ 0.00010/ 0.0010*	*0.00020/ 0.00030/ 0.0030*
5x detection limit				*0.010/ 0.10*	*0.0010/ 0.010/ 0.10*	*0.0350/ 0.050/ 0.50*	*0.040/ 0.050/ 0.50*	*0.00045/ 0.0005/ 0.0050*	*0.0010/ 0.00150/ 0.0150*
TRIPLICATE SAMPLES									
Lake Manitoba	LM-2	NARR1	16-Jan-12	0.0599	0.0525	56.9	53.2	0.00102	0.00433
	BC-2	NARR1	16-Jan-12	0.0582	0.0535	55.2	53.2	0.00082	0.00423
	CD-2	NARR1	16-Jan-12	0.0587	0.0555	55.7	56.6	0.00087	0.00457
		NARR1	Mean	0.0589	0.0538	55.9	54.3	0.00090	0.00438
			SD	0.00087	0.00153	0.87	1.96	0.000104	0.000175
			PRSD	1	3	2	4	12	4
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	0.0269	0.0253	34.9	43.9	0.00088	0.00370
	LKW-6B	LKW6	18-Jan-12	0.0244	0.0241	32.5	43.0	0.00018	0.00228
	LKW-6C	LKW6	18-Jan-12	0.0263	0.0249	33.8	42.6	0.00022	0.00280
		LKW6	Mean	0.0259	0.0248	33.7	43.2	0.00043	0.00293
			SD	0.00131	0.00061	1.20	0.67	0.000393	0.000718
			PRSD	5	2	4	2	-	-
Fairford River	FR - 1	FR1	16-May-12	0.0369	0.0395	37.6	38.9	0.0002	0.00537
	BC - 1	FR1	16-May-12	0.0381	0.0397	36.5	40.3	0.00018	0.00599
	CD - 1	FR1	16-May-12	0.0379	0.0404	36.8	39.2	0.00055	0.0054
		FR1	Mean	0.0376	0.0399	37.0	39.5	0.00031	0.00559
			SD	0.00064	0.00047	0.57	0.74	0.000208	0.000350
			PRSD	2	1	2	2	-	6
Buffalo Creek	BC3-A	BC3	16-May-12	0.0358	0.0383	36.0	39.5	0.00338	0.0127
	BC3-B	BC3	16-May-12	0.036	0.0394	35.3	37.2	0.00357	0.0122
	BC3-C	BC3	16-May-12	0.0369	0.0386	35.4	40.0	0.00333	0.0129
		BC3	Mean	0.0362	0.0388	35.6	38.9	0.00343	0.01260
			SD	0.00059	0.00057	0.38	1.49	0.000127	0.000361
			PRSD	2	1	1	4	4	3

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Lithium		Magnesium		Manganese	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	0.0294	0.0188	32.5	31.7	0.00029	0.0104
	LKW-2B	LKW2	21-May-12	0.029	0.0502	33.3	30.6	0.00046	0.0134
	LKW-2C	LKW2	21-May-12	0.0287	0.0503	32.3	41.0	0.00028	0.0144
		LKW2	Mean	0.0290	0.0398	32.7	34.4	0.00034	0.01273
			SD	0.00035	0.01816	0.53	5.71	0.000101	0.002082
			PRSD	1	46	2	17	-	16
Fairford River	FR-1	FR1	16-Jul-12	0.0342	0.0304	34.2	37	<0.000090	0.00426
	RC-A	FR1	16-Jul-12	0.0366	0.0334	35.8	38.2	<0.000090	0.00472
	RC-B	FR1	16-Jul-12	0.0332	0.0314	33.2	36.3	<0.000090	0.00441
		FR1	Mean	0.0347	0.0317	34.4	37.2	<0.000090	0.00446
			SD	0.00175	0.00153	1.31	0.96	-	0.000235
			PRSD	5	5	4	3	-	5
Lake St. Martin	LSM-1	LSM1	17-Jul-12	0.0410	0.0393	39.1	35.5	<0.00010	0.00690
	BC-A	LSM1	17-Jul-12	0.0379	0.037	42.6	38.4	<0.00010	0.00782
	BC-B	LSM1	17-Jul-12	0.0391	0.0369	40.0	34.6	0.00011	0.00698
		LSM1	Mean	0.0393	0.0377	40.6	36.2	<0.00010	0.00723
			SD	0.00156	0.00136	1.82	1.99	-	0.000510
			PRSD	4	4	4	5	-	7

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Lithium		Magnesium		Manganese	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS									
	AB-2		16-Jan-12	<0.0020	<0.0020	0.027	<0.010	0.00029	<0.00030
	FIELD		17-Jan-12	<0.0020	<0.0020	0.025	<0.010	0.00012	<0.00030
	FIELD		18-Jan-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	BC-10		16-May-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	AB - 1		16-May-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	JP-002		21-May-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	RC-1		16-Jul-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	BC-1		17-Jul-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
TRIP BLANKS									
	TRIP BLANK		16-Jan-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	TRIP		17-Jan-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	TRIP BLANK		18-Jan-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	BC-11		16-May-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	DE-1 TRIP BLANK		16-May-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	TRIP BLANK		21-May-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	RR-1		16-Jul-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030
	TB-1		17-Jul-12	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*1.0*	*1.0*	*0.050*	*0.050*	*0.000080/ 0.00010*	*0.000080/ 0.00020*
5x detection limit				*5.0*	*5.0*	*0.250*	*0.250*	*0.00040/ 0.00050*	*0.00040/ 0.0010*
TRIPLICATE SAMPLES									
Lake Manitoba	LM-2	NARR1	16-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00323	0.00290
	BC-2	NARR1	16-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00309	0.00286
	CD-2	NARR1	16-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00328	0.00304
		NARR1	Mean	<1.0	<1.0	<0.050	<0.050	0.00320	0.00293
			SD	-	-	-	-	0.000098	0.000095
			PRSD	-	-	-	-	3	3
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00192	0.00175
	LKW-6B	LKW6	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.00184	0.00176
	LKW-6C	LKW6	18-Jan-12	<1.0	<1.0	<0.050	<0.050	0.0019	0.00185
		LKW6	Mean	<1.0	<1.0	<0.050	<0.050	0.00189	0.00179
			SD	-	-	-	-	0.000042	0.000055
			PRSD	-	-	-	-	2	3
Fairford River	FR - 1	FR1	16-May-12	<1.0	<1.0	<0.050	<0.050	0.00215	0.00199
	BC - 1	FR1	16-May-12	<1.0	<1.0	<0.050	<0.050	0.00214	0.00222
	CD - 1	FR1	16-May-12	<1.0	<1.0	<0.050	<0.050	0.00214	0.00189
		FR1	Mean	<1.0	<1.0	<0.050	<0.050	0.00214	0.00203
			SD	-	-	-	-	0.000006	0.000169
			PRSD	-	-	-	-	0	8
Buffalo Creek	BC3-A	BC3	16-May-12	<1.0	<1.0	0.077	0.140	0.00224	0.00216
	BC3-B	BC3	16-May-12	<1.0	1.4	0.072	0.094	0.00222	0.00227
	BC3-C	BC3	16-May-12	<1.0	1.1	0.078	0.115	0.0022	0.00216
		BC3	Mean	<1.0	1.0	0.076	0.116	0.00222	0.00220
			SD	-	-	0.0032	0.023	0.000020	0.000064
			PRSD	-	-	4	-	1	3

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	2.5	3.4	<0.050	0.073	0.00208	0.00222
	LKW-2B	LKW2	21-May-12	<1.0	32.6[1]	<0.050	0.069	0.00211	0.00227
	LKW-2C	LKW2	21-May-12	3.3	2.9	<0.050	0.077	0.00205	0.00206
		LKW2	Mean	2.1	13.0	<0.050	0.073	0.00208	0.00218
			SD	-	17.00	-	0.004	0.000030	0.000110
			PRSD	-	-	-	-	1	5
Fairford River	FR-1	FR1	16-Jul-12	1.2	1.2	<0.050	0.077	0.00181	0.00205
	RC-A	FR1	16-Jul-12	1.2	1.9	<0.050	0.091	0.00198	0.00219
	RC-B	FR1	16-Jul-12	1.2	1.3	<0.050	0.094	0.00182	0.00201
		FR1	Mean	1.2	1.5	<0.050	0.087	0.00187	0.00208
			SD	0.00	0.38	-	0.009	0.000095	0.000095
			PRSD	-	-	-	-	5	5
Lake St. Martin	LSM-1	LSM1	17-Jul-12	1.1	1.2	<0.050	0.054	0.00183	0.00187
	BC-A	LSM1	17-Jul-12	<1.0	1.6	<0.050	0.078	0.00198	0.00224
	BC-B	LSM1	17-Jul-12	1.0	1.5	<0.050	0.098	0.0019	0.00207
		LSM1	Mean	<1.0	1.4	<0.050	0.077	0.00190	0.00206
			SD	-	0.21	-	0.022	0.000075	0.000185
			PRSD	-	-	-	-	4	9

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS									
	AB-2		16-Jan-12	<1.0	<1.0	<0.050	<0.050	<0.00010	<0.00020
	FIELD		17-Jan-12	2	2.1	**1.00**	**1.33**	<0.00010	<0.00020
	FIELD		18-Jan-12	<1.0	<1.0	<0.050	<0.050	<0.00010	<0.00020
	BC-10		16-May-12	<1.0	<1.0	-	-	<0.00010	<0.00020
	AB - 1		16-May-12	<1.0	<1.0	-	-	<0.00010	<0.00020
	JP-002		21-May-12	<1.0	<1.0	-	-	<0.00010	<0.00020
	RC-1		16-Jul-12	<1.0	<1.0	<0.050	<0.050	<0.00010	<0.00020
	BC-1		17-Jul-12	<1.0	<1.0	<0.050	<0.050	<0.00010	<0.00020
TRIP BLANKS									
	TRIP BLANK		16-Jan-12	<1.0	<1.0	-	-	<0.00010	<0.00020
	TRIP		17-Jan-12	-	-	-	-	<0.00010	<0.00020
	TRIP BLANK		18-Jan-12	-	-	-	-	<0.00010	<0.00020
	BC-11		16-May-12	<1.0	<1.0	-	-	<0.00010	<0.00020
	DE-1 TRIP BLANK		16-May-12	<1.0	<1.0	-	-	<0.00010	<0.00020
	TRIP BLANK		21-May-12	<1.0	<1.0	-	-	<0.00010	<0.00020
	RR-1		16-Jul-12	<1.0	<1.0	<0.050	<0.050	<0.00010	<0.00020
	TB-1		17-Jul-12	<1.0	<1.0	<0.050	<0.050	<0.00010	<0.00020

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Nickel		Potassium		Rubidium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00020/ 0.0010*	*0.00030/ 0.002*	*0.020/ 0.20*	*0.020/ 0.20*	*0.000050/ 0.00020*	*0.000050 /0.00020*
5x detection limit				*0.0010/ 0.0050*	*0.00150/ 0.010*	*0.10/ 1.0*	*0.10/ 1.0*	*0.000250/ 0.0010*	*0.000250/ 0.0010*
TRIPLICATE SAMPLES									
Lake Manitoba	LM-2	NARR1	16-Jan-12	0.0036	<0.0020	16.5	15.4	0.00448	0.00377
	BC-2	NARR1	16-Jan-12	0.0037	<0.0020	15.9	15.9	0.00420	0.00379
	CD-2	NARR1	16-Jan-12	0.0039	<0.0020	16.0	16.1	0.00426	0.00403
		NARR1	Mean	0.0037	<0.0020	16.1	15.8	0.00431	0.00386
			SD	0.00015	-	0.32	0.36	0.000147	0.000145
			PRSD	4	-	2	2	3	4
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	<0.0010	<0.0020	8.76	10.2	0.0033	0.00322
	LKW-6B	LKW6	18-Jan-12	<0.0010	<0.0020	8.41	10.4	0.0032	0.00308
	LKW-6C	LKW6	18-Jan-12	<0.0010	<0.0020	8.37	10.5	0.00338	0.00318
		LKW6	Mean	<0.0010	<0.0020	8.51	10.4	0.00329	0.00316
			SD	-	-	0.21	0.15	0.000090	0.000072
			PRSD	-	-	3	1	3	2
Fairford River	FR - 1	FR1	16-May-12	<0.0010	0.00275	11.3	11.3	0.00346	0.00354
	BC - 1	FR1	16-May-12	<0.0010	0.00112	11.1	11.8	0.00342	0.00374
	CD - 1	FR1	16-May-12	<0.0010	0.00101	11.2	10.8	0.00338	0.00357
		FR1	Mean	<0.0010	0.0016	11.2	11.3	0.00342	0.00362
			SD	-	0.00097	0.10	0.50	0.000040	0.000108
			PRSD	-	-	1	4	1	3
Buffalo Creek	BC3-A	BC3	16-May-12	<0.0010	0.00087	10.4	10.9	0.00348	0.00372
	BC3-B	BC3	16-May-12	<0.0010	0.00089	10.6	10.6	0.00353	0.00363
	BC3-C	BC3	16-May-12	<0.0010	0.0011	10.4	11.3	0.00341	0.00397
		BC3	Mean	<0.0010	0.0010	10.5	10.9	0.00347	0.00377
			SD	-	0.00013	0.12	0.35	0.000060	0.000176
			PRSD	-	-	1	3	2	5

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Nickel		Potassium		Rubidium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	<0.0010	0.00126	9.77	9.31	0.00337	0.00409
	LKW-2B	LKW2	21-May-12	<0.0010	0.00137	10.1	10.7	0.00337	0.00417
	LKW-2C	LKW2	21-May-12	0.001	0.00231	10.0	11.1	0.00332	0.004
		LKW2	Mean	<0.0010	0.0016	10.0	10.4	0.00335	0.00409
			SD	-	0.00058	0.17	0.94	0.000029	0.000085
			PRSD	-	-	2	9	1	2
Fairford River	FR-1	FR1	16-Jul-12	0.0022	<0.0020	9.63	9.82	0.00335	0.0037
	RC-A	FR1	16-Jul-12	0.00198	<0.0020	10.0	10.3	0.0035	0.00393
	RC-B	FR1	16-Jul-12	0.00218	<0.0020	9.03	9.73	0.0031	0.00369
		FR1	Mean	0.0021	<0.0020	9.55	10.0	0.00332	0.00377
			SD	0.00012	-	0.49	0.31	0.000202	0.000136
			PRSD	6	-	5	3	6	4
Lake St. Martin	LSM-1	LSM1	17-Jul-12	<0.0010	<0.0020	10.2	10.7	0.00354	0.00387
	BC-A	LSM1	17-Jul-12	<0.0010	<0.0020	10.3	11.5	0.00378	0.00385
	BC-B	LSM1	17-Jul-12	<0.0010	<0.0020	10.2	10.9	0.00375	0.00369
		LSM1	Mean	<0.0010	<0.0020	10.2	11.0	0.00369	0.00380
			SD	-	-	0.06	0.42	0.000131	0.000099
			PRSD	-	-	1	4	4	3

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Nickel		Potassium		Rubidium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS									
	AB-2		16-Jan-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	FIELD		17-Jan-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	FIELD		18-Jan-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	BC-10		16-May-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	AB - 1		16-May-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	JP-002		21-May-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	RC-1		16-Jul-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	BC-1		17-Jul-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
TRIP BLANKS									
	TRIP BLANK		16-Jan-12	<0.0010	<0.0020	0.022	<0.020	<0.00020	<0.00020
	TRIP		17-Jan-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	TRIP BLANK		18-Jan-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	BC-11		16-May-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	DE-1 TRIP BLANK		16-May-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	TRIP BLANK		21-May-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	RR-1		16-Jul-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	TB-1		17-Jul-12	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Selenium		Silicon		Silver	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00090/ '0.0010*	*0.00060/ 0.0010*	*0.050/ 0.50*	*0.050/ 0.50*	*0.000040/ 0.00010*	*0.000040/ 0.00010*
5x detection limit				*0.00450/ 0.0050*	*0.0030/ 0.0050*	*0.25/ 2.5*	*0.25/ 2.5*	*0.00020/ 0.00050*	*0.00020/ 0.00050*
TRIPLICATE SAMPLES									
Lake Manitoba	LM-2	NARR1	16-Jan-12	<0.0010	<0.0010	2.30	2.58	<0.00010	<0.00010
	BC-2	NARR1	16-Jan-12	<0.0010	<0.0010	2.57	2.71	<0.00010	<0.00010
	CD-2	NARR1	16-Jan-12	<0.0010	<0.0010	2.48	2.58	<0.00010	<0.00010
		NARR1	Mean	<0.0010	<0.0010	2.45	2.62	<0.00010	<0.00010
			SD	-	-	0.137	0.075	-	-
			PRSD	-	-	6	3	-	-
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	<0.0010	<0.0010	3.15	3.53	<0.00010	<0.00010
	LKW-6B	LKW6	18-Jan-12	<0.0010	<0.0010	2.91	3.53	<0.00010	<0.00010
	LKW-6C	LKW6	18-Jan-12	<0.0010	<0.0010	3.40	3.56	<0.00010	<0.00010
		LKW6	Mean	<0.0010	<0.0010	3.15	3.54	<0.00010	<0.00010
			SD	-	-	0.245	0.017	-	-
			PRSD	-	-	8	0	-	-
Fairford River	FR - 1	FR1	16-May-12	<0.0010	0.00101	2.93	2.76	<0.00010	<0.000040
	BC - 1	FR1	16-May-12	<0.0010	0.00487	3.68	2.94	<0.00010	<0.000040
	CD - 1	FR1	16-May-12	<0.0010	<0.00060	2.78	2.68	<0.00010	<0.000040
		FR1	Mean	<0.0010	0.0021	3.13	2.79	<0.00010	<0.000040
			SD	-	-	0.482	0.133	-	-
			PRSD	-	-	15	5	-	-
Buffalo Creek	BC3-A	BC3	16-May-12	<0.0010	0.00246	3.24	2.50	<0.00010	<0.000040
	BC3-B	BC3	16-May-12	<0.0010	0.00301	2.87	2.36	<0.00010	<0.000040
	BC3-C	BC3	16-May-12	<0.0010	0.00407	3.14	2.39	<0.00010	<0.000040
		BC3	Mean	<0.0010	0.0032	3.08	2.42	<0.00010	<0.000040
			SD	-	0.00082	0.191	0.074	-	-
			PRSD	-	-	6	3	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Selenium		Silicon		Silver	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	<0.0010	0.0026	2.52	3.10	<0.00010	<0.000040
	LKW-2B	LKW2	21-May-12	<0.0010	<0.00060	2.57	2.40	<0.00010	0.000335
	LKW-2C	LKW2	21-May-12	<0.0010	0.00483	2.57	3.82	<0.00010	0.000321
		LKW2	Mean	<0.0010	0.0037	2.55	3.11	<0.00010	0.00023
			SD	-	0.00158	0.029	0.710	-	-
			PRSD	-	-	1	**23**	-	-
Fairford River	FR-1	FR1	16-Jul-12	0.0047	<0.0010	3.49	3.36	<0.000040	<0.00010
	RC-A	FR1	16-Jul-12	0.00285	<0.0010	3.70	3.64	<0.000040	<0.00010
	RC-B	FR1	16-Jul-12	0.00386	<0.0010	3.30	3.28	<0.000040	<0.00010
		FR1	Mean	0.0038	<0.0010	3.50	3.43	<0.000040	<0.00010
			SD	0.00093	-	0.200	0.189	-	-
			PRSD	-	-	6	6	-	-
Lake St. Martin	LSM-1	LSM1	17-Jul-12	<0.0010	<0.0010	4.95	4.23	<0.00010	<0.00010
	BC-A	LSM1	17-Jul-12	<0.0010	<0.0010	4.57	4.68	<0.00010	<0.00010
	BC-B	LSM1	17-Jul-12	<0.0010	<0.0010	5.11	4.30	<0.00010	<0.00010
		LSM1	Mean	<0.0010	<0.0010	4.88	4.40	<0.00010	<0.00010
			SD	-	-	0.277	0.242	-	-
			PRSD	-	-	6	5	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Selenium		Silicon		Silver	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS									
	AB-2		16-Jan-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	FIELD		17-Jan-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	FIELD		18-Jan-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	BC-10		16-May-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	AB - 1		16-May-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	JP-002		21-May-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	RC-1		16-Jul-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	BC-1		17-Jul-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
TRIP BLANKS									
	TRIP BLANK		16-Jan-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	TRIP		17-Jan-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	TRIP BLANK		18-Jan-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	BC-11		16-May-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	DE-1 TRIP BLANK		16-May-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	TRIP BLANK		21-May-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	RR-1		16-Jul-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	TB-1		17-Jul-12	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Sodium		Strontium		Sulphate
				Dissolved	Total	Dissolved	Total	Dissolved
Analytical Detection Limits				*0.010/ 0.020/ 0.20*	*0.030/ 0.30/ 3.0*	*0.000060/ 0.00010/ 0.0010*	*0.000070/ 0.00010/ 0.0010*	*0.50*
5x detection limit				*0.050/ 0.10/ 1.0*	*0.150/ 1.5/ 15*	*0.00030/ 0.00050/ 0.0050*	*0.00035/ 0.00050 /0.0050*	*2.50*
TRIPLICATE SAMPLES								
Lake Manitoba	LM-2	NARR1	16-Jan-12	131	122	0.397	0.368	185
	BC-2	NARR1	16-Jan-12	125	123	0.376	0.369	188
	CD-2	NARR1	16-Jan-12	126	126	0.380	0.387	192
		NARR1	Mean	127	124	0.384	0.375	188
			SD	3.2	2.1	0.0112	0.0107	3.5
			PRSD	3	2	3	3	2
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	100	95.9	0.288	0.252	78.3
	LKW-6B	LKW6	18-Jan-12	94.7	84.7	0.277	0.265	82.0
	LKW-6C	LKW6	18-Jan-12	96.4	90.4	0.276	0.273	82.3
		LKW6	Mean	97	90	0.280	0.263	81
			SD	2.7	5.6	0.0067	0.0106	2.2
			PRSD	3	6	2	4	3
Fairford River	FR - 1	FR1	16-May-12	126	130	0.286	0.273	104
	BC - 1	FR1	16-May-12	129	135	0.278	0.298	104
	CD - 1	FR1	16-May-12	132	126	0.278	0.275	104
		FR1	Mean	129	130	0.281	0.282	104
			SD	3.0	4.5	0.0046	0.0139	0.0
			PRSD	2	3	2	5	0
Buffalo Creek	BC3-A	BC3	16-May-12	133	125	0.276	0.257	97.0
	BC3-B	BC3	16-May-12	128	123	0.277	0.259	96.5
	BC3-C	BC3	16-May-12	129	128	0.273	0.267	96.7
		BC3	Mean	130	125	0.275	0.261	97
			SD	2.6	2.5	0.0021	0.0053	0.3
			PRSD	2	2	1	2	0

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Sodium		Strontium		Sulphate
				Dissolved	Total	Dissolved	Total	Dissolved
Lake Winnipeg	LKW-2	LKW2	21-May-12	121	94.4	0.262	0.320	97.4
	LKW-2B	LKW2	21-May-12	121	97.0	0.262	0.315	97.3
	LKW-2C	LKW2	21-May-12	136	127	0.262	0.295	97.5
		LKW2	Mean	126	106	0.262	0.310	97
			SD	8.7	18.1	0.0000	0.0132	0.1
			PRSD	7	17	0	4	0
Fairford River	FR-1	FR1	16-Jul-12	114	128	0.250	0.294	84.5
	RC-A	FR1	16-Jul-12	118	130	0.261	0.305	84.7
	RC-B	FR1	16-Jul-12	110	123	0.239	0.296	84.2
		FR1	Mean	114	127	0.250	0.298	84
			SD	4.0	3.6	0.0110	0.0059	0.3
			PRSD	4	3	4	2	0
Lake St. Martin	LSM-1	LSM1	17-Jul-12	110	119	0.245	0.278	93.3
	BC-A	LSM1	17-Jul-12	108	127	0.259	0.273	93.0
	BC-B	LSM1	17-Jul-12	114	109	0.257	0.266	93.3
		LSM1	Mean	111	118	0.254	0.272	93
			SD	3.1	9.0	0.0076	0.0060	0.2
			PRSD	3	8	3	2	0

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Sodium		Strontium		Sulphate
				Dissolved	Total	Dissolved	Total	Dissolved
FIELD BLANKS								
	AB-2		16-Jan-12	0.069	<0.030	0.00016	<0.00010	<0.50
	FIELD		17-Jan-12	0.086	<0.030	0.00017	<0.00010	<0.50
	FIELD		18-Jan-12	<0.020	<0.030	<0.00010	<0.00010	<0.50
	BC-10		16-May-12	<0.020	<0.030	<0.00010	<0.00010	<0.50
	AB - 1		16-May-12	<0.020	<0.030	<0.00010	<0.00010	<0.50
	JP-002		21-May-12	<0.020	<0.030	<0.00010	<0.00010	<0.50
	RC-1		16-Jul-12	<0.020	<0.030	<0.00010	<0.00010	<0.50
	BC-1		17-Jul-12	<0.020	<0.030	<0.00010	<0.00010	<0.50
TRIP BLANKS								
	TRIP BLANK		16-Jan-12	<0.020	<0.030	<0.00010	<0.00010	<0.50
	TRIP		17-Jan-12	<0.020	0.044	<0.00010	<0.00010	<0.50
	TRIP BLANK		18-Jan-12	<0.020	<0.030	0.0001	<0.00010	<0.50
	BC-11		16-May-12	<0.020	<0.030	<0.00010	<0.00010	<0.50
	DE-1 TRIP BLANK		16-May-12	<0.020	<0.030	<0.00010	<0.00010	<0.50
	TRIP BLANK		21-May-12	<0.020	<0.030	<0.00010	<0.00010	<0.50
	RR-1		16-Jul-12	<0.020	<0.030	<0.00010	<0.00010	<0.50
	TB-1		17-Jul-12	<0.020	<0.030	<0.00010	<0.00010	<0.50

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Tellurium		Thallium		Thorium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00020*	*0.00020*	*0.000020/ 0.00010*	*0.000020/ 0.00010*	*0.000030/ 0.00010*	*0.000040 /0.00010*
5x detection limit				*0.0010*	*0.0010*	*0.00010/ 0.00050*	*0.00010/ 0.00050*	*0.000150/ 0.0050*	*0.00020/ 0.00050*
TRIPLICATE SAMPLES									
Lake Manitoba	LM-2	NARR1	16-Jan-12	<0.00020	<0.00020	<0.00010	0.00015	<0.00010	<0.00010
	BC-2	NARR1	16-Jan-12	<0.00020	<0.00020	<0.00010	0.00012	<0.00010	<0.00010
	CD-2	NARR1	16-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
		NARR1	Mean	<0.00020	<0.00020	<0.00010	0.00011	<0.00010	<0.00010
			SD	-	-	-	-	-	-
			PRSD	-	-	-	-	-	-
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	LKW-6B	LKW6	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	LKW-6C	LKW6	18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
		LKW6	Mean	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
			SD	-	-	-	-	-	-
			PRSD	-	-	-	-	-	-
Fairford River	FR - 1	FR1	16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040
	BC - 1	FR1	16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040
	CD - 1	FR1	16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040
		FR1	Mean	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040
			SD	-	-	-	-	-	-
			PRSD	-	-	-	-	-	-
Buffalo Creek	BC3-A	BC3	16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040
	BC3-B	BC3	16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040
	BC3-C	BC3	16-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040
		BC3	Mean	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040
			SD	-	-	-	-	-	-
			PRSD	-	-	-	-	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Tellurium		Thallium		Thorium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	0.000042
	LKW-2B	LKW2	21-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	0.000060
	LKW-2C	LKW2	21-May-12	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	<0.000040
		LKW2	Mean	<0.00020	<0.00020	<0.00010	<0.000020	<0.00010	0.00004
			SD	-	-	-	-	-	-
			PRSD	-	-	-	-	-	-
Fairford River	FR-1	FR1	16-Jul-12	<0.00020	<0.00020	<0.000020	<0.00010	<0.000030	<0.00010
	RC-A	FR1	16-Jul-12	<0.00020	<0.00020	<0.000020	<0.00010	<0.000030	<0.00010
	RC-B	FR1	16-Jul-12	<0.00020	<0.00020	<0.000020	<0.00010	<0.000030	<0.00010
		FR1	Mean	<0.00020	<0.00020	<0.000020	<0.00010	<0.000030	<0.00010
			SD	-	-	-	-	-	-
			PRSD	-	-	-	-	-	-
Lake St. Martin	LSM-1	LSM1	17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	BC-A	LSM1	17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	BC-B	LSM1	17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
		LSM1	Mean	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
			SD	-	-	-	-	-	-
			PRSD	-	-	-	-	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Tellurium		Thallium		Thorium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS									
	AB-2		16-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	FIELD		17-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	FIELD		18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	BC-10		16-May-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	AB - 1		16-May-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	JP-002		21-May-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	RC-1		16-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	BC-1		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
TRIP BLANKS									
	TRIP BLANK		16-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	TRIP		17-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	TRIP BLANK		18-Jan-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	BC-11		16-May-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	DE-1 TRIP BLANK		16-May-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	TRIP BLANK		21-May-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	RR-1		16-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
	TB-1		17-Jul-12	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Tin		Titanium		Tungsten	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.000080/ 0.00020*	*0.00010/ 0.00020*	*0.00020/ 0.00050*	*0.00020/ 0.00050*	*0.000060/ 0.00010/ 0.00020*	*0.000060/ 0.0001/ 0.0010*
5x detection limit				*0.00040/ 0.0010*	*0.00050/ 0.0010*	*0.0010/ 0.00250*	*0.0010/ 0.00250*	*0.00030/ 0.00050/ 0.0010*	*0.00030/ 0.00050/ 0.0010*
TRIPLICATE SAMPLES									
Lake Manitoba	LM-2	NARR1	16-Jan-12	<0.00020	<0.00020	0.00091	0.00237	<0.00020	<0.0010
	BC-2	NARR1	16-Jan-12	<0.00020	<0.00020	0.00064	0.00216	<0.00020	<0.0010
	CD-2	NARR1	16-Jan-12	<0.00020	<0.00020	0.00077	0.0027	<0.00020	<0.0010
		NARR1	Mean	<0.00020	<0.00020	0.00077	0.00241	<0.00020	<0.0010
			SD	-	-	0.000135	0.000272	-	-
			PRSD	-	-	-	11	-	-
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	<0.00020	<0.00020	0.00032	0.00446	<0.00020	<0.0010
	LKW-6B	LKW6	18-Jan-12	<0.00020	<0.00020	0.00036	0.00342	<0.00020	<0.0010
	LKW-6C	LKW6	18-Jan-12	<0.00020	<0.00020	0.00043	0.00284	<0.00020	<0.0010
		LKW6	Mean	<0.00020	<0.00020	0.00037	0.00357	<0.00020	<0.0010
			SD	-	-	0.000056	0.000821	-	-
			PRSD	-	-	-	**23**	-	-
Fairford River	FR - 1	FR1	16-May-12	<0.00020	<0.00010	0.00177	0.004	<0.00010	<0.000060
	BC - 1	FR1	16-May-12	<0.00020	<0.00010	0.00139	0.00402	<0.00010	<0.000060
	CD - 1	FR1	16-May-12	<0.00020	<0.00010	0.00131	0.00442	<0.00010	<0.000060
		FR1	Mean	<0.00020	<0.00010	0.00149	0.00415	<0.00010	<0.000060
			SD	-	-	0.000246	0.000237	-	-
			PRSD	-	-	16	6	-	-
Buffalo Creek	BC3-A	BC3	16-May-12	<0.00020	<0.00010	0.00134	0.00617	<0.00010	<0.000060
	BC3-B	BC3	16-May-12	<0.00020	<0.00010	0.00189	0.00414	<0.00010	<0.000060
	BC3-C	BC3	16-May-12	<0.00020	<0.00010	0.00189	0.00697	<0.00010	<0.000060
		BC3	Mean	<0.00020	<0.00010	0.00171	0.00576	<0.00010	<0.000060
			SD	-	-	0.000318	0.001459	-	-
			PRSD	-	-	**19**	**25**	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Tin		Titanium		Tungsten	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	<0.00020	<0.00010	0.00205	0.0107	<0.00010	0.000252
	LKW-2B	LKW2	21-May-12	<0.00020	<0.00010	0.002	0.0138	<0.00010	0.000339
	LKW-2C	LKW2	21-May-12	<0.00020	0.00014	0.00204	0.0183	<0.00010	<0.000060
		LKW2	Mean	<0.00020	<0.00010	0.00203	0.01427	<0.00010	0.0003
			SD	-	-	0.000026	0.003821	-	0.00006
			PRSD	-	-	1	27	-	-
Fairford River	FR-1	FR1	16-Jul-12	0.000144	<0.00020	0.00248	0.00239	<0.000060	<0.00010
	RC-A	FR1	16-Jul-12	0.000094	<0.00020	0.00253	0.00313	<0.000060	<0.00010
	RC-B	FR1	16-Jul-12	0.000125	0.00026	0.00273	0.00222	<0.000060	<0.00010
		FR1	Mean	0.00012	<0.00020	0.00258	0.00258	<0.000060	<0.00010
			SD	0.000025	-	0.000132	0.000484	-	-
			PRSD	-	-	5	19	-	-
Lake St. Martin	LSM-1	LSM1	17-Jul-12	<0.00020	<0.00020	0.00163	0.00374	<0.00010	<0.00010
	BC-A	LSM1	17-Jul-12	<0.00020	<0.00020	<0.00050	0.00489	<0.00010	<0.00010
	BC-B	LSM1	17-Jul-12	<0.00020	<0.00020	0.00177	0.00397	<0.00010	<0.00010
		LSM1	Mean	<0.00020	<0.00020	0.00170	0.00420	<0.00010	<0.00010
			SD	-	-	0.000099	0.000609	-	-
			PRSD	-	-	-	14	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Tin		Titanium		Tungsten	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS									
	AB-2		16-Jan-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010
	FIELD		17-Jan-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010
	FIELD		18-Jan-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010
	BC-10		16-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010
	AB - 1		16-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010
	JP-002		21-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010
	RC-1		16-Jul-12	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	BC-1		17-Jul-12	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
TRIP BLANKS									
	TRIP BLANK		16-Jan-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010
	TRIP		17-Jan-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010
	TRIP BLANK		18-Jan-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010
	BC-11		16-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010
	DE-1 TRIP BLANK		16-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010
	TRIP BLANK		21-May-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010
	RR-1		16-Jul-12	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	TB-1		17-Jul-12	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Uranium		Vanadium	
				Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.000020/ 0.00010*	*0.000020/ 0.00010*	*0.00020*	*0.00020*
5x detection limit				*0.00010/ 0.00050*	*0.00010/ 0.00050*	*0.0010*	*0.0010*
TRIPLICATE SAMPLES							
Lake Manitoba	LM-2	NARR1	16-Jan-12	0.00317	0.00273	0.0027	0.0024
	BC-2	NARR1	16-Jan-12	0.00293	0.00264	0.0026	0.0027
	CD-2	NARR1	16-Jan-12	0.00308	0.00279	0.0025	0.0029
		NARR1	Mean	0.00306	0.00272	0.0026	0.0027
			SD	0.000121	0.000075	0.00010	0.00025
			PRSD	4	3	4	9
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	0.00163	0.00150	0.0017	0.00191
	LKW-6B	LKW6	18-Jan-12	0.00160	0.00153	0.0017	0.00206
	LKW-6C	LKW6	18-Jan-12	0.00157	0.00153	0.0017	0.00198
		LKW6	Mean	0.00160	0.00152	0.0017	0.0020
			SD	0.000030	0.000017	0.00000	0.00008
			PRSD	2	1	0	4
Fairford River	FR - 1	FR1	16-May-12	0.00178	0.00168	0.00136	0.00096
	BC - 1	FR1	16-May-12	0.0018	0.0016	0.00139	0.00119
	CD - 1	FR1	16-May-12	0.00177	0.00165	0.00144	0.00076
		FR1	Mean	0.00178	0.00164	0.0014	0.0010
			SD	0.000015	0.000040	0.00004	0.00022
			PRSD	1	2	3	-
Buffalo Creek	BC3-A	BC3	16-May-12	0.00142	0.00138	0.00127	0.00087
	BC3-B	BC3	16-May-12	0.00142	0.00134	0.00138	0.00059
	BC3-C	BC3	16-May-12	0.00144	0.00145	0.00135	0.00071
		BC3	Mean	0.00143	0.00139	0.0013	0.0007
			SD	0.000012	0.000056	0.00006	0.00014
			PRSD	1	4	4	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Uranium		Vanadium	
				Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	0.00169	0.00180	0.00150	0.00141
	LKW-2B	LKW2	21-May-12	0.00169	0.00188	0.00149	0.00207
	LKW-2C	LKW2	21-May-12	0.0017	0.00192	0.00166	0.00436
		LKW2	Mean	0.00169	0.00187	0.0016	0.0026
			SD	0.000006	0.000061	0.00010	0.00155
			PRSD	0	3	6	59
Fairford River	FR-1	FR1	16-Jul-12	0.00155	0.00144	0.0019	0.0013
	RC-A	FR1	16-Jul-12	0.00164	0.00153	0.00208	0.00146
	RC-B	FR1	16-Jul-12	0.00142	0.00140	0.00199	0.00133
		FR1	Mean	0.00154	0.00146	0.0020	0.0014
			SD	0.000111	0.000067	0.00009	0.00009
			PRSD	7	5	5	6
Lake St. Martin	LSM-1	LSM1	17-Jul-12	0.00164	0.00170	0.00143	0.00147
	BC-A	LSM1	17-Jul-12	0.00149	0.00218	0.00149	0.00164
	BC-B	LSM1	17-Jul-12	0.00164	0.00207	0.00134	0.00159
		LSM1	Mean	0.00159	0.00198	0.0014	0.0016
			SD	0.000087	0.000251	0.00008	0.00009
			PRSD	5	13	5	6

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Uranium		Vanadium	
				Dissolved	Total	Dissolved	Total
FIELD BLANKS							
	AB-2		16-Jan-12	<0.00010	<0.00010	-	<0.00020
	FIELD		17-Jan-12	<0.00010	<0.00010	<0.00020	<0.00020
	FIELD		18-Jan-12	<0.00010	<0.00010	<0.00020	<0.00020
	BC-10		16-May-12	<0.00010	<0.00010	<0.00020	<0.00020
	AB - 1		16-May-12	<0.00010	<0.00010	<0.00020	<0.00020
	JP-002		21-May-12	<0.00010	<0.00010	<0.00020	<0.00020
	RC-1		16-Jul-12	<0.00010	<0.00010	<0.00020	<0.00020
	BC-1		17-Jul-12	<0.00010	<0.00010	<0.00020	<0.00020
TRIP BLANKS							
	TRIP BLANK		16-Jan-12	<0.00010	<0.00010	<0.00020	<0.00020
	TRIP		17-Jan-12	<0.00010	<0.00010	<0.00020	<0.00020
	TRIP BLANK		18-Jan-12	<0.00010	<0.00010	<0.00020	<0.00020
	BC-11		16-May-12	<0.00010	<0.00010	<0.00020	<0.00020
	DE-1 TRIP BLANK		16-May-12	<0.00010	<0.00010	<0.00020	<0.00020
	TRIP BLANK		21-May-12	<0.00010	<0.00010	<0.00020	<0.00020
	RR-1		16-Jul-12	<0.00010	<0.00010	<0.00020	<0.00020
	TB-1		17-Jul-12	<0.00010	<0.00010	<0.00020	<0.00020

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Zinc		Zirconium	
				Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.0010/ 0.0020*	*0.0020/ 0.0050*	*0.00010/ 0.00040*	*0.00010/ 0.00040*
5x detection limit				*0.0050/ 0.010*	*0.0050/ 0.010*	*0.00050/ 0.0020*	*0.00050/ 0.0020*
TRIPLICATE SAMPLES							
Lake Manitoba	LM-2	NARR1	16-Jan-12	0.0021	<0.0050	<0.00040	<0.00040
	BC-2	NARR1	16-Jan-12	0.0023	<0.0050	<0.00040	<0.00040
	CD-2	NARR1	16-Jan-12	0.0022	<0.0050	<0.00040	<0.00040
		NARR1	Mean	0.0022	<0.0050	<0.00040	<0.00040
			SD	0.00010	-	-	-
			PRSD	-	-	-	-
Lake Winnipeg	LKW-6A	LKW6	18-Jan-12	0.0134	0.0143	<0.00040	<0.00040
	LKW-6B	LKW6	18-Jan-12	<0.0020	<0.0050	<0.00040	<0.00040
	LKW-6C	LKW6	18-Jan-12	<0.0020	<0.0050	<0.00040	<0.00040
		LKW6	Mean	0.0051	0.0064	<0.00040	<0.00040
			SD	-	-	-	-
			PRSD	-	-	-	-
Fairford River	FR - 1	FR1	16-May-12	<0.0020	0.0028	<0.00040	0.000139
	BC - 1	FR1	16-May-12	<0.0020	<0.0020	<0.00040	0.000176
	CD - 1	FR1	16-May-12	<0.0020	0.0020	<0.00040	0.000156
		FR1	Mean	<0.0020	<0.0020	<0.00040	0.000157
			SD	-	-	-	0.0000185
			PRSD	-	-	-	12
Buffalo Creek	BC3-A	BC3	16-May-12	<0.0020	0.0111	<0.00040	0.000188
	BC3-B	BC3	16-May-12	<0.0020	0.0042	<0.00040	0.000137
	BC3-C	BC3	16-May-12	<0.0020	<0.0020	<0.00040	0.000144
		BC3	Mean	<0.0020	0.0054	<0.00040	0.000156
			SD	-	-	-	0.0000276
			PRSD	-	-	-	18

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Zinc		Zirconium	
				Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW-2	LKW2	21-May-12	<0.0020	0.0035	<0.00040	0.000277
	LKW-2B	LKW2	21-May-12	<0.0020	0.0032	<0.00040	0.000187
	LKW-2C	LKW2	21-May-12	<0.0020	0.0043	<0.00040	0.000178
		LKW2	Mean	<0.0020	0.0037	<0.00040	0.000214
			SD	-	0.00057	-	0.0000547
			PRSD	-	-	-	26
Fairford River	FR-1	FR1	16-Jul-12	0.0023	<0.0020	<0.00010	<0.00040
	RC-A	FR1	16-Jul-12	0.0026	<0.0020	<0.00010	<0.00040
	RC-B	FR1	16-Jul-12	0.0019	<0.0020	<0.00010	<0.00040
		FR1	Mean	0.0023	<0.0020	<0.00010	<0.00040
			SD	0.00035	-	-	-
			PRSD	-	-	-	-
Lake St. Martin	LSM-1	LSM1	17-Jul-12	<0.0020	<0.0020	<0.00040	<0.00040
	BC-A	LSM1	17-Jul-12	<0.0020	<0.0020	<0.00040	<0.00040
	BC-B	LSM1	17-Jul-12	<0.0020	<0.0020	<0.00040	<0.00040
		LSM1	Mean	<0.0020	<0.0020	<0.00040	<0.00040
			SD	-	-	-	-
			PRSD	-	-	-	-

Table C-10. Continued.

Sample Location	Field ID	Location ID	Sample Date	Zinc		Zirconium	
				Dissolved	Total	Dissolved	Total
FIELD BLANKS							
	AB-2		16-Jan-12	<0.0020	<0.0050	<0.00040	<0.00040
	FIELD		17-Jan-12	<0.0020	<0.0050	<0.00040	<0.00040
	FIELD		18-Jan-12	<0.0020	<0.0050	<0.00040	<0.00040
	BC-10		16-May-12	<0.0020	<0.0020	<0.00040	<0.00040
	AB - 1		16-May-12	<0.0020	<0.0020	<0.00040	<0.00040
	JP-002		21-May-12	<0.0020	<0.0020	<0.00040	<0.00040
	RC-1		16-Jul-12	<0.0020	<0.0020	<0.00040	<0.00040
	BC-1		17-Jul-12	<0.0020	<0.0020	<0.00040	<0.00040
TRIP BLANKS							
	TRIP BLANK		16-Jan-12	<0.0020	<0.0050	<0.00040	<0.00040
	TRIP		17-Jan-12	<0.0020	<0.0050	<0.00040	<0.00040
	TRIP BLANK		18-Jan-12	<0.0020	<0.0050	<0.00040	<0.00040
	BC-11		16-May-12	<0.0020	<0.0020	<0.00040	<0.00040
	DE-1 TRIP BLANK		16-May-12	<0.0020	<0.0020	<0.00040	<0.00040
	TRIP BLANK		21-May-12	<0.0020	<0.0020	<0.00040	<0.00040
	RR-1		16-Jul-12	<0.0020	<0.0020	<0.00040	<0.00040
	TB-1		17-Jul-12	<0.0020	<0.0020	<0.00040	<0.00040

Table C-11. Quality assurance/quality control results for total suspended solids (TSS) and turbidity measured in triplicate samples collected from sites in Sturgeon Bay in February, 2012. Percent relative standard deviations (PRSD) values above 18% are indicated in red.

Sample Location	Location ID	Sample ID	Sample Date	TSS (mg/L)	Turbidity (NTU)
Analytical Detection Limit				*2.0*	*0.1*
Sturgeon Bay	ST-04	ST-04A	14-Feb-12	<2.0	1.42
		ST-04B	14-Feb-12	<2.0	1.92
		ST-04C	14-Feb-12	<2.0	2.11
			Mean	<2.0	1.82
			SD	-	0.36
			PRSD	-	20
	ST-18	ST-18A	14-Feb-12	<2.0	2.49
		ST-18B	14-Feb-12	<2.0	2.62
		ST-18C	14-Feb-12	<2.0	2.13
			Mean	<2.0	2.41
			SD	-	0.25
			PRSD	-	11
	ST-31	ST-31A	13-Feb-12	<2.0	2.39
		ST-31B	13-Feb-12	<2.0	3.35
		ST-31C	13-Feb-12	<2.0	3.59
			Mean	<2.0	3.11
			SD	-	0.63
			PRSD	-	20

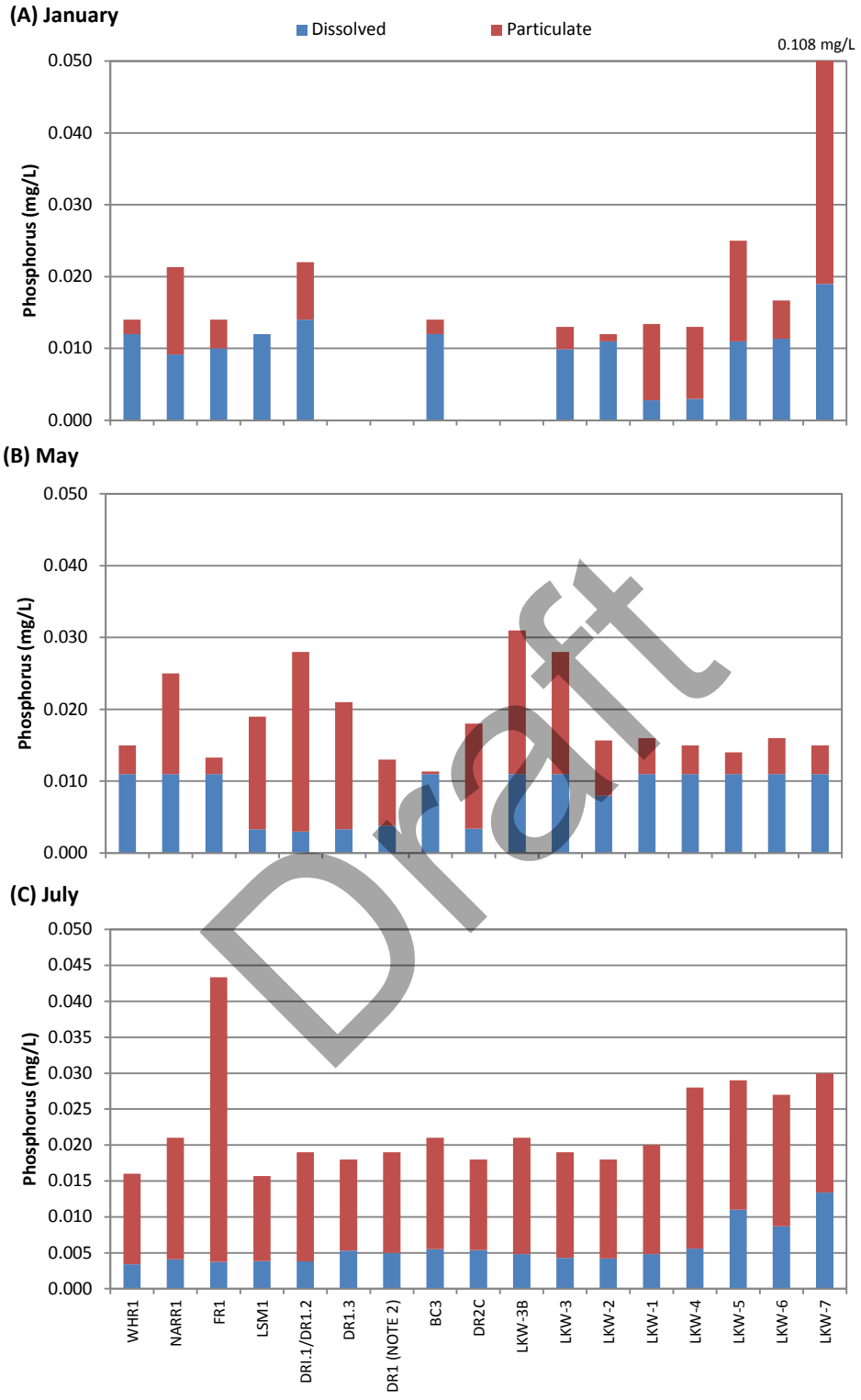

Figure C-2. Phosphorus (P) concentrations (mg/L) measured at RWQMP sites during channel operation, 2012. Where particulate P concentrations were less than the analytical detection limit they are plotted as the difference between total P and dissolved P so that the bars shown in the graph represent total P concentrations.

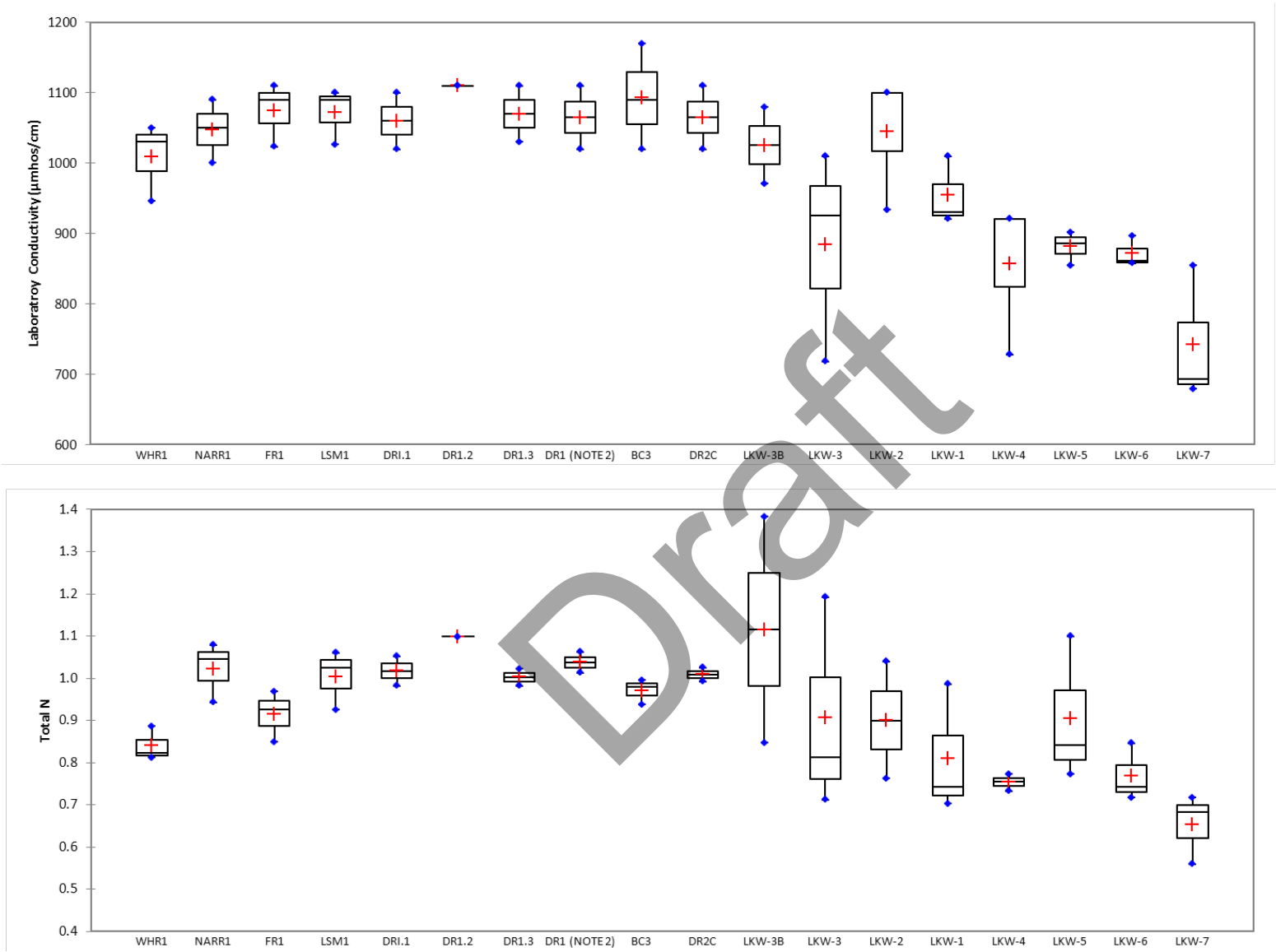

Figure C-3. Boxplots of conductivity and total nitrogen measured in the study area, 2012

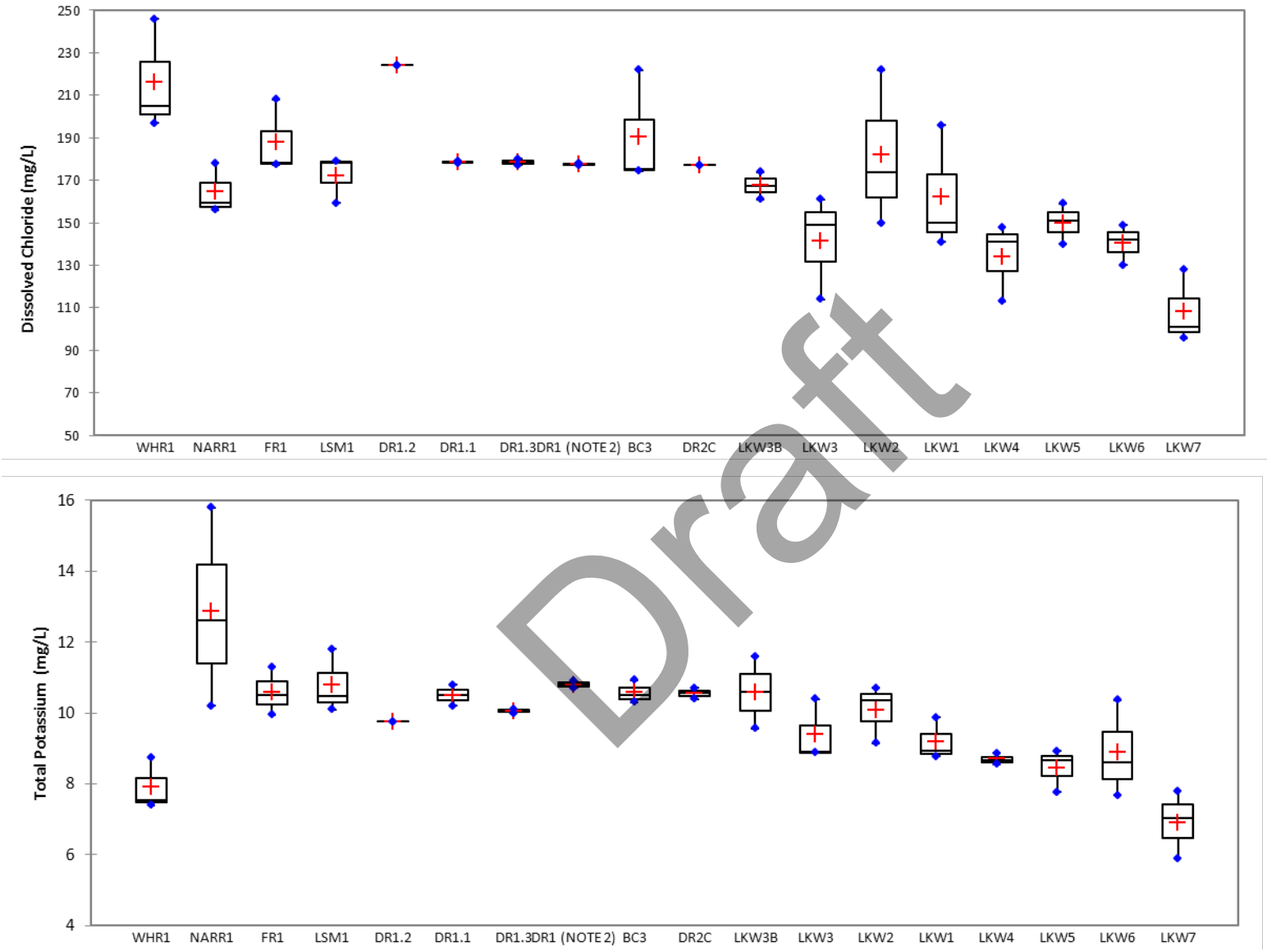

Figure C-4. Boxplots of dissolved chloride and total potassium concentrations measured in the study area, 2012.

Figure C-5. Mercury concentrations (ng/L) measured at RWQMP sites during channel operation, 2012. Values less than the analytical detection limit (DL) are plotted in a lighter colour at half the DL.

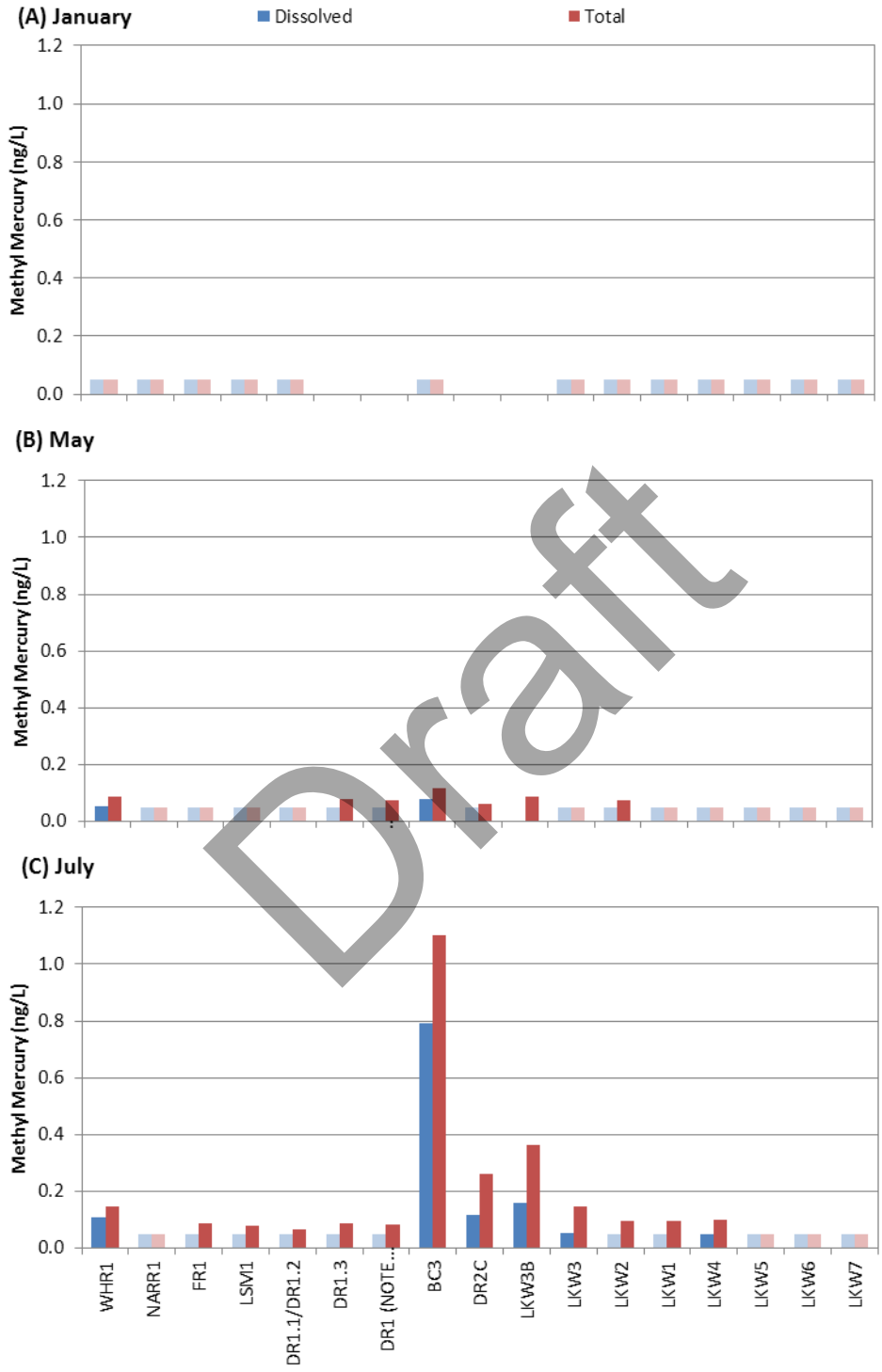

Figure C-6. Methyl mercury concentrations (ng/L) measured at RWQMP sites during channel operation, 2012. Values less than the analytical detection limit (DL) are plotted in a lighter colour at half the DL.

Appendix D. Regional Water Quality Monitoring Program Methods and Results – Fall 2012

D1.0 INTRODUCTION

During the conduct of the RWQMP in Fall 2012, water quality information was collected from all major waterbodies and waterways within the study area that were affected by flooding and encompassed the major inputs to the north basin of Lake Manitoba (i.e., Waterhen River and at the Lake Manitoba Narrows) downstream to and including Sturgeon Bay on Lake Winnipeg. The objectives of the program were:

- to supplement data sets at sites within the study area where Manitoba Water Stewardship, Water Quality Management Branch (MWS) conducts water quality monitoring;
- to evaluate spatial differences in water quality within the study area; and,
- to compare with results obtained during operation of Reach 1.

Monitoring preceding cessation of flows in Reach 1 was conducted in October 2012. Sampling included *in situ* water quality measurements and the collection of water samples for laboratory analysis. Detailed methods and results are provided below.

D2.0 METHODS

D2.1 SAMPLING SITES

Water quality samples and *in situ* measurements were collected at 15 sites throughout area, including the following:

- Fairford River - one site at or near the PTH # 6 bridge (MWS site MB05LMS001);
- Lake St. Martin - one site in the north basin;
- Dauphin River - four sites; including one site at or near the outflow from Lake St. Martin, one site at or near the existing MWS site (MWS Site MB05LMS003); one site upstream of the confluence of Buffalo Creek, and one site in the mouth of the Dauphin River and upstream of Sturgeon Bay;
- Buffalo Creek - one site upstream of the confluence with the Dauphin River; and,
- Sturgeon Bay - eight sites, including one near the existing MWS site (MWS Site MB05SES012).

A list of all sampling sites and locations are provided in Table D-1 and illustrated in Figure D-1.

D2.2 SAMPING METHODS

Water quality sampling was conducted on 15 and 16 October 2012 following RWQMP sampling methods. Most *in situ* measurements were taken using a Horiba® W22-XD water quality meter, while turbidity was measured using an Analite turbidity meter. Samples were collected for the usual list of parameters sampled by the RWQMP.

D3.0 RESULTS

D3.1 ROUTINE VARIABLES AND LIMNOLOGY

Results for routine water quality parameters are presented in Tables D-2 and D-3.

Water quality of the study area can be generally described as moderately nutrient-rich, low to moderately turbid, slightly alkaline, hard to very hard, and well-oxygenated. Both Lake St. Martin and Sturgeon Bay were isothermal in October 2012. Other *in situ* variables, including DO, turbidity, pH, and specific conductance, were with one exception relatively consistent across depth in both lakes. The exception was specific conductance in Sturgeon Bay at the site nearest the mouth of the Dauphin River (LKW3B). At this site, specific conductance increased with depth starting at 2.5 m below the surface.

Total phosphorus (TP) concentrations in the study area were composed of a mix of dissolved and particulate forms (Figure D-2). At most sites phosphorus was predominately in particulate form; however, the reverse was true at Lake St. Martin, the inlet of the Dauphin River, and two sites in Sturgeon Bay (LKW6 and LKW7). The majority of total nitrogen (TN) was present in organic form at all sites, with ammonia generally comprising a greater amount of dissolved inorganic nitrogen (DIN) than nitrate/nitrite (Figure D-3). On the basis of TN:TP molar ratios, all waterbodies sampled were phosphorus limited (i.e., TN:TP ratio > 20; Kalff 2002).

Several routine water quality parameters were higher in the Fairford River, Lake St. Martin, the Dauphin River and Buffalo Creek than were typical of Sturgeon Bay, including: alkalinity, conductivity, total dissolved solids (TDS), TN, and inorganic and organic carbon (total and dissolved; Figures D-3 and D-4). Conversely, colour was generally higher in Sturgeon Bay than in other waterbodies sampled, and turbidity was generally higher in Sturgeon Bay than it was in Lake St. Martin, the Dauphin River and Buffalo Creek (Figure D-5). However, the routine water quality at LKW2 was more similar to the Dauphin River and sites upstream than it was to other sites in Sturgeon Bay (i.e., higher alkalinity, conductivity, TDS, TN and carbon; and, lower colour and turbidity). The water quality of LKW4 and LKW5 also appeared to be influenced by the Dauphin River though to a lesser extent than was LKW2.

Additionally, TSS and chlorophyll *a* were higher in the Fairford River than at all other sites (Figure D-6), and DIN was notably higher in Buffalo Creek than in all other waterbodies sampled (Figure D-3).

TP exceeded the MWQSOGs narrative guideline for phosphorus for lakes (i.e., 0.025 mg/L) at four sites in Sturgeon Bay (LKW1, 3, 6 and 7; Figure D-2). All applicable measurements were within the narrative guideline for streams (0.050 mg/L). All other routine water quality variables for which there are MWQSOGs and CCME guidelines, including DO, pH, ammonia, nitrate and nitrite were within PAL objectives and guidelines.

The MWQSOGs aesthetic objective for drinking water for TDS (≤ 500 mg/L) was exceeded at the Fairford River, Lake St. Martin, the Dauphin River, Buffalo Creek and at two sites in Sturgeon Bay (LKW2 and LKW4; Figure D-4C). Additionally, laboratory measured pH was above the range for the aesthetic objective for drinking water at Lake St. Martin and at the inlet of the Dauphin River; *in situ* pH exceeded

this objective at most sites. All other routine water quality variables for which there are MWQSOGs, including colour, nitrate, nitrite, and nitrate/nitrite were within guidelines for drinking water. As discussed in Appendix A an assessment of the maximum acceptable concentration for drinking water for turbidity was not conducted.

D3.2 METALS AND MAJOR IONS

Metal and major ion concentrations measured in the study area are presented in Table D-4. Beryllium, bismuth, cesium, selenium, silver, tellurium, thallium, tin and tungsten were not detected at any site. Additionally, several metals were not detected in dissolved form at any site, including: chromium; cobalt; methyl mercury; thorium; zinc; and, zirconium. Total aluminum, arsenic, barium, boron, calcium, chloride, copper, fluoride, total lead, lithium, magnesium, manganese, molybdenum, potassium, rubidium, silicon, sodium, strontium, sulfate, titanium, uranium and vanadium, were consistently detected; the remaining metals and major ions were detected in some samples.

Several metals and major ions were present in higher concentrations in the Fairford River, Lake St. Martin, the Dauphin River and Buffalo Creek than were typically found in Sturgeon Bay, including: boron; calcium; chloride; fluoride; lithium; magnesium; molybdenum; potassium; rubidium; silicon; sodium; strontium; sulfate; and, uranium (Table D-4 and Figure D-7). Conversely, Sturgeon Bay had higher concentrations of aluminum, copper, iron, lead and titanium than were measured upstream of Lake Winnipeg (Figure D-8). Similar to the routine water quality, metals and major ion concentrations at LKW2 were more alike to those of the Dauphin River than they were to other sites in Sturgeon Bay; this was also true of LKW4 and LKW5 though to a lesser extent.

Aluminum exceeded or was at the MWQSOGs and CCME guideline for PAL (0.1 mg/L) at all sites in Sturgeon Bay (Figure D-8A). Chloride concentrations exceeded the CCME long-term guideline for PAL (120 mg/L) at all sites upstream of Lake Winnipeg and at two sites in Sturgeon Bay (LKW2 and 4; Figure D-7E); however, chloride concentrations were well below the CCME short-term guideline for PAL (640 mg/L) at all sites. Fluoride concentrations exceeded the CCME guideline for PAL (0.12 mg/L) at all sites upstream of Lake Winnipeg (Figure D-7F). Iron concentrations were above the MWQSOGs and CCME guideline for PAL (0.3 mg/L) at four sites in Sturgeon Bay (LKW1, 3, 6 and 7; Figure D-8C). All other metals and major ions for which there are MWQSOGs or CCME guidelines for PAL were within objectives and guidelines at all other sites sampled in October 2012.

Iron concentrations exceeded the MWQSOGs aesthetic objective for drinking water (0.3 mg/L) at four sites in Sturgeon Bay (LKW1, 3, 6 and 7). All other metals and major ions were within the existing MWQSOGs for drinking water.

D3.3 QA/QC

Quality assurance and quality control results are presented in Tables D-5 and D-6.

D3.3.1 Field and Trip Blanks

Field and trip blank results generally indicate high precision and no sample contamination. The concentration of dissolved barium was reported to be greater than five times the detection limit in one of two field blanks submitted to the analytical laboratory. Measurements for all other parameters (metals, dissolved metals and routine parameters) were below the threshold of five times the detection limit.

D3.3.2 Replicate Samples

PRSD values were not derived for several parameters due to low concentrations (i.e., concentrations less than five times the DL). In general, the results indicate good agreement between samples and acceptable levels of precision. The PRSD exceeded threshold values (18%) for three parameters including: dissolved aluminum; total aluminum; and, total titanium.

Table D-1. Location of sites sampled as part of the RWQMP, fall 2012.

Water body	Location Description	Site ID	MWS Site	UTM (Zone 14U) [1]	
				Easting	Northing
Fairford River	near PTH #6	FR1	MB05LMS001	518775	5715297
Lake St. Martin	North basin	LSM1	-	550111	5736744
Dauphin River	River inlet at Lake St. Martin	DR1.1	-	547362	5741777
	Between Gypsumville and Anama Bay	DR1.3	MB05LMS003	545991	5757469
	Upstream of Buffalo Creek	DR1(Note 2)	-	562124	5754995
Buffalo Creek		BC3	-	562264	5754772
Dauphin River	River mouth at Lake Winnipeg	DR2C	-	564701	5757096
Sturgeon Bay		LKW3B	-	567090	5757481
		LKW3	-	569038	5759083
		LKW2	-	571476	5754219
		LKW1	-	578396	5750402
		LKW4	-	566337	5765391
		LKW5	-	577142	5758608
		LKW6	-	573302	5762626
		LKW7	MB05SES012	574046	5771087

1 - UTM coordinates; Datum NAD 83, Zone 14U.

Table D-2. *In situ* water quality measurements recorded as part of the RWQMP, fall 2012.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH
Fairford River	FR1	15-Oct-12	11:03	NM	0.3	5.6	11.2	92	1750	NM	8.48
Lake St. Martin	LSM1	15-Oct-12	13:42	2.0	0.3	5.2	11.4	93	1770	7.0	8.56
					1.0	5.2	11.4	93	1770	7.1	8.59
					1.5	5.2	11.4	93	1770	6.7	8.59
Dauphin River	DR1.1	15-Oct-12	14:18	1.6	0.3	5.0	11.7	96	1770	7.3	8.74
					1.0	4.9	11.7	96	1770	NM	8.75
Dauphin River	DR1.3	15-Oct-12	15:19	NM	0.2	5.1	11.5	93	1760	8.7	8.77
Dauphin River	DR1 (NOTE 2)	16-Oct-12	15:08	1.8	0.3	5.6	11.2	92	1760	14	8.68
Buffalo Creek	BC3	16-Oct-12	15:28	NM	0.3	5.4	9.9	81	1730	6.9	8.51
Dauphin River	DR2C	16-Oct-12	14:14	NM	0.3	5.5	11.0	90	1750	8.6	8.68
Lake Winnipeg	LKW3B	16-Oct-12	13:43	5.5	0.3	6.1	10.6	89	1130	22	8.64
					1.0	5.9	10.6	88	1130	22	8.65
					1.5	5.9	10.6	88	1130	22	8.62
					2.0	5.8	10.5	87	1130	NM	8.61
					2.5	5.5	10.6	87	1400	NM	8.58
					3.0	5.1	10.7	87	1540	NM	8.61
					3.5	5.0	10.6	86	1600	NM	8.61
					4.0	4.8	10.6	86	1660	NM	8.61
					4.5	4.8	10.6	85	1680	NM	8.61
					5.0	4.8	10.5	85	1690	NM	8.60
Lake Winnipeg	LKW3	16-Oct-12	13:17	6.6	0.3	6.2	10.9	90	1020	23	8.66
					1.0	6.1	10.9	90	1020	22	8.65
					2.0	5.9	10.8	90	1020	24	8.61
					3.0	5.9	10.7	89	1020	23	8.58
					4.0	5.9	10.7	89	1030	23	8.57
					5.0	5.9	10.7	88	1030	22	8.56
					6.0	5.9	10.6	88	1030	24	8.54

Table D-2. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH
Lake Winnipeg	LKW2	16-Oct-12	12:36	4.2	0.3	4.8	11.0	89	1590	14	8.68
					1.0	4.8	11.0	89	1590	13	8.66
					1.5	4.7	11.0	89	1590	13	8.66
					2.0	4.7	11.0	89	1590	13	8.64
					2.5	4.6	11.0	88	1590	13	8.64
					3.0	4.6	10.9	88	1590	13	8.64
					3.5	4.6	10.9	88	1590	13	8.63
					3.8	4.6	11.0	88	1590	13	8.62
Lake Winnipeg	LKW1	16-Oct-12	11:57	4.4	0.3	4.9	11.0	89	970	30	8.62
					1.0	4.9	11.0	89	970	31	8.59
					1.5	4.9	11.0	89	970	31	8.59
					2.0	4.9	11.0	88	980	30	8.59
					2.5	4.9	11.0	88	970	31	8.56
					3.0	4.9	11.0	88	970	30	8.55
					3.5	4.8	10.9	88	970	29	8.55
					4.0	4.8	10.9	88	970	31	8.55
Lake Winnipeg	LKW4	16-Oct-12	9:15	6.9	0.3	5.6	10.8	89	1300	24	8.46
					1.0	5.6	10.7	88	1300	24	8.49
					2.0	5.6	10.7	88	1300	24	8.50
					3.0	5.6	10.7	88	1300	23	8.50
					4.0	5.6	10.7	88	1300	23	8.50
					5.0	5.6	10.7	88	1300	23	8.50
					6.0	5.6	10.7	88	1310	24	8.49
					6.5	5.7	10.6	87	1330	23	8.47

Table D-2. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH
Lake Winnipeg	LKW5	16-Oct-12	11:23	7.3	0.3	5.3	10.8	88	1260	25	8.61
					1.0	5.3	10.8	88	1260	23	8.6
					2.0	5.3	10.8	88	1270	23	8.59
					3.0	5.2	10.8	88	1260	23	8.58
					4.0	5.2	10.8	88	1270	23	8.56
					5.0	5.2	10.8	88	1270	23	8.55
					6.0	5.2	10.8	88	1280	23	8.54
					6.8	5.3	10.7	87	1310	22	8.53
Lake Winnipeg	LKW6	16-Oct-12	10:46	8.1	0.3	6.0	10.7	89	745	26	8.55
					1.0	6.0	10.7	89	745	27	8.55
					2.0	6.0	10.7	89	745	26	8.52
					3.0	6.0	10.7	89	745	26	8.51
					4.0	6.0	10.7	89	745	26	8.50
					5.0	6.0	10.7	89	745	26	8.49
					6.0	6.0	10.7	89	745	26	8.47
					7.0	6.0	10.7	89	745	27	8.46
					7.6	6.0	10.7	89	745	26	8.46
Lake Winnipeg	LKW7	16-Oct-12	10:00	6.3	0.3	6.0	10.8	90	950	29	8.60
					1.0	6.0	10.8	90	940	29	8.59
					2.0	6.0	10.8	90	940	29	8.58
					3.0	6.0	10.8	90	950	30	8.56
					4.0	6.0	10.8	90	950	29	8.54
					5.0	6.0	10.8	90	950	28	8.53
					6.0	6.0	10.8	90	950	30	8.52

NM - Not Measured.

Table D-3. Laboratory results for routine water quality parameters at RWQMP sites, fall 2012.

Sample Location	Location ID	Sample Date	Lab pH	Alkalinity			
				Total, as $CaCO_3$ (mg/L)	as Bicarbonate (mg/L)	as Carbonate (mg/L)	as Hydroxide (mg/L)
Analytical Detection Limits			*0.10*	*20*	*24*	*12*	*6.8*
Fairford River	FR1	15-Oct-12	8.48	183	212	<12	<6.8
Lake St. Martin	LSM1	15-Oct-12	8.51	187	214	<12	<6.8
Dauphin River	DR1.1	15-Oct-12	8.52	187	214	<12	<6.8
	DR1.3	15-Oct-12	8.50	187	215	<12	<6.8
	DR1 (NOTE 2)	16-Oct-12	8.47	186	216	<12	<6.8
Buffalo Creek	BC3	16-Oct-12	8.31	189	227	<12	<6.8
Dauphin River	DR2C	16-Oct-12	8.44	187	218	<12	<6.8
Lake Winnipeg	LKW3B	16-Oct-12	8.41	154	181	<12	<6.8
	LKW3	16-Oct-12	8.40	146	172	<12	<6.8
	LKW2	16-Oct-12	8.39	178	210	<12	<6.8
	LKW1	16-Oct-12	8.37	144	171	<12	<6.8
	LKW4	16-Oct-12	8.41	163	192	<12	<6.8
	LKW5	16-Oct-12	8.41	159	187	<12	<6.8
	LKW6	16-Oct-12	8.36	136	162	<12	<6.8
	LKW7	16-Oct-12	8.38	139	165	<12	<6.8

Table D-3. Continued.

Sample Location	Location ID	Sample Date	Nitrogen						
			Ammonia (mg N/L)	Nitrate /nitrite (mg N/L)	Nitrate-N (mg N/L)	Nitrite-N (mg N/L)	Dissolved Inorganic N[1] (mg/L)	Total Kjeldahl N (mg/L)	Total N[2] (mg/L)
Analytical Detection Limits			*0.010*	*0.0051*	*0.0050*	*0.0010*	-	*0.20*	-
Fairford River	FR1	15-Oct-12	0.017	<0.0051	<0.0050	<0.0010	0.020	1.05	1.05
Lake St. Martin	LSM1	15-Oct-12	0.02	<0.0051	<0.0050	<0.0010	0.023	0.91	0.91
Dauphin River	DR1.1	15-Oct-12	0.022	<0.0051	<0.0050	<0.0010	0.025	0.96	0.96
	DR1.3	15-Oct-12	0.029	<0.0051	<0.0050	<0.0010	0.032	0.95	0.96
	DR1 (NOTE 2)	16-Oct-12	0.024	<0.0051	<0.0050	<0.0010	0.027	0.99	0.99
Buffalo Creek	BC3	16-Oct-12	0.044	0.0652	0.0652	<0.0010	0.109	0.82	0.89
Dauphin River	DR2C	16-Oct-12	0.027	0.0131	0.0131	<0.0010	0.040	0.85	0.86
Lake Winnipeg	LKW3B	16-Oct-12	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.57	0.57
	LKW3	16-Oct-12	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.50	0.50
	LKW2	16-Oct-12	0.011	0.0106	0.0106	<0.0010	0.022	0.87	0.88
	LKW1	16-Oct-12	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.53	0.53
	LKW4	16-Oct-12	0.020	<0.0051	<0.0050	<0.0010	0.023	0.65	0.65
	LKW5	16-Oct-12	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.77	0.77
	LKW6	16-Oct-12	0.026	<0.0051	<0.0050	<0.0010	0.029	0.52	0.52
	LKW7	16-Oct-12	0.011	<0.0051	<0.0050	<0.0010	0.014	0.63	0.63

Table D-3. Continued.

Sample Location	Location ID	Sample Date	Phosphorus				N:P Molar Ratios		
			Total P (mg/L)	Dissolved P (mg/L)	Total Particulate P (mg/L)	Dissolved Fraction (%)	TN:TP	DIN:DP	DIN:TP
Analytical Detection Limits			*0.010*	*0.0010/0.010*	*0.010/0.014*	-	-	-	-
Fairford River	FR1	15-Oct-12	0.023	0.0042	0.018	18	101	10.3	1.9
Lake St. Martin	LSM1	15-Oct-12	0.015	0.011	<0.014	73	135	4.5	3.3
Dauphin River	DR1.1	15-Oct-12	0.015	0.011	<0.014	73	142	5.0	3.6
	DR1.3	15-Oct-12	0.016	0.004	0.012	26	132	17.1	4.4
	DR1 (NOTE 2)	16-Oct-12	0.018	0.0052	0.012	29	122	11.3	3.3
Buffalo Creek	BC3	16-Oct-12	0.014	0.0033	0.011	24	140	73.3	17.3
Dauphin River	DR2C	16-Oct-12	0.014	0.0059	<0.010	42	137	15.0	6.3
Lake Winnipeg	LKW3B	16-Oct-12	0.022	0.011	<0.014	50	58	1.0	0.5
	LKW3	16-Oct-12	0.033	0.016	0.017	48	34	0.7	0.3
	LKW2	16-Oct-12	0.017	0.004	0.013	22	114	12.9	2.8
	LKW1	16-Oct-12	0.030	0.006	0.023	20	39	1.8	0.4
	LKW4	16-Oct-12	0.016	0.0048	0.011	30	90	10.4	3.1
	LKW5	16-Oct-12	0.018	0.0037	0.014	21	95	3.0	0.6
	LKW6	16-Oct-12	0.033	0.019	<0.014	58	35	3.3	1.9
	LKW7	16-Oct-12	0.032	0.018	0.014	56	44	1.7	0.9

Table D-3. Continued.

Sample Location	Location ID	Sample Date	Carbon			C:N Molar Ratios	
			Total Inorganic C (mg/L)	Total Organic C (mg/L)	Dissolved Organic C (mg/L)	TOC:ON	TOC:TN
Analytical Detection Limits			*1.0*	*1.0*	*1.0*	-	-
Fairford River	FR1	15-Oct-12	40.9	13.3	11.5	15.0	14.7
Lake St. Martin	LSM1	15-Oct-12	42.0	14.4	11.8	18.9	18.4
Dauphin River	DR1.1	15-Oct-12	41.4	14.0	11.7	17.4	17.0
	DR1.3	15-Oct-12	42.1	13.3	12.2	16.8	16.2
	DR1 (NOTE 2)	16-Oct-12	42.1	13.8	12.0	16.7	16.2
Buffalo Creek	BC3	16-Oct-12	44.3	13.7	11.7	20.6	18.1
Dauphin River	DR2C	16-Oct-12	43.1	13.8	12.1	19.6	18.7
Lake Winnipeg	LKW3B	16-Oct-12	35.0	9.3	8.6	19.2	18.9
	LKW3	16-Oct-12	33.4	8.5	7.9	20.0	19.7
	LKW2	16-Oct-12	40.9	12.6	11.3	17.2	16.8
	LKW1	16-Oct-12	32.5	9.2	8.0	20.4	20.2
	LKW4	16-Oct-12	37.5	10.8	9.3	20.0	19.3
	LKW5	16-Oct-12	36.8	10.1	9.4	15.4	15.3
	LKW6	16-Oct-12	31.4	7.9	7.4	18.7	17.6
	LKW7	16-Oct-12	31.5	8.3	7.4	15.6	15.3

Table D-3. Continued.

Sample Location	Location ID	Sample Date	Conductivity (µmhos/cm)	TDS (mg/L)	Water Clarity: TSS (mg/L)	Water Clarity: Turbidity (NTU)	Water Clarity: True Colour (CU)	Algal Pigments: Chlorophyll *a* (µg/L)	Algal Pigments: Phaeophytin *a* (µg/L)
Analytical Detection Limits			*20*	*5.0*	*2.0*	*0.10*	*5.0*	*0.10*	*0.10*
Fairford River	FR1	15-Oct-12	1110	608	20.8	10.9	6	10.8	0.94
Lake St. Martin	LSM1	15-Oct-12	1110	622	10.4	4.52	<5.0	7.14	0.90
Dauphin River	DR1.1	15-Oct-12	1100	616	10.4	4.14	6.5	6.44	0.57
	DR1.3	15-Oct-12	1110	618	10.4	4.26	7.0	5.22	0.36
	DR1 (NOTE 2)	16-Oct-12	1110	585	13.0	5.96	6.6	4.21	0.45
Buffalo Creek	BC3	16-Oct-12	1090	618	6.8	3.81	9.1	2.65	0.62
Dauphin River	DR2C	16-Oct-12	1100	640	11.2	5.77	5.9	4.23	0.26
Lake Winnipeg	LKW3B	16-Oct-12	716	377	9.6	15.9	10.4	5.27	0.69
	LKW3	16-Oct-12	645	433	6.2	11.9	10.9	3.16	0.66
	LKW2	16-Oct-12	992	556	11.7	6.42	10.2	4.71	0.44
	LKW1	16-Oct-12	610	358	11.4	15.3	12.3	2.76	0.68
	LKW4	16-Oct-12	818	517	12.6	10.5	11.6	5.27	0.94
	LKW5	16-Oct-12	796	419	11.2	9.18	11.4	4.63	0.69
	LKW6	16-Oct-12	569	324	7.0	12.2	9.9	5.68	0.66
	LKW7	16-Oct-12	597	338	9.0	13.1	9.6	4.99	0.65

1 - Calculated as the sum of ammonia-N and nitrate/nitrite-N

2 - Calculated as the sum of total Kjeldahl N and nitrate/nitrite-N.

Table D-4. Concentrations of metals and major ions measured as part of the RWQMP, fall 2012. Units are mg/L unless otherwise indicated.

Sample Location	Location ID	Sample Date	Hardness, as $CaCO_3$	Aluminum		Antimony		Arsenic		Barium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.30*	*0.0020*	*0.0050*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*
Fairford River	FR1	15-Oct-12	263	0.0026	0.0255	<0.00020	<0.00020	0.00196	0.00212	0.0435	0.0489
Lake St. Martin	LSM1	15-Oct-12	268	0.0153	0.0120	0.00026	<0.00020	0.00227	0.00217	0.0446	0.0460
Dauphin River	DR1.1	15-Oct-12	261	<0.0020	0.0328	<0.00020	<0.00020	0.00202	0.00233	0.0435	0.0478
	DR1.3	15-Oct-12	251	0.0015	0.0101	<0.00020	<0.00020	0.00223	0.00206	0.0457	0.0453
	DR-1 (NOTE 2)	16-Oct-12	254	0.004	0.0108	<0.00020	<0.00020	0.00219	0.00203	0.0469	0.0458
Buffalo Creek	BC3	16-Oct-12	254	<0.0020	0.0431	<0.00020	<0.00020	0.00193	0.00192	0.0450	0.0438
Dauphin River	DR2C	16-Oct-12	254	<0.0020	0.0103	<0.00020	<0.00020	0.00194	0.00212	0.0476	0.0448
Lake Winnipeg	LKW3B	16-Oct-12	192	0.0233	0.375	<0.00020	<0.00020	0.00209	0.00202	0.0414	0.0473
	LKW3	16-Oct-12	185	0.0314	0.575	<0.00020	<0.00020	0.00211	0.00188	0.0405	0.0543
	LKW2	16-Oct-12	242	0.0058	0.105	<0.00020	<0.00020	0.00197	0.00195	0.0445	0.0445
	LKW1	16-Oct-12	183	0.0172	0.698	<0.00020	<0.00020	0.00158	0.00181	0.0366	0.0434
	LKW4	16-Oct-12	208	0.0422	0.363	<0.00020	<0.00020	0.00207	0.00192	0.0425	0.0457
	LKW5	16-Oct-12	209	0.0501	0.112	<0.00020	<0.00020	0.00187	0.00177	0.0425	0.0443
	LKW6	16-Oct-12	173	0.0474	0.569	<0.00020	<0.00020	0.00203	0.00194	0.0398	0.0463
	LKW7	16-Oct-12	175	0.0608	0.411	<0.00020	<0.00020	0.00180	0.00191	0.0398	0.0460

Table D-4. Continued.

Sample Location	Location ID	Sample Date	Beryllium		Bismuth		Boron		Cadmium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.010*	*0.010*	*0.000010*	*0.000010*
Fairford River	FR1	15-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.084	0.100	<0.000010	0.000012
Lake St. Martin	LSM1	15-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.088	0.103	0.000017	<0.000010
Dauphin River	DR1.1	15-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.084	0.102	<0.000010	<0.000010
	DR1.3	15-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.086	0.097	<0.000010	<0.000010
	DR-1 (NOTE 2)	16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.087	0.098	<0.000010	0.000012
Buffalo Creek	BC3	16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.087	0.092	<0.000010	<0.000010
Dauphin River	DR2C	16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.093	0.097	<0.000010	0.000011
Lake Winnipeg	LKW3B	16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.066	0.065	<0.000010	0.000011
	LKW3	16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.062	0.060	<0.000010	0.000016
	LKW2	16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.085	0.086	<0.000010	<0.000010
	LKW1	16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.045	0.048	<0.000010	<0.000010
	LKW4	16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.074	0.066	<0.000010	0.000011
	LKW5	16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.073	0.068	<0.000010	0.000015
	LKW6	16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.053	0.051	<0.000010	0.000011
	LKW7	16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	0.053	0.052	<0.000010	0.000011

Table D-4. Continued.

Sample Location	Location ID	Sample Date	Calcium		Cesium		Chloride	Chromium		Cobalt	
			Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.050*	*0.010*	*0.00010*	*0.00010*	*0.20*	*0.0020*	*0.0010*	*0.00020*	*0.00020*
Fairford River	FR1	15-Oct-12	38.8	47.6	<0.00010	<0.00010	197	<0.0020	<0.0010	<0.00020	<0.00020
Lake St. Martin	LSM1	15-Oct-12	40.8	48.2	<0.00010	<0.00010	196	<0.0020	<0.0010	<0.00020	<0.00020
Dauphin River	DR1.1	15-Oct-12	40.0	46.8	<0.00010	<0.00010	196	<0.0020	<0.0010	<0.00020	<0.00020
	DR1.3	15-Oct-12	40.0	44.6	<0.00010	<0.00010	195	<0.0020	<0.0010	<0.00020	<0.00020
	DR-1 (NOTE 2)	16-Oct-12	40.1	46.3	<0.00010	<0.00010	193	<0.0020	<0.0010	<0.00020	<0.00020
Buffalo Creek	BC3	16-Oct-12	39.5	46.0	<0.00010	<0.00010	188	<0.0020	<0.0010	<0.00020	<0.00020
Dauphin River	DR2C	16-Oct-12	41.8	46.2	<0.00010	<0.00010	192	<0.0020	<0.0010	<0.00020	<0.00020
Lake Winnipeg	LKW3B	16-Oct-12	35.0	36.3	<0.00010	<0.00010	97.5	<0.0020	<0.0010	<0.00020	<0.00020
	LKW3	16-Oct-12	34.8	36.3	<0.00010	<0.00010	81.5	<0.0020	<0.0010	<0.00020	0.00025
	LKW2	16-Oct-12	38.6	45.3	<0.00010	<0.00010	166	<0.0020	<0.0010	<0.00020	<0.00020
	LKW1	16-Oct-12	33.4	37.0	<0.00010	<0.00010	74.7	<0.0020	0.0013	<0.00020	0.00034
	LKW4	16-Oct-12	36.7	40.6	<0.00010	<0.00010	121	<0.0020	<0.0010	<0.00020	0.00020
	LKW5	16-Oct-12	36.3	41.1	<0.00010	<0.00010	117	<0.0020	<0.0010	<0.00020	<0.00020
	LKW6	16-Oct-12	33.3	35.2	<0.00010	<0.00010	64.9	<0.0020	<0.0010	<0.00020	0.00027
	LKW7	16-Oct-12	33.0	34.6	<0.00010	<0.00010	71.0	<0.0020	<0.0010	<0.00020	0.00023

Table D-4. Continued.

Sample Location	Location ID	Sample Date	Copper		Fluoride	Iron		Lead		Lithium	
			Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00020*	*0.00020*	*0.020*	*0.010*	*0.010/0.10*	*0.000090*	*0.000090*	*0.0020*	*0.0020*
Fairford River	FR1	15-Oct-12	0.00037	0.00098	0.144	<0.010	0.209	<0.000090	0.000289	0.0319	0.0342
Lake St. Martin	LSM1	15-Oct-12	0.00043	0.00093	0.145	<0.010	0.056	0.000104	0.000148	0.0307	0.0310
Dauphin River	DR1.1	15-Oct-12	0.00035	0.00100	0.146	<0.010	0.052	<0.000090	0.000167	0.0327	0.0320
	DR1.3	15-Oct-12	0.00036	0.00071	0.136	<0.010	0.069	<0.000090	0.000166	0.0320	0.0329
	DR-1 (NOTE 2)	16-Oct-12	0.00044	0.00083	0.139	<0.010	0.067	<0.000090	0.000181	0.0330	0.0333
Buffalo Creek	BC3	16-Oct-12	0.00043	0.00088	0.122	<0.010	0.074	<0.000090	0.000115	0.0322	0.0326
Dauphin River	DR2C	16-Oct-12	0.00036	0.00140	0.124	<0.010	0.073	<0.000090	0.000142	0.0332	0.0322
Lake Winnipeg	LKW3B	16-Oct-12	0.00100	0.00174	0.103	<0.010	0.27	<0.000090	0.000192	0.0205	0.0218
	LKW3	16-Oct-12	0.00117	0.00188	0.098	<0.010	0.42	<0.000090	0.000218	0.0196	0.0211
	LKW2	16-Oct-12	0.00051	0.00083	0.119	<0.010	0.26	<0.000090	0.000186	0.0288	0.0293
	LKW1	16-Oct-12	0.00102	0.00252	0.097	<0.010	0.62	<0.000090	0.000308	0.0193	0.0182
	LKW4	16-Oct-12	0.00085	0.00145	0.110	0.025	0.27	<0.000090	0.000244	0.0237	0.0236
	LKW5	16-Oct-12	0.00092	0.00177	0.107	0.017	0.11	<0.000090	0.000310	0.0227	0.0233
	LKW6	16-Oct-12	0.00107	0.00301	0.093	0.013	0.45	<0.000090	0.000304	0.0158	0.0181
	LKW7	16-Oct-12	0.00124	0.00173	0.095	0.023	0.37	<0.000090	0.000278	0.0170	0.0186

Table D-4. Continued.

Sample Location	Location ID	Sample Date	Magnesium		Manganese		Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.010*	*0.010*	*0.00010*	*0.0003*	*1.0*	*1.0*	*0.050*	*0.050*	*0.00010*	*0.00020*
Fairford River	FR1	15-Oct-12	34.4	35.1	0.00027	0.01060	<1.0	1.4	<0.05	<0.05	0.00198	0.00219
Lake St. Martin	LSM1	15-Oct-12	35.8	35.9	0.00180	0.00474	<1.0	<1.0	<0.05	<0.05	0.00248	0.00210
Dauphin River	DR1.1	15-Oct-12	36.3	35.0	0.00018	0.00481	<1.0	<1.0	<0.05	<0.05	0.00202	0.00209
	DR1.3	15-Oct-12	34.9	33.9	0.00015	0.00461	<1.0	<1.0	<0.05	<0.05	0.00201	0.00204
	DR-1 (NOTE 2)	16-Oct-12	35.0	33.6	0.00065	0.00499	<1.0	1.3	<0.05	<0.05	0.00216	0.00210
Buffalo Creek	BC3	16-Oct-12	33.8	33.8	0.00567	0.0119	<1.0	<1.0	<0.05	0.118	0.00198	0.00192
Dauphin River	DR2C	16-Oct-12	36.4	33.6	0.00044	0.00582	<1.0	1.2	<0.05	<0.05	0.00208	0.00198
Lake Winnipeg	LKW3B	16-Oct-12	24.3	24.5	0.00019	0.00619	<1.0	<1.0	<0.05	<0.05	0.00145	0.00128
	LKW3	16-Oct-12	21.9	23.0	0.00026	0.00778	<1.0	<1.0	<0.05	<0.05	0.00132	0.00122
	LKW2	16-Oct-12	31.8	31.3	0.00016	0.00636	<1.0	<1.0	<0.05	<0.05	0.00186	0.00183
	LKW1	16-Oct-12	21.4	22.0	0.00017	0.0118	1.1	1.2	<0.05	<0.05	0.00115	0.00111
	LKW4	16-Oct-12	27.1	25.9	0.00039	0.00742	<1.0	<1.0	<0.05	0.052	0.00172	0.00142
	LKW5	16-Oct-12	26.0	25.9	0.00025	0.00652	<1.0	<1.0	<0.05	<0.05	0.00158	0.00140
	LKW6	16-Oct-12	20.0	20.7	0.00030	0.00897	<1.0	<1.0	<0.05	<0.05	0.00114	0.00108
	LKW7	16-Oct-12	21.5	21.4	0.00035	0.00952	<1.0	<1.0	<0.05	<0.05	0.00121	0.00105

Table D-4. Continued.

Sample Location	Location ID	Sample Date	Nickel		Potassium		Rubidium		Selenium		Silicon	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.0010*	*0.0020*	*0.020*	*0.020*	*0.00020*	*0.00020*	*0.0010*	*0.0010*	*0.05*	*0.050*
Fairford River	FR1	15-Oct-12	<0.0010	<0.0020	9.68	11.0	0.00346	0.00407	<0.0010	<0.0010	4.24	4.59
Lake St. Martin	LSM1	15-Oct-12	<0.0010	<0.0020	9.55	11.0	0.00351	0.00390	<0.0010	<0.0010	4.75	5.16
Dauphin River	DR1.1	15-Oct-12	<0.0010	<0.0020	9.61	10.8	0.00367	0.00383	<0.0010	<0.0010	4.84	5.14
	DR1.3	15-Oct-12	<0.0010	<0.0020	9.35	10.3	0.00352	0.00376	<0.0010	<0.0010	4.67	4.89
	DR-1 (NOTE 2)	16-Oct-12	<0.0010	<0.0020	9.48	10.4	0.00357	0.00379	<0.0010	<0.0010	4.90	4.81
Buffalo Creek	BC3	16-Oct-12	<0.0010	<0.0020	9.33	10.3	0.00352	0.00374	<0.0010	<0.0010	4.32	4.69
Dauphin River	DR2C	16-Oct-12	<0.0010	<0.0020	9.84	10.2	0.00372	0.00368	<0.0010	<0.0010	4.67	4.83
Lake Winnipeg	LKW3B	16-Oct-12	<0.0010	<0.0020	5.86	5.90	0.00226	0.00275	<0.0010	<0.0010	2.44	3.38
	LKW3	16-Oct-12	<0.0010	<0.0020	5.33	5.75	0.00219	0.00299	<0.0010	<0.0010	1.99	3.19
	LKW2	16-Oct-12	<0.0010	<0.0020	8.20	9.37	0.00316	0.00353	<0.0010	<0.0010	3.99	4.49
	LKW1	16-Oct-12	0.0010	<0.0020	5.20	5.79	0.00185	0.00338	<0.0010	<0.0010	1.73	2.95
	LKW4	16-Oct-12	<0.0010	<0.0020	6.75	7.64	0.00264	0.00313	<0.0010	<0.0010	3.13	3.92
	LKW5	16-Oct-12	<0.0010	<0.0020	6.43	7.39	0.00264	0.00267	<0.0010	<0.0010	2.88	3.03
	LKW6	16-Oct-12	<0.0010	<0.0020	4.54	5.12	0.00203	0.00285	<0.0010	<0.0010	1.40	2.57
	LKW7	16-Oct-12	<0.0010	<0.0020	4.85	5.10	0.00203	0.00261	<0.0010	<0.0010	1.66	2.45

Table D-4. Continued.

Sample Location	Location ID	Sample Date	Silver		Sodium		Strontium		Sulfate	Tellurium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00010*	*2.0*	*3.0*	*0.00010*	*0.00010*	*0.50*	*0.00020*	*0.00020*
Fairford River	FR1	15-Oct-12	<0.00010	<0.00010	133	144	0.292	0.287	85.7	<0.00020	<0.00020
Lake St. Martin	LSM1	15-Oct-12	<0.00010	<0.00010	110	144	0.303	0.263	83.1	<0.00020	<0.00020
Dauphin River	DR1.1	15-Oct-12	<0.00010	<0.00010	134	141	0.292	0.266	83.2	<0.00020	<0.00020
	DR1.3	15-Oct-12	<0.00010	<0.00010	135	143	0.292	0.265	82.6	<0.00020	<0.00020
	DR-1 (NOTE 2)	16-Oct-12	<0.00010	<0.00010	142	141	0.289	0.263	82.2	<0.00020	<0.00020
Buffalo Creek	BC3	16-Oct-12	<0.00010	<0.00010	135	139	0.282	0.243	80.3	<0.00020	<0.00020
Dauphin River	DR2C	16-Oct-12	<0.00010	<0.00010	136	140	0.298	0.262	81.7	<0.00020	<0.00020
Lake Winnipeg	LKW3B	16-Oct-12	<0.00010	<0.00010	76.9	76.2	0.206	0.182	61.6	<0.00020	<0.00020
	LKW3	16-Oct-12	<0.00010	<0.00010	64.9	69.5	0.194	0.176	57.7	<0.00020	<0.00020
	LKW2	16-Oct-12	<0.00010	<0.00010	125	125	0.259	0.242	75.9	<0.00020	<0.00020
	LKW1	16-Oct-12	<0.00010	<0.00010	60.3	58.1	0.181	0.161	53.0	<0.00020	<0.00020
	LKW4	16-Oct-12	<0.00010	<0.00010	94.3	91.8	0.231	0.195	66.9	<0.00020	<0.00020
	LKW5	16-Oct-12	<0.00010	<0.00010	89.7	90.6	0.222	0.198	65.1	<0.00020	<0.00020
	LKW6	16-Oct-12	<0.00010	<0.00010	52.9	54.9	0.177	0.166	52.5	<0.00020	<0.00020
	LKW7	16-Oct-12	<0.00010	<0.00010	54.5	58.1	0.179	0.166	54.3	<0.00020	<0.00020

Table D-4. Continued.

Sample Location	Location ID	Sample Date	Thallium		Thorium		Tin		Titanium		Tungsten	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00020*	*0.00020*	*0.00050*	*0.00050*	*0.00010*	*0.00010*
Fairford River	FR1	15-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00152	0.00294	<0.00010	<0.00010
Lake St. Martin	LSM1	15-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00160	0.00218	<0.00010	<0.00010
Dauphin River	DR1.1	15-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00139	0.00269	<0.00010	<0.00010
	DR1.3	15-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00141	0.00202	<0.00010	<0.00010
	DR-1 (NOTE 2)	16-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00151	0.00226	<0.00010	<0.00010
Buffalo Creek	BC3	16-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00134	0.00330	<0.00010	<0.00010
Dauphin River	DR2C	16-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00142	0.00208	<0.00010	<0.00010
Lake Winnipeg	LKW3B	16-Oct-12	<0.00010	<0.00010	<0.00010	0.00010	<0.00020	<0.00020	0.00130	0.0154	<0.00010	<0.00010
	LKW3	16-Oct-12	<0.00010	<0.00010	<0.00010	0.00016	<0.00020	<0.00020	0.00154	0.0195	<0.00010	<0.00010
	LKW2	16-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00137	0.00736	<0.00010	<0.00010
	LKW1	16-Oct-12	<0.00010	<0.00010	<0.00010	0.00022	<0.00020	<0.00020	0.00115	0.0317	<0.00010	<0.00010
	LKW4	16-Oct-12	<0.00010	<0.00010	<0.00010	0.00010	<0.00020	<0.00020	0.00211	0.0149	<0.00010	<0.00010
	LKW5	16-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00204	0.00473	<0.00010	<0.00010
	LKW6	16-Oct-12	<0.00010	<0.00010	<0.00010	0.00016	<0.00020	<0.00020	0.00232	0.0210	<0.00010	<0.00010
	LKW7	16-Oct-12	<0.00010	<0.00010	<0.00010	0.00012	<0.00020	<0.00020	0.00243	0.0155	<0.00010	<0.00010

Table D-4. Continued.

Sample Location	Location ID	Sample Date	Uranium		Vanadium		Zinc		Zirconium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits			*0.00010*	*0.00010*	*0.00020*	*0.00020*	*0.0020*	*0.0020*	*0.00040*	*0.00040*
Fairford River	FR1	15-Oct-12	0.00177	0.00149	0.00139	0.00160	<0.0020	<0.0020	<0.00040	<0.00040
Lake St. Martin	LSM1	15-Oct-12	0.00159	0.00144	0.00185	0.00154	<0.0020	<0.0020	<0.00040	<0.00040
Dauphin River	DR1.1	15-Oct-12	0.00168	0.00158	0.00173	0.00167	<0.0020	<0.0020	<0.00040	<0.00040
	DR1.3	15-Oct-12	0.00161	0.00144	0.00161	0.00155	<0.0020	<0.0020	<0.00040	<0.00040
	DR-1 (NOTE 2)	16-Oct-12	0.00151	0.00142	0.00162	0.00158	<0.0020	<0.0020	<0.00040	<0.00040
Buffalo Creek	BC3	16-Oct-12	0.00154	0.00156	0.00129	0.00140	<0.0020	<0.0020	<0.00040	<0.00040
Dauphin River	DR2C	16-Oct-12	0.00140	0.00150	0.00158	0.00160	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW3B	16-Oct-12	0.00104	0.00126	0.00162	0.00221	<0.0020	<0.0020	<0.00040	<0.00040
	LKW3	16-Oct-12	0.00097	0.00125	0.00148	0.00235	<0.0020	0.0021	<0.00040	<0.00040
	LKW2	16-Oct-12	0.00138	0.00146	0.00146	0.00180	<0.0020	<0.0020	<0.00040	<0.00040
	LKW1	16-Oct-12	0.00096	0.00110	0.00141	0.00263	<0.0020	0.0028	<0.00040	0.00054
	LKW4	16-Oct-12	0.00114	0.00129	0.00173	0.00227	<0.0020	<0.0020	<0.00040	<0.00040
	LKW5	16-Oct-12	0.00113	0.00125	0.00157	0.00190	<0.0020	0.0023	<0.00040	<0.00040
	LKW6	16-Oct-12	0.00095	0.00118	0.00139	0.00231	<0.0020	0.0025	<0.00040	0.00043
	LKW7	16-Oct-12	0.00098	0.00116	0.00138	0.00213	<0.0020	0.0023	<0.00040	0.00042

Table D-5. Quality assurance/quality control results for routine water chemistry variables measured in the laboratory. Percent relative standard deviations (PRSD) values above 18% are indicated in red. Field and trip blank measurements greater than five times the analytical detection limits are also indicated in red.

Sample Location	Field ID	Location ID	Sample Date	Lab pH	Alkalinity Total, as $CaCO_3$ (mg/L)	Alkalinity as Bicarbonate (HCO_3^-) (mg/L)	Alkalinity as Carbonate (CO_3^{2-}) (mg/L)	Alkalinity as Hydroxide (OH^-) (mg/L)
Analytical Detection Limits				*0.10*	*1.0/20*	*1.2/24*	*0.60/12*	*0.34 /6.8*
5x detection limit				*0.50*	*5.0/100*	*6/120*	*3.0/60*	*1.7/34*
TRIPLICATE SAMPLES								
Dauphin River	DR-2	DR1.3	15-Oct-12	8.49	187	216	<12	<6.8
	REP-1	DR1.3	15-Oct-12	8.50	187	215	<12	<6.8
	REP-2	DR1.3	15-Oct-12	8.50	187	215	<12	<6.8
		DR1.3	Mean	8.50	187	215	<12	<6.8
			SD	0.01	0.0	0.6	-	-
			PRSD	0	0	0	-	-
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	8.43	177	207	<12	<6.8
	REP-3	LKW2	16-Oct-12	8.36	179	212	<12	<6.8
	REP-4	LKW2	16-Oct-12	8.37	179	212	<12	<6.8
			Mean	8.39	178	210	<12	<6.8
			SD	0.04	1.2	2.9	-	-
			PRSD	0	1	1	-	-
FIELD BLANKS								
	LFB-1		15-Oct-12	6.03	2.1	2.5	<0.60	<0.34
	LFB-2		16-Oct-12	5.86	1.8	2.2	<0.60	<0.34
TRIP BLANKS								
	LTB-1		15-Oct-12	5.82	1.8	2.2	<0.60	<0.34
	LTB-2		16-Oct-12	5.77	1.8	2.2	<0.60	<0.34

Table D-5. Continued.

Sample Location	Field ID	Location ID	Sample Date	Nitrogen: Ammonia (mg/L N)	Nitrogen: Dissolved Nitrate/ nitrite (mg/L N)	Nitrogen: Nitrate (mg/L N)	Nitrogen: Nitrite (mg/L N)	Nitrogen: TKN (mg/L N)	Phosphorus: Total P (mg/L P)	Phosphorus: Dissolved P (mg/L P)	Phosphorus: Total Particulate P (mg/L P)
Analytical Detection Limits				*0.010*	*0.0051*	*0.0050*	*0.0010*	*0.20*	*0.0010/0.010*	*0.0010/0.010*	*0.010/0.014*
5x detection limit				*0.050*	*0.026*	*0.025*	*0.005*	*1.0*	*0.005 /0.050*	*0.0050/0.050*	*0.050/0.070*
TRIPLICATE SAMPLES											
Dauphin River	DR-2	DR1.3	15-Oct-12	0.029	<0.0051	<0.0050	<0.0010	0.98	0.016	0.0046	0.012
	REP-1	DR1.3	15-Oct-12	0.028	<0.0051	<0.0050	<0.0010	0.95	0.015	0.004	0.011
	REP-2	DR1.3	15-Oct-12	0.031	<0.0051	<0.0050	<0.0010	0.93	0.017	0.0038	0.013
		DR1.3	Mean	0.029	<0.0051	<0.0050	<0.0010	0.95	0.016	0.004	0.012
			SD	0.002	-	-	-	0.03	0.001	0.000	0.001
			PRSD	5	-	-	-	3	6	10	8
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	0.011	0.0116	0.0116	<0.0010	0.78	0.017	0.0042	0.013
	REP-3	LKW2	16-Oct-12	0.011	0.0086	0.0086	<0.0010	0.93	0.015	0.0035	0.011
	REP-4	LKW2	16-Oct-12	0.011	0.0117	0.0117	<0.0010	0.89	0.019	0.0034	0.015
			Mean	0.011	0.0106	0.0106	<0.0010	0.87	0.017	0.004	0.013
			SD	0.000	0.0018	0.0018	-	0.08	0.002	0.000	0.002
			PRSD	0	17	17	-	9	12	12	15
FIELD BLANKS											
	LFB-1		15-Oct-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20	<0.0010	<0.0010	<0.0014
	LFB-2		16-Oct-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20	<0.0010	<0.0010	<0.0014
TRIP BLANKS											
	LTB-1		15-Oct-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20	<0.0010	<0.0010	<0.0014
	LTB-2		16-Oct-12	<0.010	<0.0051	<0.0050	<0.0010	<0.20	<0.0010	<0.0010	<0.0014

Table D-5. Continued.

Sample Location	Field ID	Location ID	Sample Date	Carbon: Total Inorganic (mg/L)	Carbon: Total Organic (mg/L)	Carbon: Dissolved Organic (mg/L)	Conductivity (µmhos/cm)	TDS (mg/L)	Water Clarity: TSS (mg/L)	Water Clarity: Turbidity (NTU)	Water Clarity: True Colour (CU)
Analytical Detection Limits				*1.0*	*1.0*	*1.0*	*1/20*	*5.0*	*2.0*	*0.10*	*5.0*
5x detection limit				*5.0*	*5.0*	*5.0*	*5/100*	*25*	*10*	*0.50*	*25*
TRIPLICATE SAMPLES											
Dauphin River	DR-2	DR1.3	15-Oct-12	42.4	12.9	12.3	1110	638	10	4.29	7.8
	REP-1	DR1.3	15-Oct-12	42.1	13.6	12.3	1110	602	10.4	4.97	5.7
	REP-2	DR1.3	15-Oct-12	41.7	13.3	11.9	1110	614	10.8	3.51	7.4
		DR1.3	Mean	42.1	13.3	12.2	1110	618	10.4	4.26	7.0
			SD	0.4	0.4	0.2	0.0	18.3	0.40	0.73	1.12
			PRSD	1	3	2	0	3	4	17	16
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	40.6	12.3	11.6	998	530	11.8	6.59	12.1
	REP-3	LKW2	16-Oct-12	41.2	12.7	11.1	989	564	11.2	6.20	8.8
	REP-4	LKW2	16-Oct-12	40.9	12.9	11.3	990	574	12.0	6.48	9.7
			Mean	40.9	12.6	11.3	992	556	11.7	6.42	10.2
			SD	0.3	0.3	0.3	4.9	23.1	0.42	0.20	1.71
			PRSD	1	2	2	0	4	4	3	17
FIELD BLANKS											
	LFB-1		15-Oct-12	<1.0	<1.0	<1.0	<1.0	<5.0	<2.0	0.11	<5.0
	LFB-2		16-Oct-12	<1.0	<1.0	<1.0	<1.0	<5.0	<2.0	0.13	<5.0
TRIP BLANKS											
	LTB-1		15-Oct-12	<1.0	<1.0	<1.0	<1.0	<5.0	<2.0	<0.10	<5.0
	LTB-2		16-Oct-12	<1.0	<1.0	<1.0	<1.0	<5.0	<2.0	<0.10	<5.0

Table D-5. Continued.

Sample Location	Field ID	Location ID	Sample Date	Algal Pigments: Chlorophyll *a* (µg/L)	Algal Pigments: Pheophytin *a* (µg/L)
Analytical Detection Limits				*0.10*	*0.10*
5x detection limit				*0.50*	*0.50*
TRIPLICATE SAMPLES					
Dauphin River	DR-2	DR1.3	15-Oct-12	5.62	0.42
	REP-1	DR1.3	15-Oct-12	4.55	0.29
	REP-2	DR1.3	15-Oct-12	5.50	0.37
		DR1.3	Mean	5.22	0.36
			SD	0.59	0.07
			PRSD	11	18
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	4.19	0.58
	REP-3	LKW2	16-Oct-12	4.94	0.43
	REP-4	LKW2	16-Oct-12	5.00	0.30
			Mean	4.7	0.4
			SD	0.45	0.14
			PRSD	10	-
FIELD BLANKS					
	LFB-1		15-Oct-12	0.17	<0.10
	LFB-2		16-Oct-12	0.11	<0.10
TRIP BLANKS					
	LTB-1		15-Oct-12	0.14	<0.10
	LTB-2		16-Oct-12	0.11	<0.10

Table D-6. Quality assurance/quality control results for major ions and metals measured in the laboratory. Percent relative standard deviations (PRSD) above 18% are indicated in red. Field and trip blank measurements greater than five times the analytical detection limits are also indicated in red. Values in blue italics are considered suspect.

Sample Location	Field ID	Location ID	Sample Date	Hardness, as $CaCO_3$	Aluminum		Antimony		Arsenic	
					Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.30*	*0.0020*	*0.0050*	*0.00020*	*0.00020*	*0.00020*	*0.00020*
5x detection limit				*1.50*	*0.0100*	*0.0250*	*0.00100*	*0.00100*	*0.00100*	*0.00100*
TRIPLICATE SAMPLES										
Dauphin River	DR-2	DR1.3	15-Oct-12	252	0.0024	0.0094	<0.00020	<0.00020	0.00222	0.00208
	REP-1	DR1.3	15-Oct-12	254	<0.0020	0.0108	<0.00020	<0.00020	0.00223	0.00216
	REP-2	DR1.3	15-Oct-12	246	<0.0020	0.0102	<0.00020	<0.00020	0.00225	0.00195
		DR1.3	Mean	251	0.0015	0.0101	<0.00020	<0.00020	0.00223	0.00206
			SD	4.2	-	0.0007	-	-	0.00002	0.00011
			PRSD	2	-	7	-	-	1	5
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	238	0.0034	0.0481	<0.00020	<0.00020	0.00195	0.00180
	REP-3	LKW2	16-Oct-12	249	0.0056	***0.225***	<0.00020	<0.00020	0.00204	0.00210
	REP-4	LKW2	16-Oct-12	240	0.0083	0.0431	<0.00020	<0.00020	0.00191	0.00195
		LKW2	Mean	242	0.0058	0.105	<0.00020	<0.00020	0.00197	0.00195
			SD	5.9	0.0025	0.1036	-	-	0.00007	0.00015
			PRSD	2	**43**	**98**	-	-	3	8
FIELD BLANKS										
	LFB-1		15-Oct-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020
	LFB-2		16-Oct-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020
TRIP BLANKS										
	LTB-1		15-Oct-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020
	LTB-2		16-Oct-12	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020

Table D-6. Continued.

Sample Location	Field ID	Location ID	Sample Date	Barium		Beryllium		Bismuth	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*
5x detection limit				*0.00100*	*0.00100*	*0.00100*	*0.00100*	*0.00100*	*0.00100*
TRIPLICATE SAMPLES									
Dauphin River	DR-2	DR1.3	15-Oct-12	0.0449	0.0454	<0.00020	<0.00020	<0.00020	<0.00020
	REP-1	DR1.3	15-Oct-12	0.0459	0.0463	<0.00020	<0.00020	<0.00020	<0.00020
	REP-2	DR1.3	15-Oct-12	0.0463	0.0443	<0.00020	<0.00020	<0.00020	<0.00020
		DR1.3	Mean	0.0457	0.0453	<0.00020	<0.00020	<0.00020	<0.00020
			SD	0.0007	0.0010	-	-	-	-
			PRSD	2	2	-	-	-	-
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	0.0450	0.0438	<0.00020	<0.00020	<0.00020	<0.00020
	REP-3	LKW2	16-Oct-12	0.0440	0.0463	<0.00020	<0.00020	<0.00020	<0.00020
	REP-4	LKW2	16-Oct-12	0.0445	0.0435	<0.00020	<0.00020	<0.00020	<0.00020
		LKW2	Mean	0.0445	0.0445	<0.00020	<0.00020	<0.00020	<0.00020
			SD	0.0005	0.0015	-	-	-	-
			PRSD	1	3	-	-	-	-
FIELD BLANKS									
	LFB-1		15-Oct-12	0.00079	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	LFB-2		16-Oct-12	0.00104	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
TRIP BLANKS									
	LTB-1		15-Oct-12	0.00029	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	LTB-2		16-Oct-12	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table D-6. Continued.

Sample Location	Field ID	Location ID	Sample Date	Boron		Cadmium		Calcium		Cesium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.010*	*0.010*	*0.000010*	*0.000010*	*0.050*	*0.050*	*0.00010*	*0.00010*
5x detection limit				*0.050*	*0.050*	*0.000050*	*0.000050*	*0.250*	*0.250*	*0.00050*	*0.00050*
TRIPLICATE SAMPLES											
Dauphin River	DR-2	DR1.3	15-Oct-12	0.082	0.104	<0.000010	0.000011	40.4	44.5	<0.00010	<0.00010
	REP-1	DR1.3	15-Oct-12	0.089	0.095	<0.000010	<0.000010	40.6	45.4	<0.00010	<0.00010
	REP-2	DR1.3	15-Oct-12	0.086	0.092	<0.000010	<0.000010	39.0	44.0	<0.00010	<0.00010
		DR1.3	Mean	0.086	0.097	<0.000010	<0.000010	40.0	44.6	<0.00010	<0.00010
			SD	0.004	0.006	-	-	0.87	0.71	-	-
			PRSD	4	6	-	-	2	2	-	-
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	0.078	0.085	<0.000010	<0.000010	37.6	44.6	<0.00010	<0.00010
	REP-3	LKW2	16-Oct-12	0.091	0.083	<0.000010	0.000011	39.1	46.0	<0.00010	<0.00010
	REP-4	LKW2	16-Oct-12	0.087	0.091	<0.000010	<0.000010	39.1	45.4	<0.00010	<0.00010
		LKW2	Mean	0.085	0.086	<0.000010	<0.000010	38.6	45.3	<0.00010	<0.00010
			SD	0.007	0.004	-	-	0.9	0.7	-	-
			PRSD	8	5	-	-	2	2	-	-
FIELD BLANKS											
	LFB-1		15-Oct-12	<0.010	<0.010	<0.000010	<0.000010	0.094	<0.10	<0.00010	<0.00010
	LFB-2		16-Oct-12	<0.010	<0.010	<0.000010	<0.000010	0.098	<0.10	<0.00010	<0.00010
TRIP BLANKS											
	LTB-1		15-Oct-12	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010
	LTB-2		16-Oct-12	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010

Table D-6. Continued.

Sample Location	Field ID	Location ID	Sample Date	Chloride	Chromium		Cobalt		Copper	
				Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.20*	*0.0020*	*0.0010*	*0.00020*	*0.00020*	*0.00020*	*0.00020*
5x detection limit				*1.00*	*0.0100*	*0.0050*	*0.00100*	*0.00100*	*0.00100*	*0.00100*
TRIPLICATE SAMPLES										
Dauphin River	DR-2	DR1.3	15-Oct-12	195	<0.0020	<0.0010	<0.00020	<0.00020	0.00036	0.00058
	REP-1	DR1.3	15-Oct-12	195	<0.0020	<0.0010	<0.00020	<0.00020	0.00032	0.00078
	REP-2	DR1.3	15-Oct-12	195	<0.0020	<0.0010	<0.00020	<0.00020	0.00040	0.00077
		DR1.3	Mean	195	<0.0020	<0.0010	<0.00020	<0.00020	0.00036	0.00071
			SD	0.0	-	-	-	-	0.00004	0.00011
			PRSD	0	-	-	-	-	11	16
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	166	<0.0020	<0.0010	<0.00020	<0.00020	0.00048	0.00079
	REP-3	LKW2	16-Oct-12	166	<0.0020	<0.0010	<0.00020	<0.00020	0.00051	0.00089
	REP-4	LKW2	16-Oct-12	166	<0.0020	<0.0010	<0.00020	<0.00020	0.00054	0.00080
		LKW2	Mean	166	<0.0020	<0.0010	<0.00020	<0.00020	0.00051	0.00083
			SD	0.0	-	-	-	-	0.00003	0.00006
			PRSD	0	-	-	-	-	6	7
FIELD BLANKS										
	LFB-1		15-Oct-12	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	LFB-2		16-Oct-12	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
TRIP BLANKS										
	LTB-1		15-Oct-12	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020
	LTB-2		16-Oct-12	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020

Table D-6. Continued.

Sample Location	Field ID	Location ID	Sample Date	Fluoride	Iron		Lead		Lithium	
				Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.020*	*0.010*	*0.010/0.10*	*0.000090*	*0.000090*	*0.0020*	*0.0020*
5x detection limit				*0.100*	*0.050*	*0.050/0.50*	*0.000450*	*0.000450*	*0.0100*	*0.0100*
TRIPLICATE SAMPLES										
Dauphin River	DR-2	DR1.3	15-Oct-12	0.144	<0.010	0.067	<0.000090	0.000188	0.0318	0.0344
	REP-1	DR1.3	15-Oct-12	0.122	<0.010	0.061	<0.000090	0.000171	0.0317	0.0333
	REP-2	DR1.3	15-Oct-12	0.143	<0.010	0.078	<0.000090	0.000140	0.0324	0.0310
		DR1.3	Mean	0.136	<0.010	0.069	<0.000090	0.000166	0.0320	0.0329
			SD	0.012	-	0.009	-	0.000024	0.0004	0.0017
			PRSD	9	-	13	-	15	1	5
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	0.119	<0.010	0.276	<0.000090	0.000170	0.0314	0.0294
	REP-3	LKW2	16-Oct-12	0.118	<0.010	0.24	<0.000090	0.000198	0.0280	0.0296
	REP-4	LKW2	16-Oct-12	0.120	<0.010	0.258	<0.000090	0.000191	0.0269	0.0290
		LKW2	Mean	0.119	<0.010	0.26	<0.000090	0.000186	0.0288	0.0293
			SD	0.001	-	0.018	-	0.000015	0.0023	0.0003
			PRSD	1	-	7	-	8	8	1
FIELD BLANKS										
	LFB-1		15-Oct-12	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	LFB-2		16-Oct-12	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
TRIP BLANKS										
	LTB-1		15-Oct-12	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	LTB-2		16-Oct-12	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020

Table D-6. Continued.

Sample Location	Field ID	Location ID	Sample Date	Magnesium		Manganese		Mercury (ng/L)		Methyl Mercury (ng/L)	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.010*	*0.010*	*0.00010*	*0.00010*	*1.0*	*1.0*	*0.050*	*0.050*
5x detection limit				*0.050*	*0.050*	*0.00050*	*0.00050*	*5.0*	*5.0*	*0.250*	*0.250*
TRIPLICATE SAMPLES											
Dauphin River	DR-2	DR1.3	15-Oct-12	35.1	34.3	0.00016	0.00464	<1.0	<1.0	<0.05	<0.05
	REP-1	DR1.3	15-Oct-12	35.6	34.2	0.00014	0.00470	1.2	<1.0	<0.05	<0.05
	REP-2	DR1.3	15-Oct-12	33.9	33.1	0.00014	0.00449	<1.0	<1.0	<0.05	<0.05
		DR1.3	Mean	34.9	33.9	0.00015	0.00461	<1.0	<1.0	<0.05	<0.05
			SD	0.87	0.67	0.00001	0.00011	-	-	-	-
			PRSD	3	2	8	2	-	-	-	-
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	30.1	30.7	<0.00010	0.00605	<1.0	1.1	<0.05	<0.05
	REP-3	LKW2	16-Oct-12	33.2	32.5	0.00025	0.00705	1.1	<1.0	<0.05	0.071
	REP-4	LKW2	16-Oct-12	32.0	30.8	0.00019	0.00598	1.1	<1.0	<0.05	<0.05
		LKW2	Mean	31.8	31.3	0.00016	0.00636	<1.0	<1.0	<0.05	<0.05
			SD	1.6	1.0	0.00010	0.00060	0.35	-	-	-
			PRSD	5	3	-	9	-	-	-	-
FIELD BLANKS											
	LFB-1		15-Oct-12	0.02	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.05	<0.05
	LFB-2		16-Oct-12	<0.010	<0.010	<0.00010	<0.00030	1.6	<1.0	<0.05	<0.05
TRIP BLANKS											
	LTB-1		15-Oct-12	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.05	<0.05
	LTB-2		16-Oct-12	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.05	<0.05

Table D-6. Continued.

Sample Location	Field ID	Location ID	Sample Date	Molybdenum		Nickel		Potassium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00010*	*0.00020*	*0.0010*	*0.0020*	*0.020*	*0.020*
5x detection limit				*0.00050*	*0.00100*	*0.0050*	*0.0100*	*0.100*	*0.100*
TRIPLICATE SAMPLES									
Dauphin River	DR-2	DR1.3	15-Oct-12	0.00194	0.00209	<0.0010	<0.0020	9.50	10.3
	REP-1	DR1.3	15-Oct-12	0.00205	0.00206	<0.0010	<0.0020	9.48	10.6
	REP-2	DR1.3	15-Oct-12	0.00204	0.00198	<0.0010	<0.0020	9.06	10.0
		DR1.3	Mean	0.00201	0.00204	<0.0010	<0.0020	9.35	10.3
			SD	0.00006	0.00006	-	-	0.25	0.30
			PRSD	3	3	-	-	3	3
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	0.00179	0.00174	<0.0010	<0.0020	8.12	9.05
	REP-3	LKW2	16-Oct-12	0.00194	0.0019	<0.0010	<0.0020	8.51	9.75
	REP-4	LKW2	16-Oct-12	0.00185	0.00184	<0.0010	<0.0020	7.98	9.32
		LKW2	Mean	0.00186	0.00183	<0.0010	<0.0020	8.20	9.37
			SD	0.00008	0.00008	-	-	0.27	0.35
			PRSD	4	4	-	-	3	4
FIELD BLANKS									
	LFB-1		15-Oct-12	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020
	LFB-2		16-Oct-12	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020
TRIP BLANKS									
	LTB-1		15-Oct-12	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020
	LTB-2		16-Oct-12	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020

Table D-6. Continued.

Sample Location	Field ID	Location ID	Sample Date	Rubidium		Selenium		Silicon		Silver	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00020*	*0.00020*	*0.0010*	*0.0010*	*0.050*	*0.050*	*0.00010*	*0.00010*
5x detection limit				*0.00100*	*0.00100*	*0.0050*	*0.0050*	*0.250*	*0.250*	*0.00050*	*0.00050*
TRIPLICATE SAMPLES											
Dauphin River	DR-2	DR1.3	15-Oct-12	0.00359	0.00376	<0.0010	<0.0010	4.55	4.92	<0.00010	<0.00010
	REP-1	DR1.3	15-Oct-12	0.00353	0.00381	<0.0010	<0.0010	4.67	4.84	<0.00010	<0.00010
	REP-2	DR1.3	15-Oct-12	0.00345	0.00371	<0.0010	<0.0010	4.80	4.92	<0.00010	<0.00010
		DR1.3	Mean	0.00352	0.00376	<0.0010	<0.0010	4.67	4.89	<0.00010	<0.00010
			SD	0.00007	0.00005	-		0.13	0.05	-	-
			PRSD	2	1	-		3	1	-	-
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	0.00305	0.00331	<0.0010	<0.0010	3.94	4.33	<0.00010	<0.00010
	REP-3	LKW2	16-Oct-12	0.00324	0.0038	<0.0010	<0.0010	3.95	4.95	<0.00010	<0.00010
	REP-4	LKW2	16-Oct-12	0.00318	0.00349	<0.0010	<0.0010	4.08	4.18	<0.00010	<0.00010
		LKW2	Mean	0.00316	0.00353	<0.0010	<0.0010	3.99	4.49	<0.00010	<0.00010
			SD	0.00010	0.00025	-	-	0.08	0.41	-	-
			PRSD	3	7	-	-	2	9	-	-
FIELD BLANKS											
	LFB-1		15-Oct-12	<0.00020	<0.00020	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	LFB-2		16-Oct-12	<0.00020	<0.00020	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
TRIP BLANKS											
	LTB-1		15-Oct-12	<0.00020	<0.00020	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010
	LTB-2		16-Oct-12	<0.00020	<0.00020	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010

Table D-6. Continued.

Sample Location	Field ID	Location ID	Sample Date	Sodium		Strontium		Sulfate	Tellurium	
				Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total
Analytical Detection Limits				*0.020/2.0*	*0.030/3.0*	*0.00010*	*0.00010*	*0.50*	*0.00020*	*0.00020*
5x detection limit				*0.050/10.0*	*0.150/15.0*	*0.00050*	*0.00050*	*2.50*	*0.0010*	*0.0010*
TRIPLICATE SAMPLES										
Dauphin River	DR-2	DR1.3	15-Oct-12	134	145	0.301	0.271	82.7	<0.00020	<0.00020
	REP-1	DR1.3	15-Oct-12	136	148	0.287	0.267	82.7	<0.00020	<0.00020
	REP-2	DR1.3	15-Oct-12	136	135	0.288	0.257	82.4	<0.00020	<0.00020
		DR1.3	Mean	135	143	0.292	0.265	82.6	<0.00020	<0.00020
			SD	1.2	6.8	0.008	0.007	0.17	-	-
			PRSD	1	5	3	3	0	-	-
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	124	125	0.255	0.233	76.0	<0.00020	<0.00020
	REP-3	LKW2	16-Oct-12	115	123	0.264	0.248	75.8	<0.00020	<0.00020
	REP-4	LKW2	16-Oct-12	135	128	0.259	0.245	75.9	<0.00020	<0.00020
		LKW2	Mean	125	125	0.259	0.242	75.9	<0.00020	<0.00020
			SD	10.0	2.5	0.005	0.008	0.10	-	-
			PRSD	8	2	2	3	0	-	-
FIELD BLANKS										
	LFB-1		15-Oct-12	0.08	<0.030	0.00044	<0.00010	<0.50	<0.00020	<0.00020
	LFB-2		16-Oct-12	0.021	<0.030	0.0003	<0.00010	<0.50	<0.00020	<0.00020
TRIP BLANKS										
	LTB-1		15-Oct-12	<0.020	<0.030	0.00014	<0.00010	<0.50	<0.00020	<0.00020
	LTB-2		16-Oct-12	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020

Table D-6. Continued.

Sample Location	Field ID	Location ID	Sample Date	Thallium		Thorium		Tin	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00010*	*0.00010*	*0.00010*	*0.00010*	*0.00020*	*0.00020*
5x detection limit				*0.00050*	*0.00050*	*0.00050*	*0.00050*	*0.00100*	*0.00100*
TRIPLICATE SAMPLES									
Dauphin River	DR-2	DR1.3	15-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
	REP-1	DR1.3	15-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
	REP-2	DR1.3	15-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		DR1.3	Mean	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
			SD	-	-	-	-	-	-
			PRSD	-	-	-	-	-	-
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
	REP-3	LKW2	16-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
	REP-4	LKW2	16-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
		LKW2	Mean	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
			SD	-	-	-	-	-	-
			PRSD	-	-	-	-	-	-
FIELD BLANKS									
	LFB-1		15-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
	LFB-2		16-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
TRIP BLANKS									
	LTB-1		15-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020
	LTB-2		16-Oct-12	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020

Table D-6. Continued.

Sample Location	Field ID	Location ID	Sample Date	Titanium		Tungsten		Uranium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00050*	*0.00050*	*0.00010*	*0.00010*	*0.00010*	*0.00010*
5x detection limit				*0.00250*	*0.00250*	*0.00050*	*0.00050*	*0.00050*	*0.00050*
TRIPLICATE SAMPLES									
Dauphin River	DR-2	DR1.3	15-Oct-12	0.00147	0.00199	<0.00010	<0.00010	0.00164	0.00152
	REP-1	DR1.3	15-Oct-12	0.00134	0.00206	<0.00010	<0.00010	0.00158	0.00143
	REP-2	DR1.3	15-Oct-12	0.00141	0.00200	<0.00010	<0.00010	0.00161	0.00136
		DR1.3	Mean	0.00141	0.00202	<0.00010	<0.00010	0.00161	0.00144
			SD	0.00007	0.00004	-	-	0.00003	0.00008
			PRSD	5	2	-	-	2	6
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	0.00121	0.00347	<0.00010	<0.00010	0.00143	0.00143
	REP-3	LKW2	16-Oct-12	0.00149	0.0152	<0.00010	<0.00010	0.00136	0.00156
	REP-4	LKW2	16-Oct-12	0.00141	0.0034	<0.00010	<0.00010	0.00135	0.00138
		LKW2	Mean	0.00137	0.00736	<0.00010	<0.00010	0.00138	0.00146
			SD	0.00014	0.00679	-	-	0.00004	0.00009
			PRSD	11	**92**	-	-	3	6
FIELD BLANKS									
	LFB-1		15-Oct-12	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
	LFB-2		16-Oct-12	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
TRIP BLANKS									
	LTB-1		15-Oct-12	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
	LTB-2		16-Oct-12	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010

Table D-6. Continued.

Sample Location	Field ID	Location ID	Sample Date	Vanadium		Zinc		Zirconium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00020*	*0.00020*	*0.0020*	*0.0020*	*0.00040*	*0.00040*
5x detection limit				*0.0010*	*0.0010*	*0.0100*	*0.0100*	*0.00200*	*0.00200*
TRIPLICATE SAMPLES									
Dauphin River	DR-2	DR1.3	15-Oct-12	0.00177	0.00159	<0.0020	<0.0020	<0.00040	<0.00040
	REP-1	DR1.3	15-Oct-12	0.00151	0.0016	<0.0020	<0.0020	<0.00040	<0.00040
	REP-2	DR1.3	15-Oct-12	0.00156	0.00146	<0.0020	<0.0020	<0.00040	<0.00040
		DR1.3	Mean	0.00161	0.00155	<0.0020	<0.0020	<0.00040	<0.00040
			SD	0.00014	0.00008	-	-	-	-
			PRSD	9	5	-	-	-	-
Lake Winnipeg	LKW-2	LKW2	16-Oct-12	0.00144	0.00170	<0.0020	<0.0020	<0.00040	<0.00040
	REP-3	LKW2	16-Oct-12	0.00150	0.00213	<0.0020	<0.0020	<0.00040	<0.00040
	REP-4	LKW2	16-Oct-12	0.00145	0.00157	<0.0020	<0.0020	<0.00040	<0.00040
		LKW2	Mean	0.00146	0.00180	<0.0020	<0.0020	<0.00040	<0.00040
			SD	0.00003	0.00029	-	-	-	-
			PRSD	2	16	-	-	-	-
FIELD BLANKS									
	LFB-1		15-Oct-12	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	LFB-2		16-Oct-12	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
TRIP BLANKS									
	LTB-1		15-Oct-12	<0.00020	<0.00020	0.0027	<0.0020	<0.00040	<0.00040
	LTB-2		16-Oct-12	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040

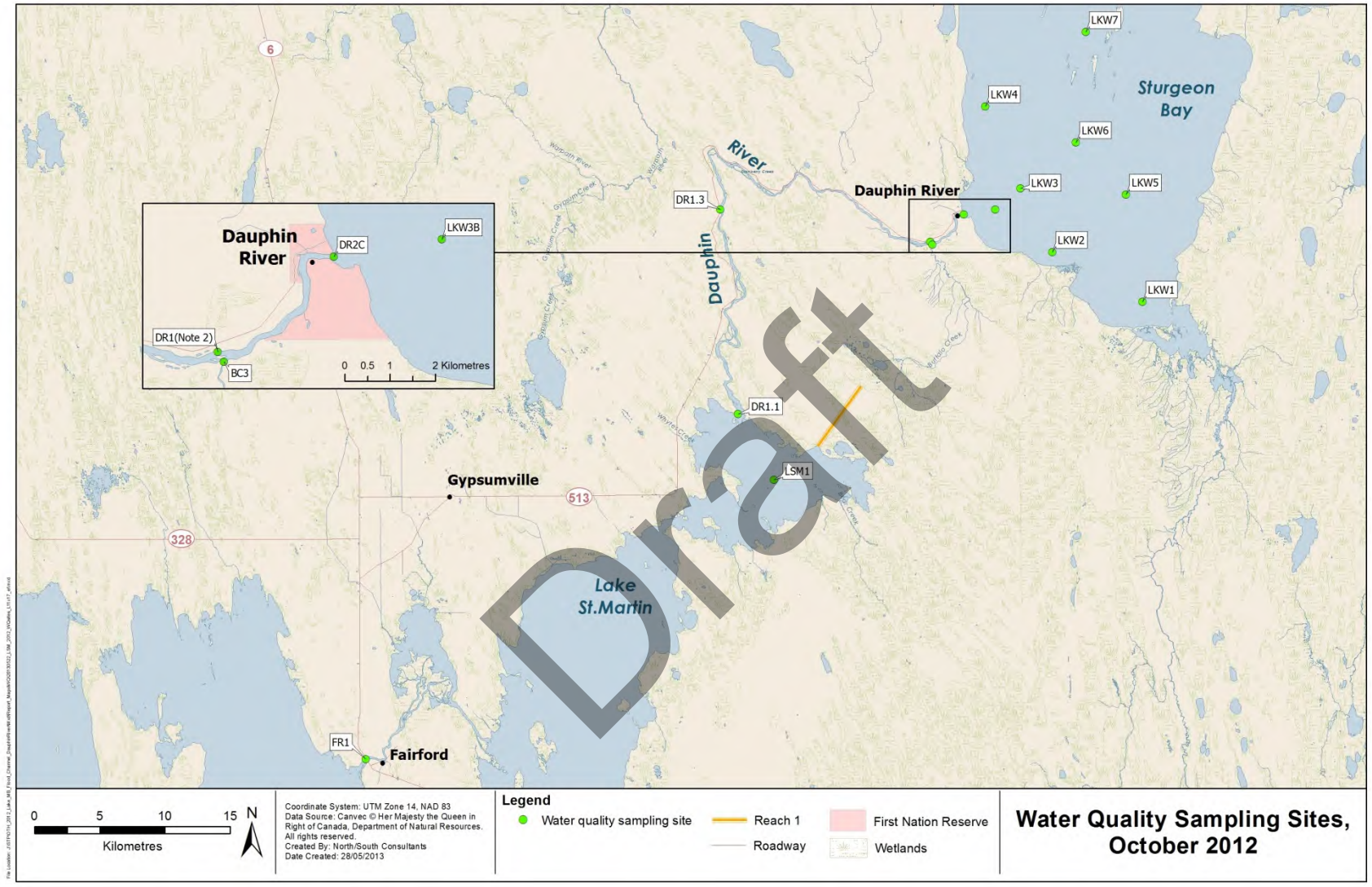

Figure D-1. Location of sites sampled as part of the RWQMP, fall 2012.

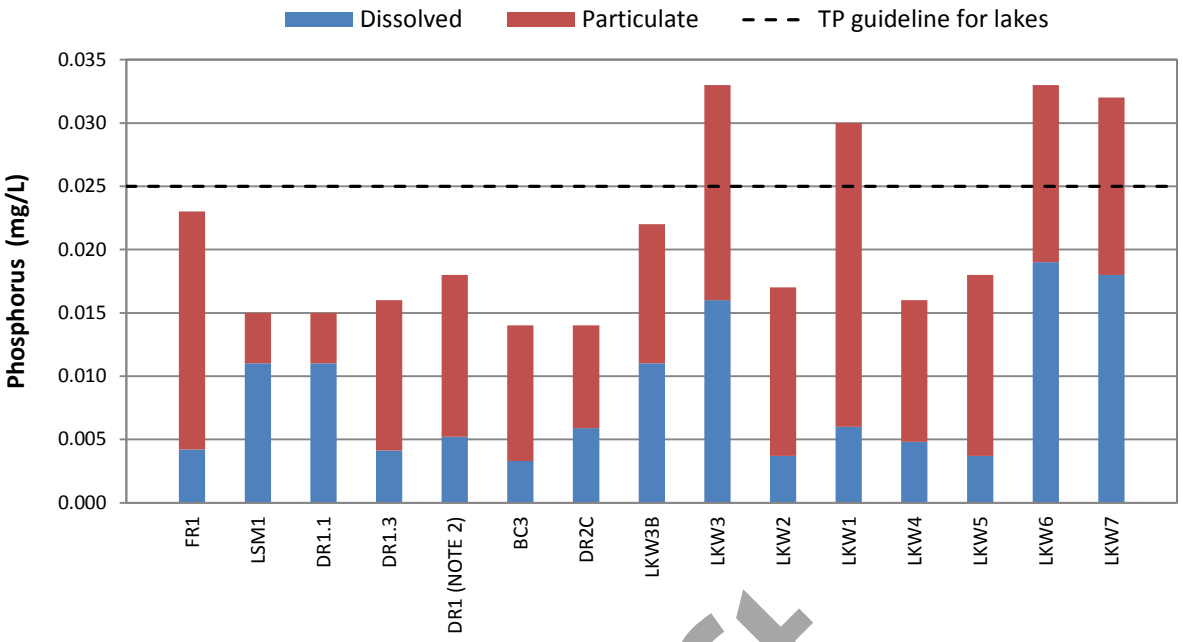

Figure D-2. Phosphorus (P) concentrations (mg/L) measured at RWQMP sites, fall 2012. Where particulate P concentrations were less than the analytical detection limit they are plotted as the difference between total P and dissolved P so that the bars shown in the graph represent total P concentrations. Dashed line indicates the MWQSOGs narrative guideline for lakes.

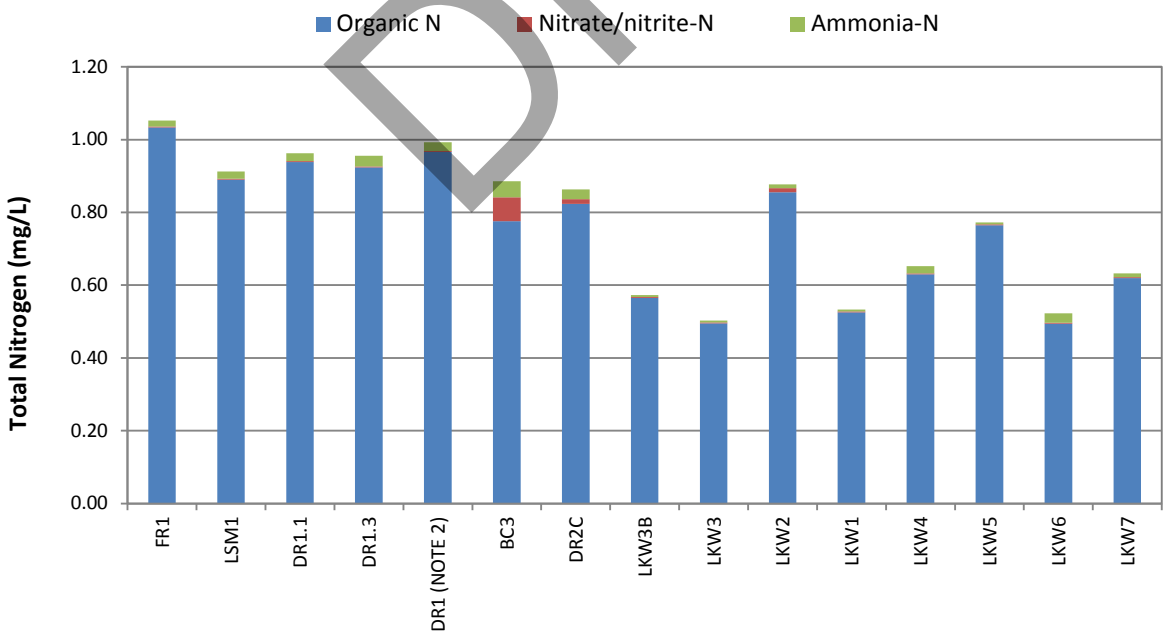

Figure D-3. Total nitrogen concentrations measured at RWQMP sites, fall 2012, showing contributions of organic and dissolved inorganic forms (i.e., nitrate/nitrite and ammonia).

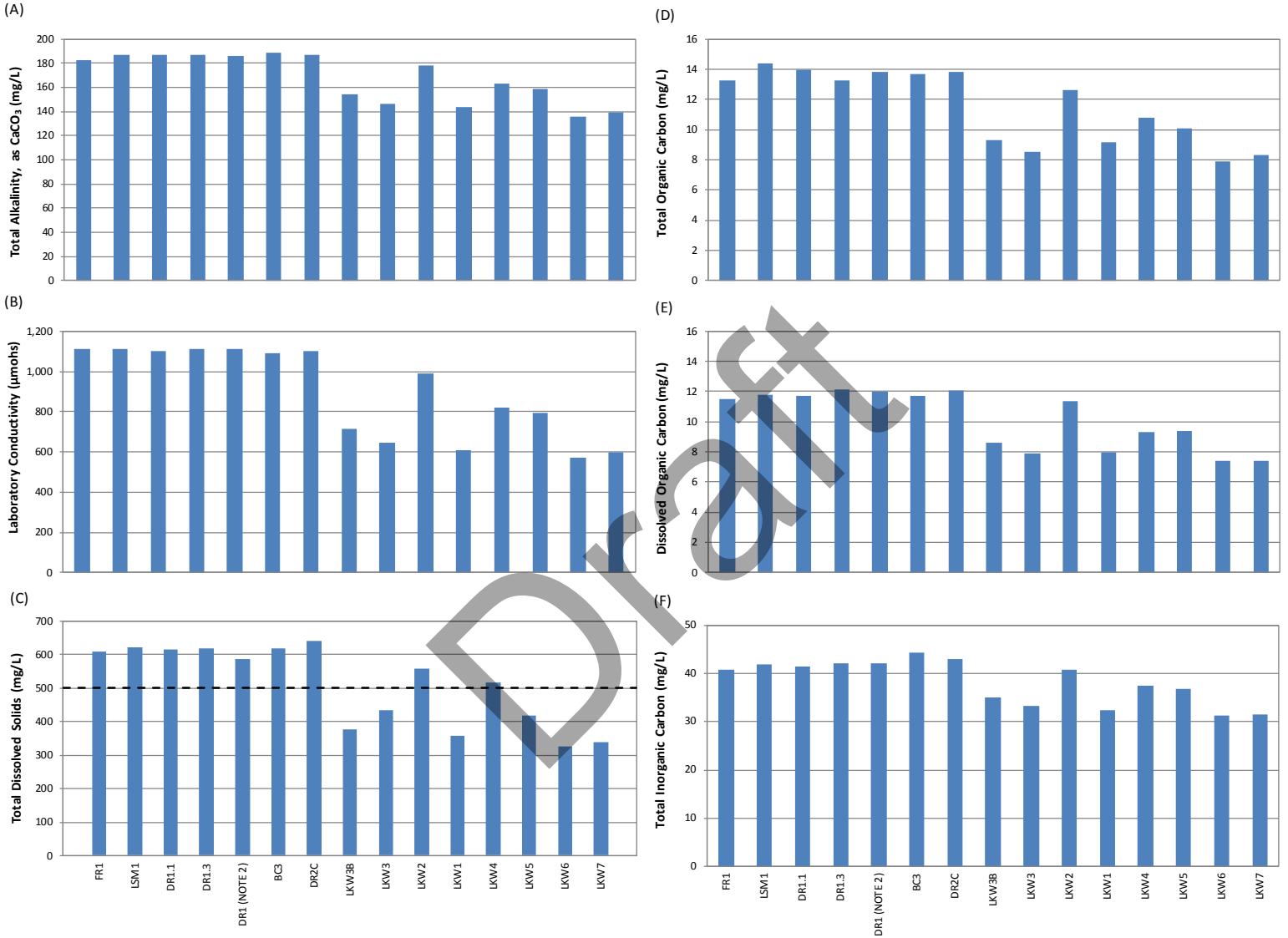

Figure D-4. Concentrations of selected routine water quality parameters, fall 2012. Dashed line in plot (C) indicates the MWQSOGs aesthetic objective for drinking water.

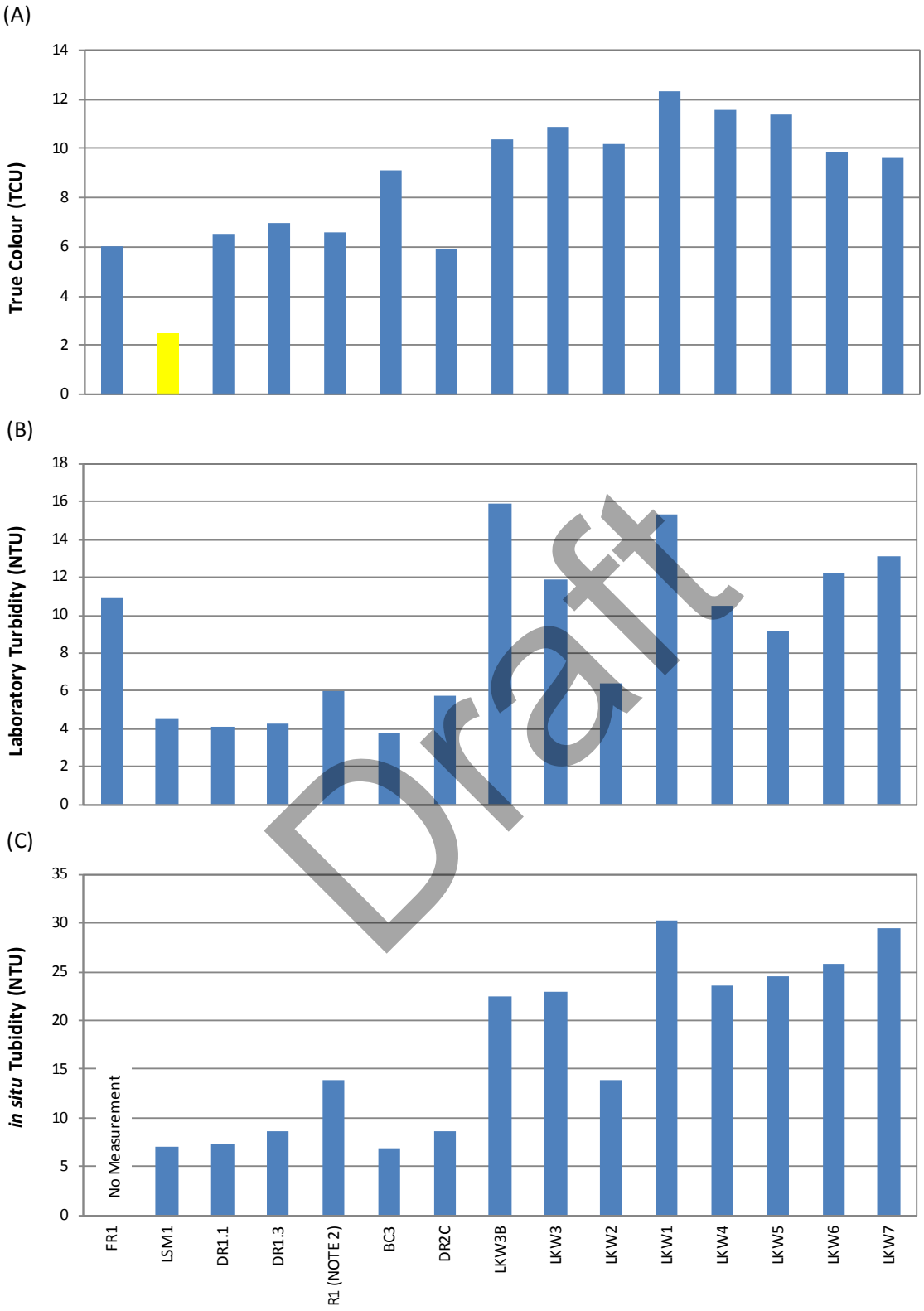

Figure D-5. True colour (A) and turbidity [laboratory (B) and *in situ* (C)] measured in the study area, fall 2012. Values below the analytical detection limit (DL) are plotted at half the DL and are indicated in yellow.

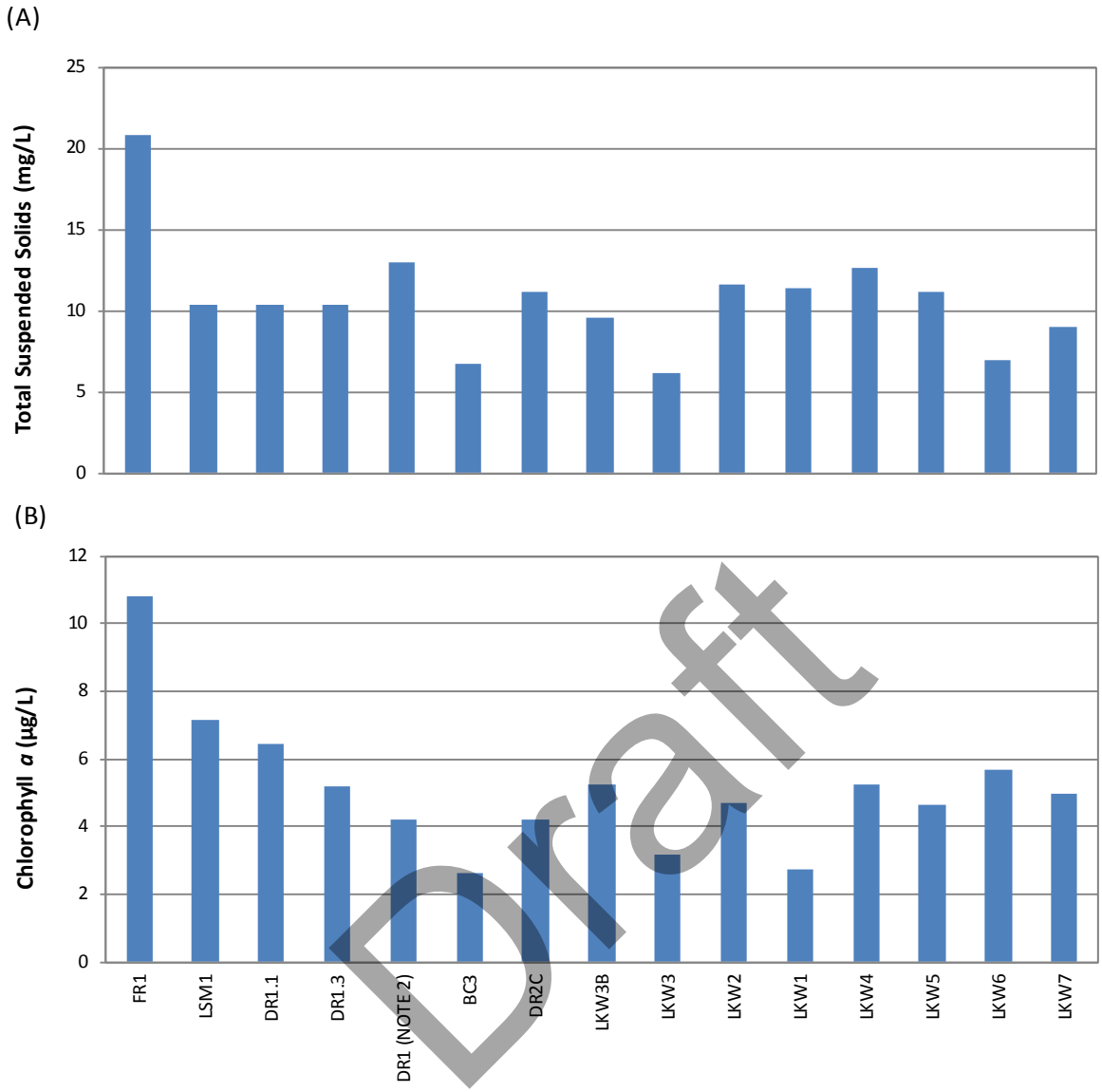

Figure D-6. Total suspended solids (A) and chlorophyll *a* (B) concentrations measured in the study area, fall 2012.

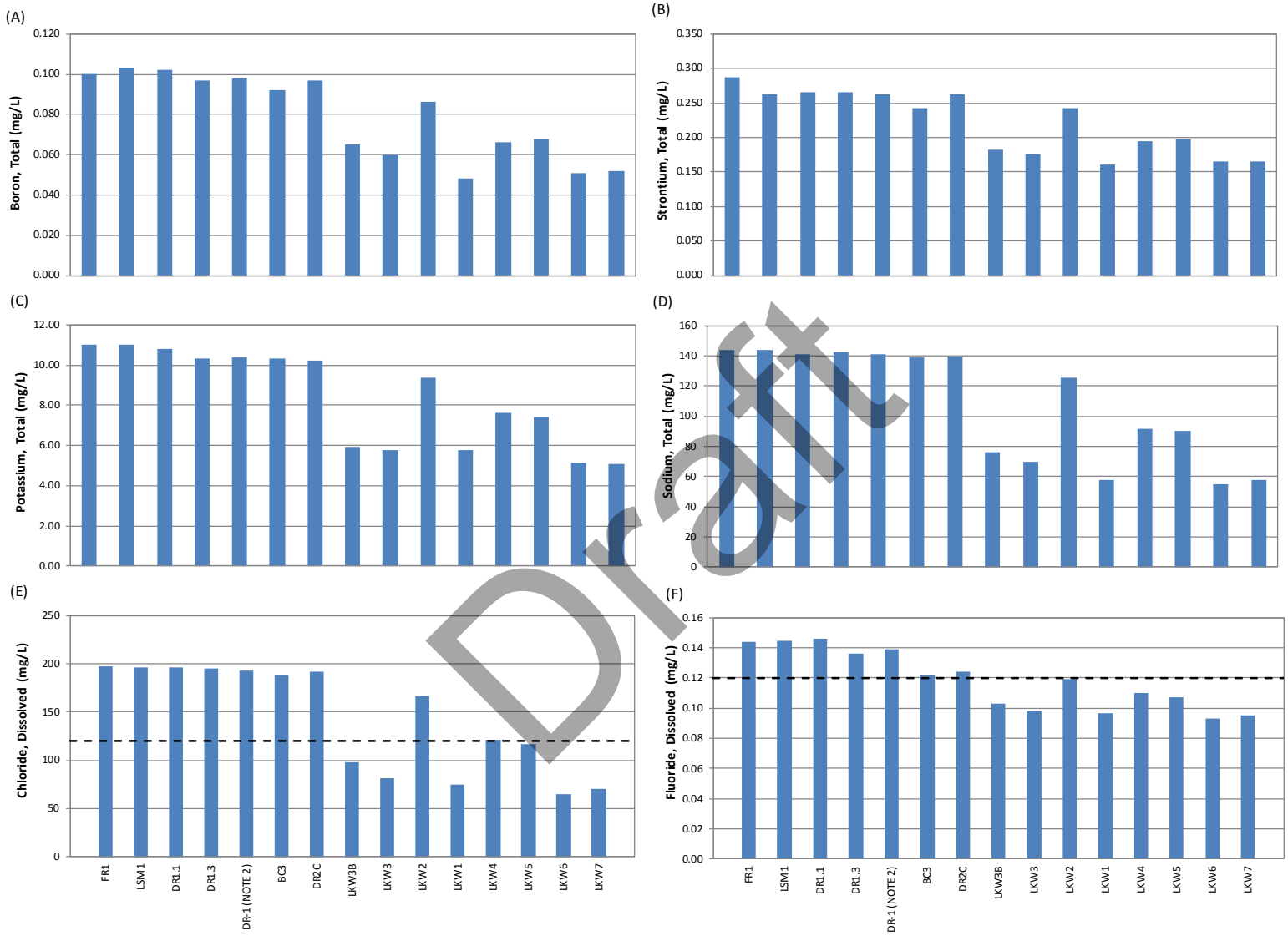

Figure D-7. Concentrations of selected metals and major ions measured in the study area, fall, 2012. Dashed lines indicate the CCME long-term PAL guidelines for (E) chloride and (F) fluoride.

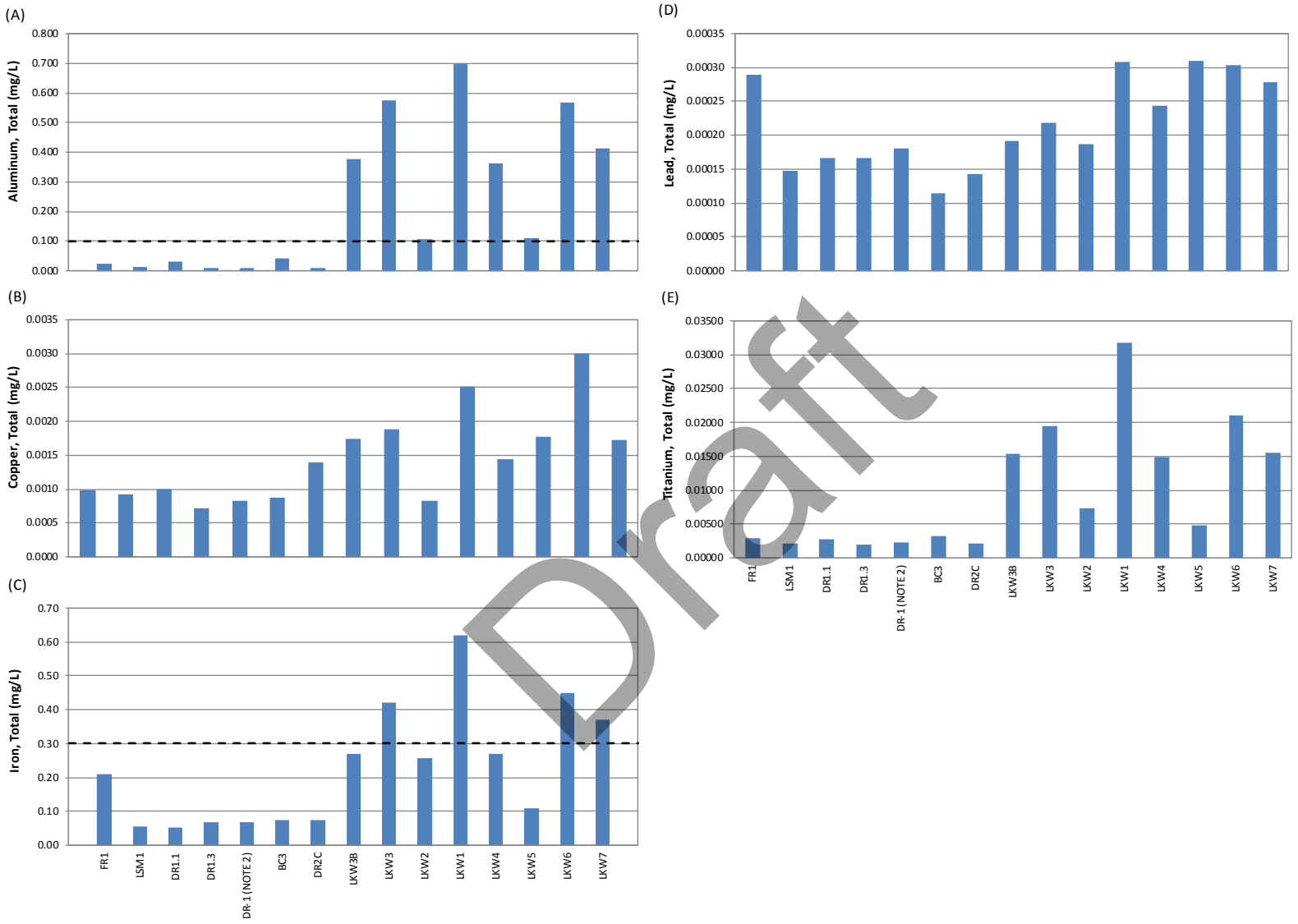

Figure D-8. Total metal concentrations measured in the study area, fall 2012, for (A) aluminum, (B) copper, (C) iron, (D) lead, and (E) titanium. Dashed lines indicate the applicable MWQSOGs and CCME PAL guidelines.

Appendix E. Regional Water Quality Monitoring Program Methods and Results – 2011/2012 Closure

E1.0 INTRODUCTION

During the conduct of the RWQMP during 2011/2012 Closure, water quality information was collected from all major waterbodies and waterways within the study area that were affected by flooding, and encompassed the area from the Fairford River (i.e., the major input source to the system) downstream to and including Sturgeon Bay on Lake Winnipeg. The objectives of the program were:

- to monitor water quality conditions following the closure of Reach 1, which occurred in November 2012;
- to supplement data sets at sites within the study area where Manitoba Conservation and Water Stewardship, Water Quality Management Branch (MCWS) conducts water quality monitoring;
- to evaluate spatial differences in water quality within the study area; and,
- to obtain a dataset which will be compared with results obtained during operation of Reach 1.

Sampling included *in situ* water quality measurements and the collection of water samples for laboratory analysis. Detailed methods and results are provided below.

E2.0 METHODS

E2.1 SAMPLING SITES

Water quality samples and *in situ* measurements were generally collected at 15 sites throughout the area; however, there was some variation in site locations between the open-water and ice-covered seasons due to accessibility issues in winter. In general, sites consisted of the following:

- Fairford River - one site at or near the PTH # 6 bridge (MWS site MB05LMS001);
- Lake St. Martin - one site in the north basin;
- Dauphin River - four sites; including one site at or near the outflow from Lake St. Martin, one site at or near the existing MCWS site (MCWS Site MB05LMS003); one site upstream of the confluence with Buffalo Creek, and one site in the mouth of the river upstream of Sturgeon Bay;
- Buffalo Creek - one site upstream of the confluence with the Dauphin River (open-water season only); and,
- Sturgeon Bay - eight sites.

In addition, a site near the middle of Big Buffalo Lake was sampled in winter and in June 2014. A list of all sampling sites and locations are provided in Table E-1 and illustrated in Figure E-1.

E2.2 SAMPLING METHODS

Water quality sampling was conducted on March 24-27 (winter), June 10-12, July 21-22, and October 6-7 in 2013; and, on April 7-10 (winter), May 28-29, and June 18-20 in 2014.

With the exception of March 2013, all *in situ* measurements were taken using a YSI EXO™-2 sonde. In March 2013, most measurements were taken using a Horiba® W22-XD water quality meter, while DO was measured using an YSI-550 dissolved oxygen meter.

Samples were collected for the usual list of parameters sampled by the RWQMP.

E3.0 RESULTS

E3.1 QA/QC

QA/QC results are presented in Tables E-2 and E-3.

E3.1.2 Field and Trip Blanks

Field and trip blank results generally indicate high precision and no sample contamination. Total and bicarbonate alkalinity were reported to be greater than five times the detection limit in one of seven field blanks submitted to the analytical laboratory. Turbidity was reported to be greater than five times the detection limit in one of seven trip blanks submitted to the analytical laboratory. Measurements for all other parameters (routine parameters, and total and dissolved metals and major ions) were below the threshold of five times the detection limit (Table E-2).

E3.1.3 Replicate Samples

PRSD values were not derived for several parameters due to low concentrations (i.e., concentrations less than five times the DL). In general, the results indicate good agreement between samples and acceptable levels of precision. The PRSD exceeded threshold values (18%) for six parameters including: total phosphorus; dissolved phosphorus; chlorophyll *a*; pheophytin *a*; dissolved aluminum; and total copper (Table E-3).

E3.2 ROUTINE VARIABLES AND LIMNOLOGY

Results for *in situ* and routine water quality parameters are presented in Tables E-4 to E-12. The discussion below focuses on the sites sampled along the Fairford and Dauphin rivers, Lake St. Martin, Buffalo Creek and Sturgeon Bay. Due to differences in sampling effort, the water quality of Big Buffalo Lake is discussed separately.

Based on the results of the RWQMP sampling, water quality of the study area could be generally described as moderately nutrient-rich, low to moderately turbid, slightly alkaline, hard to very hard, and well-oxygenated. Thermal stratification was observed at two sites near the middle of Sturgeon Bay in June 2013 (LKW6 and LKW7; Table E-5), and near the mouth of the Dauphin River in May 2014 (LKW3B and LKW3; Table E-9); at all other times sampled during 2011/2012 Closure, both Lake St. Martin and Sturgeon Bay were isothermal. During the open-water season, other *in situ* variables including, DO, turbidity, pH, and specific conductance were relatively consistent across depth in both lakes.

During the ice-cover season in March 2013 and April 2014, water entering Lake Winnipeg from the Dauphin River formed a high conductivity/lower DO layer along the bottom of Sturgeon Bay such that, DO decreased with depth and specific conductance was higher at depth at most sites in the bay (the exception was LKW4 in March 2013). The depth of the higher conductivity layer and the depth at which DO began to decrease varied from less than 1 m to 4.5 m below the ice-surface and depended on the proximity to the Dauphin River. The plume from the Dauphin River extended out along the bottom in a

south-easterly direction before turning north toward the mouth of Sturgeon Bay. *In situ* variables were similar across depth in Lake St. Martin during the ice-cover season.

Total phosphorus (TP) concentrations in the study area were composed of a mix of dissolved and particulate forms (Figure E-2). In the Fairford and Dauphin rivers and in Buffalo Creek, phosphorus was, on average, predominately in particulate form. In Lake St. Martin and Sturgeon Bay, the predominate form varied by site and season although the dissolved form was consistently predominate in Sturgeon Bay during the ice-cover season. The majority of total nitrogen (TN) was present in organic form at all sites, with ammonia generally comprising a greater amount of dissolved inorganic nitrogen (DIN) than nitrate/nitrite (Figure E-3). Buffalo Creek was an exception to this trend; there, DIN was dominated by nitrate/nitrite. Due to relatively high concentrations of ammonia, DIN was notably higher in the Fairford and Dauphin rivers and Lake St. Martin during the ice-cover season than it was in the open-water season. This trend was also observed in Sturgeon Bay, although to a much lesser degree. On the basis of TN:TP molar ratios (Figure E-4), all waterbodies sampled were phosphorus limited (i.e., TN:TP ratio > 20; Kalff 2002).

Several routine water quality parameters were higher in the Fairford and Dauphin rivers and Lake St. Martin than were typical of Sturgeon Bay, including: alkalinity; conductivity; total dissolved solids (TDS); TN; and, carbon (inorganic and organic forms; Figure E-5).

TOC, DOC, colour, TSS, and turbidity were notably higher in Buffalo Creek than in all other waterbodies sampled (Figures E-5D and E-6). Additionally, in the open-water season of 2013, nitrate/nitrite was higher in Buffalo Creek than in the rest of the study area (Figure E-3); this trend was not observed in 2014. Conversely, conductivity and TDS were lower in Buffalo Creek than in the other waterbodies sampled (Figure E-5B).

E3.2.1 Big Buffalo Lake

Big Buffalo Lake was relatively nutrient rich, fairly clear, slightly alkaline, hard and highly coloured (Tables E-4, E-8, E-10, E-11 and E-12). The water quality of Big Buffalo Lake varied between the open-water and ice-covered seasons. Under ice-cover, in March 2013 and April 2014, several water quality parameters were higher in concentration than when the lake was sampled in June 2014, including: alkalinity, ammonia, TN, TP, TOC, DOC, conductivity, TDS, and hardness (Table E-11). Conversely, under-ice cover pH, TSS, and DO were lower than during the open-water season. Under-ice cover the lake was anoxic. The lake was shallow (total depth was ≤ 2.2 m) and therefore no *in situ* profile was collected. In March 2013 and April 2014, nutrients (nitrogen, phosphorus and carbon) concentrations were high relative to other sites; this was not true in June 2014. TN and TP were a mix of dissolved and particulate forms. The TN:TP molar ratio indicates that the lake was phosphorus limited. Big Buffalo Lake was highly coloured relative to other sites sampled (Table E-11).

E3.2.2 Comparison to Water Quality Guidelines and Objectives

TP exceeded the MWQSOGs narrative guideline for phosphorus for lakes (i.e., 0.025 mg/L) in 25-50% of surface samples collected at four sites in Sturgeon Bay (LKW4, 5, 6 and 7; Figure E-2) and in Big Buffalo

Lake in winter; TP was within the applicable guideline at all other sites (0.025 mg/L for lakes and river mouths, and 0.050 mg/L for rivers and streams). In winter, DO was at or below the Manitoba objective for the protection of early stages of cold-water aquatic life (9.5 mg/L) and the CCME objective for cold-water ecosystems in Lake St. Martin (March 2013 only), the Dauphin River (all sites sampled, in March 2013 only), Big Buffalo Lake, and at depth at most sites in Sturgeon Bay (Tables E-4 and E-8). Additionally, DO in Big Buffalo Lake was below the MWQSOGs instantaneous minimum for the protection of mature stages of cool-water aquatic life (3.0 mg/L) in winter. All other routine water quality variables for which there are MWQSOGs and CCME guidelines, including, pH, ammonia, nitrate and nitrite were within PAL objectives and guidelines.

TDS was consistently above the MWQSOGs aesthetic objective for drinking water (≤ 500 mg/L) in the Fairford River; and, in Lake St. Martin and the Dauphin River during most sampling periods (the exception was May 2014). This objective was also exceeded in 28-42% of samples collected from six sites in Sturgeon Bay (LKW3B, LKW3, LKW2, LKW1, LKW5 an LKW6) and in Big Buffalo Lake in winter. Laboratory measured and/or *in situ* pH was above the range for the aesthetic objective for drinking water at least once at most sites sampled. Colour consistently exceeded the MWQSOGs aesthetic objective for drinking water in Big Buffalo Lake and Buffalo Creek, and was above this objective in the Fairford River (June 2014), at LKW1 (May 2014), and at LKW7 (June 2013) on one occasion. All other routine water quality variables for which there are MWQSOGs, including nitrate, nitrite, and nitrate/nitrite were within guidelines/objectives for drinking water. As discussed in Appendix A, an assessment of the maximum acceptable concentration for drinking water for turbidity was not conducted.

E3.3 METALS AND MAJOR IONS

Metal and major ion concentrations measured in the study area are presented in Table E-12. Beryllium, bismuth, selenium, tellurium, total thallium, and total tungsten were not detected at any site. Additionally, several metals were not detected in dissolved form at any site; including: cesium; chromium; cobalt; silver; thorium; and, zirconium. Total aluminum, total arsenic, barium, boron, calcium, chloride, total copper, fluoride, lithium, magnesium, total manganese, molybdenum, potassium, rubidium, silicon, sodium, strontium, sulphate, and uranium were consistently detected. The remaining metals and major ions were detected in some samples.

The discussion below focuses on sites sampled along the Fairford and Dauphin rivers, Lake St. Martin, Buffalo Creek and Sturgeon Bay. Due to the differences in sampling effort, the water quality of Big Buffalo Lake is discussed separately.

Several metals and major ions were present in higher concentrations in the Fairford River, Lake St. Martin, and the Dauphin River than were typically found in Sturgeon Bay, including: boron; calcium; chloride; fluoride; lithium; magnesium; molybdenum; potassium; rubidium; silicon; sodium; strontium; sulphate; and, uranium (Table E-12 and Figure E-7). Conversely, Sturgeon Bay had higher concentrations of aluminum, copper, iron, and titanium than were measured along the Fairford/Dauphin river system (Table E-12 and Figure E-8).

The same metals and major ions identified above as having either lower or higher concentrations in Sturgeon Bay compared to the Fairford/Dauphin river system were also present in lower or higher concentrations, respectively, in Buffalo Creek compared to the Dauphin River; although, often to a greater degree (Table E-12 and Figures E-7 and E-8). Additionally, lead, manganese, and methyl mercury, were higher; and, sulphate and dissolved vanadium were lower in Buffalo Creek compared to the other waterbodies sampled.

E3.3.1 Big Buffalo Lake

In Big Buffalo Lake, manganese (particularly in winter) and methyl mercury concentrations were high; and, molybdenum, titanium, uranium and vanadium concentrations were low, relative to other waterbodies sampled.

E.3.3.2 Comparison to Water Quality Guidelines and Objectives

Aluminum exceeded the MWQSOGs and CCME guideline for PAL (0.1 mg/L) in 38-100 % of samples collected at sites in Sturgeon Bay and in four of five samples from Buffalo Creek. Chloride and fluoride concentrations consistently exceeded the CCME long-term guideline for PAL (120 mg/L and 0.12 mg/L, respectively) in the Fairford River, Lake St. Martin and the Dauphin River. These guidelines were also exceeded in 13-71% of samples collected from all but one site in Sturgeon Bay; the exception was the site nearest the mouth of Sturgeon Bay (LKW7) where chloride was consistently below the guideline. Chloride also exceeded the CCME long-term guideline for PAL in the sample collected from Big Buffalo Lake in March 2013. Chloride concentrations were well below the CCME short-term guideline for PAL (640 mg/L) at all sites. Iron concentrations were above the MWQSOGs and CCME guideline for PAL (0.3 mg/L) in 14-29% of samples at three sites in Sturgeon Bay (LKW1, 6 and 7), and in two of five samples from Buffalo Creek. Silver exceeded the MWQSOGs PAL and CCME long-term guideline for PAL (0.0001 mg/L) in Lake St. Martin in one of seven samples collected. All other metals and major ions for which there are MWQSOGs or CCME guidelines for PAL were within objectives and guidelines at all sites sampled during 2011/2012 Closure.

Chloride exceeded the MWQSOGs aesthetic objective for drinking water (≤ 250 mg/L) in the Fairford River in March 2013. Iron concentrations exceeded the MWQSOGs aesthetic objective for drinking water (<0.3 mg/L) in 14-29% of samples at three sites in Sturgeon Bay (LKW1, 6 and 7), and in two of five samples from Buffalo Creek. Manganese exceeded the MWQSOGs aesthetic objective for drinking water (≤ 0.050 mg/L) in one of five samples from Buffalo Creek, in Big Buffalo Lake in winter (March 2013 and April 2014), and near the bottom of Sturgeon Bay in April 2014 at site LKW4. All other metals and major ions were within the existing MWQSOGs for drinking water.

E4.0 SUMMARY

Based on the RWQMP results, water quality of the study area can be generally described as moderately nutrient-rich, low to moderately turbid, slightly alkaline, hard to very hard, and well-oxygenated. In general, water quality of the Fairford River, Lake St. Martin and Dauphin River were more similar to each other than to Sturgeon Bay. Both Lake St. Martin and Sturgeon Bay were typically isothermal; however, thermal stratification was occasionally observed in spring. Other *in situ* variables, including DO, turbidity, pH and specific conductance were typically consistent across depth in both lakes during the open-water season. Under ice-cover, water from the Dauphin River formed a bottom layer in Sturgeon Bay, which exhibited higher conductivity and lower DO relative to surface waters.

TP exceeded the MWQSOGs narrative guideline for phosphorus for lakes in 25-50% of samples collected at four sites in Sturgeon Bay, and in Big Buffalo Lake in winter. In winter, DO concentrations at or below the Manitoba objective for the protection of early stages of cold-water aquatic life and the CCME objective for cold-water ecosystems were observed in Lake St. Martin, the Dauphin River, Big Buffalo Lake and at depth at most sites in Sturgeon Bay. Additionally, DO in Big Buffalo Lake was below the MWQSOGs instantaneous minimum for the protection of mature stages of cool-water aquatic life in winter. All other routine water quality variables for which there are MWQSOGs and CCME guidelines, including DO, pH, ammonia, nitrate and nitrite were within PAL objectives and guidelines. The MWQSOGs aesthetic objective for drinking water for TDS was exceeded at the Fairford River, Lake St. Martin, the Dauphin River, Sturgeon Bay and Big Buffalo Lake on at least one occasion. Laboratory measured and/or *in situ* pH was above the range for the aesthetic objective for drinking water at least once at most sites sampled. Colour consistently exceeded the MWQSOGs aesthetic objective for drinking water in Buffalo Creek and Big Buffalo Lake; and, on one occasion in the Fairford River and at two sites in Sturgeon Bay. All other routine water quality variables for which there are MWQSOGs, including nitrate, nitrite, and nitrate/nitrite were within guidelines for drinking water.

Several metals and major ions were present in higher (boron, calcium, chloride, fluoride, lithium, magnesium, molybdenum, potassium, rubidium, silicon, sodium, strontium, sulphate, and, uranium) or lower (aluminum, copper, iron and titanium) concentrations in the Fairford River, Lake St. Martin, and Dauphin River than were typically found in Sturgeon Bay. Additionally, metal and major ions concentrations in Buffalo Creek and Big Buffalo Lake differed from those in the other waterbodies sampled; of particular note, manganese and methyl-mercury were higher.

Aluminum typically exceeded the MWQSOGs and CCME guideline for PAL in Sturgeon Bay and Buffalo Creek. Chloride and fluoride consistently exceeded the CCME long-term PAL in the Fairford River, Lake St. Martin and Dauphin River; and, these guidelines were exceeded at least once in Sturgeon Bay and Big Buffalo Lake. Iron concentrations were above the MWQSOGs and CCME guideline for PAL in at least one sample from both Sturgeon Bay and Buffalo Creek. Silver exceeded the MWQSOGs PAL and CCME long-term guideline for PAL in one sample from Lake St. Martin. All other metals and major ions for which there are MWQSOGs or CCME guidelines for PAL were within objectives and guidelines. Chloride exceeded the MWQSOGs aesthetic objective for drinking water in the Fairford River in March 2013. Iron concentrations exceeded the MWQSOGs aesthetic objective for drinking water in at least one sample

from Sturgeon Bay and Buffalo Creek. And, manganese exceeded the MWQSOGs aesthetic objective for drinking water in one sample from Buffalo Creek, in winter in Big Buffalo Lake, and near the bottom of Sturgeon Bay in April 2014 at site LKW4. All other metals and major ions were within the existing MWQSOGs for drinking water.

Table E-1. Location of sites sampled as part of the RWQMP during 2011/2012 Closure.

Waterbody	Location Description	Site ID	MWS Site	UTM [1]		2013				2014		
				Easting	Northing	Mar 24-27	Jun 10-12	July 21-22	Oct 6-7	Apr 7-10	May 28-29	Jun 18-20
Fairford River	near PTH #6	FR1	MB05LMS001	518775	5715297	X	X	X	X	X	X	X
Lake St. Martin	North basin	LSM1	-	550111	5736744	X	X	X	X	X	X	X
Dauphin River	River inlet at Lake St. Martin	DR1.0		547611	5740719	X	-	-	-	-	-	-
	River inlet at Lake St. Martin	DR1.1	-	547362	5741777	-	X	X	X	X	X	X
	Between Gypsumville and Anama Bay	DR1.3	MB05LMS003	546015	5757471	X	X	X	X	X	X	X
	Upstream of Buffalo Creek	DR1(Note 2)	-	562124	5754995	X	X	X	X	X	X	X
Big Buffalo Lake		BBL[2]	-	558198	5745772	X	-	-	-	X	-	X
Buffalo Creek		BC3	-	562264	5754772	-	X	X	X	-	X	X
Dauphin River	River mouth at Lake Winnipeg	DR2C	-	564511	5757111	X	X	X	X	X	X	X
Sturgeon Bay		LKW3B	-	567090	5757481	X	X	X	X	X	X	X
		LKW3	-	569038	5759083	X	X	X	X	X	X	X
		LKW2	-	571476	5754219	X	X	X	X	X	X	X
		LKW1	-	578396	5750402	X	X	X	X	X	X	X
		LKW4	-	566337	5765391	X	X	X	X	X	X	X
		LKW5	-	577142	5758608	X	X	X	X	X	X	X
		LKW6	-	573302	5762626	X	X	X	X	X	X	X
		LKW7	-	574046	5771087	X	X	X	X	X	X	X

1 - UTM coordinates; Datum NAD 83, Zone 14U.
2 - UTM varied slightly between seasons.

Table E-2. Quality assurance/quality control results for routine water quality parameters, RWQMP during 2011/2012 Closure. Percent standard relative deviations (PRSD) above 18% and concentrations in trip and field blanks greater than five times the analytical detection limit (DL) are indicated in red.

				Alkalinity				Nitrogen				
Sample Location	Sample ID	Sample Date	ALS Sample ID	Total, as $CaCO_3$ (mg/L)	as Bicarbonate (HCO_3^-) (mg/L)	as Carbonate (CO_3^{2-}) (mg/L)	as Hydroxide (OH^-) (mg/L)	Ammonia (mg/L N)	Nitrate/ nitrite (mg/L N)	Nitrate-N (mg/L N)	Nitrite-N (mg/L N)	TKN (mg/L N)
Analytical DL				*1.0/20*	*1.2/2.0/24*	*0.60/12*	*0.34/0.40/6.8*	*0.010*	*0.0051*	*0.0050*	*0.0010*	*0.20*
5x DL				*5.0/100*	*6.0/10.0/120*	*3.0/60*	*1.7/2.0/34.0*	*0.050*	*0.0255*	*0.0250*	*0.0050*	*1.00*
TRIPLICATE SAMPLES												
Lake Winnipeg	LKW3B	26-Mar-13	L1283154-4	174	213	<12	<6.8	0.042	0.0228	0.0228	<0.0010	0.52
	RP1	26-Mar-13	L1283154-5	173	208	<12	<6.8	0.020	0.0135	0.0135	<0.0010	0.54
	RP2	26-Mar-13	L1283154-6	174	210	<12	<6.8	0.020	0.0125	0.0125	<0.0010	0.52
		Mean		174	210	<12	<6.8	0.027	0.0163	0.0163	<0.0010	0.53
		SD		0.6	2.5	-	-	0.0127	0.0057	0.0057	-	0.012
		PRSD		0	1	-	-	-	-	-	-	-
Dauphin River	DR1 (NOTE2)	12-Jun-13	L1316464-2	177	203	<12	<6.8	<0.010	<0.0051	<0.0050	<0.0010	0.83
	RP1	12-Jun-13	L1316464-3	177	203	<12	<6.8	<0.010	<0.0051	<0.0050	<0.0010	0.81
	RP2	12-Jun-13	L1316464-4	177	203	<12	<6.8	<0.010	<0.0051	<0.0050	<0.0010	0.81
		Mean		177	203	<12	<6.8	<0.010	<0.0051	<0.0050	<0.0010	0.82
		SD		0	0	-	-	-	-	-	-	0.012
		PRSD		0	0	-	-	-	-	-	-	-
Lake St. Martin	LSM1	22-Jul-13	L1336361-5	183	200	<12	<6.8	<0.010	<0.0051	<0.0050	<0.0010	0.87
	RP1	22-Jul-13	L1336361-10	182	201	<12	<6.8	<0.010	<0.0051	<0.0050	<0.0010	0.88
	RP2	22-Jul-13	L1336361-11	182	200	<12	<6.8	<0.010	<0.0051	<0.0050	<0.0010	0.84
		Mean		182	200	<12	<6.8	<0.010	<0.0051	<0.0050	<0.0010	0.86
		SD		0.6	0.6	-	-	-	-	-	-	0.021
		PRSD		0	0	-	-	-	-	-	-	-
Lake St. Martin	LSM 1	7-Oct-13	L1374688-10	178	201	<12	<6.8	0.023	<0.0051	<0.0050	<0.0010	0.88
	RP 1	7-Oct-13	L1374688-13	178	202	<12	<6.8	<0.010	<0.0051	<0.0050	<0.0010	0.91
	RP 2	7-Oct-13	L1374688-14	178	202	<12	<6.8	<0.010	<0.0051	<0.0050	<0.0010	0.88
		Mean		178	202	<12	<6.8	0.011	<0.0051	<0.0050	<0.0010	0.89
		SD		0	1	-	-	-	-	-	-	0.017
		PRSD		0	0	-	-	-	-	-	-	-

Table E-2. Continued.

				Alkalinity				Nitrogen				
Sample	Sample	Sample	ALS	Total, as $CaCO_3$	as Bicarbonate (HCO_3^-)	as Carbonate (CO_3^{2-})	as Hydroxide (OH^-)	Ammonia	Nitrate/ nitrite	Nitrate-N	Nitrite-N	TKN
Lake Winnipeg	LKW 4	8-Apr-14	L1441278-1	151	184	<12	<6.8	0.022	0.0182	0.0182	<0.0010	0.52
	RP 1	8-Apr-14	L1441278-3	151	185	<12	<6.8	0.024	0.0197	0.0197	<0.0010	0.59
	RP 2	8-Apr-14	L1441278-4	151	184	<12	<6.8	0.023	0.0221	0.0221	<0.0010	0.53
		Mean		151	184	<12	<6.8	0.023	0.0200	0.0200	<0.0010	0.55
		SD		0.0	0.6	-	-	0.0010	0.00197	0.00197	-	0.038
		PRSD		0	0	-	-	-	-	-	-	-
Lake Winnipeg	LKW1	28-May-14	L1461949-5	151	184	<12	<6.8	<0.010	<0.0051	<0.0051	<0.0010	0.57
	REP 1	28-May-14	L1461949-7	151	184	<12	<6.8	<0.010	<0.0051	<0.0051	<0.0010	0.51
	REP 2	28-May-14	L1461949-8	151	184	<12	<6.8	<0.010	<0.0051	<0.0051	<0.0010	0.53
		Mean		151	184	<12	<6.8	<0.010	<0.0051	<0.0051	<0.0010	0.54
		SD		0.0	0.0	-	-	-	-	-	-	0.031
		PRSD		0	0	-	-	-	-	-	-	-
Buffalo Creek	BC3	20-Jun-14	L1474237-13	135	164	<12	<6.8	<0.010	0.0053	0.0053	<0.0010	0.67
	RP 1	20-Jun-14	L1474237-14	135	165	<12	<6.8	<0.010	0.0059	0.0059	<0.0010	0.70
	RP 2	20-Jun-14	L1474237-15	135	165	<12	<6.8	<0.010	0.0065	0.0065	<0.0010	0.66
		Mean		135	165	<12	<6.8	<0.010	0.0059	0.0059	<0.0010	0.68
		SD		0.0	0.6	-	-	-	0.00060	0.00060	-	0.021
		PRSD		0	0	-	-	-	-	-	-	-
FIELD BLANKS												
	FBI	25-Mar-13	L1282620-6	1.7	2.1	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	FBI	12-Jun-13	L1316464-6	1.9	2.4	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	FBI	22-Jul-13	L1336361-8	2.0	2.5	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	FB 1	7-Oct-13	L1374688-15	2.1	2.5	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	FB1	10-Apr-14	L1442360-4	1.5	1.9	<0.60	<0.34	0.018	<0.0051	<0.0050	<0.0010	<0.20
	FB-1	28-May-14	L1461949-13	**5.6**	**6.8**	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	FB1	20-Jun-14	L1474237-18	2.3	2.8	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20

Table E-2. Continued.

				Alkalinity				Nitrogen				
Sample	Sample	Sample	ALS	Total, as $CaCO_3$	as Bicarbonate (HCO_3^-)	as Carbonate (CO_3^{2-})	as Hydroxide (OH^-)	Ammonia	Nitrate/ nitrite	Nitrate-N	Nitrite-N	TKN
TRIP BLANKS												
	TB1	27-Mar-13	L1283894-5	1.8	2.2	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	TB1	10-Jun-13	L1314453-5	1.4	1.7	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	TB1	22-Jul-13	L1336361-9	1.8	2.2	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	TB 1	7-Oct-13	L1374688-16	1.8	2.2	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	TB1	10-Apr-14	L1442360-5	1.6	1.9	<0.60	<0.34	0.050	<0.0051	<0.0050	<0.0010	<0.20
	TB-1	28-May-14	L1461949-14	1.8	2.1	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20
	TB1	20-Jun-14	L1474237-19	2.0	2.4	<0.60	<0.34	<0.010	<0.0051	<0.0050	<0.0010	<0.20

Table E-2. Continued.

Sample Location	Sample ID	Sample Date	ALS Sample ID	Phosphorus			Carbon		
				Total (mg/L P)	Dissolved (mg/L P)	Total Particulate (mg/L P)	Total Inorganic (mg/L)	Total Organic (mg/L)	Dissolved Organic (mg/L)
Analytical DL				*0.0010/0.010*	*0.0010/0.010*	*0.0028/0.010/0.014*	*1.0*	*1.0*	*1.0*
5x DL				*0.0050/0.050*	*0.0050/0.050*	*0.014/0.050/0.070*	*5.0*	*5.0*	*5.0*
TRIPLICATE SAMPLES									
Lake Winnipeg	LKW3B	26-Mar-13	L1283154-4	0.018	0.018	<0.014	41.4	12.5	12.3
	RP1	26-Mar-13	L1283154-5	0.020	0.014	<0.014	41.0	12.5	12.2
	RP2	26-Mar-13	L1283154-6	0.019	0.015	<0.014	40.9	12.3	12.3
		Mean		0.019	0.016	<0.014	41.1	12.4	12.3
		SD		0.001	0.002	-	0.26	0.12	0.06
		PRSD		5	13	-	1	1	0
Dauphin River	DR1 (NOTE2)	12-Jun-13	L1316464-2	0.017	0.0016	0.016	40.8	13.1	13.4
	RP1	12-Jun-13	L1316464-3	0.019	0.0023	0.016	40.8	13.2	12.8
	RP2	12-Jun-13	L1316464-4	0.017	0.0020	0.015	40.6	13.0	12.4
		Mean		0.018	0.0020	0.016	40.7	13.1	12.9
		SD		0.0012	0.00035	0.0006	0.12	0.1	0.50
		PRSD		7	18	4	0	1	4
Lake St. Martin	LSM1	22-Jul-13	L1336361-5	0.018	0.0029	0.016	41.7	15.0	13.4
	RP1	22-Jul-13	L1336361-10	0.018	0.0031	0.015	41.8	14.7	13.6
	RP2	22-Jul-13	L1336361-11	0.019	0.0033	0.015	42.0	14.9	13.7
		Mean		0.018	0.0031	0.015	41.8	14.9	13.6
		SD		0.0006	0.00020	0.0006	0.15	0.15	0.15
		PRSD		3	6	4	0	1	1
Lake St. Martin	LSM 1	7-Oct-13	L1374688-10	0.012	0.0076	<0.010	40.0	12.5	11.0
	RP 1	7-Oct-13	L1374688-13	0.011	0.0083	<0.010	39.1	12.2	11.6
	RP 2	7-Oct-13	L1374688-14	0.011	0.0044	<0.010	38.8	13.4	12.0
		Mean		0.011	0.0068	<0.010	39.3	12.7	11.5
		SD		0.0006	0.0021	-	0.62	0.62	0.50
		PRSD		5	**31**	-	2	5	4
Lake Winnipeg	LKW 4	8-Apr-14	L1441278-1	0.0166	0.0144	<0.0028	38.0	9.4	9.2
	RP 1	8-Apr-14	L1441278-3	0.0166	0.0142	<0.0028	37.7	9.3	9.8
	RP 2	8-Apr-14	L1441278-4	0.0136	***0.210***	<0.0028	37.7	9.5	9.7
		Mean		0.0156	0.0143	<0.0028	37.8	9.4	9.6

Table E-2. Continued.

				Phosphorus			Carbon		
Sample Location	Sample ID	Sample Date	ALS Sample ID	Total (mg/L P)	Dissolved (mg/L P)	Total Particulate (mg/L P)	Total Inorganic (mg/L)	Total Organic (mg/L)	Dissolved Organic (mg/L)
		SD		0.00173	0.00014	-	0.17	0.10	0.32
		PRSD		11	1	-	0	1	3
Lake Winnipeg	LKW1	28-May-14	L1461949-5	0.0157	0.0070	0.0086	35.1	9.6	9.4
	REP 1	28-May-14	L1461949-7	0.0167	0.0063	0.0105	46.9	9.6	9.5
	REP 2	28-May-14	L1461949-8	0.0270	0.0067	0.020	34.6	9.5	9.2
		Mean		0.0198	0.0067	0.0130	38.9	9.6	9.4
		SD		0.00626	0.00035	0.00611	6.96	0.06	0.15
		PRSD		**32**	5	-	18	1	2
Buffalo Creek	BC3	20-Jun-14	L1474237-13	0.024	0.0046	0.019	30.1	18.6	17.9
	RP 1	20-Jun-14	L1474237-14	0.023	0.0055	0.018	29.6	18.3	18.2
	RP 2	20-Jun-14	L1474237-15	0.024	0.0047	0.019	29.1	18.2	18.4
		Mean		0.024	0.0049	0.0187	29.6	18.4	18.2
		SD		0.0006	0.00049	0.00058	0.50	0.21	0.25
		PRSD		-	-	3	2	1	1
FIELD BLANKS									
	FBI	25-Mar-13	L1282620-6	<0.0010	<0.0010	<0.0014	<1.0	<1.0	<1.0
	FBI	12-Jun-13	L1316464-6	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0
	FBI	22-Jul-13	L1336361-8	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0
	FB 1	7-Oct-13	L1374688-15	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0
	FB1	10-Apr-14	L1442360-4	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0
	FB-1	28-May-14	L1461949-13	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0
	FB1	20-Jun-14	L1474237-18	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0
TRIP BLANKS									
	TB1	27-Mar-13	L1283894-5	<0.0010	<0.0010	<0.0014	<1.0	<1.0	<1.0
	TB1	10-Jun-13	L1314453-5	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0
	TB1	22-Jul-13	L1336361-9	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0
	TB 1	7-Oct-13	L1374688-16	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0
	TB1	10-Apr-14	L1442360-5	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0
	TB-1	28-May-14	L1461949-14	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0
	TB1	20-Jun-14	L1474237-19	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0

Table E-2. Continued.

							Water Clarity			Algal Pigments	
Sample Location	Sample ID	Sample Date	ALS Sample ID	Lab pH	Conductivity (µmhos/cm)	TDS (mg/L)	TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Pheophytin *a* (µg/L)
Analytical DL				*0.10*	*0.40/1.0/20*	*5.0*	*2.0*	*0.10*	*5.0*	*0.10*	*0.10*
5x DL				*0.50*	*2.0/5.0/100*	*25.0*	*10.0*	*0.50*	*25.0*	*0.50*	*0.50*
TRIPLICATE SAMPLES											
Lake Winnipeg	LKW3B	26-Mar-13	L1283154-4	8.29	802	478	<2.0	2.63	9.2	0.76	0.37
	RP1	26-Mar-13	L1283154-5	8.31	768	462	<2.0	2.71	9.7	1.91	0.82
	RP2	26-Mar-13	L1283154-6	8.31	778	454	<2.0	2.67	10.1	1.38	0.71
		Mean		8.30	783	465	<2.0	2.67	9.67	1.35	0.63
		SD		0.012	17.5	12.2	-	0.040	0.451	0.576	0.235
		PRSD		0	2	3	-	1	5	43	37
Dauphin River	DR1 (NOTE2)	12-Jun-13	L1316464-2	8.48	996	563	9.5	5.05	8.2	4.40	1.14
	RP1	12-Jun-13	L1316464-3	8.48	997	583	12.0	5.59	9.1	3.71	1.00
	RP2	12-Jun-13	L1316464-4	8.48	1000	578	11.0	5.46	9.6	4.22	1.11
		Mean		8.48	998	575	10.8	5.37	9.0	4.11	1.08
		SD		0	2.1	10.4	1.26	0.282	0.71	0.358	0.074
		PRSD		0	0	2	12	5	8	9	7
Lake St. Martin	LSM1	22-Jul-13	L1336361-5	8.62	1030	631	10.0	4.16	8.9	7.58	1.33
	RP1	22-Jul-13	L1336361-10	8.62	1030	610	9.5	4.35	7.9	6.58	1.29
	RP2	22-Jul-13	L1336361-11	8.62	1030	598	9.5	4.49	7.6	6.41	1.29
		Mean		8.62	1030	613	9.7	4.33	8.1	6.86	1.30
		SD		0	0	16.7	0.3	0.166	0.68	0.632	0.023
		PRSD		0	0	3	3	4	8	9	2
Lake St. Martin	LSM 1	7-Oct-13	L1374688-10	8.54	1050	612	8.8	3.53	5.1	5.51	1.15
	RP 1	7-Oct-13	L1374688-13	8.53	1050	586	10	3.58	5.3	6.26	1.06
	RP 2	7-Oct-13	L1374688-14	8.53	1050	595	10	3.32	5.5	5.32	0.94
		Mean		8.53	1050	598	9.6	3.48	5.3	5.70	1.05
		SD		0.006	0	13.2	0.69	0.138	0.2	0.497	0.105
		PRSD		0	0	2	7	4	4	9	10
Lake Winnipeg	LKW 4	8-Apr-14	L1441278-1	8.00	547	313	2.4	2.4	11.2	0.89	0.48
	RP 1	8-Apr-14	L1441278-3	8.04	536	287	2.0	2.4	9.2	0.84	0.43
	RP 2	8-Apr-14	L1441278-4	8.02	554	296	<2.0	2.3	9.8	0.90	0.50

Table E-2. Continued.

							Water Clarity			Algal Pigments	
Sample Location	Sample ID	Sample Date	ALS Sample ID	Lab pH	Conductivity (µmhos/cm)	TDS (mg/L)	TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Pheophytin *a* (µg/L)
		Mean		8.02	546	299	2.2	2.4	10.1	0.88	0.47
		SD		0.020	9.1	13.2	0.28	0.06	1.03	0.032	0.036
		PRSD		0	2	-	-	2	-	4	8
Lake Winnipeg	LKW1	28-May-14	L1461949-5	8.26	721	406	6.0	4.4	15.2	4.67	0.93
	REP 1	28-May-14	L1461949-7	8.28	720	400	7.5	4.9	15.4	4.47	0.97
	REP 2	28-May-14	L1461949-8	8.27	721	412	6.0	5.0	16.4	4.59	0.94
		Mean		8.27	721	406	6.5	4.8	15.7	4.58	0.95
		SD		0.010	0.6	6.0	0.87	0.32	0.64	0.101	0.021
		PRSD		0	0	1	-	7	-	2	2
Buffalo Creek	BC3	20-Jun-14	L1474237-13	8.21	289	216	17.6	10.6	63.5	2.19	2.22
	RP 1	20-Jun-14	L1474237-14	8.23	289	214	18.8	10.2	65.9	2.44	2.43
	RP 2	20-Jun-14	L1474237-15	8.26	290	207	18.8	12.4	65.4	2.24	2.20
		Mean		8.23	289	212	18.4	11.1	64.9	2.29	2.28
		SD		0.025	0.6	4.7	0.69	1.17	1.27	0.132	0.127
		PRSD		0	0	2	4	11	2	6	6
FIELD BLANKS											
	FBI	25-Mar-13	L1282620-6	6.31	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	FBI	12-Jun-13	L1316464-6	6.29	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	FBI	22-Jul-13	L1336361-8	6.01	<1.0	<5.0	<2.0	<0.10	<5.0	0.16	<0.10
	FB 1	7-Oct-13	L1374688-15	6.15	1.3	<5.0	<2.0	<0.10	<5.0	0.12	<0.10
	FB1	10-Apr-14	L1442360-4	6.16	1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	FB-1	28-May-14	L1461949-13	6.16	1.1	<5.0	<2.0	0.12	<5.0	<0.10	<0.10
	FB1	20-Jun-14	L1474237-18	6.17	1.2	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
TRIP BLANKS											
	TB1	27-Mar-13	L1283894-5	5.52	<1.0	<5.0	<2.0	***1.22***	<5.0	<0.10	<0.10
	TB1	10-Jun-13	L1314453-5	5.67	<1.0	<5.0	<2.0	0.13	<5.0	<0.10	<0.10
	TB1	22-Jul-13	L1336361-9	5.69	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	TB 1	7-Oct-13	L1374688-16	5.85	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	TB1	10-Apr-14	L1442360-5	5.97	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10
	TB-1	28-May-14	L1461949-14	5.92	<1.0	<5.0	<2.0	0.13	<5.0	<0.10	<0.10
	TB1	20-Jun-14	L1474237-19	5.92	<1.0	<5.0	<2.0	<0.10	<5.0	<0.10	<0.10

Table E-3. Quality assurance/quality control results for metals and major ions during 2011/2012 Closure. Percent standard relative deviations (PRSD) above 18% and concentrations in trip and field blanks greater than five times the analytical detection limit (DL) are indicated in red. Concentrations are mg/L unless otherwise noted.

Sample Location	Sample ID	ALS ID	Sample Date	Hardness, as $CaCO_3$	Aluminum		Antimony		Arsenic		Barium	
					Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical DL				*0.30*	*0.0020*	*0.0050*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*
5x DL				*1.50*	*0.010*	*0.025*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*
TRIPLICATE SAMPLES												
Lake Winnipeg	LKW3B	L1283154-4	26-Mar-13	215	0.0101	0.0985	<0.00020	<0.00020	0.00205	0.00197	0.0421	0.0446
	RP1	L1283154-5	26-Mar-13	223	0.0170	0.1130	<0.00020	<0.00020	0.00207	0.00202	0.0430	0.0467
	RP2	L1283154-6	26-Mar-13	213	0.0164	0.0976	<0.00020	<0.00020	0.00209	0.00208	0.0427	0.0460
			Mean	217	0.0145	0.1030	<0.00020	<0.00020	0.00207	0.00202	0.0426	0.0458
			SD	5.3	0.00382	0.00864	-	-	0.00002	0.00006	0.00046	0.00107
			PRSD	2	**26**	8	-	-	1	3	1	2
Dauphin River	DR1 (NOTE2)	L1316464-2	12-Jun-13	239	<0.0020	0.0639	<0.00020	<0.00020	0.00166	0.00177	0.0379	0.0426
	RP1	L1316464-3	12-Jun-13	251	<0.0020	0.0488	<0.00020	<0.00020	0.00190	0.00187	0.0379	0.0399
	RP2	L1316464-4	12-Jun-13	247	<0.0020	0.0574	<0.00020	<0.00020	0.00169	0.00172	0.0369	0.0426
			Mean	246	<0.0020	0.0567	<0.00020	<0.00020	0.00175	0.00179	0.0376	0.0417
			SD	6.1	-	0.00757	-	-	0.000131	0.000076	0.00058	0.00156
			PRSD	2	-	13	-	-	7	4	2	4
Lake St. Martin	LSM1	L1336361-5	22-Jul-13	251	<0.0020	0.0313	<0.00020	<0.00020	0.00204	0.00179	0.0407	0.0450
	RP1	L1336361-10	22-Jul-13	255	0.0084	0.0333	<0.00020	<0.00020	0.00208	0.00193	0.0417	0.0434
	RP2	L1336361-11	22-Jul-13	261	<0.0020	0.0287	<0.00020	<0.00020	0.00216	0.00221	0.0411	0.0470
			Mean	256	0.0035	0.0311	<0.00020	<0.00020	0.00209	0.00198	0.0412	0.0451
			SD	5.0	-	0.00231	-	-	0.000061	0.000214	0.00050	0.00180
			PRSD	2	-	7	-	-	3	11	1	4
Lake St. Martin	LSM 1	L1374688-10	7-Oct-13	270	<0.0020	0.0263	<0.00020	<0.00020	0.00191	0.00203	0.0389	0.0418
	RP 1	L1374688-13	7-Oct-13	237	<0.0020	0.0226	<0.00020	<0.00020	0.00196	0.00200	0.0393	0.0424
	RP 2	L1374688-14	7-Oct-13	240	<0.0020	0.0270	<0.00020	<0.00020	0.00190	0.00204	0.0391	0.0429
			Mean	249	<0.0020	0.0253	<0.00020	<0.00020	0.00192	0.00202	0.0391	0.0424
			SD	18.2	-	0.00236	-	-	0.000032	0.000021	0.00020	0.00055
			PRSD	7	-	9	-	-	2	1	1	1

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Hardness, as $CaCO_3$	Aluminum		Antimony		Arsenic		Barium	
					Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW 4	L1441278-1	8-Apr-14	196	0.0199	0.1630	<0.00020	<0.00020	0.00167	0.00179	0.0508	0.0528
	RP 1	L1441278-3	8-Apr-14	194	0.0224	0.1690	<0.00020	<0.00020	0.00176	0.00179	0.0511	0.0540
	RP 2	L1441278-4	8-Apr-14	193	0.0227	0.1650	<0.00020	<0.00020	0.00170	0.00175	0.0516	0.0528
			Mean	194	0.0217	0.1657	<0.00020	<0.00020	0.00171	0.00178	0.0512	0.0532
			SD	1.5	0.00154	0.00306	-	-	0.000046	0.000023	0.00040	0.00069
			PRSD	1	7	2	-	-	3	1	1	1
Lake Winnipeg	LKW1	L1461949-5	28-May-14	185	0.0035	0.1850	<0.00020	<0.00020	0.00124	0.00139	0.0357	0.0359
	REP 1	L1461949-7	28-May-14	199	0.0043	0.1750	<0.00020	<0.00020	0.00131	0.00135	0.0363	0.0356
	REP 2	L1461949-8	28-May-14	204	0.0029	0.1670	<0.00020	<0.00020	0.00135	0.00139	0.0365	0.0360
			Mean	196	0.0036	0.1757	<0.00020	<0.00020	0.00130	0.00138	0.0362	0.0358
			SD	9.8	0.00070	0.00902	-	-	0.000056	0.000023	0.00042	0.00021
			PRSD	5	-	5	-	-	4	2	1	1
Buffalo Creek	BC3	L1474237-13	20-Jun-14	152	0.0128	0.4920	<0.00020	<0.00020	0.00088	0.00093	0.0157	0.0205
	RP 1	L1474237-14	20-Jun-14	157	0.0111	0.5880	<0.00020	<0.00020	0.00108	0.00104	0.0211	0.0221
	RP 2	L1474237-15	20-Jun-14	148	0.0138	0.5570	<0.00020	<0.00020	0.00089	0.00101	0.0160	0.0210
			Mean	152	0.0126	0.5457	<0.00020	<0.00020	0.00095	0.00099	0.0176	0.0212
			SD	4.5	0.00137	0.0490	-	-	0.000113	0.000057	0.00303	0.00082
			PRSD	3	11	9	-	-	-	-	17	4
FIELD BLANKS												
	FBI	L1282620-6	25-Mar-13	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	FB1	L1316464-6	12-Jun-13	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	FB1	L1336361-8	22-Jul-13	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	FB 1	L1374688-15	7-Oct-13	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	FB1	L1442360-4	10-Apr-14	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	FB-1	L1461949-13	28-May-14	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	FB1	L1474237-18	20-Jun-14	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
TRIP BLANKS												
	TB1	L1283894-5	27-Mar-13	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TB1	L1314453-5	10-Jun-13	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TB1	L1336361-9	22-Jul-13	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TB 1	L1374688-16	7-Oct-13	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TB1	L1442360-5	10-Apr-14	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TB-1	L1461949-14	28-May-14	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	TB1	L1474237-19	20-Jun-14	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Beryllium		Bismuth		Boron		Cadmium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical DL				*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.010*	*0.010*	*0.000010*	*0.000010*
5x DL				*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.050*	*0.050*	*0.000050*	*0.000050*
TRIPLICATE SAMPLES											
Lake Winnipeg	LKW3B	L1283154-4	26-Mar-13	<0.00020	<0.00020	<0.00020	<0.00020	0.068	0.067	<0.000010	<0.000010
	RP1	L1283154-5	26-Mar-13	<0.00020	<0.00020	<0.00020	<0.00020	0.064	0.063	<0.000010	<0.000010
	RP2	L1283154-6	26-Mar-13	<0.00020	<0.00020	<0.00020	<0.00020	0.064	0.064	<0.000010	<0.000010
			Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.065	0.065	<0.000010	<0.000010
			SD	-	-	-	-	0.0023	0.0021	-	-
			PRSD	-	-	-	-	4	3	-	-
Dauphin River	DR1 (NOTE2)	L1316464-2	12-Jun-13	<0.00020	<0.00020	<0.00020	<0.00020	0.098	0.082	<0.000010	0.000012
	RP1	L1316464-3	12-Jun-13	<0.00020	<0.00020	<0.00020	<0.00020	0.072	0.076	<0.000010	0.000011
	RP2	L1316464-4	12-Jun-13	<0.00020	<0.00020	<0.00020	<0.00020	0.074	0.078	<0.000010	0.00001
			Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.081	0.079	<0.000010	0.000011
			SD	-	-	-	-	0.0145	0.0031	-	0.000001
			PRSD	-	-	-	-	18	4	-	9
Lake St. Martin	LSM1	L1336361-5	22-Jul-13	<0.00020	<0.00020	<0.00020	<0.00020	0.092	0.111	<0.000010	<0.000010
	RP1	L1336361-10	22-Jul-13	<0.00020	<0.00020	<0.00020	<0.00020	0.091	0.105	<0.000010	<0.000010
	RP2	L1336361-11	22-Jul-13	<0.00020	<0.00020	<0.00020	<0.00020	0.092	0.091	<0.000010	<0.000010
			Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.092	0.102	<0.000010	<0.000010
			SD	-	-	-	-	0.0006	0.0103	-	-
			PRSD	-	-	-	-	1	10	-	-
Lake St. Martin	LSM 1	L1374688-10	7-Oct-13	<0.00020	<0.00020	<0.00020	0.00025	0.086	0.086	<0.000010	<0.000010
	RP 1	L1374688-13	7-Oct-13	<0.00020	<0.00020	<0.00020	<0.00020	0.086	0.080	<0.000010	0.000010
	RP 2	L1374688-14	7-Oct-13	<0.00020	<0.00020	<0.00020	<0.00020	0.087	0.081	<0.000010	<0.000010
			Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.086	0.082	<0.000010	<0.000010
			SD	-	-	-	-	0.0006	0.0032	-	-
			PRSD	-	-	-	-	1	4	-	-

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Beryllium		Bismuth		Boron		Cadmium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW 4	L1441278-1	8-Apr-14	<0.00020	<0.00020	<0.00020	<0.00020	0.041	0.044	<0.000010	<0.000010
	RP 1	L1441278-3	8-Apr-14	<0.00020	<0.00020	<0.00020	<0.00020	0.040	0.046	<0.000010	<0.000010
	RP 2	L1441278-4	8-Apr-14	<0.00020	<0.00020	<0.00020	<0.00020	0.038	0.045	<0.000010	<0.000010
			Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.040	0.045	<0.000010	<0.000010
			SD	-	-	-	-	0.0015	0.0010	-	-
			PRSD	-	-	-	-	-	-	-	-
Lake Winnipeg	LKW1	L1461949-5	28-May-14	<0.00020	<0.00020	<0.00020	<0.00020	0.066	0.063	<0.000010	<0.000010
	REP 1	L1461949-7	28-May-14	<0.00020	<0.00020	<0.00020	<0.00020	0.067	0.064	<0.000010	<0.000010
	REP 2	L1461949-8	28-May-14	<0.00020	<0.00020	<0.00020	<0.00020	0.068	0.064	<0.000010	<0.000010
			Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.067	0.064	<0.000010	<0.000010
			SD	-	-	-	-	0.0010	0.0006	-	-
			PRSD	-	-	-	-	1	1	-	-
Buffalo Creek	BC3	L1474237-13	20-Jun-14	<0.00020	<0.00020	<0.00020	<0.00020	0.045	0.046	<0.000010	<0.000010
	RP 1	L1474237-14	20-Jun-14	<0.00020	<0.00020	<0.00020	<0.00020	0.047	0.047	<0.000010	<0.000010
	RP 2	L1474237-15	20-Jun-14	<0.00020	<0.00020	<0.00020	<0.00020	0.040	0.042	<0.000010	<0.000010
			Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.044	0.045	<0.000010	<0.000010
			SD	-	-	-	-	0.0036	0.0026	-	-
			PRSD	-	-	-	-	-	-	-	-
FIELD BLANKS											
	FBI	L1282620-6	25-Mar-13	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	FB1	L1316464-6	12-Jun-13	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	FB1	L1336361-8	22-Jul-13	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	FB 1	L1374688-15	7-Oct-13	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	FB1	L1442360-4	10-Apr-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	FB-1	L1461949-13	28-May-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	FB1	L1474237-18	20-Jun-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
TRIP BLANKS											
	TB1	L1283894-5	27-Mar-13	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	TB1	L1314453-5	10-Jun-13	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	TB1	L1336361-9	22-Jul-13	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	TB 1	L1374688-16	7-Oct-13	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	TB1	L1442360-5	10-Apr-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	TB-1	L1461949-14	28-May-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010
	TB1	L1474237-19	20-Jun-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Calcium		Cesium		Chloride	Chromium		Cobalt	
				Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
Analytical DL				*0.050*	*0.10*	*0.00010*	*0.00010*	*0.20*	*0.0020*	*0.0010*	*0.00020*	*0.00020*
5x DL				*0.25*	*0.50*	*0.00050*	*0.00050*	*1.00*	*0.010*	*0.0050*	*0.0010*	*0.0010*
TRIPLICATE SAMPLES												
Lake Winnipeg	LKW3B	L1283154-4	26-Mar-13	42.7	42.7	<0.00010	<0.00010	112	<0.0020	<0.0010	<0.00020	<0.00020
	RP1	L1283154-5	26-Mar-13	42.2	44.4	<0.00010	<0.00010	103	<0.0020	<0.0010	<0.00020	<0.00020
	RP2	L1283154-6	26-Mar-13	42.6	43.9	<0.00010	<0.00010	105	<0.0020	<0.0010	<0.00020	<0.00020
			Mean	42.5	43.7	<0.00010	<0.00010	107	<0.0020	<0.0010	<0.00020	<0.00020
			SD	0.26	0.87	-	-	4.7	-	-	-	-
			PRSD	1	2	-	-	4	-	-	-	-
Dauphin River	DR1 (NOTE2)	L1316464-2	12-Jun-13	43.1	42.0	<0.00010	<0.00010	179	<0.0020	<0.0010	<0.00020	<0.00020
	RP1	L1316464-3	12-Jun-13	45.9	45.9	<0.00010	<0.00010	179	<0.0020	<0.0010	<0.00020	<0.00020
	RP2	L1316464-4	12-Jun-13	46.0	43.8	<0.00010	<0.00010	179	<0.0020	<0.0010	<0.00020	<0.00020
			Mean	45.0	43.9	<0.00010	<0.00010	179	<0.0020	<0.0010	<0.00020	<0.00020
			SD	1.65	1.95	-	-	0	-	-	-	-
			PRSD	4	4	-	-	0	-	-	-	-
Lake St. Martin	LSM1	L1336361-5	22-Jul-13	40.8	44.9	<0.00010	<0.00010	183	<0.0020	<0.0010	<0.00020	<0.00020
	RP1	L1336361-10	22-Jul-13	41.0	45.9	<0.00010	<0.00010	183	<0.0020	<0.0010	<0.00020	<0.00020
	RP2	L1336361-11	22-Jul-13	41.2	45.9	<0.00010	<0.00010	183	<0.0020	<0.0010	<0.00020	<0.00020
			Mean	41.0	45.6	<0.00010	<0.00010	183	<0.0020	<0.0010	<0.00020	<0.00020
			SD	0.20	0.58	-	-	0	-	-	-	-
			PRSD	0	1	-	-	0	-	-	-	-
Lake St. Martin	LSM 1	L1374688-10	7-Oct-13	39.8	46.2	<0.00010	<0.00010	187	<0.0020	<0.0010	<0.00020	<0.00020
	RP 1	L1374688-13	7-Oct-13	40.2	44.5	<0.00010	<0.00010	188	<0.0020	<0.0010	<0.00020	<0.00020
	RP 2	L1374688-14	7-Oct-13	40.0	45.3	<0.00010	<0.00010	188	<0.0020	<0.0010	<0.00020	<0.00020
			Mean	40.0	45.3	<0.00010	<0.00010	188	<0.0020	<0.0010	<0.00020	<0.00020
			SD	0.20	0.85	-	-	0.6	-	-	-	-
			PRSD	1	2	-	-	0	-	-	-	-

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Calcium		Cesium		Chloride	Chromium		Cobalt	
				Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW 4	L1441278-1	8-Apr-14	38.5	43.0	<0.00010	<0.00010	47.7	<0.0020	<0.0010	<0.00020	<0.00020
	RP 1	L1441278-3	8-Apr-14	38.6	41.4	<0.00010	<0.00010	47.7	<0.0020	<0.0010	<0.00020	<0.00020
	RP 2	L1441278-4	8-Apr-14	37.7	42.9	<0.00010	<0.00010	47.3	<0.0020	<0.0010	<0.00020	<0.00020
			Mean	38.3	42.4	<0.00010	<0.00010	47.6	<0.0020	<0.0010	<0.00020	<0.00020
			SD	0.49	0.90	-	-	0.23	-	-	-	-
			PRSD	1	2	-	-	0	-	-	-	-
Lake Winnipeg	LKW1	L1461949-5	28-May-14	35.0	39.2	<0.00010	<0.00010	105.0	<0.0020	<0.0010	<0.00020	<0.00020
	REP 1	L1461949-7	28-May-14	34.8	38.8	<0.00010	<0.00010	105.0	<0.0020	<0.0010	<0.00020	<0.00020
	REP 2	L1461949-8	28-May-14	35.0	39.1	<0.00010	<0.00010	105.0	<0.0020	<0.0010	<0.00020	<0.00020
			Mean	34.9	39.0	<0.00010	<0.00010	105.0	<0.0020	<0.0010	<0.00020	<0.00020
			SD	0.12	0.21	-	-	0.00	-	-	-	-
			PRSD	0	1	-	-	0	-	-	-	-
Buffalo Creek	BC3	L1474237-13	20-Jun-14	29.0	31.2	<0.00010	<0.00010	9.23	<0.0020	<0.0010	<0.00020	0.00026
	RP 1	L1474237-14	20-Jun-14	29.2	30.5	<0.00010	<0.00010	9.22	<0.0020	0.001	<0.00020	0.00029
	RP 2	L1474237-15	20-Jun-14	25.3	30.3	<0.00010	<0.00010	9.25	<0.0020	<0.0010	<0.00020	0.00026
			Mean	27.8	30.7	<0.00010	<0.00010	9.23	<0.0020	<0.0010	<0.00020	0.00027
			SD	2.20	0.47	-	-	0.015	-	-	-	0.000017
			PRSD	8	2	-	-	0	-	-	-	-
FIELD BLANKS												
	FBI	L1282620-6	25-Mar-13	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	FB1	L1316464-6	12-Jun-13	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	FB1	L1336361-8	22-Jul-13	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	FB 1	L1374688-15	7-Oct-13	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	FB1	L1442360-4	10-Apr-14	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	FB-1	L1461949-13	28-May-14	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	FB1	L1474237-18	20-Jun-14	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
TRIP BLANKS												
	TB1	L1283894-5	27-Mar-13	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	TB1	L1314453-5	10-Jun-13	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	TB1	L1336361-9	22-Jul-13	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	TB 1	L1374688-16	7-Oct-13	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	TB1	L1442360-5	10-Apr-14	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	TB-1	L1461949-14	28-May-14	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020
	TB1	L1474237-19	20-Jun-14	<0.050	<0.10	<0.00010	<0.00010	<0.20	<0.0020	<0.0010	<0.00020	<0.00020

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Copper		Fluoride	Iron		Lead		Lithium	
				Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical DL				*0.00020*	*0.00020*	*0.020*	*0.010*	*0.10/ 0.010*	*0.000090*	*0.000090*	*0.0020*	*0.0020*
5x DL				*0.0010*	*0.0010*	*0.10*	*0.050*	*0.50/ 0.050*	*0.00045*	*0.00045*	*0.010*	*0.010*
TRIPLICATE SAMPLES												
Lake Winnipeg	LKW3B	L1283154-4	26-Mar-13	0.00123	0.00131	0.135	<0.010	0.029	<0.000090	<0.000090	0.0226	0.0232
	RP1	L1283154-5	26-Mar-13	0.00148	0.00157	0.117	<0.010	0.042	<0.000090	<0.000090	0.0204	0.0225
	RP2	L1283154-6	26-Mar-13	0.00131	0.00151	0.133	<0.010	0.038	<0.000090	<0.000090	0.0217	0.0224
			Mean	0.00134	0.00146	0.128	<0.010	0.036	<0.000090	<0.000090	0.0216	0.0227
			SD	0.000128	0.000136	0.0099	-	0.0067	-	-	0.00111	0.00044
			PRSD	10	9	8	-	-	-	-	5	2
Dauphin River	DR1 (NOTE2)	L1316464-2	12-Jun-13	0.00037	0.00063	0.139	<0.010	0.064	<0.000090	0.000106	0.0291	0.0284
	RP1	L1316464-3	12-Jun-13	0.00053	0.00071	0.153	<0.010	0.068	<0.000090	0.000102	0.0298	0.0283
	RP2	L1316464-4	12-Jun-13	0.00043	0.00085	0.156	<0.010	0.070	<0.000090	0.000102	0.0311	0.0288
			Mean	0.00044	0.00073	0.149	<0.010	0.067	<0.000090	0.000103	0.0300	0.0285
			SD	0.000081	0.000111	0.0091	-	0.0031	-	0.0000023	0.00101	0.00026
			PRSD	-	-	6	-	5	-	2	3	1
Lake St. Martin	LSM1	L1336361-5	22-Jul-13	<0.00020	0.00037	0.141	<0.010	0.018	<0.000090	<0.000090	0.0319	0.0321
	RP1	L1336361-10	22-Jul-13	<0.00020	0.00043	0.162	<0.010	0.031	<0.000090	0.000094	0.0324	0.0320
	RP2	L1336361-11	22-Jul-13	<0.00020	0.00042	0.162	<0.010	0.023	<0.000090	<0.000090	0.0329	0.0314
			Mean	<0.00020	0.00041	0.155	<0.010	0.024	<0.000090	<0.000090	0.0324	0.0318
			SD	-	0.000032	0.0121	-	0.0066	-	-	0.00050	0.00038
			PRSD	-	-	8	-	-	-	-	2	1
Lake St. Martin	LSM 1	L1374688-10	7-Oct-13	0.00036	0.00066	0.136	<0.010	0.022	<0.000090	0.000177	0.0293	0.0303
	RP 1	L1374688-13	7-Oct-13	0.00031	0.00046	0.134	<0.010	0.022	<0.000090	0.000121	0.0294	0.0277
	RP 2	L1374688-14	7-Oct-13	0.00029	0.00038	0.133	<0.010	0.026	<0.000090	0.000166	0.0294	0.0281
			Mean	0.00032	0.00050	0.134	<0.010	0.023	<0.000090	0.000155	0.0294	0.0287
			SD	0.000036	0.000144	0.0015	-	0.0023	-	0.0000297	0.00006	0.00140
			PRSD	-	-	1	-	-	-	-	0	5

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Copper		Fluoride	Iron		Lead		Lithium	
				Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW 4	L1441278-1	8-Apr-14	0.00150	0.00164	0.123	<0.010	0.070	<0.000090	<0.000090	0.0152	0.0175
	RP 1	L1441278-3	8-Apr-14	0.00141	0.00196	0.121	<0.010	0.067	<0.000090	<0.000090	0.0151	0.0188
	RP 2	L1441278-4	8-Apr-14	0.00153	0.00182	0.126	<0.010	0.064	<0.000090	<0.000090	0.0149	0.0189
			Mean	0.00148	0.00181	0.123	<0.010	0.067	<0.000090	<0.000090	0.0151	0.0184
			SD	0.000062	0.000160	0.0025	-	0.0030	-	-	0.00015	0.00078
			PRSD	4	9	2	-	-	-	-	1	4
Lake Winnipeg	LKW1	L1461949-5	28-May-14	0.00064	0.00091	0.106	<0.010	0.15	<0.000090	0.000097	0.0206	0.0209
	REP 1	L1461949-7	28-May-14	0.00069	0.00086	0.106	<0.010	0.14	<0.000090	<0.000090	0.0204	0.0210
	REP 2	L1461949-8	28-May-14	0.00065	0.00084	0.106	<0.010	0.14	<0.000090	<0.000090	0.0207	0.0210
			Mean	0.00066	0.00087	0.106	<0.010	0.14	<0.000090	<0.000090	0.0206	0.0210
			SD	0.000026	0.000036	0.0000	-	0.006	-	-	0.00015	0.00006
			PRSD	-	4	-	-	-	-	-	1	0
Buffalo Creek	BC3	L1474237-13	20-Jun-14	0.00022	0.00390	0.063	0.022	0.45	<0.000090	0.000347	0.0065	0.0065
	RP 1	L1474237-14	20-Jun-14	0.00038	0.00067	0.063	0.020	0.45	<0.000090	0.000234	0.0066	0.0065
	RP 2	L1474237-15	20-Jun-14	0.00027	0.00065	0.063	0.023	0.48	<0.000090	0.000234	0.0058	0.0067
			Mean	0.00029	0.00174	0.063	0.022	0.46	<0.000090	0.000272	0.0063	0.0066
			SD	0.000082	0.00187	0.0000	0.0015	0.017	-	0.0000652	0.00044	0.00012
			PRSD	-	108	-	-	-	-	-	7	-
FIELD BLANKS												
	FBI	L1282620-6	25-Mar-13	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	FB1	L1316464-6	12-Jun-13	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	FB1	L1336361-8	22-Jul-13	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	FB 1	L1374688-15	7-Oct-13	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	FB1	L1442360-4	10-Apr-14	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	FB-1	L1461949-13	28-May-14	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	FB1	L1474237-18	20-Jun-14	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
TRIP BLANKS												
	TB1	L1283894-5	27-Mar-13	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	TB1	L1314453-5	10-Jun-13	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	TB1	L1336361-9	22-Jul-13	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	TB 1	L1374688-16	7-Oct-13	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	TB1	L1442360-5	10-Apr-14	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	TB-1	L1461949-14	28-May-14	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020
	TB1	L1474237-19	20-Jun-14	<0.00020	<0.00020	<0.020	<0.010	<0.010	<0.000090	<0.000090	<0.0020	<0.0020

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Magnesium		Manganese		Mercury (ng/L)		Methyl Mercury (ng/L)	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical DL				*0.010*	*0.010*	*0.00010*	*0.00030*	*1.0/25*	*1.0/5.0*	*0.050*	*0.050*
5x DL				*0.050*	*0.050*	*0.00050*	*0.00150*	*5.0/100*	*5.0/25*	*0.250*	*0.250*
TRIPLICATE SAMPLES											
Lake Winnipeg	LKW3B	L1283154-4	26-Mar-13	26.3	26.6	0.00064	0.00197	<1.0	1.4	<0.050	<0.050
	RP1	L1283154-5	26-Mar-13	25.7	27.2	0.00042	0.00140	<1.0	1.1	<0.050	<0.050
	RP2	L1283154-6	26-Mar-13	25.9	27.0	0.00043	0.00144	<1.0	<1.0	<0.050	<0.050
			Mean	26.0	26.9	0.00050	0.00160	<1.0	1.0	<0.050	<0.050
			SD	0.31	0.31	0.000124	0.000318	-	-	-	-
			PRSD	1	1	-	-	-	-	-	-
Dauphin River	DR1 (NOTE2)	L1316464-2	12-Jun-13	34.1	32.7	0.00019	0.00671	1.8	2.4	<0.050	0.051
	RP1	L1316464-3	12-Jun-13	35.2	33.0	0.00022	0.00665	1.6	1.3	<0.050	0.057
	RP2	L1316464-4	12-Jun-13	35.3	33.5	0.00020	0.00688	<1.0	1.1	<0.050	0.075
			Mean	34.9	33.1	0.00020	0.00675	1.3	1.6	<0.050	0.061
			SD	0.67	0.40	0.000015	0.000119	0.7	0.7	-	0.0125
			PRSD	2	1	-	2	-	-	-	20
Lake St. Martin	LSM1	L1336361-5	22-Jul-13	34	33.7	<0.00010	0.00654	2.0	<1.0	<0.050	<0.050
	RP1	L1336361-10	22-Jul-13	33.4	34.1	0.00309	0.00646	<1.0	<1.0	<0.050	<0.050
	RP2	L1336361-11	22-Jul-13	34.2	35.5	<0.00010	0.00650	<1.0	<1.0	<0.050	<0.050
			Mean	33.9	34.4	0.00106	0.00650	<1.0	<1.0	<0.050	<0.050
			SD	0.42	0.95	-	0.000040	-	-	-	-
			PRSD	1	3	-	1	-	-	-	-
Lake St. Martin	LSM 1	L1374688-10	7-Oct-13	27.7	37.5	0.00012	0.00621	<1.0	1.3	<0.050	0.051
	RP 1	L1374688-13	7-Oct-13	27.4	30.6	0.00015	0.00579	<1.0	<1.0	<0.050	<0.050
	RP 2	L1374688-14	7-Oct-13	27.1	30.9	0.00012	0.00578	<1.0	1.3	<0.050	<0.050
			Mean	27.4	33.0	0.00013	0.00593	<1.0	1.0	<0.050	<0.050
			SD	0.30	3.90	0.000017	0.000245	-	-	-	-
			PRSD	1	12	-	4	-	-	-	-

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Magnesium		Manganese		Mercury (ng/L)		Methyl Mercury (ng/L)	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW 4	L1441278-1	8-Apr-14	18.7	21.5	0.00037	0.00150	2.2	2.8	<0.050	<0.050
	RP 1	L1441278-3	8-Apr-14	19.7	22.1	0.00034	0.00142	2.8	3.9	<0.050	<0.050
	RP 2	L1441278-4	8-Apr-14	19.3	20.8	0.00029	0.00132	2.3	2.3	<0.050	<0.050
			Mean	19.2	21.5	0.00033	0.00141	2.4	3.0	<0.050	<0.050
			SD	0.50	0.65	0.000040	0.000090	0.32	0.82	-	-
			PRSD	3	3	-	-	-	-	-	-
Lake Winnipeg	LKW1	L1461949-5	28-May-14	23.7	25.4	0.00032	0.00570	<1.0	<1.0	<0.050	<0.050
	REP 1	L1461949-7	28-May-14	23.9	24.9	0.00028	0.00571	<1.0	1.5	<0.050	<0.050
	REP 2	L1461949-8	28-May-14	23.8	25.8	0.00030	0.00569	<1.0	<1.0	<0.050	<0.050
			Mean	23.8	25.4	0.00030	0.00570	<1.0	<1.0	<0.050	<0.050
			SD	0.10	0.45	0.000020	0.000010	-	-	-	-
			PRSD	0	2	-	0	-	-	-	-
Buffalo Creek	BC3	L1474237-13	20-Jun-14	15.9	17.9	0.00510	0.0347	1.2	2.2	0.151	0.175
	RP 1	L1474237-14	20-Jun-14	19.2	19.7	0.00617	0.0379	1.2	4.2	0.094	0.167
	RP 2	L1474237-15	20-Jun-14	16.2	17.5	0.00521	0.0351	1.2	2.5	0.131	0.176
			Mean	17.1	18.4	0.00549	0.0359	1.2	3.0	0.125	0.173
			SD	1.82	1.17	0.000589	0.00174	0.00	1.08	0.0289	0.0049
			PRSD	11	6	11	5	-	-	-	-
FIELD BLANKS											
	FBI	L1282620-6	25-Mar-13	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
	FB1	L1316464-6	12-Jun-13	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
	FB1	L1336361-8	22-Jul-13	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
	FB 1	L1374688-15	7-Oct-13	<0.010	<0.010	-	<0.00030	<1.0	<1.0	<0.050	<0.050
	FB1	L1442360-4	10-Apr-14	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
	FB-1	L1461949-13	28-May-14	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
	FB1	L1474237-18	20-Jun-14	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
TRIP BLANKS											
	TB1	L1283894-5	27-Mar-13	<0.010	<0.010	<0.00010	<0.00030	<25	<5.0	<0.050	<0.050
	TB1	L1314453-5	10-Jun-13	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
	TB1	L1336361-9	22-Jul-13	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
	TB 1	L1374688-16	7-Oct-13	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
	TB1	L1442360-5	10-Apr-14	<0.010	<0.010	<0.00010	<0.00030	<1.0	1.4	<0.050	<0.050
	TB-1	L1461949-14	28-May-14	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
	TB1	L1474237-19	20-Jun-14	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Molybdenum		Nickel		Potassium		Rubidium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical DL				*0.00010*	*0.00020*	*0.0010*	*0.0020*	*0.020*	*0.020*	*0.00020*	*0.00020*
5x DL				*0.00050*	*0.0010*	*0.0050*	*0.010*	*0.10*	*0.10*	*0.0010*	*0.0010*
TRIPLICATE SAMPLES											
Lake Winnipeg	LKW3B	L1283154-4	26-Mar-13	0.00146	0.00156	<0.0010	<0.0020	6.49	6.99	0.00276	0.00285
	RP1	L1283154-5	26-Mar-13	0.00160	0.00160	<0.0010	<0.0020	6.20	6.82	0.00260	0.00281
	RP2	L1283154-6	26-Mar-13	0.00152	0.00154	<0.0010	<0.0020	6.25	6.82	0.00260	0.00273
			Mean	0.00153	0.00157	<0.0010	<0.0020	6.31	6.88	0.00265	0.00280
			SD	0.000070	0.000031	-	-	0.155	0.098	0.000092	0.000061
			PRSD	5	2	-	-	2	1	3	2
Dauphin River	DR1 (NOTE2)	L1316464-2	12-Jun-13	0.00185	0.00176	<0.0010	<0.0020	7.97	8.30	0.00343	0.00341
	RP1	L1316464-3	12-Jun-13	0.00190	0.00173	<0.0010	<0.0020	8.22	8.30	0.00350	0.00347
	RP2	L1316464-4	12-Jun-13	0.00174	0.00180	<0.0010	<0.0020	7.97	8.56	0.00335	0.00350
			Mean	0.00183	0.00176	<0.0010	<0.0020	8.05	8.39	0.00343	0.00346
			SD	0.000082	0.000035	-	-	0.144	0.150	0.000075	0.000046
			PRSD	4	2	-	-	2	2	2	1
Lake St. Martin	LSM1	L1336361-5	22-Jul-13	0.00164	0.00170	<0.0010	<0.0020	8.88	9.30	0.00351	0.00351
	RP1	L1336361-10	22-Jul-13	0.00167	0.00172	<0.0010	<0.0020	8.71	9.65	0.00350	0.00357
	RP2	L1336361-11	22-Jul-13	0.00168	0.00180	<0.0010	<0.0020	8.81	9.65	0.00358	0.00368
			Mean	0.00166	0.00174	<0.0010	<0.0020	8.80	9.53	0.00353	0.00359
			SD	0.000021	0.000053	-	-	0.085	0.202	0.000044	0.000086
			PRSD	1	3	-	-	1	2	1	2
Lake St. Martin	LSM 1	L1374688-10	7-Oct-13	0.00163	0.00191	<0.0010	<0.0020	8.22	9.70	0.00359	0.00384
	RP 1	L1374688-13	7-Oct-13	0.00156	0.00205	<0.0010	<0.0020	8.16	9.51	0.00357	0.00389
	RP 2	L1374688-14	7-Oct-13	0.00159	0.00184	<0.0010	<0.0020	8.14	9.61	0.00352	0.00389
			Mean	0.00159	0.00193	<0.0010	<0.0020	8.17	9.61	0.00356	0.00387
			SD	0.000035	0.000107	-	-	0.042	0.095	0.000036	0.000029
			PRSD	2	6	-	-	1	1	1	1

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Molybdenum		Nickel		Potassium		Rubidium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW 4	L1441278-1	8-Apr-14	0.00109	0.00117	<0.0010	<0.0020	4.37	4.61	0.00179	0.00203
	RP 1	L1441278-3	8-Apr-14	0.00109	0.00118	<0.0010	<0.0020	4.39	4.84	0.00188	0.00207
	RP 2	L1441278-4	8-Apr-14	0.00106	0.00123	<0.0010	<0.0020	4.39	4.68	0.00171	0.00205
			Mean	0.00108	0.00119	<0.0010	<0.0020	4.38	4.71	0.00179	0.00205
			SD	0.000017	0.000032	-	-	0.012	0.118	0.000085	0.000020
			PRSD	2	3	-	-	0	3	5	1
Lake Winnipeg	LKW1	L1461949-5	28-May-14	0.00116	0.00123	<0.0010	<0.0020	5.30	6.05	0.00244	0.00278
	REP 1	L1461949-7	28-May-14	0.00123	0.00121	<0.0010	<0.0020	5.35	6.02	0.00244	0.00268
	REP 2	L1461949-8	28-May-14	0.00119	0.00120	<0.0010	<0.0020	5.29	6.11	0.00246	0.00277
			Mean	0.00119	0.00121	<0.0010	<0.0020	5.31	6.06	0.00245	0.00274
			SD	0.000035	0.000015	-	-	0.032	0.046	0.000012	0.000055
			PRSD	3	1	-	-	1	1	0	2
Buffalo Creek	BC3	L1474237-13	20-Jun-14	0.00030	0.00033	<0.0010	<0.0020	0.87	1.11	0.00096	0.00208
	RP 1	L1474237-14	20-Jun-14	0.00030	0.00033	<0.0010	<0.0020	1.08	1.21	0.00127	0.00236
	RP 2	L1474237-15	20-Jun-14	0.00028	0.00034	<0.0010	<0.0020	0.90	1.10	0.00095	0.00235
			Mean	0.00029	0.00033	<0.0010	<0.0020	0.95	1.14	0.00106	0.00226
			SD	0.000012	0.000006	-	-	0.114	0.061	0.000182	0.000159
			PRSD	-	-	-	-	12	5	17	7
FIELD BLANKS											
	FBI	L1282620-6	25-Mar-13	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	FB1	L1316464-6	12-Jun-13	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	FB1	L1336361-8	22-Jul-13	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	FB 1	L1374688-15	7-Oct-13	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	FB1	L1442360-4	10-Apr-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	FB-1	L1461949-13	28-May-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	FB1	L1474237-18	20-Jun-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
TRIP BLANKS											
	TB1	L1283894-5	27-Mar-13	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	TB1	L1314453-5	10-Jun-13	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	TB1	L1336361-9	22-Jul-13	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	TB 1	L1374688-16	7-Oct-13	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	TB1	L1442360-5	10-Apr-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	TB-1	L1461949-14	28-May-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020
	TB1	L1474237-19	20-Jun-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Selenium		Silicon		Silver		Sodium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical DL				*0.0010*	*0.0010*	*0.050/0.10*	*0.050/0.10*	*0.00010*	*0.00010*	*0.020/2.0*	*0.030/0.30/3.0*
5x DL				*0.0050*	*0.0050*	*0.25/0.50*	*0.25/0.50*	*0.00050*	*0.00050*	*0.10/10.0*	*0.150/1.50/15.0*
TRIPLICATE SAMPLES											
Lake Winnipeg	LKW3B	L1283154-4	26-Mar-13	<0.0010	<0.0010	2.78	2.80	<0.00010	<0.00010	85.3	77.4
	RP1	L1283154-5	26-Mar-13	<0.0010	<0.0010	2.43	2.59	<0.00010	<0.00010	76.9	73.7
	RP2	L1283154-6	26-Mar-13	<0.0010	<0.0010	2.40	2.54	<0.00010	<0.00010	76.5	70.7
			Mean	<0.0010	<0.0010	2.54	2.64	<0.00010	<0.00010	79.6	73.9
			SD	-	-	0.211	0.138	-	-	4.97	3.36
			PRSD	-	-	8	5	-	-	6	5
Dauphin River	DR1 (NOTE2)	L1316464-2	12-Jun-13	<0.0010	<0.0010	2.89	3.16	<0.00010	<0.00010	113	127
	RP1	L1316464-3	12-Jun-13	<0.0010	<0.0010	3.23	2.88	<0.00010	<0.00010	114	119
	RP2	L1316464-4	12-Jun-13	<0.0010	<0.0010	3.22	2.85	<0.00010	<0.00010	114	120
			Mean	<0.0010	<0.0010	3.11	2.96	<0.00010	<0.00010	114	122
			SD	-	-	0.193	0.171	-	-	0.6	4.4
			PRSD	-	-	6	6	-	-	1	4
Lake St. Martin	LSM1	L1336361-5	22-Jul-13	<0.0010	<0.0010	3.95	4.41	<0.00010	<0.00010	120	135
	RP1	L1336361-10	22-Jul-13	<0.0010	<0.0010	3.89	4.42	<0.00010	<0.00010	122	138
	RP2	L1336361-11	22-Jul-13	<0.0010	<0.0010	3.94	4.35	<0.00010	<0.00010	124	124
			Mean	<0.0010	<0.0010	3.93	4.39	<0.00010	<0.00010	122	132
			SD	-	-	0.032	0.038	-	-	2.0	7.4
			PRSD	-	-	1	1	-	-	2	6
Lake St. Martin	LSM 1	L1374688-10	7-Oct-13	<0.0010	<0.0010	4.79	5.68	<0.00010	<0.00010	115	126
	RP 1	L1374688-13	7-Oct-13	<0.0010	<0.0010	4.76	5.04	<0.00010	<0.00010	114	119
	RP 2	L1374688-14	7-Oct-13	<0.0010	<0.0010	4.74	5.18	<0.00010	<0.00010	116	119
			Mean	<0.0010	<0.0010	4.76	5.30	<0.00010	<0.00010	115	121
			SD	-	-	0.025	0.336	-	-	1.0	4.0
			PRSD	-	-	1	6	-	-	1	3

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Selenium		Silicon		Silver		Sodium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW 4	L1441278-1	8-Apr-14	<0.0010	<0.0010	0.61	1.12	<0.00010	<0.00010	42.1	41.0
	RP 1	L1441278-3	8-Apr-14	<0.0010	<0.0010	0.60	1.10	<0.00010	<0.00010	43.0	42.9
	RP 2	L1441278-4	8-Apr-14	<0.0010	<0.0010	0.61	1.03	<0.00010	<0.00010	42.6	40.0
			Mean	<0.0010	<0.0010	0.61	1.08	<0.00010	<0.00010	42.6	41.3
			SD	-	-	0.006	0.047	-	-	0.45	1.47
			PRSD	-	-	1	4	-	-	1	4
Lake Winnipeg	LKW1	L1461949-5	28-May-14	<0.0010	<0.0010	2.71	3.44	<0.00010	<0.00010	68.9	71.4
	REP 1	L1461949-7	28-May-14	<0.0010	<0.0010	2.71	3.20	<0.00010	<0.00010	71.0	65.4
	REP 2	L1461949-8	28-May-14	<0.0010	<0.0010	2.65	3.16	<0.00010	<0.00010	68.7	68.9
			Mean	<0.0010	<0.0010	2.69	3.27	<0.00010	<0.00010	69.5	68.6
			SD	-	-	0.035	0.151	-	-	1.27	3.01
			PRSD	-	-	1	5	-	-	2	4
Buffalo Creek	BC3	L1474237-13	20-Jun-14	<0.0010	<0.0010	5.07	4.95	<0.00010	<0.00010	11.2	11.9
	RP 1	L1474237-14	20-Jun-14	<0.0010	<0.0010	3.77	4.83	<0.00010	<0.00010	13.8	13.4
	RP 2	L1474237-15	20-Jun-14	<0.0010	<0.0010	4.17	5.07	<0.00010	<0.00010	11.4	12.1
			Mean	<0.0010	<0.0010	4.34	4.95	<0.00010	<0.00010	12.1	12.5
			SD	-	-	0.666	0.120	-	-	1.45	0.81
			PRSD	-	-	15	2	-	-	12	7
FIELD BLANKS											
	FBI	L1282620-6	25-Mar-13	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010	<0.020	<0.030
	FB1	L1316464-6	12-Jun-13	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010	<0.020	<0.030
	FB1	L1336361-8	22-Jul-13	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010	<0.020	<0.030
	FB 1	L1374688-15	7-Oct-13	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010	<0.020	<0.030
	FB1	L1442360-4	10-Apr-14	<0.0010	<0.0010	<0.10	<0.10	<0.00010	<0.00010	<0.020	<0.030
	FB-1	L1461949-13	28-May-14	<0.0010	<0.0010	<0.10	<0.10	<0.00010	<0.00010	<0.020	<0.030
	FB1	L1474237-18	20-Jun-14	<0.0010	<0.0010	<0.10	<0.10	<0.00010	<0.00010	<0.020	<0.030
TRIP BLANKS											
	TB1	L1283894-5	27-Mar-13	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010	<0.020	<0.030
	TB1	L1314453-5	10-Jun-13	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010	<0.020	<0.030
	TB1	L1336361-9	22-Jul-13	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010	<0.020	<0.030
	TB 1	L1374688-16	7-Oct-13	<0.0010	<0.0010	<0.050	<0.050	<0.00010	<0.00010	<0.020	<0.030
	TB1	L1442360-5	10-Apr-14	<0.0010	<0.0010	<0.10	<0.10	<0.00010	<0.00010	<0.020	<0.030
	TB-1	L1461949-14	28-May-14	<0.0010	<0.0010	<0.10	<0.10	<0.00010	<0.00010	<0.020	<0.030
	TB1	L1474237-19	20-Jun-14	<0.0010	<0.0010	<0.10	<0.10	<0.00010	<0.00010	<0.020	<0.030

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Strontium		Sulphate	Tellurium		Thallium	
				Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
Analytical DL				*0.00010*	*0.00010*	*0.50*	*0.00020*	*0.00020*	*0.00010*	*0.00010*
5x DL				*0.00050*	*0.00050*	*2.50*	*0.0010*	*0.0010*	*0.00050*	*0.00050*
TRIPLICATE SAMPLES										
Lake Winnipeg	LKW3B	L1283154-4	26-Mar-13	0.226	0.224	68.2	<0.00020	<0.00020	<0.00010	<0.00010
	RP1	L1283154-5	26-Mar-13	0.218	0.229	66.9	<0.00020	<0.00020	<0.00010	<0.00010
	RP2	L1283154-6	26-Mar-13	0.214	0.224	67.5	<0.00020	<0.00020	<0.00010	<0.00010
			Mean	0.219	0.226	67.5	<0.00020	<0.00020	<0.00010	<0.00010
			SD	0.0061	0.0029	0.65	-	-	-	-
			PRSD	3	1	1	-	-	-	-
Dauphin River	DR1 (NOTE2)	L1316464-2	12-Jun-13	0.240	0.238	73.7	<0.00020	<0.00020	<0.00010	<0.00010
	RP1	L1316464-3	12-Jun-13	0.244	0.240	73.8	<0.00020	<0.00020	<0.00010	<0.00010
	RP2	L1316464-4	12-Jun-13	0.236	0.242	73.9	<0.00020	<0.00020	<0.00010	<0.00010
			Mean	0.240	0.240	73.8	<0.00020	<0.00020	<0.00010	<0.00010
			SD	0.0040	0.0020	0.1	-	-	-	-
			PRSD	2	1	0	-	-	-	-
Lake St. Martin	LSM1	L1336361-5	22-Jul-13	0.257	0.267	81.1	<0.00020	<0.00020	<0.00010	<0.00010
	RP1	L1336361-10	22-Jul-13	0.254	0.252	81.1	<0.00020	<0.00020	<0.00010	<0.00010
	RP2	L1336361-11	22-Jul-13	0.260	0.275	81.1	<0.00020	<0.00020	<0.00010	<0.00010
			Mean	0.257	0.265	81.1	<0.00020	<0.00020	<0.00010	<0.00010
			SD	0.0030	0.0117	0.0	-	-	-	-
			PRSD	1	4	0	-	-	-	-
Lake St. Martin	LSM 1	L1374688-10	7-Oct-13	0.238	0.267	71.5	<0.00020	<0.00020	<0.00010	<0.00010
	RP 1	L1374688-13	7-Oct-13	0.234	0.267	72.1	<0.00020	<0.00020	<0.00010	<0.00010
	RP 2	L1374688-14	7-Oct-13	0.231	0.268	72.3	<0.00020	<0.00020	<0.00010	<0.00010
			Mean	0.234	0.267	72.0	<0.00020	<0.00020	<0.00010	<0.00010
			SD	0.0035	0.0006	0.42	-	-	-	-
			PRSD	1	0	1	-	-	-	-

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Strontium		Sulphate	Tellurium		Thallium	
				Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW 4	L1441278-1	8-Apr-14	0.190	0.189	56.9	<0.00020	<0.00020	<0.00010	<0.00010
	RP 1	L1441278-3	8-Apr-14	0.189	0.180	56.7	<0.00020	<0.00020	<0.00010	<0.00010
	RP 2	L1441278-4	8-Apr-14	0.182	0.193	56.4	<0.00020	<0.00020	<0.00010	<0.00010
			Mean	0.187	0.187	56.7	<0.00020	<0.00020	<0.00010	<0.00010
			SD	0.0044	0.0067	0.25	-	-	-	-
			PRSD	2	4	0	-	-	-	-
Lake Winnipeg	LKW1	L1461949-5	28-May-14	0.182	0.188	53.2	<0.00020	<0.00020	<0.00010	<0.00010
	REP 1	L1461949-7	28-May-14	0.187	0.184	53.1	<0.00020	<0.00020	<0.00010	<0.00010
	REP 2	L1461949-8	28-May-14	0.184	0.192	53.2	<0.00020	<0.00020	<0.00010	<0.00010
			Mean	0.184	0.188	53.2	<0.00020	<0.00020	<0.00010	<0.00010
			SD	0.0025	0.0040	0.06	-	-	-	-
			PRSD	1	2	0	-	-	-	-
Buffalo Creek	BC3	L1474237-13	20-Jun-14	0.0741	0.0770	5.10	<0.00020	<0.00020	<0.00010	<0.00010
	RP 1	L1474237-14	20-Jun-14	0.0822	0.0772	5.09	<0.00020	<0.00020	<0.00010	<0.00010
	RP 2	L1474237-15	20-Jun-14	0.0669	0.0760	5.10	<0.00020	<0.00020	<0.00010	<0.00010
			Mean	0.0744	0.0767	5.10	<0.00020	<0.00020	<0.00010	<0.00010
			SD	0.00765	0.00064	0.006	-	-	-	-
			PRSD	10	1	0	-	-	-	-
FIELD BLANKS										
	FBI	L1282620-6	25-Mar-13	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	FB1	L1316464-6	12-Jun-13	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	FB1	L1336361-8	22-Jul-13	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	FB 1	L1374688-15	7-Oct-13	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	FB1	L1442360-4	10-Apr-14	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	FB-1	L1461949-13	28-May-14	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	FB1	L1474237-18	20-Jun-14	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
TRIP BLANKS										
	TB1	L1283894-5	27-Mar-13	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	TB1	L1314453-5	10-Jun-13	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	TB1	L1336361-9	22-Jul-13	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	TB 1	L1374688-16	7-Oct-13	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	TB1	L1442360-5	10-Apr-14	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	TB-1	L1461949-14	28-May-14	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
	TB1	L1474237-19	20-Jun-14	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Thorium		Tin		Titanium		Tungsten	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical DL				*0.00010*	*0.00010*	*0.00020*	*0.00020*	*0.00050*	*0.00050*	*0.00010*	*0.00010*
5x DL				*0.00050*	*0.00050*	*0.0010*	*0.0010*	*0.00250*	*0.00250*	*0.00050*	*0.00050*
TRIPLICATE SAMPLES											
Lake Winnipeg	LKW3B	L1283154-4	26-Mar-13	<0.00010	<0.00010	<0.00020	<0.00020	0.00147	0.00371	<0.00010	<0.00010
	RP1	L1283154-5	26-Mar-13	<0.00010	<0.00010	<0.00020	<0.00020	0.00149	0.00396	<0.00010	<0.00010
	RP2	L1283154-6	26-Mar-13	<0.00010	<0.00010	<0.00020	<0.00020	0.00151	0.00358	<0.00010	<0.00010
			Mean	<0.00010	<0.00010	<0.00020	<0.00020	0.00149	0.00375	<0.00010	<0.00010
			SD	-	-	-	-	0.000020	0.000193	-	-
			PRSD	-	-	-	-	-	5	-	-
Dauphin River	DR1 (NOTE2)	L1316464-2	12-Jun-13	<0.00010	<0.00010	<0.00020	<0.00020	0.00111	0.00363	<0.00010	<0.00010
	RP1	L1316464-3	12-Jun-13	<0.00010	<0.00010	<0.00020	<0.00020	0.00137	0.00332	<0.00010	<0.00010
	RP2	L1316464-4	12-Jun-13	<0.00010	<0.00010	<0.00020	<0.00020	0.00137	0.00412	<0.00010	<0.00010
			Mean	<0.00010	<0.00010	<0.00020	<0.00020	0.00128	0.00369	<0.00010	<0.00010
			SD	-	-	-	-	0.000150	0.000403	-	-
			PRSD	-	-	-	-	-	11	-	-
Lake St. Martin	LSM1	L1336361-5	22-Jul-13	<0.00010	<0.00010	<0.00020	0.00084	0.00135	0.00230	<0.00010	<0.00010
	RP1	L1336361-10	22-Jul-13	<0.00010	<0.00010	<0.00020	0.00079	0.00146	0.00222	<0.00010	<0.00010
	RP2	L1336361-11	22-Jul-13	<0.00010	<0.00010	<0.00020	<0.00020	0.00123	0.00267	<0.00010	<0.00010
			Mean	<0.00010	<0.00010	<0.00020	0.00058	0.00135	0.00240	<0.00010	<0.00010
			SD	-	-	-	0.000414	0.000115	0.000240	-	-
			PRSD	-	-	-	-	-	-	-	-
Lake St. Martin	LSM 1	L1374688-10	7-Oct-13	<0.00010	<0.00010	<0.00020	<0.00020	0.00156	0.00301	<0.00010	<0.00010
	RP 1	L1374688-13	7-Oct-13	<0.00010	<0.00010	<0.00020	<0.00020	0.00155	0.00200	<0.00010	<0.00010
	RP 2	L1374688-14	7-Oct-13	<0.00010	<0.00010	<0.00020	<0.00020	0.00144	0.00230	<0.00010	<0.00010
			Mean	<0.00010	<0.00010	<0.00020	<0.00020	0.00152	0.00244	<0.00010	<0.00010
			SD	-	-	-	-	0.000067	0.000519	-	-
			PRSD	-	-	-	-	-	-	-	-

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Thorium		Tin		Titanium		Tungsten	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW 4	L1441278-1	8-Apr-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00378	<0.00010	<0.00010
	RP 1	L1441278-3	8-Apr-14	<0.00010	<0.00010	<0.00020	<0.00020	0.00067	0.00415	<0.00010	<0.00010
	RP 2	L1441278-4	8-Apr-14	<0.00010	<0.00010	<0.00020	<0.00020	0.00065	0.00370	<0.00010	<0.00010
			Mean	<0.00010	<0.00010	<0.00020	<0.00020	0.00066	0.00388	<0.00010	<0.00010
			SD	-	-	-	-	0.000014	0.000240	-	-
			PRSD	-	-	-	-	-	6	-	-
Lake Winnipeg	LKW1	L1461949-5	28-May-14	<0.00010	<0.00010	<0.00020	<0.00020	0.00092	0.00789	<0.00010	<0.00010
	REP 1	L1461949-7	28-May-14	<0.00010	<0.00010	<0.00020	<0.00020	0.00099	0.00748	<0.00010	<0.00010
	REP 2	L1461949-8	28-May-14	<0.00010	<0.00010	<0.00020	<0.00020	0.00109	0.00743	<0.00010	<0.00010
			Mean	<0.00010	<0.00010	<0.00020	<0.00020	0.00100	0.00760	<0.00010	<0.00010
			SD	-	-	-	-	0.000085	0.000252	-	-
			PRSD	-	-	-	-	9	3	-	-
Buffalo Creek	BC3	L1474237-13	20-Jun-14	<0.00010	0.00014	<0.00020	<0.00020	0.00060	0.0212	<0.00010	<0.00010
	RP 1	L1474237-14	20-Jun-14	<0.00010	0.00015	<0.00020	<0.00020	<0.00050	0.0211	<0.00010	<0.00010
	RP 2	L1474237-15	20-Jun-14	<0.00010	0.00016	<0.00020	<0.00020	<0.00050	0.0242	<0.00010	<0.00010
			Mean	<0.00010	0.00015	<0.00020	<0.00020	<0.00050	0.0222	<0.00010	<0.00010
			SD	-	0.000010	-	-	-	0.00176	-	-
			PRSD	-	-	-	-	-	8	-	-
FIELD BLANKS											
	FBI	L1282620-6	25-Mar-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	FB1	L1316464-6	12-Jun-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	FB1	L1336361-8	22-Jul-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	FB 1	L1374688-15	7-Oct-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	FB1	L1442360-4	10-Apr-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	FB-1	L1461949-13	28-May-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	FB1	L1474237-18	20-Jun-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
TRIP BLANKS											
	TB1	L1283894-5	27-Mar-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	TB1	L1314453-5	10-Jun-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	TB1	L1336361-9	22-Jul-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	TB 1	L1374688-16	7-Oct-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	TB1	L1442360-5	10-Apr-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	TB-1	L1461949-14	28-May-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
	TB1	L1474237-19	20-Jun-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Uranium		Vanadium		Zinc		Zirconium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical DL				*0.00010*	*0.00010*	*0.00020*	*0.00020*	*0.0020*	*0.0020*	*0.00040*	*0.00040*
5x DL				*0.00050*	*0.00050*	*0.0010*	*0.0010*	*0.010*	*0.010*	*0.0020*	*0.0020*
TRIPLICATE SAMPLES											
Lake Winnipeg	LKW3B	L1283154-4	26-Mar-13	0.00131	0.00138	0.00131	0.00145	<0.0020	<0.0020	<0.00040	<0.00040
	RP1	L1283154-5	26-Mar-13	0.00129	0.00139	0.00138	0.00157	<0.0020	<0.0020	<0.00040	<0.00040
	RP2	L1283154-6	26-Mar-13	0.00132	0.00138	0.00141	0.00157	<0.0020	<0.0020	<0.00040	<0.00040
			Mean	0.00131	0.00138	0.00137	0.00153	<0.0020	<0.0020	<0.00040	<0.00040
			SD	0.000015	0.000006	0.000051	0.000069	-	-	-	-
			PRSD	1	0	4	5	-	-	-	-
Dauphin River	DR1 (NOTE2)	L1316464-2	12-Jun-13	0.00135	0.00138	0.00103	0.00122	<0.0020	<0.0020	<0.00040	0.0008
	RP1	L1316464-3	12-Jun-13	0.00143	0.00129	0.00145	0.00119	<0.0020	<0.0020	<0.00040	<0.00040
	RP2	L1316464-4	12-Jun-13	0.00138	0.00138	0.00133	0.00131	<0.0020	<0.0020	<0.00040	<0.00040
			Mean	0.00139	0.00135	0.00127	0.00124	<0.0020	<0.0020	<0.00040	0.00040
			SD	0.000040	0.000052	0.000216	0.000062	-	-	-	-
			PRSD	3	4	17	5	-	-	-	-
Lake St. Martin	LSM1	L1336361-5	22-Jul-13	0.00143	0.00138	0.00113	0.00119	<0.0020	<0.0020	<0.00040	<0.00040
	RP1	L1336361-10	22-Jul-13	0.00132	0.00136	0.00113	0.00121	<0.0020	<0.0020	<0.00040	<0.00040
	RP2	L1336361-11	22-Jul-13	0.00143	0.00149	0.00114	0.00121	<0.0020	<0.0020	<0.00040	<0.00040
			Mean	0.00139	0.00141	0.00113	0.00120	<0.0020	<0.0020	<0.00040	<0.00040
			SD	0.000064	0.000070	0.000006	0.000012	-	-	-	-
			PRSD	5	5	1	1	-	-	-	-
Lake St. Martin	LSM 1	L1374688-10	7-Oct-13	0.00131	0.00123	0.00131	0.00148	<0.0020	<0.0020	<0.00040	<0.00040
	RP 1	L1374688-13	7-Oct-13	0.00135	0.00133	0.00133	0.00136	<0.0020	<0.0020	<0.00040	<0.00040
	RP 2	L1374688-14	7-Oct-13	0.00131	0.00131	0.00132	0.00139	<0.0020	<0.0020	<0.00040	<0.00040
			Mean	0.00132	0.00129	0.00132	0.00141	<0.0020	<0.0020	<0.00040	<0.00040
			SD	0.000023	0.000053	0.000010	0.000062	-	-	-	-
			PRSD	2	4	1	4	-	-	-	-

Table E-3. Continued.

Sample Location	Sample ID	ALS ID	Sample Date	Uranium		Vanadium		Zinc		Zirconium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Lake Winnipeg	LKW 4	L1441278-1	8-Apr-14	0.00115	0.00117	0.00080	0.00106	<0.0020	<0.0020	<0.00040	<0.00040
	RP 1	L1441278-3	8-Apr-14	0.00114	0.00118	0.00083	0.00102	<0.0020	<0.0020	<0.00040	<0.00040
	RP 2	L1441278-4	8-Apr-14	0.00116	0.00119	0.00080	0.00101	<0.0020	<0.0020	<0.00040	<0.00040
			Mean	0.00115	0.00118	0.00081	0.00103	<0.0020	<0.0020	<0.00040	<0.00040
			SD	0.000010	0.000010	0.000017	0.000026	-	-	-	-
			PRSD	1	1	-	3	-	-	-	-
Lake Winnipeg	LKW1	L1461949-5	28-May-14	0.00105	0.00104	0.00070	0.00109	<0.0020	<0.0020	<0.00040	<0.00040
	REP 1	L1461949-7	28-May-14	0.00108	0.00101	0.00075	0.00119	<0.0020	<0.0020	<0.00040	<0.00040
	REP 2	L1461949-8	28-May-14	0.00108	0.00104	0.00078	0.00109	<0.0020	<0.0020	<0.00040	<0.00040
			Mean	0.00107	0.00103	0.00074	0.00112	<0.0020	<0.0020	<0.00040	<0.00040
			SD	0.000017	0.000017	0.000040	0.000058	-	-	-	-
			PRSD	2	2	5	5	-	-	-	-
Buffalo Creek	BC3	L1474237-13	20-Jun-14	0.00014	0.00019	0.00051	0.00131	<0.0020	0.0048	<0.00040	<0.00040
	RP 1	L1474237-14	20-Jun-14	0.00015	0.00020	0.00063	0.00152	<0.0020	0.0034	<0.00040	<0.00040
	RP 2	L1474237-15	20-Jun-14	0.00014	0.00019	0.00055	0.00143	<0.0020	0.0032	<0.00040	0.00042
			Mean	0.00014	0.00019	0.00056	0.00142	<0.0020	0.0038	<0.00040	<0.00040
			SD	0.000006	0.000006	0.000061	0.000105	-	0.00087	-	-
			PRSD	-	-	11	7	-	-	-	-
FIELD BLANKS											
	FBI	L1282620-6	25-Mar-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	FB1	L1316464-6	12-Jun-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	FB1	L1336361-8	22-Jul-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	FB 1	L1374688-15	7-Oct-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	FB1	L1442360-4	10-Apr-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	FB-1	L1461949-13	28-May-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	FB1	L1474237-18	20-Jun-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
TRIP BLANKS											
	TB1	L1283894-5	27-Mar-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	TB1	L1314453-5	10-Jun-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	TB1	L1336361-9	22-Jul-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	TB 1	L1374688-16	7-Oct-13	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	TB1	L1442360-5	10-Apr-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	TB-1	L1461949-14	28-May-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
	TB1	L1474237-19	20-Jun-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040

Table E-4. *In situ* water quality measurements recorded as part of the RWQMP, March 2013.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Effective Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH
Fairford River	FR1	24-Mar-13	12:09	0	0	NM	0.1	2.0	12.47	96	1620	9.20	7.82
Lake St. Martin	LSM1	24-Mar-13	15:19	0.25	0.75	1.9	0.5	0.1	9.46	70	1550	8.9	7.82
				-	-	-	1.0	0.1	9.80	73	1550	9.2	7.82
				-	-	-	1.5	0.1	9.83	73	1550	8.6	7.82
Dauphin River	DR1.0	24-Mar-13	16:22	0.28	0.25	2.0	0.5	0.0	10.1	75	1570	9.1	8.00
				-	-	-	1.0	0.3	9.6	72	1560	9.1	8.00
				-	-	-	1.5	0.5	9.5	71	1560	9.0	8.00
Dauphin River	DR1.3	26-Mar-13	16:00	-	0.5	0.9	0.3	-0.1	8.58	63	1500	19.2	8.00
Dauphin River	DR1(NOTE2)	26-Mar-13	15:16	-	-	NM	0.3	-0.13	9.4	70	1330	21.0	8.01
Big Buffalo Lake	BBL	27-Mar-13	10:15	0.27	0.63	1.0	0.5	2.80	0.02	0	1450	9.3	7.20
Dauphin River	DR2C	25-Mar-13	15:09	0.15	0.85	2.7	0.5	-0.13	9.44	70	1500	20.4	7.98
Lake Winnipeg	LKW3B	26-Mar-13	13:17	0.15	1.04	4.9	0.5	-0.09	14.49	107	1008	22.0	8.28
				-	-	-	1.0	0.01	14.90	110	1008	22.2	8.29
				-	-	-	1.5	0.02	14.49	107	1008	21.5	8.30
				-	-	-	2.0	-0.06	14.51	107	1008	20.2	8.24
				-	-	-	2.5	-0.08	12.17	90	1008	20.2	8.21
				-	-	-	3.0	-0.09	11.85	88	1260	19.2	8.16
				-	-	-	3.5	-0.11	11.58	86	1470	19.3	8.08
				-	-	-	4.0	-0.12	10.41	77	1480	18.9	8.05
				-	-	-	4.5	-0.13	9.08	67	1490	19.1	8.05

Table E-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Effective Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH
Lake Winnipeg	LKW3	25-Mar-13	13:50	0.19	1.02	5.1	0.5	-0.13	14.43	107	957	22.3	8.27
				-	-	-	1.5	-0.13	14.68	109	957	22.3	8.28
				-	-	-	2.5	-0.02	15.07	112	957	22.3	8.27
				-	-	-	3.5	0.32	13.32	99	957	22.2	8.23
				-	-	-	4.5	0.07	11.67	87	1360	19.5	8.05
Lake Winnipeg	LKW2	26-Mar-13	12:15	0.18	1.03	3.1	0.5	-0.10	15.41	114	976	21.2	8.36
				-	-	-	1.0	-0.08	15.26	113	976	21.1	8.32
				-	-	-	1.5	-0.10	11.47	85	976	19.3	8.26
				-	-	-	2.0	-0.04	10.57	78	1400	18.2	8.20
				-	-	-	2.5	-0.02	9.48	70	1450	17.8	8.14
				-	-	-	3.0	0.13	8.82	66	1470	17.8	8.10
Lake Winnipeg	LKW1	26-Mar-13	10:45	0.16	1.18	3.1	0.5	-0.12	14.45	107	970	21.2	8.22
				-	-	-	1.0	-0.12	14.40	107	970	21.1	8.23
				-	-	-	1.5	-0.10	12.75	94	970	20.8	8.22
				-	-	-	2.0	-0.02	11.31	84	1100	19.9	8.18
				-	-	-	2.5	0.29	9.54	71	1180	18.7	8.11
				-	-	-	3.0	0.81	9.05	68	1200	18.7	8.06
Lake Winnipeg	LKW4	25-Mar-13	9:19	0.25	0.76	5.8	0.5	-0.08	14.97	111	675	19.5	7.19
				-	-	-	1.5	-0.08	14.16	105	675	19.3	7.38
				-	-	-	2.5	-0.01	14.14	105	673	19.2	7.43
				-	-	-	3.5	0.20	14.13	105	670	19.0	7.44
				-	-	-	4.5	0.72	13.80	104	666	19.9	7.43
				-	-	-	5.5	2.34	13.11	102	678	24.1	7.33

Table E-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Effective Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH
Lake Winnipeg	LKW5	26-Mar-13	9:19	0.17	1.03	6.1	0.5	-0.1	16.51	122	923	20.7	7.93
				-	-	-	1.5	-0.1	15.13	112	923	20.4	7.99
				-	-	-	2.5	-0.1	14.96	111	923	18.7	8.00
				-	-	-	3.5	-0.1	12.01	89	923	17.1	7.96
				-	-	-	4.5	0.0	9.15	68	1440	15.8	7.90
				-	-	-	5.5	0.4	8.95	67	1470	15.8	7.89
Lake Winnipeg	LKW6	25-Mar-13	12:25	0.22	1.12	6.7	0.5	-0.11	14.61	108	656	23.7	7.98
				-	-	-	1.5	-0.11	15.52	115	656	23.4	8.01
				-	-	-	2.5	-0.04	13.86	103	675	22.9	8.02
				-	-	-	3.5	0.00	14.98	111	706	22.1	8.01
				-	-	-	4.5	0.01	14.35	107	740	22.3	7.96
				-	-	-	5.5	0.07	9.03	67	1490	17.9	7.83
				-	-	-	6.5	0.16	8.59	64	1490	17.8	7.85
Lake Winnipeg	LKW7	25-Mar-13	10:50	0.23	0.90	4.9	0.5	-0.05	14.82	110	595	22.6	7.90
				-	-	-	1.0	0.11	13.75	103	592	22.4	7.94
				-	-	-	1.5	0.37	14.04	105	604	22.5	7.93
				-	-	-	2.0	0.57	13.36	101	613	22.2	7.92
				-	-	-	2.5	0.67	12.65	96	629	21.5	7.88
				-	-	-	3.0	0.65	12.44	94	684	21.6	7.85
				-	-	-	2.5	0.77	10.98	83	774	23.0	7.88
				-	-	-	4.0	0.78	10.15	77	899	20.6	7.87
				-	-	-	4.5	1.69	8.41	65	1270	23.2	7.86

Table E-5. *In situ* water quality measurements recorded as part of the RWQMP, June 2013.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Fairford River	FR1	10-Jun-13	13:10	NM	0.3	17.1	10.23	108	1057	2.85	8.53	-
Lake St. Martin	LSM1	10-Jun-13	11:04	2.7	0.3	16.8	9.11	96	1013	1.78	8.47	NM
				-	1.0	16.8	9.08	95	1013	1.76	8.44	-
				-	1.5	16.8	9.07	95	1013	1.76	8.44	-
				-	2.0	16.8	9.07	95	1013	1.76	8.54	-
Dauphin River	DR1.1	10-Jun-13	11:50	2.1	0.3	16.9	9.04	95	1008	2.07	8.52	-
				-	1.0	16.9	9.04	95	1008	2.01	8.42	-
				-	1.5	16.9	9.04	95	1008	2.32	8.42	-
Dauphin River	DR1.3	10-Jun-13	10:00	NM	0.3	16.8	8.20	86	986	3.60	8.29	-
Dauphin River	DR1 (NOTE 2)	12-Jun-13	16:55	1.0	0.3	17.8	9.11	98	1000	3.62	8.48	-
Buffalo Creek	BC3	12-Jun-13	17:30	0.8	0.3	18.5	10.03	109	368	5.68	8.22	NM
Dauphin River	DR2C	12-Jun-13	9:15	4.3	0.3	17.5	8.70	93	1006	3.15	8.43	-
Lake Winnipeg	LKW3B	12-Jun-13	8:50	5.5	0.3	12.5	10.58	102	754	1.43	8.40	2.0
				-	1.0	12.5	10.58	102	754	1.41	8.40	-
				-	2.0	12.5	10.57	102	754	1.36	8.40	-
				-	3.0	12.5	10.56	102	754	1.38	8.40	-
				-	4.0	12.5	10.55	102	754	1.41	8.33	-
				-	5.0	12.5	10.54	102	754	1.41	8.33	-
Lake Winnipeg	LKW3	12-Jun-13	8:25	6.7	0.3	12.4	10.68	103	753	1.32	8.38	2.0
				-	1.0	12.4	10.68	103	753	1.32	8.35	-
				-	2.0	12.4	10.67	103	753	1.37	8.32	-
				-	3.0	12.4	10.67	103	752	1.34	8.32	-
				-	4.0	12.4	10.66	103	752	1.32	8.30	-
				-	5.0	12.3	10.65	102	752	1.35	8.29	-
				-	6.0	12.3	10.64	102	748	1.40	8.29	-

Table E-5. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Lake Winnipeg	LKW2	11-Jun-13	11:55	4.4	0.3	13.3	10.21	100	766	2.02	8.39	1.9
				-	1.0	13.3	10.21	100	767	2.04	8.39	-
				-	2.0	13.3	10.20	100	766	2.15	8.39	-
				-	3.0	13.3	10.19	100	766	2.09	8.39	-
				-	4.0	13.2	10.19	100	761	2.44	8.38	-
Lake Winnipeg	LKW1	11-Jun-13	11:20	4.4	0.3	13.2	10.50	103	750	1.52	8.43	2.2
				-	1.0	13.2	10.50	103	750	1.53	8.43	-
				-	2.0	13.2	10.49	103	750	1.52	8.43	-
				-	3.0	13.2	10.49	103	749	1.50	8.43	-
				-	4.0	13.2	10.48	103	749	1.54	8.43	-
Lake Winnipeg	LKW4	11-Jun-13	9:18	7.0	0.3	12.4	10.54	102	768	1.32	8.40	2.0
				-	1.0	12.2	10.53	101	768	1.41	8.39	-
				-	2.0	12.1	10.53	101	767	1.44	8.36	-
				-	3.0	12.0	10.51	100	767	1.40	8.29	-
				-	4.0	11.5	10.53	100	765	1.56	8.29	-
				-	5.0	10.9	10.52	98	755	1.65	8.26	-
				-	6.0	10.4	10.63	98	731	1.71	8.25	-
Lake Winnipeg	LKW5	11-Jun-13	10:45	7.3	0.3	11.1	11.25	106	697	1.85	8.42	2.15
				-	1.0	11.1	11.25	106	697	1.91	8.41	-
				-	2.0	11.1	11.25	106	697	1.88	8.41	-
				-	3.0	11.1	11.25	106	697	1.85	8.41	-
				-	4.0	11.0	11.25	106	694	1.93	8.4	-
				-	5.0	10.9	11.25	105	691	1.91	8.38	-
				-	6.0	10.5	11.27	105	983	1.93	8.36	-
				-	7.0	9.6	11.06	101	698	2.50	8.27	-
Lake Winnipeg	LKW6	11-Jun-13	9:55	8.2	0.3	11.2	8.42	79	725	1.77	8.42	2.1
				-	1.0	11.2	8.42	79	724	1.80	8.42	-
				-	2.0	11.2	8.42	79	725	1.80	8.42	-
				-	3.0	11.2	8.38	79	723	1.84	8.38	-
				-	4.0	11.0	8.31	78	723	1.95	8.31	-

Table E-5. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Lake Winnipeg	LKW6	11-Jun-13	9:55	8.2	5.0	10.4	8.27	77	684	2.21	8.27	-
				-	6.0	10.0	8.24	76	673	2.26	8.24	-
				-	7.0	8.6	8.21	73	606	2.72	8.21	-
				-	8.0	7.8	8.14	72	621	3.54	8.14	-
Lake Winnipeg	LKW7	11-Jun-13	8:20	6.5	0.3	12.1	11.25	108	652	2.68	8.40	1.9
				-	1.0	12.1	11.25	108	652	2.63	8.41	-
				-	2.0	12.1	11.24	108	652	2.71	8.38	-
				-	3.0	11.9	11.38	109	645	2.43	8.32	-
				-	4.0	9.8	12.02	110	637	1.75	8.29	-
				-	5.0	9.5	12.08	110	633	1.92	8.26	-
				-	6.0	8.2	12.26	109	646	2.67	8.26	-

Table E-6. *In situ* water quality measurements recorded as part of the RWQMP, July 2013.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Fairford River	FR1	22-Jul-13	16:10	NM	0.3	20.06	9.49	107	1042	4.4	8.74	-
Lake St. Martin	LSM1	22-Jul-13	13:00	2.0	0.3	18.9	8.94	99	1079	2.5	8.74	NM
				-	1.0	18.9	8.93	99	1080	2.5	8.75	-
				-	1.5	18.9	8.93	99	1080	2.4	8.73	-
Dauphin River		22-Jul-13	13:30	2.4	0.3	18.9	9.08	100	1079	2.38	8.70	NM
				-	1.0	18.9	9.09	100	1079	2.43	8.71	-
				-	1.5	18.9	9.09	100	1079	2.43	8.70	-
				-	2.0	18.9	9.09	100	1079	2.53	8.70	-
Dauphin River	DR1.3	22-Jul-13	10:50	NM	0.3	18.6	8.25	91	1065	2.64	8.50	-
Dauphin River	DR1 (NOTE 2)	22-Jul-13	8:41	1.9	0.3	18.9	8.29	92	1067	6.76	8.60	-
Buffalo Creek	BC3	22-Jul-13	9:10	0.8	0.3	17.2	8.05	86	394	14.3	8.11	0.35
Dauphin River	DR2C	22-Jul-13	8:00	5.1	0.3	19.2	8.30	92	1066	3.09	8.60	-
Lake Winnipeg	LKW3B	21-Jul-13	12:25	5.8	0.3	20.1	8.54	97	1017	2.94	8.60	1.45
				-	1.0	20.1	8.53	97	1012	2.91	8.60	-
				-	2.0	20.1	8.52	97	1011	2.90	8.60	-
				-	3.0	20.0	8.50	96	1008	2.97	8.60	-
				-	4.0	20.0	8.45	96	1019	2.96	8.60	-
				-	5.0	20.0	8.43	95	1019	3.01	8.59	-
Lake Winnipeg	LKW3	21-Jul-13	12:00	6.6	0.3	20.2	8.63	98	1050	2.94	8.63	1.5
				-	1.0	20.3	8.62	98	1037	2.91	8.62	-
				-	2.0	20.3	8.62	98	1048	2.81	8.62	-
				-	3.0	20.3	8.63	98	1052	2.90	8.63	-
				-	4.0	20.2	8.60	98	1033	2.92	8.60	-
				-	5.0	20.2	8.60	98	1043	2.92	8.60	-
				-	6.0	20.20	8.61	98	1042	2.90	8.61	-

Table E-6. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Lake Winnipeg	LKW2	21-Jul-13	11:40	4.4	0.3	20.4	8.51	97	973	2.95	8.61	1.35
				-	1.0	20.4	8.51	97	973	2.95	8.60	-
				-	1.5	20.4	8.51	97	971	2.97	8.60	-
				-	2.0	20.4	8.52	97	974	2.98	8.60	-
				-	2.5	20.3	8.51	97	974	3.00	8.60	-
				-	3.0	20.3	8.49	97	975	3.00	8.60	-
				-	3.5	20.3	8.48	97	976	3.09	8.59	-
				-	4.0	20.3	8.47	97	976	3.28	8.59	-
Lake Winnipeg	LKW1	21-Jul-13	11:02	4.5	0.3	20.1	8.38	95	824	6.5	8.55	0.95
				-	1.0	20.0	8.36	95	824	6.6	8.55	-
				-	1.5	20.0	8.35	95	824	6.45	8.56	-
				-	2.0	20.0	8.34	95	824	6.8	8.55	-
				-	2.5	19.9	8.31	94	824	6.65	8.56	-
				-	3.0	20.0	8.32	94	824	7.0	8.54	-
				-	3.5	19.9	8.28	94	824	6.8	8.54	-
				-	4.0	19.9	8.26	94	824	9.0	8.52	-
Lake Winnipeg	LKW4	21-Jul-13	8:50	7.1	0.3	19.8	8.41	95	678	5.23	8.43	0.90
				-	1.0	19.8	8.40	95	678	5.37	8.42	-
				-	2.0	19.8	8.40	95	678	5.27	8.41	-
				-	3.0	19.8	8.38	95	678	5.39	8.40	-
				-	4.0	19.8	8.38	95	678	5.44	8.35	-
				-	5.0	19.8	8.33	94	677	5.43	8.24	-
				-	6.0	19.8	8.33	94	677	5.40	8.22	1.0
Lake Winnipeg	LKW5	21-Jul-13	10:20	7.3	0.3	20.3	8.33	95	781	3.74	8.47	1.0
				-	1.0	20.3	8.31	95	781	3.68	8.47	-
				-	2.0	20.4	8.31	95	781	3.74	8.47	-
				-	3.0	20.4	8.31	95	781	3.93	8.47	-
				-	4.0	20.4	8.28	95	781	3.76	8.46	-
				-	5.0	20.4	8.27	95	781	3.64	8.44	-
				-	6.0	20.4	8.26	95	780	3.72	8.43	-
				-	7.0	20.3	8.24	94	781	3.91	8.41	-

Table E-6. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Lake Winnipeg	LKW6	21-Jul-13	9:35	8.1	0.3	20.1	8.29	94	702	7.22	8.41	0.70
				-	1.0	20.1	8.28	94	702	7.20	8.41	-
				-	2.0	20.1	8.26	94	702	7.55	8.41	-
				-	3.0	20.1	8.26	94	702	7.70	8.41	-
				-	4.0	20.1	8.25	94	702	7.37	8.39	-
				-	5.0	20.1	8.24	94	702	7.24	8.33	-
				-	6.0	20.1	8.22	94	702	7.34	8.3	-
				-	7.0	20.1	8.19	93	702	7.28	8.27	-
Lake Winnipeg	LKW7	21-Jul-13	7:50	6.8	0.3	19.4	8.93	100	524	9.25	8.32	0.70
				-	1.0	19.4	8.90	100	522	9.00	8.32	-
				-	2.0	19.4	8.90	100	523	9.50	8.28	-
				-	3.0	19.4	8.89	100	523	9.17	8.26	-
				-	4.0	19.4	8.89	100	524	9.02	8.27	-
				-	5.0	19.4	8.88	100	524	9.16	8.26	-
				-	6.0	19.4	8.87	100	524	9.81	8.26	-

Table E-7. *In situ* water quality measurements recorded as part of the RWQMP, October 2013.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Fairford River	FR1	07-Oct-13	18:15	NM	0.3	11.7	11.08	107	1013	4.72	8.59	-
Lake St. Martin	LSM1	07-Oct-13	15:50	2.6	0.3	10.8	10.91	103	1036	2.13	8.63	1.25
				-	1.0	10.3	11.11	104	1038	2.49	8.64	-
				-	1.5	10.2	11.30	106	1038	2.40	8.65	-
				-	2.0	10.1	11.50	107	1038	2.37	8.64	-
				-	2.5	10.0	11.41	106	1038	2.39	8.64	-
Dauphin River		07-Oct-13	16:50	1.7	0.3	10.4	11.49	108	1036	1.91	8.69	1.1
				-	1.0	10.4	11.50	108	1036	1.92	8.68	-
				-	1.5	10.4	11.50	108	1036	1.92	8.68	-
Dauphin River	DR1.3	07-Oct-13	14:30	NM	0.3	10.1	11.06	103	1037	2.01	8.62	-
Dauphin River	DR1 (NOTE 2)	07-Oct-13	8:03	NM	0.3	9.7	10.89	101	1034	5.05	8.46	-
Buffalo Creek	BC3	07-Oct-13	7:40	0.7	0.3	8.0	10.56	95	469	12.0	8.15	0.55
Dauphin River	DR2C	07-Oct-13	12:24	NM	0.3	10.0	10.87	101	1035	2.27	8.62	-
Lake Winnipeg	LKW3B	07-Oct-13	11:57	5.2	0.3	11.0	10.72	102	807	3.43	8.57	1.25
				-	1.0	10.7	10.75	102	839	3.35	8.57	-
				-	2.0	10.3	10.79	101	882	3.19	8.58	-
				-	3.0	9.9	10.66	99	960	3.23	8.55	-
				-	4.0	9.8	10.63	99	982	3.54	8.47	-
				-	5.0	9.8	10.61	99	992	3.77	8.47	-
Lake Winnipeg	LKW3	07-Oct-13	11:30	6.4	0.3	11.2	10.52	100	823	2.77	8.54	1.55
				-	1.0	11.1	10.52	100	825	2.80	8.55	-
				-	2.0	11.0	10.51	100	827	2.76	8.55	-
				-	3.0	10.9	10.51	100	837	2.82	8.54	-
				-	4.0	10.8	10.50	100	849	2.92	8.55	-
				-	5.0	10.3	10.60	100	920	3.12	8.55	-
				-	6.0	10.3	10.56	99	924	7.12	8.54	-

Table E-7. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Lake Winnipeg	LKW2	07-Oct-13	11:00	3.4	0.3	10.5	10.76	101	888	4.61	8.58	1.0
				-	1.0	10.5	10.76	101	888	4.56	8.58	-
				-	1.5	10.5	10.75	101	888	4.45	8.58	-
				-	2.0	10.5	10.75	101	889	4.82	8.57	-
				-	2.5	10.5	10.75	101	888	4.70	8.57	-
				-	3.0	10.4	10.73	101	889	5.00	8.57	-
Lake Winnipeg	LKW1	07-Oct-13	10:26	4.0	0.3	10.2	10.64	100	873	8.32	8.55	0.8
				-	1.0	10.2	10.64	100	873	8.30	8.55	-
				-	2.0	10.2	10.63	100	873	8.52	8.55	-
				-	3.0	10.2	10.62	100	874	8.21	8.55	-
Lake Winnipeg	LKW4	06-Oct-13	14:55	7.0	0.3	12.1	10.36	101	560	5.50	8.41	-
				-	1.0	12.1	10.35	101	557	5.59	8.32	-
				-	2.0	12.1	10.37	101	559	5.47	8.37	-
				-	3.0	12.1	10.33	101	556	5.71	8.18	-
				-	4.0	12.1	10.32	101	556	5.52	8.11	-
				-	5.0	12.1	10.38	101	561	5.50	8.11	-
				-	6.0	12.1	10.38	101	561	5.39	8.11	-
Lake Winnipeg	LKW5	07-Oct-13	9:50	7.0	0.3	11.2	10.11	97	888	5.48	8.51	1.0
				-	1.0	11.2	10.10	97	889	5.50	8.51	-
				-	2.0	11.2	10.09	97	889	5.62	8.51	-
				-	3.0	11.2	10.07	96	889	5.54	8.47	-
				-	4.0	11.2	10.05	96	890	5.41	8.40	-
				-	5.0	11.2	10.05	96	889	5.55	8.39	-
				-	6.0	11.2	10.03	96	890	5.57	8.38	-
Lake Winnipeg	LKW6	06-Oct-13	15:35	7.8	0.3	11.8	10.29	100	932	3.0	8.53	1.2
				-	1.0	11.8	10.30	100	934	2.9	8.52	-
				-	2.0	11.8	10.30	100	934	3.0	8.51	-
				-	3.0	11.8	10.28	100	933	2.9	8.41	-
				-	4.0	11.8	10.27	100	932	3.0	8.36	-
				-	5.0	11.8	10.23	99	927	3.0	8.36	-

Table E-7. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Lake Winnipeg	LKW6	06-Oct-13	15:35	7.8	6.0	11.8	10.22	99	927	3.1	8.30	-
				-	7.0	11.7	10.21	99	927	3.1	8.30	-
Lake Winnipeg	LKW7	06-Oct-13	14:05	6.3	0.3	11.6	10.38	100	508	7.57	8.15	0.65
				-	1.0	11.5	10.39	100	507	7.65	8.19	-
				-	2.0	11.5	10.38	100	507	7.60	8.04	-
				-	3.0	11.5	10.39	100	507	7.71	8.04	-
				-	4.0	11.4	10.38	100	506	8.33	8.04	-
				-	5.0	11.2	10.43	100	502	8.34	8.04	-
				-	6.0	11.1	10.43	100	502	9.50	8.04	-

Table E-8. *In situ* water quality measurements recorded as part of the RWQMP, April 2014.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Effective Water Depth (m)	Sample Depth (m)	Temp (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH
Fairford River	FR1	07-Apr-14	15:50	-	-	-	0.3	2.93	9.95	78	1386	0.58	7.85
Lake St. Martin	LSM1	07-Apr-14	12:55	0.30	0.78	1.4	0.3	0.12	10.04	74	1311	0.25	7.90
				-	-	-	1.0	0.13	10.03	74	1311	0.26	7.90
Dauphin River	DR1.1	07-Apr-14	14:10	0.25	0.85	0.8	0.3	0.14	9.56	71	1323	0.24	7.86
				-	-	-	1.0	0.15	9.53	71	1325	0.20	7.86
Dauphin River	DR1.3	07-Apr-14	8:59	0.15	0.58	0.7	0.3	-0.03	10.46	77	1335	0.32	7.67
Dauphin River	DR1 (NOTE 2)	10-Apr-14	10:58	-	-	-	0.3	0.00	9.50	70	1314	0.55	7.81
Buffalo Lake	BBL	7-Apr-14	11:40	0.14	0.77	0.2	0.3	0.92	0.01	0	1225	4.37	7.08
Dauphin River	DR2C	10-Apr-14	10:07	-	0.54	2.9	0.3	0.00	9.58	71	1313	0.64	7.81
Lake Winnipeg	LKW3B	10-Apr-14	9:10	0.15	1.2	3.4	0.3	0.31	13.51	100	658	1.46	8.01
				-	-	-	0.8	0.28	13.06	97	673	1.31	7.92
				-	-	-	1.3	0.16	11.88	88	874	1.14	7.87
				-	-	-	1.8	0.12	10.84	80	972	0.91	7.83
				-	-	-	2.3	0.03	9.86	73	1233	0.91	7.78
				-	-	-	2.8	0.01	9.50	70	1298	0.75	7.79
				-	-	-	3.3	0.01	9.41	70	1301	0.61	7.79
Lake Winnipeg	LKW3	09-Apr-14	14:50	0.32	0.93	5.0	0.3	-0.04	14.65	108	598	1.49	8.07
				-	-	-	1.0	-0.04	15.30	113	635	1.36	8.10
				-	-	-	1.5	-0.01	14.52	107	663	1.40	8.13
				-	-	-	2.0	0.01	15.21	112	662	1.31	8.14
				-	-	-	2.5	0.05	15.05	111	682	1.34	8.13
				-	-	-	3.0	0.12	15.23	113	702	1.23	8.13
				-	-	-	3.5	0.34	13.67	102	800	1.39	8.03
				-	-	-	4.0	0.07	9.59	71	1176	0.48	7.82
				-	-	-	4.5	0.05	9.19	68	1296	0.52	7.80

Table E-8. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Effective Water Depth (m)	Sample Depth (m)	Temp (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidit (NTU)	pH
Lake Winnipeg	LKW2	09-Apr-14	13:50	0.15	1.20	2.2	0.3	-0.08	12.70	94	840	1.14	7.97
				-	-	-	0.8	-0.09	10.78	80	1077	0.64	7.84
				-	-	-	1.3	0.05	9.38	69	1228	0.40	7.79
				-	-	-	1.8	0.18	9.02	67	1303	0.47	7.78
				-	-	-	2.2	0.20	8.94	66	1308	0.52	7.78
Lake Winnipeg	LKW1	09-Apr-14	12:29	0.30	1.05	2.5	0.3	-0.03	14.44	107	868	0.95	8.09
				-	-	-	0.8	-0.02	13.41	99	942	0.75	8.01
				-	-	-	1.3	0.00	12.18	90	997	0.67	7.94
				-	-	-	1.8	0.17	10.51	78	1086	0.66	7.85
				-	-	-	2.3	0.84	10.12	76	1092	0.84	7.82
Lake Winnipeg	LKW4	08-Apr-14	9:40	0.32	1.10	5.3	0.3	0.01	14.10	104	556	1.49	7.90
				-	-	-	1.0	0.06	14.42	107	583	1.51	7.95
				-	-	-	2.0	0.13	14.29	106	637	1.40	7.96
				-	-	-	3.0	0.46	14.62	109	686	1.51	7.96
				-	-	-	4.0	0.93	14.49	109	746	1.22	7.99
				-	-	-	4.5	2.13	8.71	67	803	1.62	7.61
Lake Winnipeg	LKW5	09-Apr-14	11:02	0.30	1.30	5.2	0.3	-0.04	14.60	108	743	1.18	8.1
				-	-	-	1.0	0.03	14.20	105	747	1.15	8.08
				-	-	-	2.0	0.04	12.95	96	810	1.10	7.94
				-	-	-	3.0	0.07	9.53	71	1282	0.34	7.76
				-	-	-	4.0	-0.01	9.15	68	1323	0.35	7.76
				-	-	-	5.0	1.42	6.00	46	1291	0.86	7.63
Lake Winnipeg	LKW6	09-Apr-14	9:20	0.31	1.20	6.1	0.3	0.01	16.70	123	662	1.47	8.07
				-	-	-	1.0	0.01	17.02	126	730	1.36	8.05
				-	-	-	2.0	0.01	16.57	123	805	1.20	8.06
				-	-	-	3.0	0.09	12.28	91	881	1.14	8.02
				-	-	-	4.0	0.11	9.29	69	1299	0.47	7.75
				-	-	-	5.0	0.19	8.98	67	1311	0.50	7.73
				-	-	-	6.0	1.38	6.70	51	1292	0.84	7.64

Table E-8. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Effective Water Depth (m)	Sample Depth (m)	Temp (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidit (NTU)	pH
Lake Winnipeg	LKW7	08-Apr-14	14:02	0.35	1.10	4.6	0.3	0.06	14.10	104	738	2.01	7.94
				-	-	-	1.0	0.45	13.71	102	783	1.64	7.94
				-	-	-	2.0	0.78	12.90	97	808	1.48	7.93
				-	-	-	3.0	1.25	11.26	85	878	1.74	7.84
				-	-	-	4.0	1.48	8.38	64	1069	2.49	7.73

Table E-9. *In situ* water quality measurements recorded as part of the RWQMP, May 2014.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Fairford River	FR1	29-May-14	12:15	-	0.3	12.37	11.38	108	985	0.98	8.33	-
Lake St. Martin	LSM1	29-May-14	10:10	2.7	0.3	12.74	11.52	110	854	0.68	8.56	1.90
				-	1.0	12.73	11.53	110	855	0.68	8.56	-
				-	1.5	12.69	11.53	110	854	0.70	8.56	-
				-	2.0	12.65	11.53	110	853	0.69	8.55	-
				-	2.5	12.61	11.54	110	853	0.68	8.55	-
Dauphin River	DR1.1	29-May-14	10:45	2.4	0.3	10.97	11.95	110	766	0.58	8.46	2.00
				-	1.0	10.80	12.00	110	762	0.59	8.45	-
				-	1.5	10.76	12.02	111	761	0.58	8.45	-
Dauphin River	DR1.3	29-May-14	8:50	-	0.3	13.16	10.20	98	843	1.17	8.32	-
Dauphin River	DR1 (NOTE 2)	28-May-14	9:36	-	0.3	14.47	10.56	105	893	2.99	8.44	-
Buffalo Creek	BC3	28-May-14	16:30	0.7	0.3	18.88	10.12	110	290	4.91	8.26	>0.70
Dauphin River	DR2C	28-May-14	15:40	4.5	0.3	14.58	10.39	103	896	1.68	8.43	-
Lake Winnipeg	LKW3B	28-May-14	12:50	5.8	0.3	12.12	11.27	107	849	1.29	8.42	-
				-	1.0	12.05	11.27	106	849	1.31	8.42	-
				-	2.0	11.37	11.24	105	849	1.56	8.42	-
				-	3.0	9.84	11.76	106	821	1.75	8.40	-
				-	4.0	6.31	12.70	107	729	1.76	8.32	-
				-	5.0	6.25	12.77	107	727	1.87	8.30	-
Lake Winnipeg	LKW3	28-May-14	12:00	7.0	0.3	12.37	11.25	107	869	1.35	8.42	1.80
				-	1.0	12.19	11.23	106	871	1.38	8.42	-
				-	2.0	12.05	11.21	106	874	1.43	8.43	-
				-	3.0	11.87	11.28	106	864	1.55	8.42	-
				-	4.0	10.36	11.41	104	889	1.66	8.43	-
				-	5.0	8.01	12.38	108	747	1.64	8.41	-
				-	6.0	5.48	13.29	110	690	1.65	8.39	-

Table E-9. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Lake Winnipeg	LKW2	29-May-14	11:15	4.3	0.3	11.13	11.64	108	845	1.54	8.44	1.75
				-	1.0	11.11	11.66	108	848	1.59	8.44	-
				-	1.5	10.62	11.82	108	834	1.51	8.42	-
				-	2.0	10.40	11.89	109	826	1.50	8.42	-
				-	2.5	10.29	11.91	108	827	1.50	8.42	-
				-	3.0	10.24	11.91	108	826	1.56	8.42	-
				-	3.5	9.97	11.94	108	820	1.70	8.41	-
				-	4.0	9.20	11.14	99	801	1.98	8.40	-
Lake Winnipeg	LKW1	29-May-14	10:20	4.5	0.3	10.54	11.47	105	728	2.96	8.36	1.05
				-	1.0	10.45	11.53	105	733	2.94	8.36	-
				-	1.5	10.40	11.52	105	731	2.95	8.36	-
				-	2.0	10.36	11.52	105	732	2.97	8.36	-
				-	2.5	9.65	11.56	104	734	3.19	8.35	-
				-	3.0	9.59	11.60	104	732	2.96	8.34	-
				-	3.5	9.47	11.57	104	730	2.97	8.33	-
				-	4.0	8.31	11.34	99	753	2.83	8.26	-
Lake Winnipeg	LKW4	28-May-14	8:35	7.6	0.3	5.31	13.45	111	645	1.80	8.13	2.15
				-	1.0	5.26	13.48	111	645	1.66	8.13	-
				-	2.0	5.18	13.60	112	647	1.67	8.12	-
				-	3.0	5.15	13.57	111	649	1.68	8.12	-
				-	4.0	5.15	13.55	111	649	1.71	8.11	-
				-	5.0	5.13	13.52	111	649	1.87	8.10	-
				-	6.0	5.12	13.50	111	650	1.80	8.10	-
				-	7.0	5.09	13.42	110	650	2.18	8.09	-
Lake Winnipeg	LKW5	28-May-14	9:45	7.6	0.3	8.10	12.28	107	732	1.45	8.35	2.05
				-	1.0	7.99	12.33	107	735	1.44	8.36	-
				-	2.0	7.62	12.35	107	755	1.45	8.34	-
				-	3.0	7.57	12.32	106	770	1.36	8.32	-
				-	4.0	6.59	12.16	103	777	1.38	8.3	-
				-	5.0	5.65	12.29	102	833	1.34	8.15	-
				-	6.0	5.44	12.42	103	834	1.35	8.13	-

Table E-9. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
				-	7.0	5.35	12.35	102	833	1.54	8.1	-
Lake Winnipeg	LKW6	28-May-14	9:15	8.7	0.3	6.18	14.04	118	655	1.28	8.37	2.40
				-	1.0	5.63	14.10	117	654	1.40	8.38	-
				-	2.0	5.46	14.21	117	644	1.53	8.38	-
				-	3.0	5.23	14.17	116	646	1.38	8.36	-
				-	4.0	5.51	14.20	117	694	1.42	8.34	-
				-	5.0	5.19	13.26	109	758	1.38	8.23	-
				-	6.0	5.18	12.92	106	781	1.46	8.21	-
				-	7.0	5.20	12.71	104	782	1.57	8.19	-
				-	8.0	5.14	12.48	102	789	1.77	8.17	-
Lake Winnipeg	LKW7	28-May-14	7:45	7.0	0.3	1.68	13.76	105	627	1.41	8.23	2.50
				-	1.0	1.61	13.90	106	629	1.38	8.20	-
				-	2.0	1.80	13.98	107	636	1.00	8.19	-
				-	3.0	1.89	13.99	107	641	1.53	8.18	-
				-	4.0	1.83	13.98	107	648	1.52	8.18	-
				-	5.0	1.86	13.93	107	672	1.52	8.15	-
				-	6.0	1.95	13.88	107	626	1.72	8.14	-

Table E-10. *In situ* water quality measurements recorded as part of the RWQMP, June 2014.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Fairford River	FR1	20-Jun-14	20:30	-	0.3	19.20	9.54	104	929	1.71	8.53	-
Lake St. Martin	LSM1	20-Jun-14	8:00	3.4	0.3	16.46	9.07	94	945	2.04	8.38	1.75
				-	1.0	16.46	9.07	94	946	1.99	8.39	-
				-	1.5	16.39	9.08	94	948	2.01	8.39	-
				-	2.0	16.31	9.09	94	947	1.91	8.40	-
Dauphin River	DR1.1	20-Jun-14	8:38	2.5	0.3	16.39	9.13	94	957	1.85	8.44	1.50
				-	1.0	16.32	9.14	94	959	1.88	8.42	-
				-	1.5	16.29	9.13	94	960	1.84	8.42	-
				-	2.0	16.28	9.15	94	960	1.95	8.42	-
Dauphin River	DR1.3	20-Jun-14	19:20	-	0.3	17.70	9.22	98	939	2.15	8.40	-
Dauphin River	DR1 (NOTE 2)	20-Jun-14	16:50	-	0.3	17.25	8.91	93	929	9.72	8.37	-
Buffalo Lake	BBL	18-Jun-14	13:50	2.2	0.3	~ 18.5 [1]	9.10	-	372	0.89	9.42	>2.20
Buffalo Creek	BC3	20-Jun-14	17:10	0.9	0.3	18.19	9.05	97	298	7.06	8.16	0.65
Dauphin River	DR2C	20-Jun-14	15:50	4.5	0.3	17.18	8.85	93	922	2.85	8.35	-
Lake Winnipeg	LKW3B	20-Jun-14	14:55	6.0	0.3	16.80	8.85	92	900	2.76	8.32	1.20
				-	1.0	16.80	8.85	92	900	2.74	8.32	-
				-	2.0	16.80	8.85	92	896	2.62	8.32	-
				-	3.0	16.80	8.84	92	894	2.77	8.33	-
				-	4.0	16.70	8.84	92	893	2.74	8.33	-
				-	5.0	16.70	8.85	92	879	2.75	8.34	-
Lake Winnipeg	LKW3	20-Jun-14	15:30	7.3	0.3	15.40	9.64	97	743	1.93	8.41	2.20
				-	1.0	15.40	9.63	97	743	1.95	8.40	-
				-	2.0	15.40	9.62	97	744	1.95	8.40	-
				-	3.0	15.40	9.62	97	743	2.01	8.40	-
				-	4.0	15.40	9.61	97	745	1.99	8.40	-
				-	5.0	15.40	9.58	97	750	1.92	8.39	-
				-	6.0	15.80	9.53	97	754	2.07	8.38	-

Table E-10. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Lake Winnipeg	LKW2	20-Jun-14	14:30	4.5	0.3	16.30	9.39	97	700	4.03	8.41	2.00
				-	1.0	16.30	9.38	97	700	4.10	8.41	-
				-	1.5	16.20	9.39	96	702	4.14	8.41	-
				-	2.0	16.20	9.39	96	702	4.06	8.41	-
				-	2.5	16.10	9.40	96	704	4.06	8.41	-
				-	3.0	16.10	9.40	96	705	3.96	8.40	-
				-	3.5	16.10	9.40	96	705	4.01	8.40	-
				-	4.0	16.10	9.40	96	706	4.16	8.40	-
Lake Winnipeg	LKW1	20-Jun-14	14:00	4.5	0.3	15.40	9.50	96	728	2.30	8.39	2.20
				-	1.0	15.30	9.51	96	728	2.21	8.39	-
				-	1.5	15.30	9.51	96	729	2.22	8.39	-
				-	2.0	15.30	9.51	96	729	2.21	8.39	-
				-	2.5	15.30	9.51	96	729	2.17	8.38	-
				-	3.0	15.30	9.51	96	729	2.18	8.38	-
				-	3.5	15.30	9.50	96	730	2.20	8.38	-
				-	4.0	15.30	9.49	96	730	2.32	8.38	-
Lake Winnipeg	LKW4	20-Jun-14	11:10	7.7	0.3	15.78	9.34	95	777	2.58	8.31	2.00
				-	1.0	15.73	9.34	95	777	2.58	8.30	-
				-	2.0	15.69	9.34	95	778	2.57	8.30	-
				-	3.0	15.62	9.32	95	781	2.65	8.30	-
				-	4.0	15.56	9.33	95	782	2.59	8.31	-
				-	5.0	15.45	9.26	94	788	2.62	8.30	-
				-	6.0	15.28	9.15	92	793	2.48	8.28	-
				-	7.0	14.78	8.56	85	784	4.50	8.20	-
Lake Winnipeg	LKW5	20-Jun-14	13:20	7.9	0.3	14.50	9.70	96	708	2.33	8.35	1.90
				-	1.0	14.50	9.69	96	709	2.35	8.35	-
				-	2.0	14.40	9.68	96	709	2.41	8.34	-
				-	3.0	14.40	9.67	96	709	2.43	8.34	-
				-	4.0	14.40	9.67	96	709	2.34	8.34	-
				-	5.0	14.30	9.65	95	708	2.40	8.34	-
				-	6.0	14.30	9.62	95	707	2.58	8.33	-
				-	7.0	14.30	9.53	94	705	2.95	8.32	-

Table E-10. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Total Water Depth (m)	Sample Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Lake Winnipeg	LKW6	20-Jun-14	12:35	8.6	0.3	14.59	9.72	97	707	2.10	8.35	1.70
				-	1.0	14.57	9.72	97	708	2.11	8.35	-
				-	2.0	14.54	9.72	97	708	2.15	8.35	-
				-	3.0	14.55	9.72	97	709	2.10	8.35	-
				-	4.0	14.55	9.70	96	709	2.21	8.35	-
				-	5.0	14.43	9.68	96	707	2.32	8.35	-
				-	6.0	13.75	9.44	92	700	3.10	8.30	-
				-	7.0	13.62	9.24	90	700	3.45	8.27	-
				-	8.0	13.60	9.26	90	700	3.77	8.25	-
Lake Winnipeg	LKW7	20-Jun-14	12:00	7.3	0.3	14.13	10.15	100	582	3.94	8.38	2.20
				-	1.0	14.00	10.18	100	579	4.03	8.37	-
				-	2.0	14.00	10.19	100	581	3.98	8.36	-
				-	3.0	13.35	10.20	99	570	3.96	8.37	-
				-	4.0	13.30	10.24	99	569	3.58	8.36	-
				-	5.0	13.23	10.20	99	569	3.97	8.35	-
				-	6.0	13.05	10.07	97	569	4.34	8.32	-

1 - Water temperature was not recorded at the time water samples were collected and *in situ* measurements were taken; however, a water temperature of 18.5°C was recorded the same day in Big Buffalo Lake at 9:05 am during fish community sampling.

Table E-11. Laboratory results for routine water quality parameters at RWQMP sites during 2011/2012 Closure.

Sample Location	Location ID	Sample Date	ALS ID	Sample Type	Sample Depth (m)	Total Depth (m)	Alkalinity			
							Total, as CaCO3 (mg/L)	as Bicarbonate (HCO3-) (mg/L)	as Carbonate (CO32-) (mg/L)	as Hydroxide (OH-) (mg/L)
Analytical Detection Limits							*1.0*	*2.0*	*12*	*6.80*
Fairford River	FR1	24-Mar-13	L1282204-1	surface	0.3	NM	230	281	<12	<6.8
		10-Jun-13	L1314453-4	surface	0.3	NM	184	206	<12	<6.8
		22-Jul-13	L1336361-7	surface	0.3	NM	176	194	<12	<6.8
		7-Oct-13	L1374688-12	surface	0.3	NM	170	195	<12	<6.8
		7-Apr-14	L1440674-5	surface	0.3	NM	241	293	<12	<6.8
		29-May-14	L1462414-4	surface	0.3	NM	177	209	<12	<6.8
		20-Jun-14	L1474237-17	surface	0.3	NM	194	222	<12	<6.8
Lake St. Martin	LSM1	24-Mar-13	L1282204-2	surface	0.3	1.9	221	270	<12	<6.8
		10-Jun-13	L1314453-2	surface	0.3	2.7	177	199	<12	<6.8
		22-Jul-13	L1336361	surface	0.3	2.0	182	200	<12	<6.8
		7-Oct-13	L1374688	surface	0.3	2.6	178	202	<12	<6.8
		7-Apr-14	L1440674-3	surface	0.3	2.2	220	268	<12	<6.8
		29-May-14	L1462414-1	surface	0.3	2.7	161	185	<12	<6.8
		20-Jun-14	L1474237-1	surface	0.3	3.4	174	205	<12	<6.8
Dauphin River	DR1.0	24-Mar-13	L1282204-3	surface	0.3	2.0	227	277	<12	<6.8
	DR1.1	10-Jun-13	L1314453-3	surface	0.3	2.1	175	197	<12	<6.8
		22-Jul-13	L1336361-6	surface	0.3	2.4	182	202	<12	<6.8
		7-Oct-13	L1374688-11	surface	0.3	NM	178	199	<12	<6.8
		7-Apr-14	L1440674-4	surface	0.3	1.6	222	270	<12	<6.8
		29-May-14	L1462414-3	surface	0.3	2.4	144	169	<12	<6.8
		20-Jun-14	L1474237-2	surface	0.3	2.5	174	202	<12	<6.8
Dauphin River	DR1.3	26-Mar-13	L1283154-8	surface	0.3	0.9	227	276	<12	<6.8
		10-Jun-13	L1314453-1	surface	0.3	NM	175	205	<12	<6.8
		22-Jul-13	L1336361-4	surface	0.3	NM	181	208	<12	<6.8
		7-Oct-13	L1374688-9	surface	0.3	NM	179	204	<12	<6.8
		7-Apr-14	L1440674-1	surface	0.3	1.3	225	274	<12	<6.8
		29-May-14	L1462414-2	surface	0.3	NM	159	189	<12	<6.8
		20-Jun-14	L1474237-16	surface	0.3	NM	172	201	<12	<6.8

Table E-11. Continued.

Sample Location	Location ID	Sample Date	ALS ID	Sample Type	Sample Depth (m)	Total Depth (m)	Alkalinity			
							Total, as CaCO3 (mg/L)	as Bicarbonate (HCO3-) (mg/L)	as Carbonate (CO32-) (mg/L)	as Hydroxide (OH-) (mg/L)
Dauphin River	DR1 (NOTE 2)	26-Mar-13	L1283154-7	surface	0.3	NM	226	275	<12	<6.8
		12-Jun-13	L1316464	surface	0.3	1.0	177	203	<12	<6.8
		22-Jul-13	L1336361-2	surface	0.3	1.9	181	205	<12	<6.8
		7-Oct-13	L1374688-2	surface	0.3	NM	179	206	<12	<6.8
		10-Apr-14	L1442360-3	surface	0.3	NM	220	268	<12	<6.8
		28-May-14	L1462419-2	surface	0.3	NM	165	194	<12	<6.8
		20-Jun-14	L1474237-12	surface	0.3	NM	171	201	<12	<6.8
Buffalo Lake	BBL[3]	27-Mar-13	L1283894-4	surface	0.3	1.0	343	419	<12	<6.8
		7-Apr-14	L1440674-2	surface	0.3	1.0	452	551	<12	<6.8
		18-Jun-14	L1473448-1	surface	0.3	2.2	156	188	<12	<6.8
Buffalo Creek	BC3[4]	12-Jun-13	L1316464-5	surface	0.3	0.8	149	181	<12	<6.8
		22-Jul-13	L1336361-3	surface	0.3	0.8	163	198	<12	<6.8
		7-Oct-13	L1374688-1	surface	0.3	0.7	197	240	<12	<6.8
		28-May-14	L1462419-3	surface	0.3	0.7	127	155	<12	<6.8
		20-Jun-14	L1474237	surface	0.3	0.9	135	165	<12	<6.8
Dauphin River	DR2C	25-Mar-13	L1282620-5	surface	0.3	2.7	227	277	<12	<6.8
		12-Jun-13	L1315997-3	surface	0.3	4.3	178	206	<12	<6.8
		22-Jul-13	L1336361-1	surface	0.3	5.1	181	205	<12	<6.8
		7-Oct-13	L1374688-8	surface	0.3	NM	179	204	<12	<6.8
		10-Apr-14	L1442360-2	surface	0.3	3.4	211	258	<12	<6.8
		28-May-14	L1462419-1	surface	0.3	4.5	165	194	<12	<6.8
		20-Jun-14	L1474237-11	surface	0.3	4.5	170	200	<12	<6.8
Lake Winnipeg	LKW3B	26-Mar-13	L1283154	surface	0.3	4.9	174	210	<12	<6.8
		12-Jun-13	L1315997-2	surface	0.3	5.5	152	178	<12	<6.8
		21-Jul-13	L1335669-4	surface	0.3	5.8	178	199	<12	<6.8
		7-Oct-13	L1374688-7	surface	0.3	5.2	160	186	<12	<6.8
		10-Apr-14	L1442360-1	surface	0.3	4.6	156	190	<12	<6.8
		28-May-14	L1461949-10	surface	0.3	5.8	158	189	<12	<6.8
		28-May-14	L1461949-12	bottom	4.5	5.8	154	188	<12	<6.8
		20-Jun-14	L1474237-9	surface	0.3	6	169	200	<12	<6.8

Table E-11. Continued.

Sample Location	Location ID	Sample Date	ALS ID	Sample Type	Sample Depth (m)	Total Depth (m)	Alkalinity			
							Total, as CaCO3 (mg/L)	as Bicarbonate (HCO3-) (mg/L)	as Carbonate (CO32-) (mg/L)	as Hydroxide (OH-) (mg/L)
Lake Winnipeg	LKW3	25-Mar-13	L1282620-4	surface	0.3	5.1	174	212	<12	<6.8
		12-Jun-13	L1315997-1	surface	0.3	6.7	152	177	<12	<6.8
		21-Jul-13	L1335669-3	surface	0.3	6.6	175	197	<12	<6.8
		7-Oct-13	L1374688-6	surface	0.3	6.4	162	188	<12	<6.8
		9-Apr-14	L1441785-7	surface	0.3	5.9	159	194	<12	<6.8
		28-May-14	L1461949-9	surface	0.3	7.0	161	191	<12	<6.8
		28-May-14	L1461949-11	bottom	6.0	7.0	154	185	<12	<6.8
		20-Jun-14	L1474237-10	surface	0.3	7.3	157	184	<12	<6.8
Lake Winnipeg	LKW2	26-Mar-13	L1283154-3	surface	0.3	3.1	185	224	<12	<6.8
		11-Jun-13	L1315228-8	surface	0.3	4.4	155	179	<12	<6.8
		21-Jul-13	L1335669-2	surface	0.3	4.4	172	193	<12	<6.8
		7-Oct-13	L1374688-5	surface	0.3	3.4	166	192	<12	<6.8
		9-Apr-14	L1441785-6	surface	0.3	3.4	194	237	<12	<6.8
		28-May-14	L1461949-6	surface	0.3	4.3	160	190	<12	<6.8
		20-Jun-14	L1474237-8	surface	0.3	4.5	158	186	<12	<6.8
Lake Winnipeg	LKW1	26-Mar-13	L1283154-2	surface	0.3	3.1	194	237	<12	<6.8
		11-Jun-13	L1315228-7	surface	0.3	4.4	152	174	<12	<6.8
		21-Jul-13	L1335669-1	surface	0.3	4.5	162	184	<12	<6.8
		7-Oct-13	L1374688-4	surface	0.3	4.0	171	199	<12	<6.8
		9-Apr-14	L1441785-5	surface	0.3	3.5	174	212	<12	<6.8
		28-May-14	L1461949	surface	0.3	4.5	151	184	<12	<6.8
		20-Jun-14	L1474237-7	surface	0.3	4.5	155	183	<12	<6.8
Lake Winnipeg	LKW4	25-Mar-13	L1282620-1	surface	0.3	5.8	166	203	<12	<6.8
		11-Jun-13	L1315228-3	surface	0.3	7.0	152	176	<12	<6.8
		21-Jul-13	L1335669-5	surface	0.3	7.1	143	164	<12	<6.8
		6-Oct-13	L1373842-2	surface	0.3	7.0	137	156	<12	<6.8
		8-Apr-14	L1441278	surface	0.3	6.4	151	184	<12	<6.8
		8-Apr-14	L1441278-2	bottom	4.3	6.4	174	212	<12	<6.8
		28-May-14	L1461949-2	surface	0.3	7.6	148	181	<12	<6.8
		20-Jun-14	L1474237-3	surface	0.3	7.7	158	186	<12	<6.8

Table E-11. Continued.

Sample Location	Location ID	Sample Date	ALS ID	Sample Type	Sample Depth (m)	Total Depth (m)	Alkalinity			
							Total, as CaCO3 (mg/L)	as Bicarbonate (HCO3-) (mg/L)	as Carbonate (CO32-) (mg/L)	as Hydroxide (OH-) (mg/L)
Lake Winnipeg	LKW5	26-Mar-13	L1283154-1	surface	0.3	6.1	188	229	<12	<6.8
		11-Jun-13	L1315228-6	surface	0.3	7.3	144	166	<12	<6.8
		21-Jul-13	L1335669-6	surface	0.3	7.3	155	177	<12	<6.8
		7-Oct-13	L1374688-3	surface	0.3	7.0	171	201	<12	<6.8
		9-Apr-14	L1441785-3	surface	0.3	6.5	167	199	<12	<6.8
		9-Apr-14	L1441785-4	bottom	4.7	6.5	219	267	<12	<6.8
		28-May-14	L1461949-4	surface	0.3	7.6	146	178	<12	<6.8
		20-Jun-14	L1474237-6	surface	0.3	7.9	149	177	<12	<6.8
Lake Winnipeg	LKW6	25-Mar-13	L1282620-3	surface	0.3	6.7	175	213	<12	<6.8
		11-Jun-13	L1315228-4	surface	0.3	8.2	147	170	<12	<6.8
		11-Jun-13	L1315228-5	bottom	7.2	8.2	140	163	<12	<6.8
		21-Jul-13	L1335669-7	surface	0.3	8.1	145	167	<12	<6.8
		6-Oct-13	L1373842-3	surface	0.3	7.8	173	193	<12	<6.8
		9-Apr-14	L1441785-1	surface	0.3	7.3	173	211	<12	<6.8
		9-Apr-14	L1441785-2	bottom	5.5	7.3	216	264	<12	<6.8
		28-May-14	L1461949-3	surface	0.3	8.7	144	176	<12	<6.8
		20-Jun-14	L1474237-5	surface	0.3	8.6	149	177	<12	<6.8
Lake Winnipeg	LKW7	25-Mar-13	L1282620-2	surface	0.3	4.9	162	198	<12	<6.8
		11-Jun-13	L1315228-1	surface	0.3	6.5	140	162	<12	<6.8
		11-Jun-13	L1315228-2	bottom	5.5	6.5	138	161	<12	<6.8
		21-Jul-13	L1335669-8	surface	0.3	6.8	127	144	<12	<6.8
		6-Oct-13	L1373842-1	surface	0.3	6.3	132	161	<12	<6.8
		8-Apr-14	L1441278-5	surface	0.3	5.7	171	208	<12	<6.8
		28-May-14	L1461949-1	surface	0.3	7.0	125	152	<12	<6.8
		20-Jun-14	L1474237-4	surface	0.3	7.3	132	156	<12	<6.8

Table E-11. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Nitrogen						
				Ammonia (mg N/L)	Nitrate/ nitrite (mg N/L)	Nitrate-N (mg N/L)	Nitrite-N (mg N/L)	Dissolved Inorganic N[1] (mg/L)	Total Kjeldahl N (mg/L)	Total N[2] (mg/L)
Analytical Detection Limits				*0.010*	*0.0051*	*0.0050*	*0.0010*	-	*0.20*	-
Fairford River	FR1	24-Mar-13	surface	0.209	0.0433	0.0396	0.0037	0.252	1.04	1.08
		10-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.81	0.81
		22-Jul-13	surface	0.013	<0.0051	<0.0050	<0.0010	0.016	0.81	0.81
		7-Oct-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.87	0.87
		7-Apr-14	surface	0.187	0.0895	0.0861	0.0034	0.277	1.04	1.13
		29-May-14	surface	0.027	0.0273	0.0273	<0.0010	0.054	0.61	0.64
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.89	0.89
Lake St. Martin	LSM1	24-Mar-13	surface	0.247	0.0367	0.0350	0.0017	0.272	1.04	1.07
		10-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.84	0.84
		22-Jul-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.86	0.87
		7-Oct-13	surface	0.011	<0.0051	<0.0050	<0.0010	0.014	0.89	0.89
		7-Apr-14	surface	0.200	0.0547	0.0521	0.0026	0.255	0.96	1.01
		29-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.61	0.61
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.67	0.67
Dauphin River	DR1.0	24-Mar-13	surface	0.239	0.0352	0.0340	0.0013	0.274	1.09	1.13
	DR1.1	10-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.77	0.77
		22-Jul-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.82	0.82
		7-Oct-13	surface	0.026	<0.0051	<0.0050	<0.0010	0.029	0.88	0.88
		7-Apr-14	surface	0.208	0.0525	0.0506	0.0019	0.261	1.08	1.13
		29-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.66	0.66
		20-Jun-14	surface	0.012	<0.0051	<0.0050	<0.0010	0.015	0.68	0.68
Dauphin River	DR1.3	26-Mar-13	surface	0.246	0.0414	0.0400	0.0015	0.287	1.04	1.08
		10-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	1.00	1.00
		22-Jul-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.83	0.83
		7-Oct-13	surface	0.011	<0.0051	<0.0050	<0.0010	0.014	0.91	0.91
		7-Apr-14	surface	0.232	0.0506	0.0477	0.0028	0.283	1.09	1.14
		29-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.56	0.56
		20-Jun-14	surface	0.010	<0.0051	<0.0050	<0.0010	0.013	0.78	0.78

Table E-11. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Nitrogen						
				Ammonia (mg N/L)	Nitrate/ nitrite (mg N/L)	Nitrate-N (mg N/L)	Nitrite-N (mg N/L)	Dissolved Inorganic N[1] (mg/L)	Total Kjeldahl N (mg/L)	Total N[2] (mg/L)
Dauphin River	DR1 (NOTE 2)	26-Mar-13	surface	0.263	0.0458	0.0439	0.0019	0.309	1.16	1.21
		12-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.82	0.82
		22-Jul-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.93	0.93
		7-Oct-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.87	0.87
		10-Apr-14	surface	0.227	0.0440	0.0429	0.0011	0.271	0.91	0.95
		28-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.63	0.63
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.84	0.84
Buffalo Lake	BBL[3]	27-Mar-13	surface	1.91	<0.0051	<0.0050	<0.0010	1.94	3.29	3.32
		7-Apr-14	surface	1.75	<0.0051	<0.0050	0.0040	1.75	3.00	3.00
		18-Jun-14	surface	0.039	0.0055	0.0055	<0.0010	0.04	0.94	0.95
Buffalo Creek	BC3[4]	12-Jun-13	surface	0.029	0.0377	0.0322	0.0056	0.067	0.79	0.83
		22-Jul-13	surface	0.030	0.105	0.0987	0.0062	0.135	0.87	0.98
		7-Oct-13	surface	<0.010	0.0258	0.0258	<0.0010	0.031	0.87	0.90
		28-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.53	0.53
		20-Jun-14	surface	<0.010	0.0059	0.0059	<0.0010	0.011	0.68	0.69
Dauphin River	DR2C	25-Mar-13	surface	0.255	0.0264	0.0264	<0.0010	0.280	1.16	1.19
		12-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	1.04	1.04
		22-Jul-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.93	0.93
		7-Oct-13	surface	0.017	<0.0051	<0.0050	<0.0010	0.020	0.89	0.89
		10-Apr-14	surface	0.213	0.0508	0.0508	<0.0010	0.264	0.95	1.00
		28-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.58	0.58
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.80	0.80
Lake Winnipeg	LKW3B	26-Mar-13	surface	0.027	0.0163	0.0163	<0.0010	0.044	0.53	0.54
		12-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.47	0.47
		21-Jul-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.75	0.75
		7-Oct-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.69	0.69
		10-Apr-14	surface	0.041	0.0260	0.0260	<0.0010	0.067	0.39	0.42
		28-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.54	0.54
		28-May-14	bottom	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.54	0.54

Table E-11. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Nitrogen						
				Ammonia (mg N/L)	Nitrate/ nitrite (mg N/L)	Nitrate-N (mg N/L)	Nitrite-N (mg N/L)	Dissolved Inorganic N[1] (mg/L)	Total Kjeldahl N (mg/L)	Total N[2] (mg/L)
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.65	0.65
Lake Winnipeg	LKW3	25-Mar-13	surface	0.039	0.0103	0.0103	<0.0010	0.049	0.68	0.69
		12-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.50	0.50
		21-Jul-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.78	0.78
		7-Oct-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.66	0.66
		9-Apr-14	surface	0.031	0.0178	0.0178	<0.0010	0.049	0.53	0.55
		28-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.55	0.55
		28-May-14	bottom	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.54	0.54
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.58	0.58
Lake Winnipeg	LKW2	26-Mar-13	surface	0.024	0.0098	0.0098	<0.0010	0.034	0.57	0.58
		11-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.54	0.54
		21-Jul-13	surface	0.028	<0.0051	<0.0050	<0.0010	0.031	0.74	0.74
		7-Oct-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.77	0.77
		9-Apr-14	surface	0.070	0.0436	0.0416	0.002	0.114	0.65	0.69
		28-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.59	0.59
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.46	0.46
Lake Winnipeg	LKW1	26-Mar-13	surface	0.042	0.0187	0.0155	0.0032	0.061	0.62	0.64
		11-Jun-13	surface	0.052	<0.0051	<0.0050	<0.0010	0.055	0.58	0.58
		21-Jul-13	surface	0.024	<0.0051	<0.0050	<0.0010	0.027	0.58	0.58
		7-Oct-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.74	0.74
		9-Apr-14	surface	0.077	0.0196	0.0172	0.0024	0.097	0.66	0.68
		28-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.54	0.54
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.41	0.41
Lake Winnipeg	LKW4	25-Mar-13	surface	0.016	0.0097	0.0097	<0.0010	0.026	0.60	0.61
		11-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.52	0.52
		21-Jul-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.42	0.42
		6-Oct-13	surface	<0.010	0.0152	0.0152	<0.0010	0.020	0.55	0.57
		8-Apr-14	surface	0.023	0.0200	0.0200	<0.0010	0.043	0.55	0.57
		8-Apr-14	bottom	0.033	0.0976	0.0944	0.0032	0.131	0.68	0.78

Table E-11. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Nitrogen						
				Ammonia (mg N/L)	Nitrate/ nitrite (mg N/L)	Nitrate-N (mg N/L)	Nitrite-N (mg N/L)	Dissolved Inorganic N[1] (mg/L)	Total Kjeldahl N (mg/L)	Total N[2] (mg/L)
		28-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.51	0.51
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.52	0.52
Lake Winnipeg	LKW5	26-Mar-13	surface	0.014	0.0100	0.0100	<0.0010	0.024	0.50	0.51
		11-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.52	0.52
		21-Jul-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.49	0.49
		7-Oct-13	surface	<0.010	0.0178	0.0178	<0.0010	0.023	0.70	0.72
		9-Apr-14	surface	0.053	0.0212	0.0189	0.0023	0.074	0.60	0.62
		9-Apr-14	bottom	0.193	0.0696	0.0681	0.0015	0.263	1.07	1.14
		28-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.47	0.47
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.39	0.39
Lake Winnipeg	LKW6	25-Mar-13	surface	0.010	0.0102	0.0102	<0.0010	0.020	0.52	0.53
		11-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.54	0.54
		11-Jun-13	bottom	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.42	0.42
		21-Jul-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.47	0.47
		6-Oct-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.80	0.80
		9-Apr-14	surface	0.080	0.0126	0.0126	<0.0010	0.093	0.61	0.62
		9-Apr-14	bottom	0.143	0.0597	0.0577	0.0019	0.203	0.87	0.93
		28-May-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.41	0.41
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.35	0.35
Lake Winnipeg	LKW7	25-Mar-13	surface	<0.010	0.0128	0.0128	<0.0010	0.018	0.46	0.47
		11-Jun-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.50	0.50
		11-Jun-13	bottom	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.45	0.45
		21-Jul-13	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.51	0.51
		6-Oct-13	surface	<0.010	0.0500	0.0500	<0.0010	0.055	0.52	0.57
		8-Apr-14	surface	0.024	0.0507	0.0489	0.0018	0.075	0.62	0.67
		28-May-14	surface	<0.010	0.0086	0.0086	<0.0010	0.014	0.40	0.41
		20-Jun-14	surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.28	0.28

Table E-11. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Phosphorus				N:P Molar Ratios			Carbon		
				Total P (mg/L)	Dissolved P (mg/L)	Total Particulate P (mg/L)	Dissolved Fraction (%)	TN:TP	DIN:DP	DIN:TP	Total Inorganic C (mg/L)	Total Organic C (mg/L)	Dissolved Organic C (mg/L)
Analytical Detection Limits				*0.010/0.0010*	*0.0010/ 0.0020 /0.010*	*0.010/0.014*	-	-	-	-	*1.0*	*1.0*	*1.0*
Fairford River	FR1	24-Mar-13	surface	0.012	0.0038	<0.010	32	200	147	46.6	54.1	15.9	15.2
		10-Jun-13	surface	0.020	0.010	<0.014	50	90	1.1	0.6	41.7	12.3	12.8
		22-Jul-13	surface	0.020	0.0033	0.017	17	90	10	1.7	40.7	13.9	12.8
		7-Oct-13	surface	0.017	0.0074	<0.010	44	114	1.5	0.7	37.3	12	11.4
		7-Apr-14	surface	0.0112	0.0110	<0.0028	98	223	55.7	54.7	58.8	16.2	16.3
		29-May-14	surface	0.0128	0.0058	0.007	45	110	20.7	9.4	39.1	11.4	11.5
		20-Jun-14	surface	0.020	0.0071	0.013	36	99	1.6	0.6	39.6	11.3	11.3
Lake St. Martin	LSM1	24-Mar-13	surface	0.010	0.0036	<0.010	36	236	167	60.2	52.2	14.2	14.6
		10-Jun-13	surface	0.016	0.011	<0.014	69	117	1.0	0.7	40.6	12.7	12.7
		22-Jul-13	surface	0.018	0.0031	0.015	17	105	3.6	0.6	41.8	14.9	13.6
		7-Oct-13	surface	0.011	0.0068	<0.010	60	174	4.5	2.7	39.3	12.7	11.5
		7-Apr-14	surface	0.011	0.0092	<0.0028	84	206	61.3	51.7	54.2	15.2	15.4
		29-May-14	surface	0.013	0.0076	0.005	60	108	1.5	0.9	36.3	10.5	10.7
		20-Jun-14	surface	0.021	0.0058	0.015	28	71	1.9	0.5	33.8	9.1	9.0
Dauphin River	DR1.0	24-Mar-13	surface	0.011	0.0067	<0.010	61	227	91	55	53.3	14.3	14.7
	DR1.1	10-Jun-13	surface	0.018	0.010	<0.014	56	95	1.1	0.6	40.2	12.9	12.9
		22-Jul-13	surface	0.020	0.0034	0.017	17	91	3.3	0.6	42.3	14.9	13.8
		7-Oct-13	surface	0.013	0.0081	<0.010	62	150	7.8	4.9	39.0	12.1	11.9
		7-Apr-14	surface	0.0096	0.0054	0.0043	56	261	107	60.1	54.4	15.2	14.9
		29-May-14	surface	0.0135	0.0074	0.0062	55	109	1.5	0.8	32.3	10.0	9.7
		20-Jun-14	surface	0.020	0.0053	0.014	27	76	6.1	1.6	32.8	9.1	9.2
Dauphin River	DR1.3	26-Mar-13	surface	0.011	0.0034	<0.010	31	218	187	58	54.4	16.3	16.3
		10-Jun-13	surface	0.025	0.011	<0.014	44	89	1.0	0.4	40.3	13.1	13.1
		22-Jul-13	surface	0.019	0.0031	0.016	16	97	3.6	0.6	42.5	15.1	13.8
		7-Oct-13	surface	0.014	0.0040	<0.010	29	144	7.5	2.2	39.5	12.3	11.4
		7-Apr-14	surface	0.0107	0.0069	0.0038	64	236	90.7	58.5	55.8	15.3	15.9
		29-May-14	surface	0.017	0.0061	0.0108	36	73	1.8	0.7	35.8	11.0	10.8
		20-Jun-14	surface	0.0185	0.0063	0.0122	34	94	4.4	1.5	37.3	11.9	12.6

Table E-11. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Phosphorus				N:P Molar Ratios			Carbon		
				Total P (mg/L)	Dissolved P (mg/L)	Total Particulate P (mg/L)	Dissolved Fraction (%)	TN:TP	DIN:DP	DIN:TP	Total Inorganic C (mg/L)	Total Organic C (mg/L)	Dissolved Organic C (mg/L)
Dauphin River	DR1 (NOTE 2)	26-Mar-13	surface	0.011	0.0035	<0.010	32	243	195	62.2	54.9	16.4	16.5
		12-Jun-13	surface	0.018	0.0020	0.016	11	103	6	0.6	40.7	13.1	12.9
		22-Jul-13	surface	0.022	0.0027	0.019	12	94	4.1	0.5	41.9	14.9	13.6
		7-Oct-13	surface	0.013	0.0040	<0.010	31	149	2.8	0.9	39.6	13.1	12.0
		10-Apr-14	surface	0.0111	0.0079	0.0032	71	190	76.0	54.1	55.0	15.5	15.6
		28-May-14	surface	0.0155	0.0062	0.0092	40	90	1.8	0.7	37.0	11.3	11.4
		20-Jun-14	surface	0.021	0.0060	0.015	29	89	1.8	0.5	38.3	11.7	11.7
Buffalo Lake	BBL[3]	27-Mar-13	surface	0.044	0.033	<0.014	75	167	130	97	91.8	29.1	28.3
		7-Apr-14	surface	0.039	0.0076	0.031	19	170	511	99.5	124	25.5	25.5
		18-Jun-14	surface	0.0142	0.0069	0.0073	49	147	14	6.9	37.0	18.6	18.6
Buffalo Creek	BC3[4]	12-Jun-13	surface	0.024	0.011	<0.014	46	76	13	6.2	34.3	18.4	18.1
		22-Jul-13	surface	0.041	0.012	0.030	29	53	25	7.3	37.7	22.3	21.6
		7-Oct-13	surface	0.030	0.0032	0.027	11	66	21	2.3	45.0	18.1	17.4
		28-May-14	surface	0.015	0.0053	0.0096	36	79	2.1	0.7	27.4	16.7	16.5
		20-Jun-14	surface	0.024	0.0049	0.0187	20	63	4.9	1.0	29.6	18.4	18.2
Dauphin River	DR2C	25-Mar-13	surface	0.008	0.004	0.0038	51	336	155	79	52.6	15.1	14.3
		12-Jun-13	surface	0.022	0.0015	0.020	7	105	7.4	0.5	40.6	13.4	12.4
		22-Jul-13	surface	0.020	0.0028	0.017	14	103	4.0	0.6	42.3	14.9	13.8
		7-Oct-13	surface	0.014	0.0034	0.010	24	141	13	3.1	35.7	10.1	9.7
		10-Apr-14	surface	0.0125	0.0058	0.007	46	177	100.7	46.7	53.0	14.4	14.6
		28-May-14	surface	0.016	0.0074	0.009	46	81	1.5	0.7	37.0	11.3	11.2
		20-Jun-14	surface	0.020	0.0059	0.014	30	89	1.9	0.6	38.0	11.8	11.5
Lake Winnipeg	LKW3B	26-Mar-13	surface	0.019	0.016	<0.014	82	63	6.2	5.1	41.1	12.4	12.3
		12-Jun-13	surface	0.016	0.0020	0.014	13	65	5.5	0.7	35.2	10.7	10.3
		21-Jul-13	surface	0.018	0.0084	<0.010	47	93	1.3	0.6	41.4	13.7	12.9
		7-Oct-13	surface	0.017	0.0037	0.014	22	90	3.0	0.7	39.9	12.8	12.3
		10-Apr-14	surface	0.021	0.0131	<0.014	62	44	11.3	7.1	38.6	9.7	9.9
		28-May-14	surface	0.0145	0.0074	0.0071	51	83	1.5	0.8	35.2	9.7	9.2
		28-May-14	bottom	0.017	0.0073	0.0097	43	71	1.5	0.7	34.8	9.0	8.6

Table E-11. Continued.

				Phosphorus				N:P Molar Ratios			Carbon		
Sample Location	Location ID	Sample Date	Sample Type	Total P (mg/L)	Dissolved P (mg/L)	Total Particulate P (mg/L)	Dissolved Fraction (%)	TN:TP	DIN:DP	DIN:TP	Total Inorganic C (mg/L)	Total Organic C (mg/L)	Dissolved Organic C (mg/L)
		20-Jun-14	surface	0.021	0.0058	0.015	28	69	1.9	0.5	37.8	11.8	11.7
Lake Winnipeg	LKW3	25-Mar-13	surface	0.019	0.020	<0.014	105	80	5.5	5.7	39.9	10.5	10.6
		12-Jun-13	surface	0.016	<0.0010	0.015	3	70	22	0.7	35.7	10.1	10.9
		21-Jul-13	surface	0.020	0.010	<0.014	50	87	1.1	0.6	40.8	13.0	12.8
		7-Oct-13	surface	0.015	0.0068	<0.010	45	98	1.6	0.7	35.8	9.8	9.7
		9-Apr-14	surface	0.015	0.0125	<0.0028	83	81	8.6	7.2	39.8	10.2	10.1
		28-May-14	surface	0.0145	0.0091	0.0054	63	84	1.2	0.8	36.2	9.9	9.4
		28-May-14	bottom	0.0146	0.0061	0.0085	42	82	1.8	0.8	34.9	9.3	8.8
		20-Jun-14	surface	0.0166	0.0061	0.0106	37	78	1.8	0.7	34.6	10.8	10.6
Lake Winnipeg	LKW2	26-Mar-13	surface	0.020	0.014	<0.014	70	64	5.3	3.7	41.9	11.9	11.8
		11-Jun-13	surface	0.019	0.013	<0.014	68	63	0.9	0.6	35.9	10.5	10.5
		21-Jul-13	surface	0.019	0.0079	0.011	42	87	8.6	3.6	40.3	13.0	12.1
		7-Oct-13	surface	0.018	0.0105	<0.010	58	95	1.1	0.6	37.3	11.0	10.4
		9-Apr-14	surface	0.0146	0.0108	0.0038	74	105	23.3	17.2	49.3	13.1	13.4
		28-May-14	surface	0.0151	0.0064	0.0088	42	87	1.7	0.7	49.2	9.7	9.3
		20-Jun-14	surface	0.020	0.0058	0.015	29	51	1.9	0.6	35.5	11.3	11.1
Lake Winnipeg	LKW1	26-Mar-13	surface	0.019	0.015	<0.014	79	74	9.0	7.1	45.1	13.0	12.9
		11-Jun-13	surface	0.016	0.0046	0.012	29	81	26	7.5	35.1	10.4	10.3
		21-Jul-13	surface	0.023	0.0080	0.015	35	56	7.3	2.6	37.9	11.5	11.3
		7-Oct-13	surface	0.023	0.0050	0.018	22	71	2.2	0.5	38.4	10.7	10.4
		9-Apr-14	surface	0.0116	0.0062	0.0054	53	130	34.5	18.4	43.6	11.4	11.5
		28-May-14	surface	0.0198	0.0067	0.0130	34	61	1.7	0.6	38.9	9.6	9.4
		20-Jun-14	surface	0.015	0.0062	0.0088	41	61	1.8	0.7	34.6	10.5	10.1
Lake Winnipeg	LKW4	25-Mar-13	surface	0.020	0.018	<0.014	90	68	3.2	2.8	38.3	10.5	10.3
		11-Jun-13	surface	0.016	0.012	<0.014	75	72	0.9	0.7	35.1	10.4	10.7
		21-Jul-13	surface	0.029	0.012	0.017	41	32	0.9	0.4	33.1	9.6	9.3
		6-Oct-13	surface	0.026	<0.0010	0.026	2	48	89	1.7	29.9	7.6	7.2
		8-Apr-14	surface	0.0156	0.0143	<0.0028	92	81	6.7	6.1	37.8	9.4	9.6
		8-Apr-14	bottom	0.0172	0.0127	0.0046	74	100	22.8	16.8	43.2	11.1	11.2

Table E-11. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Phosphorus				N:P Molar Ratios			Carbon		
				Total P (mg/L)	Dissolved P (mg/L)	Total Particulate P (mg/L)	Dissolved Fraction (%)	TN:TP	DIN:DP	DIN:TP	Total Inorganic C (mg/L)	Total Organic C (mg/L)	Dissolved Organic C (mg/L)
		28-May-14	surface	0.0141	0.0062	0.0079	44	80	1.8	0.8	34.1	8.2	8.1
		20-Jun-14	surface	0.021	0.0057	0.015	27	55	1.9	0.5	29.2	8.4	8.4
Lake Winnipeg	LKW5	26-Mar-13	surface	0.026	0.021	<0.014	81	43	2.5	2.0	43.3	11.7	10.9
		11-Jun-13	surface	0.017	0.012	<0.014	71	68	0.9	0.7	33.3	9.5	9.9
		21-Jul-13	surface	0.027	0.0076	0.019	28	40	1.5	0.4	36.1	10.6	10.2
		7-Oct-13	surface	0.022	0.0024	0.020	11	72	21	2.3	38.6	10.9	10.2
		9-Apr-14	surface	0.0135	0.0111	<0.0028	82	102	14.8	12.2	41.7	10.7	10.8
		9-Apr-14	bottom	0.0107	0.0075	0.003	70	236	77.5	54.3	54.3	14.7	14.9
		28-May-14	surface	0.0146	0.0072	0.007	49	72	1.5	0.8	33.6	8.4	8.3
		20-Jun-14	surface	0.0158	0.0061	0.010	39	55	1.8	0.7	32.3	9.3	9.1
Lake Winnipeg	LKW6	25-Mar-13	surface	0.023	0.026	<0.014	113	51	1.7	1.9	40.4	10.6	10.6
		11-Jun-13	surface	0.017	0.012	<0.014	71	71	0.9	0.7	33.9	9.9	10.4
		11-Jun-13	bottom	0.018	0.013	<0.014	72	52	0.9	0.6	31.5	9.0	9.7
		21-Jul-13	surface	0.027	0.010	0.017	37	39	1.1	0.4	33.6	9.7	9.6
		6-Oct-13	surface	0.020	<0.0010	0.020	3	89	22	0.6	37.6	11.1	11.1
		9-Apr-14	surface	0.020	0.0143	<0.014	72	69	14.3	10.3	43.6	11.4	11.1
		9-Apr-14	bottom	0.013	0.0069	0.006	53	158	65.0	34.5	54.6	15.4	15.0
		28-May-14	surface	0.013	0.0080	0.005	62	70	1.4	0.9	33.4	8.0	8.0
		20-Jun-14	surface	0.014	0.0071	0.007	50	55	1.6	0.8	27.5	7.7	7.7
Lake Winnipeg	LKW7	25-Mar-13	surface	0.026	0.025	<0.014	96	40	1.6	1.5	37.5	9.6	9.2
		11-Jun-13	surface	0.020	0.0049	0.015	25	56	2.3	0.6	32.4	9.5	10.4
		11-Jun-13	bottom	0.019	0.011	<0.014	58	53	1.0	0.6	31.7	9.1	9.6
		21-Jul-13	surface	0.030	0.0086	0.021	29	38	1.3	0.4	29.3	8.5	8.5
		6-Oct-13	surface	0.035	0.011	0.025	31	36	11	3.5	28.7	9.5	9.7
		8-Apr-14	surface	0.0157	0.0132	<0.0028	84	95	12.5	10.5	42.9	11.0	10.9
		28-May-14	surface	0.0132	0.0067	0.0066	51	69	4.5	2.3	27.7	7.2	6.9
		20-Jun-14	surface	0.023	0.0081	0.015	35	27	1.4	0.5	24.0	6.9	7.0

Table E-11. Continued.

				C:N Molar Ratios					Water Clarity			Algal Pigments	
Sample Location	**Location ID**	**Sample Date**	**Sample Type**	**TOC:ON**	**TOC:TN**	**Lab pH**	**Laboratory Conductivity (µmhos/cm)**	**TDS (mg/L)**	**TSS (mg/L)**	**Turbidity (NTU)**	**True Colour (CU)**	**Chlorophyll *a* (µg/L)**	**Phaeophytin *a* (µg/L)**
Analytical Detection Limits				-	-	*0.10*	*1/20*	*5.0*	*2.0*	*0.10*	*5.0*	*0.10*	*0.10*
Fairford River	FR1	24-Mar-13	surface	22.3	17.1	8.22	1390	810	<2.0	0.71	5.3	0.90	0.79
		10-Jun-13	surface	17.8	17.7	8.56	1050	615	8.5	4.77	<5.0	6.41	1.31
		22-Jul-13	surface	20.3	20.0	8.61	993	596	12.0	8.03	8.1	5.11	0.68
		7-Oct-13	surface	16.2	16.0	8.50	1030	599	12.8	8.07	<5.0	4.58	0.8
		7-Apr-14	surface	22.2	16.7	7.91	1320	806	2.4	1.06	9.2	1.22	0.55
		29-May-14	surface	22.8	20.9	8.40	982	546	2.8	1.95	8.0	2.78	0.49
		20-Jun-14	surface	14.9	14.8	8.53	931	546	6.0	3.10	20.8	3.27	0.51
Lake St. Martin	LSM1	24-Mar-13	surface	20.9	15.6	8.21	1310	772	<2.0	0.65	5.5	0.50	0.57
		10-Jun-13	surface	17.7	17.6	8.56	1010	575	6.5	3.02	7.5	5.88	0.69
		22-Jul-13	surface	20.2	20.0	8.62	1030	613	9.7	4.33	8.1	6.86	1.30
		7-Oct-13	surface	16.9	16.6	8.53	1050	598	9.6	3.48	5.3	5.70	1.05
		7-Apr-14	surface	23.3	17.5	8.03	1240	747	2.4	0.64	<5.0	0.69	0.56
		29-May-14	surface	20.2	20.0	8.51	857	488	4.0	1.43	10.7	4.67	0.63
		20-Jun-14	surface	16.0	15.8	8.41	945	563	6.0	3.80	5.7	4.44	0.87
Dauphin River	DR1.0	24-Mar-13	surface	19.6	14.8	8.22	1320	761	<2.0	0.61	6.1	0.94	0.55
	DR1.1	10-Jun-13	surface	19.7	19.5	8.55	1000	587	8.0	4.78	6.6	4.91	1.83
		22-Jul-13	surface	21.3	21.1	8.59	1030	624	11.0	4.40	8.8	7.12	1.56
		7-Oct-13	surface	16.5	16.0	8.57	1050	602	7.6	3.28	5.7	4.52	1.82
		7-Apr-14	surface	20.3	15.7	7.98	1250	748	2.4	0.67	7.8	0.71	0.69
		29-May-14	surface	17.8	17.6	8.45	767	466	4.8	1.36	11.1	4.52	0.67
		20-Jun-14	surface	15.9	15.6	8.43	954	540	<2.0	3.00	5.8	5.26	1.26
Dauphin River	DR1.3	26-Mar-13	surface	24.0	17.6	8.20	1340	794	2.0	1.21	7.2	0.47	0.56
		10-Jun-13	surface	15.4	15.2	8.41	977	568	11.0	6.69	9.3	6.44	1.75
		22-Jul-13	surface	21.4	21.2	8.48	1020	590	10.0	4.17	11.1	4.66	1.45
		7-Oct-13	surface	16.0	15.7	8.52	1060	600	8.7	3.38	5.2	4.02	2.05
		7-Apr-14	surface	20.8	15.6	7.90	1260	747	2.4	0.77	7.9	0.68	0.69
		29-May-14	surface	23.1	22.8	8.39	847	479	3.6	1.91	13.9	4.31	1.39
		20-Jun-14	surface	18.0	17.7	8.43	933	544	6.4	2.70	10.8	4.49	0.83

Table E-11. Continued.

				C:N Molar Ratios					Water Clarity			Algal Pigments	
Sample Location	Location ID	Sample Date	Sample Type	TOC:ON	TOC:TN	Lab pH	Laboratory Conductivity (µmhos/cm)	TDS (mg/L)	TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Phaeophytin *a* (µg/L)
Dauphin River	DR1 (NOTE 2)	26-Mar-13	surface	21.3	15.9	8.20	1340	787	<2.0	0.95	5.0	0.52	0.54
		12-Jun-13	surface	18.8	18.7	8.48	998	575	10.8	5.37	9.0	4.11	1.08
		22-Jul-13	surface	18.8	18.6	8.52	1020	603	11.0	5.24	10.3	5.52	1.60
		7-Oct-13	surface	17.7	17.5	8.50	1050	570	10	3.71	5.6	3.58	2.7
		10-Apr-14	surface	26.5	19.0	7.99	1250	726	<2.0	1.42	9.2	0.70	0.72
		28-May-14	surface	21.1	20.8	8.42	885	524	6.0	2.40	13.3	4.38	0.51
		20-Jun-14	surface	16.3	16.2	8.41	930	543	8.4	4.00	8.5	5.68	1.05
Buffalo Lake	BBL[3]	27-Mar-13	surface	24.6	10.2	7.49	1080	640	<2.0	25.4	53.7	1.34	0.30
		7-Apr-14	surface	23.8	9.9	7.31	1170	761	2.4	1.59	43.0	7.96	<0.10
		18-Jun-14	surface	24.1	23.0	8.32	362	250	5.2	3.00	53.3	2.51	1.13
Buffalo Creek	BC3[4]	12-Jun-13	surface	28.2	25.9	8.25	366	241	12.5	8.40	59.9	3.34	2.05
		22-Jul-13	surface	31.0	26.7	8.20	383	250	23.5	18.7	65.8	5.64	5.23
		7-Oct-13	surface	24.4	23.6	8.27	479	392	14.8	16.1	43.9	1.98	2.26
		28-May-14	surface	37.1	36.6	8.29	273	208	10.8	7.80	58.7	2.79	1.29
		20-Jun-14	surface	31.8	31.3	8.23	289	212	18.4	11.1	64.9	2.29	2.28
Dauphin River	DR2C	25-Mar-13	surface	19.5	14.9	8.09	1340	780	2.0	1.06	6.3	0.56	0.63
		12-Jun-13	surface	15.1	15.0	8.45	1010	587	10.0	4.72	10.7	5.13	1.28
		22-Jul-13	surface	18.8	18.6	8.53	1020	593	11.0	4.86	9.5	5.03	1.34
		7-Oct-13	surface	13.5	13.2	8.52	1050	608	10	3.86	6	4.48	0.99
		10-Apr-14	surface	22.8	16.8	7.92	1190	693	2.0	1.54	9.4	0.68	0.67
		28-May-14	surface	22.9	22.6	8.42	889	529	6.8	3.00	12.3	4.82	0.57
		20-Jun-14	surface	17.3	17.2	8.39	921	541	8.0	5.70	10.6	5.23	1.01
Lake Winnipeg	LKW3B	26-Mar-13	surface	29.0	26.7	8.30	783	465	<2.0	2.67	9.67	1.35	0.63
		12-Jun-13	surface	26.8	26.4	8.40	759	420	4.5	2.26	11.7	2.80	0.39
		21-Jul-13	surface	21.5	21.2	8.58	1020	596	8.0	4.31	9.6	6.11	1.11
		7-Oct-13	surface	21.8	21.6	8.47	826	481	6.7	4.85	6.8	4.77	1.21
		10-Apr-14	surface	32.4	27.2	8.02	591	356	<2.0	2.50	13.0	0.59	0.45
		28-May-14	surface	21.2	20.9	8.34	837	488	5.0	2.20	14.8	4.39	0.52
		28-May-14	bottom	19.6	19.4	8.30	770	440	4.0	2.40	9.5	-	-
		20-Jun-14	surface	21.3	21.1	8.38	898	502	7.6	4.60	12.1	5.34	0.88

Table E-11. Continued.

				C:N Molar Ratios					Water Clarity			Algal Pigments	
Sample Location	Location ID	Sample Date	Sample Type	TOC:ON	TOC:TN	Lab pH	Laboratory Conductivity (µmhos/cm)	TDS (mg/L)	TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Phaeophytin *a* (µg/L)
Lake Winnipeg	LKW3	25-Mar-13	surface	19.1	17.7	8.26	746	421	<2.0	3.43	12.1	0.50	0.36
		12-Jun-13	surface	23.8	23.4	8.41	759	420	4.5	2.24	9.7	2.83	0.51
		21-Jul-13	surface	19.6	19.4	8.56	990	574	8.0	4.69	9.4	6.31	1.19
		7-Oct-13	surface	17.5	17.3	8.47	839	516	7.3	4.02	6.9	4.42	0.99
		9-Apr-14	surface	23.8	21.7	8.26	593	347	<2.0	2.40	9.8	0.76	0.45
		28-May-14	surface	21.2	20.9	8.35	854	494	4.0	2.30	13.1	5.06	0.78
		28-May-14	bottom	20.3	20.0	8.30	770	464	4.0	2.10	7.7	-	-
		20-Jun-14	surface	21.9	21.6	8.41	746	449	4.0	3.00	9.2	2.86	0.61
Lake Winnipeg	LKW2	26-Mar-13	surface	25.4	23.9	8.30	797	474	<2.0	2.74	11.4	0.84	0.37
		11-Jun-13	surface	22.9	22.6	8.46	782	446	3.5	3.50	8.0	3.31	0.62
		21-Jul-13	surface	21.3	20.4	8.58	963	556	9.0	4.74	11.0	5.88	1.10
		7-Oct-13	surface	16.8	16.6	8.49	904	507	12.7	6.65	5.4	3.73	4.54
		9-Apr-14	surface	26.4	22.0	8.20	962	574	<2.0	1.36	8.8	0.55	0.52
		28-May-14	surface	19.3	19.1	8.35	833	406	5.5	2.80	10.3	4.58	0.80
		20-Jun-14	surface	29.0	28.5	8.41	705	406	5.2	5.70	14.5	2.43	0.64
Lake Winnipeg	LKW1	26-Mar-13	surface	26.2	23.7	8.27	855	505	<2.0	2.93	14.7	0.13	0.26
		11-Jun-13	surface	23.0	20.8	8.47	750	424	4.5	2.74	9.3	2.38	0.81
		21-Jul-13	surface	24.1	23.0	8.54	820	473	12.0	10.5	12.3	3.80	0.90
		7-Oct-13	surface	17.0	16.8	8.48	888	519	14.7	11.5	6.8	3.02	1.91
		9-Apr-14	surface	22.8	19.6	8.27	786	465	<2.0	1.75	8.7	0.48	0.39
		28-May-14	surface	20.9	20.6	8.27	721	406	6.5	4.80	15.7	4.58	0.95
		20-Jun-14	surface	30.2	29.7	8.39	734	426	4.0	3.30	8.6	2.58	0.61
Lake Winnipeg	LKW4	25-Mar-13	surface	21.0	20.1	8.25	720	440	<2.0	2.99	10.1	0.46	0.23
		11-Jun-13	surface	23.6	23.2	8.44	765	441	6.0	2.40	8.4	3.09	0.45
		21-Jul-13	surface	27.0	26.5	8.47	679	386	6.5	7.30	9.6	3.89	1.24
		6-Oct-13	surface	16.3	15.7	8.53	609	325	5.2	7.41	8.5	5.95	1.36
		8-Apr-14	surface	20.8	19.2	8.02	546	299	2.2	2.40	10.1	0.88	0.47
		8-Apr-14	bottom	20.0	16.7	7.69	813	450	3.2	3.20	8.9	-	-
		28-May-14	surface	18.9	18.7	8.08	639	370	3.5	2.70	8.3	2.79	1.15
		20-Jun-14	surface	19.0	18.8	8.39	784	438	6.0	4.20	8.2	3.70	0.60

Table E-11. Continued.

				C:N Molar Ratios					Water Clarity			Algal Pigments	
Sample Location	Location ID	Sample Date	Sample Type	TOC:ON	TOC:TN	Lab pH	Laboratory Conductivity (µmhos/cm)	TDS (mg/L)	TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Phaeophytin *a* (µg/L)
Lake Winnipeg	LKW5	26-Mar-13	surface	28.1	26.8	8.29	756	460	<2.0	3.28	12.3	0.40	0.34
		11-Jun-13	surface	21.5	21.2	8.46	700	399	5.5	3.21	8.0	2.48	0.37
		21-Jul-13	surface	25.5	25.1	8.50	779	445	6.0	5.33	10.5	3.73	1.10
		7-Oct-13	surface	18.3	17.7	8.43	906	594	12.7	8.07	7.1	3.64	1.67
		9-Apr-14	surface	22.8	20.1	8.33	727	418	<2.0	1.96	7.1	0.48	0.38
		9-Apr-14	bottom	19.6	15.0	8.17	1220	722	<2.0	0.85	5.7	-	-
		28-May-14	surface	21.1	20.7	8.26	727	434	3.0	2.50	11.1	3.65	0.78
		20-Jun-14	surface	28.2	27.6	8.37	713	400	4.4	3.70	9.9	2.00	0.55
Lake Winnipeg	LKW6	25-Mar-13	surface	24.2	23.3	8.23	707	420	<2.0	3.75	10.7	0.46	0.36
		11-Jun-13	surface	26.6	21.3	8.45	724	426	10.0	3.13	9.1	2.91	0.45
		11-Jun-13	bottom	25.3	24.8	8.42	659	379	7.0	4.01	9.1	-	-
		21-Jul-13	surface	24.3	23.9	8.47	700	393	10.0	9.51	11.6	2.69	1.04
		6-Oct-13	surface	16.3	16.1	8.60	999	533	7.2	4.52	5.5	2.59	0.85
		9-Apr-14	surface	25.1	21.4	8.27	627	375	<2.0	2.50	8.7	0.65	0.45
		9-Apr-14	bottom	24.7	19.3	7.83	1190	698	<2.0	1.07	6.4	-	-
		28-May-14	surface	23.0	22.6	8.28	648	382	3.0	1.95	8.9	2.63	0.97
		20-Jun-14	surface	26.0	25.5	8.36	715	406	4.0	3.70	8.1	1.88	0.44
Lake Winnipeg	LKW7	25-Mar-13	surface	24.6	23.7	8.23	641	376	<2.0	3.22	10.8	0.43	0.35
		11-Jun-13	surface	22.4	22.1	8.45	651	379	5.0	4.25	5.9	1.80	0.30
		11-Jun-13	bottom	23.9	23.5	8.43	635	370	5.0	3.61	19.4	-	-
		21-Jul-13	surface	19.6	19.3	8.52	530	295	9.5	12.3	11.9	14.5	0.62
		6-Oct-13	surface	21.5	19.4	7.80	549	298	7.2	10.5	7.7	3.91	0.94
		8-Apr-14	surface	21.5	19.1	8.05	689	372	<2.0	3.10	11.1	0.98	0.58
		28-May-14	surface	21.3	20.6	8.21	617	358	<2.0	2.40	6.7	2.94	0.73
		20-Jun-14	surface	29.3	28.5	8.37	588	328	6.0	6.40	7.3	2.61	0.65

1 - Calculated as the sum of ammonia-N and nitrate/nitrite-N.
2 - Calculated as the sum of TKN and nitrate/nitrite-N.
3 - Big Buffalo Lake was only sampled in winter and in June 2014.
4 - Buffalo Creek was not sampling during winter.

Table E-12. Laboratory results for metals and major ions at RWQMP sites during 2011/2012 Closure. Units are mg/L unless otherwise indicated.

Sample Location	Location ID	ALS ID	Sample Date	Sample Type	Sample Depth (m)	Total Depth (m)	Hardness, as $CaCO_3$	Aluminum		Antimony	
								Dissolved	Total	Dissolved	Total
Analytical Detection Limits							*0.30*	*0.0020*	*0.0050*	*0.00020*	*0.00020*
Fairford River	FR1	L1282204-1	24-Mar-13	surface	0.3	NM	308	<0.0020	0.0065	<0.00020	<0.00020
		L1314453-4	10-Jun-13	surface	0.3	NM	273	<0.0020	0.0358	<0.00020	<0.00020
		L1336361-7	22-Jul-13	surface	0.3	NM	236	<0.0020	0.0439	<0.00020	<0.00020
		L1374688-12	7-Oct-13	surface	0.3	NM	230	<0.0020	0.0381	<0.00020	<0.00020
		L1440674-5	7-Apr-14	surface	0.3	NM	333	0.0073	0.0217	<0.00020	<0.00020
		L1462414-4	29-May-14	surface	0.3	NM	220	<0.0020	0.0208	<0.00020	<0.00020
		L1474237-17	20-Jun-14	surface	0.3	NM	256	<0.0020	0.0312	<0.00020	<0.00020
Lake St. Martin	LSM1	L1282204-2	24-Mar-13	surface	0.3	1.9	292	<0.0020	0.0066	<0.00020	<0.00020
		L1314453-2	10-Jun-13	surface	0.3	2.7	254	<0.0020	0.0202	<0.00020	<0.00020
		L1336361	22-Jul-13	surface	0.3	2.0	256	0.0035	0.0311	<0.00020	<0.00020
		L1374688	7-Oct-13	surface	0.3	2.6	249	<0.0020	0.0253	<0.00020	<0.00020
		L1440674-3	7-Apr-14	surface	0.3	2.2	291	<0.0020	0.0080	<0.00020	<0.00020
		L1462414-1	29-May-14	surface	0.3	2.7	225	<0.0020	0.0183	<0.00020	<0.00020
		L1474237-1	20-Jun-14	surface	0.3	3.4	224	<0.0020	0.0297	<0.00020	<0.00020
Dauphin River	DR1.0	L1282204-3	24-Mar-13	surface	0.3	2.0	303	<0.0020	0.0065	<0.00020	<0.00020
	DR1.1	L1314453-3	10-Jun-13	surface	0.3	2.1	241	<0.0020	0.0199	<0.00020	<0.00020
		L1336361-6	22-Jul-13	surface	0.3	2.4	253	<0.0020	0.0372	<0.00020	<0.00020
		L1374688-11	7-Oct-13	surface	0.3	NM	242	<0.0020	0.0218	<0.00020	0.00027
		L1440674-4	7-Apr-14	surface	0.3	1.6	306	<0.0020	0.0084	<0.00020	0.00020
		L1462414-3	29-May-14	surface	0.3	2.5	178	<0.0020	0.0157	<0.00020	<0.00020
		L1474237-2	20-Jun-14	surface	0.3	2.5	221	<0.0020	0.0257	<0.00020	<0.00020
Dauphin River	DR1.3	L1283154-8	26-Mar-13	surface	0.3	0.9	292	<0.0020	0.0146	<0.00020	<0.00020
		L1314453-1	10-Jun-13	surface	0.3	NM	231	<0.0020	0.0591	<0.00020	<0.00020
		L1336361-4	22-Jul-13	surface	0.3	NM	253	<0.0020	0.0440	<0.00020	<0.00020
		L1374688-9	7-Oct-13	surface	0.3	NM	241	<0.0020	0.0315	<0.00020	<0.00020
		L1440674-1	7-Apr-14	surface	0.3	1.3	288	<0.0020	0.0109	<0.00020	<0.00020
		L1462414-2	29-May-14	surface	0.3	NM	222	<0.0020	0.0319	<0.00020	<0.00020
		L1474237-16	20-Jun-14	surface	0.3	NM	252	<0.0020	0.0535	<0.00020	<0.00020
Dauphin River	DR1 (NOTE2)	L1283154-7	26-Mar-13	surface	0.3	-	290	<0.0020	0.0111	<0.00020	<0.00020

Table E-12. Continued.

Sample Location	Location ID	ALS ID	Sample Date	Sample Type	Sample Depth (m)	Total Depth (m)	Hardness, as $CaCO_3$	Aluminum		Antimony	
								Dissolved	Total	Dissolved	Total
		L1316464	12-Jun-13	surface	0.3	1.0	246	<0.0020	0.0567	<0.00020	<0.00020
		L1336361-2	22-Jul-13	surface	0.3	1.9	258	0.0069	0.0595	<0.00020	<0.00020
		L1374688-2	7-Oct-13	surface	0.3	NM	241	<0.0020	0.0346	<0.00020	<0.00020
		L1442360-3	10-Apr-14	surface	0.3	NM	328	<0.0020	0.0211	<0.00020	0.00022
		L1462419-2	28-May-14	surface	0.3	NM	211	<0.0020	0.0342	<0.00020	<0.00020
		L1474237-12	20-Jun-14	surface	0.3	NM	242	<0.0020	0.0548	<0.00020	0.00027
Buffalo Lake	BBL[1]	L1283894-4	27-Mar-13	surface	0.3	1.0	337	<0.0020	0.0065	0.00022	0.0002
		L1440674-2	7-Apr-14	surface	0.3	1.0	484	<0.0020	0.0147	<0.00020	<0.00020
		L1473448-1	18-Jun-14	surface	0.3	2.2	153	<0.0020	0.0373	<0.00020	<0.00020
Buffalo Creek	BC3[2]	L1316464-5	12-Jun-13	surface	0.3	0.8	160	0.0093	0.267	<0.00020	<0.00020
		L1336361-3	22-Jul-13	surface	0.3	0.8	176	0.0568	0.736	<0.00020	<0.00020
		L1374688-1	7-Oct-13	surface	0.3	0.7	231	0.0146	0.0987	<0.00020	<0.00020
		L1462419-3	28-May-14	surface	0.3	0.7	124	0.0086	0.287	<0.00020	<0.00020
		Mean	20-Jun-14	surface	0.3	0.9	152	0.0126	0.546	<0.00020	<0.00020
Dauphin River	DR2C	L1282620-5	25-Mar-13	surface	0.3	2.7	279	<0.0020	0.0145	<0.00020	<0.00020
		L1315997-3	12-Jun-13	surface	0.3	4.3	245	<0.0020	0.0397	<0.00020	<0.00020
		L1336361-1	22-Jul-13	surface	0.3	5.1	258	0.0054	0.0577	<0.00020	<0.00020
		L1374688-8	7-Oct-13	surface	0.3	NM	241	<0.0020	0.0421	<0.00020	<0.00020
		L1442360-2	10-Apr-14	surface	0.3	3.4	301	<0.0020	0.0260	<0.00020	0.00024
		L1462419-1	28-May-14	surface	0.3	4.5	224	<0.0020	0.0371	<0.00020	<0.00020
		L1474237-11	20-Jun-14	surface	0.3	4.5	220	<0.0020	0.0540	<0.00020	<0.00020
Lake Winnipeg	LKW3B	L1283154	26-Mar-13	surface	0.3	4.9	217	0.0145	0.103	<0.00020	<0.00020
		L1315997-2	12-Jun-13	surface	0.3	5.5	200	0.0032	0.0691	<0.00020	<0.00020
		L1335669-4	21-Jul-13	surface	0.3	5.8	217	<0.0020	0.0764	<0.00020	<0.00020
		L1374688-7	7-Oct-13	surface	0.3	5.2	224	0.0129	0.192	<0.00020	<0.00020
		L1442360-1	10-Apr-14	surface	0.3	4.6	218	0.0176	0.155	0.00024	0.00032
		L1461949-10	28-May-14	surface	0.3	5.8	207	<0.0020	0.0584	<0.00020	<0.00020
		L1461949-12	28-May-14	bottom	4.5	5.8	214	<0.0020	0.0668	<0.00020	<0.00020
		L1474237-9	20-Jun-14	surface	0.3	6.0	213	<0.0020	0.0748	<0.00020	<0.00020
Lake Winnipeg	LKW3	L1282620-4	25-Mar-13	surface	0.3	5.1	214	0.0278	0.105	<0.00020	<0.00020
		L1315997-1	12-Jun-13	surface	0.3	6.7	199	0.0022	0.0823	<0.00020	<0.00020

Table E-12. Continued.

Sample Location	Location ID	ALS ID	Sample Date	Sample Type	Sample Depth (m)	Total Depth (m)	Hardness, as $CaCO_3$	Aluminum		Antimony	
								Dissolved	Total	Dissolved	Total
		L1335669-3	21-Jul-13	surface	0.3	6.6	197	0.0040	0.104	<0.00020	<0.00020
		L1374688-6	7-Oct-13	surface	0.3	6.4	214	0.0267	0.130	<0.00020	<0.00020
		L1441785-7	9-Apr-14	surface	0.3	5.9	208	0.0243	0.152	<0.00020	<0.00020
		L1461949-9	28-May-14	surface	0.3	7.0	219	<0.0020	0.0558	<0.00020	<0.00020
		L1461949-12	28-May-14	bottom	6.0	7.0	221	<0.0020	0.0637	<0.00020	<0.00020
		L1474237-10	20-Jun-14	surface	0.3	7.3	197	0.0061	0.145	<0.00020	<0.00020
Lake Winnipeg	LKW2	L1283154-3	26-Mar-13	surface	0.3	3.1	236	0.0160	0.104	<0.00020	<0.00020
		L1315228-8	11-Jun-13	surface	0.3	4.4	204	0.0023	0.0997	<0.00020	<0.00020
		L1335669-2	21-Jul-13	surface	0.3	4.4	196	0.0039	0.114	<0.00020	<0.00020
		L1374688-5	7-Oct-13	surface	0.3	3.4	222	0.0081	0.155	<0.00020	<0.00020
		L1441785-6	9-Apr-14	surface	0.3	3.4	298	0.0037	0.0849	<0.00020	0.00021
		L1461949-6	28-May-14	surface	0.3	4.3	218	<0.0020	0.0772	<0.00020	<0.00020
		L1474237-8	20-Jun-14	surface	0.3	4.5	196	0.0119	0.241	<0.00020	<0.00020
Lake Winnipeg	LKW1	L1283154-2	26-Mar-13	surface	0.3	3.1	248	0.0266	0.129	<0.00020	<0.00020
		L1315228-7	11-Jun-13	surface	0.3	4.4	213	0.0021	0.0507	<0.00020	<0.00020
		L1335669-1	21-Jul-13	surface	0.3	4.5	169	0.0125	0.369	<0.00020	<0.00020
		L1374688-4	7-Oct-13	surface	0.3	4.0	235	0.0241	0.502	<0.00020	<0.00020
		L1441785-5	9-Apr-14	surface	0.3	3.5	216	0.0177	0.104	<0.00020	<0.00020
		Mean	28-May-14	surface	0.3	4.5	196	0.0036	0.176	<0.00020	<0.00020
		L1474237-7	20-Jun-14	surface	0.3	4.5	188	0.0077	0.127	<0.00020	<0.00020
Lake Winnipeg	LKW4	L1282620-1	25-Mar-13	surface	0.3	5.8	196	0.0252	0.107	<0.00020	<0.00020
		L1315228-3	11-Jun-13	surface	0.3	7.0	211	0.0020	0.118	<0.00020	<0.00020
		L1335669-5	21-Jul-13	surface	0.3	7.1	167	0.0351	0.374	<0.00020	<0.00020
		L1373842-2	6-Oct-13	surface	0.3	7.0	176	0.0307	0.319	<0.00020	<0.00020
		Mean	8-Apr-14	surface	0.3	6.4	194	0.0217	0.166	<0.00020	<0.00020
		L1441278-2	8-Apr-14	bottom	4.3	6.4	224	0.0146	0.188	<0.00020	<0.00020
		L1461949-2	28-May-14	surface	0.3	7.6	198	0.0110	0.108	<0.00020	<0.00020
		L1474237-3	20-Jun-14	surface	0.3	7.7	197	0.0047	0.140	<0.00020	<0.00020
Lake Winnipeg	LKW5	L1283154-1	26-Mar-13	surface	0.3	6.1	234	0.0285	0.139	<0.00020	<0.00020
		L1315228-6	11-Jun-13	surface	0.3	7.3	191	0.0035	0.0586	<0.00020	<0.00020
		L1335669-6	21-Jul-13	surface	0.3	7.3	181	0.0120	0.262	<0.00020	<0.00020
		L1374688-3	7-Oct-13	surface	0.3	7.0	225	0.0146	0.210	<0.00020	<0.00020

Table E-12. Continued.

Sample Location	Location ID	ALS ID	Sample Date	Sample Type	Sample Depth (m)	Total Depth (m)	Hardness, as $CaCO_3$	Aluminum		Antimony	
								Dissolved	Total	Dissolved	Total
		L1441785-3	9-Apr-14	surface	0.3	6.5	206	0.0200	0.118	<0.00020	<0.00020
		L1441785-4	9-Apr-14	bottom	4.7	6.5	261	<0.0020	0.0256	<0.00020	<0.00020
		L1461949-4	28-May-14	surface	0.3	7.6	199	0.0051	0.0989	<0.00020	<0.00020
		L1474237-6	20-Jun-14	surface	0.3	7.9	185	0.0265	0.149	<0.00020	<0.00020
Lake Winnipeg	LKW6	L1282620-3	25-Mar-13	surface	0.3	6.7	210	0.0269	0.124	<0.00020	<0.00020
		L1315228-4	11-Jun-13	surface	0.3	8.2	194	0.0032	0.121	<0.00020	<0.00020
		L1315228-5	11-Jun-13	bottom	7.2	8.2	182	0.0073	0.149	<0.00020	<0.00020
		L1335669-7	21-Jul-13	surface	0.3	8.1	174	0.0462	0.514	<0.00020	<0.00020
		L1373842-3	6-Oct-13	surface	0.3	7.8	238	0.0060	0.102	<0.00020	<0.00020
		L1441785-1	9-Apr-14	surface	0.3	7.3	202	0.0154	0.133	<0.00020	<0.00020
		L1441785-2	9-Apr-14	bottom	5.5	7.3	273	0.0064	0.0346	<0.00020	<0.00020
		L1461949-3	28-May-14	surface	0.3	8.7	195	0.0060	0.0811	<0.00020	<0.00020
		L1474237-5	20-Jun-14	surface	0.3	8.6	186	0.0125	0.150	<0.00020	<0.00020
Lake Winnipeg	LKW7	L1282620-2	25-Mar-13	surface	0.3	4.9	193	0.0283	0.123	<0.00020	<0.00020
		L1315228-1	11-Jun-13	surface	0.3	6.5	181	0.0068	0.163	<0.00020	<0.00020
		L1315228-2	11-Jun-13	bottom	5.5	6.5	187	0.0673	0.151	<0.00020	<0.00020
		L1335669-8	21-Jul-13	surface	0.3	6.8	149	0.0299	0.553	<0.00020	<0.00020
		L1373842-1	6-Oct-13	surface	0.3	6.3	172	0.0606	0.503	<0.00020	0.00028
		L1441278-5	8-Apr-14	surface	0.3	5.7	223	0.0309	0.221	<0.00020	<0.00020
		L1461949-1	28-May-14	surface	0.3	7.0	162	0.0085	0.0944	<0.00020	<0.00020
		L1474237-4	20-Jun-14	surface	0.3	7.3	174	0.0198	0.271	<0.00020	<0.00020

Table E-12. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Arsenic		Barium		Beryllium		Bismuth	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.00020*
Fairford River	FR1	24-Mar-13	surface	0.00233	0.00225	0.0479	0.0547	<0.00020	<0.00020	<0.00020	<0.00020
		10-Jun-13	surface	0.00157	0.00180	0.0394	0.0446	<0.00020	<0.00020	<0.00020	<0.00020
		22-Jul-13	surface	0.00202	0.00201	0.0384	0.0419	<0.00020	<0.00020	<0.00020	<0.00020
		7-Oct-13	surface	0.00186	0.00212	0.0375	0.0399	<0.00020	<0.00020	<0.00020	<0.00020
		7-Apr-14	surface	0.00207	0.00212	0.0542	0.0567	<0.00020	<0.00020	<0.00020	<0.00020
		29-May-14	surface	0.00165	0.00161	0.0376	0.0361	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00159	0.00158	0.0445	0.0427	<0.00020	<0.00020	<0.00020	<0.00020
Lake St. Martin	LSM1	24-Mar-13	surface	0.00219	0.00216	0.0460	0.0522	<0.00020	<0.00020	<0.00020	<0.00020
		10-Jun-13	surface	0.00178	0.00165	0.0374	0.0422	<0.00020	<0.00020	<0.00020	<0.00020
		22-Jul-13	surface	0.00209	0.00198	0.0412	0.0451	<0.00020	<0.00020	<0.00020	<0.00020
		7-Oct-13	surface	0.00192	0.00202	0.0391	0.0424	<0.00020	<0.00020	<0.00020	<0.00020
		7-Apr-14	surface	0.00207	0.00209	0.0495	0.0528	<0.00020	<0.00020	<0.00020	<0.00020
		29-May-14	surface	0.00138	0.00145	0.0344	0.0342	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00150	0.00155	0.0438	0.0392	<0.00020	<0.00020	<0.00020	<0.00020
Dauphin River	DR1.0	24-Mar-13	surface	0.00233	0.00265	0.0482	0.0536	<0.00020	<0.00020	<0.00020	<0.00020
	DR1.1	10-Jun-13	surface	0.00166	0.00180	0.0381	0.0417	<0.00020	<0.00020	<0.00020	<0.00020
		22-Jul-13	surface	0.00209	0.00204	0.0398	0.0428	<0.00020	<0.00020	<0.00020	<0.00020
		7-Oct-13	surface	0.00189	0.00207	0.0389	0.0421	<0.00020	<0.00020	<0.00020	<0.00020
		7-Apr-14	surface	0.00196	0.00205	0.0502	0.0532	<0.00020	<0.00020	<0.00020	<0.00020
		29-May-14	surface	0.00118	0.00126	0.0307	0.0304	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00163	0.00156	0.0432	0.0387	<0.00020	<0.00020	<0.00020	<0.00020
Dauphin River	DR1.3	26-Mar-13	surface	0.00224	0.00225	0.0484	0.0514	<0.00020	<0.00020	<0.00020	<0.00020
		10-Jun-13	surface	0.00159	0.00176	0.0382	0.0436	<0.00020	<0.00020	<0.00020	<0.00020
		22-Jul-13	surface	0.00199	0.00185	0.0386	0.0426	<0.00020	<0.00020	<0.00020	<0.00020
		7-Oct-13	surface	0.00191	0.00203	0.0384	0.0424	<0.00020	<0.00020	<0.00020	<0.00020
		7-Apr-14	surface	0.00203	0.00207	0.0497	0.0535	<0.00020	<0.00020	<0.00020	<0.00020
		29-May-14	surface	0.00136	0.00140	0.0339	0.0337	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00144	0.00170	0.0372	0.0448	<0.00020	<0.00020	<0.00020	<0.00020
Dauphin River	DR1 (NOTE2)	26-Mar-13	surface	0.00237	0.00232	0.0493	0.0517	<0.00020	<0.00020	<0.00020	<0.00020
		12-Jun-13	surface	0.00175	0.00179	0.0376	0.0417	<0.00020	<0.00020	<0.00020	<0.00020
		22-Jul-13	surface	0.00188	0.00189	0.0398	0.0431	<0.00020	<0.00020	<0.00020	<0.00020

Table E-12. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Arsenic		Barium		Beryllium		Bismuth	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		7-Oct-13	surface	0.00180	0.00204	0.0380	0.0421	<0.00020	<0.00020	<0.00020	<0.00020
		10-Apr-14	surface	0.00195	0.00191	0.0482	0.0532	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	surface	0.00137	0.00142	0.0335	0.0355	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00141	0.00154	0.0379	0.0405	<0.00020	<0.00020	<0.00020	<0.00020
Buffalo Lake	BBL[1]	27-Mar-13	surface	0.00207	0.00191	0.0473	0.0471	<0.00020	<0.00020	<0.00020	<0.00020
		7-Apr-14	surface	0.00128	0.00125	0.0569	0.0617	<0.00020	<0.00020	<0.00020	<0.00020
		18-Jun-14	surface	<0.00020	0.00098	0.0246	0.0236	<0.00020	<0.00020	<0.00020	<0.00020
Buffalo Creek	BC3[2]	12-Jun-13	surface	0.00126	0.00123	0.0202	0.0226	<0.00020	<0.00020	<0.00020	<0.00020
		22-Jul-13	surface	0.00138	0.00139	0.0217	0.0295	<0.00020	<0.00020	<0.00020	<0.00020
		7-Oct-13	surface	0.00107	0.00208	0.0237	0.0427	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	surface	0.00094	0.00094	0.0145	0.0178	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00095	0.00099	0.0176	0.0212	<0.00020	<0.00020	<0.00020	<0.00020
Dauphin River	DR2C	25-Mar-13	surface	0.00231	0.00195	0.0472	0.0561	<0.00020	<0.00020	<0.00020	<0.00020
		12-Jun-13	surface	0.00177	0.00179	0.0378	0.0406	<0.00020	<0.00020	<0.00020	<0.00020
		22-Jul-13	surface	0.00202	0.00194	0.0398	0.0428	<0.00020	<0.00020	<0.00020	<0.00020
		7-Oct-13	surface	0.00175	0.00202	0.0387	0.0410	<0.00020	<0.00020	<0.00020	<0.00020
		10-Apr-14	surface	0.00195	0.00202	0.0472	0.0522	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	surface	0.00138	0.00134	0.0355	0.0344	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00150	0.00149	0.0406	0.0382	<0.00020	<0.00020	<0.00020	<0.00020
Lake Winnipeg	LKW3B	26-Mar-13	surface	0.00207	0.00202	0.0426	0.0458	<0.00020	<0.00020	<0.00020	<0.00020
		12-Jun-13	surface	0.00144	0.00138	0.0333	0.0347	<0.00020	<0.00020	<0.00020	<0.00020
		21-Jul-13	surface	0.00191	0.00213	0.0404	0.0446	<0.00020	<0.00020	<0.00020	<0.00020
		7-Oct-13	surface	0.00191	0.00186	0.0378	0.0402	<0.00020	<0.00020	<0.00020	<0.00020
		10-Apr-14	surface	0.00227	0.00213	0.0471	0.0524	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	surface	0.00140	0.00149	0.0378	0.0355	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	bottom	0.00147	0.00150	0.0406	0.0393	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00153	0.00146	0.0397	0.0374	<0.00020	<0.00020	<0.00020	<0.00020
Lake Winnipeg	LKW3	25-Mar-13	surface	0.00222	0.00190	0.0430	0.0494	<0.00020	<0.00020	<0.00020	<0.00020
		12-Jun-13	surface	0.00144	0.00126	0.0321	0.0351	<0.00020	<0.00020	<0.00020	<0.00020
		21-Jul-13	surface	0.00207	0.00213	0.0396	0.0476	<0.00020	<0.00020	<0.00020	<0.00020
		7-Oct-13	surface	0.00189	0.00189	0.0384	0.0418	<0.00020	<0.00020	<0.00020	<0.00020

Table E-12. Continued.

Sample		Sample	Sample	Arsenic		Barium		Beryllium		Bismuth	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		9-Apr-14	surface	0.00179	0.00165	0.0518	0.0552	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	surface	0.00132	0.00153	0.0383	0.038	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	bottom	0.00152	0.00144	0.0405	0.0397	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00151	0.00132	0.0464	0.0385	<0.00020	<0.00020	<0.00020	<0.00020
Lake Winnipeg	LKW2	26-Mar-13	surface	0.00218	0.00219	0.0440	0.0484	<0.00020	<0.00020	<0.00020	<0.00020
		11-Jun-13	surface	0.00142	0.00157	0.0332	0.0368	<0.00020	<0.00020	<0.00020	<0.00020
		21-Jul-13	surface	0.00195	0.00220	0.0397	0.0481	<0.00020	<0.00020	<0.00020	<0.00020
		7-Oct-13	surface	0.00184	0.00198	0.0382	0.0422	<0.00020	<0.00020	<0.00020	<0.00020
		9-Apr-14	surface	0.00199	0.00185	0.0502	0.0545	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	surface	0.00156	0.00162	0.0403	0.0392	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00136	0.00131	0.0399	0.0369	<0.00020	<0.00020	<0.00020	<0.00020
Lake Winnipeg	LKW1	26-Mar-13	surface	0.00219	0.00216	0.0459	0.0493	<0.00020	<0.00020	<0.00020	<0.00020
		11-Jun-13	surface	0.00131	0.00156	0.0322	0.0357	<0.00020	<0.00020	<0.00020	<0.00020
		21-Jul-13	surface	0.00175	0.00204	0.0374	0.0482	<0.00020	<0.00020	<0.00020	<0.00020
		7-Oct-13	surface	0.00200	0.00213	0.0399	0.0466	<0.00020	<0.00020	<0.00020	<0.00020
		9-Apr-14	surface	0.00201	0.00189	0.0487	0.0495	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	surface	0.00130	0.00138	0.0362	0.0358	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00145	0.00128	0.042	0.0389	<0.00020	<0.00020	<0.00020	<0.00020
Lake Winnipeg	LKW4	25-Mar-13	surface	0.00209	0.00190	0.0407	0.0493	<0.00020	<0.00020	<0.00020	<0.00020
		11-Jun-13	surface	0.00134	0.00153	0.0356	0.0366	<0.00020	<0.00020	<0.00020	<0.00020
		21-Jul-13	surface	0.00174	0.00178	0.0344	0.0397	<0.00020	<0.00020	<0.00020	<0.00020
		6-Oct-13	surface	0.00180	0.00177	0.0359	0.0387	<0.00020	<0.00020	<0.00020	<0.00020
		8-Apr-14	surface	0.00171	0.00178	0.0512	0.0532	<0.00020	<0.00020	<0.00020	<0.00020
		8-Apr-14	bottom	0.00163	0.00171	0.0462	0.0492	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	surface	0.00152	0.00147	0.0441	0.0451	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00146	0.00140	0.0418	0.0378	<0.00020	<0.00020	<0.00020	<0.00020
Lake Winnipeg	LKW5	26-Mar-13	surface	0.00236	0.00226	0.0484	0.0522	<0.00020	<0.00020	<0.00020	<0.00020
		11-Jun-13	surface	0.00156	0.00136	0.0345	0.0345	<0.00020	<0.00020	<0.00020	<0.00020
		21-Jul-13	surface	0.00171	0.00181	0.0366	0.0394	<0.00020	<0.00020	<0.00020	<0.00020
		7-Oct-13	surface	0.00200	0.00201	0.0401	0.0428	<0.00020	<0.00020	<0.00020	<0.00020
		9-Apr-14	surface	0.00206	0.00178	0.0486	0.049	<0.00020	<0.00020	<0.00020	<0.00020
		9-Apr-14	bottom	0.00198	0.00190	0.0499	0.0489	<0.00020	<0.00020	<0.00020	<0.00020

Table E-12. Continued.

Sample		Sample	Sample	Arsenic		Barium		Beryllium		Bismuth	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		28-May-14	surface	0.00143	0.00141	0.0373	0.0374	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00135	0.00132	0.0421	0.0381	<0.00020	<0.00020	<0.00020	<0.00020
Lake Winnipeg	LKW6	25-Mar-13	surface	0.00220	0.00194	0.0447	0.0526	<0.00020	<0.00020	<0.00020	<0.00020
		11-Jun-13	surface	0.00157	0.00153	0.0335	0.0371	<0.00020	<0.00020	<0.00020	<0.00020
		11-Jun-13	bottom	0.00132	0.00152	0.0332	0.0357	<0.00020	<0.00020	<0.00020	<0.00020
		21-Jul-13	surface	0.00157	0.00161	0.0366	0.0411	<0.00020	<0.00020	<0.00020	<0.00020
		6-Oct-13	surface	0.00192	0.00200	0.0396	0.0439	<0.00020	<0.00020	<0.00020	<0.00020
		9-Apr-14	surface	0.00208	0.00194	0.0570	0.0583	<0.00020	<0.00020	<0.00020	<0.00020
		9-Apr-14	bottom	0.00200	0.00188	0.0513	0.0500	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	surface	0.00150	0.00147	0.0411	0.0415	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00131	0.00133	0.0416	0.0394	<0.00020	<0.00020	<0.00020	<0.00020
Lake Winnipeg	LKW7	25-Mar-13	surface	0.00215	0.00190	0.0427	0.0507	<0.00020	<0.00020	<0.00020	<0.00020
		11-Jun-13	surface	0.00152	0.00142	0.0334	0.0359	<0.00020	<0.00020	<0.00020	<0.00020
		11-Jun-13	bottom	0.00144	0.00149	0.0353	0.0374	<0.00020	<0.00020	<0.00020	<0.00020
		21-Jul-13	surface	0.00151	0.00151	0.0341	0.0397	<0.00020	<0.00020	<0.00020	<0.00020
		6-Oct-13	surface	0.00180	0.00184	0.0359	0.0399	<0.00020	<0.00020	<0.00020	<0.00020
		8-Apr-14	surface	0.00189	0.00193	0.0529	0.0563	<0.00020	<0.00020	<0.00020	<0.00020
		28-May-14	surface	0.00140	0.00128	0.0343	0.0348	<0.00020	<0.00020	<0.00020	<0.00020
		20-Jun-14	surface	0.00123	0.00131	0.0355	0.0375	<0.00020	<0.00020	<0.00020	<0.00020

Table E-12. Continued.

Sample		Sample	Sample	Boron		Cadmium		Calcium		Cesium		Chloride
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Analytical Detection Limits				*0.010*	*0.010*	*0.000010*	*0.000010*	*`0.050/5.0*	*0.10/10.0*	*0.00010*	*0.00010*	*0.20*
Fairford River	FR1	24-Mar-13	surface	0.124	0.106	0.000026	0.000017	54.1	56.0	<0.00010	<0.00010	264
		10-Jun-13	surface	0.087	0.090	<0.000010	<0.000010	49.5	48.9	<0.00010	<0.00010	179
		22-Jul-13	surface	0.089	0.103	<0.000010	<0.000010	39.0	42.0	<0.00010	<0.00010	177
		7-Oct-13	surface	0.084	0.075	<0.000010	<0.000010	39.4	44.2	<0.00010	<0.00010	186
		7-Apr-14	surface	0.101	0.110	<0.000010	<0.000010	54.4	62.5	<0.00010	<0.00010	243
		29-May-14	surface	0.094	0.087	<0.000010	<0.000010	41.0	45.8	<0.00010	<0.00010	167
		20-Jun-14	surface	0.097	0.091	<0.000010	<0.000010	42.8	43.1	<0.00010	<0.00010	137
Lake St. Martin	LSM1	24-Mar-13	surface	0.113	0.101	<0.000010	<0.000010	52.5	53.0	<0.00010	<0.00010	242
		10-Jun-13	surface	0.087	0.094	<0.000010	<0.000010	46.7	45.6	<0.00010	<0.00010	174
		22-Jul-13	surface	0.092	0.102	<0.000010	<0.000010	41.0	45.6	<0.00010	<0.00010	183
		7-Oct-13	surface	0.086	0.082	<0.000010	<0.000010	40.0	45.3	<0.00010	<0.00010	188
		7-Apr-14	surface	0.096	0.110	<0.000010	<0.000010	46.9	53.6	<0.00010	<0.00010	229
		29-May-14	surface	0.084	0.081	<0.000010	<0.000010	33.7	40.7	<0.00010	<0.00010	139
		20-Jun-14	surface	0.071	0.068	<0.000010	<0.000010	43.2	41.2	<0.00010	<0.00010	151
Dauphin River	DR1.0	24-Mar-13	surface	0.113	0.102	<0.000010	0.000010	50.2	54.0	<0.00010	<0.00010	241
	DR1.1	10-Jun-13	surface	0.083	0.091	<0.000010	0.000012	47.6	42.9	<0.00010	<0.00010	173
		22-Jul-13	surface	0.093	0.107	<0.000010	<0.000010	40.8	44.5	<0.00010	<0.00010	183
		7-Oct-13	surface	0.086	0.080	<0.000010	<0.000010	40.1	45.6	<0.00010	<0.00010	187
		7-Apr-14	surface	0.096	0.109	<0.000010	<0.000010	50.0	60.1	<0.00010	<0.00010	233
		29-May-14	surface	0.076	0.072	<0.000010	<0.000010	32.1	36.6	<0.00010	<0.00010	122
		20-Jun-14	surface	0.069	0.074	<0.000010	<0.000010	48.8	42.1	<0.00010	<0.00010	154
Dauphin River	DR1.3	26-Mar-13	surface	0.110	0.108	<0.000010	<0.000010	53.2	54.0	<0.00010	<0.00010	245
		10-Jun-13	surface	0.079	0.083	<0.000010	<0.000010	45.6	42.3	<0.00010	<0.00010	168
		22-Jul-13	surface	0.090	0.106	<0.000010	<0.000010	40.2	44.4	<0.00010	<0.00010	180
		7-Oct-13	surface	0.085	0.081	<0.000010	<0.000010	39.9	45.3	<0.00010	<0.00010	187
		7-Apr-14	surface	0.091	0.106	<0.000010	<0.000010	49.8	54.3	<0.00010	<0.00010	235
		29-May-14	surface	0.085	0.079	<0.000010	<0.000010	34.3	40.5	<0.00010	<0.00010	136
		20-Jun-14	surface	0.083	0.090	<0.000010	<0.000010	37.5	44.0	<0.00010	<0.00010	148
Dauphin River	DR1 (NOTE2)	26-Mar-13	surface	0.117	0.108	<0.000010	<0.000010	54.3	53.0	<0.00010	<0.00010	243
		12-Jun-13	surface	0.081	0.079	<0.000010	0.000011	45.0	43.9	<0.00010	<0.00010	179
		22-Jul-13	surface	0.091	0.112	<0.000010	<0.000010	39.9	45.8	<0.00010	<0.00010	181

Table E-12. Continued.

Sample		Sample	Sample	Boron		Cadmium		Calcium		Cesium		Chloride
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
		7-Oct-13	surface	0.084	0.080	<0.000010	<0.000010	38.4	45.1	<0.00010	<0.00010	187
		10-Apr-14	surface	0.097	0.140	<0.000010	<0.000010	49.8	70.3	<0.00010	<0.00010	227
		28-May-14	surface	0.081	0.073	<0.000010	<0.000010	41.6	39.9	<0.00010	<0.00010	146
		20-Jun-14	surface	0.103	0.104	<0.000010	<0.000010	44.6	46.2	<0.00010	<0.00010	148
Buffalo Lake	BBL[1]	27-Mar-13	surface	0.042	0.040	<0.000010	<0.000010	57.4	59.0	<0.00010	<0.00010	144
		7-Apr-14	surface	0.042	0.045	<0.000010	<0.000010	73.2	82.9	<0.00010	<0.00010	84.5
		18-Jun-14	surface	0.059	0.047	<0.000010	<0.000010	33.5	29.2	<0.00010	<0.00010	18.0
Buffalo Creek	BC3[2]	12-Jun-13	surface	0.055	0.040	<0.000010	<0.000010	32.3	33.4	<0.00010	<0.00010	26.9
		22-Jul-13	surface	0.052	0.060	<0.000010	<0.000010	32.6	36.0	<0.00010	<0.00010	23.4
		7-Oct-13	surface	0.044	0.074	<0.000010	0.000013	36.9	43.3	<0.00010	<0.00010	30.2
		28-May-14	surface	0.040	0.033	<0.000010	<0.000010	26.7	26.0	<0.00010	<0.00010	9.70
		20-Jun-14	surface	0.044	0.045	<0.000010	<0.000010	27.8	30.7	<0.00010	<0.00010	9.23
Dauphin River	DR2C	25-Mar-13	surface	0.112	0.114	<0.000010	0.000011	51.7	50.0	<0.00010	<0.00010	243
		12-Jun-13	surface	0.086	0.093	<0.000010	<0.000010	41.4	43.1	<0.00010	<0.00010	172
		22-Jul-13	surface	0.094	0.111	<0.000010	<0.000010	39.0	45.0	<0.00010	<0.00010	181
		7-Oct-13	surface	0.086	0.079	<0.000010	<0.000010	40.1	44.7	<0.00010	<0.00010	186
		10-Apr-14	surface	0.090	0.126	<0.000010	<0.000010	49.7	63.0	<0.00010	<0.00010	217
		28-May-14	surface	0.088	0.083	<0.000010	<0.000010	36.6	40.8	<0.00010	<0.00010	145
		20-Jun-14	surface	0.091	0.072	<0.000010	<0.000010	41.4	42.1	<0.00010	0.00018	146
Lake Winnipeg	LKW3B	26-Mar-13	surface	0.065	0.065	<0.000010	<0.000010	42.5	43.7	<0.00010	<0.00010	107
		12-Jun-13	surface	0.066	0.056	<0.000010	<0.000010	34.7	37.1	<0.00010	<0.00010	117
		21-Jul-13	surface	0.088	0.081	<0.000010	<0.000010	40.1	38.1	<0.00010	<0.00010	168
		7-Oct-13	surface	0.068	0.067	<0.000010	0.000011	36.7	40.8	<0.00010	<0.00010	132
		10-Apr-14	surface	0.045	0.060	0.000019	0.000018	39.3	52.3	<0.00010	<0.00010	61.3
		28-May-14	surface	0.080	0.074	<0.000010	<0.000010	36.3	39.3	<0.00010	<0.00010	132
		28-May-14	bottom	0.073	0.073	<0.000010	<0.000010	36.9	41.0	<0.00010	<0.00010	114
		20-Jun-14	surface	0.069	0.070	<0.000010	<0.000010	47.0	40.4	<0.00010	0.00017	141
Lake Winnipeg	LKW3	25-Mar-13	surface	0.064	0.064	0.000010	0.000011	42.8	41.0	<0.00010	<0.00010	94.9
		12-Jun-13	surface	0.062	0.058	<0.000010	<0.000010	35.2	37.1	<0.00010	<0.00010	117
		21-Jul-13	surface	0.084	0.075	<0.000010	0.000036	40.3	35.3	<0.00010	<0.00010	163
		7-Oct-13	surface	0.069	0.067	<0.000010	0.000012	37.7	41.5	<0.00010	<0.00010	135

Table E-12. Continued.

Sample		Sample	Sample	Boron		Cadmium		Calcium		Cesium		Chloride
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
		9-Apr-14	surface	0.047	0.053	<0.000010	<0.000010	40.7	49.6	<0.00010	<0.00010	55.9
		28-May-14	surface	0.080	0.078	<0.000010	<0.000010	35.9	41.3	<0.00010	<0.00010	136
		28-May-14	bottom	0.075	0.073	<0.000010	<0.000010	36.4	42.4	<0.00010	<0.00010	114
		20-Jun-14	surface	0.050	0.057	<0.000010	<0.000010	43.0	38.9	<0.00010	0.00018	105
Lake Winnipeg	LKW2	26-Mar-13	surface	0.067	0.066	<0.000010	<0.000010	45.0	46.9	<0.00010	<0.00010	107
		11-Jun-13	surface	0.069	0.063	<0.000010	0.000011	34.8	37.2	<0.00010	<0.00010	123
		21-Jul-13	surface	0.087	0.073	<0.000010	<0.000010	40.4	35.8	<0.00010	<0.00010	157
		7-Oct-13	surface	0.075	0.069	<0.000010	0.000016	38.0	42.3	<0.00010	<0.00010	153
		9-Apr-14	surface	0.078	0.109	<0.000010	<0.000010	49.0	66.8	<0.00010	<0.00010	158
		28-May-14	surface	0.080	0.078	<0.000010	<0.000010	37.3	41.7	<0.00010	<0.00010	130
		20-Jun-14	surface	0.056	0.054	<0.000010	<0.000010	33.4	38.4	<0.00010	0.00017	94.0
Lake Winnipeg	LKW1	26-Mar-13	surface	0.073	0.071	0.000012	<0.000010	47.2	48.6	<0.00010	<0.00010	119
		11-Jun-13	surface	0.064	0.063	<0.000010	<0.000010	34.1	39.6	<0.00010	<0.00010	116
		21-Jul-13	surface	0.066	0.058	<0.000010	<0.000010	37.5	31.9	<0.00010	<0.00010	124
		7-Oct-13	surface	0.075	0.072	<0.000010	0.000012	38.8	44.3	<0.00010	<0.00010	144
		9-Apr-14	surface	0.062	0.066	<0.000010	<0.000010	42.7	43.2	<0.00010	<0.00010	109
		28-May-14	surface	0.067	0.064	<0.000010	<0.000010	34.9	39.0	<0.00010	<0.00010	105
		20-Jun-14	surface	0.072	0.055	<0.000010	<0.000010	38.9	38.0	<0.00010	0.00016	102
Lake Winnipeg	LKW4	25-Mar-13	surface	0.060	0.075	<0.000010	<0.000010	39.4	41.0	<0.00010	<0.00010	91.5
		11-Jun-13	surface	0.068	0.062	<0.000010	<0.000010	33.6	38.7	<0.00010	<0.00010	121
		21-Jul-13	surface	0.055	0.051	<0.000010	<0.000010	33.7	32.2	<0.00010	<0.00010	93.7
		6-Oct-13	surface	0.048	0.042	<0.000010	0.000010	30.9	37.1	<0.00010	<0.00010	69.2
		8-Apr-14	surface	0.040	0.045	<0.000010	<0.000010	38.3	42.4	<0.00010	<0.00010	47.6
		8-Apr-14	bottom	0.057	0.066	<0.000010	<0.000010	39.1	43.2	<0.00010	<0.00010	119
		28-May-14	surface	0.057	0.053	<0.000010	<0.000010	40.0	41.9	<0.00010	<0.00010	77.8
		20-Jun-14	surface	0.077	0.061	<0.000010	<0.000010	40.3	38.9	<0.00010	0.00015	114
Lake Winnipeg	LKW5	26-Mar-13	surface	0.064	0.061	<0.000010	<0.000010	48.1	48.5	<0.00010	<0.00010	90.6
		11-Jun-13	surface	0.064	0.054	<0.000010	<0.000010	32.6	36.3	<0.00010	<0.00010	104
		21-Jul-13	surface	0.065	0.058	<0.000010	<0.000010	35.6	33.4	<0.00010	<0.00010	115
		7-Oct-13	surface	0.077	0.071	<0.000010	0.000012	39.2	42.2	<0.00010	<0.00010	148
		9-Apr-14	surface	0.055	0.057	<0.000010	<0.000010	41.1	42.1	<0.00010	<0.00010	90.3
		9-Apr-14	bottom	0.095	0.103	<0.000010	<0.000010	50.4	49.3	<0.00010	<0.00010	223

Table E-12. Continued.

Sample		Sample	Sample	Boron		Cadmium		Calcium		Cesium		Chloride
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
		28-May-14	surface	0.066	0.062	<0.000010	<0.000010	38.5	39.7	<0.00010	<0.00010	107
		20-Jun-14	surface	0.067	0.052	<0.000010	<0.000010	38.7	36.8	<0.00010	0.00015	98.8
Lake Winnipeg	LKW6	25-Mar-13	surface	0.058	0.061	0.000012	0.000012	43.8	43.8	<0.00010	<0.00010	82.3
		11-Jun-13	surface	0.064	0.054	<0.000010	<0.000010	34.8	35.8	<0.00010	<0.00010	110
		11-Jun-13	bottom	0.058	0.049	<0.000010	<0.000010	32.6	36.3	<0.00010	<0.00010	92.1
		21-Jul-13	surface	0.058	0.054	<0.000010	<0.000010	34.4	32.9	<0.00010	<0.00010	98.6
		6-Oct-13	surface	0.085	0.076	<0.000010	0.000012	36.3	44.9	<0.00010	<0.00010	164
		9-Apr-14	surface	0.047	0.044	0.000015	<0.000010	46.6	45.2	<0.00010	<0.00010	56.9
		9-Apr-14	bottom	0.085	0.091	<0.000010	<0.000010	48.7	52.1	<0.00010	<0.00010	211
		28-May-14	surface	0.058	0.055	<0.000010	<0.000010	38.3	41.5	<0.00010	<0.00010	83.2
		20-Jun-14	surface	0.068	0.053	<0.000010	<0.000010	38.5	37.5	<0.00010	0.00014	99.4
Lake Winnipeg	LKW7	25-Mar-13	surface	0.054	0.055	<0.000010	<0.000010	40.9	41.6	<0.00010	<0.00010	70.2
		11-Jun-13	surface	0.055	0.048	0.000012	<0.000010	33.8	35.0	<0.00010	<0.00010	93.0
		11-Jun-13	bottom	0.054	0.050	0.000012	0.000013	32.5	35.8	<0.00010	<0.00010	88.6
		21-Jul-13	surface	0.040	0.038	<0.000010	<0.000010	31.1	30.2	<0.00010	<0.00010	59.7
		6-Oct-13	surface	0.044	0.044	0.000016	0.000018	29.8	36.9	<0.00010	<0.00010	56.6
		8-Apr-14	surface	0.050	0.063	<0.000010	<0.000010	43.3	46.2	<0.00010	<0.00010	80.8
		28-May-14	surface	0.055	0.052	<0.000010	<0.000010	32.4	33.5	<0.00010	<0.00010	87.1
		20-Jun-14	surface	0.057	0.044	<0.000010	<0.000010	35.3	36.2	<0.00010	0.00016	71.7

Table E-12. Continued.

Sample		Sample	Sample	Chromium		Cobalt		Copper		Fluoride	Iron	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total
Analytical Detection Limits				*0.0020*	*0.0010*	*0.00020*	*0.00020*	*0.00020*	*0.00020*	*0.020*	*0.010*	*0.010/0.10*
Fairford River	FR1	24-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00046	0.00127	0.163	<0.010	<0.010
		10-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00114	0.00084	0.124	<0.010	0.035
		22-Jul-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00057	0.136	<0.010	0.041
		7-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00038	0.00083	0.130	<0.010	0.041
		7-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00057	0.00071	0.160	<0.010	0.019
		29-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00053	0.00059	0.121	<0.010	0.021
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00048	0.00046	0.111	<0.010	0.029
Lake St. Martin	LSM1	24-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00060	0.00071	0.155	<0.010	<0.010
		10-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00044	0.00087	0.116	<0.010	0.020
		22-Jul-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00041	0.155	<0.010	0.024
		7-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00032	0.00050	0.134	<0.010	0.023
		7-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00063	0.00061	0.160	<0.010	<0.010
		29-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00039	0.00202	0.117	<0.010	0.029
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00054	0.00046	0.110	<0.010	0.028
Dauphin River	DR1.0	24-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00047	0.00052	0.158	<0.010	<0.010
	DR1.1	10-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00049	0.00069	0.146	<0.010	0.015
		22-Jul-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00058	0.147	<0.010	0.023
		7-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00031	0.00050	0.131	<0.010	0.019
		7-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00066	0.00063	0.154	<0.010	<0.010
		29-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00038	0.00056	0.108	<0.010	0.020
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00051	0.00048	0.109	<0.010	0.033
Dauphin River	DR1.3	26-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00037	0.00043	0.151	<0.010	0.016
		10-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00040	0.00094	0.116	<0.010	0.13
		22-Jul-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00044	0.152	<0.010	0.032
		7-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00039	0.00060	0.130	<0.010	0.027
		7-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00052	0.00059	0.152	<0.010	0.011
		29-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00043	0.00056	0.120	<0.010	0.034
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00032	0.00049	0.114	<0.010	0.037
Dauphin River	DR1 (NOTE2)	26-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00062	0.00062	0.177	<0.010	0.012
		12-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00044	0.00073	0.149	<0.010	0.067
		22-Jul-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00370	0.161	<0.010	0.040

Table E-12. Continued.

Sample		Sample	Sample	Chromium		Cobalt		Copper		Fluoride	Iron	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total
		7-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00037	0.00049	0.132	<0.010	0.031
		10-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00039	0.00052	0.162	<0.010	0.017
		28-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00030	0.00049	0.121	<0.010	0.037
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00036	0.00044	0.106	<0.010	0.042
Buffalo Lake	BBL[1]	27-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00022	0.094	0.105	0.16
		7-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00039	0.200	0.095	0.12
		18-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00033	0.085	0.014	0.054
Buffalo Creek	BC3[2]	12-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00042	0.00072	0.104	0.023	0.23
		22-Jul-13	surface	<0.0020	0.0013	<0.00020	0.00035	0.00027	0.00112	0.106	0.031	0.63
		7-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00053	0.00119	0.109	0.024	0.11
		28-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00021	0.00121	0.078	0.018	0.27
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	0.00027	0.00029	0.00174	0.063	0.022	0.46
Dauphin River	DR2C	25-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00047	0.00060	0.140	<0.010	0.023
		12-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00050	0.00058	0.137	<0.010	0.061
		22-Jul-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00042	0.160	<0.010	0.043
		7-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00036	0.00065	0.136	<0.010	0.038
		10-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00044	0.00046	0.156	<0.010	0.025
		28-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00042	0.00051	0.120	<0.010	0.039
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00037	0.00045	0.106	<0.010	0.055
Lake Winnipeg	LKW3B	26-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00134	0.00146	0.128	<0.010	0.036
		12-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00074	0.00085	0.115	<0.010	0.047
		21-Jul-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00052	0.00025	0.134	<0.010	0.12
		7-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00068	0.00121	0.113	<0.010	0.13
		10-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00120	0.00138	0.123	<0.010	0.062
		28-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00057	0.00073	0.110	<0.010	0.042
		28-May-14	bottom	<0.0020	<0.0010	<0.00020	<0.00020	0.00103	0.00088	0.146	<0.010	0.053
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00042	0.00047	0.105	<0.010	0.069
Lake Winnipeg	LKW3	25-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00151	0.00159	0.121	<0.010	0.047
		12-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00071	0.00107	0.118	<0.010	0.047
		21-Jul-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00062	0.00033	0.136	<0.010	0.15
		7-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00071	0.00107	0.126	<0.010	0.083

Table E-12. Continued.

Sample		Sample	Sample	Chromium		Cobalt		Copper		Fluoride	Iron	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total
		9-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00133	0.00142	0.117	<0.010	0.058
		28-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00059	0.00070	0.111	<0.010	0.044
		28-May-14	bottom	<0.0020	<0.0010	<0.00020	<0.00020	0.00068	0.00085	0.115	<0.010	0.048
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00077	0.00085	0.098	<0.010	0.11
Lake Winnipeg	LKW2	26-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00147	0.00164	0.121	<0.010	0.043
		11-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00068	0.00127	0.118	<0.010	0.070
		21-Jul-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00068	0.00040	0.132	<0.010	0.17
		7-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00061	0.00094	0.128	<0.010	0.14
		9-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00083	0.00084	0.136	<0.010	0.030
		28-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00072	0.00085	0.109	<0.010	0.052
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00086	0.00100	0.102	<0.010	0.15
Lake Winnipeg	LKW1	26-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00148	0.00163	0.127	<0.010	0.059
		11-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00074	0.00098	0.115	<0.010	0.065
		21-Jul-13	surface	<0.0020	<0.0010	<0.00020	0.00023	0.00088	0.00097	0.126	<0.010	0.38
		7-Oct-13	surface	<0.0020	0.0010	<0.00020	0.00025	0.00081	0.00262	0.132	<0.010	0.38
		9-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00113	0.00128	0.126	<0.010	0.030
		28-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00066	0.00087	0.106	<0.010	0.14
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00082	0.00090	0.105	<0.010	0.095
Lake Winnipeg	LKW4	25-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00143	0.00164	0.107	<0.010	0.043
		11-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00070	0.00104	0.112	<0.010	0.041
		21-Jul-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00098	0.00099	0.114	<0.010	0.28
		6-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00103	0.00143	0.124	<0.010	0.24
		8-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00148	0.00181	0.123	<0.010	0.067
		8-Apr-14	bottom	<0.0020	<0.0010	<0.00020	<0.00020	0.00115	0.00115	0.134	<0.010	0.11
		28-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00114	0.00123	0.109	<0.010	0.061
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00065	0.00077	0.101	<0.010	0.12
Lake Winnipeg	LKW5	26-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00154	0.00214	0.123	<0.010	0.070
		11-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00082	0.00124	0.105	<0.010	0.088
		21-Jul-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00084	0.00072	0.118	<0.010	0.22
		7-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00080	0.00140	0.128	<0.010	0.22
		9-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00134	0.00133	0.126	<0.010	0.039
		9-Apr-14	bottom	<0.0020	<0.0010	<0.00020	<0.00020	0.00047	0.00054	0.159	<0.010	0.017

Table E-12. Continued.

Sample		Sample	Sample	Chromium		Cobalt		Copper		Fluoride	Iron	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total
		28-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00083	0.00089	0.105	<0.010	0.064
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00083	0.00099	0.103	<0.010	0.11
Lake Winnipeg	LKW6	25-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00152	0.00180	0.122	<0.010	0.071
		11-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00072	0.00117	0.110	<0.010	0.13
		11-Jun-13	bottom	<0.0020	<0.0010	<0.00020	<0.00020	0.00085	0.00145	0.105	<0.010	0.11
		21-Jul-13	surface	<0.0020	<0.0010	<0.00020	0.00022	0.00100	0.00108	0.114	0.015	0.43
		6-Oct-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00056	0.00115	0.136	<0.010	0.11
		9-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00164	0.00163	0.126	<0.010	0.059
		9-Apr-14	bottom	<0.0020	<0.0010	<0.00020	<0.00020	0.00071	0.00048	0.175	<0.010	0.024
		28-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00106	0.00114	0.108	<0.010	0.044
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00090	0.00100	0.104	<0.010	0.097
Lake Winnipeg	LKW7	25-Mar-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00151	0.00182	0.117	<0.010	0.063
		11-Jun-13	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00086	0.00129	0.093	<0.010	0.12
		11-Jun-13	bottom	<0.0020	<0.0010	<0.00020	<0.00020	0.00123	0.00149	0.103	<0.010	0.096
		21-Jul-13	surface	<0.0020	<0.0010	<0.00020	0.00023	0.00115	0.00126	0.104	<0.010	0.44
		6-Oct-13	surface	<0.0020	<0.0010	<0.00020	0.00023	0.00120	0.00191	0.115	0.021	0.39
		8-Apr-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00165	0.00153	0.137	<0.010	0.088
		28-May-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00082	0.00102	0.092	<0.010	0.058
		20-Jun-14	surface	<0.0020	<0.0010	<0.00020	<0.00020	0.00096	0.00127	0.101	<0.010	0.20

Table E-12. Continued.

Sample		Sample	Sample	Lead		Lithium		Magnesium		Manganese	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.000090*	*0.000090*	*0.0020*	*0.0020*	*0.010*	*0.010*	*0.00010/0.010*	*0.00030/0.030*
Fairford River	FR1	24-Mar-13	surface	<0.000090	<0.000090	0.0362	0.0373	37.8	40.6	0.00019	0.00280
		10-Jun-13	surface	<0.000090	0.000090	0.0359	0.0319	38.1	36.7	0.00018	0.00481
		22-Jul-13	surface	<0.000090	0.000120	0.0308	0.0308	32.8	31.9	<0.00010	0.00596
		7-Oct-13	surface	<0.000090	0.000168	0.0282	0.0259	26.6	29.2	<0.00010	0.00781
		7-Apr-14	surface	<0.000090	<0.000090	0.0324	0.0378	38.2	42.9	0.00520	0.00601
		29-May-14	surface	<0.000090	<0.000090	0.0276	0.0270	28.5	31.2	0.00021	0.00301
		20-Jun-14	surface	<0.000090	<0.000090	0.0298	0.0283	35.5	36.2	0.00028	0.00451
Lake St. Martin	LSM1	24-Mar-13	surface	<0.000090	<0.000090	0.0345	0.0360	36.3	38.5	0.00026	0.00337
		10-Jun-13	surface	<0.000090	<0.000090	0.0326	0.0289	35.5	34.0	0.00017	0.00400
		22-Jul-13	surface	<0.000090	<0.000090	0.0324	0.0318	33.9	34.4	0.00106	0.00650
		7-Oct-13	surface	<0.000090	0.000155	0.0294	0.0287	27.4	33.0	0.00013	0.00593
		7-Apr-14	surface	<0.000090	<0.000090	0.0295	0.0370	34.8	38.2	0.00065	0.00361
		29-May-14	surface	<0.000090	<0.000090	0.0245	0.0250	25.9	30.0	0.00018	0.00286
		20-Jun-14	surface	<0.000090	<0.000090	0.0248	0.0216	31.2	29.5	0.00014	0.00548
Dauphin River	DR1.0	24-Mar-13	surface	<0.000090	<0.000090	0.0364	0.0371	38.2	40.6	0.00031	0.00303
	DR1.1	10-Jun-13	surface	<0.000090	<0.000090	0.0329	0.0276	35.3	32.4	0.00017	0.00448
		22-Jul-13	surface	<0.000090	0.000102	0.0318	0.0323	34.0	34.6	<0.00010	0.00719
		7-Oct-13	surface	<0.000090	0.000127	0.0294	0.0276	27.7	31.2	<0.00010	0.00590
		7-Apr-14	surface	<0.000090	<0.000090	0.0306	0.0360	35.1	38.0	0.00065	0.00362
		29-May-14	surface	<0.000090	<0.000090	0.0224	0.0222	23.9	26.6	0.00044	0.00322
		20-Jun-14	surface	<0.000090	<0.000090	0.0251	0.0226	32.1	28.3	0.00016	0.00565
Dauphin River	DR1.3	26-Mar-13	surface	<0.000090	<0.000090	0.0347	0.0362	38.3	38.7	0.00067	0.00579
		10-Jun-13	surface	<0.000090	0.000104	0.0307	0.0266	34.3	30.4	0.00022	0.00688
		22-Jul-13	surface	<0.000090	<0.000090	0.0311	0.0314	32.9	34.5	<0.00010	0.00706
		7-Oct-13	surface	<0.000090	0.000152	0.0291	0.0280	27.4	31.2	0.00014	0.00576
		7-Apr-14	surface	<0.000090	0.000104	0.0293	0.0362	34.1	37.0	0.00218	0.00651
		29-May-14	surface	<0.000090	<0.000090	0.0244	0.0245	26.6	29.4	0.00024	0.00419
		20-Jun-14	surface	<0.000090	<0.000090	0.0262	0.0274	28.8	34.6	0.00016	0.00692
Dauphin River	DR1 (NOTE2)	26-Mar-13	surface	<0.000090	<0.000090	0.0356	0.0365	38.3	40.1	0.00089	0.00659
		12-Jun-13	surface	<0.000090	0.000103	0.0300	0.0285	34.9	33.1	0.00020	0.00675
		22-Jul-13	surface	<0.000090	0.000216	0.0312	0.0325	32.6	35.0	0.00234	0.00789

Table E-12. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Lead		Lithium		Magnesium		Manganese	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		7-Oct-13	surface	<0.000090	0.000126	0.0285	0.0278	27.3	31.3	0.00013	0.00598
		10-Apr-14	surface	<0.000090	<0.000090	0.0312	0.0460	35.5	37.1	0.00146	0.00641
		28-May-14	surface	<0.000090	<0.000090	0.0254	0.0214	25.2	27.2	0.00017	0.00404
		20-Jun-14	surface	0.000127	0.000191	0.0326	0.0277	29.4	30.8	0.00014	0.00692
Buffalo Lake	BBL[1]	27-Mar-13	surface	<0.000090	<0.000090	0.0279	0.0281	45.3	46.1	0.666	0.622
		7-Apr-14	surface	<0.000090	0.000093	0.0290	0.0345	61.4	67.2	0.448	0.447
		18-Jun-14	surface	<0.000090	<0.000090	0.0097	0.0067	17.7	19.5	0.00055	0.0116
Buffalo Creek	BC3[2]	12-Jun-13	surface	<0.000090	0.000258	0.0094	0.0090	20.5	18.7	0.0134	0.0452
		22-Jul-13	surface	<0.000090	0.000324	0.0088	0.0102	20.4	21.1	0.00717	0.0839
		7-Oct-13	surface	<0.000090	0.000210	0.0111	0.0260	22.4	29.9	0.00722	0.0105
		28-May-14	surface	<0.000090	0.000157	0.0058	0.0050	13.6	14.3	0.00898	0.024
		20-Jun-14	surface	<0.000090	0.000272	0.0063	0.0066	17.1	18.4	0.00549	0.0359
Dauphin River	DR2C	25-Mar-13	surface	<0.000090	<0.000090	0.0354	0.0373	37.5	37.6	0.00052	0.00578
		12-Jun-13	surface	<0.000090	0.000096	0.0269	0.0295	33.1	33.5	0.00020	0.00651
		22-Jul-13	surface	<0.000090	0.000109	0.0311	0.0322	32.1	35.4	0.00056	0.00806
		7-Oct-13	surface	<0.000090	0.000151	0.0294	0.0272	27.7	31.4	0.00026	0.00603
		10-Apr-14	surface	<0.000090	<0.000090	0.0298	0.0430	33.6	35.0	0.00144	0.00612
		28-May-14	surface	<0.000090	<0.000090	0.0261	0.0251	27.2	29.7	0.00019	0.00433
		20-Jun-14	surface	<0.000090	<0.000090	0.0228	0.0223	30.7	28.0	0.00015	0.0069
Lake Winnipeg	LKW3B	26-Mar-13	surface	<0.000090	<0.000090	0.0216	0.0227	26.0	26.9	0.00050	0.00160
		12-Jun-13	surface	<0.000090	<0.000090	0.0203	0.0221	25.1	26.0	0.00012	0.00326
		21-Jul-13	surface	<0.000090	0.000096	0.0303	0.0310	29.8	29.6	0.00017	0.00930
		7-Oct-13	surface	<0.000090	0.000166	0.0235	0.0236	22.9	29.6	0.00013	0.00680
		10-Apr-14	surface	<0.000090	<0.000090	0.0168	0.0232	20.9	21.3	0.00041	0.00166
		28-May-14	surface	<0.000090	<0.000090	0.0244	0.0240	25.9	26.5	0.00024	0.00391
		28-May-14	bottom	<0.000090	<0.000090	0.0227	0.0229	24.2	27.1	0.00021	0.00461
		20-Jun-14	surface	<0.000090	<0.000090	0.0238	0.0213	30.2	27.1	0.00020	0.00739
Lake Winnipeg	LKW3	25-Mar-13	surface	<0.000090	<0.000090	0.0215	0.0223	26.1	24.2	0.00034	0.00120
		12-Jun-13	surface	<0.000090	<0.000090	0.0205	0.0216	25.3	25.8	<0.00010	0.00311
		21-Jul-13	surface	<0.000090	0.000116	0.0293	0.0282	29.8	26.5	0.00020	0.0123
		7-Oct-13	surface	<0.000090	0.000136	0.0238	0.0228	23.2	26.8	0.00016	0.00638

Table E-12. Continued.

Sample		Sample	Sample	Lead		Lithium		Magnesium		Manganese	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		9-Apr-14	surface	<0.000090	<0.000090	0.0192	0.0208	22.7	20.5	0.00034	0.00122
		28-May-14	surface	<0.000090	<0.000090	0.0245	0.0257	26.3	28.3	0.00028	0.00437
		28-May-14	bottom	<0.000090	<0.000090	0.0232	0.0234	24.6	28.0	0.00017	0.00471
		20-Jun-14	surface	<0.000090	<0.000090	0.0174	0.0178	28.7	24.1	0.00018	0.00644
Lake Winnipeg	LKW2	26-Mar-13	surface	<0.000090	<0.000090	0.0222	0.0235	28.0	28.9	0.00049	0.00159
		11-Jun-13	surface	<0.000090	<0.000090	0.0211	0.0228	25.6	27.1	<0.00010	0.00422
		21-Jul-13	surface	<0.000090	0.000118	0.0293	0.0270	29.3	25.8	0.00019	0.0133
		7-Oct-13	surface	<0.000090	0.000316	0.0254	0.0242	24.5	28.3	0.00012	0.00843
		9-Apr-14	surface	<0.000090	<0.000090	0.0274	0.0366	29.9	32.0	0.00040	0.00311
		28-May-14	surface	<0.000090	<0.000090	0.0246	0.0248	25.8	27.8	0.00017	0.00396
		20-Jun-14	surface	<0.000090	0.000099	0.0179	0.0165	26.5	24.2	0.00032	0.00683
Lake Winnipeg	LKW1	26-Mar-13	surface	<0.000090	<0.000090	0.0232	0.0250	29.8	30.7	0.00060	0.00171
		11-Jun-13	surface	<0.000090	<0.000090	0.0210	0.0226	25.3	27.7	<0.00010	0.00340
		21-Jul-13	surface	<0.000090	0.000191	0.0232	0.0215	25.1	21.6	0.00020	0.0152
		7-Oct-13	surface	<0.000090	0.000355	0.0261	0.0253	25.7	30.2	0.00014	0.0170
		9-Apr-14	surface	<0.000090	<0.000090	0.0228	0.0227	25.8	26.3	0.00024	0.0011
		28-May-14	surface	<0.000090	<0.000090	0.0206	0.0210	23.8	25.4	0.00030	0.00570
		20-Jun-14	surface	<0.000090	<0.000090	0.0169	0.0175	26.7	22.7	0.00020	0.0077
Lake Winnipeg	LKW4	25-Mar-13	surface	<0.000090	<0.000090	0.0206	0.0212	23.8	23.3	0.00028	0.00116
		11-Jun-13	surface	<0.000090	<0.000090	0.0210	0.0223	25.6	27.8	0.00012	0.00357
		21-Jul-13	surface	<0.000090	0.000138	0.0200	0.0205	20.3	21.0	0.00049	0.00892
		6-Oct-13	surface	<0.000090	0.000132	0.0162	0.0161	18.4	20.3	0.00026	0.00670
		8-Apr-14	surface	<0.000090	<0.000090	0.0151	0.0184	19.2	21.5	0.00033	0.00141
		8-Apr-14	bottom	<0.000090	<0.000090	0.0202	0.0246	23.8	28.2	0.0763	0.101
		28-May-14	surface	<0.000090	<0.000090	0.0186	0.0191	22.3	22.7	0.00094	0.00615
		20-Jun-14	surface	<0.000090	0.000325	0.0202	0.0186	28.0	24.4	0.00014	0.00684
Lake Winnipeg	LKW5	26-Mar-13	surface	<0.000090	<0.000090	0.0210	0.0221	27.2	27.6	0.00059	0.00178
		11-Jun-13	surface	<0.000090	<0.000090	0.0193	0.0198	24.5	24.5	<0.00010	0.00310
		21-Jul-13	surface	<0.000090	0.000111	0.0223	0.0227	22.9	23.6	0.00023	0.0126
		7-Oct-13	surface	<0.000090	0.000266	0.0265	0.0247	25.9	29.1	0.00013	0.0144
		9-Apr-14	surface	<0.000090	<0.000090	0.0221	0.0204	25.8	24.4	0.00033	0.00125
		9-Apr-14	bottom	<0.000090	<0.000090	0.0325	0.0330	36.4	33.6	0.00067	0.00502

Table E-12. Continued.

Sample		Sample	Sample	Lead		Lithium		Magnesium		Manganese	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		28-May-14	surface	<0.000090	<0.000090	0.0208	0.0213	24.9	25.3	0.00028	0.00385
		20-Jun-14	surface	<0.000090	<0.000090	0.0178	0.0169	25.1	22.7	0.00049	0.00457
Lake Winnipeg	LKW6	25-Mar-13	surface	<0.000090	0.000091	0.0195	0.0209	24.5	24.0	0.00041	0.00168
		11-Jun-13	surface	<0.000090	<0.000090	0.0199	0.0212	24.0	25.4	<0.00010	0.00372
		11-Jun-13	bottom	<0.000090	0.000106	0.0182	0.0186	21.4	22.1	0.00018	0.00381
		21-Jul-13	surface	<0.000090	0.000186	0.0204	0.0218	21.6	22.2	0.00033	0.0109
		6-Oct-13	surface	<0.000090	0.000211	0.0262	0.0264	28.2	30.7	0.00018	0.0106
		9-Apr-14	surface	<0.000090	0.000097	0.0201	0.0164	23.6	21.7	0.00031	0.00105
		9-Apr-14	bottom	<0.000090	<0.000090	0.0306	0.0305	32.5	34.7	0.00055	0.00484
		28-May-14	surface	<0.000090	<0.000090	0.0191	0.0196	22.1	23.7	0.00019	0.00345
		20-Jun-14	surface	<0.000090	<0.000090	0.0148	0.0169	25.7	22.5	0.00019	0.00376
Lake Winnipeg	LKW7	25-Mar-13	surface	<0.000090	<0.000090	0.0183	0.0193	22.1	21.8	0.00026	0.00144
		11-Jun-13	surface	<0.000090	0.000091	0.0182	0.0192	22.9	22.7	0.00020	0.00457
		11-Jun-13	bottom	<0.000090	0.000098	0.0183	0.0195	22.9	23.6	0.00186	0.00388
		21-Jul-13	surface	<0.000090	0.000213	0.0156	0.0164	17.1	17.8	0.00024	0.00751
		6-Oct-13	surface	<0.000090	0.000256	0.0149	0.0159	17.1	19.5	0.00038	0.00766
		8-Apr-14	surface	<0.000090	<0.000090	0.0190	0.0247	23.2	26.1	0.00047	0.00163
		28-May-14	surface	<0.000090	<0.000090	0.0177	0.0179	19.7	20.3	0.00029	0.00244
		20-Jun-14	surface	<0.000090	0.000103	0.0180	0.0145	19.3	20.2	0.00019	0.00596

Table E-12. Continued.

Sample		Sample	Sample	Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum		Nickel		Potassium	
Location	**Location ID**	**Date**	**Type**	**Dissolved**	**Total**	**Dissolved**	**Total**	**Dissolved**	**Total**	**Dissolved**	**Total**	**Dissolved**	**Total**
Analytical Detection Limits				*1.0/25*	*1.0/5*	*0.050*	*0.050*	*0.00010*	*0.00020*	*0.0010*	*0.0020*	*0.020*	*0.020*
Fairford River	FR1	24-Mar-13	surface	<5.0	<5.0	<0.050	-	0.00257	0.00278	<0.0010	<0.0020	11.3	11.5
		10-Jun-13	surface	1.8	1.8	<0.050	<0.050	0.00197	0.00178	<0.0010	<0.0020	9.42	9.10
		22-Jul-13	surface	<1.0	<1.0	<0.050	<0.050	0.00161	0.00165	<0.0010	<0.0020	8.58	8.68
		7-Oct-13	surface	<1.0	1.0	<0.050	<0.050	0.00165	0.00189	<0.0010	<0.0020	8.06	9.18
		7-Apr-14	surface	2.5	3.3	<0.050	<0.050	0.00216	0.00266	<0.0010	<0.0020	10.3	10.7
		29-May-14	surface	1.2	2.3	<0.050	<0.050	0.00169	0.00171	<0.0010	<0.0020	7.13	7.86
		20-Jun-14	surface	<1.0	1.5	0.061	0.083	0.00146	0.00157	<0.0010	<0.0020	8.32	8.55
Lake St. Martin	LSM1	24-Mar-13	surface	<5.0	<5.0	<0.050	<0.050	0.00243	0.00249	<0.0010	<0.0020	10.6	10.9
		10-Jun-13	surface	1.0	1.3	<0.050	<0.050	0.00185	0.00172	<0.0010	<0.0020	8.37	8.24
		22-Jul-13	surface	<1.0	<1.0	<0.050	<0.050	0.00166	0.00174	<0.0010	<0.0020	8.80	9.53
		7-Oct-13	surface	<1.0	1.03	<0.050	<0.050	0.00159	0.00193	<0.0010	<0.0020	8.17	9.61
		7-Apr-14	surface	2.0	3.5	<0.050	<0.050	0.00210	0.00244	<0.0010	<0.0020	9.40	10.50
		29-May-14	surface	<1.0	<1.0	<0.050	<0.050	0.00147	0.00156	<0.0010	<0.0020	6.34	7.50
		20-Jun-14	surface	<1.0	1.2	<0.050	<0.050	0.00182	0.00176	<0.0010	<0.0020	7.82	7.72
Dauphin River	DR1.0	24-Mar-13	surface	<5.0	<5.0	<0.050	<0.050	0.00243	0.00253	<0.0010	<0.0020	10.9	11.2
	DR1.1	10-Jun-13	surface	1.7	1.4	<0.050	<0.050	0.00206	0.00169	<0.0010	<0.0020	9.16	7.77
		22-Jul-13	surface	<1.0	1.1	<0.050	<0.050	0.00167	0.00173	<0.0010	<0.0020	8.88	9.28
		7-Oct-13	surface	<1.0	1.2	<0.050	<0.050	0.00157	0.00190	<0.0010	<0.0020	8.22	9.72
		7-Apr-14	surface	2.9	2.9	<0.050	<0.050	0.00216	0.00259	<0.0010	<0.0020	9.64	9.99
		29-May-14	surface	<1.0	<1.0	<0.050	<0.050	0.00133	0.00137	<0.0010	<0.0020	5.88	6.74
		20-Jun-14	surface	<1.0	1.5	<0.050	<0.050	0.00202	0.00182	<0.0010	<0.0020	8.24	7.96
Dauphin River	DR1.3	26-Mar-13	surface	<1.0	<5.0	<0.050	<0.050	0.00239	0.00250	<0.0010	<0.0020	10.5	11.3
		10-Jun-13	surface	<1.0	1.3	<0.050	0.078	0.00179	0.00153	<0.0010	<0.0020	7.91	7.35
		22-Jul-13	surface	1.1	<1.0	<0.050	0.063	0.00155	0.00163	<0.0010	<0.0020	8.54	9.01
		7-Oct-13	surface	<1.0	1.5	<0.050	<0.050	0.00149	0.00189	<0.0010	<0.0020	8.06	9.51
		7-Apr-14	surface	2.1	2.2	<0.050	<0.050	0.00206	0.00230	<0.0010	<0.0020	9.72	10.2
		29-May-14	surface	<1.0	1.2	<0.050	<0.050	0.00145	0.00149	<0.0010	<0.0020	6.38	7.41
		20-Jun-14	surface	<1.0	1.1	<0.050	0.061	0.00139	0.00169	<0.0010	<0.0020	7.28	9.60
Dauphin River	DR1 (NOTE2)	26-Mar-13	surface	<1.0	2.5	<0.050	<0.050	0.00231	0.00250	<0.0010	<0.0020	10.7	11.5
		12-Jun-13	surface	1.3	1.6	<0.050	0.061	0.00183	0.00176	<0.0010	<0.0020	8.05	8.39
		22-Jul-13	surface	<1.0	1.2	<0.050	0.052	0.00160	0.00174	<0.0010	<0.0020	8.36	9.74

Table E-12. Continued.

Sample		Sample	Sample	Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum		Nickel		Potassium	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		7-Oct-13	surface	<1.0	<1.0	<0.050	<0.050	0.00156	0.00188	<0.0010	<0.0020	7.91	9.40
		10-Apr-14	surface	1.4	1.9	<0.050	0.057	0.00221	0.00249	<0.0010	<0.0020	9.48	10.5
		28-May-14	surface	<1.0	<1.0	<0.050	<0.050	0.00159	0.00172	<0.0010	<0.0020	6.72	7.12
		20-Jun-14	surface	<1.0	1.4	<0.050	0.062	0.00159	0.00179	<0.0010	<0.0020	7.36	8.47
Buffalo Lake	BBL[1]	27-Mar-13	surface	<25	6.5	2.01	3.11	0.00024	0.00021	<0.0010	<0.0020	8.59	9.43
		7-Apr-14	surface	4.7	5.4	1.08	1.43	0.00019	0.00024	<0.0010	<0.0020	6.94	7.47
		18-Jun-14	surface	2.2	2.1	0.140	0.175	0.00053	0.00054	<0.0010	<0.0020	1.68	1.76
Buffalo Creek	BC3[2]	12-Jun-13	surface	1.7	2.0	0.292	0.378	0.00048	0.00047	<0.0010	<0.0020	2.51	2.62
		22-Jul-13	surface	1.7	2.0	0.327	0.359	0.00027	0.00033	<0.0010	<0.0020	2.18	2.46
		7-Oct-13	surface	1.2	1.6	0.120	0.184	0.00033	0.00173	<0.0010	<0.0020	2.55	8.85
		28-May-14	surface	<1.0	1.6	0.149	0.201	0.00043	0.00051	<0.0010	<0.0020	1.40	1.52
		20-Jun-14	surface	1.2	3.0	0.376	0.376	0.00029	0.00033	<0.0010	<0.0020	0.95	1.14
Dauphin River	DR2C	25-Mar-13	surface	1.5	1.4	<0.050	<0.050	0.00240	0.00246	<0.0010	<0.0020	10.5	11.3
		12-Jun-13	surface	1.6	1.7	<0.050	<0.050	0.00172	0.00167	<0.0010	<0.0020	8.00	8.03
		22-Jul-13	surface	1.0	<1.0	<0.050	0.053	0.00161	0.00172	<0.0010	<0.0020	8.31	9.52
		7-Oct-13	surface	1.4	1.1	<0.050	0.081	0.00159	0.00187	<0.0010	<0.0020	8.11	9.33
		10-Apr-14	surface	1.5	1.2	<0.050	<0.050	0.00207	0.00233	<0.0010	<0.0020	9.27	9.93
		28-May-14	surface	1.6	1.7	<0.050	<0.050	0.00143	0.00156	<0.0010	<0.0020	6.78	7.34
		20-Jun-14	surface	<1.0	1.3	<0.050	0.076	0.00153	0.00168	<0.0010	<0.0020	7.41	7.72
Lake Winnipeg	LKW3B	26-Mar-13	surface	<1.0	1.0	<0.050	<0.050	0.00153	0.00157	<0.0010	<0.0020	6.31	6.88
		12-Jun-13	surface	1.1	1.1	<0.050	<0.050	0.00120	0.00130	<0.0010	<0.0020	5.92	6.43
		21-Jul-13	surface	<1.0	1.2	<0.050	0.055	0.00168	0.00192	<0.0010	<0.0020	8.43	7.93
		7-Oct-13	surface	<1.0	1.4	<0.050	<0.050	0.00133	0.00143	<0.0010	<0.0020	6.52	7.36
		10-Apr-14	surface	<1.0	<1.0	<0.050	<0.050	0.00115	0.00143	<0.0010	<0.0020	4.62	5.23
		28-May-14	surface	<1.0	1.2	<0.050	<0.050	0.00145	0.00139	<0.0010	<0.0020	6.34	6.79
		28-May-14	bottom	<1.0	<1.0	<0.050	<0.050	0.00134	0.00147	<0.0010	<0.0020	5.78	6.62
		20-Jun-14	surface	<1.0	1.4	<0.050	0.068	0.00171	0.00164	<0.0010	<0.0020	7.53	7.01
Lake Winnipeg	LKW3	25-Mar-13	surface	<5.0	1.6	<0.050	<0.050	0.00140	0.00151	0.0010	<0.0020	6.32	6.53
		12-Jun-13	surface	2.2	2.1	<0.050	<0.050	0.00129	0.00134	<0.0010	<0.0020	5.69	6.37
		21-Jul-13	surface	1.2	1.2	<0.050	<0.050	0.00166	0.00191	<0.0010	<0.0020	8.21	7.28
		7-Oct-13	surface	1.3	1.3	<0.050	<0.050	0.00127	0.00162	<0.0010	<0.0020	6.61	7.74

Table E-12. Continued.

Sample		Sample	Sample	Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum		Nickel		Potassium	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		9-Apr-14	surface	<1.0	<1.0	<0.050	<0.050	0.00128	0.00128	<0.0010	<0.0020	4.94	5.17
		28-May-14	surface	<1.0	1.6	<0.050	<0.050	0.00155	0.00148	<0.0010	<0.0020	6.28	7.19
		28-May-14	bottom	<1.0	<1.0	<0.050	<0.050	0.00140	0.00152	<0.0010	<0.0020	5.94	6.89
		20-Jun-14	surface	<1.0	1.4	<0.050	<0.050	0.00136	0.00136	<0.0010	<0.0020	6.86	6.20
Lake Winnipeg	LKW2	26-Mar-13	surface	<1.0	<1.0	<0.050	<0.050	0.00148	0.00161	<0.0010	<0.0020	6.49	7.19
		11-Jun-13	surface	<1.0	<1.0	<0.050	<0.050	0.00127	0.00140	<0.0010	<0.0020	5.88	6.50
		21-Jul-13	surface	1.2	1.3	<0.050	0.054	0.00162	0.00171	<0.0010	<0.0020	7.96	7.16
		7-Oct-13	surface	1.2	1.5	<0.050	<0.050	0.00137	0.00164	<0.0010	<0.0020	7.09	8.17
		9-Apr-14	surface	1.3	1.7	<0.050	<0.050	0.00198	0.00212	<0.0010	<0.0020	7.56	8.63
		28-May-14	surface	<1.0	1.6	<0.050	<0.050	0.00154	0.00148	<0.0010	<0.0020	6.31	7.11
		20-Jun-14	surface	<1.0	<1.0	<0.050	<0.050	0.00099	0.00120	<0.0010	<0.0020	6.08	5.70
Lake Winnipeg	LKW1	26-Mar-13	surface	<1.0	1.1	<0.050	<0.050	0.00157	0.00172	<0.0010	<0.0020	7.01	7.65
		11-Jun-13	surface	<1.0	<1.0	<0.050	<0.050	0.00124	0.00133	<0.0010	<0.0020	5.66	6.73
		21-Jul-13	surface	<1.0	1.2	<0.050	<0.050	0.00135	0.00141	<0.0010	<0.0020	6.72	5.82
		7-Oct-13	surface	1.0	1.6	<0.050	<0.050	0.00132	0.00161	<0.0010	<0.0020	7.07	8.45
		9-Apr-14	surface	2.0	1.8	<0.050	<0.050	0.00155	0.00150	<0.0010	<0.0020	6.45	6.96
		28-May-14	surface	<1.0	<1.0	<0.050	<0.050	0.00119	0.00121	<0.0010	<0.0020	5.31	6.06
		20-Jun-14	surface	<1.0	2.6	<0.050	<0.050	0.00132	0.00134	<0.0010	<0.0020	6.19	6.03
Lake Winnipeg	LKW4	25-Mar-13	surface	<5.0	2.1	<0.050	<0.050	0.00134	0.00147	<0.0010	<0.0020	5.91	6.23
		11-Jun-13	surface	1.1	1.5	<0.050	<0.050	0.00122	0.00139	<0.0010	<0.0020	5.80	6.57
		21-Jul-13	surface	1.2	<1.0	<0.050	<0.050	0.00118	0.00116	0.0011	<0.0020	5.60	5.37
		6-Oct-13	surface	<1.0	<1.0	<0.050	<0.050	0.00094	0.00110	<0.0010	<0.0020	4.38	5.18
		8-Apr-14	surface	2.4	3.0	<0.050	<0.050	0.00108	0.00119	<0.0010	<0.0020	4.38	4.71
		8-Apr-14	bottom	2.4	2.8	<0.050	<0.050	0.00128	0.00139	<0.0010	<0.0020	5.76	6.19
		28-May-14	surface	<1.0	1.3	<0.050	<0.050	0.00114	0.00116	0.0010	<0.0020	4.89	5.22
		20-Jun-14	surface	<1.0	1.9	<0.050	<0.050	0.00140	0.00144	<0.0010	<0.0020	6.83	6.55
Lake Winnipeg	LKW5	26-Mar-13	surface	<1.0	1.9	<0.050	<0.050	0.00147	0.00157	<0.0010	<0.0020	6.23	6.60
		11-Jun-13	surface	1.2	<1.0	0.064	<0.050	0.00120	0.00122	<0.0010	<0.0020	5.25	5.73
		21-Jul-13	surface	<1.0	<1.0	<0.050	<0.050	0.00136	0.00133	0.0010	<0.0020	6.24	5.97
		7-Oct-13	surface	<1.0	2.2	<0.050	<0.050	0.00184	0.00152	<0.0010	<0.0020	7.37	8.39
		9-Apr-14	surface	1.3	1.2	<0.050	<0.050	0.00151	0.00143	<0.0010	<0.0020	6.00	5.85
		9-Apr-14	bottom	1.2	1.1	<0.050	<0.050	0.00222	0.00228	<0.0010	<0.0020	9.73	9.35

Table E-12. Continued.

Sample		Sample	Sample	Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum		Nickel		Potassium	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		28-May-14	surface	<1.0	<1.0	<0.050	<0.050	0.00129	0.00131	<0.0010	<0.0020	5.93	6.19
		20-Jun-14	surface	<1.0	1.1	<0.050	0.058	0.00122	0.00129	<0.0010	<0.0020	5.92	6.03
Lake Winnipeg	LKW6	25-Mar-13	surface	<5.0	5.6	<0.050	<0.050	0.00146	0.00144	0.0010	<0.0020	5.89	6.23
		11-Jun-13	surface	<1.0	1.0	<0.050	<0.050	0.00126	0.00129	<0.0010	<0.0020	5.56	6.10
		11-Jun-13	bottom	4.5	6.5	0.120	0.117	0.00112	0.00111	<0.0010	<0.0020	5.04	5.13
		21-Jul-13	surface	<1.0	<1.0	<0.050	<0.050	0.00130	0.00126	0.0010	<0.0020	5.81	5.68
		6-Oct-13	surface	<1.0	<1.0	<0.050	<0.050	0.00145	0.00177	<0.0010	<0.0020	7.23	8.85
		9-Apr-14	surface	1.1	1.2	<0.050	<0.050	0.00141	0.00138	0.0010	<0.0020	5.22	5.15
		9-Apr-14	bottom	<1.0	<1.0	<0.050	<0.050	0.00210	0.00218	<0.0010	<0.0020	8.76	9.18
		28-May-14	surface	<1.0	<1.0	<0.050	<0.050	0.00116	0.00124	<0.0010	<0.0020	5.01	5.64
		20-Jun-14	surface	<1.0	1.1	<0.050	<0.050	0.00128	0.00135	<0.0010	<0.0020	5.92	5.82
Lake Winnipeg	LKW7	25-Mar-13	surface	2.3	<5.0	<0.050	<0.050	0.00125	0.00137	0.0011	<0.0020	5.22	5.68
		11-Jun-13	surface	1.5	1.8	<0.050	<0.050	0.00106	0.00114	<0.0010	<0.0020	4.95	5.42
		11-Jun-13	bottom	3.3	6.7	0.051	0.092	0.00104	0.00114	<0.0010	<0.0020	4.89	5.37
		21-Jul-13	surface	<1.0	<1.0	<0.050	<0.050	0.00102	0.00103	0.0010	<0.0020	4.33	4.43
		6-Oct-13	surface	<1.0	<1.0	<0.050	<0.050	0.00091	0.00134	<0.0010	<0.0020	4.01	4.89
		8-Apr-14	surface	2.8	2.8	<0.050	<0.050	0.00140	0.00150	<0.0010	<0.0020	5.62	5.82
		28-May-14	surface	<1.0	<1.0	<0.050	<0.050	0.00115	0.00103	<0.0010	<0.0020	4.56	4.99
		20-Jun-14	surface	<1.0	3.1	<0.050	<0.050	0.00102	0.00117	<0.0010	<0.0020	4.66	5.02

Table E-12. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Rubidium		Selenium		Silicon		Silver		Sodium	
				Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00020*	*0.00020*	*0.0010*	*0.0010*	*0.050 /0.10*	*0.050 /0.10*	*0.00010*	*0.00010*	*0.020/ 2.0*	*0.030/ 3.0*
Fairford River	FR1	24-Mar-13	surface	0.00523	0.00476	<0.0010	<0.0010	6.60	6.17	<0.00010	<0.00010	182	182
		10-Jun-13	surface	0.00360	0.00342	<0.0010	<0.0010	4.24	3.73	<0.00010	<0.00010	130	118
		22-Jul-13	surface	0.00337	0.00335	<0.0010	<0.0010	3.62	3.97	<0.00010	<0.00010	113	131
		7-Oct-13	surface	0.00354	0.00382	<0.0010	<0.0010	4.47	4.75	<0.00010	<0.00010	114	117
		7-Apr-14	surface	0.00455	0.00489	<0.0010	<0.0010	7.72	7.96	<0.00010	<0.00010	171	165
		29-May-14	surface	0.00311	0.00317	<0.0010	<0.0010	4.22	4.43	<0.00010	<0.00010	110	115
		20-Jun-14	surface	0.00321	0.00333	<0.0010	<0.0010	3.98	4.12	<0.00010	<0.00010	97.6	100
Lake St. Martin	LSM1	24-Mar-13	surface	0.00464	0.00439	<0.0010	<0.0010	6.12	5.81	<0.00010	<0.00010	173	171
		10-Jun-13	surface	0.00340	0.00319	<0.0010	<0.0010	3.19	2.79	<0.00010	0.00136	118	113
		22-Jul-13	surface	0.00353	0.00359	<0.0010	<0.0010	3.93	4.39	<0.00010	<0.00010	122	132
		7-Oct-13	surface	0.00356	0.00387	<0.0010	<0.0010	4.76	5.30	<0.00010	<0.00010	115	121
		7-Apr-14	surface	0.00419	0.00449	<0.0010	<0.0010	6.76	7.24	<0.00010	<0.00010	157	153
		29-May-14	surface	0.00279	0.00298	<0.0010	<0.0010	3.28	3.65	<0.00010	<0.00010	95.1	98.4
		20-Jun-14	surface	0.00329	0.00347	<0.0010	<0.0010	3.65	3.59	<0.00010	<0.00010	103	101
Dauphin River	DR1.0	24-Mar-13	surface	0.00480	0.00456	<0.0010	<0.0010	6.25	5.74	<0.00010	<0.00010	167	171
	DR1.1	10-Jun-13	surface	0.00364	0.00328	<0.0010	<0.0010	3.23	2.74	<0.00010	<0.00010	123	112
		22-Jul-13	surface	0.00354	0.00348	<0.0010	<0.0010	4.03	4.48	<0.00010	<0.00010	123	140
		7-Oct-13	surface	0.00358	0.00398	<0.0010	<0.0010	4.77	5.18	<0.00010	<0.00010	116	122
		7-Apr-14	surface	0.00416	0.00461	<0.0010	<0.0010	6.44	7.28	<0.00010	<0.00010	161	155
		29-May-14	surface	0.00256	0.00265	<0.0010	<0.0010	3.03	3.30	<0.00010	<0.00010	84.6	87.0
		20-Jun-14	surface	0.00339	0.00357	<0.0010	<0.0010	4.07	3.60	<0.00010	<0.00010	108	103
Dauphin River	DR1.3	26-Mar-13	surface	0.00477	0.00492	<0.0010	<0.0010	6.29	6.14	<0.00010	<0.00010	166	164
		10-Jun-13	surface	0.00346	0.00314	<0.0010	<0.0010	3.08	2.69	<0.00010	<0.00010	121	112
		22-Jul-13	surface	0.00340	0.00354	<0.0010	<0.0010	3.84	4.41	<0.00010	<0.00010	124	136
		7-Oct-13	surface	0.00359	0.00382	<0.0010	<0.0010	4.71	5.15	<0.00010	<0.00010	115	127
		7-Apr-14	surface	0.00434	0.00460	<0.0010	<0.0010	6.81	7.40	<0.00010	<0.00010	162	152
		29-May-14	surface	0.00280	0.00305	<0.0010	<0.0010	3.23	3.53	<0.00010	<0.00010	94.0	95.5
		20-Jun-14	surface	0.00296	0.00375	<0.0010	<0.0010	3.52	3.56	<0.00010	<0.00010	98.6	120
Dauphin River	DR1 (NOTE2)	26-Mar-13	surface	0.00475	0.00496	<0.0010	<0.0010	6.36	6.27	<0.00010	<0.00010	171	160
		12-Jun-13	surface	0.00343	0.00346	<0.0010	<0.0010	3.11	2.96	<0.00010	<0.00010	114	122

Table E-12. Continued.

Sample		Sample	Sample	Rubidium		Selenium		Silicon		Silver		Sodium	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		22-Jul-13	surface	0.00337	0.00375	<0.0010	<0.0010	3.74	4.55	<0.00010	<0.00010	127	138
		7-Oct-13	surface	0.00363	0.00375	<0.0010	<0.0010	4.61	5.07	<0.00010	<0.00010	125	119
		10-Apr-14	surface	0.00407	0.00434	<0.0010	<0.0010	5.99	7.03	<0.00010	<0.00010	149	144
		28-May-14	surface	0.00270	0.00316	<0.0010	<0.0010	3.58	3.53	<0.00010	<0.00010	85.9	93.4
		20-Jun-14	surface	0.00288	0.00330	<0.0010	<0.0010	3.84	3.87	<0.00010	<0.00010	97.9	106
Buffalo Lake	BBL[1]	27-Mar-13	surface	0.00529	0.00566	<0.0010	<0.0010	15.4	12.9	<0.00010	<0.00010	100	102
		7-Apr-14	surface	0.00375	0.00408	<0.0010	<0.0010	14.2	15.4	<0.00010	<0.00010	88.9	85.1
		18-Jun-14	surface	0.00147	0.00168	<0.0010	<0.0010	1.92	2.04	<0.00010	<0.00010	19.3	21.0
Buffalo Creek	BC3[2]	12-Jun-13	surface	0.00203	0.00241	<0.0010	<0.0010	3.66	3.78	<0.00010	<0.00010	24.4	23.3
		22-Jul-13	surface	0.00157	0.00297	<0.0010	<0.0010	7.85	10.0	<0.00010	<0.00010	21.5	25.4
		7-Oct-13	surface	0.00172	0.00358	<0.0010	<0.0010	6.47	9.09	<0.00010	<0.00010	27.8	-
		28-May-14	surface	0.00159	0.00252	<0.0010	<0.0010	2.39	3.06	<0.00010	<0.00010	9.96	10.6
		20-Jun-14	surface	0.00106	0.00226	<0.0010	<0.0010	4.34	4.95	<0.00010	<0.00010	12.1	12.5
Dauphin River	DR2C	25-Mar-13	surface	0.00473	0.00463	<0.0010	<0.0010	6.22	7.92	<0.00010	<0.00010	166	153
		12-Jun-13	surface	0.00331	0.00331	<0.0010	<0.0010	2.73	2.94	<0.00010	<0.00010	116	123
		22-Jul-13	surface	0.00341	0.00363	<0.0010	<0.0010	3.77	4.54	<0.00010	<0.00010	123	145
		7-Oct-13	surface	0.00359	0.00379	<0.0010	<0.0010	4.77	5.22	<0.00010	<0.00010	114	131
		10-Apr-14	surface	0.00404	0.00408	<0.0010	<0.0010	5.95	6.61	<0.00010	<0.00010	135	137
		28-May-14	surface	0.00292	0.00303	<0.0010	<0.0010	3.45	3.59	<0.00010	<0.00010	102	92.5
		20-Jun-14	surface	0.00303	0.00344	<0.0010	<0.0010	3.16	3.57	<0.00010	<0.00010	97.5	98.0
Lake Winnipeg	LKW3B	26-Mar-13	surface	0.00265	0.00280	<0.0010	<0.0010	2.54	2.64	<0.00010	<0.00010	79.6	73.9
		12-Jun-13	surface	0.00237	0.00253	<0.0010	<0.0010	1.94	2.10	<0.00010	<0.00010	78.7	75.1
		21-Jul-13	surface	0.00348	0.00375	<0.0010	<0.0010	3.61	4.00	<0.00010	<0.00010	107	117
		7-Oct-13	surface	0.00284	0.00320	<0.0010	<0.0010	3.14	3.87	<0.00010	<0.00010	84.6	90.7
		10-Apr-14	surface	0.00193	0.00203	<0.0010	<0.0010	0.97	1.43	<0.00010	<0.00010	47.5	46.1
		28-May-14	surface	0.00274	0.00267	<0.0010	<0.0010	2.96	3.01	<0.00010	<0.00010	91.2	83.6
		28-May-14	bottom	0.00244	0.00280	<0.0010	<0.0010	2.44	2.88	<0.00010	<0.00010	76.7	78.4
		20-Jun-14	surface	0.00301	0.00328	<0.0010	<0.0010	3.50	3.51	<0.00010	<0.00010	98.5	93.4
Lake Winnipeg	LKW3	25-Mar-13	surface	0.00264	0.00258	<0.0010	<0.0010	2.34	2.89	<0.00010	<0.00010	72.0	65.0
		12-Jun-13	surface	0.00246	0.00260	<0.0010	<0.0010	1.95	2.19	<0.00010	<0.00010	79.3	74.4
		21-Jul-13	surface	0.00340	0.00373	<0.0010	<0.0010	3.66	3.70	<0.00010	<0.00010	101	110

Table E-12. Continued.

Sample		Sample	Sample	Rubidium		Selenium		Silicon		Silver		Sodium	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		7-Oct-13	surface	0.00289	0.00321	<0.0010	<0.0010	3.24	3.61	<0.00010	<0.00010	86.0	92.5
		9-Apr-14	surface	0.00203	0.00202	<0.0010	<0.0010	0.84	1.21	<0.00010	<0.00010	44.1	41.4
		28-May-14	surface	0.00279	0.00285	<0.0010	<0.0010	2.97	3.19	<0.00010	<0.00010	89.2	90.1
		28-May-14	bottom	0.00260	0.00277	<0.0010	<0.0010	2.51	3.05	<0.00010	<0.00010	80.6	84.4
		20-Jun-14	surface	0.00286	0.00301	<0.0010	<0.0010	2.18	2.78	<0.00010	<0.00010	80.9	73.4
Lake Winnipeg	LKW2	26-Mar-13	surface	0.00275	0.00304	<0.0010	<0.0010	2.70	2.80	<0.00010	<0.00010	78.8	77.1
		11-Jun-13	surface	0.00249	0.00275	<0.0010	<0.0010	2.01	2.23	<0.00010	<0.00010	85.1	75.8
		21-Jul-13	surface	0.00325	0.00371	<0.0010	<0.0010	3.57	3.71	<0.00010	<0.00010	97.8	106
		7-Oct-13	surface	0.00301	0.00351	<0.0010	<0.0010	3.55	4.10	<0.00010	<0.00010	94.3	94.7
		9-Apr-14	surface	0.00330	0.00341	<0.0010	<0.0010	4.29	4.56	<0.00010	<0.00010	104	107
		28-May-14	surface	0.00274	0.00287	<0.0010	<0.0010	2.79	3.09	<0.00010	<0.00010	88.9	88.8
		20-Jun-14	surface	0.00255	0.00316	<0.0010	<0.0010	2.42	2.36	<0.00010	<0.00010	70.9	66.4
Lake Winnipeg	LKW1	26-Mar-13	surface	0.00303	0.00329	<0.0010	<0.0010	3.41	3.52	<0.00010	<0.00010	86.6	84.3
		11-Jun-13	surface	0.00238	0.00272	<0.0010	<0.0010	1.96	2.14	<0.00010	<0.00010	78.7	77.2
		21-Jul-13	surface	0.00271	0.00378	<0.0010	<0.0010	2.77	3.48	<0.00010	<0.00010	78.1	86.1
		7-Oct-13	surface	0.00288	0.00413	<0.0010	<0.0010	3.63	5.02	<0.00010	<0.00010	93.1	88.5
		9-Apr-14	surface	0.00267	0.00266	<0.0010	<0.0010	2.51	2.74	<0.00010	<0.00010	74.0	83.1
		28-May-14	surface	0.00245	0.00274	<0.0010	<0.0010	2.69	3.27	<0.00010	<0.00010	69.5	68.6
		20-Jun-14	surface	0.00265	0.00281	<0.0010	<0.0010	2.06	2.52	<0.00010	<0.00010	76.2	67.8
Lake Winnipeg	LKW4	25-Mar-13	surface	0.00234	0.00253	<0.0010	<0.0010	2.17	2.64	<0.00010	<0.00010	70.8	63.7
		11-Jun-13	surface	0.00244	0.00264	<0.0010	<0.0010	1.97	2.25	<0.00010	<0.00010	86.8	75.2
		21-Jul-13	surface	0.00233	0.00306	<0.0010	<0.0010	2.36	3.22	<0.00010	<0.00010	61.8	65.3
		6-Oct-13	surface	0.00211	0.00266	<0.0010	<0.0010	1.59	2.22	<0.00010	<0.00010	48.0	48.7
		8-Apr-14	surface	0.00179	0.00205	<0.0010	<0.0010	0.61	1.08	<0.00010	<0.00010	42.6	41.3
		8-Apr-14	bottom	0.00219	0.00291	<0.0010	<0.0010	3.31	4.46	<0.00010	<0.00010	81.7	84.9
		28-May-14	surface	0.00190	0.00208	<0.0010	<0.0010	1.61	1.70	<0.00010	<0.00010	54.9	56.9
		20-Jun-14	surface	0.00286	0.00304	<0.0010	<0.0010	3.13	2.87	<0.00010	<0.00010	82.9	78.0
Lake Winnipeg	LKW5	26-Mar-13	surface	0.00264	0.00278	<0.0010	<0.0010	2.00	2.12	<0.00010	<0.00010	70.9	67.7
		11-Jun-13	surface	0.00226	0.00230	<0.0010	<0.0010	1.75	1.80	<0.00010	<0.00010	73.5	70.1
		21-Jul-13	surface	0.00252	0.00312	<0.0010	<0.0010	2.64	3.41	<0.00010	<0.00010	73.7	78.5
		7-Oct-13	surface	0.00298	0.00358	<0.0010	<0.0010	5.74	4.74	<0.00010	<0.00010	94.6	91.5
		9-Apr-14	surface	0.00241	0.00235	<0.0010	<0.0010	2.04	2.31	<0.00010	<0.00010	66.7	64.6

Table E-12. Continued.

Sample		Sample	Sample	Rubidium		Selenium		Silicon		Silver		Sodium	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		9-Apr-14	bottom	0.00445	0.00404	<0.0010	<0.0010	6.25	6.64	<0.00010	<0.00010	142	147
		28-May-14	surface	0.00239	0.00250	<0.0010	<0.0010	2.52	2.70	<0.00010	<0.00010	72.3	73.2
		20-Jun-14	surface	0.00245	0.00288	<0.0010	<0.0010	2.51	2.51	<0.00010	<0.00010	71.8	70.0
Lake Winnipeg	LKW6	25-Mar-13	surface	0.00242	0.0025	<0.0010	<0.0010	1.76	2.26	<0.00010	<0.00010	66.8	59.8
		11-Jun-13	surface	0.00233	0.00249	<0.0010	<0.0010	1.74	2.11	<0.00010	<0.00010	70.2	72.8
		11-Jun-13	bottom	0.00194	0.00233	<0.0010	<0.0010	1.39	1.77	<0.00010	<0.00010	62.0	56.5
		21-Jul-13	surface	0.00242	0.00352	<0.0010	<0.0010	2.57	3.86	<0.00010	<0.00010	66.3	68.1
		6-Oct-13	surface	0.00332	0.00365	<0.0010	<0.0010	4.05	4.60	<0.00010	<0.00010	102	106
		9-Apr-14	surface	0.00216	0.00227	<0.0010	<0.0010	0.66	1.00	<0.00010	<0.00010	45.8	47.1
		9-Apr-14	bottom	0.00368	0.00437	<0.0010	<0.0010	4.93	5.82	<0.00010	<0.00010	116	150
		28-May-14	surface	0.00202	0.00218	<0.0010	<0.0010	1.62	1.68	<0.00010	<0.00010	54.7	59.0
		20-Jun-14	surface	0.00239	0.00273	<0.0010	<0.0010	2.49	2.60	<0.00010	<0.00010	75.4	69.0
Lake Winnipeg	LKW7	25-Mar-13	surface	0.00216	0.00237	<0.0010	<0.0010	1.43	1.83	<0.00010	<0.00010	56.3	49.7
		11-Jun-13	surface	0.00211	0.00242	<0.0010	<0.0010	1.57	1.97	<0.00010	<0.00010	69.0	60.3
		11-Jun-13	bottom	0.00207	0.00220	<0.0010	<0.0010	1.60	1.67	<0.00010	<0.00010	60.9	56.2
		21-Jul-13	surface	0.00180	0.00305	<0.0010	<0.0010	1.64	3.18	<0.00010	<0.00010	41.0	43.2
		6-Oct-13	surface	0.00196	0.00295	<0.0010	<0.0010	1.62	2.67	<0.00010	<0.00010	41.8	42.4
		8-Apr-14	surface	0.00221	0.00271	<0.0010	<0.0010	1.65	2.42	<0.00010	<0.00010	62.6	63.5
		28-May-14	surface	0.00186	0.00194	<0.0010	<0.0010	1.99	2.04	<0.00010	<0.00010	57.8	54.9
		20-Jun-14	surface	0.00182	0.00269	<0.0010	<0.0010	1.64	2.20	<0.00010	<0.00010	51.0	55.2

Table E-12. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Strontium		Sulphate	Tellurium		Thallium	
				Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00010*	*0.00010*	*0.50*	*0.00020*	*0.00020*	*0.00010*	*0.00010*
Fairford River	FR1	24-Mar-13	surface	0.347	0.348	93.2	<0.00020	<0.00020	<0.00010	<0.00010
		10-Jun-13	surface	0.252	0.274	80.6	<0.00020	<0.00020	<0.00010	<0.00010
		22-Jul-13	surface	0.242	0.253	74.9	<0.00020	<0.00020	<0.00010	<0.00010
		7-Oct-13	surface	0.231	0.255	67.6	<0.00020	<0.00020	<0.00010	<0.00010
		7-Apr-14	surface	0.326	0.351	96.9	<0.00020	<0.00020	<0.00010	<0.00010
		29-May-14	surface	0.232	0.242	67.6	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.232	0.226	68.4	<0.00020	<0.00020	<0.00010	<0.00010
Lake St. Martin	LSM1	24-Mar-13	surface	0.330	0.337	92.5	<0.00020	<0.00020	<0.00010	<0.00010
		10-Jun-13	surface	0.245	0.270	72.9	<0.00020	<0.00020	<0.00010	<0.00010
		22-Jul-13	surface	0.257	0.265	81.1	<0.00020	<0.00020	<0.00010	<0.00010
		7-Oct-13	surface	0.234	0.267	72.0	<0.00020	<0.00020	<0.00010	<0.00010
		7-Apr-14	surface	0.297	0.306	89.8	<0.00020	<0.00020	<0.00010	<0.00010
		29-May-14	surface	0.199	0.215	63.4	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.247	0.234	68.9	<0.00020	<0.00020	<0.00010	<0.00010
Dauphin River	DR1.0	24-Mar-13	surface	0.338	0.342	96.5	<0.00020	<0.00020	<0.00010	<0.00010
	DR1.1	10-Jun-13	surface	0.246	0.268	72.3	<0.00020	<0.00020	<0.00010	<0.00010
		22-Jul-13	surface	0.257	0.269	81.6	<0.00020	<0.00020	<0.00010	<0.00010
		7-Oct-13	surface	0.238	0.271	71.6	<0.00020	<0.00020	<0.00010	<0.00010
		7-Apr-14	surface	0.312	0.337	87.5	<0.00020	<0.00020	<0.00010	<0.00010
		29-May-14	surface	0.179	0.193	57.0	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.268	0.235	70.5	<0.00020	<0.00020	<0.00010	<0.00010
Dauphin River	DR1.3	26-Mar-13	surface	0.343	0.354	94.5	<0.00020	<0.00020	<0.00010	<0.00010
		10-Jun-13	surface	0.229	0.247	68.5	<0.00020	<0.00020	<0.00010	<0.00010
		22-Jul-13	surface	0.253	0.266	79.1	<0.00020	<0.00020	<0.00010	<0.00010
		7-Oct-13	surface	0.237	0.265	71.3	<0.00020	<0.00020	<0.00010	<0.00010
		7-Apr-14	surface	0.311	0.313	88.0	<0.00020	<0.00020	0.00012	<0.00010
		29-May-14	surface	0.200	0.215	62.3	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.208	0.231	67.7	<0.00020	<0.00020	<0.00010	<0.00010
Dauphin River	DR1 (NOTE2)	26-Mar-13	surface	0.338	0.357	94.5	<0.00020	<0.00020	<0.00010	<0.00010
		12-Jun-13	surface	0.240	0.240	73.8	<0.00020	<0.00020	<0.00010	<0.00010
		22-Jul-13	surface	0.245	0.272	79.0	<0.00020	<0.00020	<0.00010	<0.00010

Table E-12. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Strontium		Sulphate	Tellurium		Thallium	
				Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
		7-Oct-13	surface	0.241	0.263	71.7	<0.00020	<0.00020	<0.00010	<0.00010
		10-Apr-14	surface	0.322	0.390	85.9	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	surface	0.227	0.233	66.1	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.250	0.250	67.8	<0.00020	<0.00020	<0.00010	<0.00010
Buffalo Lake	BBL[1]	27-Mar-13	surface	0.235	0.262	11.2	<0.00020	<0.00020	<0.00010	<0.00010
		7-Apr-14	surface	0.285	0.300	108	<0.00020	<0.00020	<0.00010	<0.00010
		18-Jun-14	surface	0.116	0.112	12.1	<0.00020	<0.00020	<0.00010	<0.00010
Buffalo Creek	BC3[2]	12-Jun-13	surface	0.0965	0.0942	9.92	<0.00020	<0.00020	<0.00010	<0.00010
		22-Jul-13	surface	0.106	0.110	10.6	<0.00020	<0.00020	<0.00010	<0.00010
		7-Oct-13	surface	0.112	0.247	18.9	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	surface	0.0706	0.0711	5.99	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.0744	0.0767	5.10	<0.00020	<0.00020	<0.00010	<0.00010
Dauphin River	DR2C	25-Mar-13	surface	0.336	0.326	94.1	<0.00020	<0.00020	<0.00010	<0.00010
		12-Jun-13	surface	0.225	0.240	71.5	<0.00020	<0.00020	<0.00010	<0.00010
		22-Jul-13	surface	0.247	0.266	78.9	<0.00020	<0.00020	<0.00010	<0.00010
		7-Oct-13	surface	0.238	0.262	71.1	<0.00020	<0.00020	<0.00010	<0.00010
		10-Apr-14	surface	0.305	0.354	82.0	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	surface	0.205	0.218	65.7	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.229	0.227	66.9	<0.00020	<0.00020	<0.00010	<0.00010
Lake Winnipeg	LKW3B	26-Mar-13	surface	0.219	0.226	67.5	<0.00020	<0.00020	<0.00010	<0.00010
		12-Jun-13	surface	0.177	0.181	54.9	<0.00020	<0.00020	<0.00010	<0.00010
		21-Jul-13	surface	0.264	0.260	74.5	<0.00020	<0.00020	<0.00010	<0.00010
		7-Oct-13	surface	0.199	0.217	62.0	<0.00020	<0.00020	<0.00010	<0.00010
		10-Apr-14	surface	0.194	0.236	58.2	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	surface	0.210	0.206	63.9	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	bottom	0.202	0.221	61.3	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.260	0.215	64.8	<0.00020	<0.00020	<0.00010	<0.00010
Lake Winnipeg	LKW3	25-Mar-13	surface	0.219	0.204	66.0	<0.00020	<0.00020	<0.00010	<0.00010
		12-Jun-13	surface	0.176	0.186	54.7	<0.00020	<0.00020	<0.00010	<0.00010
		21-Jul-13	surface	0.261	0.256	72.3	<0.00020	<0.00020	<0.00010	<0.00010
		7-Oct-13	surface	0.201	0.221	64.0	<0.00020	<0.00020	<0.00010	<0.00010

Table E-12. Continued.

Sample		Sample	Sample	Strontium		Sulphate	Tellurium		Thallium	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
		9-Apr-14	surface	0.198	0.229	58.5	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	surface	0.210	0.218	64.9	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	bottom	0.205	0.219	61.5	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.217	0.193	55.2	<0.00020	<0.00020	<0.00010	<0.00010
Lake Winnipeg	LKW2	26-Mar-13	surface	0.225	0.236	69.3	<0.00020	<0.00020	<0.00010	<0.00010
		11-Jun-13	surface	0.175	0.187	56.8	<0.00020	<0.00020	<0.00010	<0.00010
		21-Jul-13	surface	0.250	0.254	69.8	<0.00020	<0.00020	<0.00010	<0.00010
		7-Oct-13	surface	0.211	0.235	66.5	<0.00020	<0.00020	<0.00010	<0.00010
		9-Apr-14	surface	0.278	0.330	72.4	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	surface	0.213	0.219	64.2	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.153	0.181	49.7	<0.00020	<0.00020	<0.00010	<0.00010
Lake Winnipeg	LKW1	26-Mar-13	surface	0.234	0.242	72.2	<0.00020	<0.00020	<0.00010	<0.00010
		11-Jun-13	surface	0.171	0.192	54.4	<0.00020	<0.00020	<0.00010	<0.00010
		21-Jul-13	surface	0.213	0.217	57.1	<0.00020	<0.00020	<0.00010	<0.00010
		7-Oct-13	surface	0.209	0.239	68.1	<0.00020	<0.00020	<0.00010	<0.00010
		9-Apr-14	surface	0.222	0.227	65.9	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	surface	0.184	0.188	53.2	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.208	0.193	55.2	<0.00020	<0.00020	<0.00010	<0.00010
Lake Winnipeg	LKW4	25-Mar-13	surface	0.200	0.201	63.7	<0.00020	<0.00020	<0.00010	<0.00010
		11-Jun-13	surface	0.181	0.194	55.6	<0.00020	<0.00020	<0.00010	<0.00010
		21-Jul-13	surface	0.188	0.184	51.3	<0.00020	<0.00020	<0.00010	<0.00010
		6-Oct-13	surface	0.165	0.172	50.0	<0.00020	<0.00020	<0.00010	<0.00010
		8-Apr-14	surface	0.187	0.189	56.7	<0.00020	<0.00020	<0.00010	<0.00010
		8-Apr-14	bottom	0.221	0.210	65.3	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	surface	0.195	0.197	56.4	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.213	0.196	58.4	<0.00020	<0.00020	<0.00010	<0.00010
Lake Winnipeg	LKW5	26-Mar-13	surface	0.226	0.232	70.2	<0.00020	<0.00020	<0.00010	<0.00010
		11-Jun-13	surface	0.165	0.170	53.1	<0.00020	<0.00020	<0.00010	<0.00010
		21-Jul-13	surface	0.205	0.202	55.3	<0.00020	<0.00020	<0.00010	<0.00010
		7-Oct-13	surface	0.211	0.231	68.7	<0.00020	<0.00020	<0.00010	<0.00010
		9-Apr-14	surface	0.219	0.223	62.5	<0.00020	<0.00020	<0.00010	<0.00010
		9-Apr-14	bottom	0.304	0.340	81.5	<0.00020	<0.00020	<0.00010	<0.00010

Table E-12. Continued.

Sample Location	Location ID	Sample Date	Sample Type	Strontium		Sulphate	Tellurium		Thallium	
				Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
		28-May-14	surface	0.198	0.198	57.0	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.186	0.182	53.7	<0.00020	<0.00020	<0.00010	<0.00010
Lake Winnipeg	LKW6	25-Mar-13	surface	0.212	0.207	65.4	<0.00020	<0.00020	<0.00010	<0.00010
		11-Jun-13	surface	0.167	0.181	54.6	<0.00020	<0.00020	<0.00010	<0.00010
		11-Jun-13	bottom	0.147	0.168	51.3	<0.00020	<0.00020	<0.00010	<0.00010
		21-Jul-13	surface	0.195	0.190	52.2	<0.00020	<0.00020	<0.00010	<0.00010
		6-Oct-13	surface	0.232	0.254	70.5	<0.00020	<0.00020	<0.00010	<0.00010
		9-Apr-14	surface	0.216	0.213	63.8	<0.00020	<0.00020	0.00011	<0.00010
		9-Apr-14	bottom	0.293	0.326	80.2	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	surface	0.191	0.193	56.2	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.195	0.193	53.9	<0.00020	<0.00020	<0.00010	<0.00010
Lake Winnipeg	LKW7	25-Mar-13	surface	0.192	0.193	60.6	<0.00020	<0.00020	<0.00010	<0.00010
		11-Jun-13	surface	0.158	0.165	51.0	<0.00020	<0.00020	<0.00010	<0.00010
		11-Jun-13	bottom	0.153	0.167	51.8	<0.00020	<0.00020	<0.00010	<0.00010
		21-Jul-13	surface	0.161	0.158	44.9	<0.00020	<0.00020	<0.00010	<0.00010
		6-Oct-13	surface	0.153	0.164	47.7	<0.00020	<0.00020	<0.00010	<0.00010
		8-Apr-14	surface	0.216	0.219	66.4	<0.00020	<0.00020	<0.00010	<0.00010
		28-May-14	surface	0.170	0.165	49.6	<0.00020	<0.00020	<0.00010	<0.00010
		20-Jun-14	surface	0.158	0.165	48.9	<0.00020	<0.00020	<0.00010	<0.00010

Table E-12. Continued.

Sample		Sample	Sample	Thorium		Tin		Titanium		Tungsten	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00010*	*0.00010*	*0.00020*	*0.00020*	*0.00050*	*0.00050*	*0.00010*	*0.00010*
Fairford River	FR1	24-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00166	0.00179	<0.00010	<0.00010
		10-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00157	0.00261	<0.00010	<0.00010
		22-Jul-13	surface	<0.00010	<0.00010	<0.00020	0.00072	0.00120	0.00299	<0.00010	<0.00010
		7-Oct-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00144	0.00288	<0.00010	<0.00010
		7-Apr-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00066	<0.00010	<0.00010
		29-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00107	0.00199	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00079	<0.00010	<0.00010
Lake St. Martin	LSM1	24-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00147	0.00184	<0.00010	<0.00010
		10-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00138	0.00194	<0.00010	<0.00010
		22-Jul-13	surface	<0.00010	<0.00010	<0.00020	0.00058	0.00135	0.00240	<0.00010	<0.00010
		7-Oct-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00152	0.00244	<0.00010	<0.00010
		7-Apr-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
		29-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00107	0.00205	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00111	<0.00010	<0.00010
Dauphin River	DR1.0	24-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00162	0.00194	<0.00010	<0.00010
	DR1.1	10-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00132	0.00214	<0.00010	<0.00010
		22-Jul-13	surface	<0.00010	<0.00010	<0.00020	0.00074	0.00131	0.00246	<0.00010	<0.00010
		7-Oct-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00154	0.00204	<0.00010	<0.00010
		7-Apr-14	surface	<0.00010	<0.00010	<0.00020	0.00021	<0.00050	<0.00050	<0.00010	<0.00010
		29-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00093	0.00159	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00094	<0.00010	<0.00010
Dauphin River	DR1.3	26-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00177	0.00227	<0.00010	<0.00010
		10-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00113	0.00361	<0.00010	<0.00010
		22-Jul-13	surface	<0.00010	<0.00010	<0.00020	0.00093	0.00128	0.00297	<0.00010	<0.00010
		7-Oct-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00155	0.00240	<0.00010	<0.00010
		7-Apr-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010
		29-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00102	0.00262	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00208	<0.00010	<0.00010
Dauphin River	DR1 (NOTE2)	26-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00170	0.00236	<0.00010	<0.00010
		12-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00128	0.00369	<0.00010	<0.00010
		22-Jul-13	surface	<0.00010	<0.00010	<0.00020	0.00108	0.00139	0.00323	<0.00010	<0.00010

Table E-12. Continued.

Sample		Sample	Sample	Thorium		Tin		Titanium		Tungsten	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		7-Oct-13	surface	<0.00010	<0.00010	0.00125	0.00284	0.00159	0.00272	<0.00010	<0.00010
		10-Apr-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00084	<0.00010	<0.00010
		28-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00130	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00153	<0.00010	<0.00010
Buffalo Lake	BBL[1]	27-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00078	<0.00010	<0.00010
		7-Apr-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00051	<0.00010	<0.00010
		18-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00126	<0.00010	<0.00010
Buffalo Creek	BC3[2]	12-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00061	0.0106	<0.00010	<0.00010
		22-Jul-13	surface	<0.00010	0.00019	<0.00020	0.00091	0.00209	0.0267	<0.00010	<0.00010
		7-Oct-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00094	0.00589	<0.00010	<0.00010
		28-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.0125	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	0.00015	<0.00020	<0.00020	<0.00050	0.0222	<0.00010	<0.00010
Dauphin River	DR2C	25-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00184	0.00177	<0.00010	<0.00010
		12-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00139	0.00339	<0.00010	<0.00010
		22-Jul-13	surface	<0.00010	<0.00010	<0.00020	0.00082	0.00137	0.00330	<0.00010	<0.00010
		7-Oct-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00158	0.00284	<0.00010	<0.00010
		10-Apr-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00108	<0.00010	<0.00010
		28-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00092	0.00285	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00254	<0.00010	<0.00010
Lake Winnipeg	LKW3B	26-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00149	0.00375	<0.00010	<0.00010
		12-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00097	0.00326	<0.00010	<0.00010
		21-Jul-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00184	0.00451	<0.00010	<0.00010
		7-Oct-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00145	0.00747	<0.00010	<0.00010
		10-Apr-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00322	<0.00010	<0.00010
		28-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00128	0.00477	<0.00010	<0.00010
		28-May-14	bottom	<0.00010	<0.00010	<0.00020	<0.00020	0.00108	0.00345	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00392	<0.00010	<0.00010
Lake Winnipeg	LKW3	25-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00152	0.00347	<0.00010	<0.00010
		12-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00105	0.00368	<0.00010	<0.00010
		21-Jul-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00189	0.00575	<0.00010	<0.00010
		7-Oct-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00158	0.00529	<0.00010	<0.00010

Table E-12. Continued.

Sample		Sample	Sample	Thorium		Tin		Titanium		Tungsten	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		9-Apr-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00353	<0.00010	<0.00010
		28-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00105	0.00295	<0.00010	<0.00010
		28-May-14	bottom	<0.00010	<0.00010	<0.00020	<0.00020	0.00105	0.00346	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00558	<0.00010	<0.00010
Lake Winnipeg	LKW2	26-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00162	0.00378	<0.00010	<0.00010
		11-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00109	0.00461	<0.00010	<0.00010
		21-Jul-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00185	0.00660	<0.00010	<0.00010
		7-Oct-13	surface	<0.00010	<0.00010	0.00061	<0.00020	0.00139	0.00815	<0.00010	<0.00010
		9-Apr-14	surface	<0.00010	<0.00010	<0.00020	0.00146	<0.00050	0.00143	<0.00010	<0.00010
		28-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00103	0.00379	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00974	<0.00010	<0.00010
Lake Winnipeg	LKW1	26-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00177	0.00509	<0.00010	<0.00010
		11-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00120	0.00331	<0.00010	<0.00010
		21-Jul-13	surface	<0.00010	0.00012	<0.00020	<0.00020	0.00160	0.0181	<0.00010	<0.00010
		7-Oct-13	surface	<0.00010	0.00013	<0.00020	<0.00020	0.00173	0.0222	<0.00010	<0.00010
		9-Apr-14	surface	<0.00010	<0.00010	<0.00020	0.00037	<0.00050	0.00179	<0.00010	<0.00010
		28-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00100	0.00760	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00515	<0.00010	<0.00010
Lake Winnipeg	LKW4	25-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00149	0.00363	<0.00010	<0.00010
		11-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00113	0.00461	<0.00010	<0.00010
		21-Jul-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00193	0.0131	<0.00010	<0.00010
		6-Oct-13	surface	<0.00010	<0.00010	0.00168	<0.00020	0.00143	0.0121	<0.00010	<0.00010
		8-Apr-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00066	0.00388	<0.00010	<0.00010
		8-Apr-14	bottom	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00491	<0.00010	<0.00010
		28-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00110	0.00392	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00581	<0.00010	<0.00010
Lake Winnipeg	LKW5	26-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00178	0.00519	<0.00010	<0.00010
		11-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00102	0.00347	<0.00010	<0.00010
		21-Jul-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00157	0.00972	<0.00010	<0.00010
		7-Oct-13	surface	<0.00010	<0.00010	0.00020	<0.00020	<0.00050	0.0114	0.00019	<0.00010
		9-Apr-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00233	<0.00010	<0.00010
		9-Apr-14	bottom	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00078	<0.00010	<0.00010

Table E-12. Continued.

Sample		Sample	Sample	Thorium		Tin		Titanium		Tungsten	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		28-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00115	0.00418	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00440	<0.00010	<0.00010
Lake Winnipeg	LKW6	25-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00154	0.00455	<0.00010	<0.00010
		11-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00096	0.00533	<0.00010	<0.00010
		11-Jun-13	bottom	<0.00010	<0.00010	0.00026	0.00072	0.00109	0.00689	<0.00010	<0.00010
		21-Jul-13	surface	<0.00010	0.00012	<0.00020	<0.00020	0.00221	0.0212	<0.00010	<0.00010
		6-Oct-13	surface	<0.00010	<0.00010	0.00228	<0.00020	0.00135	0.00608	<0.00010	<0.00010
		9-Apr-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00287	<0.00010	<0.00010
		9-Apr-14	bottom	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00104	<0.00010	<0.00010
		28-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00096	0.00315	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00892	<0.00010	<0.00010
Lake Winnipeg	LKW7	25-Mar-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00157	0.00424	<0.00010	<0.00010
		11-Jun-13	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00108	0.00702	<0.00010	<0.00010
		11-Jun-13	bottom	<0.00010	<0.00010	0.00077	0.00073	0.00312	0.00583	<0.00010	<0.00010
		21-Jul-13	surface	<0.00010	0.00012	<0.00020	<0.00020	0.00166	0.0204	<0.00010	<0.00010
		6-Oct-13	surface	<0.00010	0.00013	0.00210	<0.00020	0.00239	0.0198	<0.00010	<0.00010
		8-Apr-14	surface	<0.00010	<0.00010	0.00021	<0.00020	0.00061	0.00449	<0.00010	<0.00010
		28-May-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	0.00090	0.00384	<0.00010	<0.00010
		20-Jun-14	surface	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00993	<0.00010	<0.00010

Table E-12. Continued.

Sample		Sample	Sample	Uranium		Vanadium		Zinc		Zirconium	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Analytical Detection Limits				*0.00010*	*0.00010*	*0.00020*	*0.00020*	*0.0020*	*0.0020*	*0.00040*	*0.00040*
Fairford River	FR1	24-Mar-13	surface	0.00180	0.00177	0.00135	0.00143	<0.0020	<0.0020	<0.00040	<0.00040
		10-Jun-13	surface	0.00140	0.00161	0.00111	0.00104	<0.0020	<0.0020	<0.00040	<0.00040
		22-Jul-13	surface	0.00136	0.00143	0.00118	0.00130	<0.0020	<0.0020	<0.00040	<0.00040
		7-Oct-13	surface	0.00133	0.00128	0.00137	0.00145	<0.0020	<0.0020	<0.00040	<0.00040
		7-Apr-14	surface	0.00175	0.00185	0.00112	0.00125	<0.0020	<0.0020	<0.00040	<0.00040
		29-May-14	surface	0.00132	0.00130	0.00098	0.00099	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00117	0.00130	0.00102	0.00101	0.0025	0.0022	<0.00040	<0.00040
Lake St. Martin	LSM1	24-Mar-13	surface	0.00168	0.00175	0.00130	0.00139	<0.0020	<0.0020	<0.00040	<0.00040
		10-Jun-13	surface	0.00139	0.00153	0.00123	0.00110	<0.0020	<0.0020	<0.00040	<0.00040
		22-Jul-13	surface	0.00139	0.00141	0.00113	0.00120	<0.0020	<0.0020	<0.00040	<0.00040
		7-Oct-13	surface	0.00132	0.00129	0.00132	0.00141	<0.0020	<0.0020	<0.00040	<0.00040
		7-Apr-14	surface	0.00171	0.00177	0.00122	0.00134	<0.0020	<0.0020	<0.00040	<0.00040
		29-May-14	surface	0.00122	0.00122	0.00084	0.00095	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00118	0.00125	0.00104	0.00099	<0.0020	<0.0020	<0.00040	<0.00040
Dauphin River	DR1.0	24-Mar-13	surface	0.00181	0.00180	0.00140	0.00150	<0.0020	<0.0020	<0.00040	<0.00040
	DR1.1	10-Jun-13	surface	0.00137	0.00157	0.00120	0.00114	<0.0020	<0.0020	<0.00040	<0.00040
		22-Jul-13	surface	0.00138	0.00141	0.00114	0.00129	<0.0020	<0.0020	<0.00040	<0.00040
		7-Oct-13	surface	0.00130	0.00135	0.00129	0.00138	<0.0020	<0.0020	<0.00040	<0.00040
		7-Apr-14	surface	0.00166	0.00175	0.00114	0.00137	<0.0020	<0.0020	<0.00040	<0.00040
		29-May-14	surface	0.00108	0.00106	0.00084	0.00091	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00131	0.00129	0.00110	0.00099	<0.0020	<0.0020	<0.00040	<0.00040
Dauphin River	DR1.3	26-Mar-13	surface	0.00168	0.00178	0.00124	0.00137	<0.0020	<0.0020	<0.00040	<0.00040
		10-Jun-13	surface	0.00134	0.00146	0.00120	0.00111	<0.0020	<0.0020	<0.00040	<0.00040
		22-Jul-13	surface	0.00131	0.00134	0.00101	0.00116	0.0041	0.0038	<0.00040	<0.00040
		7-Oct-13	surface	0.00131	0.00127	0.00123	0.00127	<0.0020	0.0051	<0.00040	<0.00040
		7-Apr-14	surface	0.00169	0.00173	0.00112	0.00125	<0.0020	<0.0020	<0.00040	<0.00040
		29-May-14	surface	0.00117	0.00116	0.00092	0.00096	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00107	0.00127	0.00094	0.00118	<0.0020	0.0034	<0.00040	<0.00040
Dauphin River	DR1 (NOTE2)	26-Mar-13	surface	0.00169	0.00173	0.00122	0.00136	<0.0020	<0.0020	<0.00040	<0.00040
		12-Jun-13	surface	0.00139	0.00135	0.00127	0.00124	<0.0020	<0.0020	<0.00040	0.00040
		22-Jul-13	surface	0.00134	0.00139	0.00107	0.00128	<0.0020	0.0030	<0.00040	<0.00040

Table E-12. Continued.

Sample		Sample	Sample	Uranium		Vanadium		Zinc		Zirconium	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		7-Oct-13	surface	0.00131	0.00122	0.00114	0.00128	<0.0020	<0.0020	<0.00040	<0.00040
		10-Apr-14	surface	0.00172	0.00195	0.00112	0.00120	<0.0020	<0.0020	<0.00040	<0.00040
		28-May-14	surface	0.00125	0.00143	0.00085	0.00101	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00119	0.00140	0.00099	0.00114	<0.0020	<0.0020	<0.00040	<0.00040
Buffalo Lake	BBL[1]	27-Mar-13	surface	0.00016	0.00023	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
		7-Apr-14	surface	0.00040	0.00040	<0.00020	<0.00020	<0.0020	0.0029	<0.00040	<0.00040
		18-Jun-14	surface	0.00033	0.00033	0.00058	0.00065	<0.0020	<0.0020	<0.00040	<0.00040
Buffalo Creek	BC3[2]	12-Jun-13	surface	0.00029	0.00029	0.00082	0.00121	<0.0020	<0.0020	<0.00040	0.00043
		22-Jul-13	surface	0.00023	0.00025	0.00070	0.00191	<0.0020	0.0160	<0.00040	0.00045
		7-Oct-13	surface	0.00041	0.00115	0.00064	0.00137	<0.0020	0.0029	<0.00040	<0.00040
		28-May-14	surface	0.00021	0.00025	0.00058	0.00115	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00014	0.00019	0.00056	0.00142	<0.0020	0.0038	<0.00040	<0.00040
Dauphin River	DR2C	25-Mar-13	surface	0.00177	0.00205	0.00126	0.00137	<0.0020	<0.0020	<0.00040	0.00160
		12-Jun-13	surface	0.00139	0.00128	0.00133	0.00127	<0.0020	<0.0020	<0.00040	<0.00040
		22-Jul-13	surface	0.00139	0.00138	0.00104	0.00126	<0.0020	<0.0020	<0.00040	<0.00040
		7-Oct-13	surface	0.00132	0.00121	0.00125	0.00129	<0.0020	0.0033	<0.00040	<0.00040
		10-Apr-14	surface	0.00166	0.00181	0.00109	0.00118	<0.0020	<0.0020	<0.00040	<0.00040
		28-May-14	surface	0.00125	0.00120	0.00100	0.00101	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00108	0.00124	0.00102	0.00099	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW3B	26-Mar-13	surface	0.00131	0.00138	0.00137	0.00153	<0.0020	<0.0020	<0.00040	<0.00040
		12-Jun-13	surface	0.00113	0.00101	0.00127	0.00109	<0.0020	<0.0020	<0.00040	<0.00040
		21-Jul-13	surface	0.00136	0.00135	0.00126	0.00121	<0.0020	<0.0020	<0.00040	<0.00040
		7-Oct-13	surface	0.00118	0.00104	0.00124	0.00156	<0.0020	<0.0020	<0.00040	<0.00040
		10-Apr-14	surface	0.00126	0.00147	0.00093	0.00116	<0.0020	<0.0020	<0.00040	<0.00040
		28-May-14	surface	0.00124	0.00117	0.00090	0.00104	<0.0020	<0.0020	<0.00040	<0.00040
		28-May-14	bottom	0.00120	0.00122	0.00088	0.00106	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00137	0.00119	0.00102	0.00101	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW3	25-Mar-13	surface	0.00138	0.00153	0.00144	0.00167	<0.0020	0.0026	<0.00040	<0.00040
		12-Jun-13	surface	0.00115	0.00102	0.00115	0.00115	<0.0020	<0.0020	<0.00040	<0.00040
		21-Jul-13	surface	0.00133	0.00135	0.00132	0.00124	<0.0020	<0.0020	<0.00040	<0.00040
		7-Oct-13	surface	0.00126	0.00110	0.00120	0.00139	<0.0020	0.0025	<0.00040	<0.00040

Table E-12. Continued.

Sample		Sample	Sample	Uranium		Vanadium		Zinc		Zirconium	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		9-Apr-14	surface	0.00122	0.00127	0.00091	0.00109	<0.0020	<0.0020	<0.00040	<0.00040
		28-May-14	surface	0.00123	0.00121	0.00086	0.00100	<0.0020	<0.0020	<0.00040	<0.00040
		28-May-14	bottom	0.00120	0.00123	0.00089	0.00086	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00103	0.00104	0.00113	0.00110	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW2	26-Mar-13	surface	0.00134	0.00144	0.00143	0.00163	<0.0020	<0.0020	<0.00040	<0.00040
		11-Jun-13	surface	0.00111	0.00105	0.00122	0.00117	<0.0020	<0.0020	<0.00040	<0.00040
		21-Jul-13	surface	0.00131	0.00132	0.00137	0.00134	<0.0020	<0.0020	<0.00040	<0.00040
		7-Oct-13	surface	0.00119	0.00113	0.00122	0.00152	<0.0020	0.0027	<0.00040	<0.00040
		9-Apr-14	surface	0.00146	0.00180	0.00109	0.00121	0.0021	<0.0020	<0.00040	<0.00040
		28-May-14	surface	0.00127	0.00122	0.00079	0.00105	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00075	0.00098	0.00102	0.00126	<0.0020	0.0026	<0.00040	<0.00040
Lake Winnipeg	LKW1	26-Mar-13	surface	0.00138	0.00150	0.00143	0.00168	<0.0020	<0.0020	<0.00040	<0.00040
		11-Jun-13	surface	0.00107	0.00105	0.00118	0.00111	<0.0020	<0.0020	<0.00040	<0.00040
		21-Jul-13	surface	0.00117	0.00118	0.00131	0.00195	<0.0020	<0.0020	<0.00040	<0.00040
		7-Oct-13	surface	0.00123	0.00118	0.00137	0.00222	<0.0020	0.0036	<0.00040	0.00046
		9-Apr-14	surface	0.00138	0.00145	0.00117	0.00126	<0.0020	<0.0020	<0.00040	<0.00040
		28-May-14	surface	0.00107	0.00103	0.00074	0.00112	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00106	0.00103	0.00097	0.00101	<0.0020	<0.0020	<0.00040	0.00061
Lake Winnipeg	LKW4	25-Mar-13	surface	0.00129	0.00150	0.00139	0.00160	<0.0020	<0.0020	<0.00040	<0.00040
		11-Jun-13	surface	0.00116	0.00116	0.00121	0.00113	<0.0020	<0.0020	<0.00040	<0.00040
		21-Jul-13	surface	0.00106	0.00107	0.00127	0.00160	<0.0020	<0.0020	<0.00040	<0.00040
		6-Oct-13	surface	0.00098	0.00093	0.00109	0.00166	<0.0020	0.0100	<0.00040	<0.00040
		8-Apr-14	surface	0.00115	0.00118	0.00081	0.00103	<0.0020	<0.0020	<0.00040	<0.00040
		8-Apr-14	bottom	0.00121	0.00124	0.00091	0.00114	<0.0020	<0.0020	<0.00040	<0.00040
		28-May-14	surface	0.00109	0.00110	0.00083	0.00090	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00103	0.00110	0.00108	0.00110	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW5	26-Mar-13	surface	0.00140	0.00145	0.00142	0.00162	<0.0020	0.0055	<0.00040	<0.00040
		11-Jun-13	surface	0.00109	0.00099	0.00121	0.00114	<0.0020	<0.0020	<0.00040	<0.00040
		21-Jul-13	surface	0.00111	0.00112	0.00131	0.00151	<0.0020	<0.0020	<0.00040	<0.00040
		7-Oct-13	surface	0.00093	0.00112	0.00131	0.00175	<0.0020	0.0038	<0.00040	<0.00040
		9-Apr-14	surface	0.00135	0.00138	0.00117	0.00121	<0.0020	<0.0020	<0.00040	<0.00040
		9-Apr-14	bottom	0.00162	0.00175	0.00114	0.00123	<0.0020	<0.0020	<0.00040	<0.00040

Table E-12. Continued.

Sample		Sample	Sample	Uranium		Vanadium		Zinc		Zirconium	
Location	Location ID	Date	Type	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
		28-May-14	surface	0.00108	0.00106	0.00103	0.00096	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00091	0.00103	0.00106	0.00113	<0.0020	<0.0020	<0.00040	<0.00040
Lake Winnipeg	LKW6	25-Mar-13	surface	0.00135	0.00153	0.00137	0.00164	0.0024	<0.0020	<0.00040	<0.00040
		11-Jun-13	surface	0.00113	0.00110	0.00119	0.00123	<0.0020	<0.0020	<0.00040	<0.00040
		11-Jun-13	bottom	0.00105	0.00098	0.00107	0.00119	<0.0020	<0.0020	<0.00040	<0.00040
		21-Jul-13	surface	0.00108	0.00106	0.00138	0.00200	<0.0020	<0.0020	<0.00040	<0.00040
		6-Oct-13	surface	0.00122	0.00114	0.00104	0.00145	<0.0020	0.0028	<0.00040	<0.00040
		9-Apr-14	surface	0.00131	0.00146	0.00104	0.00113	<0.0020	<0.0020	<0.00040	<0.00040
		9-Apr-14	bottom	0.00152	0.00172	0.00115	0.00114	<0.0020	<0.0020	<0.00040	<0.00040
		28-May-14	surface	0.00110	0.00108	0.00086	0.00092	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00097	0.00106	0.00101	0.00106	<0.0020	0.0031	<0.00040	<0.00040
Lake Winnipeg	LKW7	25-Mar-13	surface	0.00125	0.00151	0.00118	0.00150	<0.0020	<0.0020	<0.00040	<0.00040
		11-Jun-13	surface	0.00109	0.00101	0.00101	0.00129	<0.0020	<0.0020	<0.00040	<0.00040
		11-Jun-13	bottom	0.00106	0.00101	0.00125	0.00114	<0.0020	<0.0020	<0.00040	<0.00040
		21-Jul-13	surface	0.00092	0.00093	0.00112	0.00189	<0.0020	<0.0020	<0.00040	0.00044
		6-Oct-13	surface	0.00098	0.00096	0.00120	0.00204	<0.0020	0.0044	<0.00040	0.00042
		8-Apr-14	surface	0.00136	0.00141	0.00106	0.00135	<0.0020	<0.0020	<0.00040	<0.00040
		28-May-14	surface	0.00097	0.00097	0.00084	0.00083	<0.0020	<0.0020	<0.00040	<0.00040
		20-Jun-14	surface	0.00090	0.00096	0.00098	0.00133	<0.0020	0.0022	<0.00040	<0.00040

1 - Big Buffalo Lake was only sampled in winter and in June 2014.
2 - Buffalo Creek was not sampling during winter.

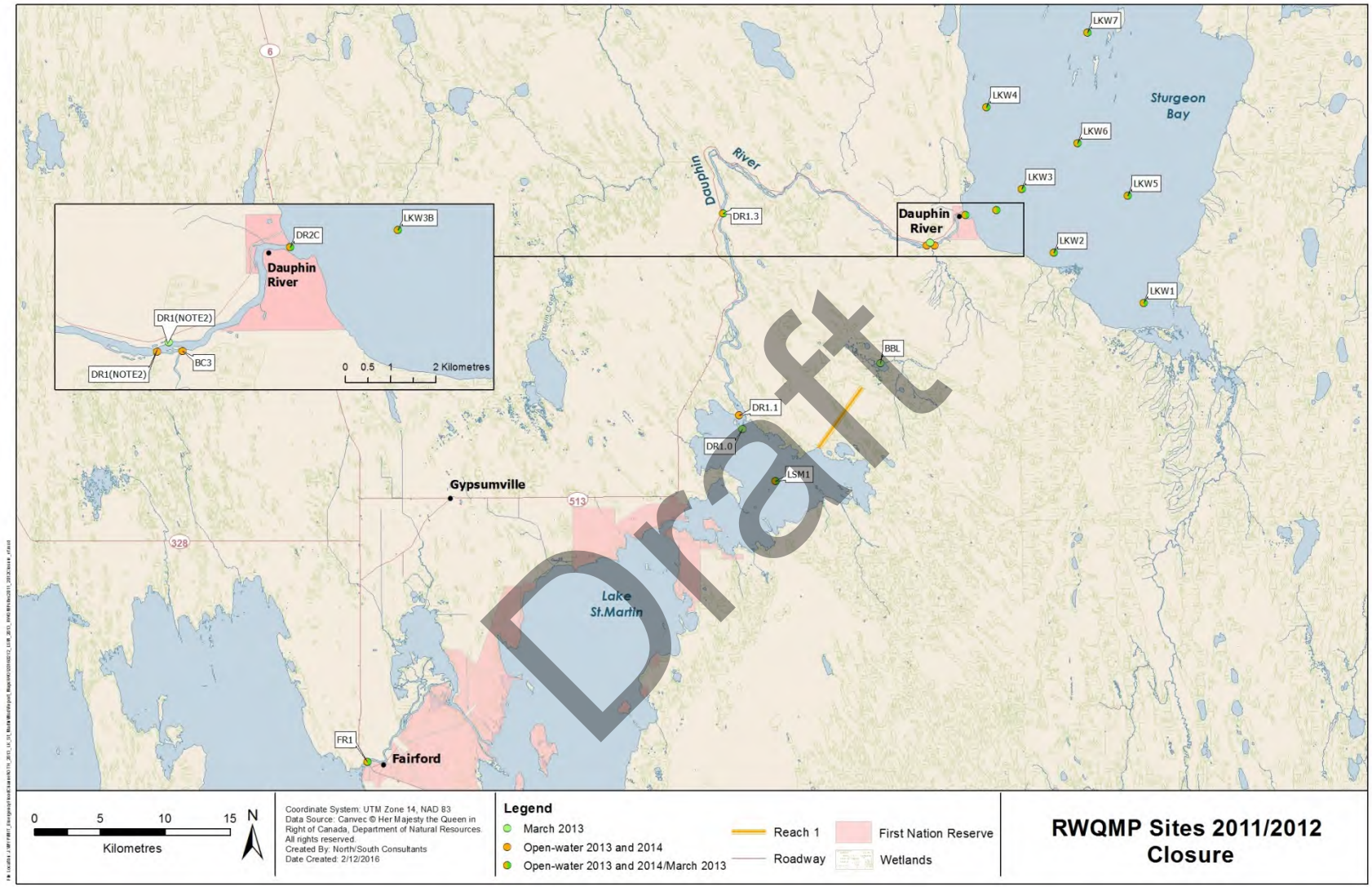

Figure E-1. Location of sites sampled as part of the RWQMP in 2013.

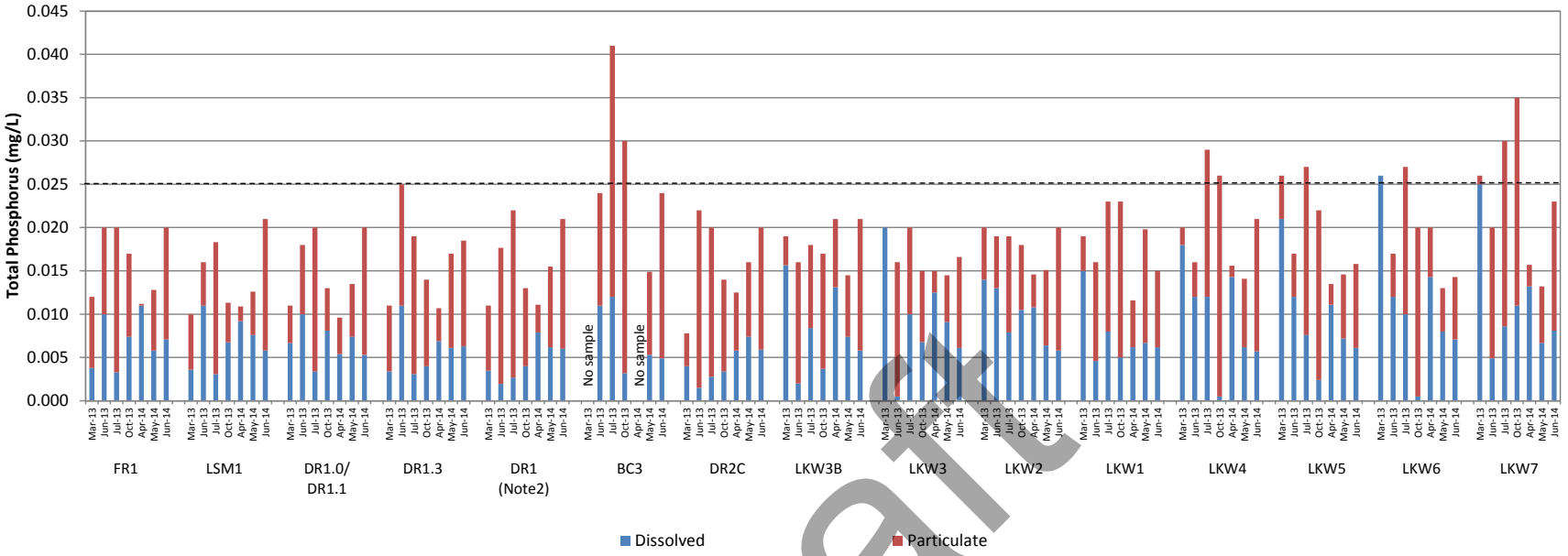

Figure E-2. Phosphorus (P) concentrations (mg/L) measured at RWQMP sites during 2011/2012 Closure. Where particulate P concentrations were less than the analytical detection limit they are plotted as the difference between total P and dissolved P so that the bars shown in the graph represent total P concentrations. Dashed line indicates the MWQSOGs narrative guideline for lakes.

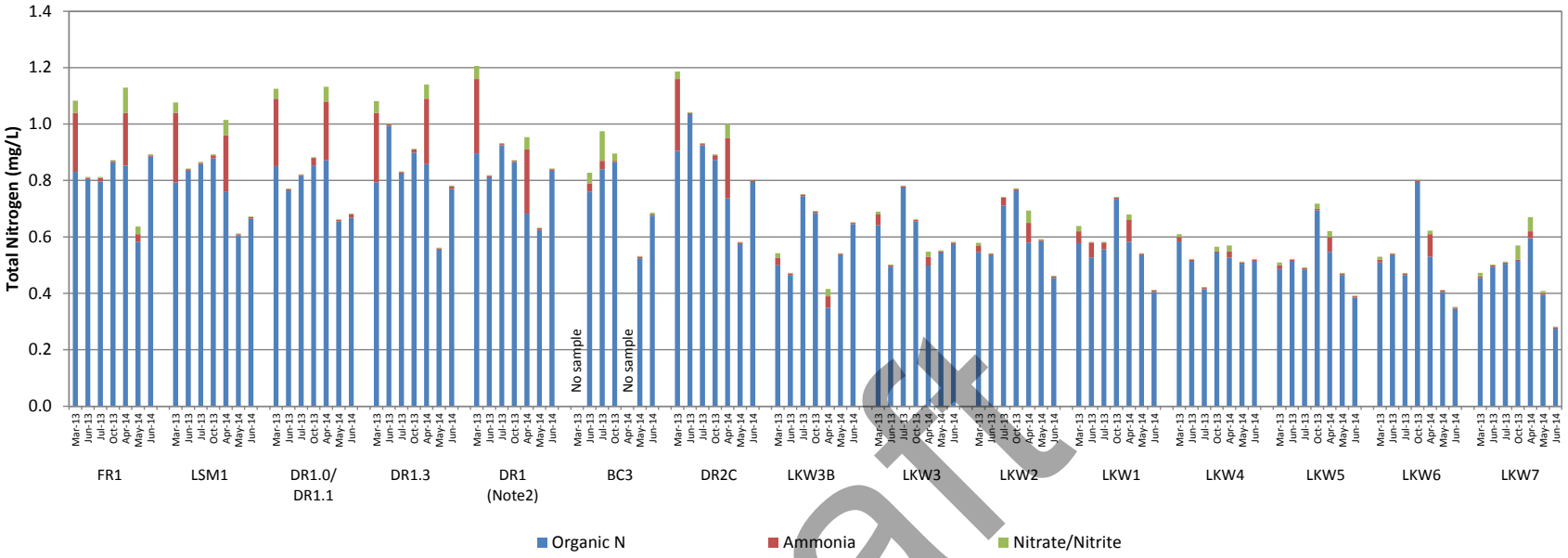

Figure E-3. Total nitrogen concentrations measured at RWQMP sites during 2011/2012 Closure, showing contributions of organic and dissolved inorganic forms (i.e., nitrate/nitrite and ammonia).

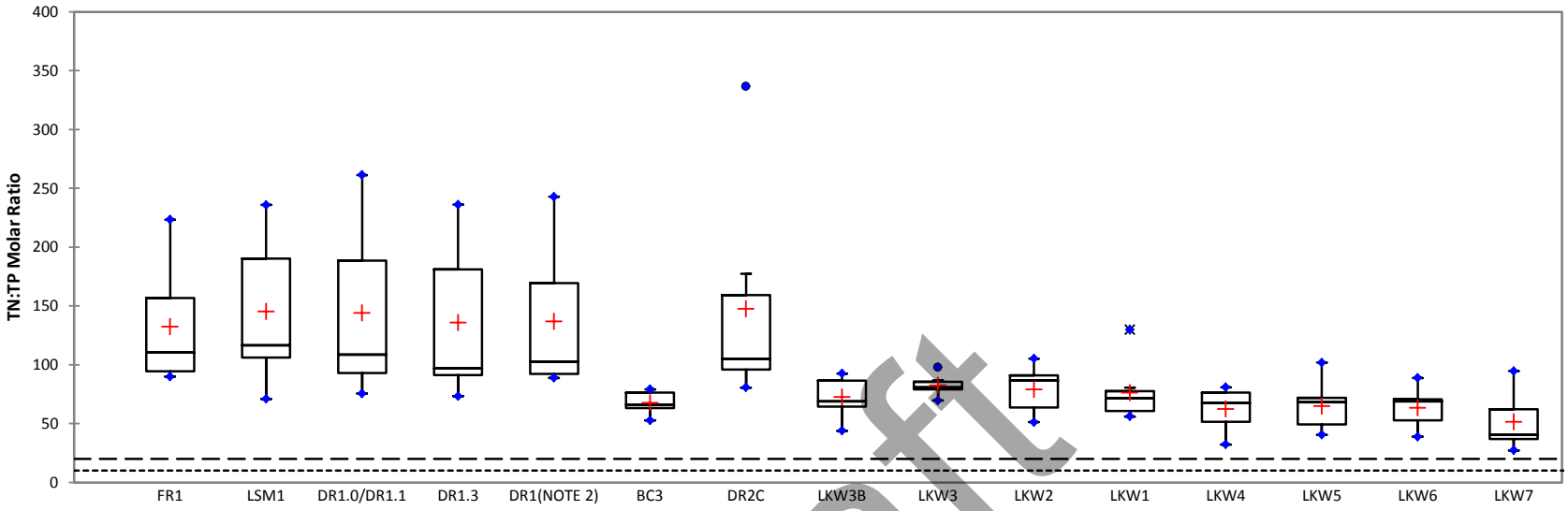

Figure E-4. Boxplots of total nitrogen to total phosphorus molar ratios at RWQMP sites during 2011/2012 Closure. Dotted and dashed lines represent the boundaries for nitrogen, and nitrogen and phosphorus co-limitation, respectively.

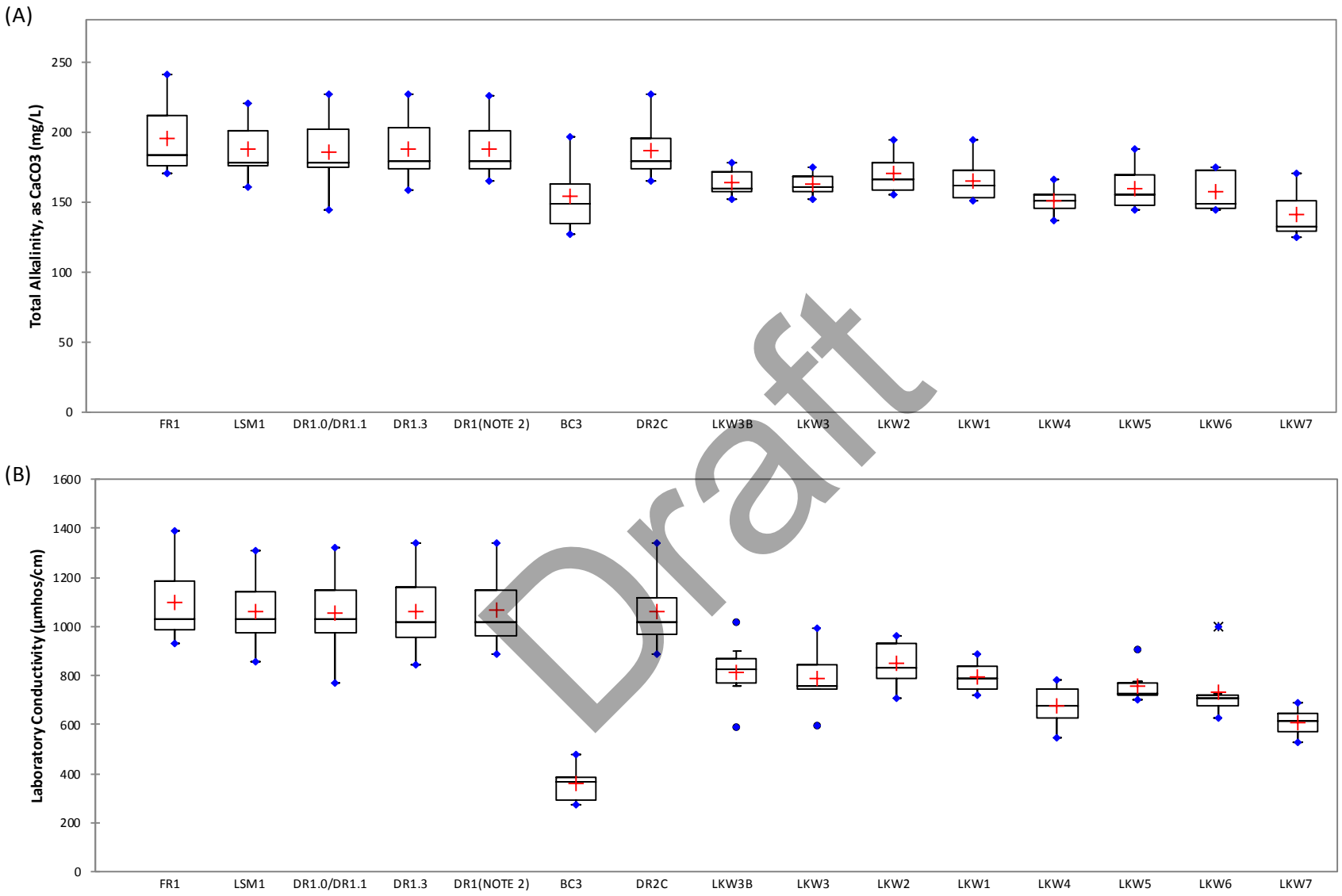

Figure E-5. Boxplots of selected routine water quality parameters measured at RWQMP sites during 2011/2012 Closure, including: (A) total alkalinity; (B) laboratory conductivity; (C) total nitrogen; and, (D) total organic carbon.

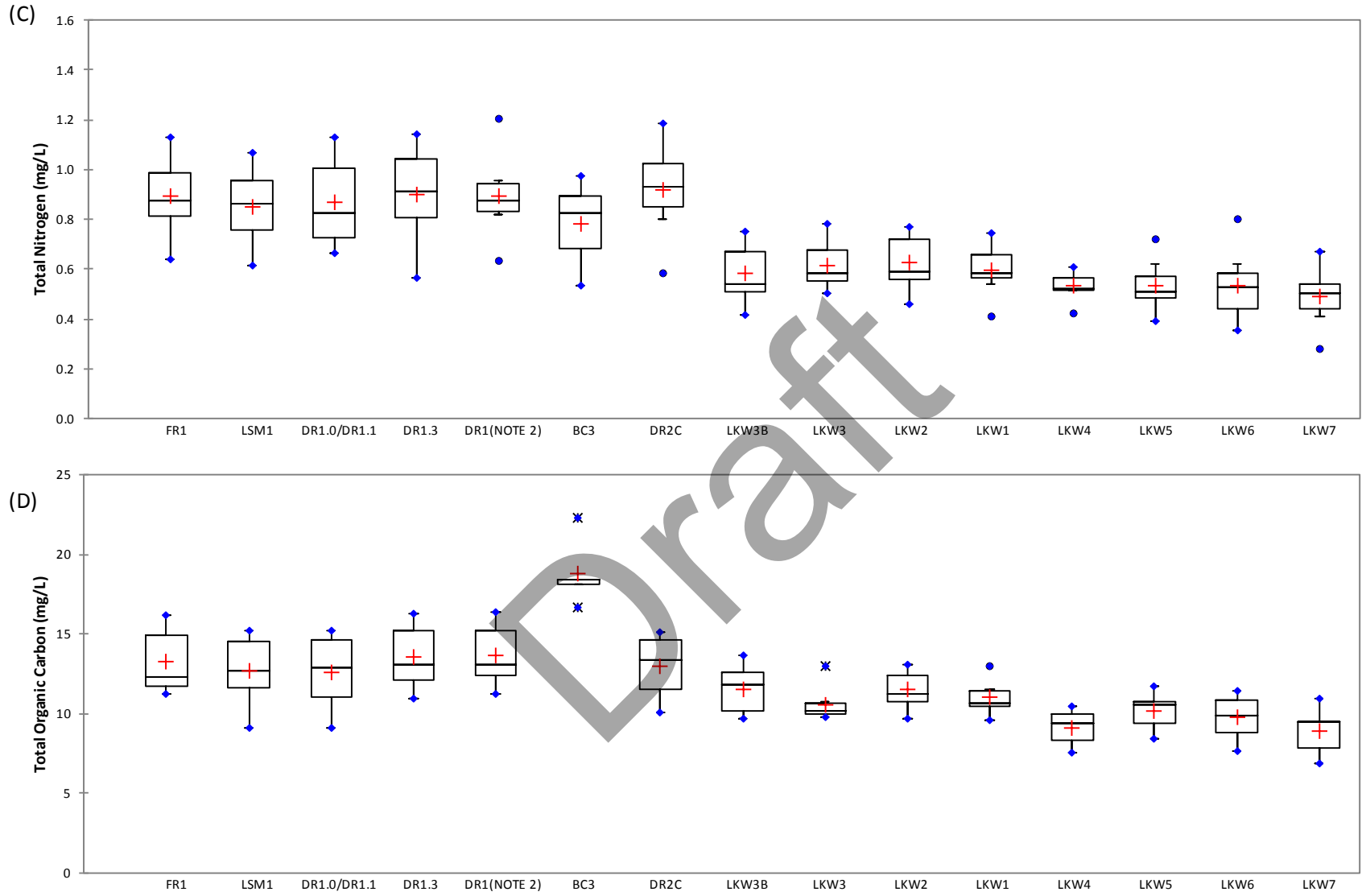

Figure E-5. Continued.

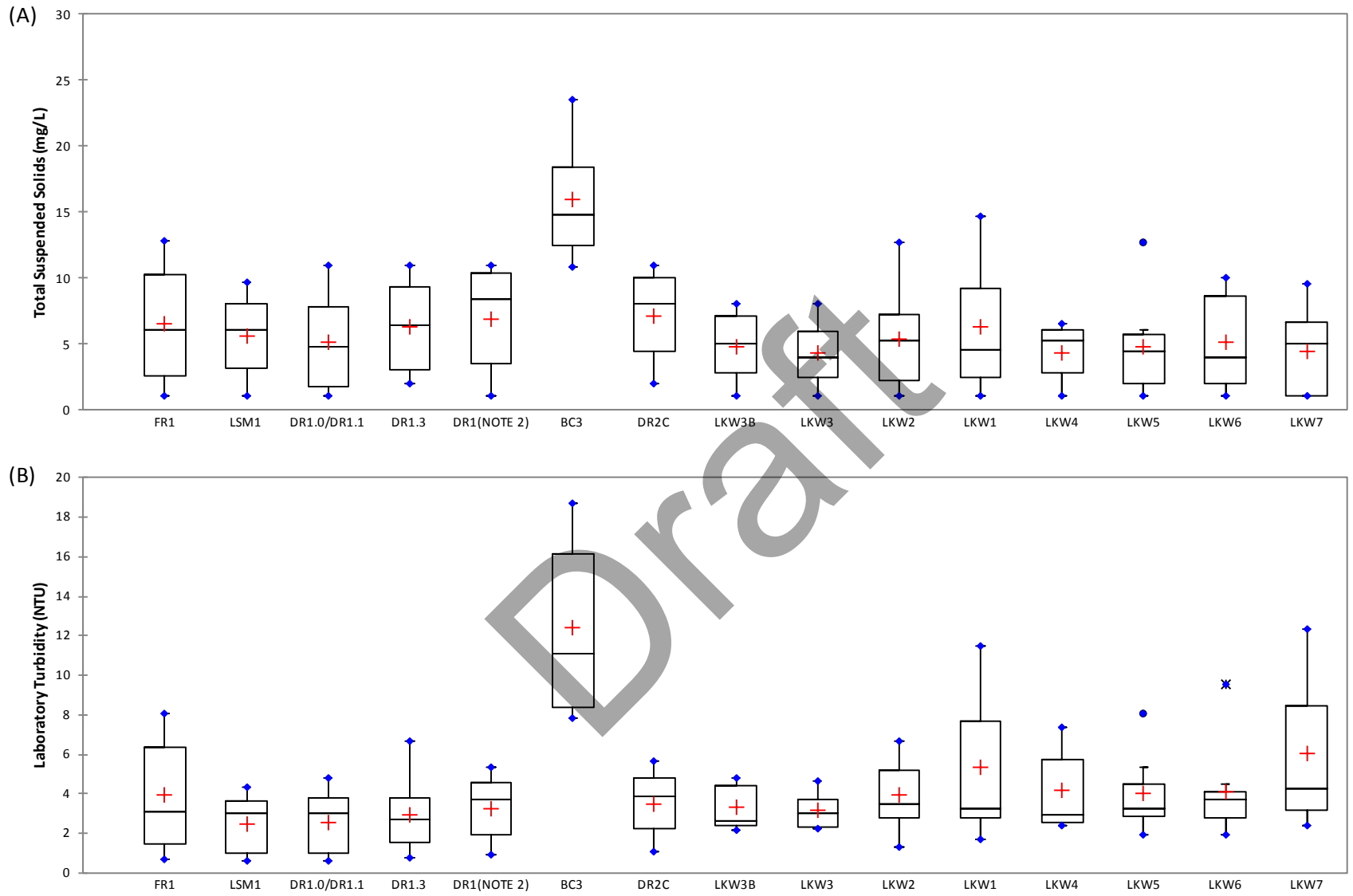

Figure E-6. Boxplots of (A) total suspended solids and (B) laboratory turbidity measured at RWQMP sites during 2011/2012 Closure.

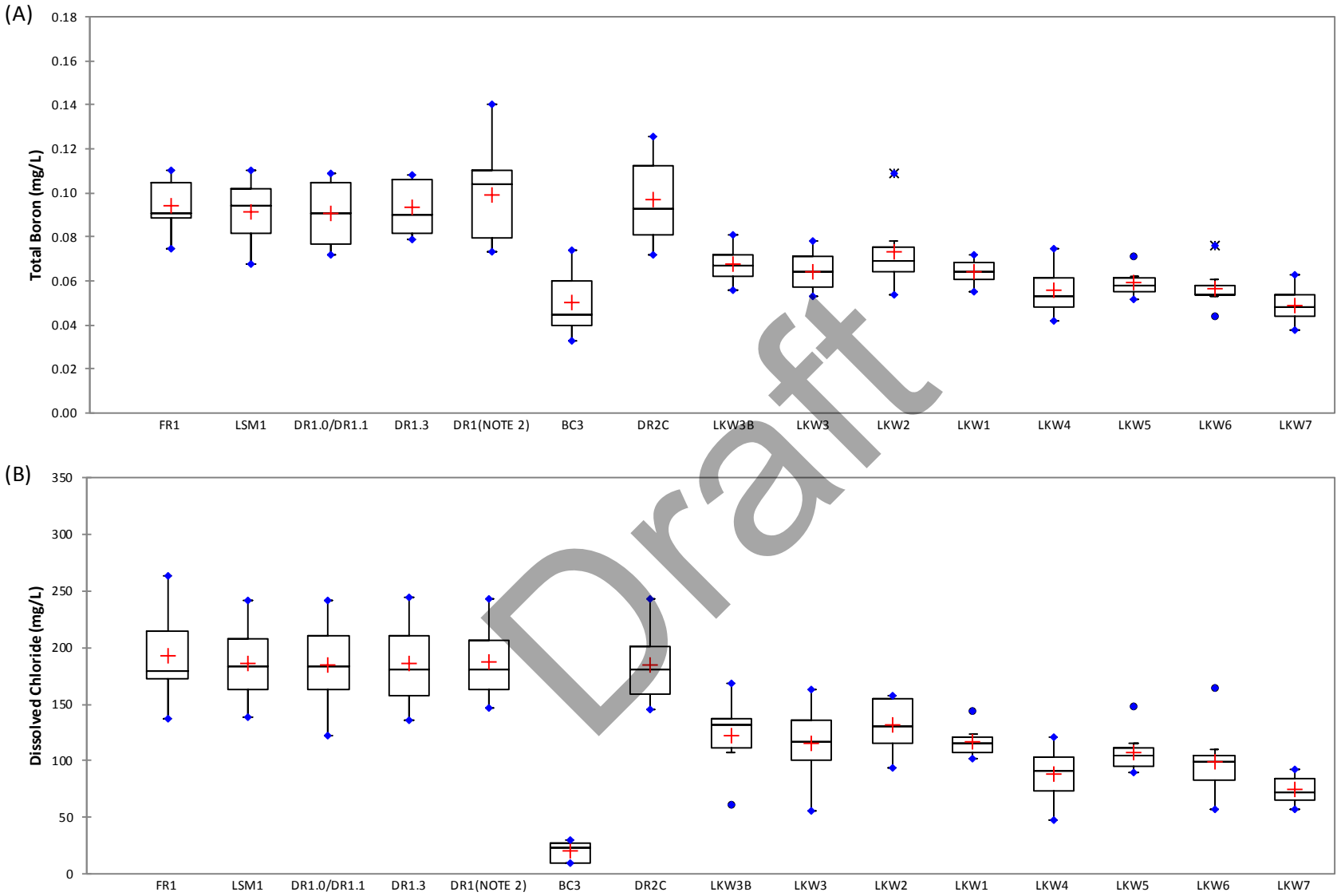

Figure E-7. Boxplots of selected metals and major ions measured at RWQMP sites, 2013, including: (A) total boron; (B) dissolved chloride; (C) total magnesium; (D) dissolved sulphate; (E) total silicon; and, (F) total uranium.

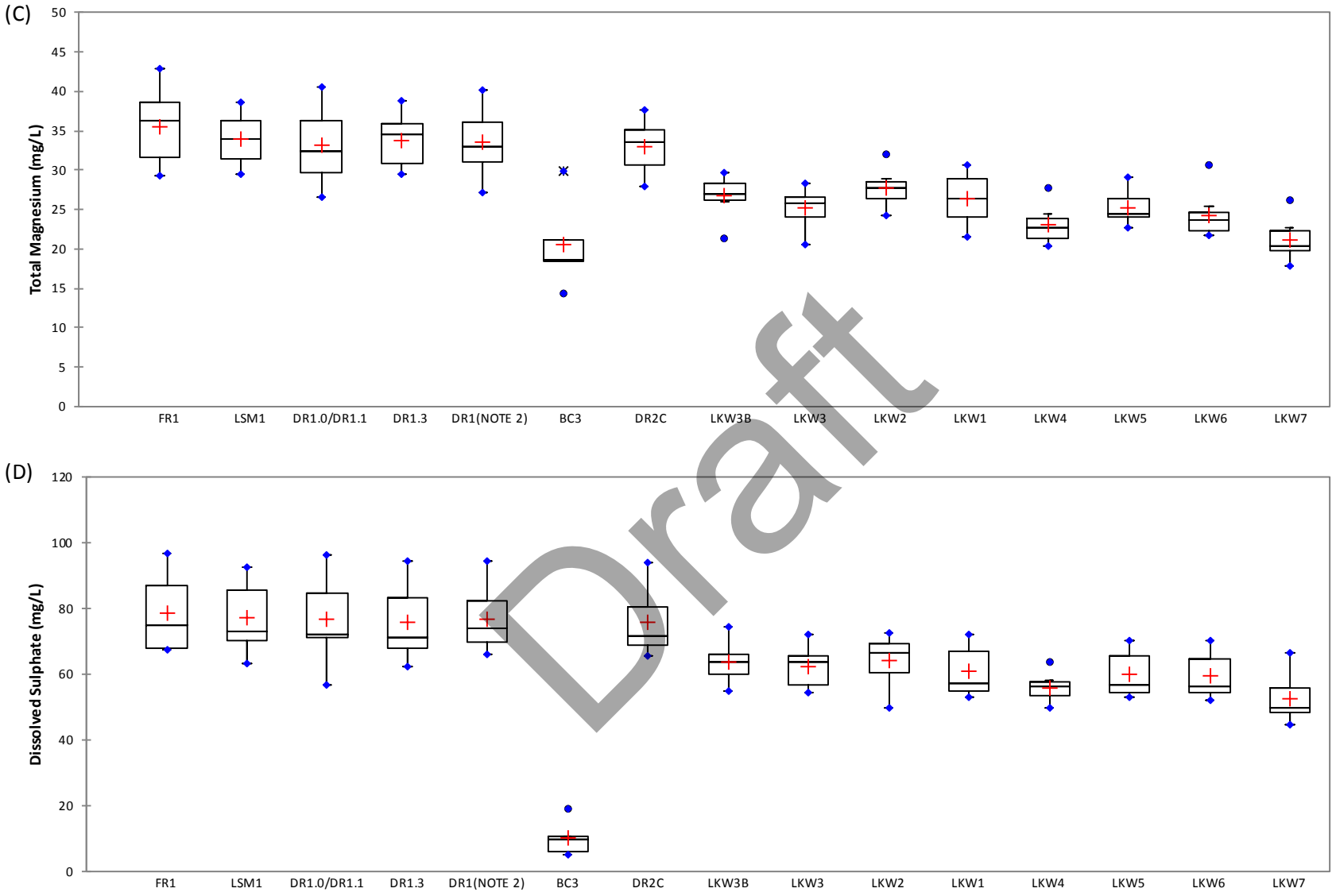

Figure E-7. Continued.

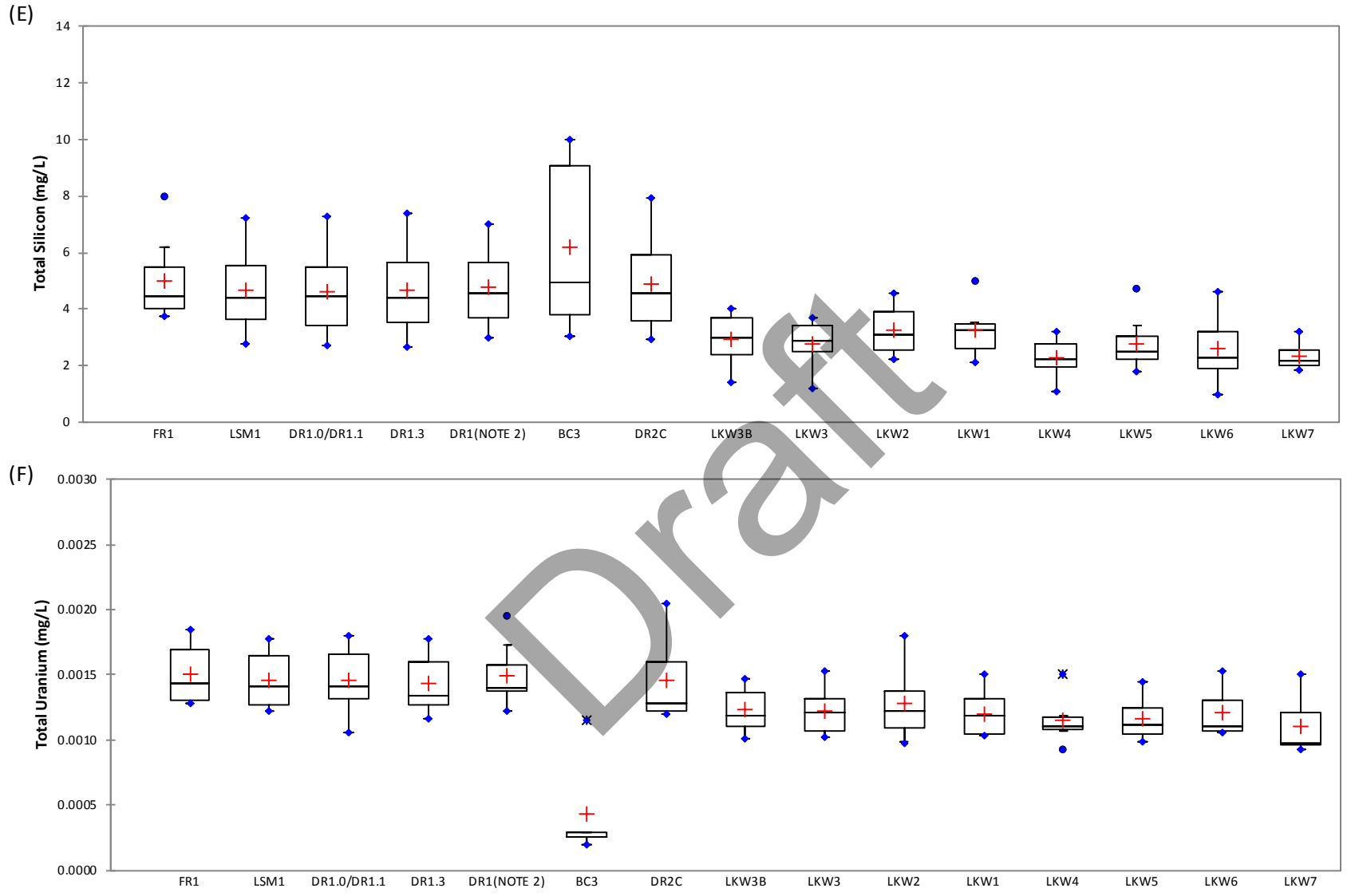

Figure E-7. Continued.

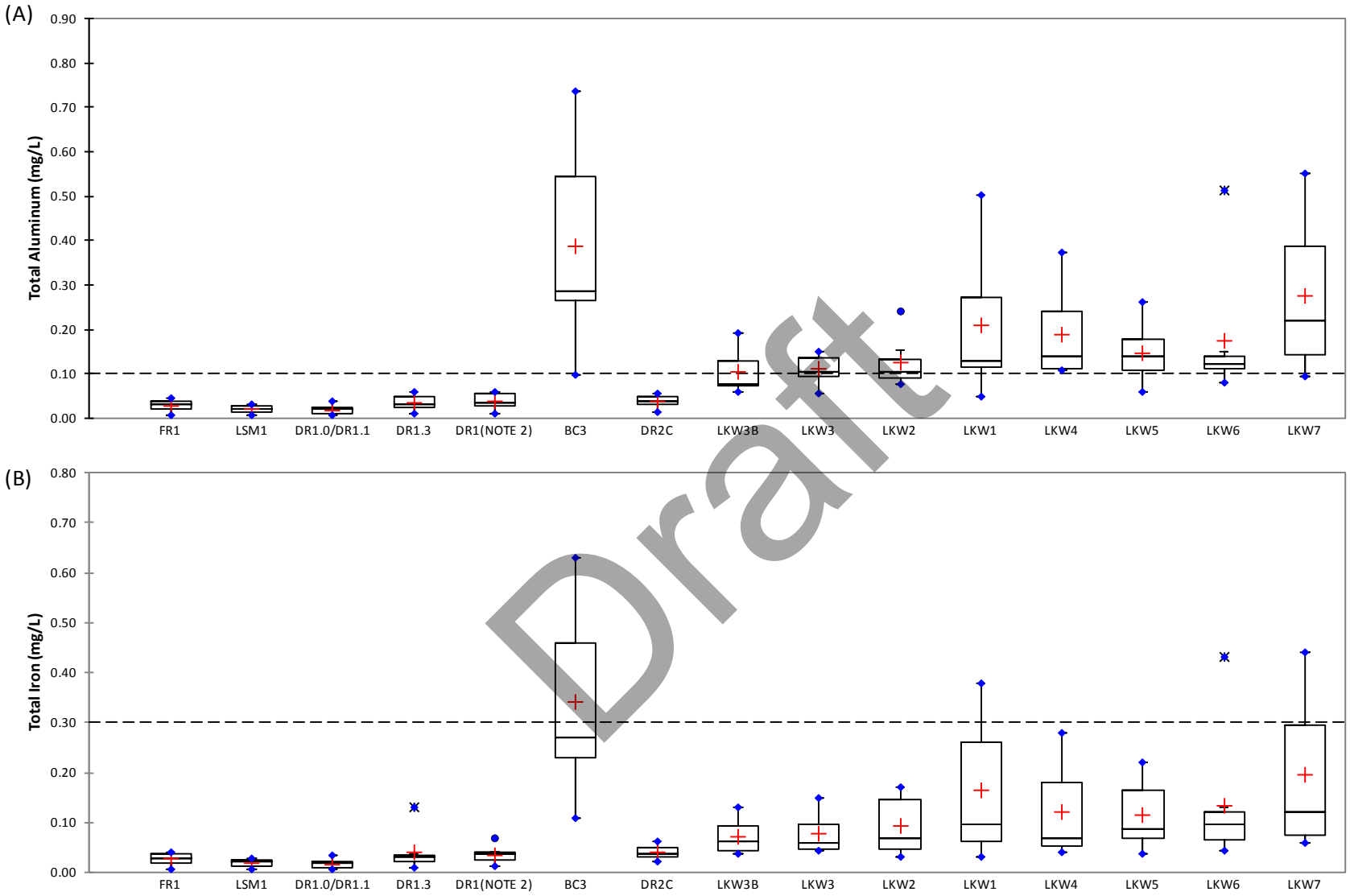

Figure E-8. Boxplots of (A) total aluminum and (B) total iron concentrations measured at RWQMP sites during 2011/2012 Closure. Dashed lines indicate the applicable MWQSOGs/CCME PAL guidelines.

Appendix F. Regional Water Quality Monitoring Program Methods and Results – 2014/2015 Operation

F1.0 INTRODUCTION

During the conduct of the RWQMP during 2014/2015 Operation, water quality information was collected from all major waterbodies and waterways within the study area that were affected by flooding, and encompassed the area from the Fairford River (i.e., the major input source to the system) downstream to and including Sturgeon Bay on Lake Winnipeg. The objectives of the program were:

- to monitor water quality conditions during channel operation;
- to supplement data sets at sites within the study area where Manitoba Water Stewardship, Water Quality Management Branch (MWS) conducts water quality monitoring; and,
- to evaluate spatial differences in water quality within the study area.

Sampling included *in situ* water quality measurements and the collection of water samples for laboratory analysis. Detailed methods and results are provided below.

F2.0 METHODS

F2.1 SAMPLING PERIODS AND LOCATIONS

The RWQMP was conducted on five occasions during 2014/2015 Operation:

- July 24-25, 2014, approximately three weeks following the onset of 2014/2015 Operation;
- August 26-27, 2014, approximately 2 months following the onset of 2014/2015 operation;
- October 16-20, 2015, in late fall;
- March 24-26, 2015, under ice cover; and,
- May 3-4, 2015, during the spring freshet.

Water quality samples and *in situ* measurements were collected up to 15 sites throughout the study area. In general, sampling was conducted at 15 sites; however; in August, 2014 and May, 2015, the number of sampling locations was reduced. Overall, sampling sites consisted of the following:

- Fairford River - one site at or near the PTH # 6 bridge (MWS site MB05LMS001);
- Lake St. Martin - one site in the north basin;
- Dauphin River - four sites; including one site at or near the outflow from Lake St. Martin, one site at or near the existing MCWS site (MCWS Site MB05LMS003); one site upstream of the confluence with Buffalo Creek, and one site in the mouth of the river upstream of Sturgeon Bay;
- Buffalo Creek - one site upstream of the confluence with the Dauphin River (open-water season only); and,
- Sturgeon Bay - eight sites.

Additionally, in August 2014, the sampling site on the Dauphin River immediately downstream of Buffalo Creek (DR-D), typically sampled as part of the LSMEOC system monitoring program, was sampled as part of the RWQMP program.

Detailed information on sampling locations is presented in Table F-1 and Figure F-1 (not all sites shown in Figure F-1 are included herein, see Table F-1 for a list of sites presented).

F2.2 SAMPLING METHODS

In situ measurements were taken using either a YSI EXO™2 sonde or a Horiba W22-XD water quality meter. Samples were collected for the usual list of parameters sampled by the RWQMP.

F3.0 QA/QC RESULTS

Measurements of water quality variables in field and trip blanks were consistently below the threshold of five times the DL, indicating good precision and the absence of sample contamination issues (Table F-2).

Triplicate samples for which indices of precision could reliably be derived (i.e., percent relative standard deviation [PRSD] calculations where all values were greater than five times the analytical detection limit) were, generally, within the criterion of 18% (Table F-3). Exceptions occurred for the triplicate samples collected in August 2015 for which the PRSDs for total inorganic carbon (65%), turbidity (125%) and dissolved aluminum (35%) were above 18%. Within these triplicate samples suspect values were identified for total inorganic carbon and turbidity and were not included in the calculation of the sample mean.

F4.0 RESULTS AND DISCUSSION

The results for *in situ* measurements and laboratory analyses are presented in Tables F-4 and F-6, respectively. A discussion of the results from the 2014 sampling periods is included with the Environmental Assessment produced in May 2015 (NSC and KGS 2015a). The following is a brief summary of the results collected in March and May 2015 as they relate to the operation of the LSMEOC.

- At the downstream end of Buffalo Creek (BC3), the total suspended solids (TSS) concentration was 9 mg/L in March and 18 mg/L in May, 2015. This is higher than was measured during baseline studies in 2011 when the average TSS in Buffalo Creek was <5 mg/L (NSC and KGS 2015b).
- Similarly total phosphorus (TP), nitrogen, conductivity, total dissolved solids (TDS) and several metals and major ions (including barium, boron, calcium, chloride, fluoride, potassium, sodium, strontium and sulphate) were higher than baseline (NSC and KGS 2015b), particularly in March. Conversely, true colour was lower than baseline.
- In March 2015, TSS in the Dauphin River was higher downstream (7.6 mg/L at DR-E) than upstream (2.2 mg/L at DR-C) of Buffalo Creek. Slight increases in TP, aluminum and iron were associated with this increase in TSS. TSS was similar upstream and downstream of Buffalo Creek in May 2015.
- In general, water quality was similar throughout Sturgeon Bay in March and May, 2015.

Comparisons with MWQSOGs/CCME PAL guidelines indicated the following:

- MWQSOGs 30-day averaging objective/CCME long-term exposure guideline of 5 mg/L above background (<5 mg/L based on 2011 average) at the downstream end of Buffalo Creek in March and May 2015.
- In March 2015, TSS near the mouth of the Dauphin River (DR-E) was just above the MWQSOGs 30-day averaging objective/CCME long-term exposure guideline of 5 mg/L above background.
- In March 2015, TP exceeded the MWQSOGs narrative guideline for lakes (0.025 mg/L) at most sites in Sturgeon Bay; exceptions were LKW-5 and LKW-7. TP was consistently within the narrative guideline for streams in the Fairford and Dauphin rivers and in Buffalo Creek.
- In March 2015, DO was below the MWQSOGs PAL for cold water early life/CCME lowest acceptable-concentration for early life stages of cold water biota (9.5 mg/L) at the downstream end of Buffalo Creek (BC3) and at two sites in Sturgeon Bay (LKW2 and at depth at LKW1). DO was within the MWQSOGs/CCME PAL guidelines at all other sites in March 2015 and at all sites sampled in May 2015.
- All other routine variables were within MWQSOGs and CCME guidelines for PAL, including: pH (6.5-9.0); ammonia (varies with pH and temperature); nitrate (2.93 mg/L); and, nitrite (0.06 mg/L).
- Aluminum exceeded the MWQSOGs/CCME PAL (0.1 mg/L) in Buffalo Creek, and in most of Sturgeon Bay (all sites except LKW2) in March 2015.

- Chloride exceeded the CCME long-term PAL (120 mg/L) in the Fairford and Dauphin Rivers, Buffalo Creek and in some sites in Sturgeon Bay in March and where sampled in May, 2015. All concentrations were well below the short-term CCME PAL (640 mg/L).
- Fluoride consistently exceeded the CCME long-term PAL (0.12 mg/L) at all sites sampled in March and May, 2015.
- Iron exceeded the MWQSOGs/CCME PAL (0.3 mg/L) at the downstream end of Buffalo Creek (BC3) in May 2015.
- All other metals and major ions with PAL guidelines/objectives were within the MWQSOGs and CCME guidelines.

Table F-1. Water quality monitoring locations sampled as part of the RWQMP during 2014/2015 Operation.

		UTM			2014			2015	
Waterbody	Location ID	Zone	Easting	Northing	July 24-25	Aug 26-27	Oct. 16-20	Mar 24-26	May 3-4
Fairford River	FR1	14 U	518838	5715229	✓	✓	✓	✓	-
Lake St. Martin	LSM1	14 U	550136	5736730	✓	-	✓	✓	-
Dauphin River	DR-A	14 U	547332	5741774	✓	-	✓	✓	-
	DR-B	14 U	546106	5757242	✓	✓	✓	✓	-
	DR-C	14 U	561756	5754788	✓	✓	✓	✓	✓
Buffalo Creek	BC3	14 U	562326	5754803	✓	✓	✓	✓	✓
Dauphin River	DR-D	14 U	562566	5754848	-	✓	-	-	-
	DR-E	14 U	564586	5757106	✓	✓	✓	✓	✓
Lake Winnipeg	LKW3B	14 U	567083	5757479	✓	-	✓	✓	✓
	LKW3	14 U	569032	5759095	✓	-	✓	✓	-
	LKW2	14 U	571480	5754215	✓	-	✓	✓	-
	LKW1	14 U	578400	5750390	✓	✓	✓	✓	-
	LKW4	14 U	566327	5765369	✓	-	✓	✓	-
	LKW5	14 U	577144	5758612	✓	-	✓	✓	-
	LKW6	14 U	573290	5762611	✓	✓	✓	✓	-
	LKW7	14 U	574055	5771081	✓	✓	✓	✓	-

Table F-2. Laboratory results for field and trip blanks.

			Alkalinity									
Field ID	Sample Date	ALS Sample ID	Total, as $CaCO_3$ (mg/L)	as Bicarbonate (HCO_3^-) (mg/L)	as Carbonate (CO_3^{2-}) (mg/L)	as Hydroxide (OH^-) (mg/L)	Total Ammonia (mg/L N)	Ammonia (mg/L N)	Dissolved Nitrate/ nitrite (mg/L N)	Nitrate-N (mg/L N)	Nitrite-N (mg/L N)	TKN (mg/L N)
FIELD BLANKS												
FB1	24-Jul-14	L1492266-11	2.1	2.6	<0.60	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	<0.20
FB1	27-Aug-14	L1509244-7	2.3	2.8	<0.60	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	<0.20
FB1	16-Oct-14	L1533943-10	2.6	3.1	<0.60	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	<0.20
FB1	26-Mar-15	L1592400-7	1.7	2.1	<0.60	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	<0.20
FB1	4-May-15	L1606740-6	1.6	2.0	<0.60	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	<0.20
TRIP BLANKS												
TB1	24-Jul-14	L1492266-12	2.1	2.6	<0.60	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	<0.20
TB1	28-Aug-14	L1509244-14	1.7	2.1	<0.60	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	<0.20
TB1	16-Oct-14	L1533943-11	1.6	2.0	<0.60	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	<0.20
TB1	26-Mar-15	L1592400-8	1.5	1.8	<0.60	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	<0.20
TB1	4-May-15	L1606740-5	1.8	2.2	<0.60	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	<0.20

Table F-2. Continued.

		Phosphorus			Carbon						Water Clarity		
Field ID	Sample Date	Total (mg/L P)	Dissolved (mg/L P)	Total Particulate (mg/L P)	Total Inorganic (mg/L)	Total Organic (mg/L)	Dissolved Organic (mg/L)	Lab pH	Conductivity (µmhos/cm)	TDS (mg/L)	TSS (mg/L)	Turbidity (NTU)	True Colour (CU)
FIELD BLANKS													
FB1	24-Jul-14	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0	6.26	1.2	<5.0	<2.0	<0.10	<5.0
FB1	27-Aug-14	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0	5.84	<1.0	<5.0	<2.0	<0.10	<5.0
FB1	16-Oct-14	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0	6.42	1.8	<5.0	<2.0	<0.10	<5.0
FB1	26-Mar-15	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0	6.08	<1.0	<6.0	<2.0	<0.10	<5.0
FB1	4-May-15	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0	6.04	1.5	<3.0	<2.0	<0.10	<5.0
TRIP BLANKS													
TB1	24-Jul-14	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0	6.18	<1.0	<5.0	<2.0	<0.10	<5.0
TB1	28-Aug-14	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0	5.87	<1.0	<5.0	<2.0	<0.10	<5.0
TB1	16-Oct-14	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0	5.47	<1.0	<5.0	<2.0	<0.10	<5.0
TB1	26-Mar-15	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0	5.91	<1.0	<3.0	<2.0	<0.10	<5.0
TB1	4-May-15	<0.0010	<0.0010	<0.0028	<1.0	<1.0	<1.0	5.81	1.2	<3.0	<2.0	<0.10	<5.0

Table F-2. Continued.

		Algal Pigments		Hardness	Metals and Major Ions (mg/L; unless otherwise indicated)							
	Sample	Chlorophyll *a*	Pheophytin *a*	as $CaCO_3$	Aluminum		Antimony		Arsenic		Barium	
Field ID	Date	(µg/L)	(µg/L)	(mg/L)	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS												
FB1	24-Jul-14	<0.10	<0.10	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
FB1	27-Aug-14	<0.10	<0.10	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
FB1	16-Oct-14	<0.10	<0.10	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
FB1	26-Mar-15	<0.10	<0.10	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
FB1	4-May-15	<0.10	<0.10	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
TRIP BLANKS												
TB1	24-Jul-14	<0.10	<0.10	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
TB1	28-Aug-14	<0.10	<0.10	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
TB1	16-Oct-14	<0.10	<0.10	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
TB1	26-Mar-15	<0.10	<0.10	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
TB1	4-May-15	<0.10	<0.10	<0.30	<0.0020	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table F-2. Continued.

		Metals and Major Ions (mg/L; unless otherwise indicated)											
	Sample	Beryllium		Bismuth		Boron		Cadmium		Calcium		Cesium	
Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS													
FB1	24-Jul-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010
FB1	27-Aug-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010
FB1	16-Oct-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010
FB1	26-Mar-15	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010
FB1	4-May-15	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010
TRIP BLANKS													
TB1	24-Jul-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010
TB1	28-Aug-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010
TB1	16-Oct-14	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010
TB1	26-Mar-15	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010
TB1	4-May-15	<0.00020	<0.00020	<0.00020	<0.00020	<0.010	<0.010	<0.000010	<0.000010	<0.050	<0.10	<0.00010	<0.00010

Table F-2. Continued.

		Metals and Major Ions (mg/L; unless otherwise indicated)									
	Sample	Chloride	Chromium		Cobalt		Copper		Fluoride	Iron	
Field ID	Date	Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total
FIELD BLANKS											
FB1	24-Jul-14	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.020	<0.010	<0.010
FB1	27-Aug-14	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.020	<0.010	<0.010
FB1	16-Oct-14	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.020	<0.010	<0.010
FB1	26-Mar-15	<0.10	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.020	<0.010	<0.010
FB1	4-May-15	<0.10	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.020	<0.010	<0.010
TRIP BLANKS											
TB1	24-Jul-14	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.020	<0.010	<0.010
TB1	28-Aug-14	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.020	<0.010	<0.010
TB1	16-Oct-14	<0.20	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.020	<0.010	<0.010
TB1	26-Mar-15	<0.10	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.020	<0.010	<0.010
TB1	4-May-15	<0.10	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.020	<0.010	<0.010

Table F-2. Continued.

		Metals and Major Ions (mg/L; unless otherwise indicated)											
	Sample	Lead		Lithium		Magnesium		Manganese		Mercury (ng/L)		Methyl Mercury (ng/L)	
Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS													
FB1	24-Jul-14	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
FB1	27-Aug-14	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
FB1	16-Oct-14	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
FB1	26-Mar-15	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
FB1	4-May-15	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
TRIP BLANKS													
TB1	24-Jul-14	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
TB1	28-Aug-14	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
TB1	16-Oct-14	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
TB1	26-Mar-15	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050
TB1	4-May-15	<0.000090	<0.000090	<0.0020	<0.0020	<0.010	<0.010	<0.00010	<0.00030	<1.0	<1.0	<0.050	<0.050

Table F-2. Continued.

		Metals and Major Ions (mg/L; unless otherwise indicated)											
	Sample	Molybdenum		Nickel		Potassium		Rubidium		Selenium		Silicon	
Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS													
FB1	24-Jul-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.10	<0.10
FB1	27-Aug-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.10	<0.10
FB1	16-Oct-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.10	<0.10
FB1	26-Mar-15	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.10	<0.10
FB1	4-May-15	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.10	<0.10
TRIP BLANKS													
TB1	24-Jul-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.10	<0.10
TB1	28-Aug-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.10	<0.10
TB1	16-Oct-14	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.10	<0.10
TB1	26-Mar-15	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.10	<0.10
TB1	4-May-15	<0.00010	<0.00020	<0.0010	<0.0020	<0.020	<0.020	<0.00020	<0.00020	<0.0010	<0.0010	<0.10	<0.10

Table F-2. Continued.

		Metals and Major Ions (mg/L; unless otherwise indicated)										
	Sample	Silver		Sodium		Strontium		Sulfate	Tellurium		Thallium	
Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
FIELD BLANKS												
FB1	24-Jul-14	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
FB1	27-Aug-14	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
FB1	16-Oct-14	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
FB1	26-Mar-15	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.30	<0.00020	<0.00020	<0.00010	<0.00010
FB1	4-May-15	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.30	<0.00020	<0.00020	<0.00010	<0.00010
TRIP BLANKS												
TB1	24-Jul-14	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
TB1	28-Aug-14	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
TB1	16-Oct-14	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.50	<0.00020	<0.00020	<0.00010	<0.00010
TB1	26-Mar-15	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.30	<0.00020	<0.00020	<0.00010	<0.00010
TB1	4-May-15	<0.00010	<0.00010	<0.020	<0.030	<0.00010	<0.00010	<0.30	<0.00020	<0.00020	<0.00010	<0.00010

Table F-2. Continued.

		Metals and Major Ions (mg/L; unless otherwise indicated)									
	Sample	Thorium		Tin		Titanium		Tungsten		Uranium	
Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS											
FB1	24-Jul-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
FB1	27-Aug-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
FB1	16-Oct-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
FB1	26-Mar-15	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
FB1	4-May-15	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
TRIP BLANKS											
TB1	24-Jul-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
TB1	28-Aug-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
TB1	16-Oct-14	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
TB1	26-Mar-15	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010
TB1	4-May-15	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010

Table F-2. Continued.

		Metals and Major Ions (mg/L; unless otherwise indicated)					
	Sample	Vanadium		Zinc		Zirconium	
Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total
FIELD BLANKS							
FB1	24-Jul-14	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
FB1	27-Aug-14	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
FB1	16-Oct-14	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
FB1	26-Mar-15	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
FB1	4-May-15	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
TRIP BLANKS							
TB1	24-Jul-14	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
TB1	28-Aug-14	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
TB1	16-Oct-14	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
TB1	26-Mar-15	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040
TB1	4-May-15	<0.00020	<0.00020	<0.0020	<0.0020	<0.00040	<0.00040

Table F-3. Laboratory results for triplicate samples. Percent relative standard deviation (PRSD) values greater than 18 are indicated in red; PRSD values were only calculated if the results were more than five times the analytical detection limit. Suspect values are indicated in blue italics.

				Alkalinity									
Location ID	Field ID	ALS Sample ID	Sample Date	Total, as $CaCO_3$ (mg/L)	as Bicarbonate (HCO_3^-) (mg/L)	as Carbonate (CO_3^{2-}) (mg/L)	as Hydroxide (OH^-) (mg/L)	Total Ammonia (mg/L N)	Ammonia (mg/L N)	Dissolved Nitrate/ nitrite (mg/L N)	Nitrate-N (mg/L N)	Nitrite-N (mg/L N)	TKN (mg/L N)
LKW3	LKW3	L1492266-3	24-Jul-14	165	194	<12	<6.8	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.75
	RP1	L1492266-9	24-Jul-14	164	192	<12	<6.8	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.76
	RP2	L1492266-10	24-Jul-14	164	192	<12	<6.8	0.011	0.011	<0.0051	<0.0050	<0.0010	0.71
			Mean	164	193	<12	<6.8	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.74
			SD	0.6	1.2	-	-	-	-	-	-	-	0.026
			PRSD	0	1	-	-	-	-	-	-	-	-
LKW1	LKW1	L1509244-6	27-Aug-14	185	215	<12	<6.8	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.86
	RP1	L1509244-8	27-Aug-14	184	217	<12	<6.8	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.96
	RP2	L1509244-9	27-Aug-14	185	214	<12	<6.8	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.88
			Mean	185	215	<12	<6.8	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.90
			SD	1	2	-	-	-	-	-	-	-	0.053
			PRSD	0	1	-	-	-	-	-	-	-	-
LSM1	LSM1	L1535278-4	20-Oct-14	179	210	<12	<6.8	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.95
	RP-1	L1535278-7	20-Oct-14	179	208	<12	<6.8	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.93
	RP-2	L1535278-8	20-Oct-14	179	209	<12	<6.8	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.89
			Mean	179	209	<12	<6.8	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.92
			SD	0.0	1.0	-	-	-	-	-	-	-	0.031
			PRSD	0	0	-	-	-	-	-	-	-	-
LKW3	LKW3	L1592813-2	27-Mar-15	172	208	<12	<6.8	0.025	0.025	0.0207	0.0191	0.0016	0.53
	RP1	L1592813-6	27-Mar-15	171	193	<12	<6.8	0.019	0.019	0.0315	0.0256	0.0060	0.68
	RP2	L1592813-7	27-Mar-15	172	193	<12	<6.8	0.030	0.030	<0.0051	<0.0050	<0.0010	0.56
			Mean	172	198	<12	<6.8	0.025	0.025	0.0183	0.0157	0.0034	0.59
			SD	0.6	8.7	-	-	0.0055	0.0055	0.01463	0.01191	0.00232	0.079
			PRSD	0	4	-	-	-	-	-	-	-	-

Table F-3. Continued.

Location ID	Field ID	ALS Sample ID	Sample Date	Alkalinity				Total Ammonia (mg/L N)	Ammonia (mg/L N)	Dissolved Nitrate/ nitrite (mg/L N)	Nitrate-N (mg/L N)	Nitrite-N (mg/L N)	TKN (mg/L N)
				Total, as $CaCO_3$ (mg/L)	as Bicarbonate (HCO_3^-) (mg/L)	as Carbonate (CO_3^{2-}) (mg/L)	as Hydroxide (OH^-) (mg/L)						
LKW3B	LKW3B	L1606740-4	4-May-15	148	173	3.72	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.49
	RP1	L1606740-7	4-May-15	148	172	4.20	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.56
	RP2	L1606740-8	4-May-15	148	172	3.84	<0.34	0.022	0.022	<0.0051	<0.0050	<0.0010	0.53
			Mean	148	172	3.92	<0.34	<0.010	<0.010	<0.0051	<0.0050	<0.0010	0.53
			SD	0.0	0.6	0.25	-	-	-	-	-	-	0.035
			PRSD	0	0	6	-	-	-	-	-	-	-

Table F-3. Continued.

			Phosphorus			Carbon						Water Clarity		
Location ID	Field ID	Sample Date	Total (mg/L P)	Dissolved (mg/L P)	Total Particulate (mg/L P)	Total Inorganic (mg/L)	Total Organic (mg/L)	Dissolved Organic (mg/L)	Lab pH	Conductivity (µmhos/cm)	TDS (mg/L)	TSS (mg/L)	Turbidity (NTU)	True Colour (CU)
LKW3	LKW3	24-Jul-14	0.023	0.0063	0.017	35.6	9.1	9.1	8.41	853	490	7.6	5.80	15.6
	RP1	24-Jul-14	0.020	0.0069	0.013	28.5	10.2	10.3	8.42	854	510	8.8	5.50	13.4
	RP2	24-Jul-14	0.020	0.0067	0.013	28.5	10.0	9.9	8.41	854	492	8.4	5.80	16.2
	Mean		0.021	0.0066	0.014	30.9	9.8	9.8	8.41	854	497	8.3	5.70	15.1
	SD		0.0017	0.00031	0.0023	4.10	0.59	0.61	0.006	0.6	11.0	0.61	0.173	1.47
	PRSD		-	5	-	13	6	6	0	0	2	-	3	-
LKW1	LKW1	27-Aug-14	0.026	0.0064	-	43.1	15.7	15.6	8.48	705	417	17.2	16.2	27.8
	RP1	27-Aug-14	0.025	0.0073	-	43.0	15.8	15.5	8.41	715	416	18.8	***150***	28.5
	RP2	27-Aug-14	0.027	0.0067	-	***7.9***	14.3	13.0	8.49	705	410	18.4	17.4	29.3
	Mean		0.026	0.0068	-	31.3	15.3	14.7	8.46	708	414	18.1	61.2	28.5
	SD		0.0010	0.00046	-	20.3	0.84	1.47	0.044	5.8	3.8	0.83	76.9	0.75
	PRSD		-	7	-	**65**	5	10	1	1	1	5	**126**	3
LSM1	LSM1	20-Oct-14	0.0148	0.0050	0.0098	42.0	14.6	14.6	8.43	950	521	6.4	2.89	7.3
	RP-1	20-Oct-14	0.0139	0.0050	0.0089	41.7	14.6	14.8	8.48	952	516	6.2	2.87	8.1
	RP-2	20-Oct-14	0.021	0.0056	0.015	42.2	14.7	14.8	8.46	953	508	6.0	2.81	7.6
	Mean		0.017	0.0052	0.011	42.0	14.6	14.7	8.46	952	515	6.2	2.86	7.7
	SD		0.0039	0.00035	0.0033	0.25	0.06	0.12	0.025	1.5	6.6	0.20	0.042	0.40
	PRSD		-	7	-	1	0	1	0	0	1	3	1	5
LKW3	LKW3	27-Mar-15	0.0330	0.0072	0.0258	37.6	8.4	8.2	8.31	672	365	<2.0	3.08	12.4
	RP1	27-Mar-15	0.0300	0.0078	0.0222	36.9	8.6	8.2	8.59	698	362	<2.0	3.07	9.7
	RP2	27-Mar-15	0.0302	0.0069	0.0233	37.2	8.7	8.3	8.59	700	375	<2.0	3.02	8.1
	Mean		0.0311	0.0073	0.0238	37.2	8.6	8.2	8.50	690	367	<2.0	3.06	10.1
	SD		0.00168	0.00046	0.00184	0.35	0.15	0.06	0.162	15.6	6.8	-	0.032	2.17
	PRSD		5	6	8	1	2	1	2	2	2	-	1	-

Table F-3. Continued.

			Phosphorus			Carbon						Water Clarity		
Location ID	Field ID	Sample Date	Total (mg/L P)	Dissolved (mg/L P)	Total Particulate (mg/L P)	Total Inorganic (mg/L)	Total Organic (mg/L)	Dissolved Organic (mg/L)	Lab pH	Conductivity (µmhos/cm)	TDS (mg/L)	TSS (mg/L)	Turbidity (NTU)	True Colour (CU)
LKW3B	LKW3B	4-May-15	0.0119	0.0053	0.0066	31.6	9.5	9.5	8.37	544	303	<2.0	2.70	8.1
	RP1	4-May-15	0.0120	0.0055	0.0064	30.9	5.4	5.3	8.37	540	299	2.0	2.66	9.2
	RP2	4-May-15	0.0106	0.0055	0.0052	31.7	9.5	9.3	8.38	541	287	<2.0	2.78	9.5
		Mean	0.0115	0.0054	0.0061	31.4	8.1	8.0	8.37	542	296	<2.0	2.71	10.1
		SD	0.00078	0.00012	0.00076	0.44	2.37	2.37	0.006	2.1	8.3	-	0.061	0.74
		PRSD	7	2	-	1	29	29	0	0	3	-	2	-

Table F-3. Continued.

Location ID	Field ID	Sample Date	Algal Pigments		Hardness, as $CaCO_3$	Metals and Major Ions (mg/L; unless otherwise indicated)							
			Chlorophyll *a* (µg/L)	Pheophytin *a* (µg/L)	(mg/L)	Aluminum		Antimony		Arsenic		Barium	
						Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3	LKW3	24-Jul-14	4.13	1.04	219	0.0043	0.196	<0.00020	<0.00020	0.00159	0.00167	0.0381	0.0410
	RP1	24-Jul-14	4.84	1.08	208	0.0072	0.175	<0.00020	<0.00020	0.00158	0.00164	0.0377	0.0394
	RP2	24-Jul-14	3.72	0.88	219	0.0057	0.177	0.00023	0.00086	0.00159	0.00170	0.0393	0.0395
		Mean	4.23	1.00	215	0.0057	0.183	<0.00020	0.00035	0.00159	0.00167	0.0384	0.0400
		SD	0.567	0.106	6.4	0.00145	0.0116	-	-	0.000006	0.000030	0.00083	0.00090
		PRSD	13	11	3	-	6	-	-	0	2	2	2
LKW1	LKW1	27-Aug-14	4.06	1.69	209	0.0104	0.648	<0.00020	<0.00020	0.00147	0.00158	0.0323	0.0384
	RP1	27-Aug-14	4.32	1.62	210	0.0217	0.572	<0.00020	<0.00020	0.00147	0.00157	0.0329	0.0365
	RP2	27-Aug-14	3.89	1.67	213	0.0186	0.564	<0.00020	<0.00020	0.00146	0.00156	0.0326	0.0400
		Mean	4.09	1.66	211	0.0169	0.595	<0.00020	<0.00020	0.00147	0.00157	0.0326	0.0383
		SD	0.217	0.036	2.1	0.00584	0.0464	-	-	0.000006	0.000010	0.00030	0.00175
		PRSD	5	2	1	**35**	8	-	-	0	1	1	5
LSM1	LSM1	20-Oct-14	6.59	1.34	237	<0.0020	0.0246	<0.00020	0.00022	0.00169	0.00171	0.0407	0.0408
	RP-1	20-Oct-14	6.88	1.44	236	<0.0020	0.0255	<0.00020	0.00021	0.00170	0.00169	0.0405	0.0396
	RP-2	20-Oct-14	6.56	1.33	244	<0.0020	0.0247	<0.00020	0.00023	0.00163	0.00170	0.0424	0.0403
		Mean	6.68	1.37	239	<0.0020	0.0249	<0.00020	0.00022	0.00167	0.00170	0.0412	0.0402
		SD	0.177	0.061	4.4	-	0.00049	-	0.000010	0.000038	0.000010	0.00104	0.00060
		PRSD	3	4	2	-	2	-	-	2	1	3	1
LKW3	LKW3	27-Mar-15	4.31	1.04	198	0.0175	0.125	0.00022	0.00034	0.00226	0.00211	0.0492	0.0487
	RP1	27-Mar-15	4.32	0.87	209	0.0173	0.157	<0.00020	0.00033	0.00207	0.00214	0.0495	0.0521
	RP2	27-Mar-15	6.62	1.16	212	0.0141	0.142	<0.00020	0.00025	0.00205	0.00196	0.0492	0.0526
		Mean	5.08	1.02	206	0.0163	0.141	<0.00020	0.00031	0.00213	0.00207	0.0493	0.0511
		SD	1.331	0.146	7.4	0.00191	0.0160	-	0.000049	0.000116	0.000096	0.00017	0.00212
		PRSD	34	16	4	12	11	-	-	5	5	0	4

Table F-3. Continued.

Location ID	Field ID	Sample Date	Algal Pigments		Hardness, as $CaCO_3$	Metals and Major Ions (mg/L; unless otherwise indicated)							
			Chlorophyll *a* (µg/L)	Pheophytin *a* (µg/L)	(mg/L)	Aluminum		Antimony		Arsenic		Barium	
						Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3B	LKW3B	4-May-15	2.23	0.56	183	0.0104	0.118	<0.00020	<0.00020	0.00123	0.00123	0.0416	0.0408
	RP1	4-May-15	2.14	0.56	174	0.0108	0.111	<0.00020	<0.00020	0.00126	0.00124	0.0423	0.0415
	RP2	4-May-15	2.35	0.63	177	0.0034	0.122	<0.00020	<0.00020	0.00124	0.00127	0.0422	0.0443
		Mean	5.08	1.02	178	0.0082	0.117	<0.00020	<0.00020	0.00124	0.00125	0.0420	0.0422
		SD	0.105	0.040	4.6	0.00416	0.0056	-	-	0.000015	0.000021	0.00038	0.00185
		PRSD	5	6	3	-	5	-	-	1	2	1	4

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)									
Location		Sample	Beryllium		Bismuth		Boron		Cadmium		Calcium	
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3	LKW3	24-Jul-14	<0.00020	<0.00020	<0.00020	<0.00020	0.081	0.081	<0.000010	<0.000010	41.0	40.1
	RP1	24-Jul-14	<0.00020	<0.00020	<0.00020	<0.00020	0.079	0.079	<0.000010	<0.000010	38.7	38.2
	RP2	24-Jul-14	<0.00020	<0.00020	<0.00020	<0.00020	0.091	0.085	<0.000010	<0.000010	43.8	39.7
		Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.084	0.082	<0.000010	<0.000010	41.2	39.3
		SD	-	-	-	-	0.0064	0.0031	-	-	2.55	1.00
		PRSD	-	-	-	-	8	4	-	-	6	3
LKW1	LKW1	27-Aug-14	<0.00020	<0.00020	<0.00020	<0.00020	0.063	0.063	<0.000010	<0.000010	37.4	38.8
	RP1	27-Aug-14	<0.00020	<0.00020	<0.00020	<0.00020	0.066	0.074	<0.000010	<0.000010	37.2	38.2
	RP2	27-Aug-14	<0.00020	<0.00020	<0.00020	<0.00020	0.067	0.070	<0.000010	<0.000010	38.4	40.3
		Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.065	0.069	<0.000010	<0.000010	37.7	39.1
		SD	-	-	-	-	0.0021	0.0056	-	-	0.64	1.08
		PRSD	-	-	-	-	3	8	-	-	2	3
LSM1	LSM1	20-Oct-14	<0.00020	<0.00020	<0.00020	<0.00020	0.095	0.102	<0.000010	<0.000010	44.1	44.8
	RP-1	20-Oct-14	<0.00020	<0.00020	<0.00020	<0.00020	0.099	0.099	<0.000010	<0.000010	42.3	44.4
	RP-2	20-Oct-14	<0.00020	<0.00020	<0.00020	<0.00020	0.099	0.093	<0.000010	<0.000010	41.1	47.0
		Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.098	0.098	<0.000010	<0.000010	42.5	45.4
		SD	-	-	-	-	0.0023	0.0046	-	-	1.51	1.40
		PRSD	-	-	-	-	2	5	-	-	4	3
LKW3	LKW3	27-Mar-15	<0.00020	<0.00020	<0.00020	<0.00020	0.048	0.050	<0.000010	0.000012	45.7	42.2
	RP1	27-Mar-15	<0.00020	<0.00020	<0.00020	<0.00020	0.057	0.053	<0.000010	0.000011	48.7	43.8
	RP2	27-Mar-15	<0.00020	<0.00020	<0.00020	<0.00020	0.050	0.052	<0.000010	0.000012	46.2	45.6
		Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.052	0.052	<0.000010	0.000012	46.9	43.9
		SD	-	-	-	-	0.0047	0.0015	-	0.0000006	1.61	1.70
		PRSD	-	-	-	-	9	3	-	-	3	4

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)									
Location		Sample	Beryllium		Bismuth		Boron		Cadmium		Calcium	
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3B	LKW3B	4-May-15	<0.00020	<0.00020	<0.00020	<0.00020	0.047	0.045	<0.000010	<0.000010	38.6	37.4
	RP1	4-May-15	<0.00020	<0.00020	<0.00020	<0.00020	0.042	0.042	<0.000010	<0.000010	37.8	36.3
	RP2	4-May-15	<0.00020	<0.00020	<0.00020	<0.00020	0.044	0.043	<0.000010	<0.000010	38.3	37.0
		Mean	<0.00020	<0.00020	<0.00020	<0.00020	0.044	0.043	<0.000010	<0.000010	38.2	36.9
		SD	-	-	-	-	0.0025	0.0015	-	-	0.40	0.56
		PRSD	-	-	-	-	-	-	-	-	1	2

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)									
Location		Sample	Cesium		Chloride	Chromium		Cobalt		Copper		Fluoride
ID	Field ID	Date	Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
LKW3	LKW3	24-Jul-14	<0.00010	<0.00010	128	<0.0020	<0.0010	<0.00020	<0.00020	0.00052	0.00063	0.123
	RP1	24-Jul-14	<0.00010	<0.00010	130	<0.0020	<0.0010	<0.00020	<0.00020	0.00051	0.00063	0.120
	RP2	24-Jul-14	<0.00010	<0.00010	128	<0.0020	<0.0010	<0.00020	<0.00020	0.00053	0.00068	0.121
		Mean	<0.00010	<0.00010	129	<0.0020	<0.0010	<0.00020	<0.00020	0.00052	0.00065	0.121
		SD	-	-	1.2	-	-	-	-	0.000010	0.000029	0.0015
		PRSD	-	-	1	-	-	-	-	2	4	1
LKW1	LKW1	27-Aug-14	<0.00010	<0.00010	88.7	<0.0020	0.0011	<0.00020	0.00034	0.00056	0.00107	0.117
	RP1	27-Aug-14	<0.00010	<0.00010	89.5	<0.0020	0.0011	<0.00020	0.00036	0.00052	0.00114	0.122
	RP2	27-Aug-14	<0.00010	<0.00010	90.1	<0.0020	0.0011	<0.00020	0.00034	0.00051	0.00110	0.120
		Mean	<0.00010	<0.00010	89.4	<0.0020	0.0011	<0.00020	0.00035	0.00053	0.00110	0.120
		SD	-	-	0.70	-	0.00000	-	0.000012	0.000026	0.000035	0.0025
		PRSD	-	-	1	-	-	-	-	5	3	2
LSM1	LSM1	20-Oct-14	<0.00010	<0.00010	144	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020	0.00044	0.125
	RP-1	20-Oct-14	<0.00010	<0.00010	147	<0.0020	<0.0010	<0.00020	<0.00020	0.00033	0.00039	0.127
	RP-2	20-Oct-14	<0.00010	<0.00010	145	<0.0020	<0.0010	<0.00020	<0.00020	0.00038	0.00043	0.130
		Mean	<0.00010	<0.00010	145	<0.0020	<0.0010	<0.00020	<0.00020	0.00027	0.00042	0.127
		SD	-	-	1.5	-	-	-	-	0.000149	0.000026	0.0025
		PRSD	-	-	1	-	-	-	-	-	-	2
LKW3	LKW3	27-Mar-15	<0.00010	<0.00010	72.8	<0.0010	<0.0010	<0.00020	<0.00020	0.00160	0.00172	0.122
	RP1	27-Mar-15	<0.00010	<0.00010	71.4	<0.0010	<0.0010	<0.00020	<0.00020	0.00122	0.00191	0.137
	RP2	27-Mar-15	<0.00010	<0.00010	71.6	<0.0010	<0.0010	<0.00020	<0.00020	0.00138	0.00174	0.130
		Mean	<0.00010	<0.00010	71.9	<0.0020	<0.0010	<0.00020	<0.00020	0.00090	0.00179	0.130
		SD	-	-	0.76	-	-	-	-	0.000697	0.000104	0.0075
		PRSD	-	-	1	-	-	-	-	-	6	6

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)									
Location		Sample	Cesium		Chloride	Chromium		Cobalt		Copper		Fluoride
ID	Field ID	Date	Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
LKW3B	LKW3B	4-May-15	<0.00010	<0.00010	58.1	<0.0010	<0.0010	<0.00020	<0.00020	0.00089	0.00114	0.116
	RP1	4-May-15	<0.00010	<0.00010	57.4	<0.0010	<0.0010	<0.00020	<0.00020	0.00113	0.00113	0.115
	RP2	4-May-15	<0.00010	<0.00010	57.4	<0.0010	<0.0010	<0.00020	<0.00020	0.00093	0.00114	0.113
		Mean	<0.00010	<0.00010	57.6	<0.0020	<0.0010	<0.00020	<0.00020	0.00072	0.00114	0.115
		SD	-	-	0.40	-	-	-	-	0.000546	0.000006	0.0015
		PRSD	-	-	1	-	-	-	-	-	1	1

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)											
Location		Sample	Iron		Lead		Lithium		Magnesium		Manganese		Mercury (ng/L)	
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3	LKW3	24-Jul-14	<0.010	0.120	<0.000090	0.000091	0.0238	0.0258	28.1	28.9	0.00022	0.01050	1.5	1.5
	RP1	24-Jul-14	<0.010	0.110	<0.000090	0.000097	0.0233	0.0252	27.5	27.4	0.00021	0.01020	2.1	<1.0
	RP2	24-Jul-14	<0.010	0.120	<0.000090	0.000184	0.0266	0.0262	27.6	29.2	0.00034	0.01060	<1.0	2.0
		Mean	<0.010	0.117	<0.000090	0.000124	0.0246	0.0257	27.7	28.5	0.00026	0.01043	1.4	1.3
		SD	-	0.0058	-	0.0000520	0.00178	0.00050	0.32	0.96	0.000072	0.000208	0.8	0.8
		PRSD	-	5	-	-	7	2	1	3	-	2	-	-
LKW1	LKW1	27-Aug-14	0.011	0.61	<0.000090	0.000353	0.0168	0.0192	27.5	27.2	0.00035	0.0198	1.4	1.7
	RP1	27-Aug-14	0.015	0.61	<0.000090	0.000349	0.0178	0.0198	27.5	27.8	0.00046	0.0197	1.3	1.8
	RP2	27-Aug-14	0.014	0.60	<0.000090	0.000262	0.0181	0.0202	28.2	27.3	0.00041	0.0197	1.6	2.0
		Mean	0.013	0.61	<0.000090	0.000321	0.0176	0.0197	27.7	27.4	0.00041	0.0197	1.1	1.4
		SD	0.0021	0.006	-	0.0000514	0.00068	0.00050	0.40	0.32	0.000055	0.00006	0.5	0.8
		PRSD	-	1	-	-	4	3	1	1	-	0	-	-
LSM1	LSM1	20-Oct-14	<0.010	0.023	<0.000090	0.000101	0.0290	0.0290	30.5	30.4	0.00015	0.00333	1.5	2.6
	RP-1	20-Oct-14	<0.010	0.023	<0.000090	0.000104	0.0291	0.0295	30.5	30.5	0.00016	0.00353	<1.0	1.8
	RP-2	20-Oct-14	<0.010	0.024	<0.000090	0.000102	0.0287	0.0295	30.1	30.8	0.00015	0.00357	1.1	1.8
		Mean	<0.010	0.023	<0.000090	0.000102	0.0289	0.0293	30.4	30.6	0.00015	0.00348	1.0	1.6
		SD	-	0.0006	-	0.0000015	0.00021	0.00029	0.23	0.21	0.000006	0.000129	1.0	1.1
		PRSD	-	-	-	-	1	1	1	1	-	4	-	-
LKW3	LKW3	27-Mar-15	<0.010	0.068	<0.000090	0.000107	0.0189	0.0186	24.5	22.6	0.00039	0.00159	<1.0	1.9
	RP1	27-Mar-15	<0.010	0.077	<0.000090	<0.000090	0.0187	0.0195	25.5	24.2	0.00068	0.00170	<1.0	2.1
	RP2	27-Mar-15	<0.010	0.069	<0.000090	<0.000090	0.0194	0.0197	24.6	23.7	0.00034	0.00168	1.0	1.3
		Mean	<0.010	0.071	<0.000090	<0.000090	0.0190	0.0193	24.9	23.5	0.00047	0.00166	0.8	1.2
		SD	-	0.0049	-	-	0.00036	0.00059	0.55	0.82	0.000184	0.000059	0.8	0.7
		PRSD	-	7	-	-	2	3	2	3	-	4	-	-

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)											
Location		Sample	Iron		Lead		Lithium		Magnesium		Manganese		Mercury (ng/L)	
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3B	LKW3B	4-May-15	<0.010	0.074	<0.000090	<0.000090	0.0184	0.0167	21.1	20.3	0.00060	0.00410	1.7	1.3
	RP1	4-May-15	<0.010	0.070	<0.000090	<0.000090	0.0186	0.0167	21.4	20.2	0.00062	0.00378	1.4	1.4
	RP2	4-May-15	<0.010	0.075	<0.000090	<0.000090	0.0189	0.0165	21.3	20.5	0.00059	0.00399	1.2	2.3
		Mean	<0.010	0.073	<0.000090	<0.000090	0.0186	0.0166	21.3	20.3	0.00060	0.00396	1.1	1.4
		SD	-	0.0026	-	-	0.00025	0.00012	0.15	0.15	0.000015	0.000163	1.1	0.9
		PRSD	-	4	-	-	1	1	1	1	3	4	-	-

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)									
Location		Sample	Methyl Mercury (ng/L)		Molybdenum		Nickel		Potassium		Rubidium	
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3	LKW3	24-Jul-14	0.070	0.100	0.00144	0.00142	<0.0010	<0.0020	6.73	7.38	0.00297	0.00331
	RP1	24-Jul-14	0.066	0.108	0.00144	0.00142	<0.0010	<0.0020	6.90	7.28	0.00296	0.00327
	RP2	24-Jul-14	0.070	0.111	0.00162	0.00141	<0.0010	<0.0020	6.64	7.52	0.00294	0.00328
		Mean	0.069	0.106	0.00150	0.00142	<0.0010	<0.0020	6.76	7.39	0.00296	0.00329
		SD	0.0023	0.0057	0.000104	0.000006	-	-	0.132	0.121	0.000015	0.000021
		PRSD	-	-	7	0	-	-	2	2	1	1
LKW1	LKW1	27-Aug-14	0.064	0.107	0.00098	0.00103	<0.0010	<0.0020	5.17	5.72	0.00263	0.0044
	RP1	27-Aug-14	0.071	0.098	0.00098	0.00105	<0.0010	<0.0020	5.31	5.54	0.00263	0.0040
	RP2	27-Aug-14	0.064	0.102	0.00096	0.00106	<0.0010	<0.0020	5.02	5.62	0.00262	0.0041
		Mean	0.066	0.102	0.00097	0.00105	<0.0010	<0.0020	5.17	5.63	0.00263	0.0042
		SD	0.0040	0.0045	0.000012	0.000015	-	-	0.145	0.090	0.000006	0.000208
		PRSD	-	-	1	1	-	-	3	2	0	5
LSM1	LSM1	20-Oct-14	<0.050	<0.050	0.00187	0.00177	<0.0010	<0.0020	8.32	8.24	0.00330	0.00321
	RP-1	20-Oct-14	<0.050	<0.050	0.00167	0.00178	<0.0010	<0.0020	8.41	8.45	0.00338	0.00325
	RP-2	20-Oct-14	<0.050	<0.050	0.00165	0.00180	<0.0010	<0.0020	8.19	8.35	0.00323	0.00325
		Mean	<0.050	<0.050	0.00173	0.00178	<0.0010	<0.0020	8.31	8.35	0.00330	0.00324
		SD	-	-	0.000122	0.000015	-	-	0.111	0.105	0.000075	0.000023
		PRSD	-	-	7	1	-	-	1	1	2	1
LKW3	LKW3	27-Mar-15	<0.050	<0.050	0.00123	0.00130	<0.0010	<0.0020	5.71	5.32	0.00197	0.00215
	RP1	27-Mar-15	<0.050	<0.050	0.00133	0.00132	<0.0010	<0.0020	5.77	5.72	0.00200	0.00224
	RP2	27-Mar-15	<0.050	<0.050	0.00124	0.00131	<0.0010	<0.0020	5.87	5.69	0.00202	0.00223
		Mean	<0.050	<0.050	0.00127	0.00131	<0.0010	<0.0020	5.78	5.58	0.00200	0.00221
		SD	-	-	0.000055	0.000010	-	-	0.081	0.223	0.000025	0.000049
		PRSD	-	-	4	1	-	-	1	4	1	2

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)									
Location		Sample	Methyl Mercury (ng/L)		Molybdenum		Nickel		Potassium		Rubidium	
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3B	LKW3B	4-May-15	0.079	<0.050	0.00112	0.00108	<0.0010	<0.0020	4.75	4.67	0.00179	0.00190
	RP1	4-May-15	<0.050	<0.050	0.00105	0.00107	<0.0010	<0.0020	4.74	4.47	0.00161	0.00177
	RP2	4-May-15	<0.050	<0.050	0.00108	0.00107	<0.0010	<0.0020	4.75	4.64	0.00173	0.00190
		Mean	<0.050	<0.050	0.00108	0.00107	<0.0010	<0.0020	4.75	4.59	0.00171	0.00186
		SD	-	-	0.000035	0.000006	-	-	0.006	0.108	0.000092	0.00008
		PRSD	-	-	3	1	-	-	0	2	5	4

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)										
Location		Sample	Selenium		Silicon		Silver		Sodium		Strontium		Sulfate
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
LKW3	LKW3	24-Jul-14	<0.0010	<0.0010	4.13	4.49	<0.00010	<0.00010	89.3	88.3	0.230	0.219	63.7
	RP1	24-Jul-14	<0.0010	<0.0010	4.01	4.46	<0.00010	<0.00010	85.7	82.0	0.228	0.214	64.8
	RP2	24-Jul-14	<0.0010	<0.0010	4.11	4.54	<0.00010	<0.00010	85.2	85.1	0.255	0.215	64.0
		Mean	<0.0010	<0.0010	4.08	4.50	<0.00010	<0.00010	86.7	85.1	0.238	0.216	64.2
		SD	-	-	0.064	0.040	-	-	2.24	3.15	0.0150	0.0026	0.57
		PRSD	-	-	2	1	-	-	3	4	6	1	1
LKW1	LKW1	27-Aug-14	<0.0010	<0.0010	5.62	7.55	<0.00010	<0.00010	66.5	61.1	0.177	0.182	43.2
	RP1	27-Aug-14	<0.0010	<0.0010	5.84	7.14	<0.00010	<0.00010	67.1	60.9	0.182	0.182	43.7
	RP2	27-Aug-14	<0.0010	<0.0010	5.67	7.11	<0.00010	<0.00010	65.7	62.6	0.170	0.188	44.2
		Mean	<0.0010	<0.0010	5.71	7.27	<0.00010	<0.00010	66.4	61.5	0.176	0.184	43.7
		SD	-	-	0.115	0.246	-	-	0.70	0.93	0.0060	0.0035	0.50
		PRSD	-	-	2	3	-	-	1	2	3	2	1
LSM1	LSM1	20-Oct-14	<0.0010	<0.0010	4.84	5.02	<0.00010	<0.00010	93.8	94.7	0.222	0.238	75.8
	RP-1	20-Oct-14	<0.0010	<0.0010	4.94	5.80	<0.00010	<0.00010	96.3	93.4	0.224	0.242	77.3
	RP-2	20-Oct-14	<0.0010	<0.0010	4.94	5.23	<0.00010	<0.00010	92.1	93.8	0.216	0.246	76.4
		Mean	<0.0010	<0.0010	4.91	5.35	<0.00010	<0.00010	94.1	94.0	0.221	0.242	76.5
		SD	-	-	0.058	0.404	-	-	2.11	0.67	0.0042	0.0040	0.75
		PRSD	-	-	1	8	-	-	2	1	2	2	1
LKW3	LKW3	27-Mar-15	<0.0010	<0.0010	1.94	2.26	<0.00010	<0.00010	51.2	51.6	0.213	0.213	66.1
	RP1	27-Mar-15	<0.0010	<0.0010	2.00	2.48	<0.00010	<0.00010	50.7	55.8	0.238	0.213	65.4
	RP2	27-Mar-15	<0.0010	<0.0010	1.98	2.39	<0.00010	<0.00010	50.9	54.9	0.213	0.213	64.9
		Mean	<0.0010	<0.0010	1.97	2.38	<0.00010	<0.00010	50.9	54.1	0.221	0.213	65.5
		SD	-	-	0.031	0.111	-	-	0.25	2.21	0.0144	0.0000	0.60
		PRSD	-	-	2	5	-	-	0	4	7	0	1

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)										
Location		Sample	Selenium		Silicon		Silver		Sodium		Strontium		Sulfate
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
LKW3B	LKW3B	4-May-15	<0.0010	<0.0010	1.52	1.61	<0.00010	<0.00010	43.0	46.5	0.181	0.186	54.7
	RP1	4-May-15	<0.0010	<0.0010	1.53	1.58	<0.00010	<0.00010	43.5	43.6	0.174	0.178	54.2
	RP2	4-May-15	<0.0010	<0.0010	1.49	1.63	<0.00010	<0.00010	43.6	44.3	0.170	0.173	54.3
		Mean	<0.0010	<0.0010	1.51	1.61	<0.00010	<0.00010	43.4	44.8	0.175	0.179	54.4
		SD	-	-	0.021	0.025	-	-	0.32	1.51	0.0056	0.0066	0.26
		PRSD	-	-	1	2	-	-	1	3	3	4	0

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)									
Location		Sample	Tellurium		Thallium		Thorium		Tin		Titanium	
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3	LKW3	24-Jul-14	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00650
	RP1	24-Jul-14	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00711
	RP2	24-Jul-14	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00564
		Mean	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00642
		SD	-	-	-	-	-	-	-	-	-	0.000739
		PRSD	-	-	-	-	-	-	-	-	-	12
LKW1	LKW1	27-Aug-14	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00020	<0.00020	<0.00020	<0.00050	0.0284
	RP1	27-Aug-14	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00019	<0.00020	<0.00020	0.00069	0.0267
	RP2	27-Aug-14	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00018	<0.00020	<0.00020	0.00080	0.0273
		Mean	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00019	<0.00020	<0.00020	0.00058	0.0275
		SD	-	-	-	-	-	0.000010	-	-	0.00029	0.00086
		PRSD	-	-	-	-	-	-	-	-	-	3
LSM1	LSM1	20-Oct-14	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00075
	RP-1	20-Oct-14	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00089
	RP-2	20-Oct-14	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00105
		Mean	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00090
		SD	-	-	-	-	-	-	-	-	-	0.000150
		PRSD	-	-	-	-	-	-	-	-	-	-
LKW3	LKW3	27-Mar-15	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00363
	RP1	27-Mar-15	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00127	0.00404
	RP2	27-Mar-15	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00327
		Mean	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00365
		SD	-	-	-	-	-	-	-	-	-	0.000385
		PRSD	-	-	-	-	-	-	-	-	-	11

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)									
Location		Sample	Tellurium		Thallium		Thorium		Tin		Titanium	
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3B	LKW3B	4-May-15	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00378
	RP1	4-May-15	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00399
	RP2	4-May-15	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00376
		Mean	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00384
		SD	-	-	-	-	-	-	-	-	-	0.000127
		PRSD	-	-	-	-	-	-	-	-	-	3

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)									
Location		Sample	Tungsten		Uranium		Vanadium		Zinc		Zirconium	
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3	LKW3	24-Jul-14	<0.00010	<0.00010	0.00114	0.00123	0.00105	0.00154	<0.0020	0.0025	<0.00040	<0.00040
	RP1	24-Jul-14	<0.00010	<0.00010	0.00113	0.00120	0.00111	0.00146	<0.0020	<0.0020	<0.00040	<0.00040
	RP2	24-Jul-14	<0.00010	<0.00010	0.00124	0.00119	0.00109	0.00153	<0.0020	0.0036	<0.00040	<0.00040
		Mean	<0.00010	<0.00010	0.00117	0.00121	0.00108	0.00151	<0.0020	0.0024	<0.00040	<0.00040
		SD	-	-	0.000061	0.000021	0.000031	0.000044	-	0.00131	-	-
		PRSD	-	-	5	2	3	3	-	-	-	-
LKW1	LKW1	27-Aug-14	<0.00010	<0.00010	0.00078	0.00084	0.00107	0.00222	<0.0020	0.0032	<0.00040	0.00058
	RP1	27-Aug-14	<0.00010	<0.00010	0.00077	0.00078	0.00106	0.00214	<0.0020	0.0037	<0.00040	0.00055
	RP2	27-Aug-14	<0.00010	<0.00010	0.00076	0.00072	0.00106	0.00223	0.0021	0.0027	<0.00040	0.00055
		Mean	<0.00010	<0.00010	0.00077	0.00078	0.00106	0.00220	<0.0020	0.0023	<0.00040	0.00056
		SD	-	-	0.000010	0.000060	0.000006	0.000049	-	0.00115	-	0.000017
		PRSD	-	-	1	8	1	2	-	-	-	-
LSM1	LSM1	20-Oct-14	<0.00010	<0.00010	0.00138	0.00148	0.00124	0.00119	0.0036	<0.0020	<0.00040	<0.00040
	RP-1	20-Oct-14	<0.00010	<0.00010	0.00137	0.00149	0.00126	0.00116	<0.0020	<0.0020	<0.00040	<0.00040
	RP-2	20-Oct-14	<0.00010	<0.00010	0.00139	0.00156	0.00124	0.00116	<0.0020	<0.0020	<0.00040	<0.00040
		Mean	<0.00010	<0.00010	0.00138	0.00151	0.00125	0.00117	<0.0020	<0.0020	<0.00040	<0.00040
		SD	-	-	0.000010	0.000044	0.000012	0.000017	-	-	-	-
		PRSD	-	-	1	3	1	1	-	-	-	-
LKW3	LKW3	27-Mar-15	<0.00010	<0.00010	0.00120	0.00122	0.00112	0.00124	<0.0020	0.0027	<0.00040	<0.00040
	RP1	27-Mar-15	<0.00010	<0.00010	0.00132	0.00125	0.00106	0.00127	<0.0020	0.0022	<0.00040	<0.00040
	RP2	27-Mar-15	<0.00010	<0.00010	0.00119	0.00123	0.00112	0.0013	<0.0020	<0.0020	<0.00040	<0.00040
		Mean	<0.00010	<0.00010	0.00124	0.00123	0.00110	0.00127	<0.0020	<0.0020	<0.00040	<0.00040
		SD	-	-	0.000072	0.000015	0.000035	0.000030	-	-	-	-
		PRSD	-	-	6	1	3	2	-	-	-	-

Table F-3. Continued.

			Metals and Major Ions (mg/L; unless otherwise indicated)									
Location		Sample	Tungsten		Uranium		Vanadium		Zinc		Zirconium	
ID	Field ID	Date	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW3B	LKW3B	4-May-15	<0.00010	<0.00010	0.00099	0.00105	0.00080	0.00099	<0.0020	<0.0020	<0.00040	<0.00040
	RP1	4-May-15	<0.00010	<0.00010	0.00100	0.00103	0.00079	0.00093	<0.0020	<0.0020	<0.00040	<0.00040
	RP2	4-May-15	<0.00010	<0.00010	0.00095	0.00106	0.00080	0.00098	<0.0020	<0.0020	<0.00040	<0.00040
		Mean	<0.00010	<0.00010	0.00098	0.00105	0.00080	0.00097	<0.0020	<0.0020	<0.00040	<0.00040
		SD	-	-	0.000026	0.000015	0.000006	0.000032	-	-	-	-
		PRSD	-	-	3	1	-	-	-	-	-	-

Table F-4. *In situ* water quality data collected as part of the RWQMP during 2014/2015 Operation. Suspect values are indicated in blue italics.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Total Water Depth[1] (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Fairford River	FR1	25-Jul-14	11:15	-	-	-	0.3	24.46	9.74	107	783	19.0	8.23	-
		27-Aug-14	13:16	-	-	-	0.3	18.30	11.03	115	769	28.2	8.21	-
		20-Oct-14	13:13	-	-	-	0.3	7.67	11.95	100	904	4.17	8.49	-
		24-Mar-15	17:55	-	-	-	0.3	1.787	11.71	84.5	1082	0.44	8.14	-
Lake St. Martin	LSM1	25-Jul-14	9:23	-	-	3.0	0.3	22.13	10.24	101	833	11.7	8.35	1.30
							1.0	22.17	10.27	100	830	10.0	8.32	
							1.5	22.18	10.27	101	831	18.7	8.31	
							2.0	22.13	10.33	99	832	8.0	8.32	
		Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
		20-Oct-14	10:45	-	-	3.0	0.3	6.89	11.91	98	916	1.74	8.41	1.45
							1.0	6.89	11.90	98	916	1.79	8.41	
							1.5	6.89	11.90	98	916	1.71	8.42	
							2.0	6.88	11.89	98	916	1.72	8.42	
							2.5	6.89	11.89	98	916	5.63	8.42	
		24-Mar-15	15:30	0.02	0.61	2.7	0.3	0.17	11.08	76.4	1079	0.28	8.05	-
							0.8	0.81	11.06	76.3	1081	0.24	8.05	
							1.3	0.19	11.06	76.3	1081	0.28	8.06	
		May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
Dauphin River	DR-A	25-Jul-14	8:46	-	-	2.6	0.3	23.60	9.74	109	803	8.6	8.49	1.25
							1.0	23.37	10.08	105	825	5.8	8.40	
							1.5	23.07	10.16	104	830	4.2	8.37	
							2.0	22.81	10.30	104	837	4.4	8.34	
							2.5	22.66	10.42	104	839	5.0	8.34	

Table F-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Total Water Depth[1] (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Dauphin River	DR-A	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
		20-Oct-14	11:28	-	-	2.5	0.3	6.87	11.99	99	920	1.58	8.46	1.50
							1.0	6.88	11.93	98	921	1.49	8.47	
							1.5	6.88	11.91	98	921	1.51	8.47	
							2.0	6.88	11.9	98	921	1.55	8.47	
		25-Mar-15	13:44	0.04	0.49	2.5	0.3	0.18	9.70	67	1079	0.24	7.94	
							0.8	0.19	9.65	67	1081	0.26	7.94	
		May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
Dauphin River	DR-B	25-Jul-14	7:48	-	-	-	0.3	24.50	9.29	96	793	13.8	9.08	-
		27-Aug-14	12:11	-	-	-	0.3	15.80	11.05	105	756	6.76	8.21	-
		16-Oct-14	15:45	-	-	-	0.3	8.59	11.37	98	919	1.61	8.40	-
		25-Mar-15	11:49	0.05	0.33	1.9	0.3	-0.03	10.62	72.9	1066	0.49	7.93	-
		May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
Dauphin River	DR-C	24-Jul-14	18:04	-	-	2.2	0.3	25.04	9.66	113	806	47.8	8.05	-
		26-Aug-14	19:21	-	-	1.8	0.3	16.86	10.81	108	800	3.80	***10.4***	-
		16-Oct-14	14:10	-	-	2.1	0.3	8.62	11.28	97	917	7.37	8.40	-
		24-Mar-15	9:55	0.02	0.87	2.2	0.3	-0.05	10.75	73.7	1058	1.18	7.92	-
		03-May-15	13:32	-	-	2.3	0.3	11.48	10.41	95.9	825	2.43	8.39	-
Buffalo Creek	BC3	24-Jul-14	17:17	-	-	-	0.3	25.97	7.99	93	787	66.7	7.86	-
		26-Aug-14	19:45	-	-	-	0.3	18.80	11.29	107	730	14.0	***9.83***	-
		16-Oct-14	14:35	-	-	-	0.3	8.95	10.41	90	883	5.00	8.19	-
		26-Mar-15	8:23	0.05	0.15	1.0	0.3	-0.04	9.26	63.6	1055	4.06	7.80	-
		03-May-15	15:10	-	-	1.2	0.3	12.18	9.04	83.3	826	5.78	8.18	-

Table F-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Total Water Depth[1] (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
Dauphin River	DR-D[2]	26-Aug-14	20:10	-	-	2.6	0.3	17.44	11.25	110	740	2.50	***9.60***	-
Dauphin River	DR-E	24-Jul-14	12:02	-	-	5.6	0.3	23.73	9.54	97	831	7.5	8.16	-
		27-Aug-14	11:08	-	-	5.7	0.3	15.60	10.50	105	752	19.7	8.25	-
		20-Oct-14	8:38	-	-	5.4	0.3	7.09	11.52	95	914	2.69	8.22	-
		26-Mar-15	14:20	0.05	0.67	4.6	0.3	-0.043	10.41	71.5	1071	2.80	7.96	-
		04-May-15	9:10	-	-	4.5	0.3	10.61	10.17	91.8	816	0.84	8.43	-
Lake Winnipeg	LKW3B	24-Jul-14	11:37	-	-	6.2	0.3	23.44	9.57	97	711	6.8	8.12	1.15
							1.0	23.22	9.63	96	722	8.9	8.16	
							2.0	23.04	9.65	97	723	2.7	8.19	
							3.0	22.96	9.70	97	700	6.9	8.22	
							4.0	22.59	9.77	96	682	6.8	8.25	
							5.0	22.23	9.86	87	634	8.7	8.26	
		27-Aug-14	10:46	-	-	6.2	0.3	16.00	10.71	102	561	19.3	8.00	0.55
							1.0	16.00	10.63	102	562	21.3	8.10	
							2.0	16.00	10.67	101	564	18.9	8.13	
							3.0	15.90	10.70	100	567	21.3	8.19	
							4.0	15.80	10.69	99	627	22.4	8.21	
							5.0	15.60	10.69	97	676	23.5	8.22	
							6.0	15.20	10.53	94	685	29.0	8.22	
		20-Oct-14	8:21	-	-	6.0	0.3	6.87	11.79	97	727	9.79	8.23	0.60
							1.0	6.87	11.73	97	727	10.2	8.25	
							2.0	6.87	11.70	96	727	10.1	8.26	
							3.0	6.88	11.67	96	733	9.78	8.27	

Table F-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Total Water Depth[1] (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
LKW3B Cont…							4.0	6.89	11.65	96	738	9.59	8.28	
							5.0	6.92	11.63	96	746	9.54	8.29	
		26-Mar-15	13:20	0.05	0.88	5.2	0.3	0.01	11.20	77.2	1006	1.45	7.97	-
							1.0	-0.02	10.37	71.2	1071	1.64	7.94	
							2.0	-0.03	10.25	70.3	1073	1.86	7.94	
							3.0	-0.03	10.18	69.8	1074	2.09	7.94	
							4.0	-0.28	10.14	69.6	1073	2.06	7.94	
		04-May-15	8:21	-	-	5.2	0.3	3.39	14.23	107.1	524	0.65	8.41	2.00
							1.0	3.36	14.37	108.0	526	0.65	8.41	
							2.0	3.37	14.43	108.5	522	0.62	8.42	
							3.0	3.38	14.44	108.6	530	0.67	8.39	
							4.0	3.44	14.42	108.4	546	0.66	8.39	
							5.0	3.67	14.24	107.6	557	0.60	8.40	
Lake Winnipeg	LKW3	24-Jul-14	10:58	-	-	7.4	0.3	22.76	7.99	96	741	12.2	8.15	1.20
							1.0	22.64	8.09	96	739	4.8	8.16	
							2.0	22.53	8.15	97	742	2.7	8.18	
							3.0	22.11	8.13	96	735	2.6	8.21	
							4.0	21.28	8.57	96	723	4.4	8.24	
							5.0	21.24	8.63	95	725	9.7	8.24	
							6.0	21.95	8.07	83	659	24.6	8.12	
		Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
		20-Oct-14	7:55	-	-	7.3	0.3	6.80	11.63	96	762	7.30	8.30	0.68
							1.0	6.80	11.63	96	762	7.49	8.30	
							2.0	6.80	11.62	96	763	7.46	8.29	

Table F-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Total Water Depth[1] (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
LKW3 Cont…							3.0	6.81	11.61	95	763	7.45	8.29	
							4.0	6.80	11.61	95	764	7.44	8.29	
							5.0	6.80	11.95	95	765	7.44	8.29	
							6.0	6.80	11.57	95	766	8.12	8.28	
		26-Mar-15	11:20	0.10	0.88	6.2	0.3	0.01	15.59	107	635	2.08	8.28	
							1.0	0.43	14.97	104	635	2.20	8.25	
							2.0	0.68	13.96	98	633	2.59	8.20	
							3.0	0.67	13.12	92	656	2.63	8.09	
							4.0	0.14	10.69	74	1043	1.20	7.94	
							5.0	0.13	10.56	73	1055	1.24	7.94	
		May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
Lake Winnipeg	LKW2	24-Jul-14	10:30	-	-	5.1	0.3	21.52	8.70	94	797	7.7	8.12	1.00
							1.0	21.53	8.68	93	799	10.1	8.13	
							2.0	21.55	8.64	93	799	6.4	8.16	
							3.0	21.62	8.54	92	799	1.1	8.16	
							4.0	22.00	8.33	93	794	3.4	8.19	
		Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
		16-Oct-14	12:10	-	-	5.0	0.3	7.83	11.74	99	892	4.78	8.37	0.95
							1.0	7.83	11.73	99	894	5.13	8.37	
							2.0	7.83	11.72	99	894	4.86	8.36	
							3.0	7.83	11.72	99	894	4.95	8.36	
							4.0	7.83	11.71	99	894	5.25	8.36	
		26-Mar-15	10:05	0.10	0.90	3.9	0.3	0.043	9.25	64	1049	0.91	7.83	-
							0.8	0.149	9.51	66	1057	1.24	7.85	

Table F-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Total Water Depth[1] (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
LKW2 Cont…							1.3	0.227	9.48	66	1056	1.37	7.84	
							1.8	0.285	9.34	65	1055	1.57	7.83	
							2.3	0.288	9.33	65	1055	1.49	7.83	
							2.8	0.334	9.26	64	1054	1.68	7.82	
		May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
Lake Winnipeg	LKW1	24-Jul-14	10:04	-	-	5.4	0.3	21.05	8.99	99	758	10.1	8.08	1.15
							1.0	21.44	8.67	96	750	9.3	8.08	
							2.0	21.49	8.61	99	750	6.1	8.11	
							3.0	21.60	8.51	99	749	5.4	8.15	
							4.0	21.90	8.40	98	746	5.6	8.16	
		27-Aug-14	9:39	-	-	5.1	0.3	14.80	***7.91***	102	564	29.2	7.61	0.53
							1.0	14.70	***8.25***	100	584	26.3	7.89	
							2.0	14.80	***8.45***	100	587	27.8	7.96	
							3.0	14.70	***8.50***	101	587	27.4	8.00	
							4.0	14.70	***8.56***	99	577	31.3	8.02	
							5.0	14.70	***8.83***	100	576	-	8.00	
		16-Oct-14	11:28	-	-	5.2	0.3	7.56	11.74	98	554	9.40	8.33	0.65
							1.0	7.54	11.73	98	553	9.73	8.33	
							2.0	7.55	11.72	98	553	10.0	8.33	
							3.0	7.53	11.71	98	553	9.70	8.32	
							4.0	7.54	11.70	98	554	9.93	8.32	
		26-Mar-15	15:35	0.12	0.92	4.1	0.3	0.231	14.43	100	932	1.97	8.07	-
							0.8	0.406	14.08	98	940	1.76	8.08	
							1.3	0.346	10.42	73	989	0.76	7.92	

Table F-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Total Water Depth[1] (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
LKW1 Cont…							1.8	0.331	8.97	62	1003	0.74	7.84	
							2.3	0.563	8.49	59	1001	0.89	7.80	
							2.8	1.226	8.02	57	1000	1.24	7.78	
		May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
Lake Winnipeg	LKW4	24-Jul-14	7:42	-	-	9.1	0.3	19.90	8.84	101	634	19.2	7.61	1.10
							1.0	19.91	8.82	100	634	18.1	7.66	
							2.0	19.91	8.79	99	636	14.3	7.69	
							3.0	19.91	8.81	100	636	13.8	7.70	
							4.0	19.84	8.84	98	631	16.2	7.71	
							5.0	19.33	9.04	97	603	18.8	7.78	
							6.0	19.17	9.06	91	591	26.4	7.82	
							7.0	19.16	9.01	90	593	30.1	7.85	
		Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
		16-Oct-14	8:45	-	-	8.2	0.3	7.58	11.71	98	664	8.50	8.31	0.75
							1.0	7.58	11.70	98	663	8.39	8.31	
							2.0	7.57	11.68	98	664	8.47	8.31	
							3.0	7.57	11.68	98	664	8.22	8.31	
							4.0	7.57	11.67	98	664	8.23	8.31	
							5.0	7.57	11.65	98	666	8.24	8.31	
							6.0	7.47	11.60	97	673	8.44	8.30	
							7.0	7.52	11.59	97	668	9.00	8.30	
		26-Mar-15	9:33	0.05	0.89	6.4	0.3	0.269	15.24	105	618	2.16	8.15	-
							1.0	0.34	15.22	105	613	2.29	8.14	
							2.0	0.385	15.20	105	613	2.25	8.13	

Table F-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Total Water Depth[1] (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
LKW4 Cont…							3.0	0.344	14.88	103	629	2.40	8.11	
							4.0	0.620	13.52	94	656	2.71	8.06	
							5.0	2.161	8.15	59	724	3.03	7.75	
		May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
Lake Winnipeg	LKW5	24-Jul-14	9:29	-	-	8.4	0.3	20.26	9.50	96	726	21.9	7.97	1.00
							1.0	20.27	9.46	95	732	18.6	7.99	
							2.0	20.24	9.44	96	734	18.8	8.04	
							3.0	20.26	9.41	95	735	13.7	8.06	
							4.0	20.26	9.40	95	735	8.0	8.09	
							5.0	20.23	9.37	96	734	7.5	8.11	
							6.0	20.11	9.40	94	727	10.8	8.11	
							7.0	19.38	9.12	89	687	-	8.00	
		Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
		16-Oct-14	10:50	-	-	8.0	0.3	7.61	11.72	98	628	7.76	8.33	0.70
							1.0	7.62	11.71	98	628	7.75	8.33	
							2.0	7.61	11.70	98	629	7.74	8.33	
							3.0	7.58	11.68	98	632	7.70	8.33	
							4.0	7.59	11.67	98	630	7.76	8.32	
							5.0	7.56	11.65	97	641	7.60	8.32	
							6.0	7.37	11.59	97	656	7.46	8.31	
							7.0	7.18	11.39	94	730	7.61	8.20	
		26-Mar-15	14:11	0.18	0.96	6.8	0.3	0.024	14.85	102	683	2.44	8.20	-
							1.0	0.093	14.33	99	707	2.00	8.15	
							2.0	0.086	12.45	87	839	1.40	8.00	

Table F-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Total Water Depth[1] (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
LKW5 Cont…							3.0	0.102	9.72	68	1037	0.88	7.83	
							4.0	0.153	8.68	60	1055	0.98	7.77	
							5.0	0.370	8.24	57	1057	1.01	7.76	
		May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
Lake Winnipeg	LKW6	24-Jul-14	8:57	-	-	10.9	0.3	19.95	9.06	98	620	36.2	8.09	0.90
							1.0	19.97	8.68	98	618	29.2	8.10	
							2.0	19.98	8.69	98	616	26.3	8.12	
							3.0	19.97	8.64	97	615	17.7	8.15	
							4.0	19.97	8.63	97	615	17.2	8.17	
							5.0	19.97	8.64	98	615	16.4	8.11	
							6.0	19.92	8.66	97	612	18.6	8.09	
							7.0	19.49	8.84	95	604	20.9	7.52	
							8.0	18.88	9.05	90	632	-	7.77	
							9.0	18.86	7.79	-	640	-	7.63	
		27-Aug-14	8:49	-	-	10.1	0.3	16.60	10.12	97	654	7.70	8.36	0.65
							1.0	16.80	10.29	97	663	8.60	8.40	
							2.0	16.80	10.27	97	666	6.30	8.44	
							3.0	16.80	10.23	97	665	4.30	8.45	
							4.0	16.80	10.15	97	663	5.60	8.39	
							5.0	16.80	10.13	97	663	5.60	8.32	
							6.0	16.80	10.19	96	665	3.80	8.25	
							7.0	16.80	10.29	96	669	5.30	8.22	
							8.0	16.80	10.32	96	671	3.70	8.18	
		16-Oct-14	10:20	-	-	9.1	0.3	7.72	11.60	97	602	9.31	8.32	-

Table F-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Total Water Depth[1] (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
LKW6 Cont…							1.0	7.71	11.59	97	602	9.28	8.32	
							2.0	7.72	11.58	97	602	9.39	8.32	
							3.0	7.71	11.57	97	602	9.41	8.31	
							4.0	7.70	11.55	97	602	9.43	8.31	
							5.0	7.67	11.53	97	604	9.76	8.31	
							6.0	7.67	11.53	97	604	9.72	8.31	
							7.0	7.63	11.51	96	605	9.53	8.30	
							8.0	7.59	11.47	96	606	10.1	8.29	
		26-Mar-15	13:10	0.14	0.96	7.4	0.3	0.052	15.05	103	639	2.18	8.23	-
							1.0	0.082	15.02	103	636	2.19	8.23	
							2.0	0.087	15.00	103	636	2.19	8.23	
							3.0	0.203	14.84	102	634	2.28	8.23	
							4.0	0.156	11.04	79	950	0.96	7.92	
							5.0	0.115	9.31	64	1050	0.89	7.83	
							6.0	0.513	8.68	61	1052	1.06	7.79	
		May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
Lake Winnipeg	LKW7	24-Jul-14	8:20	-	-	7.1	0.3	19.45	9.34	99	599	44.9	8.04	0.95
							1.0	19.46	9.15	99	575	39.0	7.96	
							2.0	19.46	9.04	100	550	35.4	7.98	
							3.0	19.47	9.02	99	530	26.2	8.00	
							4.0	19.46	8.94	99	523	25.5	8.00	
							5.0	19.16	9.04	97	519	29.6	8.00	
							6.0	19.13	9.08	92	512	35.0	7.94	
							7.0	18.79	9.40	93	510	-	7.83	

Table F-4. Continued.

Sample Location	Location ID	Sample Date	Sample Time	Snow Depth (m)	Ice Thickness (m)	Total Water Depth[1] (m)	Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	Turbidity (NTU)	pH	Secchi Disk Depth (m)
LKW7 Cont…		27-Aug-14	7:45	-	-	7.6	0.3	19.94	11.14	102	603	14.2	7.77	0.65
							1.0	19.07	11.19	99	630	12.6	7.91	
							2.0	18.90	11.09	98	630	11.4	8.05	
							3.0	19.17	10.99	98	623	13.4	8.03	
							4.0	19.97	10.94	98	617	14.6	7.91	
							5.0	22.91	9.75	98	590	15.8	7.81	
							6.0	23.62	8.86	98	565	10.8	7.88	
							7.0	24.08	8.73	98	558	-	7.91	
		16-Oct-14	9:40	-	-	7.0	0.3	8.11	11.39	97	590	10.9	8.31	0.60
							1.0	8.11	11.39	97	590	11.0	8.31	
							2.0	8.11	11.38	97	590	11.3	8.31	
							3.0	8.11	11.37	96	590	11.2	8.31	
							4.0	8.10	11.36	96	590	11.2	8.31	
							5.0	8.10	11.35	96	590	11.5	8.31	
							6.0	8.10	11.34	96	590	11.1	8.31	
		26-Mar-15	11:29	0.15	0.93	6.1	0.3	-0.012	14.62	100	679	2.35	8.08	-
							1.0	0.049	14.39	99	717	2.39	8.09	
							2.0	0.214	13.56	94	756	2.24	8.06	
							3.0	0.313	11.81	82	878	1.53	7.94	
							4.0	0.399	10.00	70	974	1.09	7.83	
							5.0	1.278	6.79	49	1002	2.36	7.72	
		May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-

1 - Represents effective depth during periods of ice-cover.

2 - This site is generally sampled as part of the LSMEOC monitoring program and was only sampled by the RWQMP once during 2014/2015 Operation.

Table F-5. Laboratory results for water samples collected at water quality monitoring locations in 2013. Values in red bold exceed the MWQSOGs for PAL.

						Alkalinity			
Sample Location	Location ID	Sample Date	ALS ID	Sample Type	Sample Depth (m)	Total, as CaCO3 (mg/L)	as Bicarbonate (HCO3-) (mg/L)	as Carbonate (CO32-) (mg/L)	as Hydroxide (OH-) (mg/L)
Fairford River	FR1	25-Jul-14	L1492753-6	Surface	0.3	168	189	<12	<6.8
		27-Aug-14	L1509244-13	Surface	0.3	176	196	<12	<6.8
		20-Oct-14	L1535278-6	Surface	0.3	175	204	<12	<6.8
		24-Mar-15	L1591240-5	Surface	0.3	231	253	14	<6.8
		May-15	-	No Sample	-	-	-	-	-
Lake St. Martin	LSM1	25-Jul-14	L1492753-5	Surface	0.3	174	197	<12	<6.8
		Aug-14	-	No Sample	-	-	-	-	-
		20-Oct-14	Mean	Surface	0.3	179	209	<12	<6.8
		24-Mar-15	L1591240-4	Surface	0.3	226	248	13	<6.8
		May-15	-	No Sample	-	-	-	-	-
Dauphin River	DR-A	25-Jul-14	L1492753-4	Surface	0.3	173	196	<12	<6.8
		Aug-14	-	No Sample	-	-	-	-	-
		20-Oct-14	L1535278-5	Surface	0.3	179	207	<12	<6.8
		24-Mar-15	L1591240-1	Surface	0.3	226	250	13	<6.8
		May-15	-	No Sample	-	-	-	-	-
Dauphin River	DR-B	25-Jul-14	L1492753-3	Surface	0.3	174	206	<12	<6.8
		27-Aug-14	L1509244-12	Surface	0.3	177	203	<12	<6.8
		16-Oct-14	L1533943-2	Surface	0.3	179	211	<12	<6.8
		24-Mar-15	L1591240-2	Surface	0.3	225	249	13	<6.8
		May-15	-	No Sample	-	-	-	-	-
Dauphin River	DR-C	24-Jul-14	L1492753-2	Surface	0.3	179	205	<12	<6.8
		26-Aug-14	L1509244-1	Surface	0.3	176	204	<12	<6.8
		16-Oct-14	L1533943-1	Surface	0.3	178	211	<12	<6.8
		24-Mar-15	L1591240-3	Surface	0.3	223	246	13	<6.8
		3-May-15	L1606740-1	Surface	0.3	181	212	4.08	<0.34
Buffalo Creek	BC3	24-Jul-14	L1492753-1	Surface	0.3	174	212	<12	<6.8
		26-Aug-14	L1509244-2	Surface	0.3	174	204	<12	<6.8
		16-Oct-14	L1533943-3	Surface	0.3	180	219	<12	<6.8

Table F-5. Continued.

Sample Location	Location ID	Sample Date	ALS ID	Sample Type	Sample Depth (m)	Alkalinity			
						Total, as CaCO3 (mg/L)	as Bicarbonate (HCO3-) (mg/L)	as Carbonate (CO32-) (mg/L)	as Hydroxide (OH-) (mg/L)
		27-Mar-15	L1592813-4	Surface	0.3	219	267	<12	<6.8
		3-May-15	L1606740-3	Surface	0.3	191	219	6.72	<0.34
Dauphin River	DR-D[1]	26-Aug-14	L1509244-3	Surface	0.3	175	203	<12	<6.8
Dauphin River	DR-E	24-Jul-14	L1492266-13	Surface	0.3	173	200	<12	<6.8
		27-Aug-14	L1509244-11	Surface	0.3	176	203	<12	<6.8
		20-Oct-14	L1535278-3	Surface	0.3	181	212	<12	<6.8
		27-Mar-15	L1592813-5	Surface	0.3	224	249	<12	<6.8
		4-May-15	L1606740-2	Surface	0.3	182	215	3.12	<0.34
Lake Winnipeg	LKW3B	24-Jul-14	L1492266-4	Surface	0.3	163	191	<12	<6.8
		27-Aug-14	L1509244-10	Surface	0.3	150	174	<12	<6.8
		20-Oct-14	L1535278-2	Surface	0.3	164	193	<12	<6.8
		27-Mar-15	L1592813-3	Surface	0.3	200	244	<12	<6.8
		4-May-15	Mean	Surface	0.3	148	172	3.92	<0.34
Lake Winnipeg	LKW3	24-Jul-14	Mean	Surface	0.3	164	193	<12	<6.8
		Aug-14	-	No Sample	-	-	-	-	-
		20-Oct-14	L1535278-1	Surface	0.3	159	189	<12	<6.8
		27-Mar-15	Mean	Surface	0.3	172	198	<12	<6.8
		May-15	-	No Sample	-	-	-	-	-
Lake Winnipeg	LKW2	24-Jul-14	L1492266-2	Surface	0.3	169	200	<12	<6.8
		Aug-14	-	No Sample	-	-	-	-	-
		16-Oct-14	L1533943-5	Surface	0.3	176	208	<12	<6.8
		27-Mar-15	L1592813-1	Surface	0.3	218	265	<12	<6.8
		May-15	-	No Sample	-	-	-	-	-
Lake Winnipeg	LKW1	24-Jul-14	L1492266-1	Surface	0.3	165	193	<12	<6.8
		27-Aug-14	Mean	Surface	0.3	185	216	<12	<6.8
		16-Oct-14	L1533943-4	Surface	0.3	141	167	<12	<6.8
		26-Mar-15	L1592400-1	Surface	0.3	221	265	<12	<6.8
		May-15	-	No Sample	-	-	-	-	-

Table F-5. Continued.

Sample Location	Location ID	Sample Date	ALS ID	Sample Type	Sample Depth (m)	Alkalinity			
						Total, as CaCO3 (mg/L)	as Bicarbonate (HCO3-) (mg/L)	as Carbonate (CO32-) (mg/L)	as Hydroxide (OH-) (mg/L)
Lake Winnipeg	LKW4	24-Jul-14	L1492266-5	Surface	0.3	147	174	<12	<6.8
		Aug-14	-	No Sample	-	-	-	-	-
		16-Oct-14	L1533943-6	Surface	0.3	152	181	<12	<6.8
		26-Mar-15	L1592400-2	Surface	0.3	169	203	<12	<6.8
		26-Mar-15	L1592400-6	Bottom	6.4	168	203	<12	<6.8
		May-15	-	No Sample	-	-	-	-	-
Lake Winnipeg	LKW5	24-Jul-14	L1492266-6	Surface	0.3	163	192	<12	<6.8
		Aug-14	-	No Sample	-	-	-	-	-
		16-Oct-14	L1533943-7	Surface	0.3	148	176	<12	<6.8
		26-Mar-15	L1592400-3	Surface	0.3	176	210	<12	<6.8
		May-15	-	No Sample	-	-	-	-	-
Lake Winnipeg	LKW6	24-Jul-14	L1492266-7	Surface	0.3	144	171	<12	<6.8
		27-Aug-14	L1509244-5	Surface	0.3	169	194	<12	<6.8
		16-Oct-14	L1533943-8	Surface	0.3	146	173	<12	<6.8
		26-Mar-15	L1592400-4	Surface	0.3	169	201	<12	<6.8
		May-15	-	No Sample	-	-	-	-	-
Lake Winnipeg	LKW7	24-Jul-14	L1492266-8	Surface	0.3	130	154	<12	<6.8
		27-Aug-14	L1509244-4	Surface	0.3	159	184	<12	<6.8
		16-Oct-14	L1533943-9	Surface	0.3	142	169	<12	<6.8
		26-Mar-15	L1592400-5	Surface	0.3	185	221	<12	<6.8
		May-15	-	No Sample	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Nitrogen							Phosphorus			
			Ammonia (mg N/L)	Nitrate/ nitrite (mg N/L)	Nitrate (mg N/L)	Nitrite (mg N/L)	Dissolved Inorganic (mg/L)	Total Kjeldahl (mg/L)	Total (mg/L)	Total (mg/L)	Dissolved (mg/L)	Total Particulate (mg/L)	Dissolved Fraction (%)
FR1	25-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.87	0.87	0.0176	0.0057	0.0119	32
	27-Aug-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.98	0.98	0.0204	0.0053	0.0151	26
	20-Oct-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.96	0.96	0.0189	0.0056	0.0134	30
	24-Mar-15	Surface	0.079	0.115	0.111	0.0047	0.194	0.95	1.07	0.0119	0.0055	0.0063	46
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LSM1	25-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	1.00	1.00	0.020	0.0068	0.013	34
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.91	0.91	0.017	0.0053	0.011	31
	24-Mar-15	Surface	0.108	0.0892	0.0877	0.0015	0.197	0.93	1.02	0.0118	0.0058	0.0060	49
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-A	25-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.96	0.96	0.021	0.0084	0.012	40
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.029	<0.0051	<0.0050	<0.0010	0.032	0.97	0.97	0.0135	0.0054	0.0082	40
	24-Mar-15	Surface	0.143	0.0828	0.0805	0.0023	0.226	1.01	1.09	0.0113	0.0057	0.0057	50
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-B	25-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.97	0.97	0.0202	0.0071	0.0131	35
	27-Aug-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.97	0.97	0.0200	0.0059	0.0141	30
	16-Oct-14	Surface	0.012	<0.0051	<0.0050	<0.0010	0.015	0.96	0.96	0.0153	0.0048	0.0105	31
	24-Mar-15	Surface	0.175	0.0768	0.0748	0.0019	0.252	1.05	1.13	0.0121	0.0055	0.0066	45
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-C	24-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	1.01	1.01	0.020	0.0065	0.013	33
	26-Aug-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.94	0.94	0.0194	0.0054	0.0140	28
	16-Oct-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.95	0.95	0.0143	0.0046	0.0097	32
	24-Mar-15	Surface	0.184	0.0782	0.0763	0.0019	0.262	0.98	1.06	0.0122	0.0052	0.0070	43
	3-May-15	Surface	0.016	<0.0051	<0.0050	<0.0010	0.019	0.77	0.77	0.0167	0.0069	0.0098	41
BC3	24-Jul-14	Surface	0.013	0.0061	0.0061	<0.0010	0.019	0.87	0.88	0.026	0.0106	0.015	41
	26-Aug-14	Surface	<0.010	0.0086	0.0086	<0.0010	0.014	0.88	0.89	0.020	0.0050	-	25
	16-Oct-14	Surface	<0.010	0.0170	0.0170	<0.0010	0.022	0.89	0.91	0.0362	0.0050	0.0312	14
	27-Mar-15	Surface	0.099	0.0875	0.0834	0.0041	0.187	0.90	0.99	0.0328	0.0067	0.0261	20

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Nitrogen							Phosphorus			
			Ammonia (mg N/L)	Nitrate/ nitrite (mg N/L)	Nitrate (mg N/L)	Nitrite (mg N/L)	Dissolved Inorganic (mg/L)	Total Kjeldahl (mg/L)	Total (mg/L)	Total (mg/L)	Dissolved (mg/L)	Total Particulate (mg/L)	Dissolved Fraction (%)
	3-May-15	Surface	0.014	0.0140	0.0140	<0.0010	0.028	0.72	0.73	0.0195	0.0060	0.0135	31
DR-D[1]	26-Aug-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.95	0.95	0.0195	0.0060	0.0135	31
DR-E	24-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.92	0.92	0.020	0.0058	0.014	29
	27-Aug-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.94	0.94	0.0210	0.0057	0.0153	27
	20-Oct-14	Surface	0.011	<0.0051	<0.0050	<0.0010	0.014	0.98	0.98	0.020	0.0050	0.015	25
	27-Mar-15	Surface	0.119	0.0716	0.0694	0.0023	0.191	1.01	1.08	0.0177	0.0058	0.0119	33
	4-May-15	Surface	0.021	<0.0051	<0.0050	<0.0010	0.024	0.72	0.72	0.0157	0.0062	0.0095	39
LKW3B	24-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.73	0.73	0.022	0.0063	0.016	29
	27-Aug-14	Surface	0.032	<0.0051	<0.0050	<0.0010	0.035	0.71	0.71	0.028	0.0058	-	21
	20-Oct-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.77	0.77	0.033	0.0054	0.028	16
	27-Mar-15	Surface	0.098	0.0449	0.0449	<0.0010	0.143	0.89	0.93	0.0270	0.0064	0.0205	24
	4-May-15	Surface	<0.010	<0.0051	<0.0050	<0.0010	0.008	0.53	0.53	0.0115	0.0054	0.0061	47
LKW3	24-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.74	0.74	0.021	0.0066	0.0143	32
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.83	0.83	0.027	0.0052	0.022	19
	27-Mar-15	Surface	0.025	0.0183	0.0157	0.0034	0.043	0.59	0.61	0.0311	0.0073	0.0238	23
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW2	24-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.82	0.82	0.023	0.0057	0.017	25
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	1.00	1.00	0.020	0.0051	0.015	26
	27-Mar-15	Surface	0.128	0.0781	0.0753	0.0028	0.206	0.93	1.01	0.0438	0.0057	0.0382	13
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW1	24-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.66	0.66	0.022	0.0063	0.015	29
	27-Aug-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.92	0.92	0.026	0.0070	-	27
	16-Oct-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.62	0.62	0.030	0.0054	0.025	18
	26-Mar-15	Surface	0.046	0.0170	0.0160	0.0010	0.063	0.81	0.83	0.0267	0.0046	0.0221	17
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Nitrogen							Phosphorus			
			Ammonia (mg N/L)	Nitrate/ nitrite (mg N/L)	Nitrate (mg N/L)	Nitrite (mg N/L)	Dissolved Inorganic (mg/L)	Total Kjeldahl (mg/L)	Total (mg/L)	Total (mg/L)	Dissolved (mg/L)	Total Particulate (mg/L)	Dissolved Fraction (%)
LKW4	24-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.55	0.55	0.021	0.0058	0.015	28
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.71	0.71	0.031	0.0057	0.025	18
	26-Mar-15	Surface	0.022	0.0064	0.0064	<0.0010	0.028	0.54	0.55	0.0300	0.0082	0.0218	27
	26-Mar-15	Bottom	0.028	0.0283	0.0263	0.0020	0.056	0.52	0.55	0.0152	0.0080	0.0072	53
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW5	24-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.63	0.63	0.0191	0.0079	0.0112	41
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.70	0.70	0.025	0.0053	0.019	21
	26-Mar-15	Surface	0.048	0.0104	0.0091	0.0013	0.058	0.63	0.64	0.0242	0.0060	0.0182	25
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW6	24-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.52	0.52	0.023	0.0072	0.016	31
	27-Aug-14	Surface	<0.010	0.0159	0.0159	<0.0010	0.021	0.78	0.80	0.026	0.0072	-	28
	16-Oct-14	Surface	0.020	<0.0051	<0.0050	<0.0010	0.023	0.65	0.65	0.027	0.0054	0.021	20
	26-Mar-15	Surface	0.082	0.0104	0.0104	<0.0010	0.092	0.56	0.57	0.0255	0.0085	0.0171	33
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW7	24-Jul-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.44	0.44	0.025	0.0087	0.016	35
	27-Aug-14	Surface	<0.010	0.0159	0.0159	<0.0010	0.021	0.65	0.67	0.028	0.0097	-	35
	16-Oct-14	Surface	<0.010	<0.0051	<0.0050	<0.0010	<0.010	0.66	0.66	0.031	0.0064	0.024	21
	26-Mar-15	Surface	0.021	0.0315	0.0298	0.0017	0.053	0.57	0.60	0.0250	0.0103	0.0147	41
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	N:P Molar Ratios			Carbon			C:N Molar Ratios		Lab pH	Conductivity (µmhos/cm)	TDS (mg/L)
			TN:TP	DIN:DP	DIN:TP	Total Inorganic (mg/L)	Total Organic (mg/L)	Dissolved Organic (mg/L)	TOC:ON	TOC:TN			
FR1	25-Jul-14	Surface	110	1.9	0.6	40.0	9.1	8.5	12.3	12.2	8.58	898	548
	27-Aug-14	Surface	107	2.1	0.5	40.4	13.5	13.2	16.2	16.0	8.61	933	526
	20-Oct-14	Surface	113	2.0	0.6	41.0	14.3	14.3	17.5	17.3	8.49	939	508
	24-Mar-15	Surface	198	91.0	42.1	52.7	12.5	12.4	16.7	13.7	8.68	1170	650
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LSM1	25-Jul-14	Surface	111	1.6	0.6	36.4	9.8	9.4	11.5	11.4	8.58	920	554
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	121	2.1	0.7	42.0	14.7	14.8	18.9	18.7	8.47	953	512
	24-Mar-15	Surface	191	67.5	33.2	51.4	12.4	12.5	17.6	14.2	8.68	1150	655
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-A	25-Jul-14	Surface	101	1.3	0.5	36.4	10.0	9.4	12.2	12.1	8.56	922	556
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	160	13.0	5.2	41.9	14.8	14.5	18.3	17.8	8.50	955	508
	24-Mar-15	Surface	214	63.4	32.0	52.0	12.7	12.4	17.1	13.6	8.67	1150	648
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-B	25-Jul-14	Surface	107	1.6	0.5	35.7	10.2	11.6	12.3	12.2	8.40	920	552
	27-Aug-14	Surface	108	1.9	0.6	41.1	14.6	13.9	17.7	17.5	8.52	925	521
	16-Oct-14	Surface	139	6.7	2.1	41.7	10.9	11.2	13.4	13.2	8.40	951	533
	24-Mar-15	Surface	206	61.0	27.7	51.9	12.6	12.5	16.8	13.0	8.66	1140	645
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-C	24-Jul-14	Surface	112	1.7	0.6	35.4	10.0	9.6	11.6	11.5	8.50	918	559
	26-Aug-14	Surface	108	2.1	0.6	40.3	12.6	12.8	15.7	15.6	8.46	904	521
	16-Oct-14	Surface	148	2.4	0.8	41.9	11.0	11.3	13.6	13.5	8.39	952	522
	24-Mar-15	Surface	192	65.8	28.0	50.8	12.4	12.4	18.2	13.7	8.68	1150	632
	3-May-15	Surface	102	1.6	0.7	39.5	12.5	12.6	19.3	19.1	8.35	850	489
BC3	24-Jul-14	Surface	75	4.0	1.6	36.0	9.7	9.4	13.2	12.9	8.29	846	537
	26-Aug-14	Surface	98	6.0	1.5	41.4	14.5	14.4	19.3	19.0	8.43	869	488
	16-Oct-14	Surface	55	9.7	1.3	41.8	11.3	11.2	14.9	14.5	8.26	938	525
	27-Mar-15	Surface	67	56.5	11.5	49.0	12.0	11.7	17.5	14.2	8.04	1080	597

Table F-5. Continued.

Location ID	Sample Date	Sample Type	N:P Molar Ratios			Carbon			C:N Molar Ratios		Lab pH	Conductivity (µmhos/cm)	TDS (mg/L)
			TN:TP	DIN:DP	DIN:TP	Total Inorganic (mg/L)	Total Organic (mg/L)	Dissolved Organic (mg/L)	TOC:ON	TOC:TN			
	3-May-15	Surface	83	10.3	3.2	41.3	12.9	12.8	21.3	20.5	8.44	850	474
DR-D[1]	26-Aug-14	Surface	108	1.8	0.6	40.8	14.7	13.9	18.1	18.0	8.48	924	522
DR-E	24-Jul-14	Surface	102	1.9	0.6	30.1	10.4	11.0	13.3	13.2	8.48	949	552
	27-Aug-14	Surface	99	1.9	0.5	41.4	14.2	13.7	17.7	17.6	8.49	914	516
	20-Oct-14	Surface	109	6.0	1.5	40.9	15.1	14.0	18.2	17.9	8.45	952	504
	27-Mar-15	Surface	135	53.8	17.6	50.2	12.4	12.2	16.2	13.4	8.60	1160	602
	4-May-15	Surface	102	1.8	0.7	39.3	12.1	11.9	20.2	19.5	8.31	837	481
LKW3B	24-Jul-14	Surface	74	1.8	0.5	35.0	8.9	9.5	14.3	14.2	8.44	846	485
	27-Aug-14	Surface	56	13.2	2.7	33.7	9.2	9.5	15.8	15.1	8.47	672	383
	20-Oct-14	Surface	52	2.1	0.3	37.1	12.6	12.6	19.2	19.0	8.38	803	403
	27-Mar-15	Surface	77	31.1	7.4	47.0	11.2	10.8	16.5	14.0	8.18	947	477
	4-May-15	Surface	102	2.1	1.0	31.4	8.1	8.0	18.2	17.9	8.37	542	296
LKW3	24-Jul-14	Surface	79	2.6	0.8	30.9	9.8	9.8	15.6	15.4	8.41	854	497
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	68	2.1	0.4	37.8	13.2	12.5	18.7	18.5	8.37	766	432
	27-Mar-15	Surface	43	10.3	2.4	37.2	8.6	8.2	17.7	16.4	8.50	690	367
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW2	24-Jul-14	Surface	79	1.9	0.5	36.6	9.2	9.2	13.2	13.0	8.41	897	514
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	111	2.2	0.6	41.1	15.1	13.9	17.7	17.6	8.37	931	515
	27-Mar-15	Surface	51	59.6	7.8	49.2	12.3	12.3	17.9	14.2	8.02	1090	587
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW1	24-Jul-14	Surface	67	1.8	0.5	35.0	9.8	9.2	17.5	17.3	8.41	846	497
	27-Aug-14	Surface	79	1.6	0.4	43.1	15.1	14.3	19.2	19.0	8.45	710	413
	16-Oct-14	Surface	46	2.1	0.4	32.4	11.2	10.7	21.2	21.0	8.34	580	330
	26-Mar-15	Surface	69	15.9	2.7	49.0	12.5	12.6	19.1	17.6	8.30	967	550
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	N:P Molar Ratios			Carbon			C:N Molar Ratios		Lab pH	Conductivity (µmhos/cm)	TDS (mg/L)
			TN:TP	DIN:DP	DIN:TP	Total Inorganic (mg/L)	Total Organic (mg/L)	Dissolved Organic (mg/L)	TOC:ON	TOC:TN			
LKW4	24-Jul-14	Surface	58	1.9	0.5	31.7	8.2	8.0	17.6	17.3	8.37	709	398
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	51	1.9	0.4	35.4	11.9	11.7	19.7	19.5	8.33	693	387
	26-Mar-15	Surface	40	3.5	0.9	36.7	8.6	8.7	19.4	18.4	8.32	647	410
	26-Mar-15	Bottom	80	15.1	8.0	36.2	7.8	7.9	18.5	16.6	8.29	682	376
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW5	24-Jul-14	Surface	73	1.4	0.6	34.8	9.3	9.4	17.4	17.2	8.38	815	468
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	62	2.1	0.4	34.3	11.6	11.4	19.5	19.3	8.41	658	368
	26-Mar-15	Surface	59	7.2	1.8	38.2	9.0	9.1	18.0	16.4	8.35	717	412
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW6	24-Jul-14	Surface	50	1.5	0.5	25.0	8.6	8.6	19.5	19.2	8.38	685	393
	27-Aug-14	Surface	68	6.4	1.8	39.6	12.6	12.7	19.0	18.5	8.50	806	457
	16-Oct-14	Surface	54	9.3	1.9	33.6	11.6	11.6	21.5	20.7	8.39	631	356
	26-Mar-15	Surface	50	5.4	1.8	36.5	8.3	8.3	20.3	17.0	8.36	671	390
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW7	24-Jul-14	Surface	39	1.3	0.4	22.5	7.4	7.8	19.8	19.5	8.36	576	328
	27-Aug-14	Surface	53	4.8	1.7	37.3	11.9	11.7	21.5	20.8	8.48	733	408
	16-Oct-14	Surface	47	1.7	0.4	32.8	11.3	10.9	20.1	19.9	8.33	620	344
	26-Mar-15	Surface	53	13.2	5.4	40.0	9.0	8.7	19.1	17.5	8.30	717	405
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Water Clarity			Algal Pigments		Hardness,	Metals and Major Ions (mg/L; unless otherwise indicated)			
			TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Phaeophytin *a* (µg/L)	as $CaCO_3$ (mg/L)	Aluminum		Antimony	
									Dissolved	Total	Dissolved	Total
FR1	25-Jul-14	Surface	7.2	5.60	7.3	3.62	0.74	236	<0.0020	0.0407	<0.00020	0.00030
	27-Aug-14	Surface	15.6	9.60	8.9	6.57	1.34	235	<0.0020	0.0500	<0.00020	<0.00020
	20-Oct-14	Surface	10.6	6.51	8.6	6.52	1.02	261	<0.0020	0.0632	0.00021	0.00022
	24-Mar-15	Surface	<2.0	1.79	8.2	1.35	0.53	323	<0.0020	0.0172	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LSM1	25-Jul-14	Surface	8.8	4.10	9.5	5.89	1.08	237	<0.0020	0.0414	<0.00020	<0.00020
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	6.1	2.84	7.9	6.72	1.39	239	<0.0020	0.0249	<0.00020	0.00022
	24-Mar-15	Surface	<2.0	1.48	9.0	0.76	0.44	298	<0.0020	0.0165	<0.00020	0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
DR-A	25-Jul-14	Surface	8.8	3.90	12.0	6.38	1.45	248	<0.0020	0.0364	0.00020	<0.00020
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	5.4	2.67	7.7	5.83	6.04	235	<0.0020	0.0249	<0.00020	0.00025
	24-Mar-15	Surface	<2.0	1.25	7.7	0.62	0.41	298	<0.0020	0.0130	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
DR-B	25-Jul-14	Surface	8.0	4.40	12.5	5.23	1.53	241	0.0144	0.0506	<0.00020	<0.00020
	27-Aug-14	Surface	8.8	4.80	8.9	5.43	1.50	249	<0.0020	0.0325	<0.00020	<0.00020
	16-Oct-14	Surface	6.6	2.62	7.8	4.74	1.33	223	<0.0020	0.0252	<0.00020	0.00038
	24-Mar-15	Surface	<2.0	1.77	10.5	0.72	0.48	290	<0.0020	0.0186	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
DR-C	24-Jul-14	Surface	8.0	4.40	10.1	4.28	0.85	242	<0.0020	0.0458	<0.00020	<0.00020
	26-Aug-14	Surface	8.8	4.30	11.4	5.45	1.56	228	<0.0020	0.0391	<0.00020	0.00024
	16-Oct-14	Surface	6.6	2.58	7.9	4.22	1.23	242	<0.0020	0.0298	<0.00020	0.00022
	24-Mar-15	Surface	2.2	2.6	7.3	0.80	0.49	289	<0.0020	0.0365	<0.00020	<0.00020
	3-May-15	Surface	4.2	3.11	10.1	3.97	0.82	233	<0.0020	0.0370	<0.00020	<0.00020
BC3	24-Jul-14	Surface	16.8	9.70	18.1	1.46	0.95	236	<0.0020	0.314	<0.00020	0.00028
	26-Aug-14	Surface	13.6	7.40	20.7	2.56	1.42	211	0.0025	0.283	<0.00020	<0.00020
	16-Oct-14	Surface	8.4	3.92	10.3	2.80	1.09	239	<0.0020	0.122	0.00052	<0.00020
	27-Mar-15	Surface	9.0	4.47	7.4	0.61	0.41	286	<0.0020	0.150	<0.00020	<0.00020

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Water Clarity			Algal Pigments		Hardness,	Metals and Major Ions (mg/L; unless otherwise indicated)			
			TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Phaeophytin *a* (µg/L)	as $CaCO_3$ (mg/L)	Aluminum		Antimony	
									Dissolved	Total	Dissolved	Total
	3-May-15	Surface	18	7.45	11.4	3.72	1.26	244	<0.0020	0.314	<0.00020	<0.00020
DR-D[1]	26-Aug-14	Surface	10.0	4.40	9.7	5.10	1.36	207	0.0026	0.0476	<0.00020	<0.00020
DR-E	24-Jul-14	Surface	9.2	4.80	12.1	4.37	1.10	240	<0.0020	0.0787	<0.00020	<0.00020
	27-Aug-14	Surface	11.5	5.30	11.9	5.33	1.81	222	<0.0020	0.0689	0.00029	<0.00020
	20-Oct-14	Surface	7.8	3.88	8.2	5.45	1.57	244	<0.0020	0.0588	0.00025	<0.00020
	27-Mar-15	Surface	7.6	2.99	7.5	0.95	0.53	276	<0.0020	0.086	<0.00020	0.00020
	4-May-15	Surface	3.8	2.87	8.7	3.37	0.96	242	<0.0020	0.0848	<0.00020	<0.00020
LKW3B	24-Jul-14	Surface	9.2	5.70	16.9	4.98	1.19	205	0.0048	0.168	<0.00020	<0.00020
	27-Aug-14	Surface	10.8	9.40	9.8	6.78	1.52	188	0.0104	0.287	0.00021	<0.00020
	20-Oct-14	Surface	15.8	12.9	10.0	1.45	1.53	215	0.0088	0.572	<0.00020	<0.00020
	27-Mar-15	Surface	<2.0	2.34	6.8	2.37	0.7	247	0.0077	0.0845	0.00020	0.00042
	4-May-15	Surface	<2.0	2.71	10.1	5.08	1.02	178	0.0082	0.117	<0.00020	<0.00020
LKW3	24-Jul-14	Surface	8.3	5.70	15.1	4.23	1.00	215	0.0057	0.183	<0.00020	0.00035
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	13.0	10.1	9.6	8.42	1.53	214	0.0041	0.371	<0.00020	<0.00020
	27-Mar-15	Surface	<2.0	3.06	10.1	5.08	1.02	206	0.0163	0.141	<0.00020	0.00031
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW2	24-Jul-14	Surface	7.6	6.10	13.8	5.04	1.23	223	0.0026	0.170	<0.00020	<0.00020
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	12.0	6.12	9.0	5.87	1.22	242	<0.0020	0.214	0.00029	<0.00020
	27-Mar-15	Surface	<2.0	1.93	5.9	1.69	0.61	265	<0.0020	0.0375	<0.00020	0.00024
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW1	24-Jul-14	Surface	4.8	6.00	14.7	3.90	1.09	229	0.0051	0.248	<0.00020	<0.00020
	27-Aug-14	Surface	18.6	16.8	28.9	4.11	1.65	211	0.0169	0.595	<0.00020	<0.00020
	16-Oct-14	Surface	11.8	12.9	10.2	8.41	1.53	183	0.0084	0.582	0.00034	0.00027
	26-Mar-15	Surface	<2.0	3.41	18.5	3.35	0.64	292	0.0125	0.135	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Water Clarity			Algal Pigments		Hardness,	Metals and Major Ions (mg/L; unless otherwise indicated)			
			TSS (mg/L)	Turbidity (NTU)	True Colour (CU)	Chlorophyll *a* (µg/L)	Phaeophytin *a* (µg/L)	as $CaCO_3$ (mg/L)	Aluminum		Antimony	
									Dissolved	Total	Dissolved	Total
LKW4	24-Jul-14	Surface	4.0	7.10	16.8	3.17	1.09	192	0.0140	0.336	<0.00020	<0.00020
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	10.8	11.4	10.7	7.08	1.29	208	0.0068	0.482	0.00025	<0.00020
	26-Mar-15	Surface	<2.0	2.89	9.9	2.8	0.68	213	0.0177	0.145	0.00022	<0.00020
	26-Mar-15	Bottom	<2.0	3.72	11.7	-	-	208	0.0209	0.187	0.00036	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW5	24-Jul-14	Surface	5.2	5.40	14.8	3.58	0.96	213	0.0104	0.256	<0.00020	<0.00020
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	10.0	10.5	10.1	6.75	1.14	190	0.0071	0.449	0.00022	<0.00020
	26-Mar-15	Surface	<2.0	3.52	12.7	1.95	0.64	236	0.0260	0.168	<0.00020	0.00025
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW6	24-Jul-14	Surface	4.4	9.00	12.2	2.47	1.04	188	0.0363	0.458	<0.00020	<0.00020
	27-Aug-14	Surface	9.2	9.20	10.6	5.48	1.71	213	0.0140	0.371	<0.00020	<0.00020
	16-Oct-14	Surface	12.0	12.2	10.8	7.42	1.25	191	0.0078	0.536	0.00020	0.00021
	26-Mar-15	Surface	<2.0	3.64	20.7	2.11	0.64	223	0.0249	0.153	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW7	24-Jul-14	Surface	6.8	10.3	9.0	2.83	1.02	160	0.0500	0.558	<0.00020	<0.00020
	27-Aug-14	Surface	10.8	10.8	11.7	3.77	1.33	193	0.0326	0.489	<0.00020	<0.00020
	16-Oct-14	Surface	14.8	14.7	12.0	8.89	1.62	189	0.0100	0.688	<0.00020	<0.00020
	26-Mar-15	Surface	<2.0	3.44	12.6	1.92	0.68	245	0.0248	0.178	<0.00020	0.00026
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)									
			Arsenic		Barium		Beryllium		Bismuth		Boron	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
FR1	25-Jul-14	Surface	0.00178	0.00186	0.0395	0.0406	<0.00020	<0.00020	<0.00020	<0.00020	0.098	0.091
	27-Aug-14	Surface	0.00167	0.00187	0.0401	0.0422	<0.00020	<0.00020	<0.00020	<0.00020	0.082	0.094
	20-Oct-14	Surface	0.00178	0.00214	0.0432	0.0539	<0.00020	<0.00020	<0.00020	<0.00020	0.100	0.101
	24-Mar-15	Surface	0.00246	0.00236	0.0537	0.0579	<0.00020	<0.00020	<0.00020	<0.00020	0.095	0.112
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LSM1	25-Jul-14	Surface	0.00177	0.00180	0.0402	0.0405	<0.00020	<0.00020	<0.00020	<0.00020	0.097	0.093
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00167	0.00170	0.0412	0.0402	<0.00020	<0.00020	<0.00020	<0.00020	0.098	0.098
	24-Mar-15	Surface	0.00234	0.00233	0.0532	0.0557	<0.00020	<0.00020	<0.00020	<0.00020	0.093	0.108
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
DR-A	25-Jul-14	Surface	0.00173	0.00183	0.039	0.0407	<0.00020	<0.00020	<0.00020	<0.00020	0.096	0.097
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00165	0.00169	0.0412	0.0401	<0.00020	<0.00020	<0.00020	<0.00020	0.096	0.098
	24-Mar-15	Surface	0.00228	0.00235	0.0520	0.0600	<0.00020	<0.00020	<0.00020	<0.00020	0.091	0.098
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
DR-B	25-Jul-14	Surface	0.00170	0.00178	0.0385	0.0402	<0.00020	<0.00020	<0.00020	<0.00020	0.096	0.095
	27-Aug-14	Surface	0.00169	0.00200	0.0492	0.0484	<0.00020	<0.00020	<0.00020	<0.00020	0.083	0.084
	16-Oct-14	Surface	0.00163	0.00171	0.0372	0.0409	<0.00020	<0.00020	<0.00020	<0.00020	0.081	0.084
	24-Mar-15	Surface	0.00218	0.00216	0.0520	0.0545	<0.00020	<0.00020	<0.00020	<0.00020	0.090	0.101
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
DR-C	24-Jul-14	Surface	0.00170	0.00177	0.0381	0.0411	<0.00020	<0.00020	<0.00020	<0.00020	0.091	0.093
	26-Aug-14	Surface	0.00164	0.00171	0.0370	0.0383	<0.00020	<0.00020	<0.00020	<0.00020	0.078	0.084
	16-Oct-14	Surface	0.00180	0.00178	0.0433	0.0424	<0.00020	<0.00020	<0.00020	<0.00020	0.081	0.088
	24-Mar-15	Surface	0.00220	0.00215	0.0515	0.0549	<0.00020	<0.00020	<0.00020	<0.00020	0.088	0.104
	3-May-15	Surface	0.0017	0.00166	0.0399	0.0399	<0.00020	<0.00020	<0.00020	<0.00020	0.087	0.082
BC3	24-Jul-14	Surface	0.00162	0.00165	0.0371	0.0403	<0.00020	<0.00020	<0.00020	<0.00020	0.087	0.085
	26-Aug-14	Surface	0.00148	0.00154	0.0349	0.0364	<0.00020	<0.00020	<0.00020	<0.00020	0.072	0.073
	16-Oct-14	Surface	0.00160	0.00181	0.0428	0.0412	<0.00020	<0.00020	<0.00020	<0.00020	0.086	0.086
	27-Mar-15	Surface	0.00203	0.00207	0.0463	0.0491	<0.00020	<0.00020	<0.00020	<0.00020	0.085	0.091

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)									
			Arsenic		Barium		Beryllium		Bismuth		Boron	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
	3-May-15	Surface	0.00179	0.00173	0.0406	0.0425	<0.00020	<0.00020	<0.00020	<0.00020	0.088	0.087
DR-D[1]	26-Aug-14	Surface	0.00143	0.00175	0.0374	0.0371	<0.00020	<0.00020	<0.00020	<0.00020	0.079	0.075
DR-E	24-Jul-14	Surface	0.00163	0.00180	0.0363	0.0424	<0.00020	<0.00020	<0.00020	<0.00020	0.087	0.092
	27-Aug-14	Surface	0.00155	0.00167	0.0381	0.0405	<0.00020	<0.00020	<0.00020	<0.00020	0.080	0.090
	20-Oct-14	Surface	0.00162	0.00166	0.0403	0.0408	<0.00020	<0.00020	<0.00020	<0.00020	0.097	0.108
	27-Mar-15	Surface	0.00215	0.00225	0.0506	0.0513	<0.00020	<0.00020	<0.00020	<0.00020	0.090	0.094
	4-May-15	Surface	0.00166	0.00162	0.0398	0.0390	<0.00020	<0.00020	<0.00020	<0.00020	0.083	0.084
LKW3B	24-Jul-14	Surface	0.00154	0.00163	0.0375	0.0401	<0.00020	<0.00020	<0.00020	<0.00020	0.082	0.079
	27-Aug-14	Surface	0.00156	0.00162	0.0361	0.0431	<0.00020	<0.00020	<0.00020	<0.00020	0.061	0.063
	20-Oct-14	Surface	0.00155	0.00173	0.0409	0.0477	<0.00020	<0.00020	<0.00020	<0.00020	0.077	0.084
	27-Mar-15	Surface	0.00247	0.00273	0.0461	0.0495	<0.00020	<0.00020	<0.00020	<0.00020	0.077	0.077
	4-May-15	Surface	0.00124	0.00125	0.0420	0.0422	<0.00020	<0.00020	<0.00020	<0.00020	0.044	0.043
LKW3	24-Jul-14	Surface	0.00159	0.00167	0.0384	0.0400	<0.00020	<0.00020	<0.00020	<0.00020	0.084	0.082
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00158	0.00159	0.0403	0.0402	<0.00020	<0.00020	<0.00020	<0.00020	0.076	0.121
	27-Mar-15	Surface	0.00213	0.00207	0.0493	0.0511	<0.00020	<0.00020	<0.00020	<0.00020	0.052	0.052
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW2	24-Jul-14	Surface	0.00159	0.00169	0.0396	0.0405	<0.00020	<0.00020	<0.00020	<0.00020	0.092	0.085
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	0.00156	0.00179	0.0426	0.0417	<0.00020	<0.00020	<0.00020	<0.00020	0.084	0.085
	27-Mar-15	Surface	0.00213	0.00211	0.0453	0.0458	<0.00020	<0.00020	<0.00020	<0.00020	0.088	0.086
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW1	24-Jul-14	Surface	0.00155	0.00172	0.0389	0.0424	<0.00020	<0.00020	<0.00020	<0.00020	0.090	0.084
	27-Aug-14	Surface	0.00147	0.00157	0.0326	0.0383	<0.00020	<0.00020	<0.00020	<0.00020	0.065	0.069
	16-Oct-14	Surface	0.00148	0.00152	0.0417	0.0428	<0.00020	<0.00020	<0.00020	<0.00020	0.050	0.051
	26-Mar-15	Surface	0.00197	0.00205	0.0513	0.0511	<0.00020	<0.00020	<0.00020	<0.00020	0.075	0.079
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)									
			Arsenic		Barium		Beryllium		Bismuth		Boron	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW4	24-Jul-14	Surface	0.00151	0.00153	0.0381	0.0396	<0.00020	<0.00020	<0.00020	<0.00020	0.068	0.066
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	0.00135	0.00156	0.0466	0.0434	<0.00020	<0.00020	<0.00020	<0.00020	0.059	0.064
	26-Mar-15	Surface	0.00162	0.00166	0.0499	0.0506	<0.00020	<0.00020	<0.00020	<0.00020	0.050	0.052
	26-Mar-15	Bottom	0.00153	0.00155	0.0471	0.0487	<0.00020	<0.00020	<0.00020	<0.00020	0.052	0.057
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW5	24-Jul-14	Surface	0.00177	0.00163	0.0425	0.0403	<0.00020	<0.00020	<0.00020	<0.00020	0.083	0.077
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	0.00147	0.00161	0.0414	0.0435	<0.00020	<0.00020	<0.00020	<0.00020	0.055	0.057
	26-Mar-15	Surface	0.00174	0.00184	0.0482	0.0477	<0.00020	<0.00020	<0.00020	<0.00020	0.056	0.057
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW6	24-Jul-14	Surface	0.00138	0.00154	0.0364	0.0420	<0.00020	<0.00020	<0.00020	<0.00020	0.065	0.064
	27-Aug-14	Surface	0.00197	0.00208	0.0384	0.0417	<0.00020	<0.00020	<0.00020	<0.00020	0.069	0.072
	16-Oct-14	Surface	0.00154	0.00155	0.0391	0.0435	<0.00020	<0.00020	<0.00020	<0.00020	0.056	0.055
	26-Mar-15	Surface	0.00178	0.00176	0.0462	0.0471	<0.00020	<0.00020	<0.00020	<0.00020	0.051	0.052
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW7	24-Jul-14	Surface	0.00126	0.00134	0.0366	0.0405	<0.00020	<0.00020	<0.00020	<0.00020	0.055	0.051
	27-Aug-14	Surface	0.00180	0.00199	0.0376	0.0421	<0.00020	<0.00020	<0.00020	<0.00020	0.061	0.062
	16-Oct-14	Surface	0.00145	0.00151	0.0395	0.0435	<0.00020	<0.00020	<0.00020	<0.00020	0.052	0.053
	26-Mar-15	Surface	0.00175	0.00175	0.0541	0.0555	<0.00020	<0.00020	<0.00020	<0.00020	0.054	0.054
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)										
			Cadmium		Calcium		Cesium		Chloride	Chromium		Cobalt	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
FR1	25-Jul-14	Surface	<0.000010	<0.000010	42.2	42.6	<0.00010	0.00020	151	<0.0020	<0.0010	<0.00020	<0.00020
	27-Aug-14	Surface	<0.000010	<0.000010	38.8	42.4	<0.00010	<0.00010	144	<0.0020	<0.0010	<0.00020	<0.00020
	20-Oct-14	Surface	<0.000010	<0.000010	41.9	45.9	<0.00010	<0.00010	142	<0.0020	<0.0010	<0.00020	<0.00020
	24-Mar-15	Surface	<0.000010	<0.000010	61.1	56.3	<0.00010	<0.00010	169	<0.0010	<0.0010	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LSM1	25-Jul-14	Surface	<0.000010	<0.000010	41.8	42.5	<0.00010	<0.00010	151	<0.0020	<0.0010	<0.00020	<0.00020
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	<0.000010	<0.000010	42.5	45.4	<0.00010	<0.00010	145	<0.0020	<0.0010	<0.00020	<0.00020
	24-Mar-15	Surface	<0.000010	<0.000010	54.8	53.1	<0.00010	<0.00010	169	<0.0010	<0.0010	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-A	25-Jul-14	Surface	<0.000010	<0.000010	40.9	45.3	<0.00010	<0.00010	150	<0.0020	<0.0010	<0.00020	<0.00020
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	<0.000010	<0.000010	43.2	44.7	<0.00010	<0.00010	146	<0.0020	<0.0010	<0.00020	<0.00020
	24-Mar-15	Surface	<0.000010	<0.000010	55.3	53.8	<0.00010	<0.00010	170	<0.0010	<0.0010	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-B	25-Jul-14	Surface	<0.000010	<0.000010	40.8	43.6	<0.00010	0.00047	151	<0.0020	<0.0010	<0.00020	<0.00020
	27-Aug-14	Surface	0.000022	<0.000010	39.1	39.1	<0.00010	<0.00010	147	<0.0020	<0.0010	<0.00020	<0.00020
	16-Oct-14	Surface	<0.000010	<0.000010	40.4	39.7	<0.00010	<0.00010	144	<0.0020	<0.0010	<0.00020	<0.00020
	24-Mar-15	Surface	<0.000010	<0.000010	52.8	52.9	<0.00010	<0.00010	170	<0.0010	<0.0010	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-C	24-Jul-14	Surface	<0.000010	<0.000010	42.6	42.1	<0.00010	<0.00010	151	<0.0020	<0.0010	<0.00020	<0.00020
	26-Aug-14	Surface	<0.000010	<0.000010	41.6	43.0	<0.00010	<0.00010	143	<0.0020	<0.0010	<0.00020	<0.00020
	16-Oct-14	Surface	<0.000010	<0.000010	42.5	41.2	<0.00010	<0.00010	147	<0.0020	<0.0010	<0.00020	<0.00020
	24-Mar-15	Surface	<0.000010	<0.000010	53.7	50.4	<0.00010	<0.00010	169	<0.0010	<0.0010	<0.00020	<0.00020
	3-May-15	Surface	<0.000010	<0.000010	44.4	41.5	<0.00010	<0.00010	129	<0.0010	<0.0010	<0.00020	<0.00020
BC3	24-Jul-14	Surface	<0.000010	<0.000010	42.2	42.5	<0.00010	<0.00010	141	<0.0020	<0.0010	<0.00020	<0.00020
	26-Aug-14	Surface	<0.000010	<0.000010	36.5	39.7	<0.00010	<0.00010	131	<0.0020	<0.0010	<0.00020	<0.00020
	16-Oct-14	Surface	<0.000010	<0.000010	41.9	41.4	<0.00010	<0.00010	143	<0.0020	<0.0010	<0.00020	<0.00020
	27-Mar-15	Surface	<0.000010	<0.000010	52.9	52.3	<0.00010	<0.00010	170	<0.0010	<0.0010	<0.00020	<0.00020

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)										
			Cadmium		Calcium		Cesium		Chloride	Chromium		Cobalt	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
	3-May-15	Surface	<0.000010	<0.000010	43.0	44.6	<0.00010	<0.00010	125	<0.0010	<0.0010	<0.00020	<0.00020
DR-D[1]	26-Aug-14	Surface	<0.000010	<0.000010	36.2	37.5	<0.00010	<0.00010	143	<0.0020	<0.0010	<0.00020	<0.00020
DR-E	24-Jul-14	Surface	<0.000010	<0.000010	41.3	42.2	<0.00010	<0.00010	151	<0.0020	<0.0010	<0.00020	<0.00020
	27-Aug-14	Surface	<0.000010	<0.000010	38.3	41.6	<0.00010	<0.00010	141	<0.0020	<0.0010	<0.00020	<0.00020
	20-Oct-14	Surface	<0.000010	<0.000010	43.2	47.2	<0.00010	<0.00010	145	<0.0020	<0.0010	<0.00020	<0.00020
	27-Mar-15	Surface	<0.000010	0.000032	54.9	49.9	<0.00010	<0.00010	170	<0.0010	<0.0010	<0.00020	<0.00020
	4-May-15	Surface	<0.000010	<0.000010	42.9	42.5	<0.00010	<0.00010	126	<0.0010	<0.0010	<0.00020	<0.00020
LKW3B	24-Jul-14	Surface	<0.000010	<0.000010	38.9	37.3	<0.00010	<0.00010	127	<0.0020	<0.0010	<0.00020	<0.00020
	27-Aug-14	Surface	<0.000010	<0.000010	33.8	36.8	<0.00010	<0.00010	87.2	<0.0020	<0.0010	<0.00020	<0.00020
	20-Oct-14	Surface	<0.000010	<0.000010	41.0	41.5	<0.00010	<0.00010	104	<0.0020	<0.0010	<0.00020	0.00028
	27-Mar-15	Surface	<0.000010	<0.000010	48.1	47.1	<0.00010	<0.00010	124	<0.0010	<0.0010	<0.00020	<0.00020
	4-May-15	Surface	<0.000010	<0.000010	38.2	36.9	<0.00010	<0.00010	57.6	<0.0020	<0.0010	<0.00020	<0.00020
LKW3	24-Jul-14	Surface	<0.000010	<0.000010	41.2	39.3	<0.00010	<0.00010	129	<0.0020	<0.0010	<0.00020	<0.00020
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	<0.000010	<0.000010	40.4	43.7	<0.00010	<0.00010	111	<0.0020	<0.0010	<0.00020	<0.00020
	27-Mar-15	Surface	<0.000010	0.000012	46.9	43.9	<0.00010	<0.00010	71.9	<0.0020	<0.0010	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW2	24-Jul-14	Surface	<0.000010	<0.000010	41.1	40.0	<0.00010	<0.00010	139	<0.0020	<0.0010	<0.00020	<0.00020
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	<0.000010	<0.000010	39.7	42.5	<0.00010	<0.00010	141	<0.0020	<0.0010	<0.00020	<0.00020
	27-Mar-15	Surface	<0.000010	<0.000010	53.7	49.0	<0.00010	<0.00010	168	<0.0010	<0.0010	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW1	24-Jul-14	Surface	<0.000010	<0.000010	43.2	43.4	<0.00010	<0.00010	128	<0.0020	<0.0010	<0.00020	<0.00020
	27-Aug-14	Surface	<0.000010	<0.000010	37.7	39.1	<0.00010	<0.00010	89.4	<0.0020	0.0011	<0.00020	0.00035
	16-Oct-14	Surface	<0.000010	<0.000010	35.6	36.9	<0.00010	<0.00010	63.6	<0.0020	<0.0010	<0.00020	0.00027
	26-Mar-15	Surface	<0.000010	<0.000010	54.4	59.6	<0.00010	<0.00010	134	<0.0010	<0.0010	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)										
			Cadmium		Calcium		Cesium		Chloride	Chromium		Cobalt	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total
LKW4	24-Jul-14	Surface	<0.000010	<0.000010	39.5	36.7	<0.00010	<0.00010	97.9	<0.0020	<0.0010	<0.00020	<0.00020
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	<0.000010	<0.000010	36.9	41.4	<0.00010	<0.00010	88.4	<0.0020	<0.0010	<0.00020	0.00024
	26-Mar-15	Surface	<0.000010	<0.000010	45.7	50.0	<0.00010	<0.00010	66.7	<0.0010	0.0022	<0.00020	<0.00020
	26-Mar-15	Bottom	<0.000010	<0.000010	43.7	45.7	<0.00010	<0.00010	79.4	<0.0010	<0.0010	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW5	24-Jul-14	Surface	<0.000010	<0.000010	39.9	38.7	<0.00010	<0.00010	121	<0.0020	<0.0010	<0.00020	<0.00020
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	<0.000010	<0.000010	35.6	36.7	<0.00010	<0.00010	80.3	<0.0020	<0.0010	<0.00020	<0.00020
	26-Mar-15	Surface	<0.000010	<0.000010	48.8	50.9	<0.00010	<0.00010	83.6	<0.0010	<0.0010	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW6	24-Jul-14	Surface	<0.000010	<0.000010	37.7	36.4	<0.00010	<0.00010	92.7	<0.0020	<0.0010	<0.00020	<0.00020
	27-Aug-14	Surface	<0.000010	<0.000010	37.5	40.2	<0.00010	<0.00010	115	<0.0020	<0.0010	<0.00020	0.00020
	16-Oct-14	Surface	<0.000010	<0.000010	36.6	37.5	<0.00010	<0.00010	74.7	<0.0020	<0.0010	<0.00020	0.00026
	26-Mar-15	Surface	<0.000010	<0.000010	45.1	46.0	<0.00010	<0.00010	74.4	<0.0010	<0.0010	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW7	24-Jul-14	Surface	<0.000010	<0.000010	35.4	32.5	<0.00010	0.00041	68.7	<0.0020	<0.0010	<0.00020	<0.00020
	27-Aug-14	Surface	<0.000010	<0.000010	35.6	37.5	<0.00010	<0.00010	98.8	<0.0020	<0.0010	<0.00020	0.00022
	16-Oct-14	Surface	<0.000010	0.000010	35.3	37.0	<0.00010	<0.00010	73.2	<0.0020	0.0011	<0.00020	0.00033
	26-Mar-15	Surface	<0.000010	<0.000010	51.7	51.3	<0.00010	<0.00010	77.0	<0.0010	<0.0010	<0.00020	<0.00020
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)										
			Copper		Fluoride	Iron		Lead		Lithium		Magnesium	
			Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
FR1	25-Jul-14	Surface	0.00055	0.00045	0.129	0.020	0.036	<0.000090	<0.000090	0.0265	0.0293	31.5	31.4
	27-Aug-14	Surface	0.00039	0.00038	0.135	<0.010	0.045	<0.000090	0.000129	0.0247	0.0298	29.4	31.3
	20-Oct-14	Surface	0.00042	0.00057	0.128	<0.010	0.044	<0.000090	0.000182	0.0296	0.0297	30.5	35.6
	24-Mar-15	Surface	0.00055	0.00061	0.166	<0.010	0.012	<0.000090	<0.000090	0.0311	0.038	41.3	43.8
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LSM1	25-Jul-14	Surface	0.00034	0.00042	0.133	<0.010	0.028	<0.000090	<0.000090	0.0264	0.0294	31.9	31.8
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00027	0.00042	0.127	<0.010	0.023	<0.000090	0.000102	0.0289	0.0293	30.4	30.6
	24-Mar-15	Surface	0.00057	0.00083	0.165	<0.010	0.020	0.000091	<0.000090	0.0298	0.0336	39.2	41.4
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-A	25-Jul-14	Surface	0.00038	0.00043	0.130	<0.010	0.027	<0.000090	<0.000090	0.0260	0.0308	31.8	32.8
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00035	0.00054	0.128	<0.010	0.025	<0.000090	0.000110	0.0293	0.0282	31.4	30.1
	24-Mar-15	Surface	0.00050	0.00070	0.161	<0.010	<0.010	<0.000090	<0.000090	0.0309	0.0306	38.9	44.5
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-B	25-Jul-14	Surface	0.00040	0.00040	0.132	0.011	0.043	<0.000090	<0.000090	0.0259	0.0299	31.8	32.2
	27-Aug-14	Surface	0.00030	0.00044	0.140	<0.010	0.029	<0.000090	0.000158	0.0261	0.0253	31.7	36.8
	16-Oct-14	Surface	0.00032	0.00036	0.125	<0.010	0.033	<0.000090	<0.000090	0.0240	0.0263	29.6	30.0
	24-Mar-15	Surface	0.00052	0.00065	0.160	<0.010	0.015	<0.000090	<0.000090	0.0294	0.0315	38.4	41.0
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-C	24-Jul-14	Surface	0.00038	0.00041	0.132	<0.010	0.036	<0.000090	<0.000090	0.0249	0.0303	31.7	33.2
	26-Aug-14	Surface	0.00031	0.00040	0.129	<0.010	0.035	<0.000090	<0.000090	0.0231	0.0275	29.0	29.4
	16-Oct-14	Surface	<0.00020	0.00040	0.133	<0.010	0.028	<0.000090	<0.000090	0.0261	0.0269	29.6	33.8
	24-Mar-15	Surface	0.00047	0.00058	0.158	<0.010	0.026	<0.000090	<0.000090	0.0287	0.0319	37.7	42.4
	3-May-15	Surface	0.00047	0.00060	0.136	<0.010	0.041	<0.000090	<0.000090	0.0312	0.0276	32.8	31.4
BC3	24-Jul-14	Surface	0.00034	0.00057	0.129	<0.010	0.29	<0.000090	0.000152	0.0234	0.0280	31.1	31.6
	26-Aug-14	Surface	0.00024	0.00054	0.126	<0.010	0.28	<0.000090	0.000165	0.0213	0.0238	27.8	27.2
	16-Oct-14	Surface	<0.00020	0.00040	0.134	<0.010	0.12	<0.000090	0.000175	0.0278	0.0260	30.3	32.9
	27-Mar-15	Surface	0.00038	0.00068	0.148	<0.010	0.140	<0.000090	0.000095	0.0294	0.0320	36.4	37.7

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)									
			Copper		Fluoride	Iron		Lead		Lithium		Magnesium	
			Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
	3-May-15	Surface	0.00040	0.00080	0.134	<0.010	0.320	<0.000090	0.000170	0.0298	0.0275	33.2	32.9
DR-D[1]	26-Aug-14	Surface	0.00027	0.00036	0.125	<0.010	0.041	<0.000090	0.000092	0.0232	0.0240	25.9	27.5
DR-E	24-Jul-14	Surface	0.00038	0.00044	0.131	<0.010	0.069	<0.000090	<0.000090	0.0245	0.0294	29.7	32.7
	27-Aug-14	Surface	0.00031	0.00052	0.126	<0.010	0.085	<0.000090	0.000122	0.0237	0.0280	29.4	28.8
	20-Oct-14	Surface	0.00037	0.00037	0.131	<0.010	0.054	<0.000090	0.000107	0.0296	0.0299	30.0	30.7
	27-Mar-15	Surface	0.00040	0.00097	0.157	<0.010	0.081	<0.000090	<0.000090	0.0307	0.0330	37.2	36.8
	4-May-15	Surface	0.00048	0.00059	0.135	<0.010	0.082	<0.000090	<0.000090	0.0296	0.0273	32.8	32.3
LKW3B	24-Jul-14	Surface	0.00053	0.00068	0.122	<0.010	0.11	<0.000090	0.000094	0.0234	0.0251	26.8	27.1
	27-Aug-14	Surface	0.00074	0.00150	0.120	<0.010	0.25	<0.000090	0.000294	0.0186	0.0206	22.4	23.3
	20-Oct-14	Surface	0.00066	0.00111	0.113	<0.010	0.51	<0.000090	0.000268	0.0235	0.0223	25.4	27.2
	27-Mar-15	Surface	0.00082	0.00118	0.133	<0.010	0.069	<0.000090	<0.000090	0.0268	0.0274	33.4	31.3
	4-May-15	Surface	0.00072	0.00114	0.115	<0.010	0.073	<0.000090	<0.000090	0.0186	0.0166	21.3	20.3
LKW3	24-Jul-14	Surface	0.00052	0.00065	0.121	<0.010	0.12	<0.000090	0.000124	0.0246	0.0257	27.7	28.5
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00062	0.00091	0.115	<0.010	0.33	<0.000090	0.000219	0.0240	0.0242	26.9	25.5
	27-Mar-15	Surface	0.00090	0.00179	0.130	<0.010	0.071	<0.000090	<0.000090	0.0190	0.0193	24.9	23.5
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW2	24-Jul-14	Surface	0.00042	0.00058	0.129	<0.010	0.13	<0.000090	0.000105	0.0262	0.0273	28.8	30.0
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	<0.00020	0.00057	0.128	<0.010	0.22	<0.000090	0.000153	0.0275	0.0265	30.0	32.9
	27-Mar-15	Surface	0.00070	0.00119	0.149	<0.010	0.054	<0.000090	<0.000090	0.0312	0.0309	37.4	34.7
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW1	24-Jul-14	Surface	0.00064	0.00072	0.116	<0.010	0.17	<0.000090	0.000114	0.0265	0.0275	27.4	29.4
	27-Aug-14	Surface	0.00053	0.00110	0.120	0.013	0.61	<0.000090	0.000321	0.0176	0.0197	27.7	27.4
	16-Oct-14	Surface	0.00070	0.00140	0.108	<0.010	0.49	<0.000090	0.000271	0.0170	0.0172	19.6	22.2
	26-Mar-15	Surface	0.00086	0.00111	0.155	<0.010	0.071	<0.000090	<0.000090	0.0246	0.0240	34.9	39.0
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)									
			Copper		Fluoride	Iron		Lead		Lithium		Magnesium	
			Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW4	24-Jul-14	Surface	0.00082	0.00098	0.112	<0.010	0.20	<0.000090	0.000105	0.0200	0.0211	23.8	24.3
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	0.00065	0.00121	0.115	<0.010	0.42	<0.000090	0.000244	0.0197	0.0206	25.2	25.5
	26-Mar-15	Surface	0.00158	0.00203	0.130	<0.010	0.089	<0.000090	<0.000090	0.0172	0.0168	23.9	25.4
	26-Mar-15	Bottom	0.00101	0.00127	0.130	<0.010	0.099	<0.000090	<0.000090	0.0186	0.0179	24.0	26.5
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW5	24-Jul-14	Surface	0.00063	0.00073	0.116	<0.010	0.16	<0.000090	0.000098	0.0234	0.0236	31.3	28.4
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	0.00063	0.00117	0.110	<0.010	0.38	<0.000090	0.000166	0.0185	0.0183	22.7	24.0
	26-Mar-15	Surface	0.00116	0.00150	0.134	<0.010	0.090	<0.000090	<0.000090	0.0192	0.0180	26.3	27.7
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW6	24-Jul-14	Surface	0.00085	0.00117	0.112	<0.010	0.31	<0.000090	0.000139	0.0191	0.0206	22.1	23.4
	27-Aug-14	Surface	0.00077	0.00104	0.127	<0.010	0.32	<0.000090	0.000269	0.0205	0.0232	26.1	27.4
	16-Oct-14	Surface	0.00063	0.00139	0.113	<0.010	0.46	<0.000090	0.000412	0.0183	0.0184	20.4	23.7
	26-Mar-15	Surface	0.00118	0.00136	0.131	<0.010	0.075	<0.000090	<0.000090	0.0184	0.0169	24.3	26.2
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW7	24-Jul-14	Surface	0.00097	0.00131	0.104	0.016	0.35	<0.000090	0.000157	0.0166	0.0173	19.4	19.1
	27-Aug-14	Surface	0.00082	0.00126	0.114	<0.010	0.41	<0.000090	0.000263	0.0183	0.0207	24.2	24.1
	16-Oct-14	Surface	0.00070	0.00182	0.110	<0.010	0.60	<0.000090	0.000357	0.0176	0.0177	20.2	23.5
	26-Mar-15	Surface	0.00137	0.00173	0.137	<0.010	0.097	<0.000090	0.000226	0.0197	0.0182	25.1	28.4
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)											
			Manganese		Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum		Nickel		Potassium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
FR1	25-Jul-14	Surface	0.00025	0.00546	1.9	1.5	<0.050	0.052	0.00176	0.00172	<0.0010	<0.0020	8.65	8.30
	27-Aug-14	Surface	0.00022	0.00613	1.3	2.1	<0.050	<0.050	0.00178	0.00173	<0.0010	<0.0020	7.70	8.34
	20-Oct-14	Surface	0.00014	0.00621	<1.0	2.1	<0.050	<0.050	0.00178	0.00195	<0.0010	<0.0020	8.76	10.2
	24-Mar-15	Surface	0.00080	0.00345	<1.0	<1.0	<0.050	<0.050	0.00229	0.00241	<0.0010	<0.0020	12.1	12.2
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LSM1	25-Jul-14	Surface	0.00017	0.00658	1.0	<1.0	<0.050	0.065	0.00169	0.00168	<0.0010	<0.0020	8.57	7.95
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00015	0.00348	1.0	2.1	<0.050	<0.050	0.00173	0.00178	<0.0010	<0.0020	8.31	8.35
	24-Mar-15	Surface	0.00087	0.00368	<1.0	<1.0	<0.050	<0.050	0.00221	0.00241	<0.0010	<0.0020	11.4	11.7
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
DR-A	25-Jul-14	Surface	0.00025	0.00711	1.9	<1.0	<0.050	0.084	0.00166	0.00171	<0.0010	<0.0020	8.50	8.09
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00016	0.00322	1.3	1.8	<0.050	<0.050	0.00171	0.00171	<0.0010	<0.0020	8.48	8.11
	24-Mar-15	Surface	0.00163	0.00722	<1.0	1.1	<0.050	0.058	0.00203	0.00227	<0.0010	<0.0020	11.0	12.4
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
DR-B	25-Jul-14	Surface	0.00251	0.00792	1.5	1.3	<0.050	0.110	0.00155	0.00159	<0.0010	<0.0020	8.49	8.23
	27-Aug-14	Surface	0.00024	0.00427	<1.0	<1.0	<0.050	<0.050	0.00162	0.00167	<0.0010	<0.0020	8.77	9.91
	16-Oct-14	Surface	0.00017	0.00621	1.3	2.5	<0.050	<0.050	0.00160	0.00155	<0.0010	<0.0020	7.59	7.98
	24-Mar-15	Surface	0.00348	0.00797	<1.0	<1.0	<0.050	0.058	0.00197	0.00237	<0.0010	<0.0020	11.1	11.6
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
DR-C	24-Jul-14	Surface	0.00016	0.00765	2.2	2.0	<0.050	0.093	0.00168	0.00163	<0.0010	<0.0020	8.34	8.43
	26-Aug-14	Surface	0.00042	0.00565	1.4	1.4	<0.050	<0.050	0.00156	0.00771	<0.0010	<0.0020	7.12	7.75
	16-Oct-14	Surface	0.00027	0.00366	<1.0	1.5	<0.050	<0.050	0.00161	0.00183	<0.0010	<0.0020	8.61	9.03
	24-Mar-15	Surface	0.00196	0.00721	<1.0	<1.0	<0.050	0.053	0.00209	0.00218	<0.0010	<0.0020	11.6	11.6
	3-May-15	Surface	0.00017	0.00432	<1.0	<1.0	<0.050	<0.050	0.00183	0.00178	<0.0010	<0.0020	9.05	8.61
BC3	24-Jul-14	Surface	0.00251	0.0260	2.3	2.1	0.269	0.476	0.00151	0.00144	<0.0010	<0.0020	7.63	7.70
	26-Aug-14	Surface	0.00230	0.0161	1.4	1.9	0.170	0.240	0.00142	0.00149	<0.0010	<0.0020	6.75	6.79
	16-Oct-14	Surface	0.00220	0.00887	1.0	<1.0	<0.050	0.064	0.00159	0.00165	<0.0010	<0.0020	8.14	8.43
	27-Mar-15	Surface	0.0113	0.0198	<1.0	1.4	0.095	0.084	0.00200	0.00209	<0.0010	<0.0020	10.6	10.7

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)											
			Manganese		Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum		Nickel		Potassium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
	3-May-15	Surface	0.00161	0.0147	1.5	2.2	<0.050	<0.050	0.00182	0.00188	<0.0010	<0.0020	8.81	8.32
DR-D[1]	26-Aug-14	Surface	0.00038	0.00588	1.4	1.4	<0.050	<0.050	0.00158	0.00161	<0.0010	<0.0020	6.55	7.63
DR-E	24-Jul-14	Surface	0.00027	0.0102	<1.0	1.8	0.062	0.133	0.00158	0.00163	<0.0010	<0.0020	8.03	8.38
	27-Aug-14	Surface	0.00029	0.00753	-	-	-	-	0.00158	0.00170	<0.0010	<0.0020	7.40	7.54
	20-Oct-14	Surface	0.00039	0.00471	1.4	2.3	<0.050	<0.050	0.00175	0.00182	<0.0010	<0.0020	8.35	8.27
	27-Mar-15	Surface	0.00290	0.0118	1.2	1.0	0.054	0.086	0.00206	0.00209	<0.0010	<0.0020	10.8	11.1
	4-May-15	Surface	0.00030	0.00552	1.1	<1.0	<0.050	<0.050	0.00171	0.00181	<0.0010	<0.0020	9.18	8.28
LKW3B	24-Jul-14	Surface	0.00027	0.00936	<1.0	<1.0	<0.050	0.088	0.00145	0.00134	<0.0010	<0.0020	6.71	7.20
	27-Aug-14	Surface	0.00017	0.00864	1.4	2.0	<0.050	<0.050	0.00129	0.00132	<0.0010	<0.0020	5.36	5.70
	20-Oct-14	Surface	0.00016	0.01170	1.3	2.6	<0.050	<0.050	0.00135	0.00135	<0.0010	<0.0020	6.57	7.14
	27-Mar-15	Surface	0.00234	0.0063	<1.0	1.0	<0.050	0.066	0.00172	0.00180	<0.0010	<0.0020	9.15	8.35
	4-May-15	Surface	0.00060	0.00396	1.1	1.4	<0.050	<0.050	0.00108	0.00107	<0.0010	<0.0020	4.75	4.59
LKW3	24-Jul-14	Surface	0.00026	0.0104	1.4	1.3	0.069	0.106	0.00150	0.00142	<0.0010	<0.0020	6.76	7.39
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00017	0.00845	1.1	2.3	<0.050	<0.050	0.00140	0.00146	<0.0010	<0.0020	7.06	6.68
	27-Mar-15	Surface	0.00047	0.00166	0.8	1.2	<0.050	<0.050	0.00127	0.00131	<0.0010	<0.0020	5.78	5.58
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LKW2	24-Jul-14	Surface	0.00021	0.0110	1.3	1.2	0.088	0.135	0.00161	0.00151	<0.0010	<0.0020	7.09	8.05
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	0.00017	0.00846	<1.0	1.3	<0.050	<0.050	0.00157	0.00171	<0.0010	<0.0020	8.34	8.62
	27-Mar-15	Surface	0.00868	0.0141	1.0	1.2	0.052	0.079	0.00197	0.00208	<0.0010	<0.0020	10.5	10.2
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LKW1	24-Jul-14	Surface	0.00019	0.0099	2.0	2.2	0.061	0.089	0.00163	0.00153	<0.0010	<0.0020	6.70	7.57
	27-Aug-14	Surface	0.00041	0.0197	1.1	1.4	0.066	0.102	0.00097	0.00105	<0.0010	<0.0020	5.17	5.63
	16-Oct-14	Surface	0.00014	0.0095	1.4	<1.0	<0.050	<0.050	0.00108	0.00112	<0.0010	<0.0020	4.91	5.16
	26-Mar-15	Surface	0.00154	0.00368	<1.0	<1.0	<0.050	<0.050	0.00170	0.00181	<0.0010	<0.0020	9.45	10.4
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)											
			Manganese		Mercury (ng/L)		Methyl Mercury (ng/L)		Molybdenum		Nickel		Potassium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW4	24-Jul-14	Surface	0.00022	0.00761	2.2	<1.0	<0.050	<0.050	0.00130	0.00121	<0.0010	<0.0020	5.79	6.19
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	0.00012	0.00900	<1.0	<1.0	<0.050	<0.050	0.00109	0.00135	<0.0010	<0.0020	6.51	6.34
	26-Mar-15	Surface	0.00040	0.00196	<1.0	<1.0	<0.050	<0.050	0.00124	0.00124	<0.0010	<0.0020	5.54	6.33
	26-Mar-15	Bottom	0.0111	0.0119	<1.0	<1.0	<0.050	<0.050	0.00125	0.00121	<0.0010	<0.0020	5.95	6.54
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LKW5	24-Jul-14	Surface	0.00031	0.00966	1.5	<1.0	0.085	0.077	0.00133	0.00133	<0.0010	<0.0020	7.32	6.76
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	0.00014	0.00762	<1.0	<1.0	<0.050	<0.050	0.00106	0.00117	<0.0010	<0.0020	5.60	5.83
	26-Mar-15	Surface	0.00066	0.00291	1.2	2.5	<0.050	<0.050	0.00138	0.00132	<0.0010	<0.0020	6.64	7.06
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LKW6	24-Jul-14	Surface	0.00032	0.00775	1.3	<1.0	<0.050	<0.050	0.00123	0.00120	<0.0010	<0.0020	5.24	5.88
	27-Aug-14	Surface	0.00029	0.0133	1.4	1.6	<0.050	<0.050	0.00142	0.00147	<0.0010	<0.0020	6.23	6.78
	16-Oct-14	Surface	<0.00010	0.00900	<1.0	<1.0	<0.050	<0.050	0.00102	0.00118	<0.0010	<0.0020	5.16	5.82
	26-Mar-15	Surface	0.00045	0.00171	1.1	1.4	<0.050	<0.050	0.00123	0.00123	<0.0010	<0.0020	5.76	6.22
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LKW7	24-Jul-14	Surface	0.00029	0.00612	1.1	<1.0	<0.050	<0.050	0.00112	0.00102	<0.0010	<0.0020	4.53	4.81
	27-Aug-14	Surface	0.00029	0.0117	1.9	1.4	<0.050	<0.050	0.00128	0.00134	<0.0010	<0.0020	5.65	6.13
	16-Oct-14	Surface	0.00012	0.0123	<1.0	1.3	<0.050	<0.050	0.00099	0.00111	<0.0010	<0.0020	5.02	5.75
	26-Mar-15	Surface	0.00138	0.00333	1.1	1.7	<0.050	<0.050	0.00136	0.00133	<0.0010	<0.0020	6.09	6.99
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)											
			Rubidium		Selenium		Silicon		Silver		Sodium		Strontium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
FR1	25-Jul-14	Surface	0.00335	0.00349	<0.0010	<0.0010	4.13	4.29	<0.00010	<0.00010	102	100	0.237	0.248
	27-Aug-14	Surface	0.00329	0.00337	<0.0010	<0.0010	4.47	4.80	<0.00010	<0.00010	101	97.4	0.228	0.222
	20-Oct-14	Surface	0.00334	0.00387	<0.0010	<0.0010	5.09	5.36	<0.00010	<0.00010	94.2	108	0.223	0.236
	24-Mar-15	Surface	0.00383	0.00407	<0.0010	<0.0010	6.77	7.66	<0.00010	<0.00010	119	123	0.311	0.315
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LSM1	25-Jul-14	Surface	0.00326	0.00344	<0.0010	<0.0010	4.40	4.48	<0.00010	<0.00010	103	101	0.248	0.249
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00330	0.00324	<0.0010	<0.0010	4.91	5.35	<0.00010	<0.00010	94.1	94.0	0.221	0.242
	24-Mar-15	Surface	0.00378	0.00388	<0.0010	<0.0010	6.70	6.96	<0.00010	<0.00010	111	126	0.293	0.310
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
DR-A	25-Jul-14	Surface	0.00322	0.00361	<0.0010	<0.0010	4.35	4.63	<0.00010	<0.00010	102	104	0.249	0.259
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00334	0.00323	<0.0010	<0.0010	4.86	4.98	<0.00010	<0.00010	95.3	93.1	0.228	0.230
	24-Mar-15	Surface	0.00401	0.00407	<0.0010	<0.0010	6.66	6.45	<0.00010	<0.00010	112	133	0.298	0.299
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
DR-B	25-Jul-14	Surface	0.00330	0.00339	<0.0010	<0.0010	4.59	4.62	<0.00010	<0.00010	102	98.4	0.246	0.259
	27-Aug-14	Surface	0.00332	0.00373	<0.0010	<0.0010	4.21	4.77	<0.00010	<0.00010	102	120	0.237	0.231
	16-Oct-14	Surface	0.00306	0.00331	<0.0010	<0.0010	4.85	4.64	<0.00010	<0.00010	100	99.5	0.222	0.237
	24-Mar-15	Surface	0.00379	0.00402	<0.0010	<0.0010	6.42	6.68	<0.00010	<0.00010	111	126	0.282	0.297
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
DR-C	24-Jul-14	Surface	0.00323	0.00359	<0.0010	<0.0010	4.24	4.43	<0.00010	<0.00010	99.7	104	0.253	0.254
	26-Aug-14	Surface	0.00321	0.00331	<0.0010	<0.0010	4.69	4.83	<0.00010	<0.00010	101	97.4	0.226	0.253
	16-Oct-14	Surface	0.00326	0.00344	<0.0010	<0.0010	4.96	4.86	<0.00010	<0.00010	92.2	108	0.251	0.240
	24-Mar-15	Surface	0.00386	0.00405	<0.0010	<0.0010	6.37	6.59	<0.00010	<0.00010	113	125	0.296	0.281
	3-May-15	Surface	0.00304	0.00314	<0.0010	<0.0010	4.39	3.92	<0.00010	<0.00010	88.3	91.0	0.232	0.229
BC3	24-Jul-14	Surface	0.00323	0.00395	<0.0010	<0.0010	4.73	5.60	<0.00010	<0.00010	97.5	96.3	0.237	0.227
	26-Aug-14	Surface	0.00308	0.00371	<0.0010	<0.0010	4.81	5.37	<0.00010	<0.00010	90.5	83.3	0.211	0.217
	16-Oct-14	Surface	0.00325	0.00356	<0.0010	<0.0010	4.91	4.78	<0.00010	<0.00010	92.8	101	0.245	0.224
	27-Mar-15	Surface	0.00370	0.00415	<0.0010	<0.0010	6.12	6.65	<0.00010	<0.00010	107	117	0.262	0.267

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)											
			Rubidium		Selenium		Silicon		Silver		Sodium		Strontium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
	3-May-15	Surface	0.00308	0.00357	<0.0010	<0.0010	3.37	3.60	<0.00010	<0.00010	86.6	89.9	0.224	0.235
DR-D[1]	26-Aug-14	Surface	0.00277	0.00330	<0.0010	<0.0010	4.74	4.62	<0.00010	<0.00010	90.6	93.8	0.232	0.220
DR-E	24-Jul-14	Surface	0.00309	0.00353	<0.0010	<0.0010	4.98	4.66	<0.00010	<0.00010	95.7	103	0.251	0.251
	27-Aug-14	Surface	0.00318	0.00346	<0.0010	<0.0010	4.90	4.85	<0.00010	<0.00010	99.7	96.5	0.227	0.237
	20-Oct-14	Surface	0.00333	0.00327	<0.0010	<0.0010	4.89	4.96	<0.00010	<0.00010	93.2	94.1	0.229	0.244
	27-Mar-15	Surface	0.00364	0.00408	<0.0010	<0.0010	6.52	6.81	<0.00010	<0.00010	109	114	0.283	0.273
	4-May-15	Surface	0.00319	0.00314	<0.0010	<0.0010	4.18	3.75	<0.00010	<0.00010	86.5	90.7	0.218	0.238
LKW3B	24-Jul-14	Surface	0.00294	0.00325	<0.0010	<0.0010	3.85	4.38	<0.00010	<0.00010	83.4	86.9	0.223	0.215
	27-Aug-14	Surface	0.00233	0.00312	<0.0010	<0.0010	3.39	3.70	<0.00010	<0.00010	66.0	62.6	0.176	0.200
	20-Oct-14	Surface	0.00250	0.00398	<0.0010	<0.0010	3.33	5.01	<0.00010	<0.00010	67.2	73.2	0.197	0.200
	27-Mar-15	Surface	0.00327	0.00319	<0.0010	<0.0010	5.00	4.84	<0.00010	<0.00010	92.6	90.9	0.275	0.246
	4-May-15	Surface	0.00171	0.00186	<0.0010	<0.0010	1.51	1.61	<0.00010	<0.00010	43.4	44.8	0.175	0.179
LKW3	24-Jul-14	Surface	0.00296	0.00329	<0.0010	<0.0010	4.08	4.50	<0.00010	<0.00010	86.7	85.1	0.238	0.216
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	0.00267	0.00337	<0.0010	<0.0010	3.60	5.19	<0.00010	<0.00010	76.7	70.9	0.198	0.212
	27-Mar-15	Surface	0.00200	0.00221	<0.0010	<0.0010	1.97	2.38	<0.00010	<0.00010	50.9	54.1	0.221	0.213
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LKW2	24-Jul-14	Surface	0.00308	0.00344	<0.0010	<0.0010	4.25	4.72	<0.00010	<0.00010	91.8	95.6	0.243	0.222
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	0.00314	0.00356	<0.0010	<0.0010	4.74	5.21	<0.00010	<0.00010	93.0	103	0.232	0.227
	27-Mar-15	Surface	0.00362	0.00385	<0.0010	<0.0010	6.44	6.28	<0.00010	<0.00010	109	113	0.269	0.265
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LKW1	24-Jul-14	Surface	0.00290	0.00344	<0.0010	<0.0010	3.91	4.70	<0.00010	<0.00010	86.1	90.0	0.245	0.233
	27-Aug-14	Surface	0.00263	0.00417	<0.0010	<0.0010	5.71	7.27	<0.00010	<0.00010	66.4	61.5	0.176	0.184
	16-Oct-14	Surface	0.00173	0.00310	<0.0010	<0.0010	2.23	3.67	<0.00010	<0.00010	44.3	50.3	0.178	0.183
	26-Mar-15	Surface	0.00312	0.00367	<0.0010	<0.0010	4.68	5.31	<0.00010	<0.00010	89.7	106	0.258	0.275
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)											
			Rubidium		Selenium		Silicon		Silver		Sodium		Strontium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW4	24-Jul-14	Surface	0.00256	0.00305	<0.0010	<0.0010	3.07	3.89	<0.00010	<0.00010	69.5	66.1	0.208	0.188
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	0.00236	0.00327	<0.0010	<0.0010	3.05	4.07	<0.00010	<0.00010	65.8	69.2	0.188	0.196
	26-Mar-15	Surface	0.00191	0.00232	<0.0010	<0.0010	1.83	2.30	<0.00010	<0.00010	50.7	55.8	0.219	0.217
	26-Mar-15	Bottom	0.00205	0.00253	<0.0010	<0.0010	2.45	3.15	<0.00010	<0.00010	54.1	63.6	0.210	0.211
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LKW5	24-Jul-14	Surface	0.00336	0.00343	<0.0010	<0.0010	3.77	4.83	<0.00010	<0.00010	93.5	82.9	0.218	0.207
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	0.00213	0.00306	<0.0010	<0.0010	2.75	3.60	<0.00010	<0.00010	57.4	60.9	0.180	0.182
	26-Mar-15	Surface	0.00227	0.00267	<0.0010	<0.0010	2.50	2.93	<0.00010	<0.00010	57.6	65.8	0.230	0.227
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LKW6	24-Jul-14	Surface	0.00240	0.00329	<0.0010	<0.0010	3.10	4.21	<0.00010	<0.00010	60.8	65.6	0.193	0.189
	27-Aug-14	Surface	0.00276	0.00382	<0.0010	<0.0010	4.37	5.13	<0.00010	<0.00010	80.5	83.2	0.214	0.220
	16-Oct-14	Surface	0.00193	0.00334	<0.0010	<0.0010	2.29	3.53	<0.00010	<0.00010	49.0	59.2	0.178	0.177
	26-Mar-15	Surface	0.00202	0.00233	<0.0010	<0.0010	2.09	2.56	<0.00010	<0.00010	51.9	59.8	0.211	0.210
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-
LKW7	24-Jul-14	Surface	0.00200	0.00306	<0.0010	<0.0010	2.14	3.39	<0.00010	<0.00010	48.1	48.5	0.176	0.167
	27-Aug-14	Surface	0.00249	0.00375	<0.0010	<0.0010	3.97	4.94	<0.00010	<0.00010	72.7	70.4	0.188	0.204
	16-Oct-14	Surface	0.00190	0.00366	<0.0010	<0.0010	1.68	3.23	<0.00010	<0.00010	50.6	57.0	0.174	0.169
	26-Mar-15	Surface	0.00213	0.00242	<0.0010	<0.0010	2.24	2.69	<0.00010	<0.00010	53.3	62.1	0.231	0.232
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)										
			Sulfate	Tellurium		Thallium		Thorium		Tin		Titanium	
			Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
FR1	25-Jul-14	Surface	72.6	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00133
	27-Aug-14	Surface	73.7	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00186
	20-Oct-14	Surface	77.6	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00191
	24-Mar-15	Surface	108	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00078
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LSM1	25-Jul-14	Surface	74.3	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00476
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	76.5	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00090
	24-Mar-15	Surface	102	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-A	25-Jul-14	Surface	77.2	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00098
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	76.7	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00074
	24-Mar-15	Surface	99.8	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-B	25-Jul-14	Surface	75.9	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00195
	27-Aug-14	Surface	76.3	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00098
	16-Oct-14	Surface	69.2	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00148
	24-Mar-15	Surface	97.3	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	<0.00050
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
DR-C	24-Jul-14	Surface	74.6	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00159
	26-Aug-14	Surface	68.6	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00155
	16-Oct-14	Surface	76.3	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00134
	24-Mar-15	Surface	96.6	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00101
	3-May-15	Surface	80.6	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00156
BC3	24-Jul-14	Surface	67.1	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.0139
	26-Aug-14	Surface	62.1	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.0135
	16-Oct-14	Surface	73.5	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00544
	27-Mar-15	Surface	95.3	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00647

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)										
			Sulfate	Tellurium		Thallium		Thorium		Tin		Titanium	
			Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
	3-May-15	Surface	76.8	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.0001	<0.00020	<0.00020	<0.00050	0.0142
DR-D[1]	26-Aug-14	Surface	68.8	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00179
DR-E	24-Jul-14	Surface	74.3	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00319
	27-Aug-14	Surface	67.8	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00308
	20-Oct-14	Surface	76.1	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00249
	27-Mar-15	Surface	98.9	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00403
	4-May-15	Surface	78.1	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00345
LKW3B	24-Jul-14	Surface	64.1	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00559
	27-Aug-14	Surface	54.2	0.00056	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.0115
	20-Oct-14	Surface	63.0	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00016	<0.00020	<0.00020	<0.00050	0.0222
	27-Mar-15	Surface	79.5	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00250
	4-May-15	Surface	54.4	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00384
LKW3	24-Jul-14	Surface	64.2	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00642
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	64.7	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00012	<0.00020	<0.00020	<0.00050	0.0146
	27-Mar-15	Surface	65.5	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00365
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW2	24-Jul-14	Surface	68.6	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00634
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	73.6	0.00025	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00938
	27-Mar-15	Surface	94.4	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	0.00033	<0.00050	0.00163
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW1	24-Jul-14	Surface	62.9	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00882
	27-Aug-14	Surface	43.7	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.0275
	16-Oct-14	Surface	51.6	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00016	<0.00020	<0.00020	<0.00050	0.0217
	26-Mar-15	Surface	81.8	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00398
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)										
			Sulfate	Tellurium		Thallium		Thorium		Tin		Titanium	
			Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW4	24-Jul-14	Surface	54.2	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00986
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	57.2	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00012	<0.00020	<0.00020	<0.00050	0.0183
	26-Mar-15	Surface	62.9	0.00030	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00389
	26-Mar-15	Bottom	62.4	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00584
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW5	24-Jul-14	Surface	60.0	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00787
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	55.5	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00011	<0.00020	<0.00020	<0.00050	0.0168
	26-Mar-15	Surface	66.0	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	0.00056	0.00425
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW6	24-Jul-14	Surface	52.8	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00010	<0.00020	<0.00020	0.00062	0.0157
	27-Aug-14	Surface	59.9	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00010	<0.00020	<0.00020	<0.00050	0.0163
	16-Oct-14	Surface	53.6	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00013	<0.00020	<0.00020	<0.00050	0.0212
	26-Mar-15	Surface	63.3	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00449
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-
LKW7	24-Jul-14	Surface	48.8	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00012	<0.00020	<0.00020	0.00123	0.0211
	27-Aug-14	Surface	55.7	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00012	<0.00020	<0.00020	0.00069	0.0191
	16-Oct-14	Surface	52.3	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	0.00016	<0.00020	<0.00020	<0.00050	0.0259
	26-Mar-15	Surface	69.2	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00050	0.00519
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)									
			Tungsten		Uranium		Vanadium		Zinc		Zirconium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
FR1	25-Jul-14	Surface	<0.00010	<0.00010	0.00122	0.00140	0.00131	0.00149	<0.0020	<0.0020	<0.00040	<0.00040
	27-Aug-14	Surface	<0.00010	<0.00010	0.00135	0.00138	0.00126	0.00143	<0.0020	<0.0020	<0.00040	<0.00040
	20-Oct-14	Surface	<0.00010	<0.00010	0.00138	0.00158	0.00132	0.00157	<0.0020	0.0025	<0.00040	<0.00040
	24-Mar-15	Surface	<0.00010	<0.00010	0.00197	0.00217	0.00142	0.00156	<0.0020	0.0021	<0.00040	<0.00040
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LSM1	25-Jul-14	Surface	<0.00010	<0.00010	0.00125	0.00141	0.00119	0.00138	<0.0020	<0.0020	<0.00040	<0.00040
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	<0.00010	<0.00010	0.00138	0.00151	0.00125	0.00117	<0.0020	<0.0020	<0.00040	<0.00040
	24-Mar-15	Surface	<0.00010	<0.00010	0.00190	0.00200	0.00133	0.00149	0.0021	0.0044	<0.00040	<0.00040
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
DR-A	25-Jul-14	Surface	<0.00010	<0.00010	0.00120	0.00139	0.00116	0.00139	<0.0020	0.0020	<0.00040	<0.00040
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	<0.00010	<0.00010	0.00137	0.00143	0.00124	0.00114	<0.0020	0.0022	<0.00040	<0.00040
	24-Mar-15	Surface	<0.00010	<0.00010	0.00176	0.00191	0.00122	0.00148	<0.0020	0.0021	<0.00040	<0.00040
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
DR-B	25-Jul-14	Surface	<0.00010	<0.00010	0.00110	0.00137	0.00112	0.00135	<0.0020	0.0026	<0.00040	<0.00040
	27-Aug-14	Surface	<0.00010	<0.00010	0.00138	0.00125	0.00125	0.00144	<0.0020	0.0042	<0.00040	<0.00040
	16-Oct-14	Surface	<0.00010	<0.00010	0.00103	0.00107	0.00119	0.00129	<0.0020	<0.0020	<0.00040	<0.00040
	24-Mar-15	Surface	<0.00010	<0.00010	0.00176	0.00172	0.00125	0.00138	<0.0020	0.0023	<0.00040	<0.00040
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
DR-C	24-Jul-14	Surface	<0.00010	<0.00010	0.00120	0.00133	0.00111	0.00135	0.0023	<0.0020	<0.00040	<0.00040
	26-Aug-14	Surface	<0.00010	<0.00010	0.00120	0.00135	0.00114	0.00123	<0.0020	<0.0020	<0.00040	<0.00040
	16-Oct-14	Surface	<0.00010	<0.00010	0.00137	0.00134	0.00118	0.00131	<0.0020	0.0025	<0.00040	<0.00040
	24-Mar-15	Surface	<0.00010	<0.00010	0.00170	0.00184	0.00122	0.00140	<0.0020	<0.0020	<0.00040	<0.00040
	3-May-15	Surface	<0.00010	<0.00010	0.00147	0.00152	0.00114	0.00120	<0.0020	<0.0020	<0.00040	<0.00040
BC3	24-Jul-14	Surface	<0.00010	<0.00010	0.00096	0.00108	0.00093	0.00167	<0.0020	<0.0020	<0.00040	<0.00040
	26-Aug-14	Surface	<0.00010	<0.00010	0.00102	0.00107	0.00098	0.00148	<0.0020	0.0028	<0.00040	<0.00040
	16-Oct-14	Surface	<0.00010	<0.00010	0.00137	0.00124	0.00113	0.00136	<0.0020	0.0023	<0.00040	<0.00040
	27-Mar-15	Surface	<0.00010	<0.00010	0.00154	0.00157	0.00081	0.00112	<0.0020	<0.0020	<0.00040	<0.00040

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)									
			Tungsten		Uranium		Vanadium		Zinc		Zirconium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
	3-May-15	Surface	<0.00010	<0.00010	0.00131	0.00137	0.00102	0.00165	<0.0020	0.0063	<0.00040	<0.00040
DR-D[1]	26-Aug-14	Surface	<0.00010	<0.00010	0.00121	0.00128	0.00102	0.00127	<0.0020	<0.0020	<0.00040	<0.00040
DR-E	24-Jul-14	Surface	<0.00010	<0.00010	0.00116	0.00139	0.00104	0.00146	<0.0020	<0.0020	<0.00040	<0.00040
	27-Aug-14	Surface	<0.00010	<0.00010	0.00123	0.00117	0.00115	0.00134	<0.0020	<0.0020	<0.00040	<0.00040
	20-Oct-14	Surface	<0.00010	<0.00010	0.00134	0.00155	0.00121	0.00122	<0.0020	<0.0020	<0.00040	<0.00040
	27-Mar-15	Surface	<0.00010	<0.00010	0.00171	0.00167	0.00111	0.00138	<0.0020	0.0044	<0.00040	<0.00040
	4-May-15	Surface	<0.00010	<0.00010	0.00141	0.00148	0.00109	0.00120	<0.0020	<0.0020	<0.00040	<0.00040
LKW3B	24-Jul-14	Surface	<0.00010	<0.00010	0.00117	0.00118	0.00108	0.00147	<0.0020	<0.0020	<0.00040	<0.00040
	27-Aug-14	Surface	<0.00010	<0.00010	0.00100	0.00097	0.00120	0.00165	<0.0020	0.0028	<0.00040	<0.00040
	20-Oct-14	Surface	<0.00010	<0.00010	0.00113	0.00120	0.00120	0.00226	<0.0020	0.0027	<0.00040	<0.00040
	27-Mar-15	Surface	<0.00010	<0.00010	0.00158	0.00151	0.00107	0.00122	<0.0020	0.0029	<0.00040	<0.00040
	4-May-15	Surface	<0.00010	<0.00010	0.00098	0.00105	0.00080	0.00097	<0.0020	<0.0020	<0.00040	<0.00040
LKW3	24-Jul-14	Surface	<0.00010	<0.00010	0.00117	0.00121	0.00108	0.00151	<0.0020	0.0024	<0.00040	<0.00040
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	20-Oct-14	Surface	<0.00010	<0.00010	0.00115	0.00131	0.00125	0.00168	<0.0020	0.0033	<0.00040	<0.00040
	27-Mar-15	Surface	<0.00010	<0.00010	0.00124	0.00123	0.00110	0.00127	<0.0020	<0.0020	<0.00040	<0.00040
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW2	24-Jul-14	Surface	<0.00010	<0.00010	0.00125	0.00128	0.00105	0.00156	<0.0020	<0.0020	<0.00040	<0.00040
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	<0.00010	<0.00010	0.00129	0.00131	0.00118	0.00159	<0.0020	0.0029	<0.00040	<0.00040
	27-Mar-15	Surface	<0.00010	<0.00010	0.00151	0.00158	0.00083	0.00093	0.0021	0.0026	<0.00040	<0.00040
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW1	24-Jul-14	Surface	<0.00010	<0.00010	0.00130	0.00128	0.00111	0.00172	<0.0020	<0.0020	<0.00040	<0.00040
	27-Aug-14	Surface	<0.00010	<0.00010	0.00077	0.00078	0.00106	0.00220	<0.0020	0.0023	<0.00040	0.00071
	16-Oct-14	Surface	0.00012	<0.00010	0.00099	0.00104	0.00113	0.00210	<0.0020	0.0035	<0.00040	<0.00040
	26-Mar-15	Surface	<0.00010	<0.00010	0.00157	0.00173	0.00124	0.00152	<0.0020	<0.0020	<0.00040	<0.00040
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-

Table F-5. Continued.

Location ID	Sample Date	Sample Type	Metals and Major Ions (mg/L; unless otherwise indicated)									
			Tungsten		Uranium		Vanadium		Zinc		Zirconium	
			Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
LKW4	24-Jul-14	Surface	<0.00010	<0.00010	0.00104	0.00108	0.00111	0.00173	<0.0020	<0.0020	<0.00040	<0.00040
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	<0.00010	<0.00010	0.00101	0.00107	0.00130	0.00200	<0.0020	0.0033	<0.00040	<0.00040
	26-Mar-15	Surface	<0.00010	<0.00010	0.00123	0.00135	0.00102	0.00130	<0.0020	0.0028	<0.00040	<0.00040
	26-Mar-15	Bottom	<0.00010	<0.00010	0.00118	0.00135	0.00101	0.00136	<0.0020	<0.0020	<0.00040	<0.00040
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW5	24-Jul-14	Surface	<0.00010	<0.00010	0.00103	0.00115	0.00125	0.00166	<0.0020	<0.0020	<0.00040	<0.00040
	Aug-14	No Sample	-	-	-	-	-	-	-	-	-	-
	16-Oct-14	Surface	<0.00010	<0.00010	0.00108	0.00099	0.00115	0.00184	<0.0020	0.0033	<0.00040	<0.00040
	26-Mar-15	Surface	<0.00010	<0.00010	0.00126	0.00138	0.00113	0.00141	<0.0020	0.0048	<0.00040	<0.00040
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW6	24-Jul-14	Surface	<0.00010	<0.00010	0.00100	0.00109	0.00115	0.00204	<0.0020	<0.0020	<0.00040	<0.00040
	27-Aug-14	Surface	<0.00010	<0.00010	0.00107	0.00112	0.00124	0.00194	<0.0020	0.0027	<0.00040	<0.00040
	16-Oct-14	Surface	<0.00010	<0.00010	0.00102	0.00106	0.00116	0.00214	<0.0020	0.0038	<0.00040	<0.00040
	26-Mar-15	Surface	<0.00010	<0.00010	0.00124	0.00126	0.00107	0.00132	<0.0020	<0.0020	<0.00040	<0.00040
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-
LKW7	24-Jul-14	Surface	<0.00010	<0.00010	0.00093	0.00103	0.00105	0.00198	<0.0020	0.0026	<0.00040	<0.00040
	27-Aug-14	Surface	<0.00010	<0.00010	0.00100	0.00109	0.00127	0.00207	<0.0020	0.0029	<0.00040	<0.00040
	16-Oct-14	Surface	<0.00010	<0.00010	0.00096	0.00098	0.00119	0.00231	<0.0020	0.0054	<0.00040	<0.00040
	26-Mar-15	Surface	<0.00010	<0.00010	0.00134	0.00139	0.00104	0.00139	<0.0020	0.0026	<0.00040	<0.00040
	May-15	No Sample	-	-	-	-	-	-	-	-	-	-

1 - This site is generally sampled as part of the LSMEOC monitoring program and was only sampled by the RWQMP once during 2014/2015 Operation.

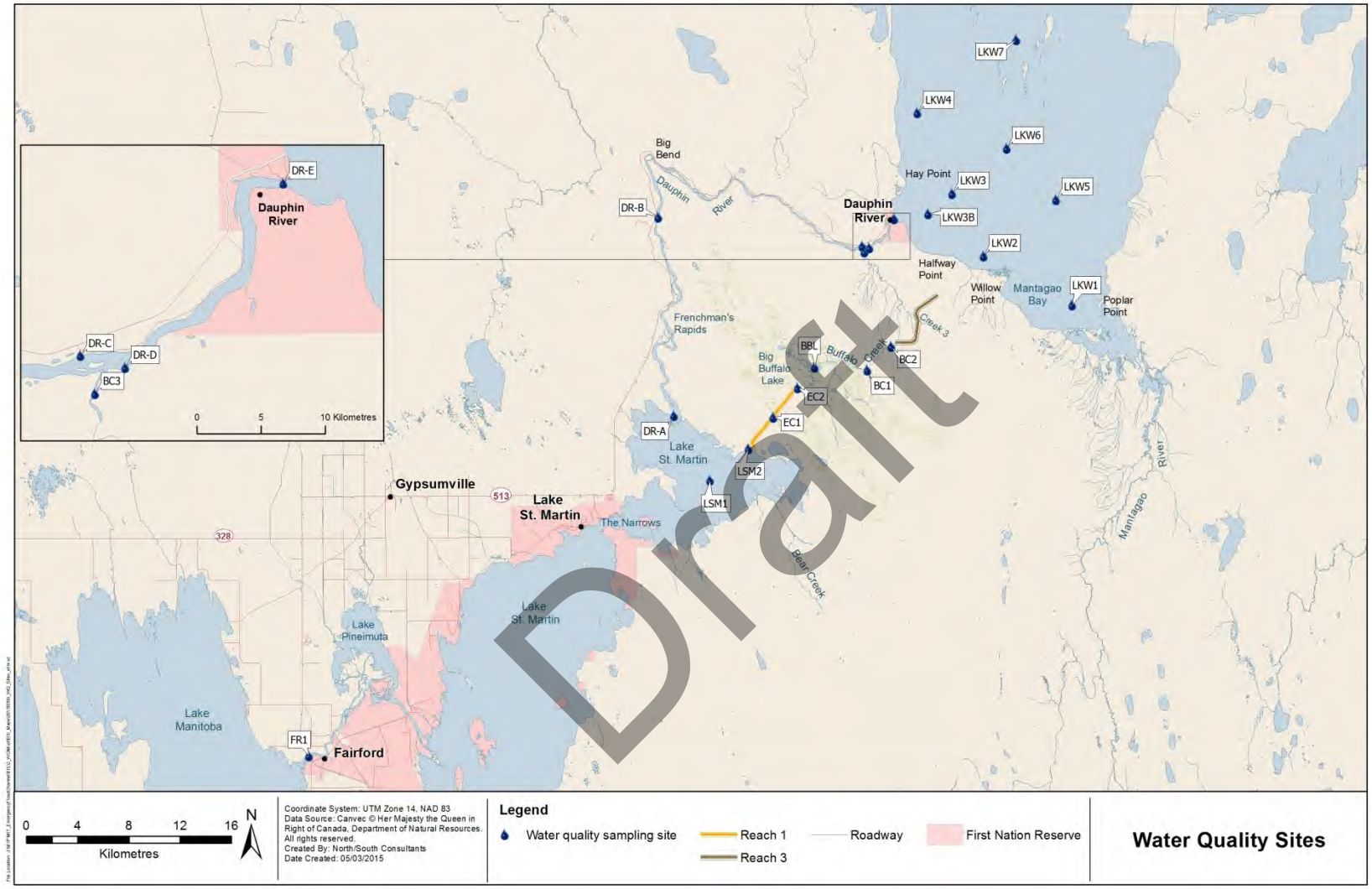

Figure F-1. Water quality sampling locations . See Table F-1 for a list of sites discussed herein.

Appendix G. *In situ* Water Quality Monitoring Program Methods and Results – Fall 2011

G1.0 INTRODUCTION

An intensive *in situ* water quality monitoring program was conducted in Sturgeon Bay, and on the Dauphin River in Fall 2011. The intent of the sampling was to gather spatial information on the water quality of Sturgeon Bay, and in particular to define the area of influence of the Dauphin River; as well as to determine what (if any) spatial differences exist in the water quality of the Dauphin River in relation to Buffalo Creek.

G2.0 METHODS

G2.1 SAMPLING SITES

In Sturgeon Bay, eight transects were established extending approximately four kilometres out from shore (Figure G-1); seven were located along the southwest shore (T-1 to -6 and T-11) and one was located on the southeast shore just north of Poplar Point (T-9). Five sites were located along each transect, as follows: nearshore (i.e., approximately 50-100 m from shore); and, 0.5 km, 1 km, 2 km, and 4 km from the nearshore site. Additionally, three sites were located in the offshore extensive zone (EZ-1 to -3). The Sturgeon Bay *in situ* water quality sites correspond to the substrate classification sites presented in Section 3.6.

In the Dauphin River, three transects were established across the channel width. Transects were located upstream from Buffalo Creek, immediately downstream from Buffalo Creek and at the Dauphin River mouth (Figure G-1). Three sampling sites were located along each transect at approximately 25%, 50% and 75% of the wetted width.

G2.2 FIELD METHODS

In situ measurements were collected at all sampling sites using a Horiba® W22-XD water quality meter. Parameters measured included: pH, specific conductance, DO, turbidity, and temperature. In Sturgeon Bay, *in situ* measurements were recorded both near the surface (i.e., approximately 0.3 m) and at approximately 0.3 m above the lake bottom. At Dauphin River sites, measurements were recorded only near the surface due to high velocities. Water depth at each site was measured with a handheld depth sounder and sample locations were recorded using a handheld Garmin GPS receiver. Sampling date and time were noted for each sampling site. All sites were accessed by boat.

G3.0 RESULTS

Due to adverse weather, *in situ* sampling was completed over a three week period from 30 September to 21 October, 2011. Results of the *In situ* water quality monitoring program are presented in Table G-1. As a result of the extended time period over which the data were collected, the ability to make spatial comparisons is limited to data collected on the same day.

G3.1 STURGEON BAY

In general, water quality near the surface was similar to that near the bottom at sites sampled in Sturgeon Bay (Table G-1). Turbidity (Figure G-2), DO, and pH were consistent between surface and bottom at all sites, and with the exception of Transects 1 and 2, this was also true for specific conductance (Figure G-3). Along Transect 1, specific conductance near the surface was increasingly lower relative to the bottom starting at approximately 1 km offshore, this trend extended out to 4 km offshore. Specific conductance was also lower near the surface than near the bottom at the most offshore site along Transect 2.

Turbidity was variable throughout Sturgeon Bay; however, since the measurements were collected on multiple days over a three week period, the ability to make spatial comparisons is limited to within transect comparisons. Turbidity was generally consistent along Transects 2, 3 and 9 (Figure G-2). At Transects 4 and 11, turbidity was higher nearshore than offshore. There was also some indication of this trend of higher turbidity closer to shore at Transects 1 and 6, though the differences were smaller. Turbidity was consistent between sites in the offshore extensive zone.

The ability to make absolute comparisons of specific conductance is limited to measurements collected on the same day; however, specific conductance is typically a variable that is relatively consistent with time and can be useful in determining the extent of the mixing zone between two water masses. Measureable changes in specific conductance were observed due to inflows from the Dauphin River (Figure G-3). At the majority of transects, there was a slight decrease in specific conductance at the offshore sites (Figure G-3 and G-4). Overall, specific conductance was higher along transects located closer to the Dauphin River mouth (i.e., T-2, T-3, T-4 and T-5) than along transects located in the southern area of the bay (i.e., T-1, T-11, T-9). Transect 6, located along the northern edge of the river plume, showed an increase in specific conductance from nearshore to 1 km offshore, followed by a decrease in specific conductance to 4 km offshore. Based on specific conductance measurements, the mixing zone of the Dauphin River in Sturgeon Bay extended offshore at least five kilometers and down the south shore of the bay as far as Willow Point.

There was no difference in pH or DO from nearshore to offshore in Sturgeon Bay, and pH and DO were similar throughout the area sampled. Sturgeon Bay was well-oxygenated and all DO measurements exceeded the MWQSOGs objectives and the CCME guidelines for PAL. All pH measurements were within the MWQSOGs and CCME guidelines for PAL.

G3.2 DAUPHIN RIVER

In the Dauphin River, *in situ* water quality was similar upstream and downstream of Buffalo Creek (Table G-1). Likewise, no difference in water quality was observed across transects.

Table G-1. *In situ* water quality results measured along transects in Sturgeon Bay and the Dauphin River, fall 2011. Data for Sturgeon Bay are ordered from nearshore to offshore within each transect, and Dauphin River sites are listed from left to right bank when facing upstream. See Figure G-1 for more detail.

Transect Location	Site ID	Sample Date	Depth (m)		Temperature (°C)	Dissolved Oxygen		Sp. Cond (µS/cm)	Turbidity (NTU)	pH
			Total	Measurement		(mg/L)	(% Saturation)			
Sturgeon Bay	T1-5	12-Oct-11	0.9	0.3	11.9	10.36	97.3	1280	37.6	8.13
				0.7	11.9	10.33	97.0	1280	34.6	8.15
	T1-4	12-Oct-11	4.0	0.3	12.1	10.36	97.7	1290	26.1	8.17
				3.0	12.1	10.32	97.3	1290	24.1	8.19
	T1-3	12-Oct-11	4.5	0.3	12.1	10.41	98.2	1170	17.3	8.15
				3.5	12.1	10.31	97.2	1220	18.8	8.19
	T1-2	12-Oct-11	6.1	0.3	12.2	10.19	96.3	1140	17.5	8.17
				5.1	12.1	10.01	94.4	1200	17.1	8.18
	T1-1	12-Oct-11	6.8	0.3	12.1	10.10	95.3	1040	21.4	8.16
				5.8	12.0	9.00	84.7	1220	30.6	8.14
	T2-5	2-Oct-11	2.0	0.3	12.3	10.16	96.2	1460	39.2	8.24
				1.3	12.3	10.13	95.9	1460	38.1	8.25
	T2-4	2-Oct-11	4.5	0.3	12.4	9.91	94.0	1490	27.4	8.24
				4.0	12.4	9.92	94.1	1490	26.3	8.25
	T2-3	2-Oct-11	6.0	0.3	12.3	10.04	95.1	1410	31.4	8.22
				5.5	12.3	9.90	93.7	1410	32.0	8.24
	T2-2	2-Oct-11	6.9	0.3	12.4	10.03	95.2	1440	28.5	8.18
				6.4	12.3	9.92	93.9	1440	29.1	8.19
	T2-1	2-Oct-11	7.3	0.3	12.4	9.92	94.1	1360	37.3	8.12
				6.6	12.4	9.77	92.7	1410	31.1	8.12
	T3-5	1-Oct-11	1.1	0.3	12.3	10.23	96.9	1510	26.6	8.25
				1.0	12.3	10.19	96.5	1510	27.7	8.25
	T3-4	1-Oct-11	3.4	0.3	12.0	10.02	94.3	1520	28.4	8.24
				3.1	12.0	9.94	93.6	1520	26.8	8.24
	T3-3	1-Oct-11	5.0	0.3	12.2	10.06	95.1	1520	28.4	8.22
				4.0	12.1	9.90	93.4	1520	29.6	8.21
	T3-2	1-Oct-11	5.2	0.3	12.4	9.66	91.7	1510	25.1	8.13
				4.7	12.3	9.56	90.5	1510	26.1	8.13
	T3-1	1-Oct-11	7.1	0.3	12.5	9.96	94.7	1450	43.8	8.00
				6.5	12.4	9.73	92.3	1450	32.7	8.01

Table G-1. Continued.

Transect Location	Site ID	Sample Date	Depth (m)		Temperature (°C)	Dissolved Oxygen		Sp. Cond (µS/cm)	Turbidity (NTU)	pH
			Total	Measurement		(mg/L)	(% Saturation)			
Sturgeon Bay	T4-5	30-Sep-11	1.1	0.3	12.7	10.13	96.7	1480	75.6	8.25
				0.7	12.7	10.13	96.7	1480	78.9	8.26
	T4-4	30-Sep-11	2.7	0.3	12.6	9.86	93.9	1500	44.1	8.22
				2.2	12.5	9.79	93.1	1500	48.4	8.22
	T4-3	30-Sep-11	3.7	0.3	13.1	9.78	94.1	1490	24.8	8.18
				3.2	13.1	9.76	93.9	1490	28.7	8.19
	T4-2	30-Sep-11	5.2	0.3	12.9	9.13	87.5	1510	24.0	8.10
				4.7	12.9	9.02	86.5	1510	22.1	8.10
	T4-1	30-Sep-11	6.1	0.3	13.1	9.31	89.6	1420	31.3	8.05
				5.7	13.1	9.20	88.5	1420	30.9	8.08
	T5-5	1-Oct-11	1.2	0.3	13.4	10.35	100.2	1510	33.2	8.22
				1.0	13.4	10.33	100.0	1510	31.6	8.22
	T5-4	1-Oct-11	2.5	0.3	13.0	10.16	97.6	1510	35.6	8.21
				1.8	13.0	10.06	96.6	1510	34.7	8.21
	T5-3	1-Oct-11	3.8	0.3	12.9	9.96	95.5	1470	39.6	8.19
				3.1	12.8	9.84	94.1	1480	36.6	8.18
	T5-2	1-Oct-11	6.7	0.3	12.8	9.78	93.6	1440	46.3	8.14
				6.0	12.2	9.63	91.0	1500	48.2	8.14
	T5-1	1-Oct-11	7.0	0.3	12.8	9.84	94.1	1510	35.1	8.20
				6.5	12.7	9.69	92.5	1510	38.9	8.17
	T6-5	30-Sep-11	1.7	0.3	11.7	9.52	89.1	1060	43.4	8.02
				1.2	11.7	9.44	88.3	1060	63.7	8.03
	T6-4	30-Sep-11	4.1	0.3	12.3	9.25	87.6	1130	41.7	8.01
				3.5	12.3	9.16	86.7	1130	50.2	8.04
	T6-3	30-Sep-11	6.6	0.3	13.3	8.96	86.6	1470	31.9	8.03
				6.0	13.3	8.76	84.7	1480	31.4	7.97
	T6-2	30-Sep-11	6.8	0.3	12.9	9.27	88.9	1310	33.8	8.03
				6.5	12.9	9.20	88.2	1320	33.4	8.06
	T6-1	30-Sep-11	7.4	0.3	12.7	9.20	87.8	1240	40.3	8.00
				7.0	12.7	8.02	76.6	1240	39.8	8.02
	T9-5	12-Oct-11	1.6	0.3	12.2	10.20	96.4	1260	19.0	8.25
				1.2	12.2	10.19	96.3	1260	19.2	8.25

Table G-1. Continued.

Transect Location	Site ID	Sample Date	Depth (m)		Temperature	Dissolved Oxygen		Sp. Cond	Turbidity	pH
			Total	Measurement	(°C)	(mg/L)	(% Saturation)	(µS/cm)	(NTU)	
Sturgeon Bay	T9-4	12-Oct-11	4.5	0.3	12.1	10.31	97.2	1240	15.6	8.27
				3.5	12.1	10.31	97.2	1240	16.8	8.27
	T9-3	12-Oct-11	4.9	0.3	12.1	10.09	95.2	1230	16.9	8.24
				3.9	12.1	10.07	95.0	1230	17.7	8.24
	T9-2	12-Oct-11	6.3	0.3	12.2	10.16	96.0	1220	17.0	8.21
				5.3	12.2	10.16	96.0	1220	17.5	8.22
	T9-1	12-Oct-11	6.8	0.3	12.2	9.81	92.7	1040	23.6	8.17
				5.8	12.2	9.61	90.8	1060	26.0	8.16
	T11-5	21-Oct-11	1.5	0.3	4.8	12.78	103.9	1190	129.0	7.80
				1.2	4.6	12.70	102.9	1160	121.0	7.93
	T11-4	21-Oct-11	2.0	0.3	6.0	12.25	102.1	1220	35.1	7.97
				1.7	5.9	12.27	102.1	1220	34.2	7.98
	T11-3	21-Oct-11	3.7	0.3	6.0	12.32	102.7	1200	39.1	7.95
				3.4	5.9	12.32	102.5	1220	44.1	7.98
	T11-2	21-Oct-11	6.0	0.3	5.9	12.08	100.5	1110	50.4	7.86
				5.7	5.9	12.14	101.0	1110	55.4	7.91
Extensive Zone (offshore)										
	EZ-1	1-Oct-11	8.5	0.3	13.0	10.21	98.1	1220	37.6	8.22
				8.0	12.5	9.90	94.1	1220	40.4	8.19
	EZ-2	1-Oct-11	8.2	0.3	13.2	10.32	99.5	1210	35.4	8.23
				7.6	12.5	9.96	94.7	1190	37.6	8.19
	EZ-3	1-Oct-11	7.6	0.3	13.4	10.59	102.5	1140	37.3	8.25
				7.3	12.2	9.83	92.9	1200	42.2	8.19
Dauphin River										
Upstream from Buffalo Cr.	DR-T1-1	30-Sep-11	3.1	0.3	13.1	9.10	87.6	1560	18.8	8.12
	DR-T1-2	30-Sep-11	2.5	0.3	13.1	8.94	86.0	1560	20.9	8.10
	DR-T1-3	30-Sep-11	2.3	0.3	13.1	9.14	88.0	1560	20.4	8.10
Downstream from Buffalo Cr.	DR-T2-1	30-Sep-11	1.7	0.3	13.2	9.17	88.4	1550	19.0	8.11
	DR-T2-2	30-Sep-11	1.4	0.3	13.1	8.94	86.0	1540	17.7	8.10
	DR-T2-3	30-Sep-11	2.1	0.3	13.1	9.12	87.8	1550	18.9	8.09
Mouth	DR-T3-1	30-Sep-11	3.4	0.3	13.2	9.05	87.3	1560	18.8	8.08
	DR-T3-2	30-Sep-11	3.4	0.3	13.2	9.01	86.9	1540	19.7	8.08
	DR-T3-3	30-Sep-11	3.9	0.3	13.2	9.18	88.5	1500	19.2	8.07

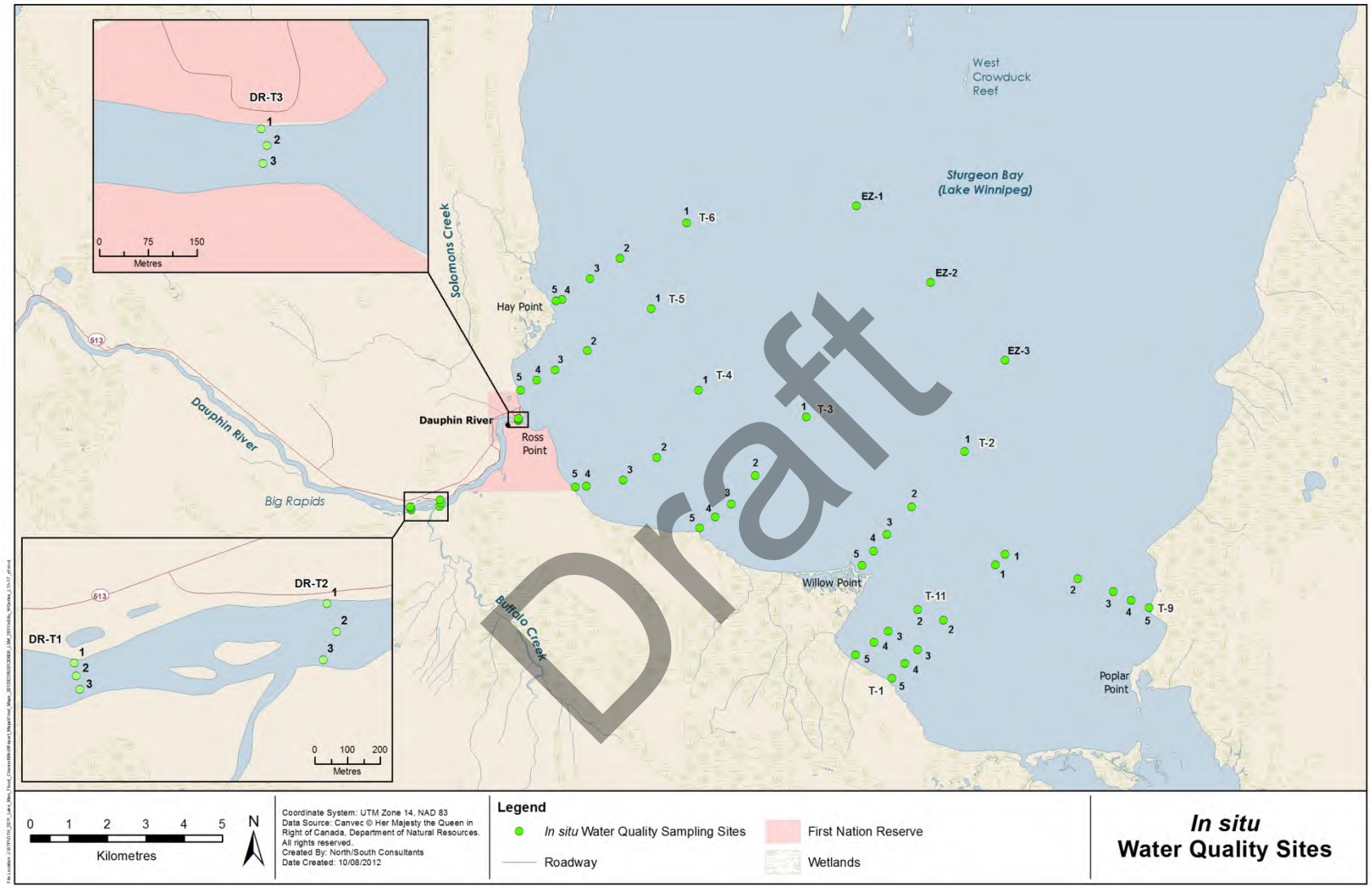

Figure G-1. Location of sites where *in situ* water quality measurements were recorded during fall 2011.

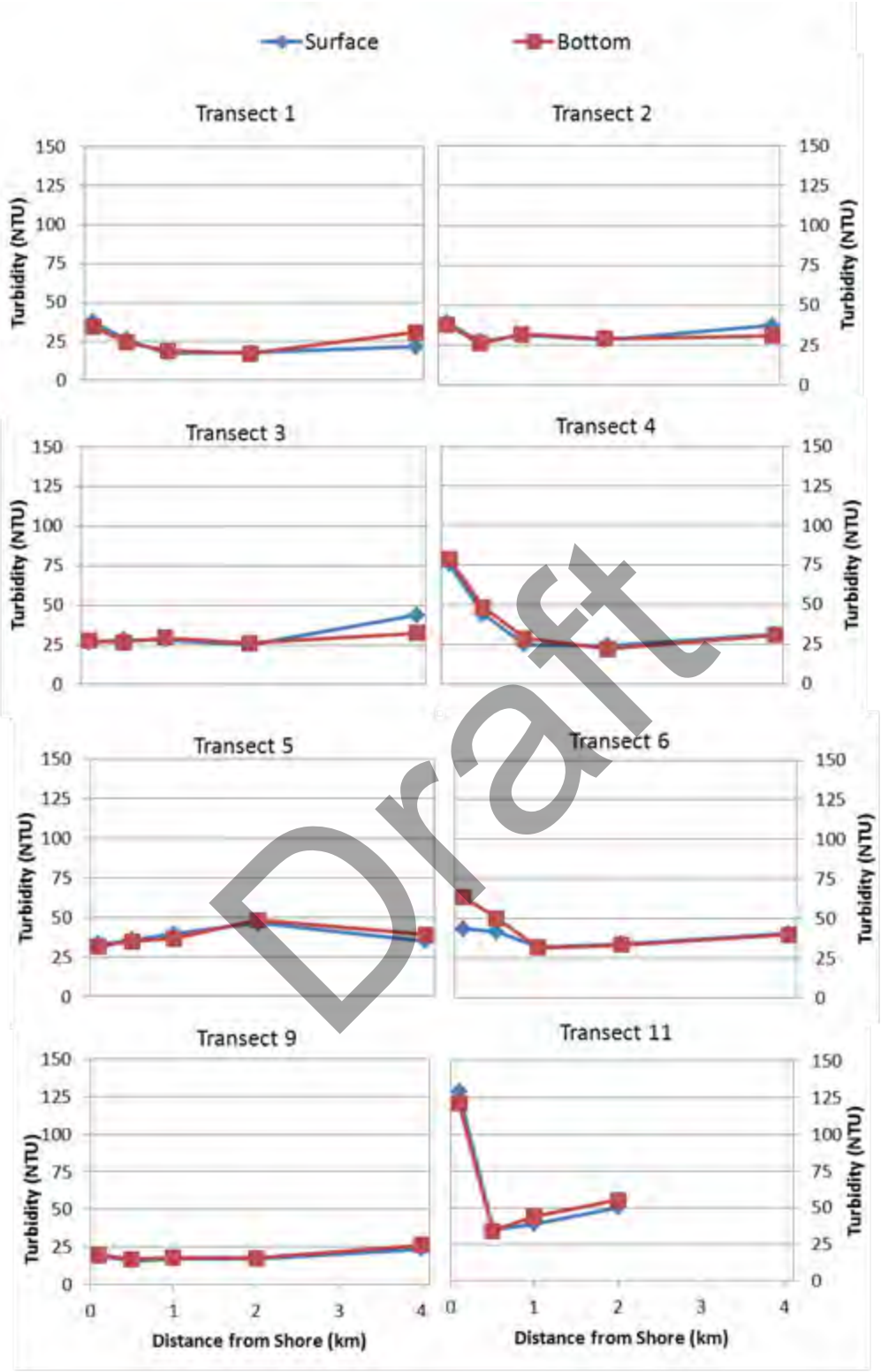

Figure G-2. *In situ* turbidity measured along transects extending out from shore in Sturgeon Bay, fall 2011.

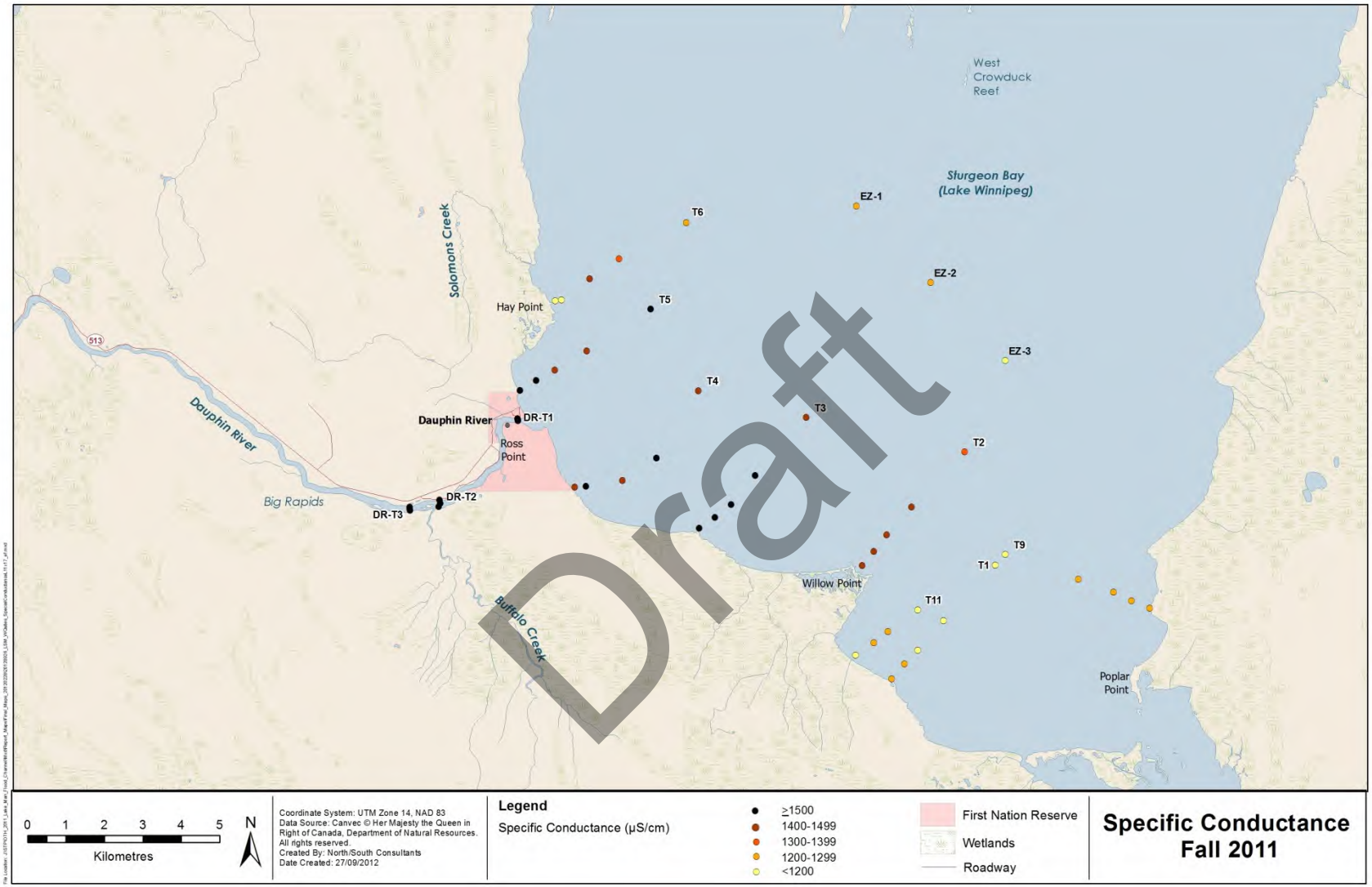

Figure G-3. Map of specific conductance values measured near the surface in the Dauphin River and Sturgeon Bay, fall 2011.

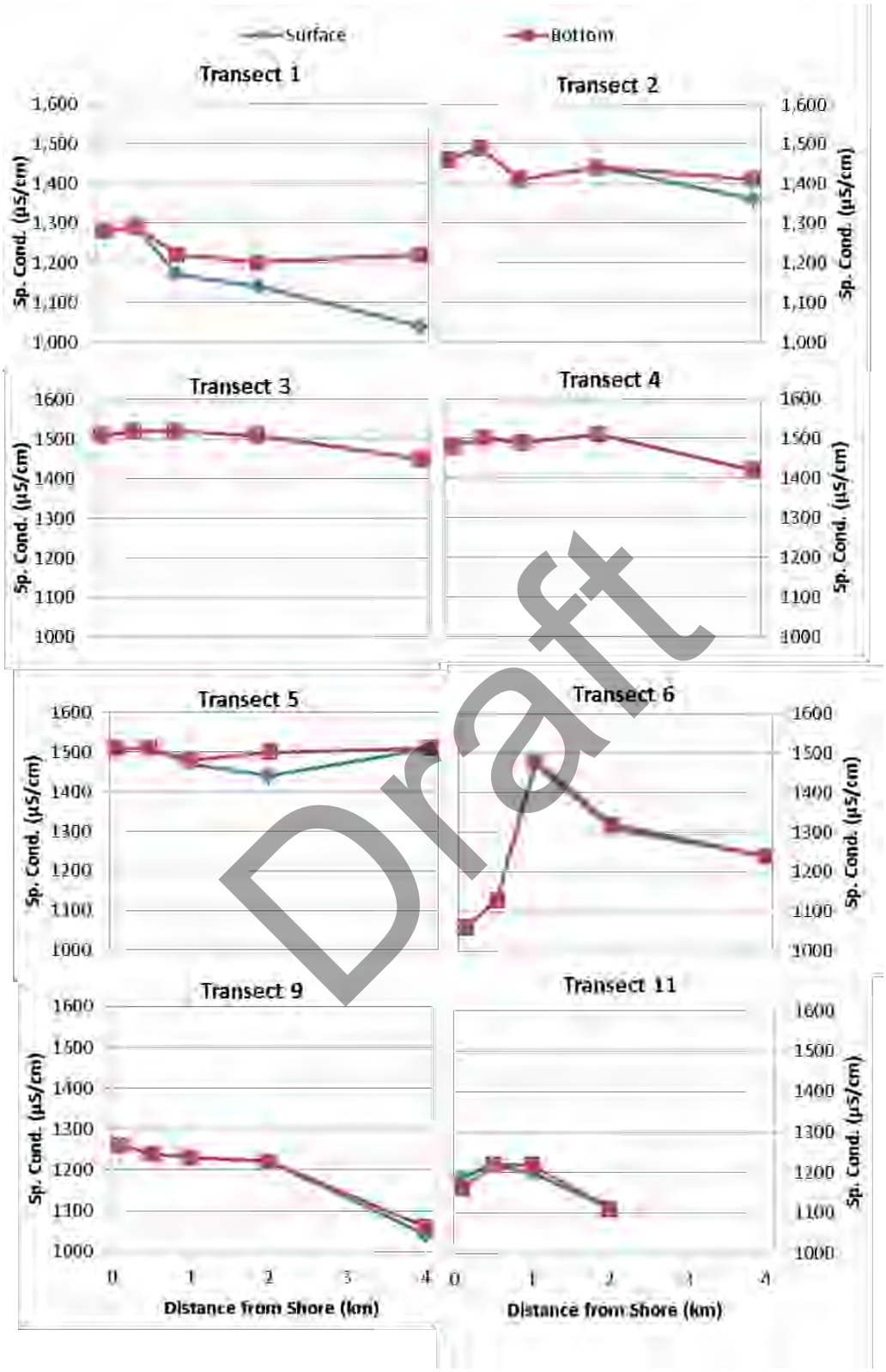

Figure G-4. *In situ* specific conductance measured along transects extending out from shore in Sturgeon Bay, fall 2011.

Appendix H. *In situ* Water Quality Monitoring Program Methods and Results – February and March 2012

H1.0 INTRODUCTION

In situ and total suspended solids (TSS) water quality monitoring sampling was conducted in Sturgeon Bay in February and March, 2012. The objectives were:

- To measure *in situ* water quality parameters to supplement data collected during fall 2011;
- To collect baseline water quality information in the vicinity of the proposed Reach 3 outlet;
- To help delineate the spatial extent over which suspended sediment inputs may be distributed in Sturgeon Bay; and,
- To develop a reliable turbidity/TSS relationship for analysis of turbidity data.

H2.0 METHODS

H2.1 SAMPLING SITES

From February 12 to 14, 2012, *in situ* measurements and water samples for the analysis of TSS and turbidity were collected from 34 sites in Sturgeon Bay (Figure H-1). The water quality sampling conducted in February coincided with the deployment of sediment traps.

From 25-27 March 2012, *in situ* measurements were collected along nine transects extending out from the south-west shore of Sturgeon Bay (Figure H-2). Additionally, water samples for the analysis of TSS/turbidity were collected from 9 of the 33 sites sampled.

H2.2 SAMPLING METHODS

Sampling sites were accessed by snowmobile and holes were drilled through the ice using a Stihl power auger. Measurements of ice thickness and effective water depth (using a handheld depth sounder) were recorded at each site. Sample locations were recorded using a handheld Garmin GPS receiver.

In situ measurements of water quality parameters including pH, specific conductance, dissolved oxygen (DO), turbidity, and water temperature were collected at all sampling sites using a Horiba® W22-XD water quality meter. *In situ* measurements were recorded at 1.5 m below the ice surface and at 1.5 m increments to a depth of approximately 1 m from the sediments.

Water samples for the laboratory analysis of TSS and turbidity were collected from approximately 0.5-1.0 m below the ice surface using pole sampler then transferred into clean sample bottles supplied by ALS Laboratories. Additionally, triplicate samples were collected for laboratory analysis of TSS/turbidity. After collection, samples were kept cool (but prevented from freezing) until submission to ALS Laboratories in Winnipeg, MB for analysis. An attempt was made to deliver the samples to the laboratory for analysis within the specified hold-times; however, this was not always logistically feasible and the hold-time for turbidity (2-3 days) was occasionally exceeded.

H3.0 RESULTS

Extremely cold air temperatures during sampling in both February and March caused the Horiba® W22-XD water quality meter to malfunction. Consequently, all *in situ* measurements collected are considered suspect. The data are presented in Tables H-1 and H-2, but are not considered further in this report. Further, broken ice and heavy ice rubble precluded sampling in close proximity to the Dauphin River mouth.

A total of 43 water samples collected in February (n = 34; Table H-3; Figure H-1) and March (n = 9; Table H-4; Figure H-2) were submitted to ALS Laboratories for TSS and turbidity analyses. Results indicate that the surface water in Sturgeon Bay was fairly clear in winter 2012 (Table H-3 and Figure H-3). TSS and turbidity measured in water samples collected in February typically ranged from < 2.0 mg/L to 2.8 mg/L and 1.6 NTU to 4.35 NTU, respectively. TSS and turbidity were higher at ST-13, which was the site located nearest the mouth of the Dauphin River (Figures H-3 and H-4), than at other sites sampled; in the water sample collected at this location TSS was 8.8 mg/L and turbidity was 5.80 NTU. In March 2012, laboratory measured TSS and turbidity ranged from < 5.0 mg/L to 10 mg/L and from 1.71 NTU to 6.18 NTU, respectively.

TSS values for a large portion of the water samples analyzed were below the laboratory detection limits (34 of 43 samples; Tables H-3 and H-4). Linear regression was used to establish a relationship between TSS and turbidity using only those samples for which TSS values were above the laboratory detection limit (n = 9). The relationship is presented in Figure H-5.

Table H-1. *In situ* water quality measurements recorded in Sturgeon Bay, February 2012. All data are suspect, see text for details.

Location ID	Sample Date	Total Depth (m)	Ice Depth (m)	Total Sample Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	pH
ST-1	12-Feb-12	8.0	0.72	1.5	0.8	0.18	11.76	87.1	1030	7.96
				3.0	2.3	0.24	11.49	85.2	1170	7.92
				4.5	3.8	0.18	10.43	77.2	1410	7.80
				6.0	5.3	0.23	8.43	62.5	1450	7.71
				7.5	6.8	1.40	6.47	49.1	1410	7.62
ST-2	12-Feb-12	6.8	0.71	1.5	0.8	0.36	12.25	91.0	790	7.93
				3.0	2.3	0.43	12.12	90.2	820	7.95
				4.5	3.8	0.47	12.03	89.6	858	7.91
				6.0	5.3	0.82	10.64	79.8	1400	7.77
ST-3	12-Feb-12	8.0	0.73	1.5	0.8	0.28	10.41	77.2	1000	7.91
				3.0	2.3	0.1	10.16	75.1	1320	7.79
				4.5	3.8	0.17	7.28	53.9	1410	7.65
				3.0	2.3	0.48	6.75	50.3	1440	7.59
				7.5	6.8	1.74	5.69	43.5	1450	7.52
ST-4	14-Feb-12	7.0	0.73	1.5	0.8	0.01	19.99	147.5	1240	7.96
				3.0	2.3	-0.01	18.81	138.7	1530	7.84
				4.5	3.8	-0.02	16.51	121.7	1450	7.73
				6.0	5.3	0.18	14.48	107.2	1640	7.67
ST-5	14-Feb-12	6.5	0.78	1.5	0.8	-0.09	19.99	147.2	1660	7.84
				3.0	2.3	-0.01	15.6	115.1	1810	7.79
				4.5	3.8	-0.01	14.23	105.0	1790	7.63
				6.0	5.3	0.16	12.5	92.5	1740	7.56
ST-6	12-Feb-12	6.0	0.66	1.5	0.9	0.48	11.86	88.4	970	7.88
				2.5	1.9	0.61	11.86	88.6	960	7.86
				4.8	4.2	1.08	10.34	78.0	804	7.80
ST-7	12-Feb-12	6.8	0.72	1.5	0.8	-0.01	11.98	88.4	9800	8.01

Table H-1. Continued.

Location ID	Sample Date	Total Depth (m)	Ice Depth (m)	Total Sample Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	pH
				3.0	2.3	0.07	12.13	89.6	940	8.00
				4.5	3.8	0.32	11.33	84.1	1030	7.96
				6.0	5.3	0.25	8.6	63.8	1410	7.76
ST-8	12-Feb-12	7.3	0.78	1.5	0.8	-0.06	12.54	92.4	800	8.04
				3.0	2.3	0.17	12.33	91.3	831	8.04
				4.5	3.8	0.3	9.38	69.6	1380	7.89
				6.0	5.3	0.05	7.91	58.4	1450	7.73
ST-9	12-Feb-12	7.7	0.75	1.5	0.8	0.18	11.56	85.6	876	8.05
				3.0	2.3	0.38	10.73	79.8	1000	7.94
				4.5	3.8	0.12	9.14	67.6	1400	7.78
				6.0	5.3	0.13	7.52	55.6	1380	7.68
				7.5	6.8	0.99	6.24	47.0	1370	7.61
ST-10	14-Feb-12	7.5	0.75	1.5	0.8	-0.04	19.99	147.4	1770	7.85
				3.0	2.3	0.01	19.99	147.5	1920	7.84
				4.5	3.8	-0.11	16.09	118.4	2130	7.71
				6.0	5.3	-0.03	14.4	106.2	2060	7.66
ST-11	13-Feb-12	7.0	0.69	1.5	0.8	0.03	18.7	138.0	1460	7.77
				3.0	2.3	-0.06	17.75	130.8	1620	7.72
				4.5	3.8	-0.08	16.12	118.7	1660	7.66
				6.0	5.3	0.01	14.8	109.2	1670	7.63
ST-12	13-Feb-12	6.5	0.72	1.5	0.8	0.09	16.49	121.9	1590	7.69
				3.0	2.3	-0.01	15.88	117.1	1650	7.64
				4.5	3.8	-0.02	15.03	110.8	1650	7.61
				6.0	5.3	0.88	14.03	105.4	1660	7.58
ST-13	12-Feb-12	4.7	0.78	1.6	0.77	1.35	11.3	85.7	980	7.72
				4.6	3.77	0.08	9.65	71.3	1470	7.58

Table H-1. Continued.

Location ID	Sample Date	Total Depth (m)	Ice Depth (m)	Total Sample Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	pH
ST-14	12-Feb-12	6.3	0.72	1.5	0.8	0.06	11.74	86.7	799	8.02
				3.0	2.3	0.29	10.43	77.4	868	7.94
				4.5	3.8	0.01	8.38	61.8	1450	7.77
				6.0	5.3	0.01	7.39	54.5	1450	7.70
ST-15	12-Feb-12	7.0	0.68	1.5	0.8	0.26	9.93	73.6	1050	7.88
				3.0	2.3	0.14	8.97	66.4	1240	7.78
				4.5	3.8	0.07	7.84	57.9	1420	7.70
				6.0	5.3	0.17	7.09	52.5	1390	7.66
ST-16	14-Feb-12	7.4	0.78	1.5	0.7	0.04	19.99	147.6	1070	7.96
				3.0	2.2	-0.02	-	-	1380	7.90
				4.5	3.7	-0.06	17.2	126.7	1380	7.82
				6.0	5.2	-0.05	16.33	117.7	1340	7.72
ST-17	14-Feb-12	5.8	0.8	1.5	0.7	-0.09	16.01	117.9	1650	7.50
				3.0	2.2	-0.1	15.52	114.3	1670	7.48
				4.5	3.7	-0.1	15.07	110.9	1660	7.47
ST-18	14-Feb-12	6.1	0.68	1.5	0.8	-0.01	18.18	134.1	1650	7.70
				3.0	2.3	-0.06	17.73		1590	7.68
				4.5	3.8	-0.11	15.25	112.3	1650	7.67
				6.0	5.3	-0.03	13.82	101.9	1650	7.56
ST-19	14-Feb-12	6.5	0.68	1.5	0.8	0.11	19.99	147.8	1150	7.97
				3.0	2.3	-0.04	19.99	147.4	1250	7.87
				4.5	3.8	-0.01	17.52	129.2	1610	7.75
				6.0	5.3	0.02	15.46	114.1	1640	7.64
ST-20	14-Feb-12	7.0	0.78	1.5	0.8	0.17	18.94	140.2	1290	7.85
				3.0	2.3	0.01	16.52	121.9	1510	7.71
				4.5	3.8	-0.05	14.15	104.3	1640	7.65

Table H-1. Continued.

Location ID	Sample Date	Total Depth (m)	Ice Depth (m)	Total Sample Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	pH
				6.0	5.3	-0.1	13.97	102.9	1770	7.59
ST-21	13-Feb-12	4.0	0.69	1.5	0.8	0.05	15.7	115.9	1630	7.15
				3.0	2.3	0.06	15.45	114.1	1630	7.19
ST-22	14-Feb-12	5.5	0.8	1.5	0.7	0.05	14.64	108.1	1680	7.53
				3.0	2.2	0.01	14.54	107.3	1660	7.51
				4.5	3.7	0.05	14.33	105.8	1660	7.50
ST-23	14-Feb-12	6.6	0.9	1.6	0.7	0.01	14.94	110.2	1670	7.57
				3.1	2.2	0.00	14.6	107.7	1670	7.55
				4.6	3.7	-0.01	14.29	105.4	1660	7.54
				6.1	5.2	0.11	14.12	104.4	1650	7.53
ST-24	14-Feb-12	6.8	0.73	1.5	0.8	-0.03	19.99	147.4	1340	7.90
				3.0	2.3	-0.1	16.5	121.5	1610	7.77
				4.5	3.8	-0.11	15.83	116.5	1660	7.70
				3.0	2.3	-0.01	15.1	111.4	1730	7.66
ST-25	13-Feb-12	2.7	0.68	1.5	0.8	0.23	15.81	117.2	1730	7.21
ST-26	13-Feb-12	3.9	0.78	1.5	0.8	0.13	15.67	115.9	1690	7.30
				3.0	2.3	0.1	15.48	114.4	1640	7.31
ST-27	14-Feb-12	6.5	0.73	1.5	0.8	0.03	14.95	110.4	1650	7.59
				3.0	2.3	0.04	14.49	107.0	1660	7.57
				4.5	3.8	0.03	14.13	104.3	1640	7.56
				6.0	5.3	0.1	13.74	101.6	1640	7.55
ST-28	13-Feb-12	6.8	0.8	1.5	0.7	0.09	17.18	127.0	1600	7.68
				3.0	2.2	-0.01	16.28	120.1	680	7.61
				4.5	3.7	-0.04	15.22	112.2	1670	7.56
				6.0	5.2	0.16	13.76	101.8	1680	7.54

Table H-1. Continued.

Location ID	Sample Date	Total Depth (m)	Ice Depth (m)	Total Sample Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	pH
ST-29	13-Feb-12	4.0	0.7	1.5	0.8	0.05	14.9	110.0	1640	7.40
				3.0	2.3	0.11	14.8	109.4	1620	7.40
ST-30	13-Feb-12	5.9	0.65	1.5	0.9	0.07	14.44	106.7	1660	7.45
				3.0	2.4	0.02	14.27	105.3	1640	7.45
				4.5	3.9	0.20	13.92	103.1	1630	7.44
ST-31	13-Feb-12	6.5	0.85	1.5	0.7	-0.06	16.16	119.1	1600	7.55
				3.0	2.2	-0.13	15.42	113.5	1670	7.52
				4.5	3.7	-0.08	14.42	106.2	1690	7.47
				6.0	5.2	0.12	13.78	101.9	1660	7.44
ST-32	13-Feb-12	6.3	0.9	1.5	0.6	0.07	16.09	118.9	1710	7.60
				3.0	2.1	-0.03	15.34	113.1	1680	7.58
				4.5	3.6	-0.03	15.07	111.1	1690	7.57
				6.0	5.1	0.07	14.46	106.8	1690	7.54
ST-33	13-Feb-12	5.3	0.8	1.8	1.0	0.01	15.22	112.3	1640	7.48
				3.3	2.5	0.00	15.07	111.2	1630	7.48
				4.8	4	0.32	14.78	109.7	1620	7.47
ST-34	13-Feb-12	5.3	0.78	1.5	0.7	0.19	19.99	148.0	1670	7.73
				3.0	2.2	-0.03	19.41	143.1	1660	7.76
				4.5	3.7	0.27	17.42	129.2	1700	7.72

Table H-2. *In situ* water quality measurements recorded along transects in Sturgeon Bay in March, 2012. All data are suspect, see text for details.

Transect	Location ID	Sample Date	Sample Time	Total Depth (m)	Ice Depth (m)	Total Sample Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	pH
1	T1-3	25-Mar-12	-	3.9	0.61	1.5	0.9	2.4	7.22	55.9	1350	7.60
						3.0	2.4	3.3	7.09	55.9	1330	7.62
	T1-4	25-Mar-12	-	2.9	0.53	1.5	1.0	2.4	7.75	60.0	1250	7.45
						2.5	2.0	2.4	7.62	59.0	1300	7.50
	T1-5B	25-Mar-12	-	1.3	0.45	1.5	1.1	4.9	11.38	92.7	734	7.92
3	T3-1	26-Mar-12	18:45	6.3	0.75	1.5	0.8	3.7	-	-	447	7.76
						3.0	2.3	1.4	-	-	1310	7.72
						5.5	4.8	1.4	-	-	1310	7.72
	T3-2	26-Mar-12	18:15	4.8	0.68	1.5	0.8	1.4	8.84	67.1	1290	7.70
						3.0	2.3	1.4	8.86	67.2	1300	7.70
						4.5	3.8	1.3	8.93	67.6	1310	7.70
	T3-3	26-Mar-12	17:35	4.1	0.70	1.5	0.8	1.3	7.92	59.9	1300	7.62
						2.5	1.8	1.3	7.99	60.5	1300	7.61
						3.5	2.8	1.3	7.98	60.4	1300	7.61
	T3-4	26-Mar-12	17:02	2.5	0.68	1.0	0.3	1.8	8.11	62.1	1270	7.60
						2.0	1.3	1.8	8.11	62.0	1280	7.60
4	T4-1	26-Mar-12	11:01	6.0	0.67	1.5	0.8	2.7	12.04	93.8	798	7.73
						3.0	2.3	2.1	10.91	84.0	1270	7.78
						4.5	3.8	2.1	10.25	78.8	1300	7.80
						5.5	4.8	2.0	9.96	76.5	1300	7.81
	T4-2	26-Mar-12	11:57	4.8	0.76	1.5	0.7	1.4	8.16	61.9	1280	7.64
						2.5	1.7	1.4	8.56	64.9	1290	7.65
						4.3	3.5	1.4	8.31	63.1	1290	7.65
	T4-3	26-Mar-12	13:02	3.6	0.66	1.5	0.8	1.4	8.67	65.7	1280	7.62
						3.0	2.3	1.4	8.45	64.1	1280	7.62
	T4-4	26-Mar-12	13:46	3.4	0.57	1.0	0.4	0.6	8.46	63.2	1280	7.66
						3.0	2.4	0.6	-	-	1280	7.65

Table H-2. Continued.

Transect	Location ID	Sample Date	Sample Time	Total Depth (m)	Ice Depth (m)	Total Sample Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	pH
10	T10-1	27-Mar-12	10:32	6.5	0.77	1.5	0.7	3.0	12.3	96.5	467	7.65
						3.0	2.2	2.2	12.59	97.1	648	7.72
						6.0	5.2	1.6	10.61	80.8	1320	7.71
	T10-2	27-Mar-12	11:34	4.4	0.73	1.5	0.8	2.1	10.58	81.3	950	7.75
						2.5	1.8	1.6	9.42	71.7	1290	7.74
						4.0	3.3	1.9	9.05	69.4	1290	7.72
	T10-3	27-Mar-12	12:07	4.0	0.68	1.5	0.8	2.1	-	-	1240	7.61
						3.0	2.3	1.7	-	-	1260	7.60
	T10-4	27-Mar-12	12:36	3.3	0.67	1.5	0.8	1.8	-	-	1280	7.58
						3.0	2.3	1.8	-	-	1290	7.59
	T10-5	27-Mar-12	13:29	1.4	0.59	1.0	0.4	2.6	-	-	1160	7.56
11	T11-2	25-Mar-12	-	5.0	0.74	1.5	0.8	1.8	10.51	80.4	1310	7.33
						3.0	2.3	1.8	10.33	79.0	1320	7.37
						4.5	3.8	1.9	10.35	79.3	1320	7.38
	T11-3	25-Mar-12	-	2.9	0.61	1.5	0.9	1.9	9.38	71.9	1300	7.50
						2.5	1.9	1.9	9.26	70.9	1300	7.49
	T11-4	25-Mar-12	-	1.7	0.44	-	-	2.7	7.65	59.5	1240	7.58
	T11-5	25-Mar-12	-	1.0	0.38	-	-	***7.5***	13.14	112.9	***734***	7.75
13	T13-2	27-Mar-12	17:17	5.0	0.68	1.5	0.8	1.8	-	-	1270	7.65
						3.0	2.3	1.9	-	-	1280	7.62
						4.5	3.8	1.7	-	-	1270	7.50
	T13-3	27-Mar-12	16:40	4.3	0.72	1.5	0.8	1.1	-	-	1260	7.57
						3.0	2.3	1.1	-	-	1290	7.58
	T13-4	27-Mar-12	16:18	4.0	0.73	1.0	0.3	1.4	-	-	1250	7.55
						3.0	2.3	1.8	-	-	1280	7.55
14	T14-3	25-Mar-12	-	5.3	0.74	1.5	0.8	1.8	9.38	71.7	1230	7.48
						3	2.3	1.7	8.94	68.3	1310	7.48
						4.5	3.8	1.7	8.23	62.8	1310	7.45
	T14-4	25-Mar-12	-	4.9	0.78	1.5	0.7	1.8	8.86	67.7	1290	7.35
						3.0	2.2	1.8	8.82	67.4	1300	7.36

Table H-2. Continued.

Transect	Location ID	Sample Date	Sample Time	Total Depth (m)	Ice Depth (m)	Total Sample Depth (m)	Effective Sample Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Oxygen Saturation (%)	Specific Conductance (µS/cm)	pH
						4.5	3.7	1.7	8.56	65.4	1300	7.37
	T14-5	25-Mar-12	-	1.9	0.69	1.5	0.8	2.1	10.97	84.5	1260	7.42
15	T15-4	27-Mar-12	14:27	4.0	0.65	1.0	0.4	1.2	-	-	1280	7.58
						3.0	2.4	1.4	-	-	1280	7.57
	T15-5	27-Mar-12	14:00	2.3	0.56	1.0	0.4	2.1	-	-	1250	7.56
						2.0	1.4	2.9	-	-	1220	7.56
16	T16-2	27-Mar-12	16:34	5.5	0.69	1.5	0.8	2.1	-	-	868	7.71
						3.0	2.3	1.4	-	-	1290	7.70
						5.0	4.3	1.5	-	-	1330	7.67
	T16-3	27-Mar-12	15:02	4.0	0.73	1.0	0.3	1.6	-	-	1270	7.59
						2.5	1.8	1.6	-	-	1400	7.60
						3.5	2.8	1.5	-	-	1460	7.61
	T16-5	26-Mar-12	15:21	2.4	0.53	1.0	0.5	1.8	8.41	64.3	1240	7.61
						2.0	1.5	1.8	8.17	62.5	1260	7.59
	T16-4	26-Mar-12	16:06	3.5	0.65	1.5	0.9	2.0	8.43	64.7	1270	7.58
						3.0	2.4	2.0	8.14	62.5	1260	7.57

Table H-3. Total suspended solids and turbidity measured in water samples collected from Sturgeon Bay in February 2012.

Location ID	Sample Date	TSS (mg/L)	Turbidity (NTU)
Analytical Detection Limit		*2.0*	*0.10*
ST-1	12-Feb-12	<2.0	2.25
ST-2	12-Feb-12	<2.0	2.62
ST-3	12-Feb-12	<2.0	1.61
ST-4	14-Feb-12	<2.0	1.82
ST-5	14-Feb-12	<2.0	2.31
ST-6	12-Feb-12	<2.0	1.96
ST-7	12-Feb-12	<2.0	1.78
ST-8	12-Feb-12	<2.0	2.09
ST-9	12-Feb-12	<2.0	1.88
ST-10	14-Feb-12	<2.0	2.33
ST-11	13-Feb-12	<2.0	1.89
ST-12	13-Feb-12	<2.0	2.48
ST-13	12-Feb-12	8.8	5.80
ST-14	12-Feb-12	<2.0	1.60
ST-15	12-Feb-12	<2.0	2.26
ST-16	14-Feb-12	<2.0	2.31
ST-17	14-Feb-12	2.0	2.74
ST-18	14-Feb-12	<2.0	2.41
ST-19	14-Feb-12	<2.0	2.53
ST-20	14-Feb-12	<2.0	3.34
ST-21	13-Feb-12	<2.0	3.24
ST-22	14-Feb-12	2.4	3.49
ST-23	14-Feb-12	<2.0	3.78
ST-24	14-Feb-12	<2.0	2.14
ST-25	13-Feb-12	<2.0	2.66
ST-26	13-Feb-12	2.0	3.29
ST-27	14-Feb-12	2.8	3.40
ST-28	13-Feb-12	<2.0	2.60
ST-29	13-Feb-12	<2.0	3.33
ST-30	13-Feb-12	<2.0	4.35
ST-31	13-Feb-12	<2.0	1.82
ST-32	13-Feb-12	<2.0	3.86
ST-33	13-Feb-12	<2.0	3.65
ST-34	13-Feb-12	<2.0	2.16

Table H-4. Total suspended solids and turbidity measured in water samples collected from Sturgeon Bay in March 2012.

Location ID	Sample Date	TSS (mg/L)	Turbidity (NTU)
Analytical Detection Limits		*5.0*	*0.10*
T1-3	25-Mar-12	<5.0	1.71
T3-1	25-Mar-12	<5.0	2.17
T3-3	25-Mar-12	10	6.03
T4-2	25-Mar-12	6.0	5.10
T10-1	25-Mar-12	<5.0	2.45
T13-3	25-Mar-12	10	6.18
T14-3	25-Mar-12	<5.0	1.62
T15-4	25-Mar-12	10	6.14
T16-4	25-Mar-12	9.0	5.89

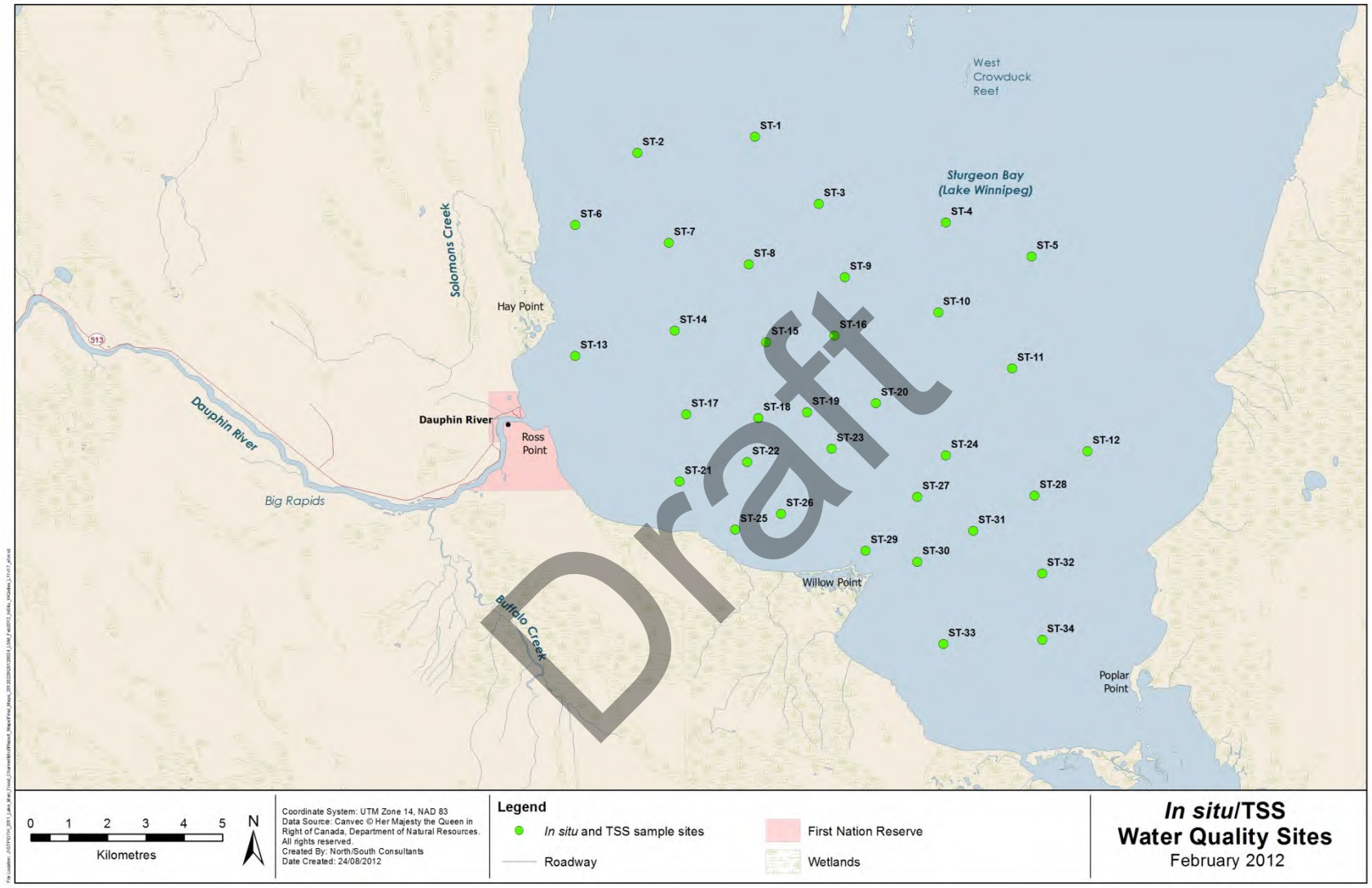

Figure H-1. Location of *in situ* water quality measurements and TSS/turbidity samples collected in February 2012.

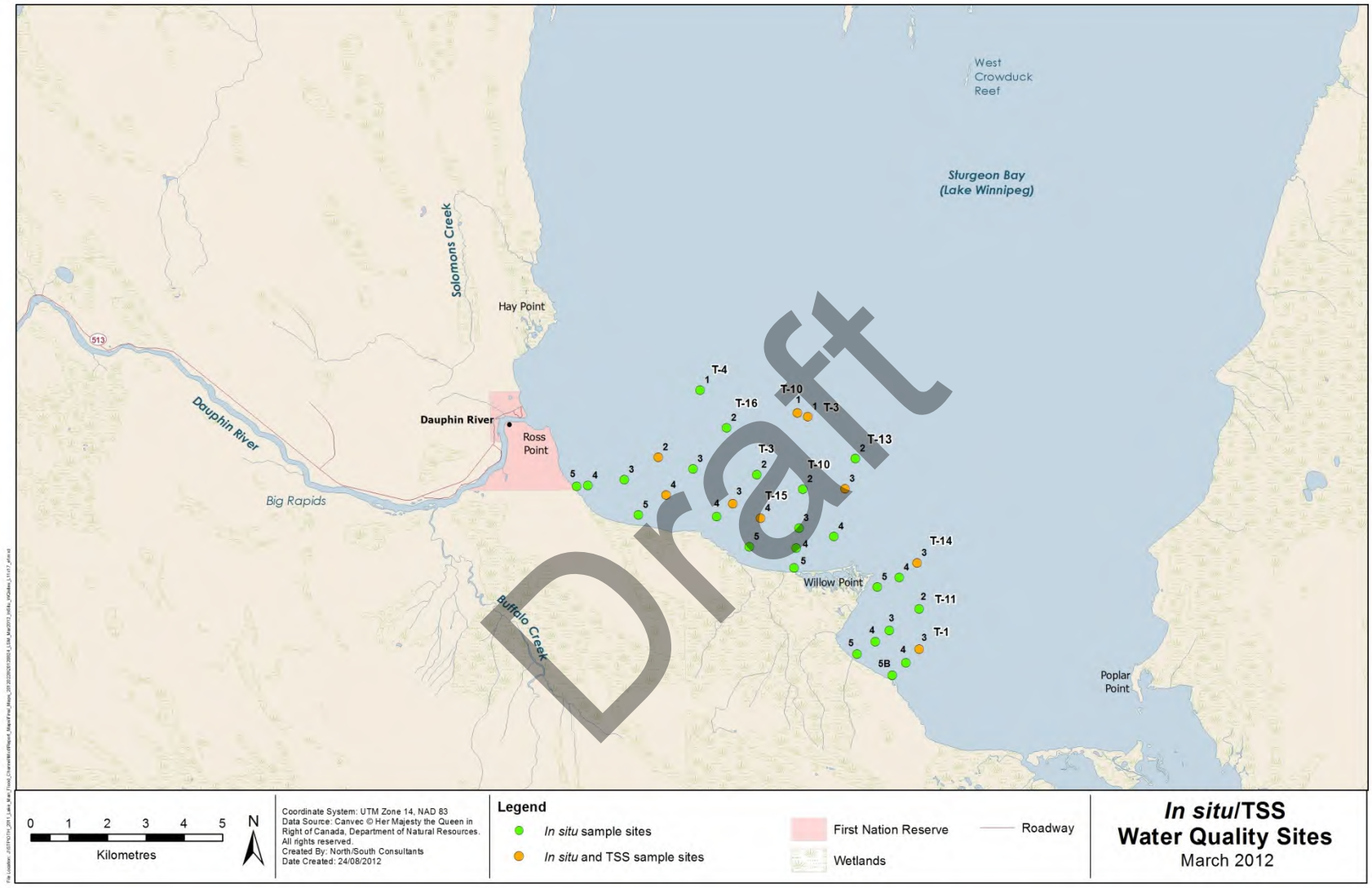

Figure H-2. Location of *in situ* water quality measurements and TSS/turbidity samples collected in March 2012.

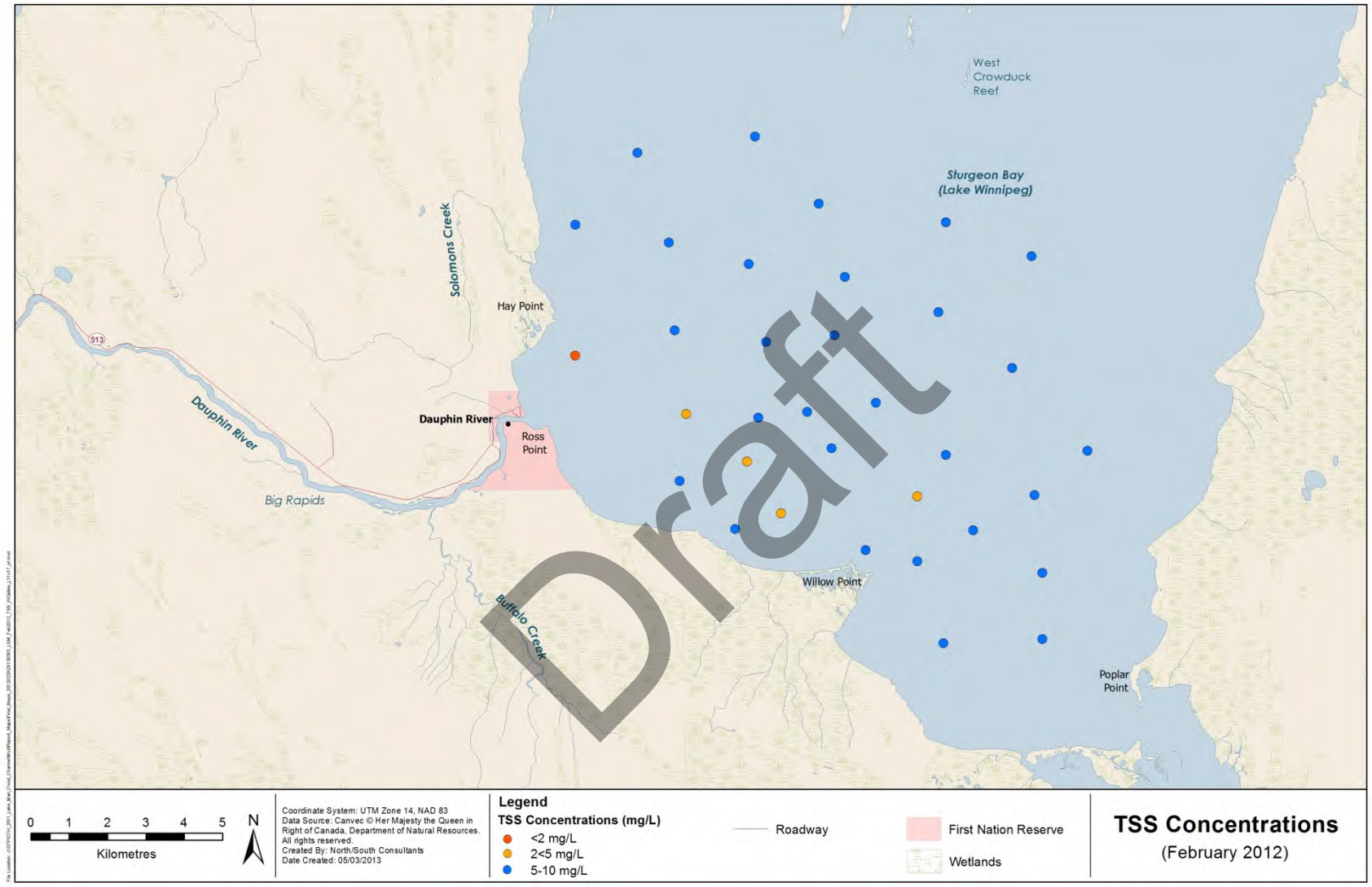

Figure H-3. The distribution of TSS concentration from water samples collected in Sturgeon Bay during February 2012.

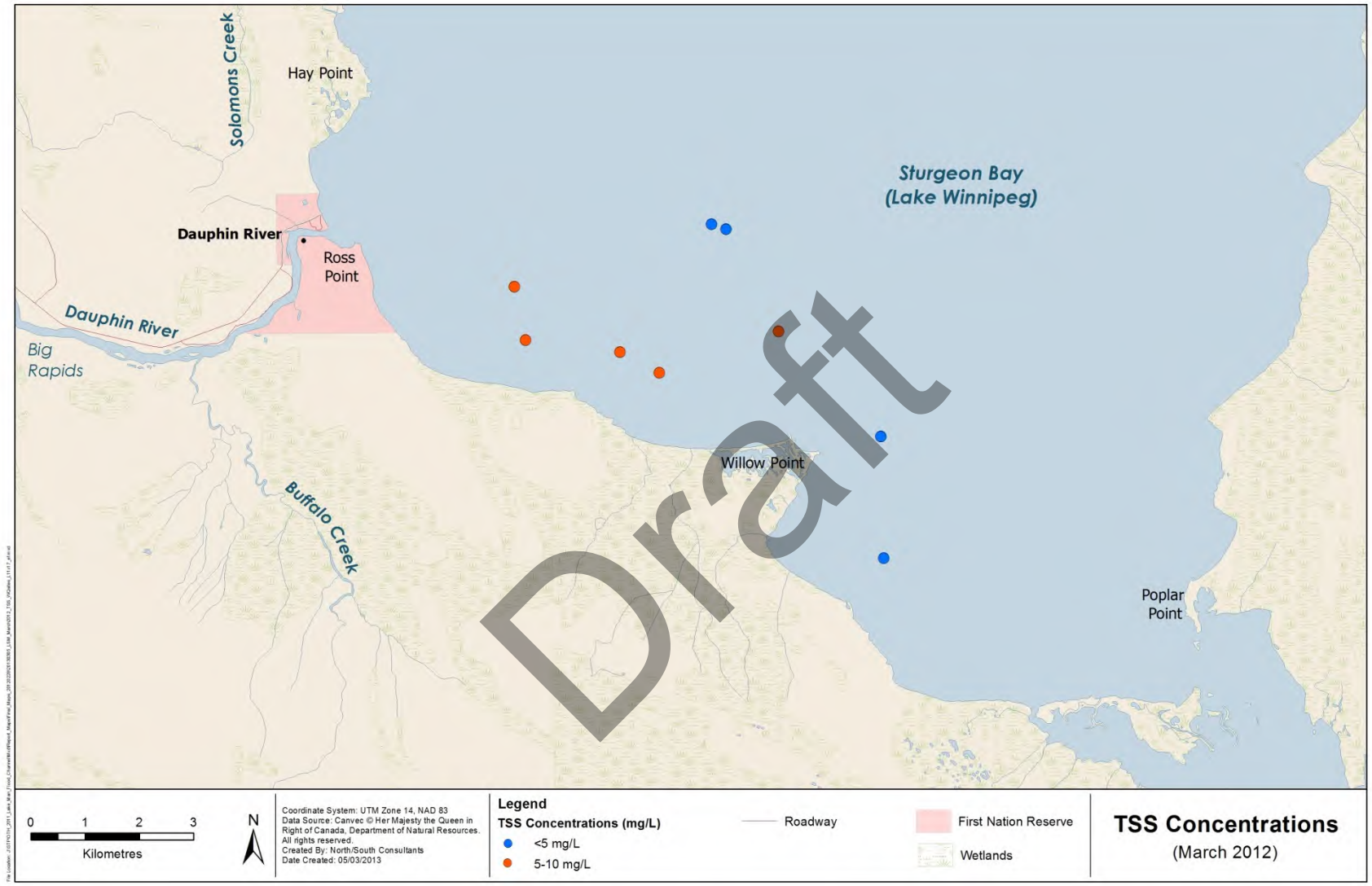

Figure H-4. The distribution of TSS concentration from water samples collected in Sturgeon Bay during March 2012.

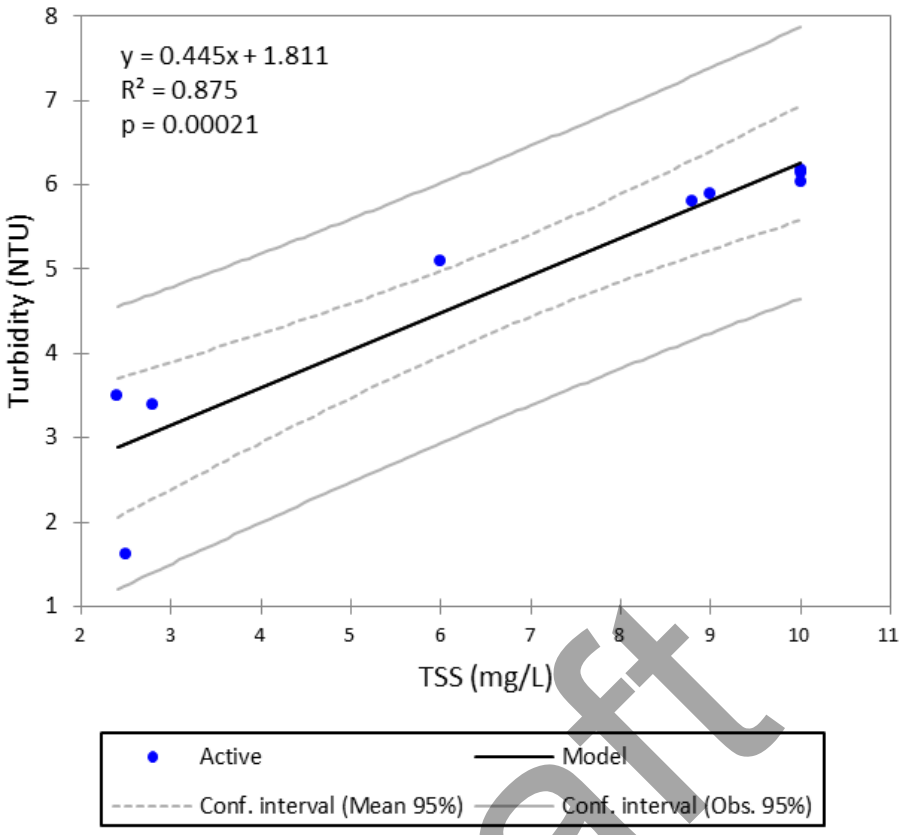

Figure H-5. Linear regression between laboratory measured TSS and turbidity, based on water samples collected during February and March, 2012.

Appendix I. LSMEOC Monitoring Program Results – 2011 to 2015

Table I-1. *In situ* measurements recorded by the LSMEOC monitoring program, 2011-2015.

Site ID	Sample Date [1]	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
LSM1	02-Sep-11	3.8	20.0	9.24	9.88	1740
LSM1	26-Sep-11	10.1	12.4	8.74	10.11	1250
LSM1	14-Oct-11	5.3	10.3	8.61	12.53	1180
LSM1	21-Oct-11	7.9	5.5	8.53	12.23	1200
LSM1	29-Oct-11	4.8	4.6	8.49	13.09	1190
LSM1	02-Nov-11	2.8	4.1	8.54	13.31	1200
LSM1	04-Nov-11	4.9	4.0	8.62	11.62	1180
LSM1	07-Nov-11	14.8	3.0	8.51	11.13	1200
LSM1	10-Nov-11	8.2	1.9	8.63	13.37	1200
LSM1	14-Nov-11	4.1	1.4	8.69	11.20	1230
LSM1	16-Mar-12	1.5	1.5	8.17	9.20	2360
LSM1	17-Apr-12 [2]	-	-	-	-	-
LSM1	16-May-12 [3]	-	-	-	-	-
LSM1	13-Jun-12	- [2]	16.3	8.56	12.00	1170
LSM1	09-Aug-12	- [2]	21.8	8.70	9.35	1101
LSM1	12-Sep-12	46.0	13.5	8.36	8.61	1054
LSM1	19-Oct-12	14.6	5.9	*9.48* [5]	12.46	1053
LSM1	13-Nov-12	4.9	2.0	7.93	14.44	1356
LSM1	19-Nov-12	3.9	1.4	8.32	14.03	1213
LSM1	22-Nov-12	3.8	0.3	7.95	13.23	1153
LSM1	27-Nov-12 [4]	-	-	-	-	-
LSM1	24-Mar-13	8.9	0.1	7.82	9.46	1550
LSM1	02-May-13	1.1	1.3	7.78	9.15	1265
LSM1	14-May-13	8.0	8.4	7.84	9.91	340
LSM1	28-May-13	7.5	15.3	8.52	8.01	1023
LSM1	24-Jul-13	3.8	19.8	8.58	7.16	1022
LSM1	09-Oct-13	4.6	10.6	8.04	10.34	1069
LSM1	02-May-14	2.7	4.0	7.80	13.39	1152
LSM1	15-May-14	1.8	4.6	7.38	12.88	840
LSM1	29-May-14	2.4	15.6	7.93	8.93	949
LSM1	20-Jun-14	97.9	18.3	8.10	6.89	790
LSM1	03-Jul-14	6.4	-	-	-	-
LSM1	04-Jul-14	17.0	19.7	8.25	8.86	709
LSM1	05-Jul-14	5.4	-	-	-	-
LSM1	06-Jul-14	9.3	20.5	8.06	6.90	924
LSM1	08-Jul-14	3.9	19.3	8.56	6.45	986
LSM1	11-Jul-14	4.3	21.4	8.33	7.40	978
LSM1	16-Jul-14	4.5	19.1	8.66	10.14	980
LSM1	26-Aug-14	6.5	15.2	8.48	8.49	900
LSM1	22-Sep-14	3.5	13.4	8.05	9.73	933
LSM1	23-Oct-14	5.1	8.0	7.58	9.42	854
LSM1	17-Nov-14	4.5	2.5	8.05	11.40	1000
LSM1	18-Nov-14	4.5	0.4	7.53	11.72	1020
LSM1	01-May-15	4.3	12.9	8.12	9.03	972
LSM1	11-Jun-15	3.1	18.6	8.12	9.35	931

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
LSM1	30-Jul-15	10.7	20.6	- [2]	7.60	936
LSM1	13-Aug-15	6.4	23.8	8.51	6.08	942
LSM1	19-Aug-15	7.5	20.5	8.32	6.65	931
LSM1	14-Sep-15	5.9	16.6	8.17	10.29	934
EC1	04-Nov-11	65.8	3.9	8.54	12.20	1190
EC1	07-Nov-11	35.2	2.6	8.49	11.64	1030
EC1	10-Nov-11	20.1	1.4	8.56	11.77	1210
EC1	14-Nov-11	16.1	0.9	8.63	10.96	1220
EC1	17-Nov-11	49.3	-0.3	8.62	10.79	1240
EC1	25-Nov-11	14.4	0.4	8.41	11.60	1250
EC1	16-Mar-12	2.6	2.2	8.26	9.93	3285
EC1	17-Apr-12	3.9	3.4	7.61	14.90	1073
EC1	16-May-12	75.9	13.8	8.18	8.83	1220
EC1	13-Jun-12	- [2]	15.9	*9.10* [5]	10.36	1148
EC1	09-Aug-12	- [2]	21.5	8.33	8.83	1060
EC1	12-Sep-12	44.1	13.1	6.73	8.34	1052
EC1	19-Oct-12	9.8	5.9	*9.58* [5]	9.17	1458
EC1	13-Nov-12	4.4	0.2	8.42	14.93	1342
EC1	19-Nov-12	3.5	1.2	8.50	13.84	1188
EC1	22-Nov-12 [4]	-	-	-	-	-
EC1	27-Nov-12 [4]	-	-	-	-	-
EC1	02-May-13	9.0	1.2	7.61	8.51	667
EC1	14-May-13	13.3	10.4	8.37	11.95	513
EC1	28-May-13	4.1	15.1	8.37	8.16	583
EC1	24-Jul-13	15.7	18.5	8.23	8.49	690
EC1	09-Oct-13	4.4	10.0	8.11	10.41	776
EC1	02-May-14	7.8	2.2	7.49	12.20	142
EC1	15-May-14	12.0	6.8	7.90	12.25	459
EC1	29-May-14	11.6	15.8	8.02	7.81	601
EC1	20-Jun-14	11.8	17.6	7.53	7.51	675
EC1	04-Jul-14	90.3	19.3	8.26	8.82	732
EC1	06-Jul-14	24.5	20.8	8.16	7.92	794
EC1	08-Jul-14	10.3	20.5	7.92	6.45	800
EC1	11-Jul-14	8.9	20.7	8.39	7.41	957
EC1	16-Jul-14	8.0	19.1	8.28	7.63	956
EC1	26-Aug-14	8.9	14.6	8.22	8.48	832
EC1	22-Sep-14	3.0	12.9	8.35	9.55	930
EC1	23-Oct-14	4.7	8.0	7.77	10.09	904
EC1	17-Nov-14	24.6	1.3	8.08	11.80	969
EC1	18-Nov-14	7.4	0.3	7.70	12.04	1027
EC2	16-Mar-12	4.0	2.0	8.19	9.54	2866
EC2	17-Apr-12	3.6	3.1	7.63	13.09	1053
EC2	16-May-12	84.1	13.8	8.10	8.78	1220
EC2	13-Jun-12	- [2]	16.0	8.60	10.55	1146
EC2	09-Aug-12	- [2]	21.1	8.61	8.42	1081
EC2	12-Sep-12	44.5	12.9	7.35	8.76	1054

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity	Temperature	pH	Dissolved Oxygen	Specific Conductance
		(NTU)	(°C)	(pH units)	(mg/L)	(µS/cm)
EC2	19-Oct-12	10.6	5.9	8.46	9.13	1162
EC2	13-Nov-12	5.5	0.0	8.50	14.88	1350
EC2	19-Nov-12	3.8	1.0	8.50	13.72	1209
EC2	22-Nov-12	7.4	0.2	8.30	13.09	1176
EC2	27-Nov-12 [4]	-	-	-	-	-
EC2	27-Mar-13	8.5	0.9	7.00	0.16	1120
EC2	2-May-13 [4]	-	-	-	-	-
EC2	14-May-13	16.1	9.4	7.98	8.01	439
EC2	28-May-13	4.1	15.6	8.55	8.20	500
EC2	24-Jul-13	25.2	19.5	8.46	7.74	624
EC2	09-Oct-13	10.4	10.2	8.40	9.79	724
EC2	02-May-14	5.5	3.0	7.35	10.07	280
EC2	15-May-14	12.0	7.6	8.10	12.05	446
EC2	29-May-14	10.9	16.4	8.21	7.82	467
EC2	20-Jun-14	9.6	19.2	8.26	7.16	545
EC2	03-Jul-14	366	-	-	-	-
EC2	04-Jul-14	114	19.8	8.24	7.71	711
EC2	05-Jul-14	124	-	-	-	-
EC2	06-Jul-14	28.9	20.9	8.24	6.40	799
EC2	08-Jul-14	18.8	19.7	8.35	4.98	758
EC2	11-Jul-14	14.5	20.6	8.43	7.28	955
EC2	16-Jul-14	9.3	19.6	8.43	7.49	943
EC2	26-Aug-14	9.2	14.7	8.43	7.34	840
EC2	22-Sep-14	4.0	13.2	8.44	8.93	927
EC2	23-Oct-14	4.9	7.9	7.94	10.12	913
EC2	17-Nov-14	26.2	1.9	8.12	11.39	961
EC2	18-Nov-14	7.6	0.3	7.81	12.02	1024
EC2	01-May-15	4.0	11.7	8.14	10.30	888
EC2	11-Jun-15	3.7	19.2	8.22	9.44	910
EC2	30-Jul-15	15.7	20.7	- [2]	7.67	928
EC2	13-Aug-15	10.2	23.8	8.51	6.44	945
EC2	19-Aug-15	26.4	20.4	8.38	6.03	947
EC2	14-Sep-15	19.9	16.6	8.43	9.95	870
EC3	16-Mar-12	12.4	1.6	8.18	10.80	2468
EC3	17-Apr-12	17.2	2.8	7.15	12.60	1061
EC3	16-May-12 [3]	-	-	-	-	-
EC3	13-Jun-12	- [2]	16.0	8.59	10.68	1155
EC3	09-Aug-12	- [2]	19.8	8.68	8.68	1068
EC3	12-Sep-12	58.8	12.8	7.81	8.77	1055
EC3	19-Oct-12	7.7	5.9	8.20	10.01	1146
EC3	13-Nov-12	5.8	-0.1	8.58	14.79	1375
EC3	19-Nov-12	4.8	1.0	8.50	13.73	1193
EC3	22-Nov-12	7.2	0.0	8.51	13.70	1186
EC3	27-Nov-12 [4]	-	-	-	-	-
EC3	02-May-13	4.2	3.3	7.40	8.78	722

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
EC3	14-May-13	7.7	12.6	8.42	10.45	431
EC3	28-May-13	2.3	15.3	8.13	6.96	434
EC3	24-Jul-13	23.2	20.0	8.57	7.61	621
EC3	09-Oct-13	10.6	10.8	8.50	9.87	729
EC3	02-May-14	4.9	4.8	7.35	10.48	382
EC3	15-May-14	10.4	6.8	8.08	12.44	416
EC3	29-May-14	9.5	16.4	8.27	8.16	449
EC3	20-Jun-14	7.4	18.4	8.05	7.64	540
EC3	04-Jul-14	110	19.9	8.28	8.58	714
EC3	06-Jul-14	41.8	20.9	8.26	8.14	786
EC3	08-Jul-14	13.5	20.3	8.15	6.34	773
EC3	11-Jul-14	11.7	26.6	8.45	7.53	928
EC3	16-Jul-14	8.3	18.8	8.40	7.73	949
EC3	26-Aug-14	7.6	14.6	8.43	9.00	840
EC3	22-Sep-14	3.6	12.9	8.52	9.48	911
EC3	23-Oct-14	5.2	7.9	8.12	10.15	916
EC3	17-Nov-14	21.7	1.6	8.14	12.00	965
BBL	27-Mar-13	9.3	2.8	7.20	0.02	1450
BBL	02-May-13	4.7	0.6	7.32	2.86	431
BBL	14-May-13	5.5	7.6	7.58	4.67	441
BBL	28-May-13	3.1	15.8	8.62	8.72	507
BBL	24-Jul-13	4.7	20.2	8.11	6.25	463
BBL	09-Oct-13	2.3	10.3	8.31	10.14	519
BBL	07-Apr-14	4.4	0.9	7.08	0.01	1225
BBL	02-May-14	1.5	3.5	7.19	6.11	242
BBL	15-May-14	1.8	7.3	8.02	12.26	403
BBL	29-May-14	1.1	17.1	8.15	7.54	369
BBL	18-Jun-14	0.9	18.5	9.42	9.10	372
BBL	20-Jun-14	1.5	18.2	7.96	7.64	395
BBL	04-Jul-14	35.5	19.3	7.77	7.33	170
BBL	06-Jul-14	30.1	20.8	8.17	6.23	775
BBL	08-Jul-14	11.0	19.9	8.17	7.45	824
BBL	11-Jul-14	9.5	20.4	8.42	6.81	948
BBL	16-Jul-14	6.7	18.7	8.38	7.18	949
BBL	26-Aug-14	6.3	14.4	8.41	8.60	873
BBL	22-Sep-14	3.9	12.6	8.49	8.62	918
BBL	23-Oct-14	4.5	8.1	8.14	9.49	916
BBL	17-Nov-14	5.4	1.7	8.16	11.69	956
BBL	01-May-15	3.0	11.7	8.07	10.27	923
BBL	11-Jun-15	3.3	20.2	8.29	9.53	909
BBL	30-Jul-15	8.7	20.7	- [2]	6.98	930
BBL	13-Aug-15	6.7	24.3	8.41	5.83	949
BBL	19-Aug-15	6.7	19.7	7.90	5.84	975
BBL	14-Sep-15	5.7	16.7	8.37	10.79	948
BC1	02-Sep-11	0.0	20.2	8.31	6.42	361
BC1	07-Sep-11	1.0	21.5	8.11	7.16	320
BC1	26-Sep-11	2.3	12.5	7.84	10.94	231
BC1	14-Oct-11	0.0	8.2	7.42	9.76	204

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity	Temperature	pH	Dissolved Oxygen	Specific Conductance
		(NTU)	(°C)	(pH units)	(mg/L)	(µS/cm)
BC1	21-Oct-11	1.5	6.0	7.80	11.69	196
BC1	29-Oct-11	0.8	3.5	7.42	11.96	186
BC1	02-Nov-11	3.5	4.5	7.55	11.74	180
BC1	16-Mar-12	6.4	1.7	7.95	8.72	2168
BC1	17-Apr-12	2.1	3.4	7.45	11.26	1082
BC1	16-May-12 [3]	-	-	-	-	-
BC1	13-Jun-12	- [2]	16.5	8.16	7.76	1140
BC1	09-Aug-12	- [2]	20.7	8.28	6.16	1049
BC1	12-Sep-12	5.8	12.4	7.73	7.66	1065
BC1	19-Oct-12	3.0	5.9	7.83	10.13	965
BC1	13-Nov-12	3.8	0.2	7.98	9.99	1285
BC1	19-Nov-12	2.5	0.6	8.20	10.15	1111
BC1	22-Nov-12	4.0	0.1	8.18	9.81	1095
BC1	27-Nov-12	2.6	-0.1	7.52	2.94	1070
BC1	27-Mar-13	161	0.0	7.55	2.11	1440
BC1	02-May-13	7.0	0.3	7.29	11.82	489
BC1	14-May-13	5.8	11.8	7.68	5.61	379
BC1	28-May-13	8.6	15.0	7.78	6.48	402
BC1	24-Jul-13	4.8	20.1	7.77	6.04	465
BC1	09-Oct-13	2.1	9.6	7.86	7.64	546
BC1	02-May-14	3.3	4.6	7.13	7.65	284
BC1	15-May-14	1.8	6.2	7.71	11.68	304
BC1	29-May-14	2.6	15.3	7.67	6.60	324
BC1	20-Jun-14	1.7	18.4	7.72	7.03	326
BC1	03-Jul-14	18.2	-	-	-	-
BC1	04-Jul-14	15.5	21.1	7.50	5.93	355
BC1	05-Jul-14	23.1	-	-	-	-
BC1	06-Jul-14	15.2	20.9	7.89	4.83	790
BC1	08-Jul-14	4.4	19.3	7.86	4.47	873
BC1	11-Jul-14	5.0	20.7	8.09	5.76	949
BC1	16-Jul-14	1.8	19.6	7.99	4.54	960
BC1	26-Aug-14	1.7	13.7	8.15	6.45	919
BC1	22-Sep-14	1.1	13.1	8.28	6.81	924
BC1	23-Oct-14	3.0	8.5	8.08	8.88	915
BC1	17-Nov-14	2.8	0.9	8.09	10.38	972
BC1	01-May-15	1.8	12.1	7.91	9.12	943
BC1	11-Jun-15	1.0	20.1	8.00	6.86	914
BC1	30-Jul-15	5.5	20.9	- [2]	5.02	940
BC1	13-Aug-15	3.3	25.2	8.19	5.90	952
BC1	19-Aug-15	4.7	19.3	7.68	5.32	980
BC1	14-Sep-15	15.9	17.2	8.07	9.50	890
BC2	02-Sep-11	2.6	19.2	8.35	7.82	366
BC2	07-Sep-11	0.1	21.9	8.52	8.92	325
BC2	26-Sep-11	2.4	12.7	8.09	8.96	235
BC2	14-Oct-11	1.2	8.4	7.62	9.31	204
BC2	21-Oct-11	0.1	5.7	7.90	11.90	193
BC2	29-Oct-11	3.0	3.1	7.84	11.56	194

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
BC2	02-Nov-11	1.2	4.1	7.67	11.53	182
BC2	04-Nov-11	41.4	3.2	7.82	10.12	1090
BC2	07-Nov-11	-	-	-	-	-
BC2	10-Nov-11	15.7	0.9	8.25	10.15	1210
BC2	14-Nov-11	7.7	0.4	8.28	10.02	1220
BC2	17-Nov-11	11.2	-0.3	8.19	10.25	1250
BC2	16-Mar-12	4.8	0.8	7.90	9.65	2890
BC2	17-Apr-12	4.3	3.7	7.67	11.80	1057
BC2	16-May-12	52.7	14.5	7.78	6.86	1200
BC2	13-Jun-12	- [2]	15.4	8.00	9.01	- [2]
BC2	09-Aug-12	- [2]	20.6	8.07	5.53	1002
BC2	12-Sep-12	6.5	12.6	7.72	6.99	1051
BC2	19-Oct-12	-	5.9	7.66	9.74	1048
BC2	13-Nov-12	-	-	-	-	-
BC2	19-Nov-12	9.8	0.2	8.14	10.80	1174
BC2	22-Nov-12	5.0	0.1	8.10	10.90	1128
BC2	27-Nov-12	2.4	-0.1	7.74	4.22	923
BC2	27-Mar-13	86.4	-0.1	7.53	7.16	1430
BC2	02-May-13	6.4	0.5	7.38	5.12	458
BC2	14-May-13	5.4	11.9	7.75	6.76	356
BC2	28-May-13	5.6	14.9	7.93	6.57	385
BC2	24-Jul-13	8.9	20.2	7.83	7.47	454
BC2	09-Oct-13	7.1	10.7	8.15	9.59	522
BC2	02-May-14	6.2	5.0	7.24	9.04	270
BC2	15-May-14	3.0	5.3	7.60	11.86	292
BC2	29-May-14	5.0	15.5	7.61	7.03	314
BC2	20-Jun-14	3.1	18.8	7.74	7.14	330
BC2	04-Jul-14	37.8	21.2	7.45	7.09	306
BC2	06-Jul-14	36.6	21.3	7.74	4.22	731
BC2	08-Jul-14	10.9	19.0	7.77	3.50	808
BC2	11-Jul-14	11.4	21.9	8.00	4.79	895
BC2	16-Jul-14	5.6	20.2	7.97	5.22	949
BC2	26-Aug-14	4.5	14.0	8.10	6.60	889
BC2	22-Sep-14	2.1	13.1	8.28	7.01	902
BC2	23-Oct-14	3.2	8.7	8.04	8.50	907
BC2	17-Nov-14	3.4	0.8	8.03	9.92	955
BC2	18-Nov-14	5.0	0.0	7.81	10.19	999
BC4	16-Mar-12	8.5	0.8	7.93	9.30	2134
BC4	17-Apr-12	3.0	3.5	7.79	11.65	1062
BC4	16-May-12	58.9	14.5	7.76	6.91	1200
BC4	13-Jun-12	- [2]	15.4	8.07	9.01	- [2]
BC4	09-Aug-12	- [2]	20.5	8.08	5.86	997
BC4	12-Sep-12	8.4	12.5	7.71	7.31	1051
BC4	19-Oct-12	6.5	6.0	7.62	7.85	1061
BC4	13-Nov-12	-	-	-	-	-
BC4	19-Nov-12	7.4	0.2	8.17	10.95	1176
BC4	22-Nov-12	4.5	0.0	8.08	11.27	1121

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
BC4	27-Nov-12 [4]	-	-	-	-	-
BC4	02-May-13	11.8	0.3	7.44	5.26	457
BC4	14-May-13	6.8	12.0	7.81	7.07	557
BC4	28-May-13	7.0	15.1	8.00	7.14	386
BC4	24-Jul-13	7.3	20.2	7.94	7.32	454
BC4	09-Oct-13	8.2	10.5	8.17	9.32	522
BC4	02-May-14	7.9	5.1	7.32	9.56	270
BC4	15-May-14	3.6	5.6	7.58	12.12	291
BC4	29-May-14	5.9	15.7	7.68	7.94	313
BC4	20-Jun-14	4.1	17.9	7.60	7.71	330
BC4	04-Jul-14	19.8	20.7	7.34	6.47	287
BC4	06-Jul-14	56.7	21.4	7.70	4.89	727
BC4	08-Jul-14	18.1	19.2	7.77	6.24	806
BC4	11-Jul-14	16.0	20.8	7.97	4.98	894
BC4	16-Jul-14	7.4	19.7	7.98	5.59	917
BC4	26-Aug-14	4.8	13.8	8.11	6.90	890
BC4	22-Sep-14	2.8	13.2	8.27	7.68	903
BC4	23-Oct-14	3.5	8.7	8.03	8.65	908
BC4	17-Nov-14	4.0	0.4	8.05	11.70	993
BC5	16-Mar-12	7.1	0.8	*9.38* [5]	9.10	1947
BC5	17-Apr-12	19.6	3.2	7.77	12.12	1061
BC5	16-May-12	42.1	14.0	8.03	7.20	1180
BC5	13-Jun-12	- [2]	16.2	8.00	7.44	1137
BC5	09-Aug-12	- [2]	20.4	8.05	5.94	993
BC5	12-Sep-12	6.4	12.6	7.72	7.11	1049
BC5	19-Oct-12	3.8	5.9	7.58	8.13	1045
BC5	13-Nov-12	6.1	0.1	8.22	11.96	1359
BC5	19-Nov-12	13.0	0.2	8.17	10.99	1175
BC5	22-Nov-12	4.1	0.1	8.08	11.65	1124
BC5	27-Nov-12	-	-	-	-	-
BC5	02-May-13	5.4	0.4	7.54	6.64	436
BC5	14-May-13	8.2	11.9	7.83	7.61	359
BC5	28-May-13	8.4	15.1	8.01	6.88	385
BC5	24-Jul-13	9.2	20.3	7.95	7.42	454
BC5	09-Oct-13	11.8	10.4	8.10	9.37	527
BC5	02-May-14	10.6	5.1	7.80	10.31	312
BC5	15-May-14	4.8	5.8	7.66	12.45	285
BC5	29-May-14	7.6	15.8	7.68	7.95	308
BC5	20-Jun-14	5.0	18.2	7.62	7.59	324
BC5	04-Jul-14	13.8	20.8	7.25	5.89	275
BC5	06-Jul-14	67.4	21.3	7.66	5.34	724
BC5	08-Jul-14	19.6	19.0	7.75	5.18	803
BC5	11-Jul-14	17.0	20.7	7.93	4.99	894
BC5	16-Jul-14	7.7	19.7	7.96	5.47	916
BC5	26-Aug-14	4.8	13.8	8.07	6.86	892
BC5	22-Sep-14	3.2	13.1	8.23	7.58	902
BC5	23-Oct-14	3.8	8.7	8.02	8.58	908

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
BC5	17-Nov-14	5.0	0.1	8.02	11.78	996
BC-TM	02-May-13	-	-	-	-	-
BC-TM	14-May-13	-	-	-	-	-
BC-TM	28-May-13	-	-	-	-	-
BC-TM	24-Jul-13	-	-	-	-	-
BC-TM	09-Oct-13	15.0	-	-	-	-
BC-TM	16-Oct-13	7.7	-	-	-	-
BC-TM	02-May-14	18.0	6.1	7.57	10.55	266
BC-TM	15-May-14	2.1	6.0	7.69	12.58	283
BC-TM	29-May-14	11.7	16.5	7.77	7.86	309
BC-TM	20-Jun-14	10.7	17.8	7.68	7.42	325
BC-TM	03-Jul-14	17.7	-	-	-	-
BC-TM	04-Jul-14	17.7	-	-	-	-
BC-TM	05-Jul-14	132	-	-	-	-
BC-TM	06-Jul-14	82.5	21.4	7.66	4.24	721
BC-TM	08-Jul-14	29.6	18.9	7.77	4.32	796
BC-TM	11-Jul-14	28.5	20.8	7.90	4.86	891
BC-TM	16-Jul-14	12.7	19.8	7.96	5.38	911
BC-TM	26-Aug-14	7.7	13.7	8.05	7.21	886
BC-TM	22-Sep-14	4.6	13.1	8.20	7.83	901
BC-TM	23-Oct-14	4.9	8.7	8.06	8.51	909
BC-TM	17-Nov-14	5.2	0.2	8.00	10.80	968
BC-TM	18-Nov-14	5.9	-0.1	7.86	10.54	1015
BC-TM	01-May-15	8.0	12.0	7.80	8.20	905
BC-TM	11-Jun-15	4.5	20.5	7.99	5.51	902
BC-TM	30-Jul-15	6.9	20.8	8.18	4.59	941
BC-TM	13-Aug-15	5.3	24.8	8.14	5.64	958
BC-TM	19-Aug-15	11.5	19.1	7.91	6.68	974
BC-TM	14-Sep-15	5.9	16.9	8.23	9.31	870
BC3	02-Sep-11	7.2	19.3	8.64	8.54	1090
BC3	07-Sep-11	5.9	20.7	8.50	8.13	358
BC3	26-Sep-11	13.1	13.0	7.39	8.83	373
BC3	14-Oct-11	6.6	8.5	7.55	12.24	225
BC3	21-Oct-11	6.7	5.5	8.18	11.81	474
BC3	29-Oct-11	5.9	2.6	7.77	11.99	254
BC3	02-Nov-11	6.7	3.5	7.63	10.85	236
BC3	04-Nov-11	62.1	3.1	7.72	10.38	1140
BC3	07-Nov-11	-	-	-	-	-
BC3	10-Nov-11	24.5	0.8	8.19	11.08	1200
BC3	14-Nov-11	16.1	0.5	8.18	11.56	1210
BC3	17-Nov-11	17.9	-0.3	8.19	10.16	1240
BC3	25-Nov-11	21.5	-0.2	7.94	9.72	1200
BC3	16-Mar-12	11.8	0.8	8.12	9.24	1868
BC3	17-Apr-12	6.6	2.8	7.78	11.70	1056
BC3	16-May-12	93.1	14.3	7.70	7.12	1200
BC3	13-Jun-12	- [2]	16.1	8.02	7.53	1131
BC3	09-Aug-12	- [2]	20.8	8.03	6.25	984

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
BC3	12-Sep-12	9.8	12.8	7.75	7.33	1049
BC3	19-Oct-12	3.6	6.0	7.69	9.38	1025
BC3	13-Nov-12	4.2	0.0	8.18	12.20	1347
BC3	19-Nov-12	16.5	0.3	8.17	11.38	1167
BC3	22-Nov-12	4.0	0.1	8.11	12.48	1101
BC3	27-Nov-12 [4]	-	-	-	-	-
BC3	02-May-13	8.8	1.0	7.92	8.56	428
BC3	14-May-13	14.6	11.9	7.88	8.35	331
BC3	28-May-13	14.3	15.1	8.62	7.30	348
BC3	24-Jul-13	12.3	20.1	8.05	6.44	406
BC3	09-Oct-13	21.7	10.6	8.15	9.83	487
BC3	02-May-14	22.3	5.2	7.56	10.66	248
BC3	15-May-14	8.7	6.7	7.70	10.72	265
BC3	29-May-14	12.1	16.4	7.76	7.85	288
BC3	20-Jun-14	10.9	19.0	7.77	6.43	303
BC3	03-Jul-14	127	19.9	7.64	3.84	746
BC3	03-Jul-14	96.3	19.6	7.47	2.04	832
BC3	04-Jul-14	66.0	20.7	7.80	7.10	207
BC3	05-Jul-14	*475* [6]	21.5	7.70	5.60	560
BC3	07-Jul-14	*636* [6]	21.5	8.90	8.50	646
BC3	08-Jul-14	152	19.5	8.07	8.01	680
BC3	11-Jul-14	30.2	21.0	7.89	4.95	882
BC3	16-Jul-14	87.1	19.9	8.09	6.61	794
BC3	26-Aug-14	14.0	18.8	9.83	11.29	730
BC3	22-Sep-14	7.1	13.2	8.21	7.81	899
BC3	23-Oct-14	5.9	8.7	8.04	8.37	909
BC3	17-Nov-14	5.9	0.5	7.99	11.38	996
BC3	18-Nov-14	5.7	-0.1	7.90	10.62	1023
BC3	01-May-15	8.9	12.0	7.77	8.50	848
BC3	11-Jun-15	4.4	20.2	7.99	5.88	908
BC3	30-Jul-15	5.8	20.6	8.26	4.56	942
BC3	13-Aug-15	5.4	25.0	8.11	5.90	957
BC3	19-Aug-15	12.2	19.0	7.93	6.37	967
BC3	14-Sep-15	6.6	16.6	8.28	9.98	768
DR1 / DR-C	02-Sep-11	5.2	19.8	8.93	8.70	1760
DR1 / DR-C	07-Sep-11	3.1	20.2	9.00	8.98	1720
DR1 / DR-C	26-Sep-11	9.2	12.7	8.41	10.35	1240
DR1 / DR-C	14-Oct-11	5.6	10.1	8.32	10.16	1190
DR1 / DR-C	21-Oct-11	7.6	6.3	8.58	11.34	1200
DR1 / DR-C	29-Oct-11	5.9	4.8	8.38	14.10	1200
DR1 / DR-C	02-Nov-11	5.1	4.4	8.45	10.80	1190
DR1 / DR-C	04-Nov-11	6.7	3.9	8.41	11.54	1190
DR1 / DR-C	07-Nov-11	-	-	-	-	-
DR1 / DR-C	10-Nov-11	5.9	1.5	8.56	12.03	1220
DR1 / DR-C	14-Nov-11	3.4	1.1	8.51	10.64	1340
DR1 / DR-C	17-Nov-11	0.5	-0.2	8.57	11.02	1240
DR1 / DR-C	25-Nov-11	0.0	-0.1	8.50	12.37	1060

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
DR1 / DR-C	16-Mar-12	4.8	0.7	8.15	9.66	1338
DR1 / DR-C	17-Apr-12	5.3	3.2	7.83	12.74	1055
DR1 / DR-C	16-May-12	69.2	14.3	8.27	8.69	1290
DR1 / DR-C	13-Jun-12	- [2]	16.4	8.57	10.25	1159
DR1 / DR-C	09-Aug-12	- [2]	21.2	8.65	8.77	1056
DR1 / DR-C	12-Sep-12	8.5	13.6	8.08	8.30	1049
DR1 / DR-C	19-Oct-12	8.3	6.2	7.79	9.81	1091
DR1 / DR-C	13-Nov-12	5.0	-0.1	8.55	14.95	1385
DR1 / DR-C	19-Nov-12	12.5	0.5	8.52	13.80	1211
DR1 / DR-C	22-Nov-12	4.7	0.1	8.48	13.77	1184
DR1 / DR-C	27-Nov-12	3.6	-0.1	8.37	12.68	867
DR1 / DR-C	26-Mar-13	21.0	-0.1	8.01	9.4	1330
DR1 / DR-C	02-May-13	5.7	1.0	8.07	12.61	1287
DR1 / DR-C	14-May-13	7.2	8.9	8.34	10.94	1136
DR1 / DR-C	28-May-13	6.9	14.6	8.50	8.58	1034
DR1 / DR-C	24-Jul-13	6.2	20.4	8.44	7.89	1071
DR1 / DR-C	09-Oct-13	5.0	10.9	8.45	10.05	1052
DR1 / DR-C	02-May-14	3.7	3.8	7.69	12.22	1087
DR1 / DR-C	15-May-14	5.1	5.1	7.82	13.03	959
DR1 / DR-C	29-May-14	4.4	14.2	8.24	8.35	881
DR1 / DR-C	20-Jun-14	5.5	18.4	8.16	6.27	950
DR1 / DR-C	03-Jul-14	22.9	19.86	7.93	8.45	822
DR1 / DR-C	04-Jul-14	46.0	20.00	7.85	8.35	836
DR1 / DR-C	05-Jul-14	55.0	20.90	7.35	8.30	833
DR1 / DR-C	06-Jul-14	14.0	21.45	8.04	8.17	837
DR1 / DR-C	07-Jul-14	7.4	21.60	8.47	10.83	843
DR1 / DR-C	08-Jul-14	8.7	20.54	8.07	10.44	854
DR1 / DR-C	11-Jul-14	16.0	21.30	8.18	7.93	858
DR1 / DR-C	11-Jul-14	10.0	21.32	8.09	7.93	862
DR1 / DR-C	11-Jul-14	13.0	21.30	8.13	7.98	862
DR1 / DR-C	16-Jul-14	16.7	19.87	8.05	9.08	778
DR1 / DR-C	26-Aug-14	3.8	16.9	10.44	10.81	800
DR1 / DR-C	22-Sep-14	3.3	13.4	8.42	9.20	929
DR1 / DR-C	23-Oct-14	4.8	8.3	8.18	9.16	925
DR1 / DR-C	17-Nov-14	5.4	-0.1	8.12	11.18	969
DR1 / DR-C	18-Nov-14	4.5	-0.1	8.05	11.94	1026
DR1 / DR-C	01-May-15	4.4	11.7	7.69	10.12	937
DR1 / DR-C	01-May-15	4.6	-	-	-	-
DR1 / DR-C	11-Jun-15	2.9	19.7	8.15	6.95	934
DR1 / DR-C	11-Jun-15	3.6	19.7	8.24	6.78	934
DR1 / DR-C	30-Jul-15	12.0	21.4	8.66	6.45	938
DR1 / DR-C	30-Jul-15	11.5	21.5	8.66	5.68	939
DR1 / DR-C	13-Aug-15	9.3	23.9	8.49	6.61	943
DR1 / DR-C	13-Aug-15	9.1	24.1	8.50	6.56	947
DR1 / DR-C	19-Aug-15	8.8	20.3	8.34	6.68	941
DR1 / DR-C	19-Aug-15	8.9	20.4	8.36	6.26	949
DR1 / DR-C	14-Sep-15	7.4	15.6	8.45	10.40	959

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
DR1 / DR-C	14-Sep-15	7.0	15.5	8.45	10.39	959
DR3 / DR-D	02-Sep-11	4.8	19.6	8.93	8.58	1740
DR3 / DR-D	07-Sep-11	5.1	20.0	8.96	8.44	1630
DR3 / DR-D	26-Sep-11	11.6	12.7	8.32	10.39	1210
DR3 / DR-D	14-Oct-11	5.7	10.0	8.27	9.72	1150
DR3 / DR-D	21-Oct-11	6.7	6.1	8.54	11.51	1160
DR3 / DR-D	29-Oct-11	5.5	4.6	8.32	10.81	1140
DR3 / DR-D	02-Nov-11	5.7	4.2	8.33	10.77	1150
DR3 / DR-D	04-Nov-11	66.6	3.2	7.76	10.45	1140
DR3 / DR-D	07-Nov-11	-	-	-	-	-
DR3 / DR-D	10-Nov-11	30.8	0.8	8.20	10.31	1200
DR3 / DR-D	14-Nov-11	18.2	0.5	8.24	10.18	1220
DR3 / DR-D	17-Nov-11	19.5	-0.3	8.23	10.83	1240
DR3 / DR-D	25-Nov-11	21.6	-0.3	7.95	9.68	1170
DR3 / DR-D	16-Mar-12	8.2	0.7	8.08	9.03	1590
DR3 / DR-D	17-Apr-12	5.4	3.4	7.89	13.30	1050
DR3 / DR-D	16-May-12	64.3	14.0	7.90	7.40	1170
DR3 / DR-D	13-Jun-12	- [2]	16.2	8.01	7.81	1130
DR3 / DR-D	09-Aug-12	- [2]	22.0	8.66	8.64	1061
DR3 / DR-D	12-Sep-12	16.2	13.6	8.24	8.58	1051
DR3 / DR-D	19-Oct-12	9.4	6.0	7.73	9.40	1038
DR3 / DR-D	13-Nov-12 [4]	-	-	-	-	-
DR3 / DR-D	19-Nov-12 [4]	-	-	-	-	-
DR3 / DR-D	22-Nov-12 [4]	-	-	-	-	-
DR3 / DR-D	27-Nov-12 [4]	-	-	-	-	-
DR3 / DR-D	02-May-13	5.8	0.8	7.98	12.92	1269
DR3 / DR-D	14-May-13	13.9	10.5	8.10	9.50	640
DR3 / DR-D	28-May-13	6.3	14.4	8.51	8.06	1033
DR3 / DR-D	24-Jul-13	7.3	20.4	8.45	7.81	1071
DR3 / DR-D	09-Oct-13	4.7	10.9	8.50	10.29	1073
DR3 / DR-D	02-May-14	6.2	3.6	7.91	12.28	1033
DR3 / DR-D	15-May-14	5.1	5.4	7.93	11.89	898
DR3 / DR-D	29-May-14	5.3	14.1	8.24	9.20	837
DR3 / DR-D	20-Jun-14	12.7	17.7	7.79	9.03	427
DR3 / DR-D	03-Jul-14	-	-	-	-	-
DR3 / DR-D	04-Jul-14	67.3	20.0	7.96	8.40	833
DR3 / DR-D	05-Jul-14	-	-	-	-	-
DR3 / DR-D	06-Jul-14	12.5	21.4	7.85	8.16	833
DR3 / DR-D	08-Jul-14	103	19.7	8.14	9.75	702
DR3 / DR-D	11-Jul-14	113	21.6	8.14	5.84	785
DR3 / DR-D	11-Jul-14	42.0	21.4	8.10	7.14	837
DR3 / DR-D	11-Jul-14	18.2	21.4	8.16	8.07	863
DR3 / DR-D	16-Jul-14	61.0	19.8	7.97	6.97	803
DR3 / DR-D	26-Aug-14	2.5	17.4	9.60	11.25	740
DR3 / DR-D	22-Sep-14	7.2	13.4	8.32	7.91	899
DR3 / DR-D	23-Oct-14	6.4	8.7	8.14	8.55	907
DR3 / DR-D	17-Nov-14	5.7	0.1	8.11	9.82	924

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
DR3 / DR-D	18-Nov-14	5.3	-0.2	8.02	10.74	1020
DR3 / DR-D	01-May-15	8.7	12.2	7.08	8.32	896
DR3 / DR-D	01-May-15	4.8	-	-	-	-
DR3 / DR-D	11-Jun-15	5.0	20.2	8.14	5.92	902
DR3 / DR-D	11-Jun-15	2.9	19.6	8.20	6.78	935
DR3 / DR-D	30-Jul-15	6.2	20.8	8.18	4.50	944
DR3 / DR-D	30-Jul-15	10.6	21.4	8.55	5.87	943
DR3 / DR-D	13-Aug-15	5.4	25.0	8.00	5.45	953
DR3 / DR-D	13-Aug-15	8.8	24.1	8.46	6.44	947
DR3 / DR-D	19-Aug-15	9.4	20.3	8.30	6.48	951
DR3 / DR-D	19-Aug-15	8.7	20.5	8.36	7.85	950
DR3 / DR-D	14-Sep-15	7.5	15.5	8.46	10.76	960
DR3 / DR-D	14-Sep-15	7.0	15.4	8.44	10.54	964
DR2C / DR-E	02-Sep-11	4.0	20.1	8.79	7.92	1770
DR2C / DR-E	07-Sep-11	4.4	20.5	8.82	8.64	1710
DR2C / DR-E	26-Sep-11	9.9	12.7	8.48	8.87	1240
DR2C / DR-E	14-Oct-11	5.6	10.1	8.33	10.13	1190
DR2C / DR-E	21-Oct-11	7.2	6.2	8.55	11.24	1200
DR2C / DR-E	29-Oct-11	7.1	4.8	8.38	11.17	1200
DR2C / DR-E	02-Nov-11	5.2	4.3	8.50	11.44	1200
DR2C / DR-E	04-Nov-11	5.8	3.8	8.43	13.34	1170
DR2C / DR-E	10-Nov-11	23.2	0.9	8.23	11.93	1200
DR2C / DR-E	14-Nov-11	17.4	0.8	8.34	11.52	1180
DR2C / DR-E	17-Nov-11	16.1	0.0	8.29	10.81	1230
DR2C / DR-E	16-Mar-12	8.6	0.9	8.02	8.08	1504
DR2C / DR-E	17-Apr-12	12.2	3.2	7.88	12.50	1054
DR2C / DR-E	16-May-12	62.5	14.2	8.06	8.80	1220
DR2C / DR-E	13-Jun-12	- [2]	16.2	8.06	8.10	1135
DR2C / DR-E	09-Aug-12	- [2]	21.5	8.28	7.18	1001
DR2C / DR-E	12-Sep-12	12.3	13.5	8.28	8.70	1049
DR2C / DR-E	19-Oct-12	4.4	6.0	7.63	10.23	1032
DR2C / DR-E	13-Nov-12 [4]	-	-	-	-	-
DR2C / DR-E	19-Nov-12 [4]	-	-	-	-	-
DR2C / DR-E	22-Nov-12 [4]	-	-	-	-	-
DR2C / DR-E	27-Nov-12 [4]	-	-	-	-	-
DR2C / DR-E	25-Mar-13	20.4	-0.1	7.98	9.44	1500
DR2C / DR-E	02-May-13	4.7	1.6	7.44	12.72	1235
DR2C / DR-E	14-May-13	12.0	9.4	8.30	10.22	1004
DR2C / DR-E	28-May-13	5.8	14.5	8.50	7.97	1008
DR2C / DR-E	24-Jul-13	7.5	20.4	8.52	7.48	1050
DR2C / DR-E	09-Oct-13	5.0	10.9	8.52	10.90	1072
DR2C / DR-E	02-May-14	6.2	4.4	7.95	11.18	1004
DR2C / DR-E	15-May-14	4.5	5.1	7.93	13.02	892
DR2C / DR-E	29-May-14	9.2	13.9	8.25	8.75	859
DR2C / DR-E	20-Jun-14	9.5	18.2	8.16	7.55	885
DR2C / DR-E	03-Jul-14	-	-	-	-	-
DR2C / DR-E	04-Jul-14	13	19.80	7.80	8.40	810

Table I-1. Continued.

Site ID	Sample Date [1]	Turbidity (NTU)	Temperature (°C)	pH (pH units)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
DR2C / DR-E	05-Jul-14	170	21.20	7.70	7.80	773
DR2C / DR-E	06-Jul-14	70.8	21.47	7.94	7.59	783
DR2C / DR-E	07-Jul-14	117	21.60	8.32	10.15	770
DR2C / DR-E	08-Jul-14	76.4	20.06	8.09	9.54	768
DR2C / DR-E	11-Jul-14	71.4	21.54	8.10	6.88	809
DR2C / DR-E	11-Jul-14	36.6	21.50	8.16	7.52	845
DR2C / DR-E	11-Jul-14	32	21.41	8.12	8.13	830
DR2C / DR-E	16-Jul-14	24	19.51	7.89	8.79	841
DR2C / DR-E	27-Aug-14	19.7	15.6	8.25	10.5	752
DR2C / DR-E	22-Sep-14	6.7	13.4	8.32	8.33	910
DR2C / DR-E	23-Oct-14	6.3	8.5	8.14	8.42	914
DR2C / DR-E	17-Nov-14 [4]	-	-	-	-	-
DR2C / DR-E	18-Nov-14 [4]	-	-	-	-	-

1 - Where two sets of measurements are recorded for a site on the same day, the first set represents the water quality of the stream at the left-hand bank (LHB; as viewed facing upstream) and the second set represents the water quality at the right-hand bank (RHB). When three sets of measurements are given they represent the water quality at the LHB, mid channel and RHB, respectively.
2 - Equipment malfunction while at sample station
3 - Station was not sampled due to technical difficulties with the helicopter
4 - Could not sample due to ice cover.
5 - pH is outside of expected range - suspected to be equipment error.
6 - Measurement likely affected by flow.

Table I-2. Laboratory results for TSS, turbidity and nutrient samples collected by the LSMEOC monitoring program, 2011-2015.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Analytical Detection Limit		*0.1*	*2.0/ 5.0[2]*	*0.01/ 0.05[3]*	*0.0051/ 0.050[4]/ 0.071[5]*	*0.005[4]/ 0.05[5]*	*0.001[4]/ 0.05[5]*	*0.2*	*0.2*	*0.010*	*0.010*
LSM1	2-Sep-11	-	7.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.021	0.012
LSM1	26-Sep-11	-	5.0	<0.050	<0.071	<0.050	<0.050	2.3	2.3	0.024	0.015
LSM1	14-Oct-11	-	10.0	<0.050	<0.071	<0.050	<0.050	1.1	1.1	0.021	<0.010
LSM1	29-Oct-11	-	5.8	0.044	0.009	0.009	<0.0010	1.1	-	0.016	<0.010
LSM1	2-Nov-11	-	7.0	0.061	<0.071	<0.050	<0.050	1.0	1.0	0.019	0.014
LSM1	4-Nov-11	-	7.0	0.074	<0.071	<0.050	<0.050	1.1	1.1	0.027	0.013
LSM1	7-Nov-11	-	19.0	0.083	<0.071	<0.050	<0.050	1.2	1.2	0.027	0.011
LSM1	10-Nov-11	-	10.0	0.067	<0.071	<0.050	<0.050	1.1	1.1	0.025	0.013
LSM1	14-Nov-11	-	7.0	0.071	<0.071	<0.050	<0.050	1.1	1.1	0.022	0.014
LSM1	18-Jan-12	1.3	<2.0	0.093	0.020	0.018	0.002	1.0	-	0.012	0.012
LSM1	09-Feb-12	1.2	<2.0	0.154	<0.071	<0.050	<0.050	1.1	1.1	0.016	0.010
LSM1	21-Feb-12	1.6	<2.0	0.211	<0.071	<0.050	<0.050	1.7	1.7	0.023	<0.010
LSM1	16-Mar-12	1.2	3.2	0.176	<0.071	<0.050	<0.050	1.1	1.1	0.010	<0.010
LSM1	17-Apr-12	4.7	10.8	0.027	<0.071	<0.050	<0.050	1.0	1.0	0.022	<0.010
LSM1	17-May-12	33.6	8.0	-	<0.071	<0.0050	0.001	1.0	1.0	0.019	<0.010
LSM1	13-Jun-12	3.8	7.6	0.013	<0.071	<0.050	<0.050	1.0	1.0	0.020	<0.010
LSM1	09-Aug-12	5.3	9.8	0.017	<0.071	<0.050	<0.050	0.4	0.4	0.017	-
LSM1	12-Sep-12	54.5	72.7	0.013	<0.071	<0.050	<0.050	1.6	1.6	0.032	<0.010
LSM1	19-Oct-12	10.0	15.4	0.023	<0.071	<0.050	<0.050	1.0	1.0	0.020	<0.010
LSM1	13-Nov-12	2.9	7.4	0.058	<0.071	<0.050	<0.050	0.9	0.9	0.016	<0.010
LSM1	19-Nov-12	3.6	4.1	0.073	<0.071	<0.050	<0.050	0.9	0.9	0.013	<0.010
LSM1	22-Nov-12	2.7	3.9	0.082	<0.071	<0.050	<0.050	0.9	0.9	0.011	<0.010
LSM1	27-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
LSM1	24-Mar-13	0.7	<2.0	0.247	<0.050	0.035	0.002	1.0	1.1	0.010	0.004
LSM1	02-May-13	3.1	3.2	0.273	<0.071	0.061	<0.050	1.0	1.0	0.019	<0.010
LSM1	14-May-13	5.0	9.8	0.070	<0.071	<0.050	<0.050	0.7	0.7	0.043	0.010
LSM1	28-May-13	6.8	11.0	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.021	<0.010
LSM1	24-Jul-13	3.7	6.5	0.233	<0.071	<0.050	<0.050	1.0	1.0	0.017	0.010

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
LSM1	09-Oct-13	3.9	8.0	0.032	<0.071	<0.050	<0.050	0.9	0.9	0.014	<0.010
LSM1	02-May-14	1.4	<2.0	0.108	<0.071	0.055	<0.050	1.0	1.0	0.016	0.011
LSM1	15-May-14	1.4	2.0	0.059	<0.071	<0.050	<0.050	0.7	0.7	0.015	0.012
LSM1	29-May-14	1.8	3.6	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.017	<0.010
LSM1	20-Jun-14	30.0	47.2	0.010	<0.071	<0.050	<0.050	0.9	0.9	0.054	0.013
LSM1	03-Jul-14	5.7	6.4	-	-	-	-	-	-	-	-
LSM1	04-Jul-14	7.9	15.6	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.025	<0.010
LSM1	05-Jul-14	2.5	6.0	-	-	-	-	-	-	-	-
LSM1	06-Jul-14	3.3	6.0	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.019	<0.010
LSM1	08-Jul-14	3.3	6.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.011	<0.010
LSM1	11-Jul-14	4.1	8.8	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.017	<0.010
LSM1	16-Jul-14	3.6	8.4	<0.010	<0.071	0.065	<0.050	0.9	0.9	0.018	<0.010
LSM1	26-Aug-14	5.9	11.4	-	0.0078	0.0061	0.0020	1.0	1.0	0.018	<0.010
LSM1	22-Sep-14	3.3	6.0	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.017	<0.010
LSM1	23-Oct-14	3.6	5.6	0.049	<0.071	<0.050	<0.050	0.9	0.9	0.021	<0.010
LSM1	17-Nov-14	2.7	5.0	0.062	<0.071	<0.050	<0.050	0.9	0.9	0.020	0.011
LSM1	18-Nov-14	3.2	4.8	-	-	-	-	-	-	-	-
LSM1	01-May-15	2.8	4.2	0.014	0.0192	0.0192	<0.0010	0.9	0.9	0.019	<0.010
LSM1	11-Jun-15	2.9	4.2	-	-	-	-	-	-	-	-
LSM1	29-Jul-15	8.5	13.2	0.012	<0.070	<0.020	<0.010	1.1	1.1	0.016	<0.010
LSM1	13-Aug-15	5.5	7.0	<0.010	<0.070	<0.020	<0.010	0.9	0.9	0.018	<0.010
LSM1	19-Aug-15	6.0	7.4	<0.010	<0.070	<0.020	<0.010	1.0	1.0	0.017	<0.010
LSM1	14-Sep-15	6.00	6.8	<0.010	<0.070	<0.020	<0.010	1.22	1.22	0.023	0.012
EC1	4-Nov-11	-	130	0.066	<0.071	<0.050	<0.050	1.3	1.3	0.065	0.015
EC1	7-Nov-11	-	51.0	0.060	<0.071	<0.050	<0.050	1.1	1.1	0.034	0.011
EC1	10-Nov-11	-	20.0	0.068	<0.071	<0.050	<0.050	1.1	1.1	0.032	0.014
EC1	14-Nov-11	-	20.0	0.078	<0.071	<0.050	<0.050	1.1	1.1	0.026	0.014
EC1	17-Nov-11	-	58.0	0.080	<0.071	<0.050	<0.050	1.2	1.2	0.027	0.010
EC1	25-Nov-11	-	17.0	0.088	<0.071	<0.050	<0.050	1.0	1.0	0.027	0.013
EC1	17-Jan-12	1.8	3.6	0.078	0.023	0.021	0.001	1.0	-	0.013	0.013

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
EC1	07-Feb-12	2.7	3.6	-	-	-	-	-	-	-	-
EC1	21-Feb-12	3.1	3.6	-	-	-	-	-	-	-	-
EC1	16-Mar-12	1.1	2.4	0.149	<0.071	<0.050	<0.050	1.1	1.1	0.035	<0.010
EC1	17-Apr-12	5.6	12.3	0.032	<0.071	<0.050	<0.050	0.9	0.9	0.018	0.011
EC1	17-Apr-12	4.3	12.8	-	-	-	-	-	-	-	-
EC1	16-May-12	4.4	8.4	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.013	0.011
EC1	16-May-12	4.8	7.6	-	-	-	-	-	-	-	-
EC1	13-Jun-12	4.4	10.0	0.015	<0.071	<0.050	<0.050	1.1	1.1	0.028	<0.010
EC1	13-Jun-12	7.0	13.6	-	-	-	-	-	-	-	-
EC1	09-Aug-12	4.2	11.0	0.026	<0.071	<0.050	<0.050	0.3	0.3	0.020	-
EC1	09-Aug-12	6.4	9.2	-	-	-	-	-	-	-	-
EC1	12-Sep-12	76.5	138	0.012	<0.071	<0.050	<0.050	1.8	1.8	0.044	<0.010
EC1	12-Sep-12	102	136	-	-	-	-	-	-	-	-
EC1	19-Oct-12	9.3	18.2	0.037	<0.071	<0.050	<0.050	1.2	1.2	0.145	<0.010
EC1	19-Oct-12	7.2	15.4	-	-	-	-	-	-	-	-
EC1	13-Nov-12	2.5	4.0	0.080	<0.071	<0.050	<0.050	0.9	0.9	0.014	<0.010
EC1	13-Nov-12	2.9	8.8	-	-	-	-	-	-	-	-
EC1	19-Nov-12	2.7	4.8	0.072	<0.071	<0.050	<0.050	0.9	0.9	0.017	<0.010
EC1	19-Nov-12	3.0	4.8	-	-	-	-	-	-	-	-
EC1	22-Nov-12	-	-	-	-	-	-	-	-	-	-
EC1	27-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
EC1	02-May-13	7.4	7.3	0.212	0.103	0.103	<0.050	1.3	1.4	0.115	<0.010
EC1	14-May-13	10.7	14.0	<0.010	<0.071	<0.050	<0.050	0.4	0.4	0.056	0.016
EC1	28-May-13	3.3	5.7	0.020	<0.071	<0.050	<0.050	0.3	0.3	0.021	<0.010
EC1	24-Jul-13	7.4	10.0	0.050	<0.071	<0.050	<0.050	<0.20	<0.20	0.011	<0.010
EC1	09-Oct-13	2.9	2.4	0.015	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
EC1	02-May-14	5.8	3.2	0.035	<0.071	0.055	<0.050	<0.20	<0.20	0.013	<0.010
EC1	15-May-14	6.2	6.8	0.021	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
EC1	29-May-14	5.6	6.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
EC1	20-Jun-14	5.7	8.8	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	0.012	<0.010

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
EC1	04-Jul-14	97.0	136	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.056	<0.010
EC1	06-Jul-14	20.0	24.4	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.025	<0.010
EC1	08-Jul-14	9.6	14.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.015	<0.010
EC1	11-Jul-14	6.8	16.0	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.017	<0.010
EC1	16-Jul-14	4.8	12.0	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.018	<0.010
EC1	26-Aug-14	9.1	13.2	<0.010	<0.0051	<0.0050	<0.0010	1.0	1.0	0.020	<0.010
EC1	22-Sep-14	3.2	5.6	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.020	<0.010
EC1	23-Oct-14	3.1	5.6	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.018	<0.010
EC1	17-Nov-14	16.7	23.8	0.039	<0.071	<0.050	<0.050	0.9	0.9	0.029	0.011
EC1	18-Nov-14	5.7	7.4	-	-	-	-	-	-	-	-
EC2	17-Jan-12	2.3	4.0	-	0.015	0.015	<0.0010	1.0	1.0	0.015	0.013
EC2	07-Feb-12	4.3	4.8	-	-	-	-	-	-	-	-
EC2	21-Feb-12	2.9	2.8	-	-	-	-	-	-	-	-
EC2	16-Mar-12	1.7	26.8	0.145	<0.071	<0.050	<0.050	1.1	1.1	0.022	<0.010
EC2	17-Apr-12	3.7	5.6	0.031	<0.071	<0.050	<0.050	0.9	0.9	0.017	<0.010
EC2	17-Apr-12	18.3	48.8	-	-	-	-	-	-	-	-
EC2	16-May-12	6.9	6.8	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.013	0.011
EC2	16-May-12	7.0	6.4	-	-	-	-	-	-	-	-
EC2	13-Jun-12	4.8	12.8	0.014	<0.071	<0.050	<0.050	1.1	1.1	0.026	<0.010
EC2	13-Jun-12	5.6	10.0	-	-	-	-	-	-	-	-
EC2	09-Aug-12	5.6	10.4	0.035	<0.071	<0.050	<0.050	0.4	0.4	0.018	-
EC2	09-Aug-12	4.9	11.4	-	-	-	-	-	-	-	-
EC2	12-Sep-12	74.6	93.3	0.011	<0.071	<0.050	<0.050	1.8	1.8	0.031	0.035
EC2	19-Oct-12	5.7	21.0	0.033	<0.071	<0.050	<0.050	1.0	1.0	0.028	<0.010
EC2	19-Oct-12	10.0	15.4	-	-	-	-	-	-	-	-
EC2	13-Nov-12	2.5	6.6	0.074	<0.071	<0.050	<0.050	0.9	0.9	0.014	<0.010
EC2	13-Nov-12	2.8	6.4	-	-	-	-	-	-	-	-
EC2	19-Nov-12	3.0	5.3	0.070	<0.071	<0.050	<0.050	0.9	0.9	0.014	<0.010
EC2	19-Nov-12	2.9	4.6	-	-	-	-	-	-	-	-
EC2	22-Nov-12	8.2	10.4	0.082	<0.071	<0.050	<0.050	1.0	1.0	0.013	<0.010

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
EC2	27-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
EC2	27-Mar-13	1.8	<2.0	0.284	<0.071	<0.050	<0.050	0.5	0.5	0.017	0.003
EC2	2-May-13 [6]	-	-	-	-	-	-	-	-	-	-
EC2	14-May-13	10.9	15.2	0.414	<0.071	<0.050	<0.050	1.4	1.4	0.070	0.014
EC2	28-May-13	3.2	7.0	0.063	<0.071	<0.050	<0.050	0.6	0.6	0.034	<0.010
EC2	24-Jul-13	12.9	15.0	0.019	<0.071	<0.050	<0.050	0.4	0.4	0.033	0.013
EC2	09-Oct-13	6.5	6.8	0.024	<0.071	<0.050	<0.050	0.2	0.2	0.012	<0.010
EC2	02-May-14	4.1	3.2	0.083	<0.071	0.068	<0.050	0.4	0.4	0.047	0.029
EC2	15-May-14	7.1	7.2	0.024	<0.071	<0.050	<0.050	0.2	0.2	0.018	0.011
EC2	29-May-14	6.5	6.4	<0.010	<0.071	<0.050	<0.050	0.4	0.4	0.014	<0.010
EC2	20-Jun-14	4.8	4.4	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	0.012	<0.010
EC2	03-Jul-14	77.0	66.8	-	-	-	-	-	-	-	-
EC2	04-Jul-14	58.0	63.2	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.037	<0.010
EC2	05-Jul-14	121	174	-	-	-	-	-	-	-	-
EC2	06-Jul-14	34.0	36.8	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.043	<0.010
EC2	08-Jul-14	11.3	28.4	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.017	<0.010
EC2	11-Jul-14	14.0	20.4	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.024	<0.010
EC2	16-Jul-14	8.7	15.2	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.019	<0.010
EC2	26-Aug-14	8.2	13.2	<0.010	<0.0051	<0.0050	<0.0010	0.9	0.9	0.019	<0.010
EC2	22-Sep-14	3.5	5.6	0.010	<0.071	<0.050	<0.050	0.8	0.8	0.013	<0.010
EC2	23-Oct-14	3.2	5.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.016	<0.010
EC2	17-Nov-14	16.1	21.4	0.033	<0.071	<0.050	<0.050	0.9	0.9	0.020	0.010
EC2	18-Nov-14	5.6	7.6	-	-	-	-	-	-	-	-
EC2	01-May-15	3.0	4.8	0.014	0.0406	0.0406	<0.0010	0.8	0.9	0.021	<0.010
EC2	11-Jun-15	3.9	4.8	-	-	-	-	-	-	-	-
EC2	30-Jul-15	11.8	17.0	0.032	<0.070	<0.020	<0.010	1.1	1.1	0.027	<0.010
EC2	13-Aug-15	8.4	10.6	<0.010	<0.070	<0.020	<0.010	0.8	0.8	0.020	<0.010
EC2	19-Aug-15	21.0	14.8	<0.010	<0.070	<0.020	<0.010	1.0	1.0	0.025	<0.010
EC2	14-Sep-15	17.3	13.2	<0.010	<0.070	<0.020	<0.010	1.00	1	0.025	0.013

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
EC3	17-Jan-12	2.2	2.0	-	-	-	-	-	-	-	-
EC3	07-Feb-12	4.7	6.0	-	-	-	-	-	-	-	-
EC3	21-Feb-12	2.1	<2.0	-	-	-	-	-	-	-	-
EC3	16-Mar-12	1.3	6.4	0.144	<0.071	<0.050	<0.050	1.0	1.0	0.018	<0.010
EC3	17-Apr-12	3.6	6.8	0.031	<0.071	<0.050	<0.050	0.9	0.9	0.016	0.010
EC3	17-Apr-12	2.4	4.8	-	-	-	-	-	-	-	-
EC3	13-Jun-12	4.1	17.2	0.015	<0.071	<0.050	<0.050	1.0	1.0	0.027	<0.010
EC3	13-Jun-12	5.0	7.6	-	-	-	-	-	-	-	-
EC3	09-Aug-12	5.4	9.6	0.046	<0.071	<0.050	<0.050	0.5	0.5	0.018	-
EC3	09-Aug-12	4.5	10.6	-	-	-	-	-	-	-	-
EC3	12-Sep-12	111	166	0.012	<0.071	<0.050	<0.050	1.7	1.7	0.075	0.049
EC3	19-Oct-12	90.2 [8]	236 [8]	0.035	<0.071	<0.050	<0.050	1.1	1.1	0.027	<0.010
EC3	19-Oct-12	10.1	20.4	-	-	-	-	-	-	-	-
EC3	13-Nov-12	3.2	12.0	0.058	<0.071	<0.050	<0.050	1.0	1.0	0.017	<0.010
EC3	13-Nov-12	3.9	15.0	-	-	-	-	-	-	-	-
EC3	19-Nov-12	3.2	6.4	0.069	<0.071	<0.050	<0.050	0.8	0.8	0.014	<0.010
EC3	19-Nov-12	2.7	4.2	-	-	-	-	-	-	-	-
EC3	22-Nov-12	9.3	8.8	0.085	<0.071	<0.050	<0.050	1.0	1.0	0.012	<0.010
EC3	22-Nov-12	6.8	14.6	-	-	-	-	-	-	-	-
EC3	27-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
EC3	02-May-13	6.0	7.7	0.228	<0.071	<0.050	<0.050	1.7	1.7	0.101	<0.010
EC3	14-May-13	6.1	18.0	0.148	<0.071	<0.050	<0.050	2.9	2.9	0.052	0.015
EC3	28-May-13	1.9	5.0	0.040	<0.071	<0.050	<0.050	0.7	0.7	0.021	<0.010
EC3	24-Jul-13	15.0	12.0	0.020	<0.071	<0.050	<0.050	0.4	0.4	0.027	<0.010
EC3	09-Oct-13	7.3	4.4	<0.010	<0.071	<0.050	<0.050	0.3	0.3	0.014	<0.010
EC3	02-May-14	3.5	<2.0	0.077	<0.071	<0.050	<0.050	0.7	0.7	0.052	0.022
EC3	15-May-14	7.3	6.8	0.014	<0.071	<0.050	<0.050	0.3	0.3	0.021	0.012
EC3	29-May-14	6.3	5.2	<0.010	<0.071	<0.050	<0.050	0.4	0.4	0.014	<0.010
EC3	20-Jun-14	4.6	5.2	<0.010	<0.071	<0.050	<0.050	0.2	0.2	0.012	<0.010
EC3	04-Jul-14	93.0	114	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.054	<0.010

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
EC3	06-Jul-14	31.0	44.4	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.031	<0.010
EC3	08-Jul-14	13.2	19.6	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.016	<0.010
EC3	11-Jul-14	10.9	16.0	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.022	<0.010
EC3	16-Jul-14	9.2	12.0	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.017	<0.010
EC3	27-Aug-14	7.4	13.2	<0.010	<0.0051	<0.0050	<0.0010	1.0	1.0	0.018	<0.010
EC3	22-Sep-14	3.3	6.4	0.012	<0.071	<0.050	<0.050	0.8	0.8	0.018	<0.010
EC3	23-Oct-14	3.4	6.2	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.018	<0.010
EC3	17-Nov-14	12.7	17.0	0.031	<0.071	<0.050	<0.050	0.9	0.9	0.021	<0.010
BBL	27-Mar-13	25.4	<2.0	1.910	<0.050	<0.0050	<0.0010	3.3	3.3	0.044	0.033
BBL	02-May-13	1.8	5.3	1.080	<0.071	<0.050	<0.050	2.3	2.3	0.041	<0.010
BBL	14-May-13	7.9	25.7	1.100	<0.071	0.064	<0.050	1.8	1.8	0.043	0.014
BBL	28-May-13	3.6	8.0	0.072	<0.071	<0.050	<0.050	1.0	1.0	0.028	0.011
BBL	24-Jul-13	3.0	3.5	0.312	<0.071	<0.050	<0.050	1.6	1.6	0.020	0.014
BBL	09-Oct-13	1.6	3.6	0.081	<0.071	<0.050	<0.050	1.0	1.0	0.010	<0.010
BBL	07-Apr-14	1.6	2.4	1.75	<0.0051	<0.0050	0.004	3.0	3.0	0.039	0.008
BBL	02-May-14	0.7	<2.0	0.263	<0.071	<0.050	<0.050	0.8	0.8	0.021	0.015
BBL	15-May-14	1.0	<2.0	0.073	<0.071	<0.050	<0.050	0.8	0.8	0.020	0.013
BBL	29-May-14	0.9	<2.0	0.024	<0.071	<0.050	<0.050	0.8	0.8	<0.010	<0.010
BBL	18-Jun-14	3.0	5.2	0.039	0.006	0.006	<0.0010	0.9	1.0	0.014	0.007
BBL	20-Jun-14	1.1	<2.0	0.035	<0.071	<0.050	<0.050	0.8	0.8	0.013	<0.010
BBL	04-Jul-14	21.0	22.4	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.030	<0.010
BBL	06-Jul-14	25.0	23.6	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.026	<0.010
BBL	08-Jul-14	7.5	10.4	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.015	<0.010
BBL	11-Jul-14	8.7	11.2	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.018	<0.010
BBL	16-Jul-14	7.1	6.4	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.014	<0.010
BBL	26-Aug-14	5.6	9.6	0.019	0.0056	0.0056	<0.0010	0.9	0.9	0.017	<0.010
BBL	22-Sep-14	3.6	6.4	0.013	<0.071	<0.050	<0.050	0.8	0.8	0.016	<0.010
BBL	23-Oct-14	3.4	6.4	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.017	<0.010
BBL	17-Nov-14	3.9	5.4	0.038	<0.071	<0.050	<0.050	1.0	1.0	0.021	0.011
BBL	01-May-15	1.76	3.0	<0.010	0.0072	0.0072	<0.0010	0.79	0.79	0.015	<0.010

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BBL	11-Jun-15	3.70	5.2	-	-	-	-	-	-	-	-
BBL	30-Jul-15	6.5	8.1	0.021	<0.070	<0.020	<0.010	1.0	1.0	0.022	<0.010
BBL	13-Aug-15	5.50	6.8	0.010	<0.070	<0.020	<0.010	0.91	0.91	0.018	<0.010
BBL	19-Aug-15	4.90	6.6	0.131	<0.070	<0.020	<0.010	1.21	1.21	0.025	0.010
BBL	14-Sep-15	5.80	8.4	0.402	<0.070	0.026	<0.010	1.84	1.84	0.030	0.013
BC1	02-Sep-11	-	5.0	<0.050	<0.071	<0.050	<0.050	1.1	1.1	0.023	0.021
BC1	26-Sep-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.019	0.016
BC1	14-Oct-11	-	6.0	<0.050	<0.071	<0.050	<0.050	0.9	0.9	<0.010	<0.010
BC1	29-Oct-11	-	<2.0	<0.010	0.031	0.031	<0.0010	0.8	-	0.024	0.020
BC1	02-Nov-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	0.8	0.8	0.021	0.020
BC1	17-Jan-12	2.3	2.8	-	-	-	-	-	-	-	-
BC1	07-Feb-12	2.3	<2.0	-	-	-	-	-	-	-	-
BC1	21-Feb-12	1.9	<2.0	-	-	-	-	-	-	-	-
BC1	16-Mar-12	1.2	4.0	0.134	<0.071	<0.050	<0.050	1.0	1.0	0.018	<0.010
BC1	17-Apr-12	1.6	<2.0	0.022	<0.071	<0.050	<0.050	0.8	0.8	0.015	<0.010
BC1	17-Apr-12	1.1	<2.0	-	-	-	-	-	-	-	-
BC1	13-Jun-12	1.2	3.2	0.013	<0.071	<0.050	<0.050	0.8	0.8	0.013	<0.010
BC1	09-Aug-12	1.9	4.0	0.044	<0.071	<0.050	<0.050	0.4	0.4	0.017	-
BC1	09-Aug-12	1.9	<2.0	-	-	-	-	-	-	-	-
BC1	12-Sep-12	6.7	6.4	0.034	<0.071	<0.050	<0.050	0.8	0.8	0.023	0.010
BC1	19-Oct-12	3.2	4.8	0.041	0.114	0.114	<0.050	0.8	0.9	0.014	<0.010
BC1	19-Oct-12	4.2	6.5	-	-	-	-	-	-	-	-
BC1	13-Nov-12	2.9	5.4	0.075	<0.071	<0.050	<0.050	0.9	0.9	0.013	<0.010
BC1	13-Nov-12	1.5	2.4	-	-	-	-	-	-	-	-
BC1	19-Nov-12	2.6	5.2	0.075	<0.071	<0.050	<0.050	0.8	0.8	0.015	<0.010
BC1	19-Nov-12	0.8	<2.0	-	-	-	-	-	-	-	-
BC1	22-Nov-12	3.1	5.2	0.097	0.079	0.079	<0.050	0.9	1.0	<0.010	<0.010
BC1	22-Nov-12	1.6	3.8	-	-	-	-	-	-	-	-
BC1	27-Nov-12	1.3	3.9	0.371	<0.071	<0.050	<0.050	1.2	1.2	0.015	<0.010
BC1	27-Mar-13	14.2	<2.0	1.440	<0.071	<0.050	<0.050	2.7	2.8	0.031	0.023

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC1	02-May-13	4.3	23.9	1.33	<0.071	<0.050	<0.050	2.4	2.4	0.050	<0.010
BC1	14-May-13	4.1	18.3	0.432	<0.071	<0.050	<0.050	1.1	1.1	0.038	0.010
BC1	28-May-13	6.0	11.5	0.085	<0.071	<0.050	<0.050	0.8	0.8	0.026	<0.010
BC1	24-Jul-13	2.0	4.0	0.124	0.076	0.076	<0.050	1.2	1.2	0.021	0.014
BC1	09-Oct-13	1.5	2.8	0.044	0.087	0.087	<0.050	0.9	1.0	0.011	<0.010
BC1	02-May-14	2.0	4.0	0.128	<0.071	0.067	<0.050	0.8	0.8	0.029	0.017
BC1	15-May-14	1.1	3.6	0.019	<0.071	<0.050	<0.050	0.5	0.5	0.013	0.012
BC1	29-May-14	1.8	4.8	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.012	<0.010
BC1	20-Jun-14	1.0	2.8	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.013	<0.010
BC1	03-Jul-14	1.2	3.4	-	-	-	-	-	-	-	-
BC1	04-Jul-14	24.0	42.8	0.018	<0.071	<0.050	<0.050	1.1	1.1	0.034	<0.010
BC1	05-Jul-14	9.9	22.0	-	-	-	-	-	-	-	-
BC1	06-Jul-14	9.5	9.6	0.010	<0.071	<0.050	<0.050	0.6	0.6	0.022	<0.010
BC1	08-Jul-14	3.7	3.6	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.016	<0.010
BC1	11-Jul-14	4.5	6.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.022	<0.010
BC1	16-Jul-14	1.8	3.2	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.015	<0.010
BC1	26-Aug-14	1.6	3.6	<0.010	0.0087	0.0087	<0.0010	0.8	0.8	0.014	<0.010
BC1	22-Sep-14	1.4	3.6	0.010	<0.071	<0.050	<0.050	0.7	0.7	0.011	<0.010
BC1	23-Oct-14	2.4	4.8	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.016	<0.010
BC1	17-Nov-14	3.0	2.8	0.042	<0.071	<0.050	<0.050	0.9	0.9	0.016	<0.010
BC1	01-May-15	1.2	<2.0	<0.010	0.0232	0.0232	<0.0010	0.7	0.7	0.015	<0.010
BC1	11-Jun-15	1.9	2.4	-	-	-	-	-	-	-	-
BC1	30-Jul-15	3.4	5.4	0.020	<0.070	<0.020	<0.010	0.8	0.8	0.022	<0.010
BC1	13-Aug-15	2.9	4.6	0.015	<0.070	0.024	<0.010	0.9	0.9	0.019	<0.010
BC1	19-Aug-15	4.5	7.0	0.139	<0.070	<0.020	<0.010	1.2	1.2	0.027	0.011
BC1	14-Sep-15	12.2	19.0	0.268	0.106	0.079	0.027	1.59	1.7	0.040	0.013
BC2	2-Sep-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	1.1	1.1	0.018	0.018
BC2	26-Sep-11	-	6.0	<0.050	<0.071	<0.050	<0.050	0.9	0.9	0.020	0.017
BC2	14-Oct-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	0.9	0.9	0.011	<0.010
BC2	29-Oct-11	-	<2.0	<0.010	0.006	0.006	<0.0010	0.8	-	0.025	0.022

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC2	2-Nov-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	0.8	0.8	0.019	0.018
BC2	4-Nov-11	-	30.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.042	0.016
BC2	7-Nov-11	-	22.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.025	0.013
BC2	10-Nov-11	-	13.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.026	0.015
BC2	14-Nov-11	-	10.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.020	0.014
BC2	17-Nov-11	-	13.0	0.080	<0.071	<0.050	<0.050	1.0	1.0	0.011	<0.010
BC2	17-Jan-12	1.4	4.0	0.069	0.023	0.021	0.002	1.0	1.0	0.017	0.011
BC2	07-Feb-12	4.1	4.8	0.101	<0.071	<0.050	<0.050	1.1	1.1	0.014	-
BC2	21-Feb-12	4.2	4.4	0.123	<0.071	<0.050	<0.050	1.0	1.0	0.016	0.014
BC2	16-Mar-12	2.0	8.8	0.125	<0.071	<0.050	<0.050	1.0	1.0	0.020	<0.010
BC2	17-Apr-12	1.5	2.0	0.020	<0.071	<0.050	<0.050	0.8	0.8	0.015	<0.010
BC2	17-Apr-12	1.5	2.0	-	-	-	-	-	-	-	-
BC2	16-May-12	1.9	2.4	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.010	<0.010
BC2	13-Jun-12	1.9	4.8	0.019	<0.071	<0.050	<0.050	0.9	0.9	0.015	<0.010
BC2	09-Aug-12	3.2	6.6	0.035	<0.071	<0.050	<0.050	0.4	0.4	0.019	.
BC2	12-Sep-12	4.5	10.6	0.032	<0.071	<0.050	<0.050	0.9	0.9	0.019	<0.010
BC2	19-Oct-12	5.1	7.2	0.052	0.075	0.075	<0.050	0.8	0.9	0.016	<0.010
BC2	19-Oct-12	3.9	5.0	-	-	-	-	-	-	-	-
BC2	13-Nov-12 [7]	-	-	-	-	-	-	-	-	-	-
BC2	19-Nov-12	4.2	21.4	0.078	<0.071	<0.050	<0.050	0.8	0.8	0.016	<0.010
BC2	19-Nov-12	3.1	8.0	-	-	-	-	-	-	-	-
BC2	22-Nov-12	3.2	6.6	0.096	<0.071	0.069	<0.050	0.9	0.9	0.012	<0.010
BC2	27-Nov-12	1.4	2.8	0.364	<0.071	<0.050	<0.050	1.2	1.2	0.013	<0.010
BC2	27-Mar-13	25.4	<2.0	1.550	<0.071	<0.050	<0.050	2.8	2.8	0.054	0.023
BC2	02-May-13	4.8	20.0	1.510	<0.071	<0.050	<0.050	2.1	2.1	0.049	<0.010
BC2	14-May-13	4.6	16.0	0.381	<0.071	<0.050	<0.050	1.0	1.0	0.034	0.011
BC2	28-May-13	4.5	8.5	0.064	<0.071	<0.050	<0.050	1.1	1.1	0.022	<0.010
BC2	24-Jul-13	4.0	5.0	0.087	0.102	0.102	<0.050	1.3	1.4	0.023	0.013
BC2	09-Oct-13	5.6	5.6	<0.010	<0.071	0.052	<0.050	1.0	1.0	0.016	<0.010
BC2	02-May-14	4.6	10.4	0.112	<0.071	0.064	<0.050	0.9	0.9	0.030	0.017

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC2	15-May-14	1.6	5.2	0.021	<0.071	<0.050	<0.050	0.5	0.5	0.013	<0.010
BC2	29-May-14	3.7	5.6	0.037	<0.071	<0.050	<0.050	0.7	0.7	0.036	<0.010
BC2	20-Jun-14	1.8	4.8	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.014	0.012
BC2	04-Jul-14	32.5	65.0	0.014	<0.071	<0.050	<0.050	0.8	0.8	0.038	<0.010
BC2	06-Jul-14	34.0	46.4	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.036	<0.010
BC2	08-Jul-14	10.1	14.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.017	<0.010
BC2	11-Jul-14	10.4	18.0	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.026	<0.010
BC2	16-Jul-14	5.0	7.2	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.016	<0.010
BC2	26-Aug-14	3.1	6.4	<0.010	0.0072	0.0072	<0.0010	0.7	0.7	0.015	<0.010
BC2	22-Sep-14	1.9	3.6	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.013	<0.010
BC2	23-Oct-14	2.2	5.0	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.016	<0.010
BC2	17-Nov-14	4.3	4.6	0.040	<0.071	<0.050	<0.050	0.9	0.9	0.016	0.012
BC2	18-Nov-14	3.5	5.3	-	-	-	-	-	-	-	-
BC4	7-Feb-12	4.6	5.2	-	-	-	-	-	-	-	-
BC4	21-Feb-12	3.1	4.8	-	-	-	-	-	-	-	-
BC4	16-Mar-12	2.4	16.0	0.128	<0.071	<0.050	<0.050	1.0	1.0	0.024	<0.010
BC4	17-Apr-12	1.9	2.4	0.018	<0.071	<0.050	<0.050	0.8	0.8	0.014	0.010
BC4	17-Apr-12	1.9	<2.0	-	-	-	-	-	-	-	-
BC4	16-May-12	2.2	<2.0	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.011	0.010
BC4	13-Jun-12	1.9	4.4	0.021	<0.071	<0.050	<0.050	<0.20	<0.20	0.016	<0.010
BC4	09-Aug-12	3.0	7.8	0.035	<0.071	<0.050	<0.050	0.3	0.3	0.021	-
BC4	09-Aug-12	2.7	8.0	-	-	-	-	-	-	-	-
BC4	12-Sep-12	5.6	11.3	0.032	<0.071	<0.050	<0.050	0.9	0.9	0.019	<0.010
BC4	19-Oct-12	4.4	5.4	0.054	0.073	0.073	<0.050	0.9	0.9	0.019	<0.010
BC4	19-Oct-12	4.1	6.8	-	-	-	-	-	-	-	-
BC4	13-Nov-12 [7]	-	-	-	-	-	-	-	-	-	-
BC4	19-Nov-12	3.6	22.6	0.081	<0.071	<0.050	<0.050	0.8	0.8	0.015	<0.010
BC4	19-Nov-12	7.7	20.8	-	-	-	-	-	-	-	-
BC4	22-Nov-12	3.7	7.2	0.098	0.074	0.074	<0.050	0.9	0.9	0.012	<0.010
BC4	22-Nov-12	2.8	5.8	-	-	-	-	-	-	-	-

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC4	27-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
BC4	02-May-13	3.7	16.3	1.100	<0.071	<0.050	<0.050	1.8	1.8	0.040	<0.010
BC4	14-May-13	6.5	18.3	0.375	<0.071	<0.050	<0.050	1.0	1.0	0.034	0.010
BC4	28-May-13	5.4	7.6	0.064	<0.071	<0.050	<0.050	0.8	0.8	0.022	<0.010
BC4	24-Jul-13	4.5	8.0	0.064	0.116	0.116	<0.050	1.1	1.2	0.024	0.012
BC4	09-Oct-13	8.2	6.4	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.017	<0.010
BC4	02-May-14	5.5	8.8	0.110	0.072	0.072	<0.050	0.8	0.9	0.030	0.018
BC4	15-May-14	2.0	5.6	0.046	<0.071	<0.050	<0.050	0.9	0.9	0.015	<0.010
BC4	29-May-14	4.3	6.8	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.013	<0.010
BC4	20-Jun-14	2.6	5.6	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.016	0.011
BC4	04-Jul-14	19.8	48.8	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.031	<0.010
BC4	06-Jul-14	42.0	78.8	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.047	<0.010
BC4	08-Jul-14	17.9	24.4	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.020	<0.010
BC4	11-Jul-14	14.9	25.6	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.028	<0.010
BC4	16-Jul-14	7.7	11.2	0.010	<0.071	<0.050	<0.050	0.8	0.8	0.019	<0.010
BC4	26-Aug-14	4.2	8.4	0.012	0.0098	0.0098	<0.0010	0.7	0.7	0.016	<0.010
BC4	22-Sep-14	2.4	5.6	0.011	<0.071	<0.050	<0.050	0.7	0.7	0.013	<0.010
BC4	23-Oct-14	2.5	5.4	0.010	<0.071	<0.050	<0.050	0.8	0.8	0.017	<0.010
BC4	17-Nov-14	2.9	3.6	0.038	<0.071	<0.050	<0.050	0.9	0.9	0.016	0.011
BC5	7-Feb-12	4.2	3.6	-	-	-	-	-	-	-	-
BC5	21-Feb-12	3.4	3.2	-	-	-	-	-	-	-	-
BC5	16-Mar-12	2.2	17.6	0.130	<0.071	<0.050	<0.050	1.0	1.0	0.023	<0.010
BC5	17-Apr-12	1.7	4.0	0.019	<0.071	<0.050	<0.050	0.8	0.8	0.015	0.010
BC5	16-May-12	2.6	3.6	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.011	0.010
BC5	13-Jun-12	1.5	5.2	0.022	<0.071	<0.050	<0.050	0.8	0.8	0.017	<0.010
BC5	09-Aug-12	2.9	6.6	0.034	<0.071	<0.050	<0.050	0.4	0.4	0.018	-
BC5	09-Aug-12	2.3	6.6	-	-	-	-	-	-	-	-
BC5	12-Sep-12	5.6	10.8	0.035	<0.071	<0.050	<0.050	0.8	0.8	0.019	<0.010
BC5	19-Oct-12	4.4	7.2	0.055	0.074	0.074	<0.050	1.0	1.0	0.015	<0.010
BC5	19-Oct-12	8.4	10.8	-	-	-	-	-	-	-	-

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC5	13-Nov-12	3.1	6.4	0.090	<0.071	<0.050	<0.050	0.9	0.9	0.016	<0.010
BC5	13-Nov-12	3.8	6.2	-	-	-	-	-	-	-	-
BC5	19-Nov-12	4.2	21.0	0.081	<0.071	<0.050	<0.050	0.9	0.9	0.015	<0.010
BC5	19-Nov-12	11.6	32.2	-	-	-	-	-	-	-	-
BC5	22-Nov-12	3.9	7.8	0.103	0.077	0.077	<0.050	0.9	1.0	0.011	<0.010
BC5	27-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
BC5	02-May-13	3.8	13.0	1.150	<0.071	0.063	<0.050	1.5	1.5	0.035	<0.010
BC5	14-May-13	7.2	16.7	0.389	<0.071	<0.050	<0.050	1.5	1.5	0.037	0.015
BC5	28-May-13	6.4	11.5	0.055	<0.071	<0.050	<0.050	0.8	0.8	0.024	<0.010
BC5	24-Jul-13	5.9	9.3	0.062	0.099	0.1	<0.050	1.1	1.2	0.027	0.013
BC5	09-Oct-13	10.1	8.4	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.021	<0.010
BC5	02-May-14	6.7	13.2	0.108	<0.071	0.069	<0.050	0.9	0.9	0.034	0.018
BC5	15-May-14	2.9	6.8	<0.010	<0.071	<0.050	<0.050	0.6	0.6	0.013	0.011
BC5	29-May-14	4.7	8.8	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.015	0.017
BC5	20-Jun-14	2.7	8.0	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.015	0.011
BC5	04-Jul-14	9.7	22.8	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.023	<0.010
BC5	06-Jul-14	47.0	72.0	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.051	<0.010
BC5	08-Jul-14	18.7	25.2	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.022	<0.010
BC5	11-Jul-14	14.4	19.2	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.028	<0.010
BC5	16-Jul-14	7.5	11.6	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.016	<0.010
BC5	27-Aug-14	4.6	8.4	<0.010	0.0097	0.0097	<0.0010	0.8	0.8	0.016	<0.010
BC5	22-Sep-14	2.9	6.4	0.017	<0.071	<0.050	<0.050	0.8	0.8	0.014	<0.010
BC5	23-Oct-14	2.6	5.6	0.011	<0.071	<0.050	<0.050	0.9	0.9	0.018	<0.010
BC5	17-Nov-14	3.9	5.8	0.049	<0.071	<0.050	<0.050	0.9	0.9	0.021	0.011
BC-TM	02-May-13	6.6	21.6	-	-	-	-	-	-	-	-
BC-TM	14-May-13	15.8	20.0	-	-	-	-	-	-	-	-
BC-TM	28-May-13	7.8	11.5	-	-	-	-	-	-	-	-
BC-TM	24-Jul-13	8.8	10.0	-	-	-	-	-	-	-	-
BC-TM	14-Aug-13	8.6	10.0	-	-	-	-	-	-	-	-
BC-TM	09-Oct-13	12.2	8.8	-	-	-	-	-	-	-	-

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC-TM	16-Oct-13	6.1	6.8	-	-	-	-	-	-	-	-
BC-TM	02-May-14	10.5	20.8	-	-	-	-	-	-	-	-
BC-TM	15-May-14	6.2	8.7	-	-	-	-	-	-	-	-
BC-TM	29-May-14	6.3	10.8	-	-	-	-	-	-	-	-
BC-TM	20-Jun-14	4.3	11.2	-	-	-	-	-	-	-	-
BC-TM	03-Jul-14	7.3	17.6	-	-	-	-	-	-	-	-
BC-TM	04-Jul-14	12.8	21.6	-	-	-	-	-	-	-	-
BC-TM	05-Jul-14	113	142	-	-	-	-	-	-	-	-
BC-TM	06-Jul-14	81.0	78.4	-	-	-	-	-	-	-	-
BC-TM	08-Jul-14	21.0	30.4	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.028	<0.010
BC-TM	11-Jul-14	15.3	33.2	-	-	-	-	-	-	-	-
BC-TM	16-Jul-14	10.6	16.4	-	-	-	-	-	-	-	-
BC-TM	26-Aug-14	6.0	12.0	-	-	-	-	-	-	-	-
BC-TM	22-Sep-14	4.0	7.6	-	-	-	-	-	-	-	-
BC-TM	23-Oct-14	3.6	7.4	-	-	-	-	-	-	-	-
BC-TM	17-Nov-14	4.8	6.2	-	-	-	-	-	-	-	-
BC-TM	18-Nov-14	4.5	6.6	-	-	-	-	-	-	-	-
BC-TM	01-May-15	6.3	9.2	-	-	-	-	-	-	-	-
BC-TM	11-Jun-15	5.1	9.8	-	-	-	-	-	-	-	-
BC-TM	30-Jul-15	4.7	6.0	-	-	-	-	-	-	-	-
BC-TM	13-Aug-15	4.7	6.6	-	-	-	-	-	-	-	-
BC-TM	19-Aug-15	9.2	12.2	-	-	-	-	-	-	-	-
BC-TM	14-Sep-15	5.5	10.0	-	-	-	-	-	-	-	-
BC3	2-Sep-11	-	6.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.026	0.017
BC3	26-Sep-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.020	0.018
BC3	14-Oct-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.015	<0.010
BC3	29-Oct-11	-	4.4	<0.010	<0.0051	<0.0050	<0.0010	0.7	-	0.011	0.011
BC3	2-Nov-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	0.7	0.7	0.020	0.018
BC3	4-Nov-11	-	60.0	<0.050	<0.071	<0.050	<0.050	1.2	1.2	0.061	0.014
BC3	7-Nov-11	-	40.0	<0.050	<0.071	<0.050	<0.050	0.9	0.9	0.034	0.012

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC3	10-Nov-11	-	26.0	<0.050	<0.071	<0.050	<0.050	1.2	1.2	0.031	0.013
BC3	14-Nov-11	-	17.0	<0.050	<0.071	<0.050	<0.050	1.3	1.3	0.023	0.013
BC3	17-Nov-11	-	20.0	0.065	<0.071	<0.050	<0.050	1.0	1.0	0.012	<0.010
BC3	25-Nov-11	-	32.0	0.054	<0.071	<0.050	<0.050	1.0	1.0	0.035	0.011
BC3	17-Jan-12	2.2	4.8	0.065	0.025	0.024	0.001	1.0	1.0	0.014	0.012
BC3	07-Feb-12	5.6	6.8	-	-	-	-	-	-	-	-
BC3	21-Feb-12	7.0	6.4	-	-	-	-	-	-	-	-
BC3	16-Mar-12	3.5	24.4	0.125	<0.071	<0.050	<0.050	1.4	1.4	0.020	<0.010
BC3	17-Apr-12	4.7	6.4	0.019	<0.071	<0.050	<0.050	0.8	0.8	0.015	0.011
BC3	16-May-12	3.8	7.7	-	<0.0051	<0.0050	<0.0010	0.9	0.9	<0.014	0.010
BC3	13-Jun-12	2.9	5.6	0.026	<0.071	<0.050	<0.050	0.8	0.8	0.019	<0.010
BC3	09-Aug-12	3.3	9.0	0.036	<0.071	<0.050	<0.050	0.4	0.4	0.020	-
BC3	09-Aug-12	3.6	7.8	-	-	-	-	-	-	-	-
BC3	12-Sep-12	6.1	13.3	0.035	<0.071	<0.050	<0.050	0.8	0.8	0.017	<0.010
BC3	19-Oct-12	4.5	8.3	0.058	0.076	0.076	<0.050	0.8	0.9	0.015	<0.010
BC3	19-Oct-12	3.8	6.8	-	-	-	-	-	-	-	-
BC3	13-Nov-12	3.3	7.6	0.088	<0.071	<0.050	<0.050	0.9	0.9	0.015	<0.010
BC3	13-Nov-12	3.4	6.4	-	-	-	-	-	-	-	-
BC3	19-Nov-12	4.4	19.7	0.093	<0.071	<0.050	<0.050	0.9	0.9	0.017	<0.010
BC3	19-Nov-12	6.0	16.4	-	-	-	-	-	-	-	-
BC3	22-Nov-12	4.5	7.8	0.105	0.076	0.076	<0.050	0.9	1.0	0.012	<0.010
BC3	27-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
BC3	02-May-13	5.7	16.0	0.211	0.086	0.086	<0.050	1.4	1.5	0.035	<0.010
BC3	14-May-13	17.4	15.3	0.355	<0.071	<0.050	<0.050	1.3	1.3	0.041	0.012
BC3	28-May-13	11.3	15.0	0.029	<0.071	<0.050	<0.050	0.7	0.7	0.028	<0.010
BC3	24-Jul-13	9.5	10.5	0.020	0.073	0.073	<0.050	1.0	1.0	0.029	0.014
BC3	09-Oct-13	19.2	15.2	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.025	<0.010
BC3	02-May-14	14.6	22.4	0.086	0.075	0.075	<0.050	0.8	0.8	0.040	0.018
BC3	15-May-14	4.9	10.7	0.036	<0.071	<0.050	<0.050	0.5	0.5	0.019	0.011
BC3	29-May-14	5.7	12.4	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.019	<0.010

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC3	20-Jun-14	6.2	18.4	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.022	0.011
BC3	03-Jul-14	17.4	22.2	-	-	-	-	-	-	-	-
BC3	04-Jul-14	12.9	22.8	<0.010	<0.071	<0.050	<0.050	0.6	0.6	0.022	<0.010
BC3	05-Jul-14	132	180	-	-	-	-	-	-	-	-
BC3	06-Jul-14	97.0	111	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.089	<0.010
BC3	07-Jul-14	23.5	62.4	-	-	-	-	-	-	-	-
BC3	08-Jul-14	34.5	48.4	<0.010	-	-	-	0.8	-	0.037	-
BC3	11-Jul-14	28.0	35.2	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.051	<0.010
BC3	16-Jul-14	14.4	24.4	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.030	<0.010
BC3	26-Aug-14	7.4	13.6	<0.010	0.0086	0.0086	<0.0010	0.9	0.9	0.020	0.005
BC3	22-Sep-14	5.4	10.0	0.013	<0.071	<0.050	<0.050	0.7	0.7	0.019	<0.010
BC3	23-Oct-14	4.1	8.0	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.018	<0.010
BC3	17-Nov-14	4.6	6.4	0.043	<0.071	<0.050	<0.050	0.9	0.9	0.017	0.011
BC3	18-Nov-14	5.3	7.0	-	-	-	-	-	-	-	-
BC3	01-May-15	6.1	10.8	0.035	0.0242	0.0242	<0.0010	0.8	0.8	0.023	<0.010
BC3	11-Jun-15	6.7	11.0	-	-	-	-	-	-	-	-
BC3	30-Jul-15	4.7	9.2	0.019	<0.070	0.021	<0.010	1.4	1.4	0.026	<0.010
BC3	13-Aug-15	6.2	7.0	0.012	<0.070	<0.020	<0.010	0.9	0.9	0.021	<0.010
BC3	19-Aug-15	9.8	12.0	0.109	<0.070	0.030	<0.010	1.1	1.1	0.029	0.010
BC3	14-Sep-15	5.70	6.6	0.044	0.193	0.151	0.042	1.11	1.3	0.022	0.012
DR1 / DR-C	2-Sep-11	-	8.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.023	0.012
DR1 / DR-C	26-Sep-11	-	<5.0	0.057	<0.071	<0.050	<0.050	1.3	1.3	0.023	0.013
DR1 / DR-C	14-Oct-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	1.5	1.5	0.022	<0.010
DR1 / DR-C	29-Oct-11	-	8.0	0.069	0.017	0.015	0.003	1.1	-	0.017	<0.010
DR1 / DR-C	2-Nov-11	-	<5.0	0.075	<0.071	<0.050	<0.050	1.5	1.5	0.021	0.013
DR1 / DR-C	4-Nov-11	-	12.0	0.082	<0.071	<0.050	<0.050	1.1	1.1	0.025	0.015
DR1 / DR-C	7-Nov-11	-	8.0	0.091	<0.071	<0.050	<0.050	1.0	1.0	0.019	0.012
DR1 / DR-C	10-Nov-11	-	<5.0	0.089	<0.071	<0.050	<0.050	1.1	1.1	0.022	0.013
DR1 / DR-C	14-Nov-11	-	6.0	0.092	<0.071	<0.050	<0.050	1.0	1.0	0.019	0.013
DR1 / DR-C	17-Nov-11	-	9.0	0.090	<0.071	<0.050	<0.050	1.0	1.0	0.010	0.012

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DR1 / DR-C	25-Nov-11	-	7.0	0.147	<0.071	<0.050	<0.050	0.9	0.9	0.021	0.015
DR1 / DR-C	18-Jan-12	2.0	<2.0	0.114	0.029	0.026	0.003	1.1	1.1	0.022	-
DR1 / DR-C	07-Feb-12	1.8	2.4	-	-	-	-	-	-	-	-
DR1 / DR-C	09-Feb-12	1.1	<2.0	0.179	<0.071	<0.050	<0.050	1.2	1.2	0.017	-
DR1 / DR-C	21-Feb-12	1.9	<2.0	0.216	<0.071	<0.050	<0.050	1.2	1.2	0.016	<0.010
DR1 / DR-C	16-Mar-12	1.2	6.8	0.168	<0.071	<0.050	<0.050	1.1	1.1	0.029	<0.010
DR1 / DR-C	17-Apr-12	3.6	6.4	0.042	<0.071	<0.050	<0.050	0.9	0.9	0.018	0.011
DR1 / DR-C	16-May-12	4.9	12.8	-	<0.0051	<0.0050	<0.0010	1.0	1.0	0.013	<0.010
DR1 / DR-C	16-May-12	4.3	11.6	-	-	-	-	-	-	-	-
DR1 / DR-C	13-Jun-12	3.9	12.0	0.038	<0.071	<0.050	<0.050	1.0	1.0	0.026	<0.010
DR1 / DR-C	13-Jun-12	6.0	8.4	-	-	-	-	-	-	-	-
DR1 / DR-C	09-Aug-12	4.4	10.6	0.017	<0.071	<0.050	<0.050	0.3	0.3	0.019	-
DR1 / DR-C	09-Aug-12	3.7	9.8	-	-	-	-	-	-	-	-
DR1 / DR-C	12-Sep-12	14.1	25.6	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.013	<0.010
DR1 / DR-C	19-Oct-12	12.9	21.2	0.049	<0.071	<0.050	<0.050	1.0	1.0	0.021	<0.010
DR1 / DR-C	19-Oct-12	10.1	19.2	-	-	-	-	-	-	-	-
DR1 / DR-C	13-Nov-12	2.6	6.6	0.057	<0.071	<0.050	<0.050	0.9	0.9	0.015	<0.010
DR1 / DR-C	13-Nov-12	2.6	8.6	-	-	-	-	-	-	-	-
DR1 / DR-C	19-Nov-12	3.9	10.0	0.074	<0.071	<0.050	<0.050	0.9	0.9	0.016	<0.010
DR1 / DR-C	19-Nov-12	4.3	7.2	-	-	-	-	-	-	-	-
DR1 / DR-C	22-Nov-12	3.5	6.6	0.077	<0.071	<0.050	<0.050	0.9	0.9	0.011	<0.010
DR1 / DR-C	27-Nov-12	2.9	4.6	0.088	<0.071	<0.050	<0.050	1.0	1.0	0.010	<0.010
DR1 / DR-C	27-Nov-12	2.4	4.8	-	-	-	-	-	-	-	-
DR1 / DR-C	26-Mar-13	1.0	<2.0	0.263	0.046	0.044	0.002	1.2	1.2	0.011	0.004
DR1 / DR-C	02-May-13	3.2	11.7	0.830	<0.071	<0.050	<0.050	1.1	1.1	0.014	<0.010
DR1 / DR-C	02-May-13	2.9	7.0	-	-	-	-	-	-	-	-
DR1 / DR-C	14-May-13	6.7	10.8	0.082	<0.071	<0.050	<0.050	1.0	1.0	0.017	<0.010
DR1 / DR-C	14-May-13	4.3	10.0	-	-	-	-	-	-	-	-
DR1 / DR-C	28-May-13	6.0	11.3	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.020	<0.010
DR1 / DR-C	28-May-13	3.9	12.0	-	-	-	-	-	-	-	-

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DR1 / DR-C	24-Jul-13	4.4	8.5	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.019	0.010
DR1 / DR-C	24-Jul-13	4.5	8.5	-	-	-	-	-	-	-	-
DR1 / DR-C	09-Oct-13	5.8	7.6	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.015	<0.010
DR1 / DR-C	09-Oct-13	5.4	7.6	-	-	-	-	-	-	-	-
DR1 / DR-C	02-May-14	3.1	4.0	0.102	<0.071	0.057	<0.050	1.0	1.0	0.019	0.016
DR1 / DR-C	02-May-14	2.2	4.4	-	-	-	-	-	-	-	-
DR1 / DR-C	15-May-14	2.6	5.3	0.066	<0.071	<0.050	<0.050	0.7	0.7	0.017	0.014
DR1 / DR-C	15-May-14	1.7	3.7	-	-	-	-	-	-	-	-
DR1 / DR-C	29-May-14	2.5	5.6	0.017	<0.071	<0.050	<0.050	0.8	0.8	0.017	<0.010
DR1 / DR-C	29-May-14	2.2	6.0	-	-	-	-	-	-	-	-
DR1 / DR-C	20-Jun-14	4.5	8.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.021	0.010
DR1 / DR-C	20-Jun-14	3.8	9.2	-	-	-	-	-	-	-	-
DR1 / DR-C	03-Jul-14	4.6	8.0	-	-	-	-	-	-	-	-
DR1 / DR-C	04-Jul-14	4.8	6.8	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.017	<0.010
DR1 / DR-C	04-Jul-14	1.3	7.6	-	-	-	-	-	-	-	-
DR1 / DR-C	05-Jul-14	3.4	8.4	-	-	-	-	-	-	-	-
DR1 / DR-C	06-Jul-14	3.1	5.2	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.019	<0.010
DR1 / DR-C	06-Jul-14	4.1	6.0	-	-	-	-	-	-	-	-
DR1 / DR-C	07-Jul-14	3.8	6.4	-	-	-	-	-	-	-	-
DR1 / DR-C	08-Jul-14	3.9	6.4	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.014	<0.010
DR1 / DR-C	08-Jul-14	3.8	7.6	-	-	-	-	-	-	-	-
DR1 / DR-C	11-Jul-14	5.8	9.6	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.021	0.012
DR1 / DR-C	11-Jul-14	5.2	9.2	-	-	-	-	-	-	-	-
DR1 / DR-C	16-Jul-14	5.6	8.0	0.011	<0.071	<0.050	<0.050	0.9	0.9	0.018	<0.010
DR1 / DR-C	16-Jul-14	3.0	8.0	-	-	-	-	-	-	-	-
DR1 / DR-C	26-Aug-14	4.3	8.8	<0.010	<0.0051	<0.0050	<0.0010	0.9	0.9	0.019	0.0054
DR1 / DR-C	22-Sep-14	3.0	6.4	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.017	<0.010
DR1 / DR-C	22-Sep-14	2.6	4.8	-	-	-	-	-	-	-	-
DR1 / DR-C	23-Oct-14	3.8	7.0	0.010	<0.071	<0.050	<0.050	0.9	0.9	0.020	<0.010
DR1 / DR-C	17-Nov-14	4.5	6.4	0.040	<0.071	<0.050	<0.050	1.0	1.0	0.016	0.012

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DR1 / DR-C	18-Nov-14	4.2	5.2	-	-	-	-	-	-	-	-
DR1 / DR-C	01-May-15	3.6	5.2	<0.010	0.0081	0.0081	<0.0010	0.8	0.8	0.021	<0.010
DR1 / DR-C	01-May-15	3.6	5.0	-	-	-	-	-	-	-	-
DR1 / DR-C	11-Jun-15	3.1	5.6	-	-	-	-	-	-	-	-
DR1 / DR-C	11-Jun-15	2.8	5.2	-	-	-	-	-	-	-	-
DR1 / DR-C	30-Jul-15	9.7	17.8	<0.010	<0.070	<0.020	<0.010	1.0	1.0	0.016	<0.010
DR1 / DR-C	30-Jul-15	9.4	13.6	-	-	-	-	-	-	-	-
DR1 / DR-C	13-Aug-15	7.8	9.4	0.59	<0.070	<0.020	<0.010	0.8	0.8	0.021	<0.010
DR1 / DR-C	13-Aug-15	8.3	9.4	-	-	-	-	-	-	-	-
DR1 / DR-C	19-Aug-15	6.6	9.6	<0.010	<0.070	<0.020	<0.010	1.0	1.0	0.021	<0.010
DR1 / DR-C	19-Aug-15	6.8	9.6	-	-	-	-	-	-	-	-
DR1 / DR-C	14-Sep-15	6.70	9.8	<0.010	<0.070	<0.020	<0.010	1.13	1.13	0.017	<0.010
DR1 / DR-C	14-Sep-15	6.60	11.0	-	-	-	-	-	-	-	-
DR-TM	14-Aug-13	3.8	6.0	-	-	-	-	-	-	-	-
DR-TM	16-Oct-13	4.1	7.6	-	-	-	-	-	-	-	-
DR-TM	22-Oct-14	3.7	9.4	-	-	-	-	-	-	-	-
DR3 / DR-D	02-Sep-11	-	7.0	<0.050	<0.071	<0.050	<0.050	1.2	1.2	0.024	0.014
DR3 / DR-D	26-Sep-11	-	5.0	0.057	<0.071	<0.050	<0.050	1.2	1.2	0.025	0.013
DR3 / DR-D	14-Oct-11	-	7.0	<0.050	<0.071	<0.050	<0.050	1.1	1.1	0.020	<0.010
DR3 / DR-D	29-Oct-11	-	7.5	0.068	0.017	0.015	0.002	1.1	-	0.017	<0.010
DR3 / DR-D	02-Nov-11	-	8.0	0.074	<0.071	<0.050	<0.050	1.0	1.0	0.020	0.014
DR3 / DR-D	04-Nov-11	-	69.0	<0.050	<0.071	<0.050	<0.050	1.1	1.1	0.070	0.019
DR3 / DR-D	07-Nov-11	-	64.0	<0.050	<0.071	<0.050	<0.050	1.1	1.1	0.052	0.031
DR3 / DR-D	10-Nov-11	-	26.0	<0.050	<0.071	<0.050	<0.050	1.1	1.1	0.033	0.014
DR3 / DR-D	14-Nov-11	-	27.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.025	0.014
DR3 / DR-D	17-Nov-11	-	16.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.016	0.014
DR3 / DR-D	25-Nov-11	-	22.0	0.057	<0.071	<0.050	<0.050	0.8	0.8	0.032	0.012
DR3 / DR-D	7-Feb-12	2.4	3.2	-	-	-	-	-	-	-	-
DR3 / DR-D	21-Feb-12	2.4	2.8	-	-	-	-	-	-	-	-
DR3 / DR-D	16-Mar-12	1.6	5.6	0.164	<0.071	<0.050	<0.050	1.1	1.1	0.018	<0.010

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DR3 / DR-D	17-Apr-12	2.9	4.0	0.039	<0.071	<0.050	<0.050	1.0	1.0	0.018	0.011
DR3 / DR-D	16-May-12	4.3	3.6	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.010	0.010
DR3 / DR-D	16-May-12	5.2	7.2	-	-	-	-	-	-	-	-
DR3 / DR-D	13-Jun-12	2.3	2.3	0.026	<0.071	<0.050	<0.050	0.8	0.8	0.018	<0.010
DR3 / DR-D	13-Jun-12	6.3	11.2	-	-	-	-	-	-	-	-
DR3 / DR-D	09-Aug-12	3.4	8.0	0.023	<0.071	<0.050	<0.050	0.3	0.3	0.019	-
DR3 / DR-D	09-Aug-12	3.0	8.2	-	-	-	-	-	-	-	-
DR3 / DR-D	12-Sep-12	13.5	21.2	0.017	<0.071	<0.050	<0.050	1.0	1.0	0.024	<0.010
DR3 / DR-D	19-Oct-12	10.2	38.2	0.059	0.075	0.075	<0.050	0.8	0.9	0.016	<0.010
DR3 / DR-D	19-Oct-12	13.1	19.6	-	-	-	-	-	-	-	-
DR3 / DR-D	13-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
DR3 / DR-D	19-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
DR3 / DR-D	22-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
DR3 / DR-D	27-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
DR3 / DR-D	02-May-13	3.8	13.7	0.181	<0.071	0.056	<0.050	1.1	1.1	0.016	<0.010
DR3 / DR-D	02-May-13	3.0	7.0	-	-	-	-	-	-	-	-
DR3 / DR-D	14-May-13	13.1	20.5	0.240	<0.071	<0.050	<0.050	1.1	1.1	0.036	<0.010
DR3 / DR-D	14-May-13	4.2	10.0	-	-	-	-	-	-	-	-
DR3 / DR-D	28-May-13	5.9	10.5	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.019	<0.010
DR3 / DR-D	28-May-13	4.6	12.5	-	-	-	-	-	-	-	-
DR3 / DR-D	24-Jul-13	4.4	9.0	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.016	0.011
DR3 / DR-D	24-Jul-13	4.1	10.0	-	-	-	-	-	-	-	-
DR3 / DR-D	09-Oct-13	4.0	8.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.015	<0.010
DR3 / DR-D	09-Oct-13	4.0	6.4	-	-	-	-	-	-	-	-
DR3 / DR-D	02-May-14	4.7	5.6	0.097	<0.071	0.055	<0.050	1.1	1.1	0.024	0.015
DR3 / DR-D	15-May-14	3.1	6.3	0.042	<0.071	<0.050	<0.050	0.7	0.7	0.017	0.012
DR3 / DR-D	29-May-14	3.2	7.2	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.017	<0.010
DR3 / DR-D	20-Jun-14	8.0	15.6	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.023	0.011
DR3 / DR-D	04-Jul-14	3.3	6.4	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.017	<0.010
DR3 / DR-D	06-Jul-14	3.7	6.8	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.016	<0.010

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DR3 / DR-D	08-Jul-14	13.9	18.4	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.044	<0.010
DR3 / DR-D	11-Jul-14	8.1	12.4	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.024	0.010
DR3 / DR-D	16-Jul-14	15.7	23.6	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.027	0.011
DR3 / DR-D	26-Aug-14	4.4	10.0	<0.010	<0.0051	<0.0050	<0.0010	1.0	1.0	0.020	0.006
DR3 / DR-D	22-Sep-14	5.8	8.8	0.012	<0.071	<0.050	<0.050	0.7	0.7	0.016	0.010
DR3 / DR-D	23-Oct-14	4.1	8.6	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.020	<0.010
DR3 / DR-D	17-Nov-14	5.2	6.2	0.040	<0.071	<0.050	<0.050	0.9	0.9	0.017	0.011
DR3 / DR-D	18-Nov-14	4.1	6.2	-	-	-	-	-	-	-	-
DR3 / DR-D	01-May-15	6.6	12.0	<0.010	0.0118	0.0118	<0.0010	0.7	0.8	0.021	<0.010
DR3 / DR-D	01-May-15	3.0	5.0	-	-	-	-	-	-	-	-
DR3 / DR-D	11-Jun-15	6.7	11.4	-	-	-	-	-	-	-	-
DR3 / DR-D	11-Jun-15	3.4	4.8	-	-	-	-	-	-	-	-
DR3 / DR-D	30-Jul-15	5.1	9.8	0.019	<0.070	0.021	<0.010	0.7	0.7	0.024	<0.010
DR3 / DR-D	30-Jul-15	10.5	16.4	-	-	-	-	-	-	-	-
DR3 / DR-D	13-Aug-15	6.4	6.8	0.016	<0.070	<0.020	<0.010	0.7	0.7	0.023	<0.010
DR3 / DR-D	13-Aug-15	7.2	9.4	-	-	-	-	-	-	-	-
DR3 / DR-D	19-Aug-15	7.5	10.0	0.020	<0.070	<0.020	<0.010	1.1	1.1	0.021	<0.010
DR3 / DR-D	19-Aug-15	7.5	10.4	0.028	<0.070	<0.020	<0.010	1.0	1.0	0.021	<0.010
DR3 / DR-D	19-Aug-15	7.0	9.2	-	-	-	-	-	-	-	-
DR3 / DR-D	14-Sep-15	6.50	9.6	0.018	<0.070	<0.020	<0.010	1.07	1.07	0.020	<0.010
DR3 / DR-D	14-Sep-15	6.70	9.6	<0.010	<0.070	<0.020	<0.010	0.99	0.99	0.017	<0.010
DR3 / DR-D	14-Sep-15	6.20	9.4	-	-	-	-	-	-	-	-
DR2C / DR-E	02-Sep-11	-	10.0	<0.050	<0.071	<0.050	<0.050	1.1	1.1	0.025	0.011
DR2C / DR-E	26-Sep-11	-	<5.0	0.055	<0.071	<0.050	<0.050	1.1	1.1	0.026	0.013
DR2C / DR-E	14-Oct-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.024	0.018
DR2C / DR-E	29-Oct-11	-	7.6	0.067	0.017	0.014	0.003	1.1	-	0.018	<0.010
DR2C / DR-E	02-Nov-11	-	5.0	0.074	<0.071	<0.050	<0.050	1.0	1.0	0.020	0.014
DR2C / DR-E	04-Nov-11	-	11.0	0.085	<0.071	<0.050	<0.050	1.1	1.1	0.031	0.017
DR2C / DR-E	10-Nov-11	-	23.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.028	0.013
DR2C / DR-E	14-Nov-11	-	19.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.024	0.014

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DR2C / DR-E	17-Nov-11	-	16.0	<0.050	<0.071	<0.050	<0.050	1.0	1.0	0.012	0.010
DR2C / DR-E	17-Jan-12	2.0	4.0	-	-	-	-	-	-	-	-
DR2C / DR-E	07-Feb-12	4.8	4.4	-	-	-	-	-	-	-	-
DR2C / DR-E	21-Feb-12	4.2	4.8	0.180	<0.071	<0.050	<0.050	1.0	1.0	0.016	0.013
DR2C / DR-E	16-Mar-12	2.0	9.2	0.154	<0.071	<0.050	<0.050	1.1	1.1	0.024	0.014
DR2C / DR-E	17-Apr-12	2.7	5.6	0.026	<0.071	<0.050	<0.050	0.8	0.8	0.017	<0.010
DR2C / DR-E	16-May-12	4.7	13.2	-	<0.010	<0.0050	<0.001	1.0	1.0	0.018	<0.010
DR2C / DR-E	16-May-12	4.0	4.4	-	-	-	-	-	-	-	-
DR2C / DR-E	13-Jun-12	2.9	5.2	0.028	<0.071	<0.050	<0.050	0.8	0.8	0.019	<0.010
DR2C / DR-E	13-Jun-12	3.7	6.8	-	-	-	-	-	-	-	-
DR2C / DR-E	09-Aug-12	3.1	6.6	0.028	<0.071	<0.050	<0.050	0.3	0.3	0.018	-
DR2C / DR-E	09-Aug-12	4.1	10.2	-	-	-	-	-	-	-	-
DR2C / DR-E	12-Sep-12	14.0	21.2	0.011	<0.071	<0.050	<0.050	0.9	0.9	0.015	<0.010
DR2C / DR-E	19-Oct-12	6.1	9.8	0.054	<0.071	0.062	<0.050	0.9	0.9	0.018	<0.010
DR2C / DR-E	19-Oct-12	11.6	17.7	-	-	-	-	-	-	-	-
DR2C / DR-E	13-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
DR2C / DR-E	19-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
DR2C / DR-E	22-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
DR2C / DR-E	27-Nov-12 [6]	-	-	-	-	-	-	-	-	-	-
DR2C / DR-E	25-Mar-13	1.1	2.0	0.255	<0.050	0.026	<0.0010	1.2	1.2	0.008	0.004
DR2C / DR-E	02-May-13	4.0	9.7	0.205	<0.071	0.058	<0.050	1.1	1.1	0.017	<0.010
DR2C / DR-E	02-May-13	6.1	10.7	-	-	-	-	-	-	-	-
DR2C / DR-E	14-May-13	7.0	18.8	0.120	<0.071	<0.050	<0.050	1.2	1.2	0.024	<0.010
DR2C / DR-E	14-May-13	6.5	9.3	-	-	-	-	-	-	-	-
DR2C / DR-E	28-May-13	5.9	10.0	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.022	<0.010
DR2C / DR-E	28-May-13	5.6	12.5	-	-	-	-	-	-	-	-
DR2C / DR-E	24-Jul-13	4.1	9.0	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.020	<0.010
DR2C / DR-E	24-Jul-13	4.6	9.5	-	-	-	-	-	-	-	-
DR2C / DR-E	09-Oct-13	4.1	9.2	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.016	<0.010
DR2C / DR-E	09-Oct-13	4.0	6.0	-	-	-	-	-	-	-	-

Table I-2. Continued.

Site ID	Sample Date [1]	Turbidity	TSS [1]	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
		(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
DR2C / DR-E	02-May-14	4.4	6.8	0.097	<0.071	0.059	<0.050	0.9	0.9	0.024	0.016
DR2C / DR-E	15-May-14	2.0	4.7	0.055	<0.071	<0.050	<0.050	0.7	0.7	0.016	0.012
DR2C / DR-E	29-May-14	4.4	14.8	0.015	<0.071	<0.050	<0.050	0.9	0.9	0.025	<0.010
DR2C / DR-E	20-Jun-14	3.2	9.6	<0.010	-	<0.050	<0.050	0.8	0.8	0.025	0.012
DR2C / DR-E	04-Jul-14	4.2	7.6	0.022	<0.071	<0.050	<0.050	0.9	0.9	0.018	<0.010
DR2C / DR-E	05-Jul-14	37.0	46.0	-	-	-	-	-	-	-	-
DR2C / DR-E	06-Jul-14	28.0	34.8	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.031	0.031
DR2C / DR-E	07-Jul-14	6.0	16.4	-	-	-	-	-	-	-	-
DR2C / DR-E	08-Jul-14	25.0	30.4	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.022	0.012
DR2C / DR-E	11-Jul-14	10.1	16.4	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.025	0.011
DR2C / DR-E	16-Jul-14	6.2	12.0	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.020	<0.010
DR2C / DR-E	26-Aug-14	5.3	11.5	<0.010	<0.0051	<0.0050	<0.0010	0.9	0.9	0.021	0.0057
DR2C / DR-E	22-Sep-14	5.6	10.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.019	<0.010
DR2C / DR-E	23-Oct-14	4.0	7.6	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.019	<0.010
DR2C / DR-E	17-Nov-14 [6]	-	-	-	-	-	-	-	-	-	-
DR2C / DR-E	18-Nov-14 [6]	-	-	-	-	-	-	-	-	-	-

1 - Where two sets of TSS results appear for a site on the same date, the second set of results is from the additional TSS sample that was collected from the opposite shore from where sampling typically takes place for that site.

2 - All samples analysed for TSS in 2011 (except 29-Oct-11) had a detection limit of 5.0 mg/L.

3 - All samples analysed for Ammonia (as N) in 2011 (except 29-Oct-11) had a detection limit of 0.050 mg/L.

4 - Samples taken as part of the RWQMP (2012-2013) in conjunction with 2012-2013 LSMEOC monitoring program on these dates: 17&18-Jan-12; 9-Feb-12; 16-May-12; and 24-27-Mar-13 (LSM1,DR1,DR2C).

5 - Samples taken as part of the 2011 LSMEOC monitoring program on these dates: 2-Sep-11, 26-Sep-11, 14-Oct-11, 2-Nov-11, 4-Nov-11, 7-Nov-11, 10-Nov-11, 14-Nov-11, 17-Nov-11, 25-Nov-11; and as part of 2012-2013 LSMEOC monitoring programon these dates: 7-Feb-12; 21-Feb-12; 16-Mar-12; 17-Apr-12; 13-June-12; 9-Aug-12; 12-Sept-12; 19-Oct-12; 13-Nov-12; 19-Nov-12; 22-Nov-12; 27-Nov-12; 27-Mar-13(EC2,BC1,BC2); 2-May-13; 14-May-13; 28-May-13; 24-Jul-13; and 9-Oct-13.

6 - Not able to sample due to ice cover.

7 - No data was collected - helicopter was required for additional tasks; field crew chose to delete mid-stream sample stations to meet the available schedule for the helicopter.

8 - TSS Sample was inundated with fine sediment due to rotor wash from the helicopter during sampling; the additional TSS sample represents more typical conditions during this sample event for this station.

Table I-3. QA/QC results for replicate TSS, turbidity and nutrient samples collected by the LSMEOC monitoring program, 2011-2015. Relative percent mean differences (RPMD) greater than 25% and percent standard relative deviations (PRSD) above 18% are indicated in red bold.

Site ID	Sample Date		Turbidity	TSS	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
			(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Analytical Detection Limit			*0.1*	*2.0/ 5.0[2]*	*0.01/ 0.05[3]*	*0.0051/ 0.050[4]/ 0.071[5]*	*0.005[4]/ 0.05[5]*	*0.001[4]/ 0.05[5]*	*0.2*	*0.2*	*0.010*	*0.010*
LSM1	09-Feb-12	Duplicate	1.3	<2.0	0.129	<0.071	<0.050	<0.050	1.1	1.1	0.015	-
		Duplicate	1.1	<2.0	0.179	<0.071	<0.050	<0.050	1.2	1.2	0.017	0.010
		Mean	1.2	<2.0	0.154	<0.071	<0.050	<0.050	1.1	1.1	0.016	0.010
		SD	0.1	-	0.0354	-	-	-	0.1	0.1	0.0016	-
		RPMD	13	-	**32**	-	-	-	11	11	-	-
LSM1	21-Feb-12	Duplicate	1.7	<2.0	0.219	<0.071	<0.050	<0.050	1.8	1.8	0.025	<0.010
		Duplicate	1.6	<2.0	0.202	<0.071	<0.050	<0.050	1.7	1.7	0.021	<0.010
		Mean	1.6	<2.0	0.211	<0.071	<0.050	<0.050	1.7	1.7	0.023	<0.010
		SD	0.1	-	0.0120	-	-	-	0.1	0.1	0.0028	-
		RPMD	5	-	8	-	-	-	10	10	-	-
LSM1	16-Mar-12	Duplicate	1.3	4.4	0.160	<0.071	<0.050	<0.050	1.1	1.1	0.014	<0.010
		Duplicate	1.2	2.0	0.192	<0.071	<0.050	<0.050	1.1	1.1	<0.010	0.011
		Mean	1.2	3.2	0.176	<0.071	<0.050	<0.050	1.1	1.1	0.010	<0.010
		SD	0.0	1.7	0.0226	-	-	-	0.0	0.0	-	-
		RPMD	2	-	18	-	-	-	0	0	-	-
LSM1	17-Apr-12	Duplicate	4.3	14.0	0.028	<0.071	<0.050	<0.050	1.0	1.0	0.023	0.010
		Duplicate	5.2	7.6	0.026	<0.071	<0.050	<0.050	1.0	1.0	0.021	<0.010
		Mean	4.7	10.8	0.027	<0.071	<0.050	<0.050	1.0	1.0	0.022	<0.010
		SD	0.6	4.5	0.0014	-	-	-	0.0	0.0	0.0014	-
		RPMD	19	-	-	-	-	-	1	1	-	-
EC1	17-Apr-12	Duplicate	3.5	6.8	0.032	<0.071	<0.050	<0.050	0.9	0.9	0.018	0.011
		Duplicate	7.6	17.8	-	-	-	-	-	-	-	-
		Mean	5.6	12.3	0.032	<0.071	<0.050	<0.050	0.9	0.9	0.018	0.011
		SD	2.9	7.8	-	-	-	-	-	-	-	-
		RPMD	**73**	-	-	-	-	-	-	-	-	-

Table I-3. Continued.

Site ID	Sample Date		Turbidity	TSS	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
			(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC3	16-May-12	Triplicate	3.8	6.8	-	<0.050	<0.0050	<0.0010	0.9	0.9	0.012	0.011
		Triplicate	3.7	8.4	-	<0.0051	<0.0050	<0.0010	0.9	0.9	0.012	0.010
		Triplicate	4.1	8.0	-	<0.050	<0.0050	<0.0010	1.0	1.0	<0.014	0.010
		Mean	3.8	7.7	-	<0.0051	<0.0050	<0.0010	0.9	0.9	<0.014	0.010
		SD	0.3	0.3	-	-	-	-	0.02	0.02	-	0.0000
		PRSD	7	-	-	-	-	-	-	-	-	-
LSM1	19-Oct-12	Duplicate	6.8	19.2	0.022	<0.071	<0.050	<0.050	0.9	0.9	0.020	<0.010
		Duplicate	13.2	11.6	0.023	<0.071	<0.050	<0.050	1.2	1.2	0.020	<0.010
		Mean	10.0	15.4	0.023	<0.071	<0.050	<0.050	1.0	1.0	0.020	<0.010
		SD	4.5	5.4	0.0007	-	-	-	0.1	0.1	0.0000	-
		RPMD	**64**	**49**	-	-	-	-	-	-	-	-
LSM1	13-Nov-12	Duplicate	3.1	7.0	0.058	<0.071	<0.050	<0.050	0.9	0.9	0.017	<0.010
		Duplicate	2.6	7.8	0.057	<0.071	<0.050	<0.050	0.9	0.9	0.015	<0.010
		Mean	2.9	7.4	0.058	<0.071	<0.050	<0.050	0.9	0.9	0.016	<0.010
		SD	0.4	0.6	0.0007	-	-	-	0.0	0.0	0.0014	-
		RPMD	18	-	2	-	-	-	-	-	-	-
LSM1	19-Nov-12	Duplicate	2.8	4.0	0.074	<0.071	<0.050	<0.050	0.9	0.9	0.014	<0.010
		Duplicate	4.3	4.2	0.071	<0.071	<0.050	<0.050	0.9	0.9	0.012	<0.010
		Mean	3.6	4.1	0.073	<0.071	<0.050	<0.050	0.9	0.9	0.013	<0.010
		SD	1.0	0.1	0.0021	-	-	-	0.0	0.0	0.0014	-
		RPMD	**41**	-	4	-	-	-	-	-	-	-
LSM1	22-Nov-12	Duplicate	2.4	3.8	0.083	<0.071	<0.050	<0.050	0.9	0.9	0.011	<0.010
		Duplicate	3.0	4.0	0.080	<0.071	<0.050	<0.050	0.9	0.9	0.011	<0.010
		Mean	2.7	3.9	0.082	<0.071	<0.050	<0.050	0.9	0.9	0.011	<0.010
		SD	0.4	0.1	0.0021	-	-	-	0.0	0.0	0.0000	-
		RPMD	22	-	4	-	-	-	-	-	-	-

Table I-3. Continued.

Site ID	Sample Date		Turbidity	TSS	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
			(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC1	27-Nov-12	Duplicate	1.2	3.3	0.374	<0.071	<0.050	<0.050	1.2	1.2	0.015	<0.010
		Duplicate	1.5	4.4	0.368	<0.071	<0.050	<0.050	1.2	1.2	0.014	<0.010
		Mean	1.3	3.9	0.371	<0.071	<0.050	<0.050	1.2	1.2	0.015	<0.010
		SD	0.2	0.8	0.0042	-	-	-	0.0	0.0	0.0007	-
		RPMD	21	-	2	-	-	-	1	1	-	-
BC1	02-May-13	Duplicate	5.3	24.7	1.53	<0.071	<0.050	<0.050	2.2	2.2	0.049	<0.010
		Duplicate	3.4	23.0	1.13	<0.071	<0.050	<0.050	2.6	2.6	0.051	<0.010
		Mean	4.3	23.9	1.33	<0.071	<0.050	<0.050	2.4	2.4	0.050	<0.010
		SD	1.3	1.2	0.283	-	-	-	0.2	0.2	0.0014	-
		RPMD	**44**	7	**30**	-	-	-	14	14	-	-
DR3 / DR-D	14-May-13	Duplicate	14.3	21.8	0.230	<0.071	<0.050	<0.050	1.1	1.1	0.036	<0.010
		Duplicate	11.8	19.2	0.249	<0.071	<0.050	<0.050	1.2	1.2	0.035	<0.010
		Mean	13.1	20.5	0.240	<0.071	<0.050	<0.050	1.1	1.1	0.036	<0.010
		SD	1.8	1.8	0.0134	-	-	-	0.1	0.1	0.0007	-
		RPMD	19	13	8	-	-	-	8	8	-	-
DR1 / DR-C	28-May-13	Duplicate	5.7	11.5	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.020	<0.010
		Duplicate	6.2	11.0	0.013	<0.071	<0.050	<0.050	0.7	0.7	0.020	<0.010
		Mean	6.0	11.3	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.020	<0.010
		SD	0.3	0.4	-	-	-	-	0.0	0.0	0.0000	-
		RPMD	8	4	-	-	-	-	-	-	-	-
BC5	24-Jul-13	Duplicate	5.5	9.0	0.049	0.098	0.098	<0.050	1.0	1.1	0.026	0.013
		Duplicate	6.3	9.5	0.074	0.100	0.100	<0.050	1.1	1.2	0.027	0.013
		Mean	5.9	9.3	0.062	0.099	0.1	<0.050	1.1	1.2	0.027	0.013
		SD	0.6	0.4	0.018	0.0014	0.0	#DIV/0!	0.0	0.0	0.0007	0.0000
		RPMD	13	-	-	-	-	-	6	5	-	-

Table I-3. Continued.

Site ID	Sample Date		Turbidity (NTU)	TSS (mg/L)	Ammonia (mg N/L)	Nitrate & Nitrite (mg N/L)	Nitrate (mg N/L)	Nitrite (mg N/L)	TKN (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Phosphorus (mg/L)
BC-TM	14-Aug-13	Duplicate	8.9	9.5	-	-	-	-	-	-	-	-
		Duplicate	8.4	10.5	-	-	-	-	-	-	-	-
		Mean	8.6	10.0	-	-	-	-	-	-	-	-
		SD	0.3	0.7	-	-	-	-	-	-	-	-
		RPMD	6	-	-	-	-	-	-	-	-	-
BC5	09-Oct-13	Duplicate	10.7	8.4	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.021	<0.010
		Duplicate	9.6	8.4	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.020	<0.010
		Mean	10.1	8.4	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.021	<0.010
		SD	0.8	0.0	-	-	-	-	0.0	0.0	0.0007	-
		RPMD	11	-	-	-	-	-	-	-	-	-
DR-TM	16-Oct-13	Duplicate	4.5	7.2	-	-	-	-	-	-	-	-
		Duplicate	3.6	8.0	-	-	-	-	-	-	-	-
		Mean	4.1	7.6	-	-	-	-	-	-	-	-
		SD	0.6	0.6	-	-	-	-	-	-	-	-
		RPMD	22	11	-	-	-	-	-	-	-	-
EC2	20-Jun-14	Duplicate	4.6	4.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	0.012	<0.010
		Duplicate	5.0	4.8	<0.010	<0.071	<0.050	<0.050	0.2	0.2	0.011	<0.010
		Mean	4.8	4.4	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	0.012	<0.010
		SD	0.3	0.6	-	-	-	-	-	-	0.0007	-
		RPMD	8	-	-	-	-	-	-	-	-	-
BC1	03-Jul-14	Duplicate	1.9	4.0	-	-	-	-	-	-	-	-
		Duplicate	0.5	2.8	-	-	-	-	-	-	-	-
		Mean	1.2	3.4	-	-	-	-	-	-	-	-
		SD	1.0	0.8	-	-	-	-	-	-	-	-
		RPMD	**112**	-	-	-	-	-	-	-	-	-

Table I-3. Continued.

Site ID	Sample Date		Turbidity	TSS	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
			(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC2	04-Jul-14	Duplicate	32.0	63.2	0.012	<0.071	<0.050	<0.050	0.8	0.8	0.036	<0.010
		Duplicate	33.0	66.8	0.016	<0.071	<0.050	<0.050	0.9	0.9	0.040	<0.010
		Mean	32.5	65.0	0.014	<0.071	<0.050	<0.050	0.8	0.8	0.038	<0.010
		SD	0.7	2.5	0.0028	-	-	-	0.0	0.0	0.0028	-
		RPMD	3	6	-	-	-	-	-	-	-	-
EC2	05-Jul-14	Duplicate	126.0	168	-	-	-	-	-	-	-	-
		Duplicate	116.0	179	-	-	-	-	-	-	-	-
		Mean	121.0	174	-	-	-	-	-	-	-	-
		SD	7.1	7.8	-	-	-	-	-	-	-	-
		RPMD	8	6	-	-	-	-	-	-	-	-
BC2	06-Jul-14	Duplicate	34.0	46.8	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.036	0.010
		Duplicate	34.0	46.0	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.036	<0.010
		Mean	34.0	46.4	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.036	<0.010
		SD	0.0	0.6	-	-	-	-	0.1	0.1	0.0000	<0.010
		RPMD	0	2	-	-	-	-	-	-	-	-
LSM1	08-Jul-14	Duplicate	3.2	6.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.017	<0.010
		Duplicate	3.3	6.8	<0.010	<0.071	<0.050	<0.050	0.8	0.8	<0.010	<0.010
		Mean	3.3	6.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.011	<0.010
		SD	0.1	0.0	-	-	-	-	0.0	0.0	-	-
		RPMD	3	-	-	-	-	-	-	-	-	-
EC2	11-Jul-14	Duplicate	13.2	20.0	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.025	<0.010
		Duplicate	14.7	20.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.022	<0.010
		Mean	14.0	20.4	<0.010	<0.071	<0.050	<0.050	1.0	1.0	0.024	<0.010
		SD	1.1	0.6	-	-	-	-	0.1	0.1	0.0021	-
		RPMD	11	4	-	-	-	-	8	-	-	-

Table I-3. Continued.

Site ID	Sample Date		Turbidity	TSS	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
			(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BC2	16-Jul-14	Duplicate	5.2	7.2	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.017	-
		Duplicate	4.7	7.2	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.015	<0.010
		Mean	5.0	7.2	<0.010	<0.071	<0.050	<0.050	0.8	0.8	0.016	<0.010
		SD	0.4	0.0	-	-	-	-	0.0	0.0	0.0014	-
		RPMD	10	-	-	-	-	-	-	-	-	-
LSM1	26-Aug-14	Duplicate	5.9	11.2	<0.010	<0.0051	<0.0050	<0.0010	1.0	1.0	0.018	<0.010
		Duplicate	5.9	11.6	<0.010	0.0130	0.0096	0.0035	1.0	1.0	0.018	<0.010
		Mean	5.9	11.4	-	0.0078	0.0061	0.0020	1.0	1.0	0.018	<0.010
		SD	0.0	0.3	-	-	-	-	0.0	0.0	0.0000	-
		RPMD	0	4	-	-	-	-	3	-	-	-
BC2	22-Sep-14	Duplicate	1.9	3.2	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.012	<0.010
		Duplicate	1.8	4.0	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.013	<0.010
		Mean	1.9	3.6	<0.010	<0.071	<0.050	<0.050	0.7	0.7	0.013	<0.010
		SD	0.1	0.6	-	-	-	-	0.0	0.0	0.0007	-
		RPMD	6	22	-	-	-	-	7	-	-	-
BBL	23-Oct-14	Duplicate	3.3	5.8	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.018	<0.010
		Duplicate	3.5	7.0	0.013	<0.071	<0.050	<0.050	0.9	0.9	0.015	<0.010
		Mean	3.4	6.4	<0.010	<0.071	<0.050	<0.050	0.9	0.9	0.017	<0.010
		SD	0.1	0.8	-	-	-	-	0.0	0.0	0.0021	-
		RPMD	4	-	-	-	-	-	-	0	-	-
BC2	17-Nov-14	Duplicate	4.0	4.0	0.037	<0.071	<0.050	<0.050	0.9	0.9	0.018	0.012
		Duplicate	4.6	5.2	0.042	<0.071	<0.050	<0.050	0.9	0.9	0.013	0.012
		Mean	4.3	4.6	0.040	<0.071	<0.050	<0.050	0.9	0.9	0.016	0.012
		SD	0.4	0.8	0.004	-	-	-	0.0	0.0	0.0035	0.0000
		RPMD	14	-	-	-	-	-	-	-	-	-

Table I-3. Continued.

Site ID	Sample Date		Turbidity (NTU)	TSS (mg/L)	Ammonia (mg N/L)	Nitrate & Nitrite (mg N/L)	Nitrate (mg N/L)	Nitrite (mg N/L)	TKN (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Phosphorus (mg/L)
BC2	18-Nov-14	Duplicate	4.0	5.4	-	-	-	-	-	-	-	-
		Duplicate	3.0	5.2	-	-	-	-	-	-	-	-
		Mean	3.5	5.3	-	-	-	-	-	-	-	-
		SD	0.6	0.1	-	-	-	-	-	-	-	-
		RPMD	**26**	-	-	-	-	-	-	-	-	-
DR1 / DR-C	01-May-15	Duplicate	3.7	5.6	<0.010	0.0067	0.0067	<0.0010	0.7	0.7	0.019	<0.010
		Duplicate	3.4	4.8	<0.010	0.0095	0.0095	<0.0010	0.9	0.9	0.023	0.012
		Mean	3.6	5.2	<0.010	0.0081	0.0081	<0.0010	0.8	0.8	0.021	<0.010
		SD	0.2	0.6	-	0.0020	0.0020	-	0.1	0.1	0.0028	-
		RPMD	9	-	-	-	-	-	-	-	-	-
BC3	11-Jun-15	Duplicate	6.3	10.8	-	-	-	-	-	-	-	-
		Duplicate	7.0	11.2	-	-	-	-	-	-	-	-
		Mean	6.7	11.0	-	-	-	-	-	-	-	-
		SD	0.5	0.3	-	-	-	-	-	-	-	-
		RPMD	11	4	-	-	-	-	-	-	-	-
BBL	30-Jul-15	Duplicate	6.70	8.8	0.021	<0.070	<0.020	<0.010	1.1	1.1	0.022	<0.010
		Duplicate	6.20	7.4	0.021	<0.070	<0.020	<0.010	0.9	0.9	0.021	<0.010
		Mean	6.5	8.1	0.021	<0.070	<0.020	<0.010	1.0	1.0	0.022	<0.010
		SD	0.4	1.0	0.0000	-	-	-	0.1	0.1	0.0007	-
		RPMD	8	-	-	-	-	-	-	-	-	-
EC2	13-Aug-15	Duplicate	8.2	10.4	<0.010	<0.070	<0.020	<0.010	0.9	0.9	0.019	<0.010
		Duplicate	8.5	10.8	<0.010	<0.070	<0.020	<0.010	0.8	0.8	0.020	0.011
		Mean	8.4	10.6	<0.010	<0.070	<0.020	<0.010	0.8	0.8	0.020	<0.010
		SD	0.2	0.3	-	-	-	-	0.0	0.0	0.0007	-
		RPMD	4	4	-	-	-	-	-	-	-	-

Table I-4. Laboratory results for TSS, turbidity and nutrients in field and trip blanks submitted by the LSMEOC monitoring program, 2011-2015. Results that are more than five times the analytical detection limit are indicated in red bold.

Sample Date	Turbidity	TSS	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
	(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Analytical Detection Limit	*0.1*	*2.0/ 5.0*	*0.01/ 0.05*	*0.0051/ 0.050/ 0.071*	*0.0050/ 0.050*	*0.0010/ 0.050*	*0.20*	*0.20*	*0.010*	*0.010*
Field Blanks										
26-Sep-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
02-Nov-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
17-Jan-12	<0.10	<2.0	<0.010	<0.0051	<0.005	<0.001	<0.20	<0.2	<0.010	<0.010
07-Feb-12	<0.10	<2.0	-	-	-	-	-	-	-	-
09-Feb-12	-	-	-	-	-	-	-	-	-	-
21-Feb-12	0.12	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
16-Mar-12	0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
17-Apr-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
16-May-12	<0.10	<2.0	-	<0.050	<0.005	<0.001	<0.20	<0.20	<0.010	<0.010
13-Jun-12	0.15	<2.0	<0.010	<0.071	<0.005	<0.050	<0.20	<0.20	<0.010	<0.010
12-Sep-12	0.15	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
19-Oct-12	0.16	<2.0	-	-	-	-	-	-	-	-
13-Nov-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
19-Nov-12	0.16	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
22-Nov-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
27-Nov-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
27-Mar-13	<0.10	<2.0	<0.010	<0.0051	<0.005	<0.001	<0.20	-	<0.001	<0.001
02-May-13	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
14-May-13	0.14	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
28-May-13	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
24-Jul-13	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
09-Oct-13	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
02-May-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
14-May-14	0.14	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
29-May-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
20-Jun-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010

Table I-4. Continued.

Sample Date	Turbidity (NTU)	TSS (mg/L)	Ammonia (mg N/L)	Nitrate & Nitrite (mg N/L)	Nitrate (mg N/L)	Nitrite (mg N/L)	TKN (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Phosphorus (mg/L)
03-Jul-14	<0.10	<2.0	-	-	-	-	-	-	-	-
04-Jul-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
06-Jul-14	-	-	<0.010	-	-	-	-	-	<0.010	-
08-Jul-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
11-Jul-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
16-Jul-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
26-Aug-14	<0.10	<2.0	<0.010	<0.0051	<0.0050	<0.0010	<0.20	<0.20	<0.010	<0.010
22-Sep-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
23-Oct-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
17-Nov-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
18-Nov-14	<0.10	<2.0	-	-	-	-	-	-	-	-
01-May-15	<0.10	<2.0	<0.010	<0.0051	<0.0050	<0.0010	<0.20	<0.20	<0.010	<0.010
11-Jun-15	<0.10	<2.0	-	-	-	-	-	-	-	-
30-Jul-15	<0.10	<2.0	<0.010	<0.070	<0.020	<0.010	<0.20	<0.20	<0.010	<0.010
13-Aug-15	<0.10	<2.0	<0.010	<0.070	<0.020	<0.010	<0.20	<0.20	<0.010	<0.010
19-Aug-15	<0.10	<2.0	<0.010	<0.070	<0.020	<0.010	<0.20	<0.20	<0.010	<0.010
14-Sep-15	<0.10	<2.0	<0.010	<0.070	<0.020	<0.010	<0.20	<0.20	<0.010	<0.010
Trip Blanks										
26-Sep-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	<0.20	-	<0.010	<0.010
14-Oct-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
29-Oct-11	-	<2.0	<0.010	<0.0051	<0.0050	<0.0010	<0.20	-	<0.010	<0.010
10-Nov-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
14-Nov-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
17-Nov-11	-	<5.0	<0.050	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
17-Jan-12	<0.10	<2.0	<0.010	<0.0051	<0.005	<0.001	<0.2	<0.2	<0.001	<0.010
07-Feb-12	<0.10	<2.0	-	-	-	-	-	-	-	-
09-Feb-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
21-Feb-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
16-Mar-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
17-Apr-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010

Table I-4. Continued.

Sample Date	Turbidity (NTU)	TSS (mg/L)	Ammonia (mg N/L)	Nitrate & Nitrite (mg N/L)	Nitrate (mg N/L)	Nitrite (mg N/L)	TKN (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Phosphorus (mg/L)
16-May-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
13-Jun-12	<0.10	<2.0	0.015	<0.071	<0.005	<0.050	<0.20	<0.20	<0.010	<0.010
12-Sep-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
19-Oct-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
13-Nov-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
19-Nov-12	0.20	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
22-Nov-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
27-Nov-12	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
27-Mar-13	**1.22**	<2.0	<0.010	<0.0051	<0.005	<0.001	<0.20	<0.20	<0.001	<0.001
02-May-13	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
14-May-13	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
28-May-13	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
24-Jul-13	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
09-Oct-13	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
02-May-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	**2.99**	**2.99**	<0.010	<0.010
14-May-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
29-May-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
20-Jun-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
03-Jul-14	<0.10	<2.0	-	-	-	-	-	-	-	-
04-Jul-14	<0.10	<2.0	0.037	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
05-Jul-14	<0.10	<2.0	-	-	-	-	-	-	-	-
06-Jul-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
08-Jul-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
11-Jul-14	<0.10	<2.0	0.043	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
16-Jul-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
26-Aug-14	<0.10	<2.0	<0.010	<0.0051	<0.0050	<0.0010	<0.20	<0.20	<0.010	<0.010
22-Sep-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
23-Oct-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
17-Nov-14	<0.10	<2.0	<0.010	<0.071	<0.050	<0.050	<0.20	<0.20	<0.010	<0.010
18-Nov-14	<0.10	<2.0	-	-	-	-	-	-	-	-

Table I-4. Continued.

Sample Date	Turbidity	TSS	Ammonia	Nitrate & Nitrite	Nitrate	Nitrite	TKN	Total Nitrogen	Total Phosphorus	Total Dissolved Phosphorus
	(NTU)	(mg/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg N/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
01-May-15	<0.10	<2.0	<0.010	<0.0051	<0.0050	<0.0010	<0.20	<0.20	<0.010	<0.010
30-Jul-15	<0.10	<2.0	<0.010	<0.070	<0.020	<0.010	<0.20	<0.20	<0.010	<0.010
13-Aug-15	<0.10	<2.0	<0.010	<0.070	<0.020	<0.010	<0.20	<0.20	<0.010	<0.010
19-Aug-15	<0.10	<2.0	<0.010	<0.070	<0.020	<0.010	<0.20	<0.20	<0.010	<0.010
14-Sep-15	<0.10	<2.0	<0.010	<0.070	<0.020	<0.010	<0.20	<0.20	<0.010	<0.010

Table I-5. Laboratory results for mercury samples collected by the LSMEOC monitoring program, 2011-2015. Values in blue italics are considered suspect.

Site ID	Sample Date	Dissolved Mercury (ng/L)	Total Mercury (ng/L)	Dissolved Methyl Mercury (ng/L)	Total Methyl Mercury (ng/L)
Analytical Detection Limit		*1.0*	*1.0 / 50[(1)]*	*0.050*	*0.050*
LSM1	2-Sep-11	-	<50	-	-
LSM1	26-Sep-11	-	<50	-	-
LSM1	14-Oct-11	-	<50	-	-
LSM1	29-Oct-11	-	1.5	-	-
LSM1	2-Nov-11	-	<50	-	-
LSM1	4-Nov-11	-	<50	-	-
LSM1	7-Nov-11	-	<50	-	-
LSM1	10-Nov-11	-	<50	-	-
LSM1	14-Nov-11	-	<50	-	-
LSM1	18-Jan-12	-	<1.0	<0.050	<0.050
LSM1	16-Mar-12	-	<1.0	<0.050	<0.050
LSM1	24-Mar-13	-	<0.50	<0.050	<0.050
LSM1	20-Jun-14	<1.0	3.3	-	0.080
LSM1	08-Jul-14	1.3	1.3	0.175	<0.050
LSM1	16-Jul-14	3.0	1.2	<0.050	<0.050
LSM1	26-Aug-14	1.7	1.2	<0.050	<0.050
EC1	4-Nov-11	-	<50	-	-
EC1	7-Nov-11	-	<50	-	-
EC1	10-Nov-11	-	<50	-	-
EC1	14-Nov-11	-	<50	-	-
EC1	17-Nov-11	-	<50	-	-
EC1	25-Nov-11	-	<50	-	-
EC1	17-Jan-12	-	<1.0	<0.050	<0.050
EC2	17-Jan-12	-	<1.0	<0.050	<0.050
EC2	20-Jun-14	1.2	-	-	0.246
EC2	08-Jul-14	<1.0	1.8	<0.050	0.080
EC2	16-Jul-14	1.2	2.4	<0.050	0.058
EC2	26-Aug-14	1.8	1.2	<0.050	<0.050
BBL	27-Mar-13	-	0.7	0.201	0.311
BC1	02-Sep-11	-	<50	-	-
BC1	26-Sep-11	-	<50	-	-
BC1	14-Oct-11	-	<50	-	-
BC1	29-Oct-11	-	1.9	-	-
BC1	02-Nov-11	-	<50	-	-
BC2	2-Sep-11	-	<50	-	-
BC2	26-Sep-11	-	<50	-	-
BC2	14-Oct-11	-	<50	-	-
BC2	29-Oct-11	-	1.6	-	-
BC2	2-Nov-11	-	<50	-	-
BC2	4-Nov-11	-	<50	-	-
BC2	7-Nov-11	-	<50	-	-

Table I-5. Continued.

Site ID	Sample Date	Dissolved Mercury (ng/L)	Total Mercury (ng/L)	Dissolved Methyl Mercury (ng/L)	Total Methyl Mercury (ng/L)
BC2	10-Nov-11	-	<50	-	-
BC2	14-Nov-11	-	<50	-	-
BC2	17-Nov-11	-	<50	-	-
BC2	17-Jan-12	-	<1.0	<0.050	<0.050
BC2	20-Jun-14	<1.0	-	-	0.164
BC2	08-Jul-14	2.6	2.9	<0.050	0.481
BC2	16-Jul-14	1.7	1.9	0.199	0.390
BC2	26-Aug-14	1.6	1.3	0.161	0.210
BC3	2-Sep-11	-	<50	-	-
BC3	26-Sep-11	-	<50	-	-
BC3	14-Oct-11	-	<50	-	-
BC3	29-Oct-11	-	2.0	-	-
BC3	2-Nov-11	-	<50	-	-
BC3	4-Nov-11	-	<50	-	-
BC3	7-Nov-11	-	<50	-	-
BC3	10-Nov-11	-	<50	-	-
BC3	14-Nov-11	-	<50	-	-
BC3	17-Nov-11	-	<50	-	-
BC3	25-Nov-11	-	<50	-	-
BC3	17-Jan-12	-	<1.0	<0.050	<0.050
BC3	16-May-12	-	1.0	0.076	0.116
BC3	20-Jun-14	1.1	-	-	0.142
BC3	08-Jul-14	1.8	3.7	0.452	0.451
BC3	16-Jul-14	1.7	2.8	0.229	0.403
BC3	26-Aug-14	1.4	1.9	0.170	0.240
DR1 / DR-C	2-Sep-11	-	<50	-	-
DR1 / DR-C	26-Sep-11	-	<50	-	-
DR1 / DR-C	14-Oct-11	-	*87*	-	-
DR1 / DR-C	29-Oct-11	-	<1.0	-	-
DR1 / DR-C	2-Nov-11	-	<50	-	-
DR1 / DR-C	4-Nov-11	-	<50	-	-
DR1 / DR-C	7-Nov-11	-	<50	-	-
DR1 / DR-C	10-Nov-11	-	<50	-	-
DR1 / DR-C	14-Nov-11	-	<50	-	-
DR1 / DR-C	17-Nov-11	-	<50	-	-
DR1 / DR-C	25-Nov-11	-	<50	-	-
DR1 / DR-C	18-Jan-12	-	<1.0	<0.050	<0.050
DR1 / DR-C	16-May-12	-	1.1	<0.050	0.073
DR1 / DR-C	26-Mar-13	-	<0.5	<0.050	<0.050
DR1 / DR-C	20-Jun-14	<1.0	-	-	0.051
DR1 / DR-C	08-Jul-14	1.0	1.4	0.053	0.096
DR1 / DR-C	16-Jul-14	1.8	1.8	<0.050	0.070
DR1 / DR-C	26-Aug-14	1.4	1.4	<0.050	<0.050
DR3 / DR-D	02-Sep-11	-	<50	-	-

Table I-5. Continued.

Site ID	Sample Date	Dissolved Mercury (ng/L)	Total Mercury (ng/L)	Dissolved Methyl Mercury (ng/L)	Total Methyl Mercury (ng/L)
DR3 / DR-D	26-Sep-11	-	<50	-	-
DR3 / DR-D	14-Oct-11	-	<50	-	-
DR3 / DR-D	29-Oct-11	-	<1.0	-	-
DR3 / DR-D	02-Nov-11	-	<50	-	-
DR3 / DR-D	04-Nov-11	-	<50	-	-
DR3 / DR-D	07-Nov-11	-	<50	-	-
DR3 / DR-D	10-Nov-11	-	<50	-	-
DR3 / DR-D	14-Nov-11	-	<50	-	-
DR3 / DR-D	17-Nov-11	-	<50	-	-
DR3 / DR-D	25-Nov-11	-	<50	-	-
DR3 / DR-D	20-Jun-14	1.0	-	-	0.136
DR3 / DR-D	08-Jul-14	2.1	-	0.268	0.450
DR3 / DR-D	16-Jul-14	2.3	3.6	0.224	0.401
DR3 / DR-D	26-Aug-14	1.4	1.4	<0.050	<0.050
DR2C / DR-E	02-Sep-11	-	<50	-	-
DR2C / DR-E	26-Sep-11	-	<50	-	-
DR2C / DR-E	14-Oct-11	-	*90*	-	-
DR2C / DR-E	29-Oct-11	-	1.1	-	-
DR2C / DR-E	02-Nov-11	-	<50	-	-
DR2C / DR-E	04-Nov-11	-	<50	-	-
DR2C / DR-E	10-Nov-11	-	<50	-	-
DR2C / DR-E	14-Nov-11	-	<50	-	-
DR2C / DR-E	17-Nov-11	-	<50	-	-
DR2C / DR-E	16-May-12	-	1.2	<0.050	0.061
DR2C / DR-E	25-Mar-13	-	0.1	<0.050	<0.050
DR2C / DR-E	08-Jul-14	1.2	2.1	0.138	0.152
DR2C / DR-E	16-Jul-14	1.5	1.7	0.069	0.100

1 - All samples analysed for total mercury in 2011 (except 29-Oct-11) had a detection limit of 0.050 µg/L.

Table I-6. QA/QC results for replicate mercury samples collected by the LSMEOC monitoring program, 2011-2015. Relative percent mean differences (RPMD) greater than 25% are indicated in red bold.

Site ID	Sample Date		Dissolved Mercury (ng/L)	Total Mercury (ng/L)	Dissolved Methyl Mercury (ng/L)	Total Methyl Mercury (ng/L)
Analytical Detection Limit			*1.0*	*1.0 / 50[(1)]*	*0.050*	*0.050*
EC2	20-Jun-14	Duplicate	1.2	-	-	0.244
		Duplicate	1.1	-	-	0.247
		Mean	1.2	-	-	0.246
		SD	-	-	-	-
		RPMD	-	-	-	-
LSM1	08-Jul-14	Duplicate	1.1	1.3	<0.050	<0.050
		Duplicate	1.5	1.2	0.324	<0.050
		Mean	1.3	1.3	0.175	<0.050
		SD	-	-	-	-
		RPMD	-	-	-	-
BC2	16-Jul-14	Duplicate	1.6	1.8	0.204	0.374
		Duplicate	1.7	1.9	0.194	0.406
		Mean	1.7	1.9	0.199	0.390
		SD	-	-	-	0.0226
		RPMD	-	-	-	8
LSM1	26-Aug-14	Duplicate	1.7	1.2	<0.050	<0.050
		Duplicate	1.7	1.1	<0.050	<0.050
		Mean	1.7	1.2	<0.050	<0.050
		SD	-	-	-	-
		RPMD	-	-	-	-

Table I-7. Laboratory results for mercury and methyl-mercury in field and trip blanks submitted by the LSMEOC monitoring program, 2011-2015. Results that are more than five times the analytical detection limit are indicated in red bold.

Sample Date	Dissolved Mercury (ng/L)	Total Mercury (ng/L)	Dissolved Methyl Mercury (ng/L)	Total Methyl Mercury (ng/L)
Analytical Detection Limit	*1.0/50*[1]	*1.0/50*[1]	*0.050*	*0.050*
Field Blanks				
26-Sep-11	<50	203		
02-Nov-11	<50	<50		
17-Jan-12	2.0	2.1	**1.0**	**1.33**
20-Jun-14	<1.0	-	-	<0.050
08-Jul-14	<1.0	<1.0	<0.050	<0.050
16-Jul-14	<1.0	<1.0	<0.050	<0.050
26-Aug-14	1.1	<1.0	<0.050	<0.050
Trip Blanks				
26-Sep-11	<50	<50		
14-Oct-11	<50	<50		
29-Oct-11	<1.0	<1.0		
10-Nov-11	<50	<50		
14-Nov-11	<50	<50		
17-Nov-11	<50	<50		
27-Mar-13	-	<0.050	<0.050	<0.050
20-Jun-14	<1.0	-	-	<0.050
08-Jul-14	<1.0	<1.0	<0.050	<0.050
16-Jul-14	1.7	<1.0	<0.050	<0.050
26-Aug-14	1.2	<1.0	<0.050	<0.050

Table I-8. Laboratory results for petroleum hydrocarbon samples collected by the LSMEOC monitoring program, 2011-2015.

Site	AECOM ID [1]	Sample Date	Benzene	Ethyl Benzene	Toluene	o-Xylene	m+p Xylenes	Total Xylenes	F1 (C6-C10)	F1-BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Total Hydrocarbons (C6-C50)
			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Analytical Detection Limit			*0.0005*	*0.0005*	*0.001*	*0.0005*	*0.0005*	*0.0015*	*0.1*	*0.1*	*0.25*	*0.25*	*0.25*	*0.44*
LSM1	LSM01	02-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM01	26-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM01	14-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM01	29-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM01	02-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM01	04-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM01	07-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM01	10-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM01	14-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	-	9-Feb-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	-	13-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	-	19-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	-	22-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	-	20-Jun-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	-	6-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	-	8-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	-	17-Nov-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC1	EC1	04-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC1	EC1	07-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC1	EC1	10-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC1	EC1	14-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC1	EC1	17-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC1	EC1	25-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC2	-	13-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC2	-	19-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC2	-	22-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC2	-	20-Jun-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC2	-	6-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44

Table I-8. Continued.

Site	AECOM ID [1]	Sample Date	Benzene	Ethyl Benzene	Toluene	o-Xylene	m+p Xylenes	Total Xylenes	F1 (C6-C10)	F1-BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Total Hydrocarbons (C6-C50)
			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
EC2	-	8-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC2	-	17-Nov-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC1	BC01	02-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC1	BC01A	26-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC1	BC01A	14-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC1	BC01A	02-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC1	BC01A	29-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC1	-	13-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC1	-	19-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC1	-	22-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC1	-	27-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	BC02	02-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	BC02	14-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	BC02	29-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	BC02	02-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	BC02A	04-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	BC02A	07-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	BC02A	10-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	BC02A	14-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	BC02A	17-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	-	9-Feb-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	-	20-Jun-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	-	6-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	-	8-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	-	17-Nov-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	BC03	02-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	BC03	26-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	BC03	14-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	BC03	29-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	BC03	02-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44

Table I-8. Continued.

Site	AECOM ID [1]	Sample Date	Benzene	Ethyl Benzene	Toluene	o-Xylene	m+p Xylenes	Total Xylenes	F1 (C6-C10)	F1-BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Total Hydrocarbons (C6-C50)
			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
BC3	BC03A	04-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	BC03A	07-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	BC03A	10-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	BC03A	14-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	BC03A	17-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	BC03A	25-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	-	20-Jun-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	-	4-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	-	6-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	-	8-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC3	-	17-Nov-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	DR01	02-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	DR01	26-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	DR01	14-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	DR01	29-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	DR01	02-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	DR01	04-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	DR01	07-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	DR01	10-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	DR01	14-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	DR01	17-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	DR01	25-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	-	13-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	-	19-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	-	22-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	-	27-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	-	20-Jun-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	-	4-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	-	6-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR1 / DR-C	-	8-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44

Table I-8. Continued.

Site	AECOM ID [1]	Sample Date	Benzene	Ethyl Benzene	Toluene	o-Xylene	m+p Xylenes	Total Xylenes	F1 (C6-C10)	F1-BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Total Hydrocarbons (C6-C50)
			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
DR1 / DR-C	-	17-Nov-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	DR03	02-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	DR03	14-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	DR03	26-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	DR03	29-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	DR03	02-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	DR03	04-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	DR03	07-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	DR03	10-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	DR03	14-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	DR03	17-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	DR03	25-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	-	20-Jun-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	-	4-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	-	6-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	-	8-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR3 / DR-D	-	17-Nov-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR2C / DR-E	DR02	02-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR2C / DR-E	DR02	26-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR2C / DR-E	DR02	14-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR2C / DR-E	DR02	29-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR2C / DR-E	DR02	02-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR2C / DR-E	DR02	04-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR2C / DR-E	DR02B	10-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR2C / DR-E	DR02B	14-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR2C / DR-E	DR02B	17-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR2C / DR-E	-	4-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
DR2C / DR-E	-	6-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44

1 - Sample ID as reported by AECOM (2012).

Table I-9. QA/QC results for replicate petroleum hydrocarbon samples collected by the LSMEOC monitoring program, 2011-2015. Since all results were below the analytical detection limit relative percent mean differences were not calculated.

Site ID	Sample ID	Sample Date	Benzene	Ethyl Benzene	Toluene	o-Xylene	m+p Xylenes	Total Xylenes	F1 (C6-C10)	F1-BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Total Hydrocarbons (C6-C50)
			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Analytical Detection Limit			*0.0005*	*0.0005*	*0.001*	*0.0005*	*0.0005*	*0.0015*	*0.1*	*0.1*	*0.25*	*0.25*	*0.25*	*0.44*
BC1	BC-1	27-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
	DUP (BC1)	27-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM1	9-Feb-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
	DUP (LSM1)	9-Feb-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM1	13-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
	DUP (LSM1)	13-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM1	19-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
	DUP (LSM1)	19-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM1	22-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
	DUP (LSM1)	22-Nov-12	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
EC2	EC2	20-Jun-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
	DUP	20-Jun-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	BC2	6-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
	DUP	6-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
LSM1	LSM1	8-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
	DUP	8-Jul-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
BC2	BC2	14-Nov-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
	DUP	14-Nov-14	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44

Table I-10. Laboratory results for petroleum hydrocarbons in field and trip blanks submitted by the LSMEOC monitoring program, 2011-2015.

Sample Date	Benzene	Ethyl Benzene	Toluene	o-Xylene	m+p Xylenes	Total Xylenes	F1 (C6-C10)	F1-BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Total Hydrocarbons (C6-C50)
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Analytical Detection Limit	*0.00050*	*0.0010*	*0.00050*	*0.00050*	*0.00050*	*0.0015*	*0.10*	*0.10*	*0.25*	*0.25*	*0.25*	*0.44*
Field Blanks												
26-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
02-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
13-Nov-12	<0.0005	<0.001	<0.005	<0.0005	<0.0005	<0.0015	<0.1	<0.1	<0.25	<0.25	<0.25	<0.44
19-Nov-12	<0.0005	<0.001	<0.005	<0.0005	<0.0005	<0.0015	<0.1	<0.1	<0.25	<0.25	<0.25	<0.44
22-Nov-12	<0.0005	<0.001	<0.005	<0.0005	<0.0005	<0.0015	<0.1	<0.1	<0.25	<0.25	<0.25	<0.44
27-Nov-12	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0015	<0.1	<0.1	<0.25	<0.25	<0.25	<0.44
20-Jun-14	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
04-Jul-14	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
06-Jul-14	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
08-Jul-14	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
17-Nov-14	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
Trip Blanks												
26-Sep-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
14-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
29-Oct-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
10-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
14-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
17-Nov-11	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
09-Feb-12	<0.0005	<0.001	<0.005	<0.0005	<0.0005	<0.0015	<0.1	<0.1	<0.25	<0.25	<0.25	<0.44
13-Nov-12	<0.0005	<0.001	<0.005	<0.0005	<0.0005	<0.0015	<0.1	<0.1	<0.25	<0.25	<0.25	<0.44
19-Nov-12	<0.0005	<0.001	<0.005	<0.0005	<0.0005	<0.0015	<0.1	<0.1	<0.25	<0.25	<0.25	<0.44
22-Nov-12	<0.0005	<0.001	<0.005	<0.0005	<0.0005	<0.0015	<0.1	<0.1	<0.25	<0.25	<0.25	<0.44
27-Nov-12	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0015	<0.1	<0.1	<0.25	<0.25	<0.25	<0.44
20-Jun-14	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
04-Jul-14	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
06-Jul-14	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
08-Jul-14	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44
17-Nov-14	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.0015	<0.10	<0.10	<0.25	<0.25	<0.25	<0.44

Appendix J. Channel Inlet and Dredging Plan

Provided Within: Channel Inlet Dredging Plan (taken from AECOM 2012)
Dredging Inlet Monitoring Results (taken from AECOM 2012)

Appendix D

Channel Inlet Dredging Plan

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Memorandum

To	Eric Blais	Page	1
CC	Jim Friesen; Cliff Samoiloff		
Subject	Lake St. Martin Emergency Diversion Channel - Channel Inlet Dredging Plan		
From	Leanna Burgess		
Date	September 29, 2011	Project Number	60212781 (401.4)

1. Introduction

Water levels in Lake Manitoba and Lake St. Martin are extremely high due to widespread record flooding across southern Manitoba in the spring and summer of 2011. An emergency channel is being constructed on Lake St. Martin to reduce the level in both lakes in order to protect the surrounding communities. The emergency channel begins at the northeast point of Lake St. Martin and runs 6 km northeast towards Big Buffalo Lake. The channel location is presented on Figure 1.

AECOM Canada Ltd (AECOM) has been tasked with managing the construction component of the Lake St. Martin Emergency Diversion Channel Project (the Project). To mitigate the environmental impacts of the Project, an Environmental Management Plan (EMP) associated with the construction and operation of the Project is currently being developed. The Channel Inlet Dredging Plan, described in detail in this memorandum, will be included in the EMP.

2. Inlet Construction Overview

The channel inlet design includes a control structure to regulate flow once the channel is open. The control structure will be reinforced with rip rap and geotextile to minimize erosion. The control structure has a top of sill elevation of 243.2 m (798 ft), equal to the lower end of the desirable operating range of Lake St. Martin. The sill is approximately 180 m wide. The channel inlet design is presented on Figure 2.

Currently, the inlet area is mostly flooded wetland/riparian area, submerged up to 1m in some parts. The channel inlet fore bay must be cleared out of vegetation and excavated to an elevation of 797 ft (242.93 m) to allow the water to flow through the control structure and into the channel. The inlet fore bay will be excavated and/or dredged to reach the desired bottom elevation. Material will be cleared from the inlet area using a long reach excavator operating from a barge and a dredge with a capacity of 60 m^3 per hour. The dredge will evacuate the sediment, vegetation, etc. through a 12" pipe. The slurry will be pumped to an initial settling pond northwest of the inlet area. Once the sludge settles, the water will be pumped to a secondary settling area west of the inlet where it will filter through existing vegetation and to eventually re-enter Lake St Martin. The area to be dredged is estimated to be 350 m long and 210 m wide, for a total of 73,500 m^2.

2.1 Siltation and Erosion Control

Prior to dredging operation, two 100 m turbidity curtains will be installed to contain sediment on the east and west sides of the inlet area. The floating bog will initially contain sediment on the south side. The proposed locations of the turbidity curtains are presented on Figure 2 and Figure 3. The digging/dredging operation will start near the existing flood zone shoreline and work south towards the lake and the flooded original shore. The excavator will work from dry land where possible. When the equipment reaches the southern edge of the floating bog, the turbidity curtain will be relocated to the south. In this way, most of the sediment will be contained within turbidity curtains until the very end.

Erosion control measures will be employed during the channel inlet construction. Rip rap will be collected from the channel excavation and placed at the sill and on the west flank of the downstream transition slope. Geotextile will be placed under the rock fill to form nearly impermeable walls to reduce risk of sill breach and reduce erosion.

2.2 Scour Protection

The initial settling pond will be constructed using the hard till material on site. At the secondary settling area, the soil under the pump discharge line will be protected with a blast mat or other energy dissipater to minimize scour.

2.3 Settling Areas

The initial settling pond for the dredged material will be located approximately 200m northwest of the inlet area on the north side of the south access road. The initial settling pond dimensions will be approximately 350m by 200m by 0.5m with berms for containment. The secondary settling area will be located approximately 300m west of the inlet area. It is surrounded by vegetation which will filter remaining sediment in the water. The settling area locations are presented in Figure 2 and Figure 3.

3. Environmental Mitigation Measures

The following mitigation measures are proposed to eliminate or minimize impacts to Lake St. Martin during construction of the channel inlet;

- Minimize the footprint of the dredged area to the extent possible. The dredged area will be documented (m^2).
- Minimize the footprint of shoreline/riparian habitat to be affected to the extent possible. The area of shoreline/riparian habitat disturbed and/or destroyed will be documented (m^2).
- Pump dredged material to a settling pond and then to a secondary settling/filtration area to remove sediment before the slurry water is reintroduced into Lake St. Martin.
- Channel armouring is proposed at the mouth of the inlet to minimize channel erosion.
- Install two or more turbidity curtains (see Figure 2 and Figure 3) to contain sediment from the inlet construction area.

- Where possible, refuelling and maintenance of equipment will not occur within 100 m of Lake St. Martin. For larger waterborne equipment, proper refuelling practices will be followed: use of drip trays and observation of refuelling so any potential spills can be handled immediately.
- Operators to be appropriately trained in the practice of refuelling and emergency spill procedures. Spill kits to be available on all equipment and refuelling vehicles.
- Monitor for evidence of sediment-laden discharges from the settling pond.
- Conduct in-water monitoring including total suspended solids (TSS) and turbidity prior to and during construction of the channel inlet.
- Ensure all equipment operating near or in Lake St. Martin are well maintained and clean and free of external leaks, grease, oil, and vegetative materials.
- Stabilize the banks and allow for natural re-vegetation of the area when Project is complete.

4. Inlet Construction Schedule

Construction of the channel inlet will commence with mobilization of equipment the last week of September 2011. Dredging and excavation of the channel inlet will commence the first week of October 2011 and will continue until November 2011.

5. Water Quality Monitoring Program

The excavation and dredging of the channel inlet could potentially result in sedimentation to Lake St. Martin. To monitor the effects of construction, water quality monitoring will be employed to measure turbidity and total suspended solids (TSS) in Lake St. Martin.

Water quality will be monitored prior to and during construction of the channel inlet. Grab samples will be collected at three stations just below the surface of the water. It is assumed that a single sample will be representative of the sediment load at the station. The exact locations of these stations may change or stations may be added or removed in response to measured turbidity levels or if lake conditions become hazardous, at the discretion of the EMP Manager and/or EMP Coordinator.

At each station, turbidity (NTU), dissolved oxygen (mg/L and %), pH, electrical conductance (mS/cm), total dissolved solids (g/L), and temperature (ºC) will be measured, using a Horiba U-53 multi-parameter meter, or equivalent.

In the event of an elevated turbidity measurement, the extent of the sediment plume will be delineated with additional measurements. A representative water sample from the affected area will be collected and submitted for TSS analysis. The instream monitors will record the turbidity levels observed, their response (e.g., increased sampling) and identify potential sources, which could include but are not limited to:

- Extreme weather event (e.g., rain or wind),
- Natural lakebed or bank erosion,
- Construction spill, or
- Human or animal activity.

At each station, water samples will be collected and submitted to ALS Laboratories in Winnipeg for TSS analysis. Each sample will be identified with a unique code, composed of station number and date.

Prior to the construction of the channel inlet, water quality monitoring will be performed at each of the three stations to establish baseline water quality conditions. During construction of the channel inlet, water quality monitoring will be performed Sunday to Thursday each week at each of the three stations (due to sample hold times). This frequency will be maintained with the exception of major events (e.g., heavy rain fall, high winds, notable sedimentation events). During these major events, sediment monitoring frequency could increase or decrease at the discretion of the EMP Manager and/or EMP Coordinator.

Throughout the water quality monitoring program, the calibration of the multi-parameter meter will be checked on an as required basis.

In addition to turbidity and TSS monitoring, additional analyses may be conducted in conjunction with the water quality monitoring plan in response to specific events on an as-needed basis. For example, in the event of a spill that could potentially introduce hydrocarbons into Lake St. Martin, samples may be analyzed for benzene, toluene, ethylbenzene and xylene (BTEX) and total hydrocarbons (F1-F4). These additional analyses are at the discretion of the EMP Manager and/or EMP Coordinator.

5.1 Quality Assurance (QA)/Quality Control (QC)

The precision and range of the measurements that will be collected with the Horiba U-53 during the instream monitoring is summarized in Table - 01.

Table – 01: Range, Resolution and Precision of the Horiba U-53 Multi-Parameter Meter

Parameter	Range	Resolution	Precision
pH	0 to 14 pH	0.01 pH	± 0.1 pH
Dissolved Oxygen	0 to 50.0 mg/L	0.01 mg/L	< 20 mg/L reading: ± 0.2 mg/L > 20 mg/L reading: ± 0.5 mg/L
Electrical Conductivity	0 to 100 mS/cm	<0.999 mS/cm: 0.001 1.00 to 9.99 mS/cm: 0.01 >10.0 mS/cm: 0.1	1 %
Total Dissolved Solids	0 to 100 g/L	0.1 %	± 5 g/L
Temperature	-10 to 55°C	0.01°C	±0.01°C
Turbidity	0 to 1000 NTU		<10 NTU reading: ±0.5 NTU >10 NTU reading: 3% or 1 NTU (whichever is greater)
Oxidation Reduction Potential	-2000 to 2000 mV	1 mV	±15 mV

Field datasheets will undergo regular inspections by the field staff to ensure they are complete and accurate. Upon field QA, field datasheets will be saved electronically and entered into an Excel

Spreadsheet. Data will undergo content and transcriptional QA/QC checks to ensure that data was entered free of errors. Errors encountered will be documented and corrected.

In addition to samples submitted for TSS analysis, confirmatory analyses may also be requested for turbidity. These results will be used to verify the precision of the handheld meter. Differences between field- and lab-measured values greater than 20% will be flagged as suspect. The laboratory will be requested to review the erroneous measurements and field staff will be notified. Meters will be re-calibrated or sent for servicing if the problem persists. If a change in equipment is required, additional confirmatory samples may be submitted and the specifications will be included in the summary report.

The water samples to be submitted to ALS will be stored, kept cool and out of direct sun in a cooler. Ice packs will be on hand in situations of warm weather. Each sample will be identified with a unique code and will be accompanied by complete analytical request forms.

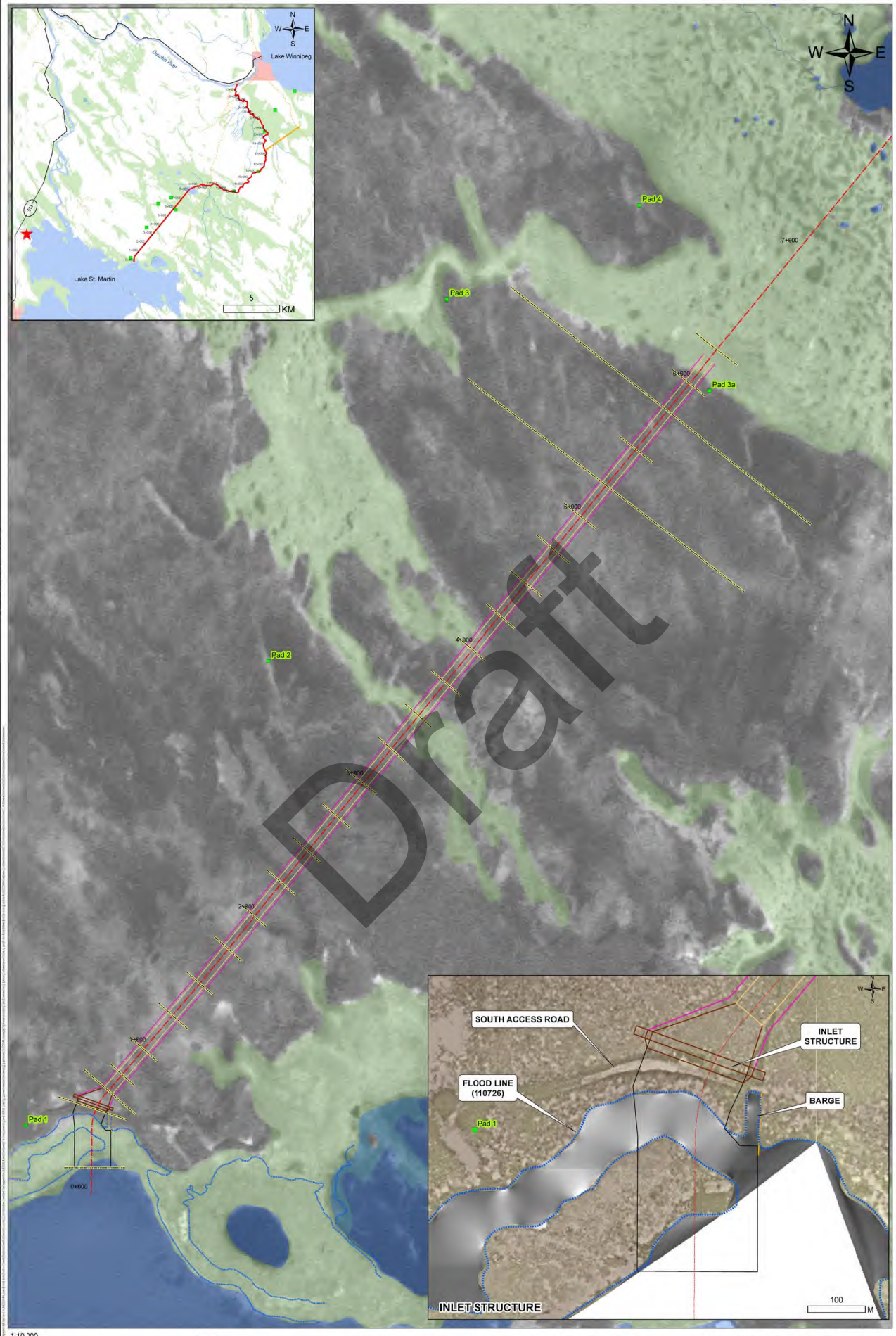
Data returned from ALS (i.e., TSS, hydrocarbons) will be checked against the analytical forms to confirm the requested analysis was performed. Data will be screened for outliers and/or transcriptional errors and verified by the laboratory if required. All data will be summarized and field staff will be notified immediately if any trends or gaps are found.

5.2 Response Plan

The field staff will regularly report the results to the EMP Data and Technical Manager. In the event of increased turbidity or TSS values, appropriate personnel (e.g., Contract Administrator) will be notified immediately and steps will be taken to implement corrective action to the extent feasible. Additional monitoring events or stations may be established as required.

5.3 Reporting

As per the requirements of the EMP, reports are to be submitted weekly to Manitoba Infrastructure and Transportation, summarizing the findings of the water quality monitoring and environmental monitoring associated with the Project.



1:10,000

0 140 280 560 Meters

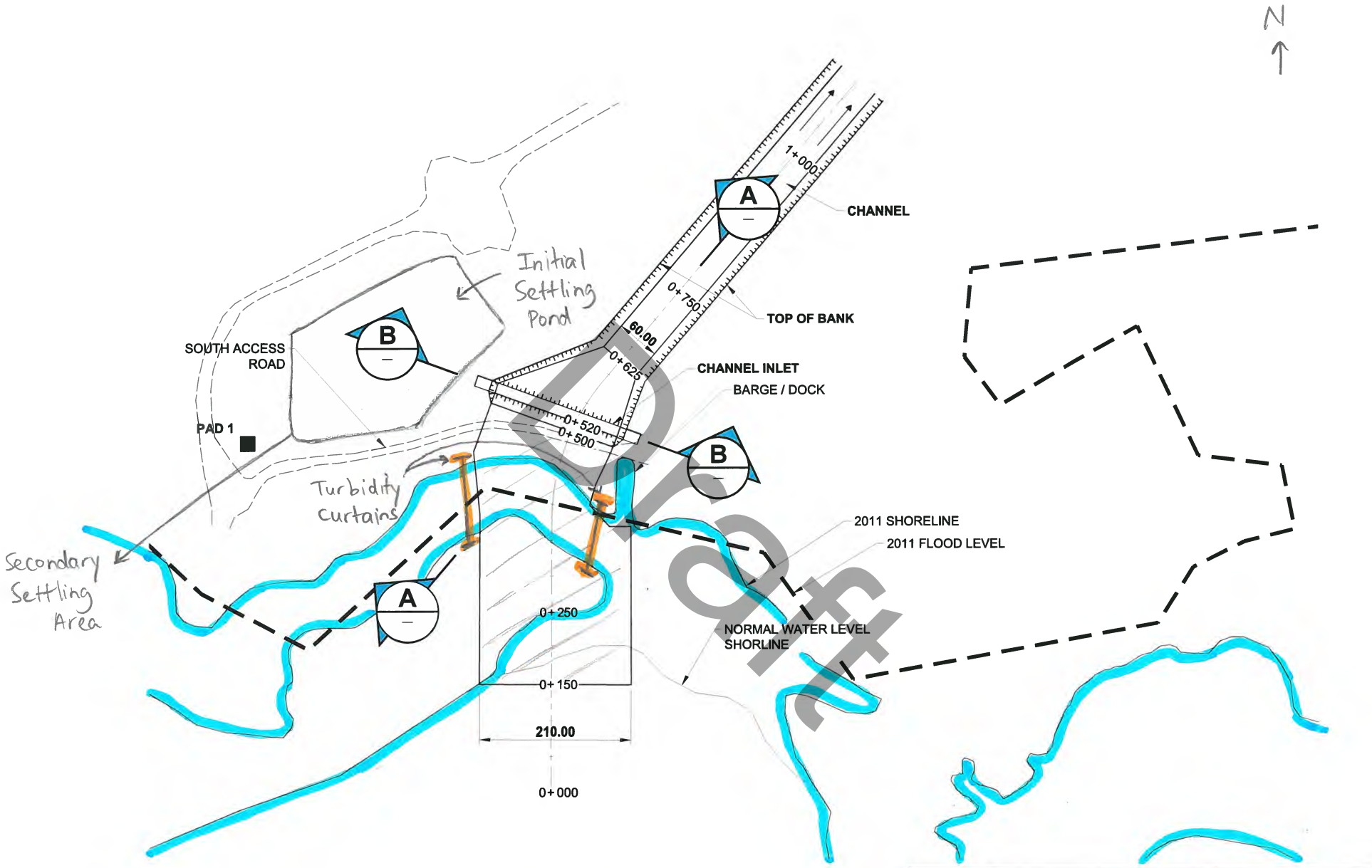
Legend

ROUTE L (d)
ROUTE L REACH 3
CAMP SITE
Trails
Trans Line
Railways
Highways
Municipal Roads
Lakes
Streams
FN Boundary
Wetlands
CL OF CHANNEL
CHANNEL BOTTOM (60M)
TOB (APPROX. 90M)
INLET PROPOSED STRUCTURE
BARGES
CONSTRUCTED HELIPADS
CROSS SECTIONS

AECOM

LAKE MANITOBA AND LAKE ST.MARTIN EMERGENCY CHANNEL

Inlet Construction Plan
Figure 1



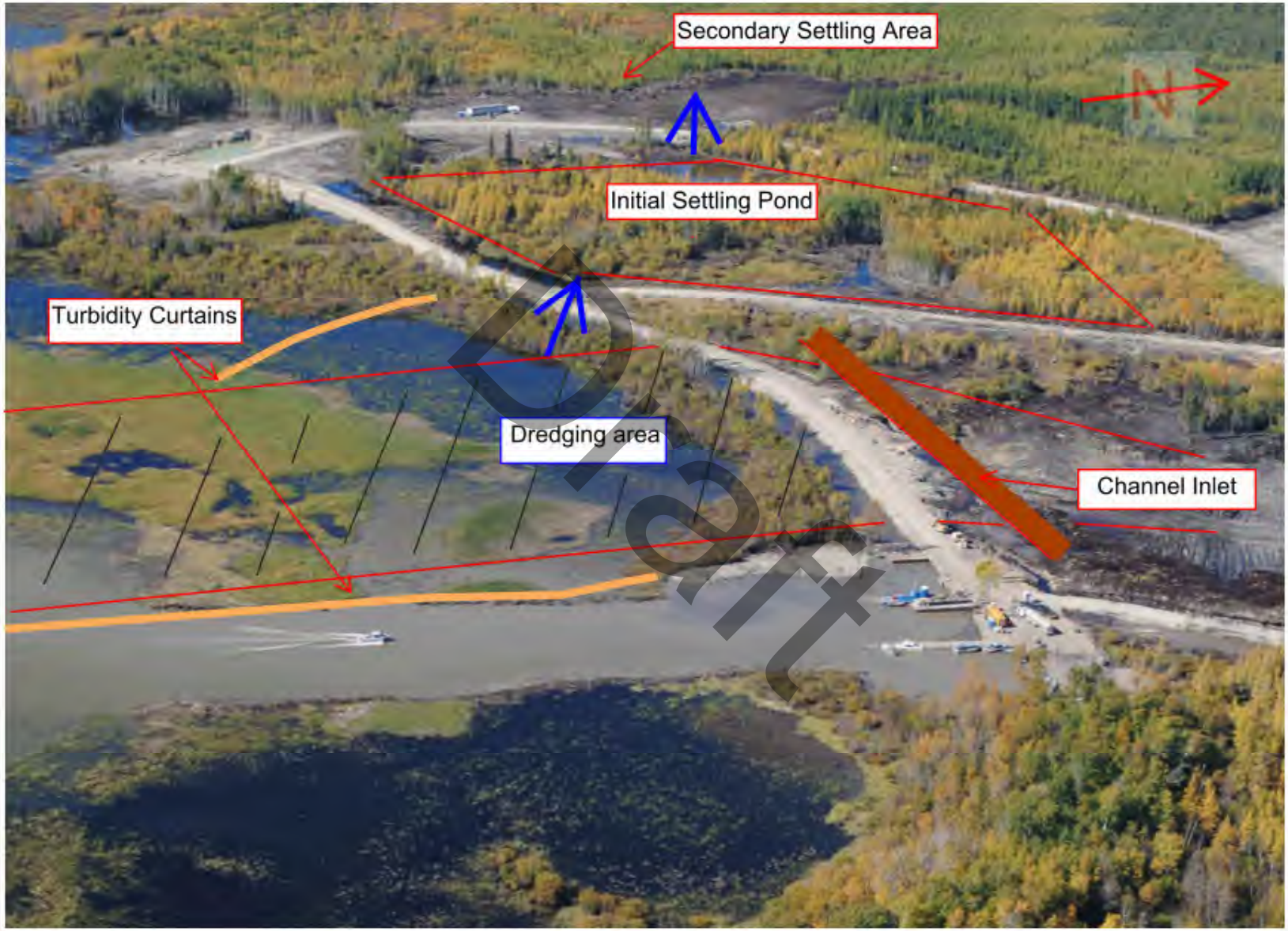
DETAIL 1 (03-C-101)

0 50 100 150 m SCALE 1:5000

AECOM

Lake Manitoba and Lake St. Martin Emergency Channel
Inlet Construction Plan
FIGURE 2

Channel Inlet Dredging Plan - Updated



Lake Manitoba and Lake St. Martin Emergency Channel
Inlet Construction Plan - Updated
FIGURE 3

Appendix H

Water Quality Tables

Table 03 - Field-Measured Limnological Parameters and Laboratory Results, Lake St. Martin Emergency Channel

Waterbody	Station ID	Date	Time	Field Measurements						Laboratory Results	
				Turbidity (NTU)	DO (mg/L)	DO (%)	Temp (^{o}C)	pH	SpCond (mS/cm)	TSS (mg/L)	Turbidity (NTU)
Water Quality and Sediment Monitoring											
Lake St. Martin	LSM01	2-Sep-11	15:00	3.76	9.88	112.2	20.01	9.24	1.74	7.0	-
		26-Sep-11	12:32	10.1	10.11	98.2	12.39	8.74	1.25	5.0	-
		14-Oct-11	17:21	5.26	12.53	115.7	10.25	8.61	1.18	10.0	-
		21-Oct-11	11:13	7.87	12.23	100.4	5.45	8.53	1.20	7.0	-
		29-Oct-11	10:27	4.82	13.09	105.0	4.58	8.49	1.19	5.8*	-
		2-Nov-11	11:17	2.77	13.31	105.3	4.08	8.54	1.20	7.0	-
		4-Nov-11	17:41	4.93	11.62	91.8	4.00	8.62	1.18	7.0	-
		7-Nov-11	12:26	**14.8**	11.13	85.5	2.96	8.51	1.20	19.0	-
		10-Nov-11	10:55	8.24	13.37	99.8	1.87	8.63	1.20	10.0	-
		14-Nov-11	10:10	4.07	11.20	82.4	1.36	8.69	1.23	7.0	-
	LSM02	8-Sep-11	14:00	6.25	9.30	105.4	19.89	9.17	1.73	7.0	-
Buffalo Creek	BC01	2-Sep-11	13:15	0.00	6.42	72.9	20.20	8.31	0.361	5.0	-
		7-Sep-11	16:30	1.02	7.16	83.4	21.54	8.11	0.320	<5.0	-
	BC01A	26-Sep-11	10:30	2.30	10.94	106.1	12.51	7.84	0.231	<5.0	-
		14-Oct-11	13:40	0.01	9.76	85.6	8.20	7.42	0.204	6.0	-
		21-Oct-11	17:25	1.49	11.69	97.1	6.04	7.80	0.196	<5.0	-
		29-Oct-11	16:16	0.79	11.96	93.0	3.51	7.42	0.186	<2.0*	-
		2-Nov-11	15:21	3.45	11.74	93.6	4.48	7.55	0.180	<5.0	-
	BC02	2-Sep-11	12:35	2.61	7.82	87.1	19.19	8.35	0.366	<5.0	-
		7-Sep-11	16:15	0.13	8.92	104.5	21.85	8.52	0.325	<5.0	-
		26-Sep-11	9:42	2.40	8.96	87.3	12.65	8.09	0.235	6.0	-
		14-Oct-11	13:33	1.16	9.31	82.0	8.41	7.62	0.204	<5.0	-
		21-Oct-11	17:13	0.09	11.90	98.0	5.69	7.90	0.193	<5.0	-
		29-Oct-11	15:41	2.96	11.56	88.9	3.12	7.84	0.194	<2.0*	-
		2-Nov-11	15:32	1.20	11.53	91.1	4.13	7.67	0.182	<5.0	-
	BC02A	4-Nov-11	14:30	**41.4**	10.12	78.2	3.16	7.82	1.09	**30.0**	-
		7-Nov-11	15:23	-	-	-	-	-	-	22.0	-
		10-Nov-11	16:25	**15.7**	10.15	73.8	0.91	8.25	1.21	13.0	-
		14-Nov-11	9:10	7.70	10.02	71.8	0.41	8.28	1.22	10.0	-
		17-Nov-11	10:00	11.2	10.25	72.1	-0.28	8.19	1.25	13.0	-
	BC03	2-Sep-11	11:45	7.18	8.54	95.6	19.34	8.64	1.09	6.0	-
		7-Sep-11	15:50	5.85	8.13	93.3	20.74	8.50	0.358	<5.0	-
		26-Sep-11	8:00	13.1	8.83	86.7	13.04	7.39	0.373	<5.0	-
		14-Oct-11	12:08	6.58	12.24	108.0	8.46	7.55	0.225	<5.0	-
		21-Oct-11	16:29	6.67	11.81	96.8	5.49	8.18	0.474	<5.0	-
		29-Oct-11	12:54	5.93	11.99	90.9	2.56	7.77	0.254	4.4*	-
										4.0*,[a]	-
		2-Nov-11	15:46	6.73	10.85	84.3	3.50	7.63	0.236	<5.0	-
	BC03A	4-Nov-11	13:45	**62.1**	10.38	79.9	3.06	7.72	1.14	**60.0**	-
		7-Nov-11	15:33	-	-	-	-	-	-	**40.0**	-
		10-Nov-11	16:15	**24.5**	11.08	80.4	0.83	8.19	1.20	26.0	-
		14-Nov-11	8:35	**16.1**	11.56	83.1	0.53	8.18	1.21	17.0	-
		17-Nov-11	9:20	**17.9**	10.16	71.5	-0.26	8.19	1.24	20.0	-
		25-Nov-11	12:00	**21.5**	9.72	68.4	-0.24	7.94	1.20	**32.0**	-

Table 03 Continued - Field-Measured Limnological Parameters and Laboratory Results, Lake St. Martin Emergency Channel

Waterbody	Station ID	Date	Time	Field Measurements						Laboratory Results	
				Turbidity (NTU)	DO (mg/L)	DO (%)	Temp (^{0}C)	pH	SpCond (mS/cm)	TSS (mg/L)	Turbidity (NTU)
Dauphin River	DR01	2-Sep-11	12:15	5.19	8.70	98.6	19.83	8.93	1.76	8.0	-
		7-Sep-11	16:00	3.14	8.98	102.4	20.19	9.00	1.72	<5.0	-
		26-Sep-11	9:00	9.20	10.35	101.2	12.72	8.41	1.24	<5.0	-
		14-Oct-11	13:00	5.61	10.16	93.6	10.13	8.32	1.19	<5.0	-
		21-Oct-11	16:48	7.64	11.34	95.0	6.25	8.58	1.20	10.0	-
		29-Oct-11	14:52	5.86	14.10	113.6	4.76	8.38	1.20	8.0*	-
		2-Nov-11	16:14	5.07	10.80	86.1	4.37	8.45	1.19	<5.0	-
										10.0[a]	-
		4-Nov-11	13:24	6.71	11.54	90.9	3.91	8.41	1.19	12.0	-
		7-Nov-11	15:54	-	-	-	-	-	-	8.0	-
		10-Nov-11	15:30	5.93	12.03	88.8	1.49	8.56	1.22	<5.0	-
		14-Nov-11	8:25	3.38	10.64	77.7	1.08	8.51	1.34	6.0	-
		17-Nov-11	9:50	0.49	11.02	77.7	-0.19	8.57	1.24	9.0	-
		25-Nov-11	11:30	0.00	12.37	87.4	-0.08	8.50	1.06	7.0	
	DR02	2-Sep-11	10:50	3.97	-	-	19.43	8.59	1.78	10.0	-
		2-Sep-11	12:35	4.06	7.92	89.6	19.81	8.98	1.76	-	-
		7-Sep-11	15:30	4.36	8.64	98.9	20.45	8.82	1.71	6.0	-
		26-Sep-11	9:20	9.90	8.87	86.7	12.71	8.48	1.24	<5	-
		14-Oct-11	13:19	5.56	10.13	93.3	10.12	8.33	1.19	<5.0	-
		21-Oct-11	16:57	7.17	11.24	94.0	6.21	8.55	1.20	12.0	-
		29-Oct-11	15:20	7.06	11.17	90.0	4.75	8.38	1.20	7.6	-
		2-Nov-11	16:26	5.19	11.44	91.2	4.34	8.50	1.20	5.0	-
		4-Nov-11	13:08	5.79	13.34	104.9	3.84	8.43	1.17	11.0	-
	DR02B	10-Nov-11	15:05	**23.2**	11.93	86.5	0.86	8.23	1.20	23.0	-
		14-Nov-11	8:10	**17.4**	11.52	83.4	0.78	8.34	1.18	19.0	-
		17-Nov-11	8:50	**16.1**	10.81	76.6	0.02	8.29	1.23	16.0	-
	DR03	2-Sep-11	11:15	4.78	8.58	96.7	19.57	8.93	1.74	7.0	-
		7-Sep-11	15:40	5.05	8.44	95.8	20.00	8.96	1.63	<5.0	-
		26-Sep-11	8:25	11.6	10.39	101.6	12.72	8.32	1.21	5.0	-
		14-Oct-11	12:32	5.70	9.72	89.2	9.95	8.27	1.15	7.0	-
										9.0[a]	-
		21-Oct-11	16:37	6.67	11.51	96.0	6.10	8.54	1.16	8.0	-
		29-Oct-11	14:04	5.49	10.81	86.9	4.64	8.32	1.14	7.5*	-
		2-Nov-11	15:50	5.65	10.77	85.5	4.20	8.33	1.15	8.0	-
		4-Nov-11	13:58	**66.6**	10.45	80.9	3.24	7.76	1.14	**69.0**	-
		7-Nov-11	15:41	-	-	-	-	-	-	**64.0**	-
		10-Nov-11	16:05	**30.8**	10.31	74.7	0.80	8.20	1.20	26.0	-
		14-Nov-11	8:45	**18.2**	10.18	73.1	0.50	8.24	1.22	27.0	-
		17-Nov-11	9:40	**19.5**	10.83	76.2	-0.28	8.23	1.24	16.0	-
		25-Nov-11	12:10	**21.6**	9.68	68.1	-0.26	7.95	1.17	22.0	-
Emergency Channel	EC1[b]	4-Nov-11	16:11	**65.8**	12.20	96.0	3.86	8.54	1.19	**130**	-
		7-Nov-11	12:47	**35.2**	11.64	88.7	2.63	8.49	1.03	**51.0**	-
		10-Nov-11	11:30	**20.1**	11.77	86.6	1.36	8.56	1.21	20.0	-
		14-Nov-11	9:45	**16.1**	10.96	79.7	0.93	8.63	1.22	20.0	-
		17-Nov-11	10:20	**49.3**	10.79	75.9	-0.27	8.62	1.24	**58.0**	-
		25-Nov-11	12:35	**14.4**	11.60	83.1	0.39	8.41	1.25	17.0	-

Table 03 Continued - Field-Measured Limnological Parameters and Laboratory Results, Lake St. Martin Emergency Channel

Waterbody	Station ID	Date	Time	Field Measurements						Laboratory Results	
				Turbidity (NTU)	DO (mg/L)	DO (%)	Temp (^{0}C)	pH	SpCond (mS/cm)	TSS (mg/L)	Turbidity (NTU)
Channel Inlet Dredging Monitoring											
Lake St. Martin	LSM01	14-Oct-11	17:21	5.26	12.53	115.7	10.25	8.61	1.18	10.0	-
		20-Oct-11	11:46	7.60	11.37	93.8	5.66	8.59	1.19	<5.0	
		21-Oct-11	11:13	7.87	12.23	100.4	5.45	8.53	1.20	7.0	-
		24-Oct-11	14:50	4.51	12.86	105.0	5.28	8.62	1.20	<5.0	-
		25-Oct-11	13:53	4.50	12.64	104.7	5.83	8.69	1.19	<5.0	-
		26-Oct-11	14:30	3.85	13.40	108.5	4.95	8.31	1.20	<5.0	-
		27-Oct-11	16:00	3.88	16.78	136.6	5.14	8.63	1.20	<5.0	-
		28-Oct-11	9:13	4.28	13.28	106.4	4.55	8.54	1.18	**32.0**	-
		29-Oct-11	10:27	4.82	13.09	10.50	4.58	8.49	1.19	5.8*	-
		30-Oct-11	13:33	4.45	12.09	97.2	4.67	8.60	1.18	<5.0	-
		31-Oct-11	16:10	3.47	14.12	113.6	4.68	8.69	1.19	<5.0	-
		1-Nov-11	10:11	5.58	11.91	94.4	4.13	8.14	1.19	11.0	-
			15:03	3.89	13.00	103.4	4.24	8.40	1.20	11.0[a]	-
		2-Nov-11	11:17	2.77	13.31	105.3	4.08	8.54	1.20	7.0	-
		4-Nov-11	17:41	4.93	11.62	91.8	4.00	8.62	1.18	7.0	-
		5-Nov-11	13:05	3.96	11.54	90.2	3.61	8.49	1.19	<5.0	-
		6-Nov-11	10:26	3.07	11.45	89.4	3.54	8.43	1.20	5.0	-
		7-Nov-11	12:26	**14.8**	11.13	85.5	2.96	8.51	1.20	19.0	-
	LSM02	5-Oct-11	12:10	**18.9**	12.76	123.2	12.13	8.30	1.32	13.0	10.7
		12-Oct-11	13:55	-	10.47	100.6	11.91	8.21	1.18	8.0	122[c]
		13-Oct-11	15:42	8.19	10.39	98.1	11.21	8.29	1.18	11.0	4.29
		14-Oct-11	17:29	5.09	9.89	91.2	10.19	8.67	1.17	8.0	-
		15-Oct-11	14:20	5.09	10.24	92.5	9.32	8.30	1.17	8.0	-
		16-Oct-11	16:02	6.43	10.94	95.6	7.95	8.32	1.18	12.0	-
		17-Oct-11	17:25	10.0	11.57	98.9	7.04	8.36	1.19	11.0	-
		18-Oct-11	13:21	6.89	10.81	90.5	6.22	8.37	1.19	15.0	-
		19-Oct-11	13:03	6.28	10.55	87.8	6.00	8.45	1.19	5.0	-
		20-Oct-11	11:51	5.17	10.71	87.6	5.31	8.38	1.18	<5.0	-
		21-Oct-11	11:21	7.36	11.29	92.1	5.27	8.38	1.18	6.0	-
		22-Oct-11	18:37	-	12.10	99.1	5.48	8.49	1.19	9.0	-
		23-Oct-11	13:30	4.60	12.71	104.0	5.36	8.56	1.19	6.0	-
		24-Oct-11	15:00	5.98	11.91	97.3	5.29	8.42	1.19	8.0	-
		25-Oct-11	14:00	3.67	11.50	96.0	6.13	8.59	1.18	<5.0	-
		26-Oct-11	14:40	4.72	12.10	98.0	4.97	8.36	1.19	<5.0	-
		27-Oct-11	16:08	**15.6**	12.00	97.0	4.89	8.43	1.19	7.0	-
		28-Oct-11	9:24	12.5	11.41	91.5	4.60	8.46	1.19	<5.0	-
		29-Oct-11	11:05	**15.1**	12.36	98.2	4.22	8.36	1.20	8.0	-
		30-Oct-11	13:39	12.6	11.74	93.9	4.49	8.49	1.19	6.0	-
		31-Oct-11	16:19	13.0	11.98	95.7	4.46	8.50	1.19	16.0	-
		1-Nov-11	10:17	**26.8**	10.68	84.3	3.97	7.96	1.20	22.0	-
			15:11	**23.4**	11.39	90.4	4.18	8.32	1.20	26.0[a]	-
		2-Nov-11	11:26	6.09	11.42	90.0	3.90	8.47	1.20	12.0	-
		4-Nov-11	17:46	4.79	11.43	90.2	3.99	8.64	1.19	5.0	-
		5-Nov-11	13:00	4.40	11.95	93.6	3.66	8.53	1.19	<5.0	-
		6-Nov-11	10:21	3.84	11.35	88.5	3.50	8.51	1.20	5.0	-
	LSM02A	7-Nov-11	12:07	6.36	11.83	90.3	2.71	8.47	1.19	9.0	-

Table 03 Continued - Field-Measured Limnological Parameters and Laboratory Results, Lake St. Martin Emergency Channel

Waterbody	Station ID	Date	Time	Field Measurements						Laboratory Results	
				Turbidity (NTU)	DO (mg/L)	DO (%)	Temp (^{o}C)	pH	SpCond (mS/cm)	TSS (mg/L)	Turbidity (NTU)
Lake St. Martin	LSM03	5-Oct-11	12:17	10.7	10.37	100	12.09	8.40	1.32	15.0	7.17
		12-Oct-11	14:10	-	9.30	89.2	11.87	8.12	1.18	9.0	4.14
		13-Oct-11	15:47	8.55	9.11	86.1	11.26	8.18	1.18	8.0	6.58
		14-Oct-11	17:36	7.41	8.07	74.3	10.08	8.39	1.18	10.0	-
		15-Oct-11	14:30	5.52	8.67	78.1	9.19	8.15	1.18	7.0	-
		16-Oct-11	16:11	9.09	9.70	84.6	7.87	8.24	1.19	10.0	-
		17-Oct-11	17:33	6.76	9.66	82.5	7.06	8.18	1.17	<5.0	-
		18-Oct-11	13:26	6.83	9.13	76.3	6.20	8.04	1.16	9.0	-
		19-Oct-11	13:09	4.53	9.42	78.8	6.23	8.29	1.17	<5.0	-
		20-Oct-11	11:56	**16.7**	9.89	80.4	5.09	8.18	1.18	14.0	-
		21-Oct-11	11:27	**53.6**	10.30	83.8	5.15	8.12	1.17	18.0	-
		22-Oct-11	18:31	-	12.08	98.6	5.36	8.36	1.18	26.0	-
		23-Oct-11	13:40	**28.3**	10.95	90.2	5.57	8.40	1.17	18.0	-
		24-Oct-11	15:05	**29.7**	11.06	90.2	5.24	8.28	1.18	18.0	-
		25-Oct-11	14:05	12.7	10.41	87.3	6.32	8.48	1.17	9.0	-
		26-Oct-11	14:45	**37.1**	10.96	88.6	4.90	8.17	1.18	18.0	-
		27-Oct-11	16:12	**59.1**	10.80	87.0	4.74	8.19	1.18	**37.0**	-
		28-Oct-11	9:29	**58.6**	10.51	83.9	4.41	8.35	1.18	8.0	-
		29-Oct-11	11:12	**56.7**	11.07	87.7	4.11	8.22	1.20	25.0	-
		30-Oct-11	13:44	**20.2**	11.50	91.7	4.36	8.41	1.18	8.0	-
		31-Oct-11	16:25	**88.9**	11.16	88.7	4.24	8.23	1.19	**48.0**	-
		1-Nov-11	10:22	**110**	9.53	84.9	3.80	7.84	1.19	**62.0**	-
			15:15	**132**	10.17	80.6	4.16	8.11	1.20	**66.0**[a]	-
		2-Nov-11	11:32	**24.4**	10.87	85.5	3.84	8.33	1.20	21.0	-
		4-Nov-11	17:49	6.22	11.38	89.8	3.97	8.63	1.19	8.0	-
		5-Nov-11	12:55	5.72	13.78	108.0	3.70	8.65	1.18	7.0	-
		6-Nov-11	10:16	3.62	11.40	88.7	3.44	8.46	1.16	6.0	-
		7-Nov-11	12:11	4.23	10.91	84.1	3.09	8.51	1.18	7.0	-
	LSM04	5-Oct-11	12:24	**75.6**	9.60	92.5	12.06	7.78	1.31	**50.0**	26.7
		12-Oct-11	14:15	-	10.22	98.0	11.88	7.97	1.18	19.0	5.58
		13-Oct-11	15:52	10.0	7.99	75.3	11.12	7.93	1.17	9.0	6.68
		14-Oct-11	17:41	4.47	6.81	62.4	9.93	8.13	1.17	10.0	-
		15-Oct-11	14:38	5.31	7.96	71.5	9.04	8.18	1.18	7.0	-
		16-Oct-11	16:21	9.30	8.80	76.5	7.74	8.04	1.14	10.0	-
		17-Oct-11	17:40	7.83	9.10	77.2	6.73	7.93	1.14	5.0	-
		18-Oct-11	13:30	9.66	8.93	74.0	5.86	7.87	1.15	<5.0	-
		19-Oct-11	13:20	8.78	8.51	70.3	5.74	8.10	1.16	<5.0	-
		20-Oct-11	12:05	**54.5**	9.75	78.8	4.90	7.96	1.16	**35.0**	-
		21-Oct-11	11:32	**17.4**	10.53	85.7	5.17	8.19	1.17	17.0	-
		22-Oct-11	18:24	-	13.90	113.9	5.43	8.17	1.16	**38.0**	-
		23-Oct-11	13:50	**14.2**	10.45	85.5	5.37	8.35	1.17	15.0	-
		24-Oct-11	15:10	**49.5**	10.43	84.9	5.15	8.25	1.18	**33.0**	-
		25-Oct-11	14:30	**15.0**	11.38	93.5	5.50	8.46	1.17	10.0	-
		26-Oct-11	14:50	**30.2**	10.90	88.0	4.86	8.13	1.18	18.0	-
		27-Oct-11	16:18	**131**	10.39	83.6	4.71	8.16	1.18	**75.0**	-
		28-Oct-11	9:33	11.5	10.65	84.9	4.37	8.40	1.19	<5.0	-
		29-Oct-11	11:17	**109**	10.76	85.1	4.06	8.18	1.20	**63.0**	-
		30-Oct-11	13:50	**37.3**	10.83	86.2	4.31	8.43	1.19	16.0	-
		31-Oct-11	16:28	**157**	10.51	83.5	4.21	8.14	1.19	**87.0**	-
		1-Nov-11	10:27	**49.3**	9.49	74.7	3.88	7.85	1.19	29.0	-
			15:22	**50.0**	10.41	82.4	4.10	8.23	1.19	**35**[a]	-
		2-Nov-11	11:37	8.03	11.09	87.1	3.81	8.45	1.20	16.0	-
		4-Nov-11	17:53	4.34	11.45	90.4	3.95	8.66	1.19	5.0	-
		5-Nov-11	13:12	3.86	11.12	86.3	3.35	8.50	1.20	<5.0	-
		6-Nov-11	10:10	5.37	11.80	92.2	3.57	8.57	1.18	<5.0	-
		7-Nov-11	12:01	4.78	13.69	104.7	2.78	8.52	1.20	9.0	-

Table 03 Continued - Field-Measured Limnological Parameters and Laboratory Results, Lake St. Martin Emergency Channel

Waterbody	Station ID	Date	Time	Field Measurements						Laboratory Results	
				Turbidity (NTU)	DO (mg/L)	DO (%)	Temp (^{0}C)	pH	SpCond (mS/cm)	TSS (mg/L)	Turbidity (NTU)
Quality Assurance/Quality Control Samples											
Trip Blank	TRB01	26-Sep-11	12:00	-	-	-	-	-	-	<5.0	-
	TRB02	14-Oct-11	12:00	-	-	-	-	-	-	<5.0	-
	TripBlank	29-Oct-11	12:00	-	-	-	-	-	-	<2.0*	-
	TripBlank	10-Nov-11	12:00	-	-	-	-	-	-	<5.0	-
	TripBlank	14-Nov-11	12:00	-	-	-	-	-	-	<5.0	-
	TripBlank	17-Nov-11	12:00	-	-	-	-	-	-	<5.0	-
Field Blank	FLB01	26-Sep-11	8:30	-	-	-	-	-	-	<5.0	-
	FLB02	14-Oct-11	17:30	-	-	-	-	-	-	<5.0	-
	FLB03	2-Nov-11	15:46	-	-	-	-	-	-	<5.0	-

Notes:

Bolded *values indicate an exceedance of the background values greater than 8 NTU for turbidity or greater than 25 mg/L for TSS according to the Canadian Council of Ministers of Environment (CCME) Water Quality Guidelines (2007) for the Protection of Freshwater Aquatic Life.*

[a] *Duplicate sample.*

[b] *EC1 background values are according to baseline values at LSM01*

[c] *Confirmatory analysis is requested.*

- = not applicable/recorded; NTU = Nephelometric Turbidity Units; DO = dissolved oxygen; mg/L = milligrams per Litre; % = percent; SpCond = specific conductance; mS/cm =

** Detection limit for TSS on 29-Oct-11 is 2.0 mg/L*