

Report

**P-21-15**

June 2022



# Hydrochemical monitoring of near surface groundwater, surface water and precipitation

## Results from the sampling period January–December 2020

**Anders Wallin**

**Susanne Qvarfordt**

**Micke Borgiel**

**Julia Dahlström**

SVENSK KÄRNBRÄNSLEHANTERING AB

SWEDISH NUCLEAR FUEL  
AND WASTE MANAGEMENT CO

Box 3091, SE-169 03 Solna  
Phone +46 8 459 84 00  
skb.se

SVENSK KÄRNBRÄNSLEHANTERING



ISSN 1651-4416

**SKB P-21-15**

ID 1885560

June 2022

# **Hydrochemical monitoring of near surface groundwater, surface water and precipitation**

## **Results from the sampling period January – December 2020**

Anders Wallin, Susanne Qvarfordt, Micke Borgiel  
Sveriges Vattenekologer AB

Julia Dahlström, Svensk Kärnbränslehantering AB

*Keywords:* AP SFK-20-001, AP SFK-20-002, Water sampling, Chemical analyses, Field measurements, Sea, Lake, Stream, Near surface groundwater, Precipitation.

Data in SKB's database can be changed for different reasons. Minor changes in SKB's database will not necessarily result in a revised report. Data revisions may also be presented as supplements, available at [www.skb.se](http://www.skb.se).

This report is published on [www.skb.se](http://www.skb.se)

© 2022 Svensk Kärnbränslehantering AB





# Summary

This report presents the hydrochemical monitoring of near surface groundwater and surface water in Forsmark during the sampling period January to December 2020.

Near surface groundwater were sampled and analysed four times during this period. The samples were collected from standpipes in soil. Samples from a private drinking well were also included in near surface groundwater analysis and were sampled one time in December.

The monitoring programme included four lakes, eight shallow sea bay location and four streams. The extent of the sampling varied at different occasions. The streams and one of the sea sampling locations (Biotestsjön) were sampled at eleven occasions (once per month, except for July). At these occasions measurements were also conducted at Norra bassängen (PFM000097). The remaining lakes were sampled at four occasions (once per season) during the reported period. The sea sampling locations PFM000062, PFM007910, PFM007911, PFM007912, PFM000083, PFM000084 and PFM007783 were sampled at six occasions (April, May, June, August, September and October). The sea sampling locations PFM000062 and were also sampled in January 2020. Starting in April 2020, a new location, PFM008211, was sampled. This location was sampled in April, May, June, August, September and October.

Precipitation were sampled weekly at sampling location PFM008126 and analysed as collective monthly samples twelve times during January to December 2020.

The results from the near surface groundwater and surface water monitoring include field measurements of redox potential (ORP), pH, dissolved oxygen, electrical conductivity and water temperature, as well as chemical analyses of major constituents, nutrient salts, trace metals and isotopes. For surface water, the field measurements also include depth and turbidity. Precipitation results include field measurements of pH, electrical conductivity and water temperature, as well as chemical analyses of major constituents, nutrient salts, trace metals and isotopes.

Generally, the new data confirm the knowledge and conclusions from the earlier investigation periods. Surface water in the lakes and streams in the Forsmark area are well buffered with high alkalinity, high pH and high calcium concentrations. The proportions of the major ions in the sampled freshwaters and the shallow sea bay were similar to previous years, showing no major changes. Also, the concentrations of total nitrogen and total phosphorus were similar to previous years. In previous years, occasions of slightly elevated concentration of Na and Cl have indicated salt water inflow into Bolundsfjärden. In 2020 the concentrations of these ions were higher compared to 2018 and 2019 suggesting it might have been influenced by the sea.

Previous data also indicates periodic tritium contamination from the adjacent nuclear power plant in water samples from near the cooling water outlet. Due to covid-19 and the following lockdown, tritium analyses have been seriously delayed. By the time this report was written, only results from January to April 2020 were available. No elevated tritium concentrations were measured between January and April 2020.

# Sammanfattning

Rapporten dokumenterar den hydrokemiska övervakningen av ytnära grundvatten och ytvatten i Forsmarksområdet under provtagningsperioden januari till december 2020.

Provtagning och analyser av ytnära grundvatten utfördes vid fyra tillfällen under 2020. Vid dessa tillfällen provtogs vatten från sju jordborrhål. En privat brunn provtogs även vid ett tillfälle under december månad.

Ytvatten provtogs en gång per månad (utom i juli) i fyra bäckar och i utloppet av Biotestsjön. Vid dessa tillfällen gjordes även sondmätningar i Norra bassängen. Resterande sjöar provtogs fyra gånger per år (en gång per årstid). Havspunkterna PFM000062, PFM000083, PFM000084 och PFM007783 PFM007910, PFM007911, PFM007912, samt den nya punkten PFM008211, provtogs vid sex tillfällen (april, maj, juni, augusti, september och oktober). Havspunkten PFM00062 provtogs även i januari.

Nederbörd provtogs veckovis vid provtagningspunkt PFM008126 och analyserades månadsvis som samlingsprov motsvarande en månads nederbörd. Totalt analyserades tolv samlingsprov under provtagningsperioden januari till december 2020.

De erhållna resultaten från ytnära grundvatten och ytvatten omfattar fältmätningar av ORP (redox-potential), pH, löst syre, elektrisk konduktivitet och vattentemperatur samt kemiska analyser av huvudkomponenter, närsalter, kolföreningar, spårelement och isotoper. För ytvatten mäts även djup och turbiditet. De erhållna resultaten från nederbörd omfattar fältmätningar av pH, elektrisk konduktivitet och vattentemperatur samt kemiska analyser av huvudkomponenter, närsalter, spårelement och isotoper.

Årets data bekräftar generellt slutsatser från tidigare undersökningsperioder. Ytvattnet i sjöar och bäckar i Forsmarksområdet är väl buffrade med hög alkalinitet, högt pH och höga kalciumkoncentrationer. Koncentrationen av de vanligaste jonerna i de provtagna sötvattnen och havet liknade föregående år. Något förhöjda koncentrationer av natrium- och kloridjoner har tidigare år indikerat saltvattensinflöde i Bolundsfjärden. Koncentrationen av dessa joner var år 2020 högre än åren 2019 och 2018 vilket skulle kunna bero på påverkan från havet.

På grund av covid-19 och den efterföljande nedstängningen har analyserna av tritium blivit kraftigt försenade. När denna rapport skrevs fanns bara tillgängliga data från januari till april 2020. Under den tiden fanns det inga förhöjda halter av tritium i proverna nära kylvattenutsläppet från kärnkraftverket (Biotestsjön).

# Contents

|          |  |    |
|----------|--|----|
| <b>1</b> | <b>Introduction</b>                        | 7  |
| <b>2</b> | <b>Near surface groundwater</b>            | 9  |
| 2.1      | Objectives and scope                       | 9  |
| 2.2      | Sampling objects                           | 9  |
| 2.3      | Equipment                                  | 10 |
| 2.3.1    | Sampling equipment                         | 10 |
| 2.3.2    | Multi-parameter sondes                     | 10 |
| 2.4      | Performance                                | 11 |
| 2.4.1    | Sampling programme                         | 11 |
| 2.4.2    | Nonconformities                            | 12 |
| 2.5      | Results                                    | 13 |
| 2.5.1    | Field measurements                         | 13 |
| 2.5.2    | Water analyses                             | 15 |
| 2.6      | Summary and discussion                     | 19 |
| <b>3</b> | <b>Surface water</b>                       | 21 |
| 3.1      | Objectives and scope                       | 21 |
| 3.2      | Sampling locations and sampling schedule   | 21 |
| 3.3      | Equipment                                  | 25 |
| 3.3.1    | Sampling equipment                         | 25 |
| 3.3.2    | Multi-parameter sondes                     | 26 |
| 3.3.3    | General field equipment                    | 26 |
| 3.4      | Performance                                | 26 |
| 3.4.1    | Pre-sampling preparations                  | 26 |
| 3.4.2    | Water sampling                             | 26 |
| 3.4.3    | Field measurements                         | 27 |
| 3.4.4    | Sample treatment and chemical analyses     | 28 |
| 3.4.5    | Data handling/post processing              | 29 |
| 3.4.6    | Nonconformities                            | 30 |
| 3.5      | Results                                    | 31 |
| 3.5.1    | General                                    | 31 |
| 3.5.2    | Water analyses                             | 31 |
| 3.5.3    | Field measurements                         | 32 |
| 3.5.4    | Water composition                          | 33 |
| 3.5.5    | The NP-ratio in the surface water          | 37 |
| 3.5.6    | Metals                                     | 39 |
| 3.6      | Summary and discussion                     | 42 |
| <b>4</b> | <b>Precipitation</b>                       | 43 |
| 4.1      | Objective and scope                        | 43 |
| 4.2      | Equipment                                  | 44 |
| 4.3      | Performance                                | 45 |
| 4.3.1    | Sampling                                   | 45 |
| 4.3.2    | Chemical analyses                          | 46 |
| 4.4      | Results                                    | 47 |
| 4.4.1    | Field measurements                         | 47 |
| 4.4.2    | Water Analysis                             | 47 |
| 4.5      | Summary                                    | 48 |
|          | <b>References</b>                          | 49 |
|          | <b>Appendix 1</b> Near surface groundwater | 51 |
|          | <b>Appendix 2</b> Surface water            | 61 |
|          | <b>Appendix 3</b> Precipitation            | 89 |



# 1 Introduction

The site investigations in Forsmark were finished in June 2007 (SKB 2001, 2005) and a less intensive phase commenced when a prolonged monitoring programme was established (SKB 2007). This document reports the performance and results for near surface groundwater, surface water and precipitation during the period January to December 2020. The monitoring has been ongoing, in one form or another, since 2001 and is today governed by the monitoring programme (SKB 2007).



*Figure 1-1. Water measurements at PFM000097 in January 2020.*

The sampling objects for near surface groundwater include standpipes in soil and a private drinking well. The different sampling objects are presented in Table 2-1 and a map showing their location is presented in Figure 2-1. The surface water sampling sites include lakes, streams and the sea in the Forsmark area. The sampling locations are presented in Figure 2-1 and Table 3-1. The precipitation sampling location is presented in Figure 4-1.

The monitoring activities include sampling and chemical analyses as well as field measurements. The controlling documents for the activities are listed in Table 1-1. The activity plans and method descriptions are SKB's internal controlling documents. Original data from the reported activities are stored in the primary database Sicada. Data are traceable in Sicada by the activity plan numbers (AP SFK-20-001 and AP SFK-20-002). Only data in the database are accepted for further interpretation and modelling. The results presented in this report are regarded as copies of the original data. Data in the database may be revised, if needed. However, such revision of the database will not necessarily result in a revision of this report.

**Table 1-1. Controlling documents for performance of the activity.**

| <b>Activity plans</b>  | <b>Number</b>  | <b>Version</b>   |
|--|----------------|------------------|
| Hydrokemisk övervakning av ytvatten, gölar och ytnära grundvatten 2020 | AP SFK-20-001  | 1.0              |
| Hydrokemisk övervakning av nederbörd 2020                              | AP SFK-20-002  | 1.0              |
| <b>Method descriptions<sup>1</sup></b>                                 | <b>Number</b>  | <b>Version</b>   |
| Metodbeskrivning för hydrokemisk provtagning av ytvatten               | SKB MD 900.004 | 3.0              |
| Metodbeskrivning för provtagning och analys av nederbörd               | SKB MD 423.003 | 3.0              |
| Provtagning och Provhantering  | SKB MD 452.001 | 14.0, 15.0, 16.0 |

<sup>1</sup> Water sampling and measurement procedures are also described in SKB PIR-04-09 "Metodik för provtagning av ekologiska parametrar i hav", SKB PIR-04-06, "Metodik för provtagning av ekologiska parametrar i sjöar och vattendrag", and SKB PIR-04-12, "Översikt över provhanterings- och analysrutiner för vattenprov" (SKB internal documents).

## 2 Near surface groundwater

### 2.1 Objectives and scope

An extensive, two-year-long sampling campaign designed to characterise near surface groundwater in different types of environments within the candidate area (SKB 2001) was followed by a reduced monitoring programme in July 2005 (SKB 2005). The site investigation of the candidate area was concluded in June 2007, but the monitoring programme (SKB 2007) will continue until the construction of the repository for spent nuclear fuel starts and during the construction and operation phase. This in order to monitor the water composition and obtain long time-series of data, first to create a baseline describing the natural variations and second to follow changes caused by the construction and operation of the repository.

During the reported period, January–December 2020, the sampling locations (stand pipes) within the monitoring programme were sampled at four occasions, in January, April, August and October. The sampling was conducted from shallow soil monitoring wells.

In addition, one private drinking well was also sampled regarding drinking water in December 2020. The different sampling objects are presented in Table 2-1 and a map showing their location is presented in Figure 2-1.

The activity includes water sampling for chemical analysis as well as direct measurements in the field of parameters such as Oxidation Reduction Potential (ORP), pH, dissolved oxygen, Electrical Conductivity (EC) and water temperature. The analytical protocol includes major constituents, nutrient salts, silica, carbon species as well as isotopes and trace metals. The analytical protocol for the private drinking well includes major constituents, nutrient salts, carbon species, trace metals and coliform bacteria. For details on the analysis program, see Activity plan AP SFK-20-001.

### 2.2 Sampling objects

The monitoring programme for near surface groundwater includes standpipes in soil. The standpipes are of the following types:

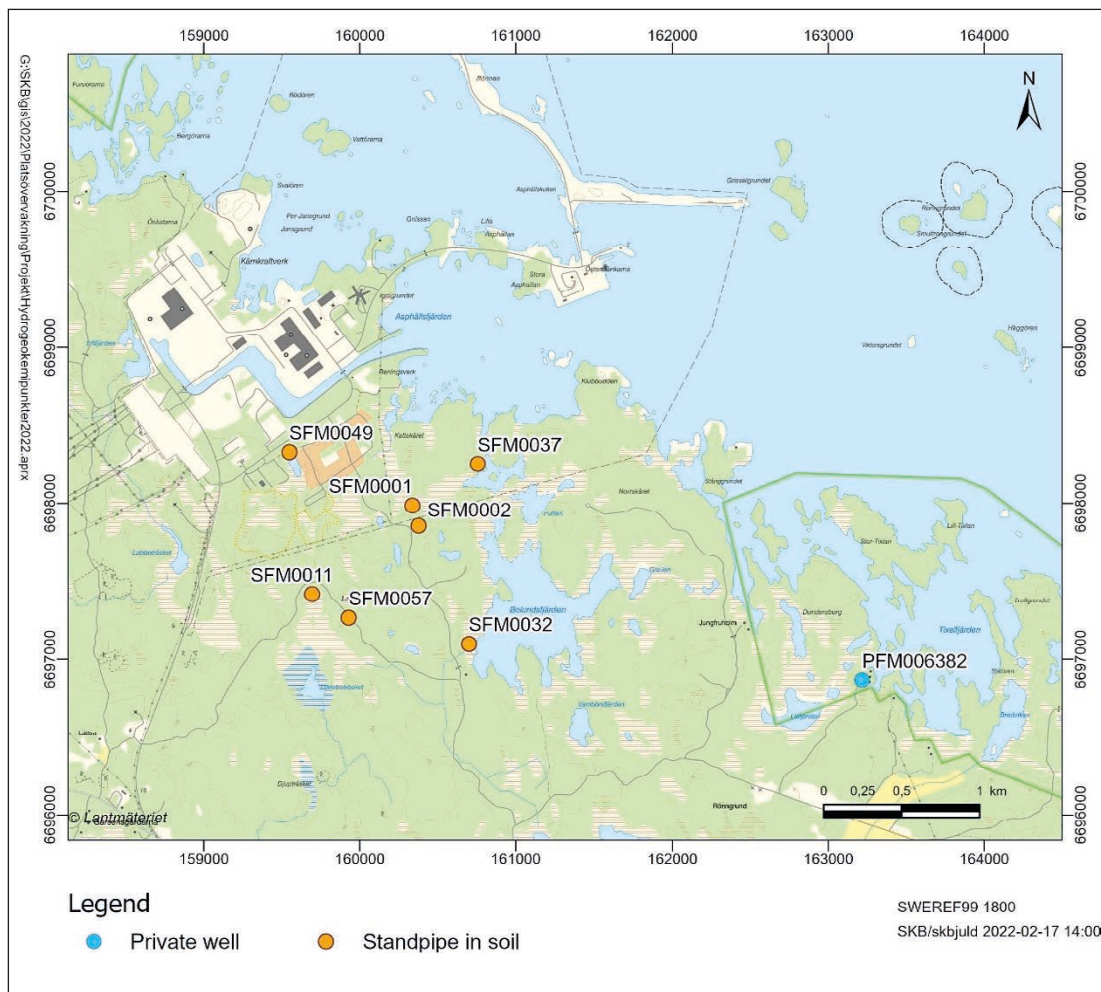
1. Single standpipes made of HDPE (High Density Polyethylene) located close to drill sites.
2. Double and single standpipes made of HDPE. Double standpipes mean that one of the standpipes is equipped with a permanently installed sensor for logging the groundwater pressure and the other standpipe is intended for hydrochemical sampling.

For both standpipe types the positions of the filter/screen part correspond to the upper and lower section limits (Secup and Seclow) in the Sicada database. The section limits refer to the top of the standpipe (Top Of Casing). The sampled monitoring wells and their stand pipe types are listed in Table 2-1. Regarding the private drinking well, PFM006382, the sampling was conducted using a faucet with no filter which was linked to the well. The locations of the different sampling objects are displayed in Figure 2-1.

**Table 2-1. List of sampling objects.**

| <b>Id-code</b> | <b>Comments on sampled object</b>         | <b>Pipe type</b> |
|----------------|---|------------------|
| SFM0001        | Standpipe in soil connected to drill site | Plastic          |
| SFM0002        | Double standpipe in soil for chemistry    | Plastic          |
| SFM0011        | Double standpipe in soil for chemistry    | Plastic          |
| SFM0032        | Double standpipe in soil for chemistry    | Plastic          |
| SFM0037        | Double standpipe in soil for chemistry    | Plastic          |
| SFM0049        | Double standpipe in soil for chemistry    | Plastic          |
| SFM0057        | Double standpipe in soil for chemistry    | Plastic          |
| PFM006382      | Private drinking well                     | -                |





**Figure 2-1.** Sampling locations within the monitoring programme for near surface water in Forsmark during 2020.

## 2.3 Equipment

### 2.3.1 Sampling equipment

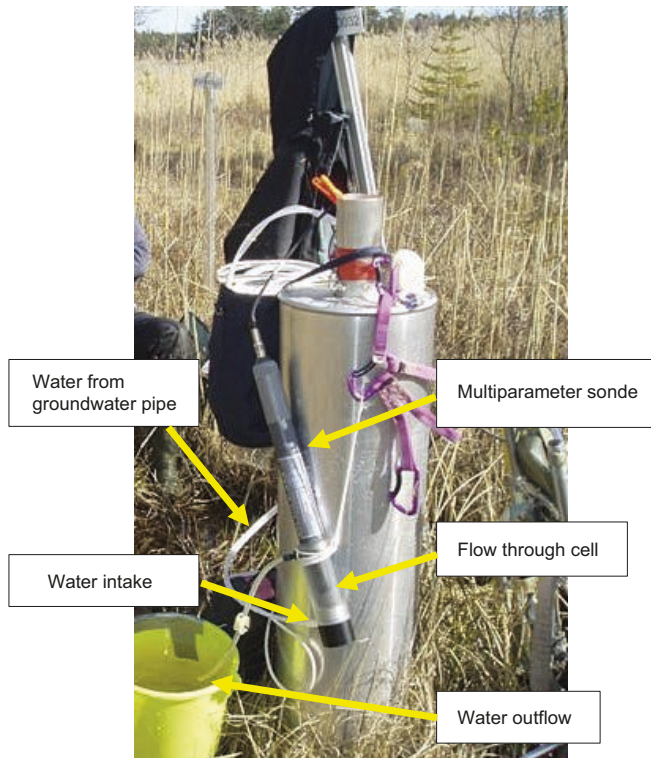
Groundwater samples from the standpipes in soil were collected using pump setups, each one consisting of a submersible electrical pump (12 V, Awimex) connected to a 5–10 m long polyamide-tube (Tecalán) of 8 mm diameter. Manually operated electrical regulators were used to adjust the water flow to a maximum of 0.5 litre/minute. Disposable filters (0.45 µm, Ø = 22 mm) were used for filtration of some sample portions. The filters were fitted to 60 ml syringes. No pumping equipment was needed for the private drinking well since a faucet was connected.

### 2.3.2 Multi-parameter sondes

Field measurements were conducted with a multi-parameter sonde, YSI, ProDSS. A hand-held terminal is connected to the sonde through a cable for logging and initial field control of data.

The measured parameters in near surface groundwater included pH, water temperature, oxygen, ORP as well as EC. Measurements were conducted in a flow-through cell, Figure 2-2.





**Figure 2-2.** *The multi parameter sonde setup.*

## 2.4 Performance

### 2.4.1 Sampling programme

#### **Sampling schedule**

The sampling schedule for the sampling programme is given in Table 2-2. Bottles were filled and the analyses performed according to the different SKB analysis programs (Program D – program for near surface ground waters and Program E – program for private wells). For details on the analysis program, see Activity plan AP SFK-20-001.

#### **Presampling preparations**

Prior to the sampling campaigns, sample bottles were labelled and packed in insulated boxes/bags. Acid additions were made in advance to bottles intended for trace metal and iron analyses as well as acidified archive samples. Bottles with nitric acid added were put in a separate plastic bag and kept outside the box away from the other sample bottles in order to avoid contamination. The pump setups were washed and rinsed with deionised water before use and all parts of equipment were kept well protected in plastic bags or in tight containers. Calibration of the sonde was performed according to the measurement system description (the operator’s manual).

**Table 2-2. Sampling schedule January–December 2020.**

| Year | Month    | Week | Sampling objects      | Analysis program |
|------|----------|------|-----------------------|------------------|
| 2020 | January  | 3    | Standpipes in soil    | D                |
| 2020 | April    | 17   | Standpipes in soil    | D                |
| 2020 | August   | 33   | Standpipes in soil    | D                |
| 2020 | October  | 42   | Standpipes in soil    | D                |
| 2020 | December | 49   | Private drinking well | E                |

## Sampling and measurements

The near surface groundwater sampling procedure described below was generally applied in the standpipes in soil. First, the groundwater level in the standpipe was established by sounding and the water volume of the standpipe was calculated. The pump with its connected tube was lowered carefully in order to prevent dirt from entering the standpipe. The water inlet of the submersible pump was lowered to the filter/screen section of the standpipe or just above. Pumping was then performed at a maximum flow rate of 0.5 litre per minute. The pumped water was disposed of at least 10 m away from the sampling object where it filtrated back into the ground. The pumping phases were as follows:

- *Exchange of water volume in standpipe and tubes:* The water volume was exchanged three to five times (depending on the exchange/recovery time) prior to the actual sampling.
- *Field measurement:* A flow-through cell was connected to the pump setup and measurements were performed with the multi parameter sonde. The results were recorded when the electrodes and sensors in the flow-through cell showed stable values (minimum 10 minutes). A judgement of the plausibility of the values was made in the field and accepted values were noted in the field protocol and logged on the hand-held terminal.
- *Sampling:* All sample bottles, except the ones with added acid, were rinsed three times with sample water before they were filled. Disposable filters were used for filtration of water portions for major components, trace metals, Fe(tot), Fe(II), nutrients and DOC/DIC. Each filter was rinsed with sample water (approximately 20 mL) before the sample portion/filtrate was collected. Bottles containing acid were the last ones to be filled in order to prevent acid contamination in the other sample portions. Disposable plastic gloves were used during the sampling. The samples were transported back from the field in insulated boxes/bags.

## Sample handling and analyses

Table 2-3 lists the collected samples during the reported period. Measurements/analyses of pH<sub>(lab)</sub>, electrical conductivity<sub>(lab)</sub> and alkalinity as well as spectrophotometric analyses of total iron and ferrous iron (Fe(II)), were conducted immediately at the site laboratory. An overview of sample treatments and analytical routines for major constituents, minor anions, trace metals and isotopes are given in the internal document “Kvalitetsparametrar för kemianalys – SKB:s kemiklasser, aktuella detektions-, rapporteringsgränser samt mätosäkerheter”. The routines are applicable independent of sampling method or type of sampling object.

**Table 2-3. List of collected samples during the period January to December 2020 (X = collected sample).**

| Id code        | Week/ Year |          |          |          |          | Sum (X)   |
|----------------|------------|----------|----------|----------|----------|-----------|
|                | 3/20       | 17/20    | 33/20    | 42/20    | 49/20    |           |
| SFM 0001       | X          | X        | X        | X        | -        | 4         |
| SFM 0002       | X          | X        | X        | X        | -        | 4         |
| SFM 0011       | X          | X        | X        | X        | -        | 4         |
| SFM 0032       | X          | X        | X        | X        | -        | 4         |
| SFM 0037       | X          | X        | X        | X        | -        | 4         |
| SFM 0049       | X          | X        | X        | X        | -        | 4         |
| SFM 0057       | X          | X        | X        | X        | -        | 4         |
| PFM 006382     | -          | -        | -        | -        | X        | 1         |
| <b>Sum (X)</b> | <b>7</b>   | <b>7</b> | <b>7</b> | <b>7</b> | <b>1</b> | <b>29</b> |

### 2.4.2 Nonconformities

The sampling of near surface groundwater in 2020 was performed with only minor comments. The sampling planned for April 2020 (week 17) was conducted in early May (week 18) due to sickness.

Due to covid-19 and the following lockdown, tritium analyses have been seriously delayed. By the time this report was written, only results from January to April 2020 were available.

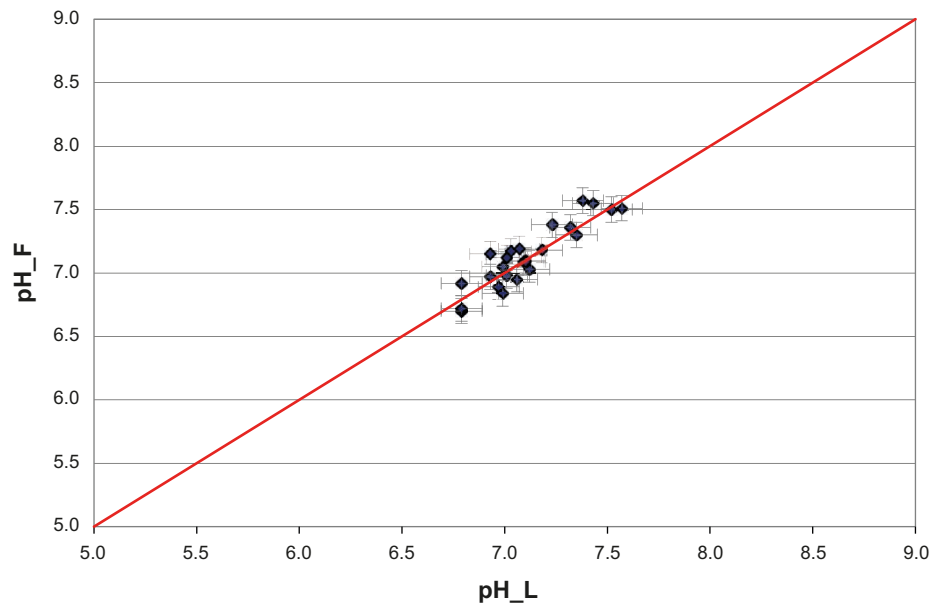
## 2.5 Results

### 2.5.1 Field measurements

The pH, EC, dissolved oxygen, oxygen saturation, water temperature and ORP results from the field measurements are presented in Appendix 1.

#### *pH-measurement*

Field measurements of pH are plotted against the corresponding laboratory values in Figure 2-3. The data show good agreement between field and laboratory measurements although some deviation is expected due to different water temperatures and the time delay between field and laboratory measurements.



**Figure 2-3.** Field-pH ( $pH_F$ ) values versus laboratory-pH ( $pH_L$ ) values. Field-pH and laboratory-pH values are measured at prevailing water temperature and at 25 °C respectively. The measurement uncertainty (Appendix 1) is shown as error bars.

### Electrical conductivity

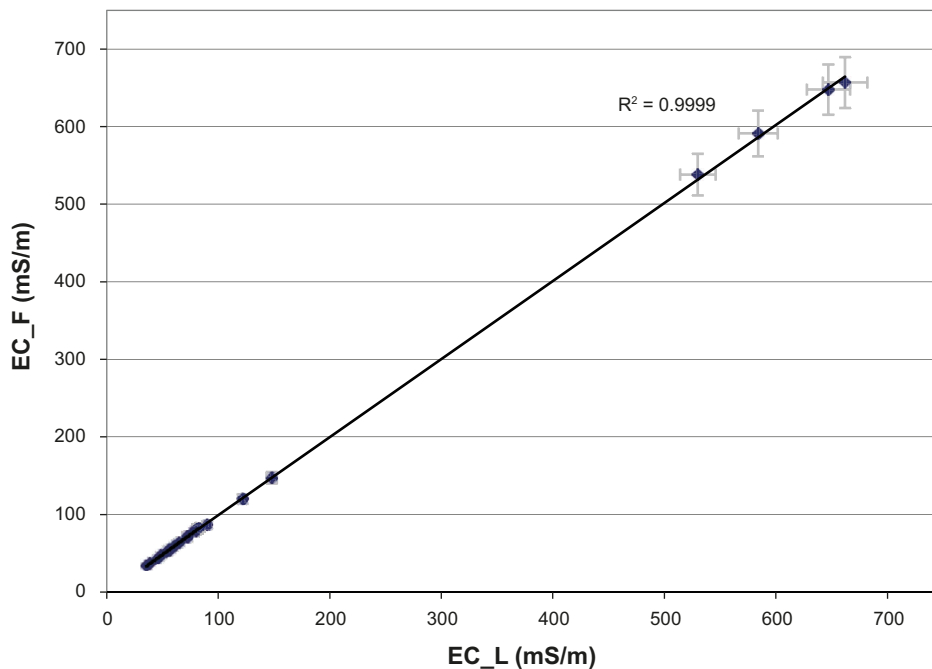
Electrical conductivity (EC) values from the field are plotted versus corresponding laboratory values in Figure 2-4. The values generally show good agreement between field and laboratory measurements.

### Dissolved oxygen

The field measurements of dissolved oxygen were checked in April 2005 by comparison to results from laboratory analyses (Nilsson and Borgiel 2005). This control showed that, generally, the field measurement values were somewhat higher, especially at oxygen concentrations below 4 mg/L. Field measurements of dissolved oxygen are presented in Appendix 1.

### ORP-measurements and redox conditions

ORP-measurements have been conducted using the multipurpose measurement sonde. The recorded ORP-values should be used with great caution and merely considered as an indication of the redox conditions in the waters. Measured ORP-values are presented in Appendix 1.



**Figure 2-4.** Electrical conductivity (25 °C). Field measurements (*EC\_F*) versus laboratory values (*EC\_L*). The measurement uncertainty (Appendix 1) is shown as error bars.



Figure 2-5. Ground water sampling at SFM0049.

## 2.5.2 Water analyses

### Basic components

The basic water analyses include the major constituents Ca, Cl<sup>-</sup>, HCO<sub>3</sub><sup>-</sup>, K, Na, Mg, S, SO<sub>4</sub><sup>2-</sup>, Si and Sr as well as the minor constituents Fe, Li, Mn, Br, F<sup>-</sup> and I<sup>-</sup>. Furthermore, batch measurements of pH and electrical conductivity are included. The basic water analysis data are compiled in Appendix 1. The charge balance error provides an indication of the quality and uncertainty of the analyses of major constituents and the charge balance error was calculated for all samples according to the formula below.

$$rel.error(\%) = 100 \times \frac{\sum cation(equivalents) - \sum anions(equivalents)}{\sum cation(equivalents) + \sum anion(equivalents)}$$

Relative errors within 5 % are considered acceptable. All samples collected in 2020 showed acceptable errors (less than/within +/- 5 %).

Differences in flow rate may result in different water characteristics in the duplicate samples which may result in a large charge balance error. Duplicate analyses by a second laboratory or another method are conducted regularly for some of the analysed constituents as a further check of the reliability of the analyses.

### Surface water supplements

Shallow groundwater analysis includes the surface water supplements/options  $\text{NH}_4\text{-N}$ ,  $\text{NO}_2\text{-N}$ ,  $\text{NO}_3\text{-N}+\text{NO}_2\text{-N}$ ,  $\text{NO}_3\text{-N}$ , tot-N, tot-P,  $\text{PO}_4\text{-P}$ ,  $\text{SiO}_2\text{-Si}$ , TOC, DOC and DIC. The analytical data are compiled in Appendix 1.

The concentrations of the different nitrogen, phosphorous and carbon compounds may show seasonal variation depending on decomposition processes and varying redox conditions also in near surface groundwater, however, this variation is more pronounced in surface water. The graphs in Figure 2-6 show the variations of total nitrogen, ammonium and phosphate in the sampled groundwater from the standpipes in soil included in the long-term monitoring programme. The results from 2020 show concentrations within reasonable variations (compared to previous measurements) for each sampling location. Of the newer standpipes in soil (SFM0002, SFM0011 and SFM0057), SFM0011 stands out with overall higher ammonium concentrations.

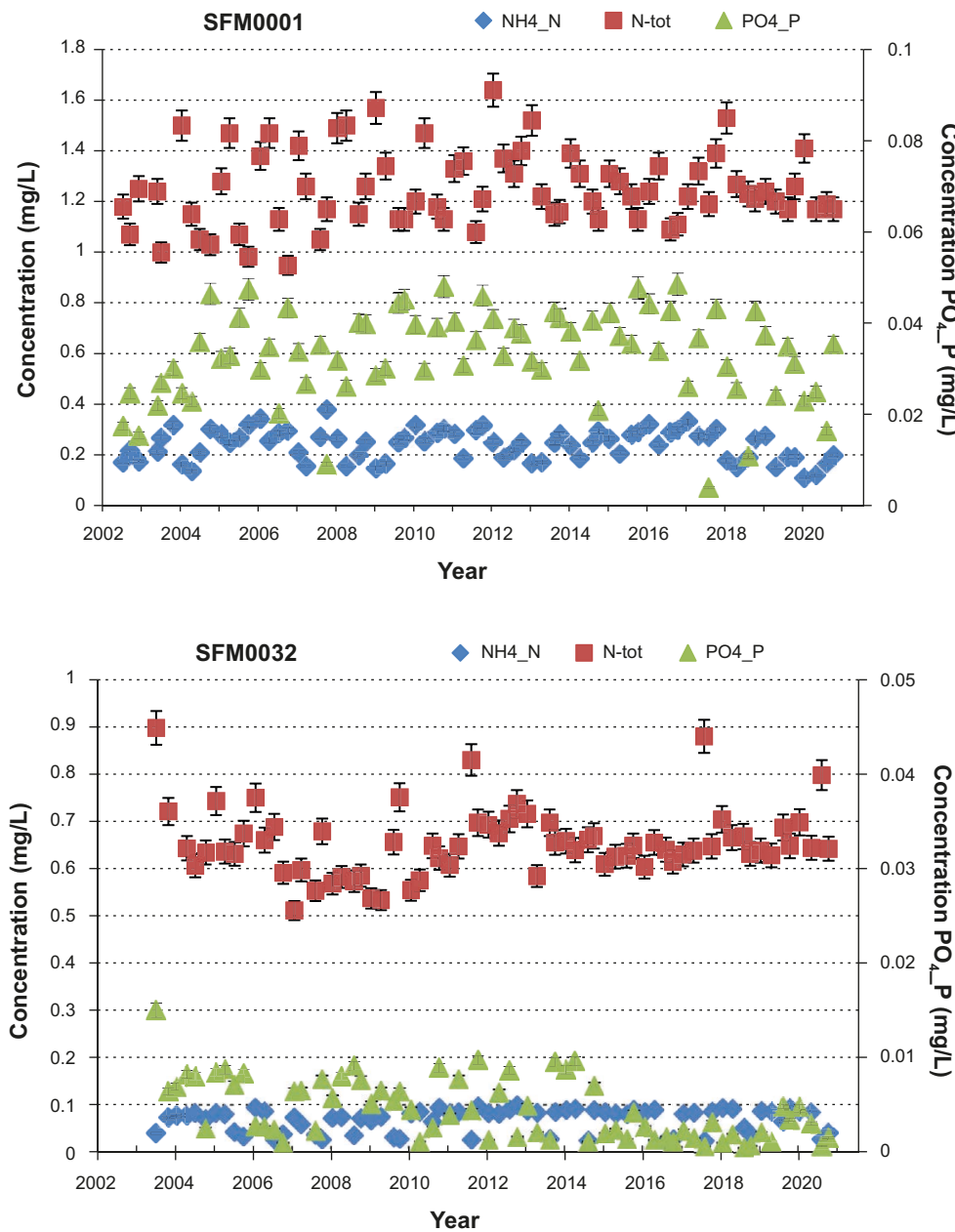


Figure 2-6a. Ammonium, total nitrogen and phosphate concentrations plotted versus sampling date for the standpipes SFM0001 and SFM0032.



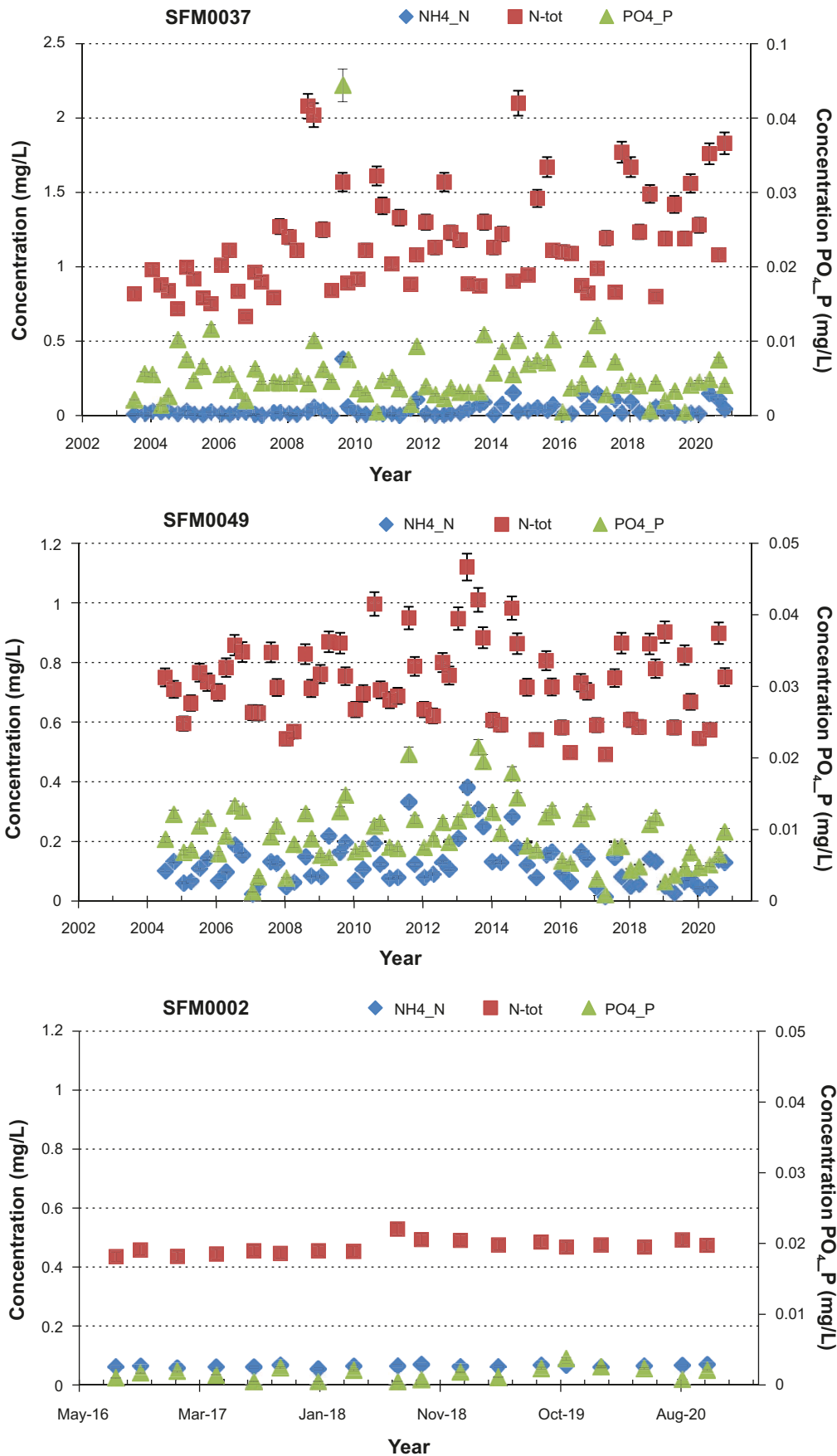


Figure 2-6b. Ammonium, total nitrogen and phosphate concentrations plotted versus sampling date for the standpipes SFM0037, SFM0049, SFM0002.

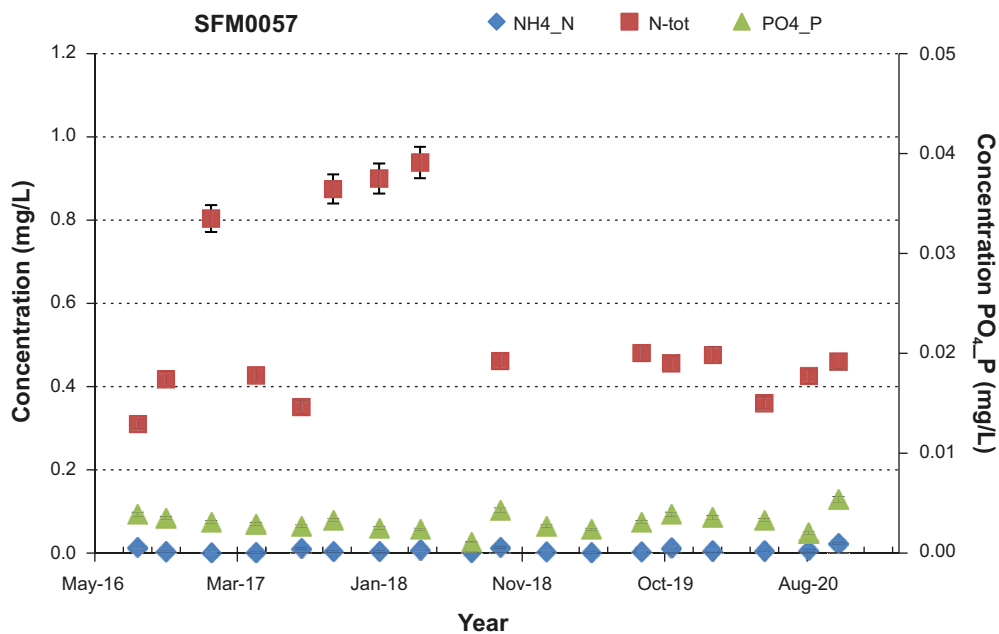
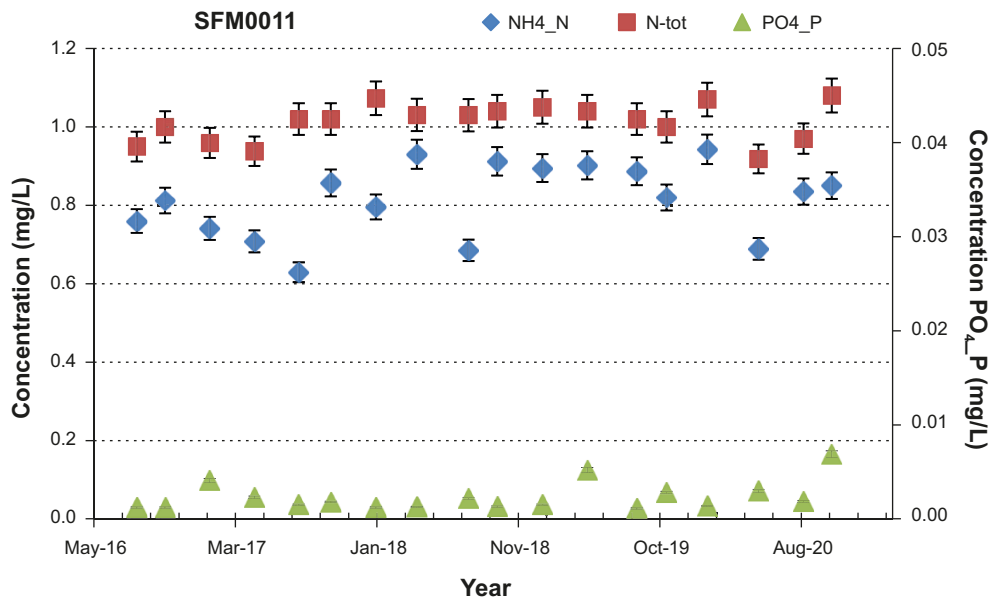


Figure 2-6c. Ammonium, total nitrogen and phosphate concentrations plotted versus sampling date for the standpipes SFM0001, SFM0032, SFM0037, SFM0049, SFM0002, SFM0011 and SFM0057.

**Trace metals**

The analyses of trace and rare earth elements include Ag, Al, As, B, Cd, Cr, Cu, Co, Hg, Nb, Ni, Pb, Pd, Se, Sn, V, Zn, U, Th, Sc, Rb, Y, La, Hf, Tl, Ce, Pr, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Sb, Zr, Mo, Cs, Ba and Nd. The trace element data are compiled in Appendix 1.

These elements are generally present at low concentrations in the groundwater and the risk for contamination is high.

**Isotopes**

Isotope determinations including the stable isotopes  $\delta D$ , and  $\delta^{18}O$  as well as the radioactive isotope  $^3H$  (TU) are compiled in Appendix 1.



## **2.6 Summary and discussion**

The characters of the near surface groundwater in the monitoring programme generally remain unchanged. The chemical investigation routines for near surface groundwater are well established after several years of field work, reporting and data administration and this year of the long-term monitoring programme has passed without any major nonconformities or surprises.

Regarding results for the private well, concentrations are low or near reporting limits. No significant changes of the characteristics can be noted compared to the last sampling in 2011.



## **3 Surface water**

### **3.1 Objectives and scope**

Sampling and analyses of surface water in the Forsmark area began in 2002 during the site investigation phase. After the site investigations, the surface water monitoring programme continued and focused on sampling locations in the prioritised north–western part of the Forsmark candidate area (SKB 2007). The monitoring programme was reviewed and modified in 2010. The modifications of the programme have resulted in reduced sampling frequency in the lakes and sea and fewer isotope determinations but also extended sampling in the streams adding environmental metals to the analytical programme at every sampling occasion.

The main objectives are to obtain long time-series of data to create a base-line, describing the natural variations. This in order to allow identification of eventual perturbation effects from SKB activities during the future construction and operation of the repository for nuclear waste.

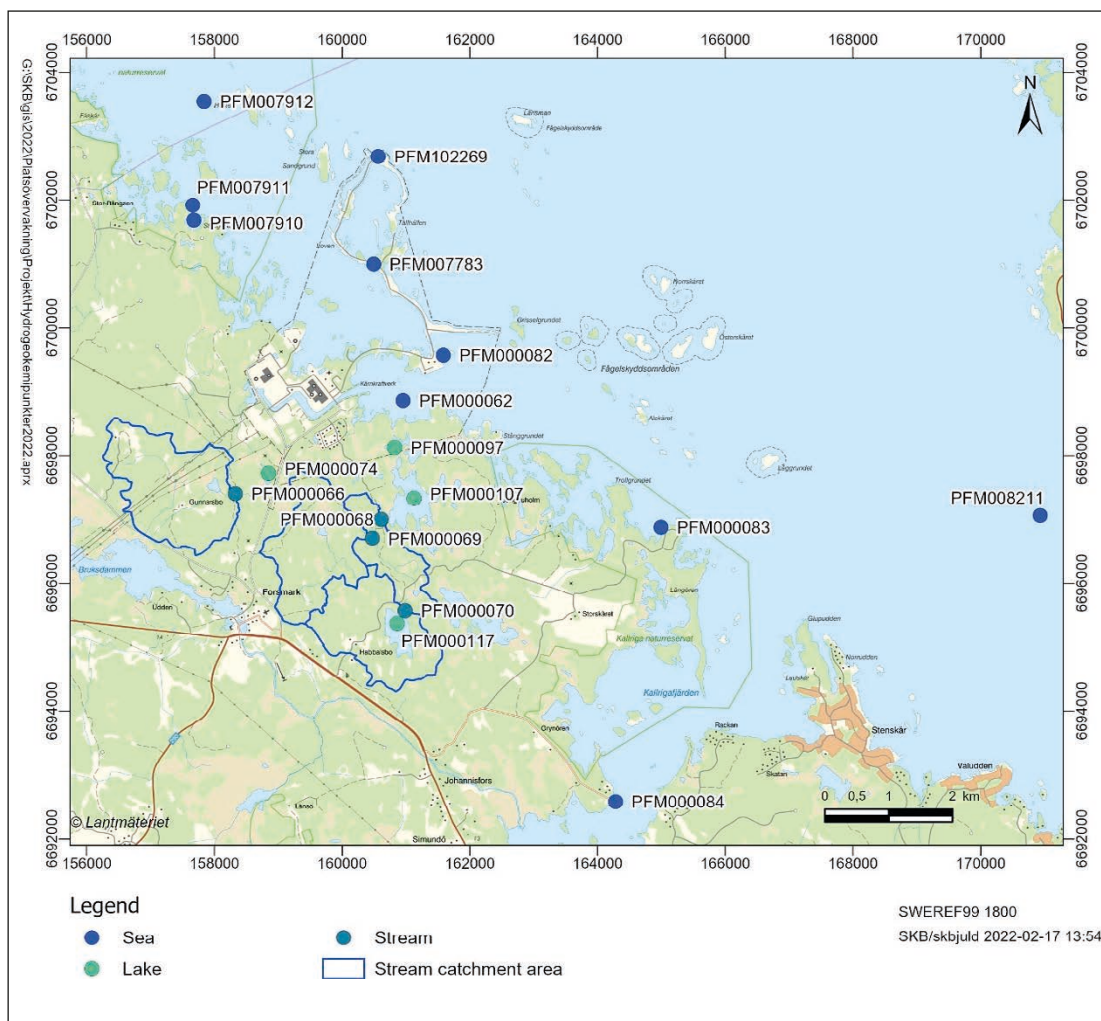
The programme includes sampling of water for chemical analysis as well as direct field measurements of physical and chemical parameters such as Oxidation Reduction Potential (ORP), pH, dissolved oxygen, Electrical Conductivity (EC), measurement depth, turbidity and water temperature.

Analyses of major constituents, surface water supplements (nutrient salts etc) and trace elements were conducted frequently (once a month, except July) while extended analyses, including also isotopes were performed once per season, i.e. in January, April, August and October.

### **3.2 Sampling locations and sampling schedule**

The monitoring programme included four lakes, eight shallow sea bay location and four streams. The extent of the sampling varied at different occasions. The streams and one of the sea sampling locations (Biotestsjön) were sampled at eleven occasions (once per month, except for July). At these occasions measurements were also conducted at Norra bassängen (PFM000097). The remaining lakes were sampled at four occasions (once per season) during the reported period. The sea sampling locations PFM000062, PFM007910, PFM007911, PFM007912, PFM000083, PFM000084 and PFM007783 were sampled at six occasions (April, May, June, August, September and October). The sea sampling locations PFM000062 and were also sampled in January 2020. Starting in April 2020, a new location, PFM008211, was sampled. This location was sampled in April, May, June, August, September and October.

The sampling locations are presented in Figure 3-1 and listed in Table 3-1. The sampling schedule for 2020 is given in Table 3-2. For details on the analysis program, see Activity plan AP SFK-20-001.



**Figure 3-1.** Sampling locations within the monitoring programme for surface water in Forsmark during 2020. One location (PFM000082) constitutes an alternative for a regular sampling position (see Table 3-1).

**Table 3-1. Sampling locations (Id-code, coordinates, name and comments).**

| Sampling locations                       | Coordinates (SWEREF99 E, N) | Name                                   | Comments   |
|--|-----------------------------|--|--|
| <b>Lakes</b>                             |                             |  |  |
| PFM000074                                | 15 88 47, 66 97 715         | Labboträsket                           |  |
| PFM000097                                | 16 08 22, 66 98 124         | Norra bassängen                        | Only field measurements  |
| PFM000107                                | 161126, 66 97 329           | Bolundsfjärden                         |  |
| PFM000117                                | 16 08 62, 66 95 372         | Eckarfjärden                           |  |
| <b>Shallow sea bays and sea location</b> |                             |  |  |
| PFM000062                                | 16 09 53, 66 98 857         | SV Forslingens grund                   |  |
| PFM102269                                | 160564, 6702678             | Cooling water outlet, Lake Biotestsjön | Check of tritium contamination. Normal sampling starting in August 2016. |
| PFM000083                                | 16 49 90, 66 96 874         | Kallrigafjärden                        | Included from August 2016. First sampled in October 2016.                |
| PFM000084                                | 16 42 79, 66 92 581         | Olandsån                               | Included from August 2016. First sampled in October 2016.                |
| PFM007783                                | 16 04 93, 67 00 992         | Uppströms böjen, Lake Biotestsjön      | Included from August 2016. First sampled in August 2016.                 |
| PFM007910                                | 15 76 78, 67 01 680         | Skaten-Rångsenområdet                  |  |
| PFM007911                                | 15 76 61, 67 01 917         | Skaten-Rångsenområdet                  |  |
| PFM007912                                | 15 78 36, 67 03 539         | Skaten-Rångsenområdet                  |  |
| PFM008211                                | 17 09 30, 66 97 058         | Öregrundsgrepen                        | New location 2020  |
| <b>Streams</b>                           |                             |  |  |
| PFM000066                                | 15 83 26, 66 97 403         | Öster Gunnarsboträsket                 |  |
| PFM000068                                | 16 06 11, 66 96 998         | Kungsträsket                           |  |
| PFM000069                                | 16 04 70, 66 96 707         | Bolundsskogen                          |  |
| PFM000070                                | 160984, 66 95 569           | Norr Eckarfjärden                      |  |

**Table 3-2. Surface water sampling schedule from January to December 2020.**

| Year | Month     | Week | Analysis program | Sampling comment  |
|------|-----------|------|------------------|---|
| 2020 | January   | 3    | AC               | All sampling points, except PFM007910, 7911, 7912, 7783, 0083 and 0084.                       |
| 2020 | February  | 7    | BC               | Streams, PFM000097 and Lake Biotestsjön.  |
| 2020 | March     | 12   | BC               | Streams, PFM000097 and Lake Biotestsjön.  |
| 2020 | April     | 17   | AC               | All sampling points.  |
| 2020 | May       | 22   | BC               | Streams, Lake Biotestsjön, PFM000097, PFM000062, 7910, 7911, 7912, 0083, 0084, 7783 and 8211. |
| 2020 | June      | 26   | BC               | Streams, Lake Biotestsjön, PFM000097, PFM000062, 7910, 7911, 7912, 0083, 0084, 7783 and 8211. |
| 2020 | August    | 33   | AC               | All sampling points.  |
| 2020 | September | 38   | BC               | Streams, Lake Biotestsjön, PFM000097, PFM000062, 7910, 7911, 7912, 0083, 0084, 7783 and 8211. |
| 2020 | October   | 42   | AC               | All sampling points.  |
| 2020 | November  | 46   | BC               | Streams, PFM000097 and Lake Biotestsjön.  |
| 2020 | December  | 50   | BC               | Streams, PFM000097 and Lake Biotestsjön.  |

Analysis program A: Extended sampling. B: Normal sampling. C: Only field measurements (only PFM000097). For details on the analysis program, see Activity plan AP SFK-20-001.





*Figure 3-2. Water sampling at PFM000070 in November 2020.*



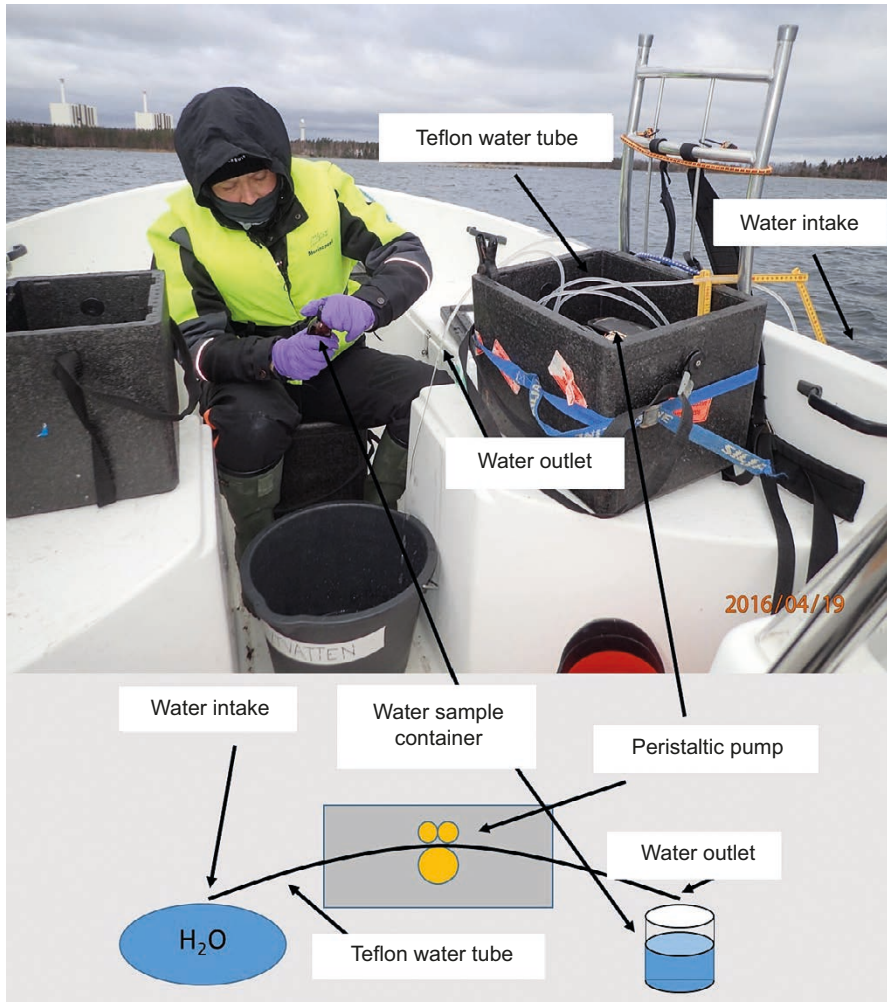
*Figure 3-3. Dry conditions at PFM000068 in October 2020.*



### 3.3 Equipment

#### 3.3.1 Sampling equipment

Water samples were collected using a pump setup consisting of an electrical peristaltic pump system, Solinst, model 410, connected to 4–8 m long Teflon-tubes (FEP 140) of 5 mm inner diameter. The sampling equipment is presented in Figure 3-4.



**Figure 3-4.** Winter sampling of surface water using the peristaltic pump system (PPS). A schematic presentation of the PPS is shown below the photo. Photo from the sampling at PFM00062.

### 3.3.2 Multi-parameter sondes

Field measurements were conducted with a multi-parameter sonde, YSI, Pro DSS. The measured parameters in surface water included pH, water temperature, dissolved oxygen, ORP, EC, water depth as well as turbidity. A hand-held terminal is connected to the sonde through a cable for logging and initial field control of data.

### 3.3.3 General field equipment

- Ruttner samplers were used as back up if the portable pump system should fail.
- The exact locations of the sampling location positions were determined using a GPS.
- Water depth in the lakes and sea was measured using an echo sounder (Plastimo, Echotest, LCD digital sounder) with an accuracy of  $\pm 0.05$  m.
- Water transparency was estimated using a Secchi disc and an aqua scope.
- Disposable filters (Millipore, 0.40  $\mu\text{m}$ ,  $\varnothing = 22$  mm) were used together with 60 mL syringes to filter specific sample portions of the sampled water in the field.
- Stopwatch, a water-filled plastic bottle (50 mL) and measuring-tape were used for flow/runoff estimates in stream waters.

## 3.4 Performance

### 3.4.1 Pre-sampling preparations

Prior to sampling, the sample bottles were labelled and packed in insulated boxes/bags. Acid additions were made in advance to bottles intended for iron and trace metal analyses as well as acidified archive samples. The bottles with added acid were placed in separate plastic bags outside the box/bag to avoid contamination. The peristaltic pump system, including the Teflon tubes, was washed using acid (0.5 M HCl) and rinsed with deionised water before use. The equipment was kept well protected in plastic bags or in tight containers. Calibration of the sonde was performed according to the measurement system description (the operator's manual for YSI, Pro DSS).

### 3.4.2 Water sampling

Water samples were collected using the peristaltic pump system. Lake and sea water samples were collected close to the surface at 0.5 m depth. When the lake and sea sampling locations were covered with ice, water was also collected from approximately 0.5 m above the lake or sea bottom, in order to sample water both above and below the stratification. Stream water samples were collected at approximately 0.1 m depth. The peristaltic pump and sample bottles were rinsed with water from the sampling locations prior to collecting samples, except for bottles with acid additions. The disposable filters were rinsed with sample water before filtering and sampling commenced. The field crew wore rubber gloves to avoid contamination and great care was taken not to contaminate bottles or equipment. Bottles and samples with added acid were handled and stored separately to avoid contaminating other sample portions.

Each sample consists of several sample portions labelled with the same sample number. The preparation of the sample portions in the field differs depending on their use. Details on collected sample portions, components to be analysed and sample preparations are summarised in Activity plan AP SFK-20-001.





*Figure 3-5. Water sampling at PFM000069 in June 2020.*

### 3.4.3 Field measurements

The multi parameter sonde was used for measurements of pH, water temperature, ORP, turbidity, (EC) and dissolved oxygen. Light penetration was measured at lake and sea sampling locations with a Secchi disc according to the Swedish standard BIN SR 111. Photo documentation of stream waters was performed to facilitate evaluation of the investigation data. Photos were taken at each stream water sampling location. At the lakes and sea sampling location field measurements were taken in a depth profile, with measurements logged at every metre from the surface to the bottom, see Table 3-3.

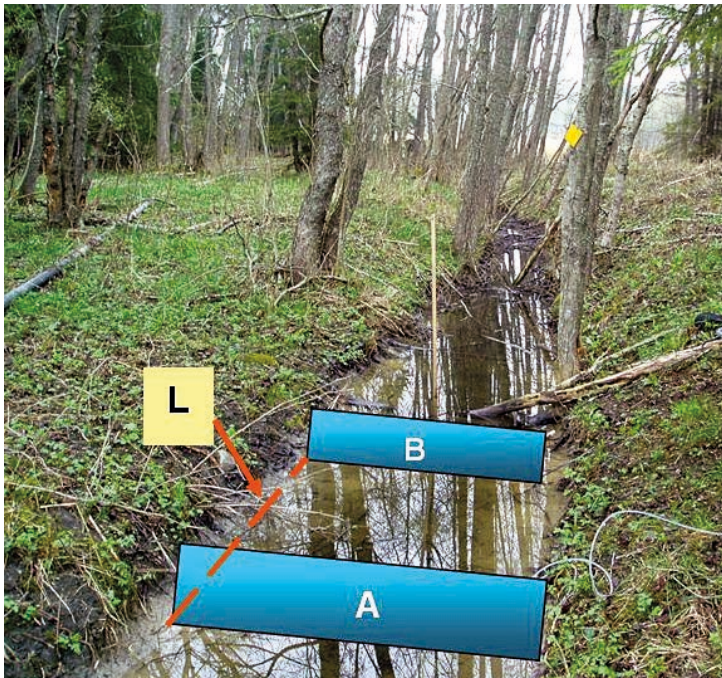
**Table 3-3. Logging depths at sampling locations in lakes and sea locations.**

| Sampling locations                        | Name                                   | Logging depth (m) |   |     |   |     |   |   |     |   |   |   |   |
|---|--|-------------------|---|-----|---|-----|---|---|-----|---|---|---|---|
|   |  | 0.5               | 1 | 1.5 | 2 | 2.5 | 3 | 4 | 4.5 | 5 | 6 | 7 | 8 |
| <b>Lakes</b>                              |  |                   |   |     |   |     |   |   |     |   |   |   |   |
| PFM000074                                 | Labboträsket                           | X                 |   |     |   |     |   |   |     |   |   |   |   |
| PFM000097                                 | Norra bassängen                        | X                 |   |     |   |     |   |   |     |   |   |   |   |
| PFM000107                                 | Bolundsfjärden                         | X                 | X |     |   |     |   |   |     |   |   |   |   |
| PFM000117                                 | Eckarfjärden                           | X                 | X | X   |   |     |   |   |     |   |   |   |   |
| <b>Shallow sea bays and sea locations</b> |  |                   |   |     |   |     |   |   |     |   |   |   |   |
| PFM000062                                 | SV Forslingens grund                   | X                 | X |     | X |     | X |   |     |   |   |   |   |
| PFM007910                                 | Skaten-Rångsenområdet                  | X                 | X | X   | X |     |   |   |     |   |   |   |   |
| PFM007911                                 | Skaten-Rångsenområdet                  | X                 | X |     | X |     | X | X |     | X |   |   |   |
| PFM007912                                 | Skaten-Rångsenområdet                  |                   |   |     |   |     | X | X |     | X | X | X | X |
| PFM102269                                 | Cooling water outlet, Lake Biotestsjön | X                 |   |     |   |     |   |   |     |   |   |   |   |
| PFM000083                                 | Kallrigafjärden                        | X                 |   |     |   |     |   |   |     |   |   |   |   |
| PFM000084                                 | Olandsån                               | X                 |   |     |   |     |   |   |     |   |   |   |   |
| PFM007783                                 | Uppströms böjen, Lake Biotestsjön      | X                 |   |     |   |     |   |   |     |   |   |   |   |
| PFM008211                                 | Öregrundsgrepen                        | X                 |   |     |   |     |   |   |     |   |   |   |   |

A simple “floating bottle” method (Johansson 2005) was used to measure water flow/runoff in the streams as a complement to the regular method using discharge weirs and gauges. The cross-section mean area of the stream was estimated, forming a rectangle, see Figure 3-6. The time for the bottle (close to neutral in weight in water) to float the distance (L) from point A to B was measured with a stopwatch. This procedure was repeated three times in each stream. The average water velocity (m/s) multiplied with the average area (m<sup>2</sup>) resulted in a rough water runoff estimate (m<sup>3</sup>/s).

#### 3.4.4 Sample treatment and chemical analyses

An overview of sample treatments and analytical routines for major constituents, minor anions, trace metals and isotopes are given in the internal document “Kvalitetsparametrar för kemianalyser – SKB:s kemiklasser, aktuella detektions-, rapporteringsgränser samt mätosäkerheter”. The routines are applicable independent of sampling method or type of sampling object.



**Figure 3-6.** Schematic presentation for estimating water runoff in natural stream waters (see text for explanation).



### 3.4.5 Data handling/post processing

A field protocol established during sampling/measuring contains metadata (idcode, date, time, sample no., field crew etc), a few measured data and weather observations as well as other comments on field conditions that may influence the analytical results. The field protocols supply the basic information for creating activities and activity comments in the Sicada database and also information that describes the sampling conditions for further storage in database tables. Furthermore, eventual deviations from the sampling programme or from the normal routines are also documented in special reports/comment files. The comment files are stored in the Sicada file archive (Table 3-4).

#### ***Field measurement data***

The logged data from field measurements are exported digitally from the hand-held terminal to the specified Sicada data table. The original data file, as well as photographs and comments on sampling and measurements, are stored in the Sicada file archive (Table 3-4).

**Table 3-4. File types stored in the Sicada file archive.**

| Type of file | Example of file name   | No. per sampling session |
|--------------|------------------------|--------------------------|
| Data file    | Vatten_v42_20_data.xls | 1                        |
| Comments     | Noterat V42-20.doc     | 1                        |
| Photography  | PFM66.jpg              | 1-4                      |



***Figure 3-7. Water sampling at PFM000066 in May 2020.***

### Other relevant information and data

Information about weather conditions and related parameters describing the sampling conditions are compiled in a separate table in Sicada called “Weather\_data” which contains the following columns below. These data are not presented in this report but are good information when evaluating data together with information from measurements of other activities within the monitoring programme.

|                 |                                   |                   |
|-----------------|-----------------------------------|-------------------|
| Air temperature | Wind velocity                     | Runoff/Water flow |
| Cloudiness      | Wind direction                    | Water depth       |
| Precipitation   | Light penetration (lakes and sea) | Snow/ice depth    |

### 3.4.6 Nonconformities

Some nonconformities have been reported during this sampling period, January–December 2020. The flow measurements in the streams were not always performed due to e.g. ice, dry conditions or too much water vegetation. Collected samples and some comments on sampling and measurements are compiled in Tables 3-5 and 3-6.

Due to covid-19 and the following lockdown, tritium analyses have been seriously delayed. By the time this report was written, only results from January to April 2020 were available.

**Table 3-5. Collected samples and conducted measurements.**

|               | Year               | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | Sum |
|---------------|--------------------|----|----|----|----|----|----|----|----|----|----|----|-----|
|               | Week               | 3  | 7  | 12 | 17 | 22 | 26 | 33 | 38 | 42 | 46 | 50 |     |
| <b>Sea</b>    |                    |    |    |    |    |    |    |    |    |    |    |    |     |
|               | <b>Name</b>        |    |    |    |    |    |    |    |    |    |    |    |     |
| PFM000062     | SV-Forslingen      | X  |    |    | X  | X  | X  | X  | X  | X  |    |    | 7   |
| PFM102269     | Utlopp Biotesten   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | 11  |
| PFM000083     | Kallrigafjärden    |    |    |    | X  | X  | X  | X  | X  | X  |    |    | 6   |
| PFM000084     | Olandsån           |    |    |    | X  | X  | X  | X  | X  | X  |    |    | 6   |
| PFM007783     | Böjen Biotestsjön  |    |    |    | X  | X  | X  | X  | X  | X  |    |    | 6   |
| PFM007910     | Skaten-Rångsenomr. |    |    |    | X  | X  | X  | X  | X  | X  |    |    | 6   |
| PFM007911     | Skaten-Rångsenomr. |    |    |    | X  | X  | X  | X  | X  | X  |    |    | 6   |
| PFM007912     | Skaten-Rångsenomr. |    |    |    | X  | X  | X  | X  | X  | X  |    |    | 6   |
| PFM008211     | Öregrundsgrepen    |    |    |    | X  | X  | X  | X  | W  | X  |    |    | 5   |
| <b>Stream</b> |                    |    |    |    |    |    |    |    |    |    |    |    |     |
| PFM000066     | Ö-Gunnarsbo        | X  | X  | X  | X  | X  | X  | G  | G  | G  | X  | X  | 8   |
| PFM000068     | Kungsträsket       | X  | X  | X  | X  | X  | X  | G  | G  | G  | X  | X  | 8   |
| PFM000069     | Bolundsskogen      | X  | X  | X  | X  | X  | X  | G  | G  | G  | X  | X  | 8   |
| PFM000070     | N-Eckarfjärden     | X  | X  | X  | X  | X  | X  | G  | G  | G  | X  | X  | 8   |
| <b>Lakes</b>  |                    |    |    |    |    |    |    |    |    |    |    |    |     |
| PFM000074     | Labboträsket       | Y  |    |    | X  |    |    | X  |    | X  |    |    | 3   |
| PFM000097     | N. bassängen       | B  | Y  | B  | B  | B  | B  | B  | B  | B  | B  | B  |     |
| PFM00107      | Bolundsfjärden     | Y  |    |    | X  |    |    | X  |    | X  |    |    | 3   |
| PFM00117      | Eckarfjärden       | Y  |    |    | X  |    |    | X  |    | X  |    |    | 3   |
|               | Sum water samples  | 6  | 5  | 5  | 16 | 13 | 13 | 12 | 8  | 12 | 5  | 5  | 100 |

X: Sample and fieldmeasurements taken.

W: No sampling or measurement due to extremely hard/difficult weather.

Y: No sampling or measurement due to weak ice.

B: No sample, only field measurements with sonde.

G: Dry conditions, no measurements or samples.

**Table 3-6. Some comments on measurements/water sampling.**

|               | Year           | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |    |
|---------------|----------------|----|----|----|----|----|----|----|----|----|----|----|
|               | Week           | 3  | 7  | 12 | 17 | 22 | 26 | 33 | 38 | 42 | 46 | 50 |
| <b>Stream</b> |                |    |    |    |    |    |    |    |    |    |    |    |
| PFM000066     | Ö-Gunnarsbo    |    |    |    |    |    | F  | G  | G  | G  |    |    |
| PFM000068     | Kungsträsket   |    |    |    | B  | B  | B  | G  | G  | G  |    |    |
| PFM000069     | Bolundsskogen  |    |    |    |    |    |    | G  | G  | G  |    |    |
| PFM000070     | N-Eckarfjärden |    |    |    | B  | B  | B  | G  | G  | G  | F  | F  |
| <b>Lakes</b>  |                |    |    |    |    |    |    |    |    |    |    |    |
| PFM000097     | N. bassängen   | Si |    |    |    | Sb |    |    |    | Sb | Sb |    |

B: Too much water vegetation, no flow measurement.

F: Flow rate to low, no flow measurement.

G: Dry conditions, no flow measurements.

Si: Measurements closer to shore due to weak ice.

Sb: Measurements closer to shore due to broken boat.

## 3.5 Results

### 3.5.1 General

The surface water investigation period from January to December 2020 includes 100 water samples and 235 field loggings of measurements from the regular sampling locations in streams, lakes and sea. Furthermore, the accompanying field documentation is quite extensive. The data are compiled in the attached Appendices and stored in the Sicada database where they are traceable by the activity plan number.

Fresh waters in the Forsmark area are well buffered with high alkalinity, high pH and high calcium concentrations. In addition, waters affected or recently affected by brackish sea water still show high sodium chloride concentrations. The relationship between the position of the coastline and the salinity of the water samples collected at the sampling locations in the area has been demonstrated in Nilsson et al. (2003). Furthermore, a detailed evaluation of surface water data from March 2002 to March 2004 was presented in Sonsten (2005). A summary of the results from the surface water monitoring during 2005–2009 is available in Nilsson et al. (2010).

The results presented and compiled in this section are restricted to field work performed between January and December 2020.

### 3.5.2 Water analyses

#### **Major components**

The basic water analyses include the major constituents Na, K, Ca, Mg, HCO<sub>3</sub><sup>-</sup>, Sr, SO<sub>4</sub>, SO<sub>4</sub>-S, Cl<sup>-</sup>, Si as well as the minor constituents Fe, Li, Mn, Br<sup>-</sup>, F<sup>-</sup>, and I<sup>-</sup>. Furthermore, batch measurements of pH and EC are included. The basic water analysis data are compiled together with field measurements of pH and water temperature in Appendix 2.

The charge balance errors, see Section 2.5.2 for calculation formula, give an indication of the quality and uncertainty of the analyses of major constituents. Of the samples collected in 2020, all samples were within the acceptable error for surface water (± 10 %).

#### **Surface water supplements**

The surface water supplements include NH<sub>4</sub>-N, NO<sub>2</sub>-N, NO<sub>3</sub>-N+NO<sub>2</sub>-N, NO<sub>3</sub>-N, tot-N, tot-P, PO<sub>4</sub>-P, POP, PON, SiO<sub>2</sub>-Si, POC, TOC, DOC and DIC as well as Chlorophyll A, Chlorophyll C and Pheopigment. The analytical data are compiled in Appendix 2.



## Isotopes

The isotope data including the stable isotopes  $\delta D$ ,  $\delta^{18}O$ , as well as the radioactive isotope tritium ( $^3H$ ) are compiled in Appendix 2.

## Tritium

It is suspected that the adjacent nuclear power plant may have increased the natural content of tritium and  $^{14}C$  isotopes (Nilsson and Borgiel 2005). Very high tritium concentrations, above 100 TU, have previously been recorded in samples from the cooling water outlet PFM102269 in July 2005, January and May 2008, October 2010 and April 2011. Slightly elevated values have also been noted in 2006, 2007, 2009, 2011, 2013, 2015, 2016, 2017, 2018 and 2019.

Due to covid-19 and the following lockdown, tritium analyses have been seriously delayed. By the time this report was written, only results from January to April 2020 were available. No elevated tritium concentrations were measured between January and April 2020, Figure 3-8. Tritium content in the water from near the cooling water outlet (PFM102269) ranged from 5.80–7.10 TU compared to the other sampling points, ranging from 5.20–9.40 TU. Before publication of this report, results became available and added to the figure. No elevated tritium concentrations were measured during 2020, all sampling points ranged from 3.70–9.40 TU. Tritium content in the water from near the cooling water outlet (PFM102269) ranged from 5.80–7.10 TU.

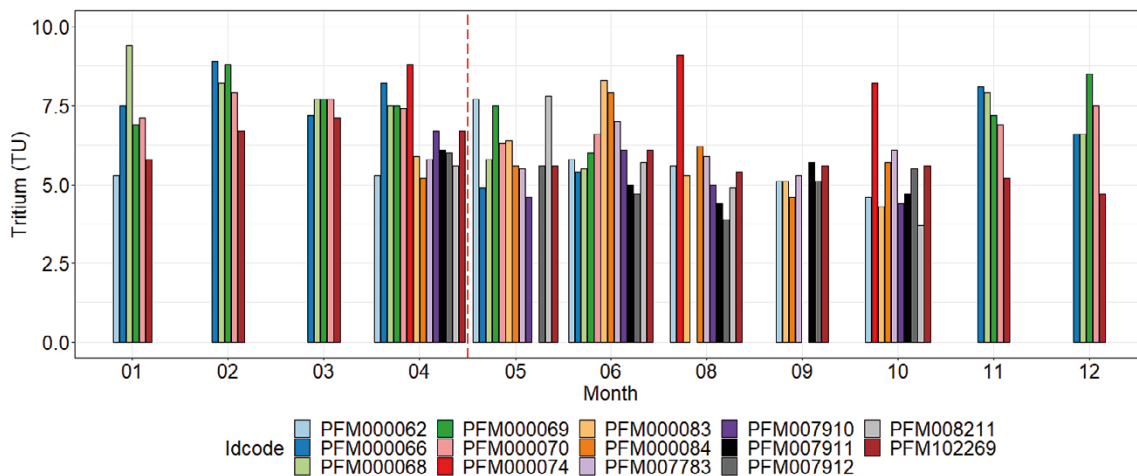
## Trace metals

The analyses of trace and rare earth elements include Ag, Al, As, B, Ba, Cd, Cr, Cu, Co, Hg, Nb, Ni, Mo, Pb, Pd, Se, Sn, V, Zn, U, Th, Sc, Rb, Y, Zr, Sb, Cs, La, Hf, Tl, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu. The trace element data are compiled in Appendix 2.

These elements are generally present at low concentrations in the water and the risk for contamination is high.

### 3.5.3 Field measurements

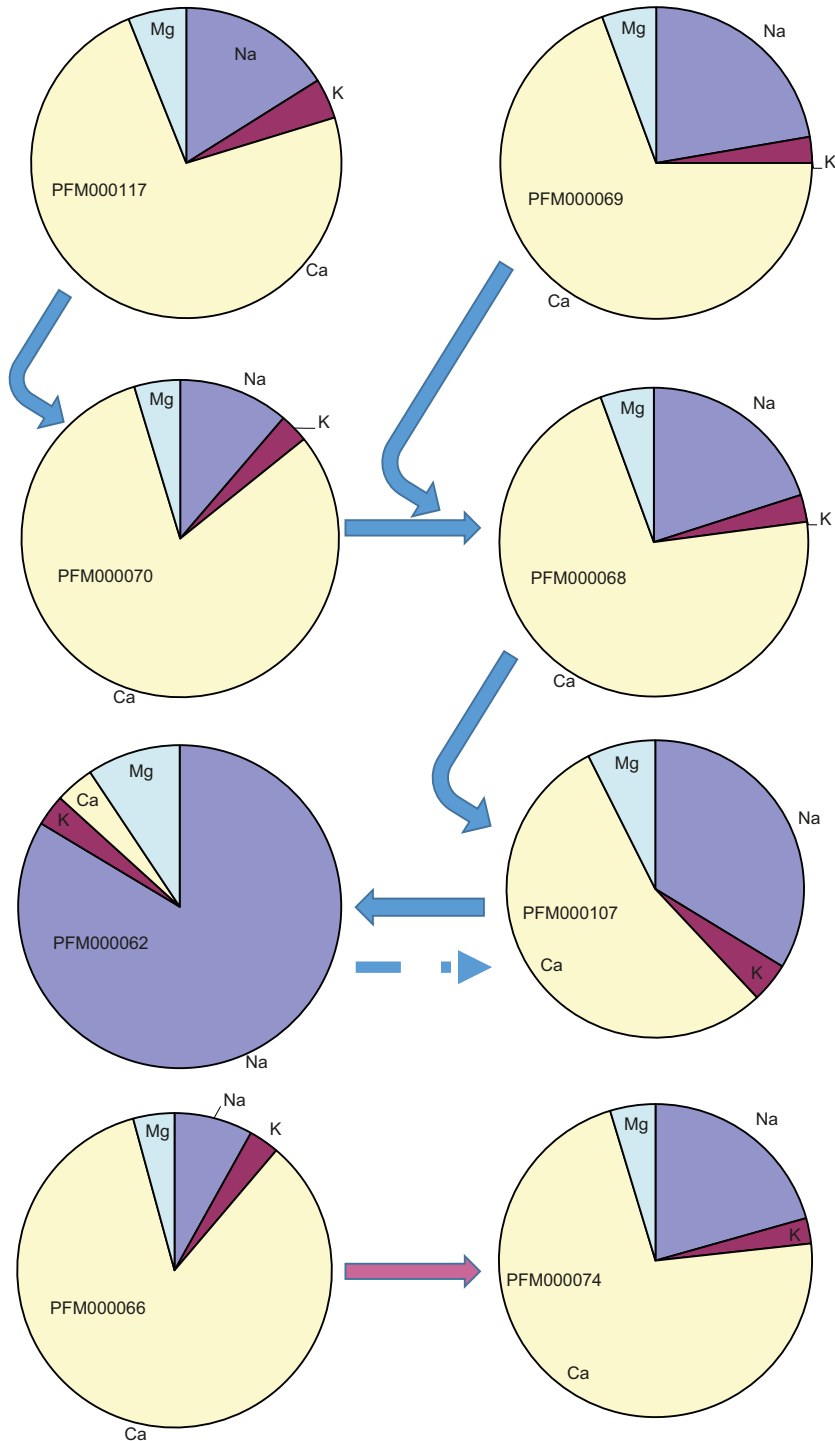
The field measurement data including redox potential, pH, dissolved oxygen, electrical conductivity, turbidity and water temperature. This dataset is compiled in Appendix 2. The water flow rate estimations by the float method (Johansson 2005) are of low accuracy compared to measurements using discharge weirs and gauges. They were performed in order to allow comparison between early data obtained when there was no other available method and new data from installed measurement stations.



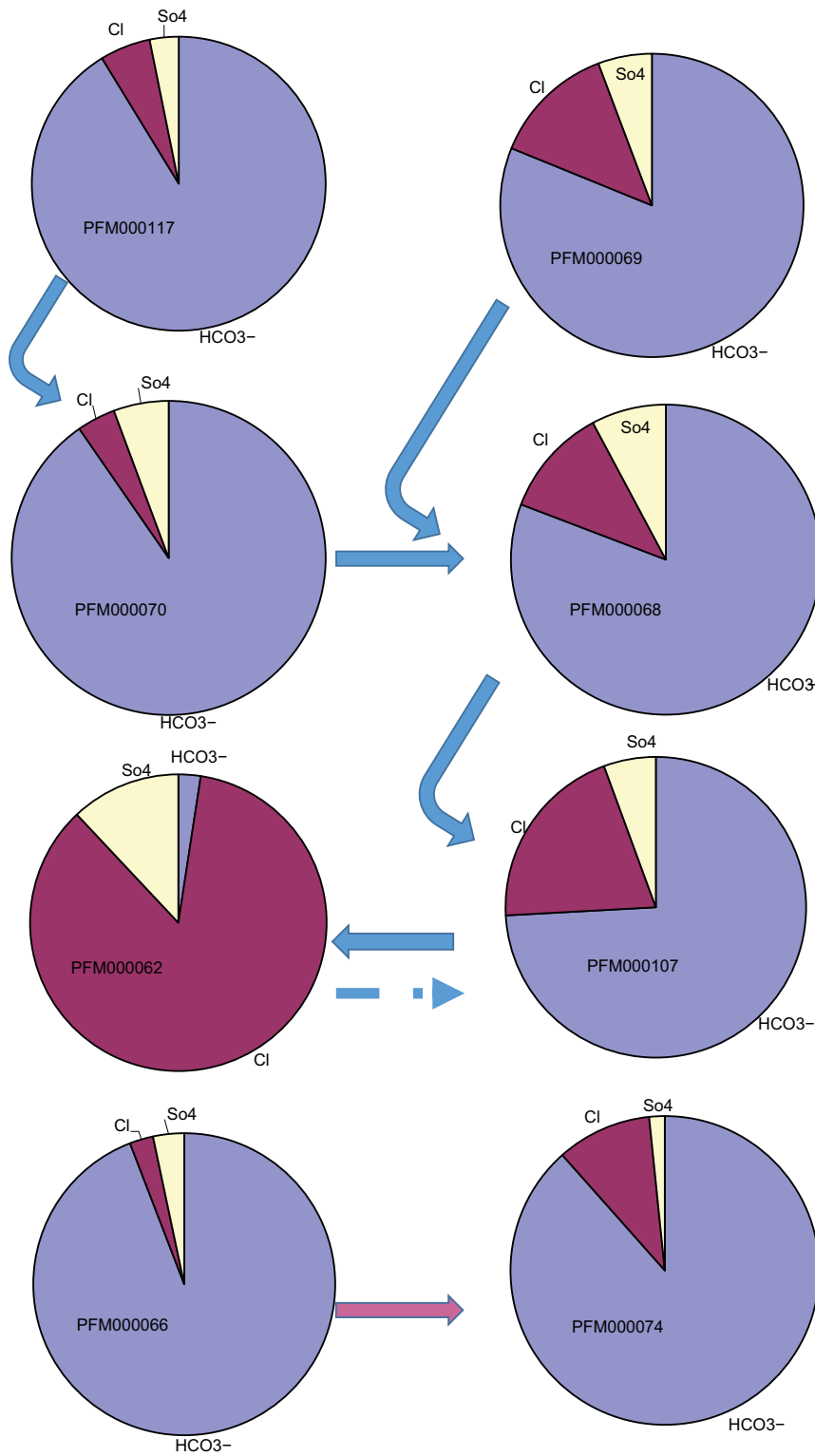
**Figure 3-8.** Tritium concentration in surface water sampled during 2020. The dark red bar represents the sampling location near the cooling water outlet, PFM102269. The orange dotted vertical line indicates where data were added in the figure after this report was written.

### 3.5.4 Water composition

The major cations in freshwater and sea water are generally calcium, magnesium, sodium and potassium. Sulphate and chloride are the major anions in sea water and in freshwater also bicarbonate gives a large contribution. The relative proportions between these major constituents differ between sea water and freshwater and also between different freshwater bodies, Figures 3-9 and 3-10. The sampling locations PFM007910, 7911, 7912, 0083, 0084, 8211 and 7783 are not presented in these figures. These are sea locations and they are similar to the sea location PFM000062.



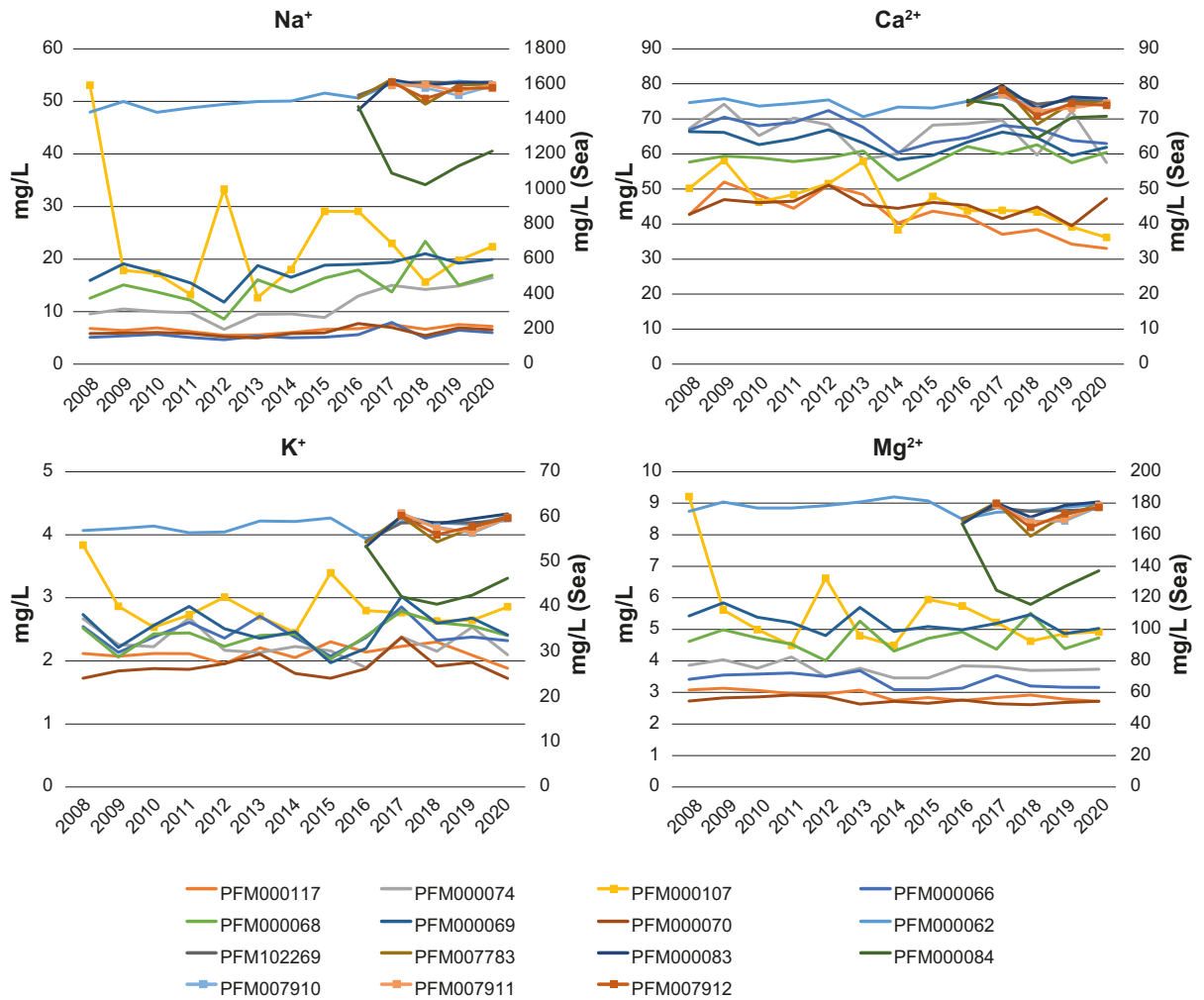
**Figure 3-9.** Relative proportions of the cations Na, K, Ca, Mg based on average values during the sampling period 2020. The arrows show the path of the surface water between the lakes and streams. Occasional inflow of sea water into Lake Bolundsfjärden (PFM 000107) is indicated by a dashed arrow. The Lake Labboträsket (PFM000074) and the stream PFM000066 belong to a different catchment area.



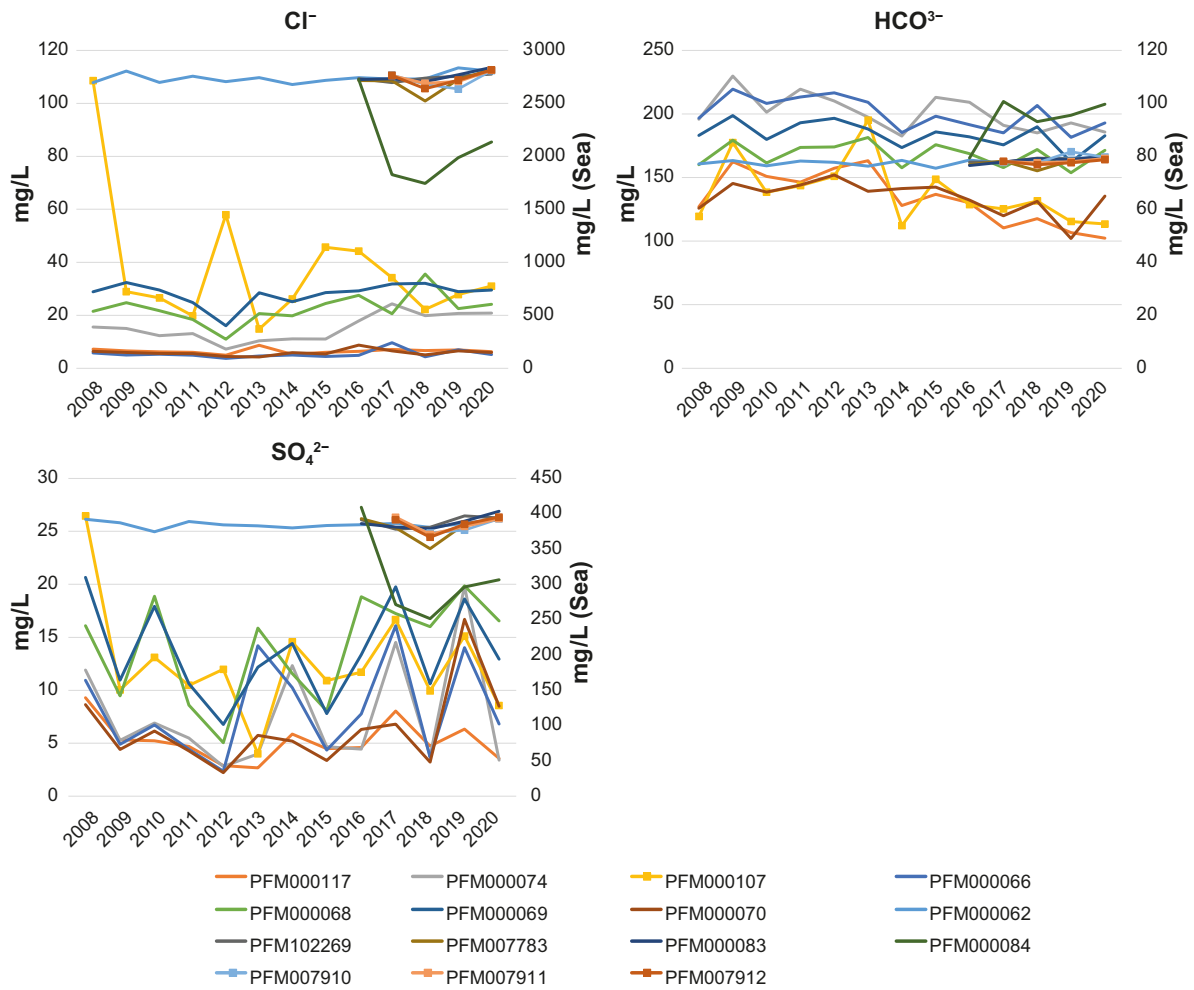
**Figure 3-10.** Relative proportions of the anions  $\text{Cl}^-$ ,  $\text{HCO}_3^-$  and  $\text{SO}_4^{2-}$  based on the average values during the sampling period 2020. The arrows show the path of the surface water between the lakes and streams. Occasional inflow of sea water into Lake Bolundsfjärden (PFM 000107) is indicated by a dotted arrow. The Lake Labboträsket (PFM000074) and the stream PFM000066 belong to a different catchment area.



Comparisons of the mean concentrations of these ions at the different sampling locations during year 2008–2020 generally show some variation, Figure 3-11 and 3-12. Large variation in these major constituents is seen in Lake Bolundsfjärden, PFM000107, especially for the ions  $\text{Na}^+$  and  $\text{Cl}^-$ . Lake Bolundsfjärden is characterised by irregular inflow of saltwater, which explains the larger variations in these two ions. The concentrations of Na and  $\text{Cl}^-$  were comparatively high in 2008 indicating a recent influx of saltwater. Also, in 2012, 2015–2017 the concentrations were higher indicating saltwater inflow. In 2020 the concentrations of these ions were higher compared to 2018 and 2019 suggesting it might have been influenced by the sea.



**Figure 3-11.** Mean concentrations of the cations Na, K, Ca, Mg during the years 2008–2020 at the sampling locations in the three lakes (PFM000074, PFM000107 and PFM000117) the four streams (PFM000066, PFM000068, PFM000069 and PFM000070) and the sea (PFM000062, PFM102269, PFM007783, PFM000083, PFM000084, PFM007910, PFM007911 and PFM007912). Note that the four sea locations PFM102269, PFM007783, PFM000083 and PFM000084 only have data from 2016–2020 and the three locations PFM007910, PFM007911 and PFM007912 only have data from 2017 and 2020.



**Figure 3-12.** Mean concentrations of the anions  $Cl^-$ ,  $HCO_3^-$  and  $SO_4^{2-}$  during the years 2008–2020 at the sampling locations in the three lakes (PFM000074, PFM000107 and PFM000117) the four streams (PFM000066, PFM000068, PFM000069 and PFM000070) and the sea (PFM000062, PFM102269, PFM007783, PFM000083, PFM000084, PFM007910, PFM007911 and PFM007912). Note that the four sea locations PFM102269, PFM007783, PFM000083 and PFM000084 only have data from 2016–2020 and the three locations PFM007910, PFM007911 and PFM007912 only have data from 2017 and 2020.



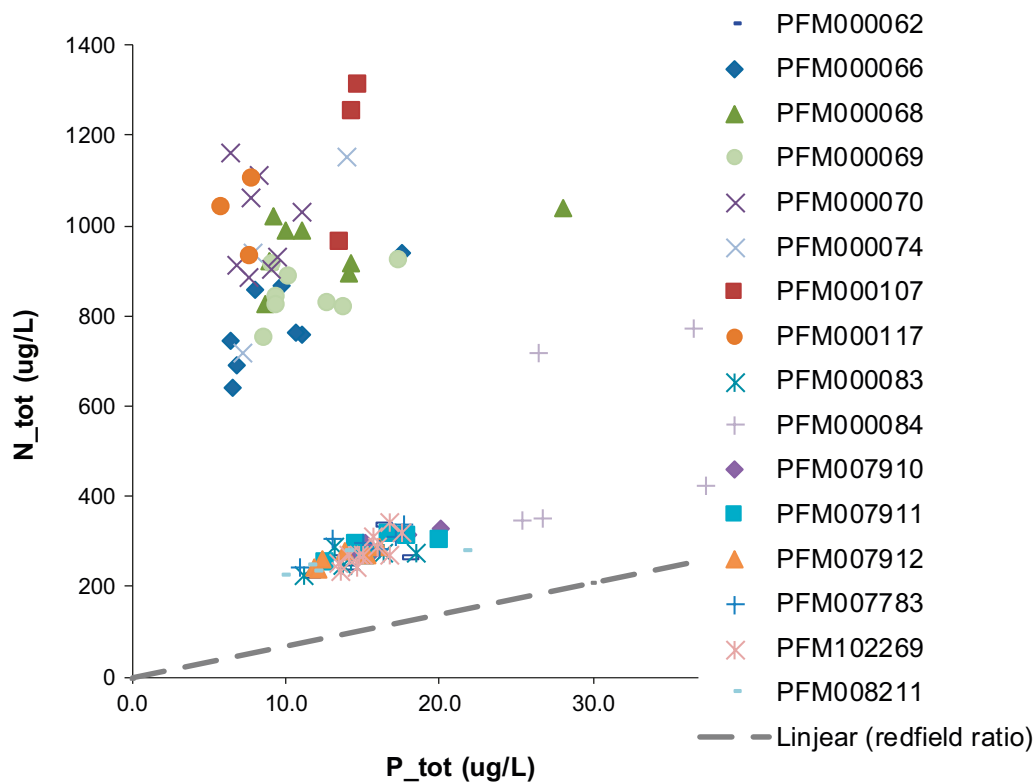
*Figure 3-13. Water sampling at PFM000069 in May 2020.*

### **3.5.5 The NP-ratio in the surface water**

The nutrients, nitrogen and phosphorus, are often the limiting factors for the primary production. Primary producers, such as plants and phytoplankton, use nitrogen and phosphorus in a ratio of about 16 mol nitrogen to 1 mol phosphorous, also known as the Redfield ratio, or 7:1 in terms of mass. A ratio deviating from 16 (or 7) indicates that the primary production is limited by either nitrogen or phosphorus. When nitrogen is present in excess the ratio will be higher than 16, indicating that lack of phosphorus is limiting the growth. Whereas lower ratios indicate nitrogen limitations, which may favour growth of blue green algae able to use nitrogen from the air. In fresh water, phosphorus is usually the limiting nutrient whereas in the oceans it is usually nitrogen.

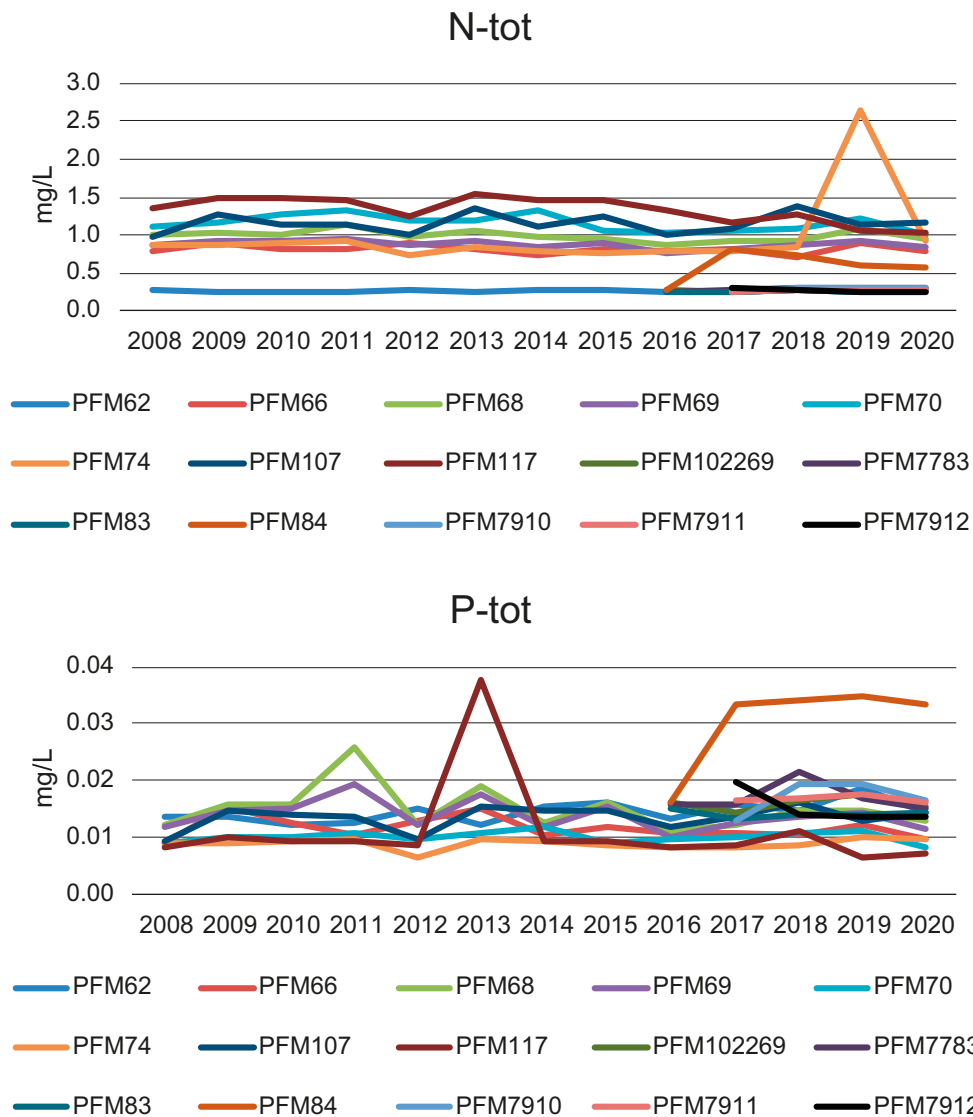
Figure 3-14 shows the relationship between nitrogen and phosphorous in the surface water of the investigated streams, lakes and coastal bays in the Forsmark area. The lakes and streams are phosphorus limited with high concentrations of nitrogen. The coastal locations in the Baltic Sea, PFM000062, PFM000083, PFM000084, PFM007783, PFM007910, PFM007911, PFM007912 and PFM008211 are also phosphorous limited although the ratio is much lower.

Comparisons of the mean concentrations of total nitrogen and total phosphorus during years 2008–2020 generally show little variation between years, Figure 3-15. The largest variation is seen for phosphorus in Lake Eckarfjärden, PFM000117, but there is no increasing or decreasing trend over the years. The highest concentration of phosphorus during 2017–2020 has been measured in Olandsån, PFM000084. In January 2019, a high concentration (8.05 mg/l) of total nitrogen was measured at PFM 000074, which influences the mean concentration presented in Figure 3-15. In 2020, the concentration was similar to previous years.



**Figure 3-14.** The relationship between nitrogen and phosphorus in the surface water of the investigated streams, lakes and coastal locations in the Forsmark area during 2020. The Redfield ratio (7:1) is indicated. Values above and below the line indicate phosphorus limitation and nitrogen limitation, respectively.



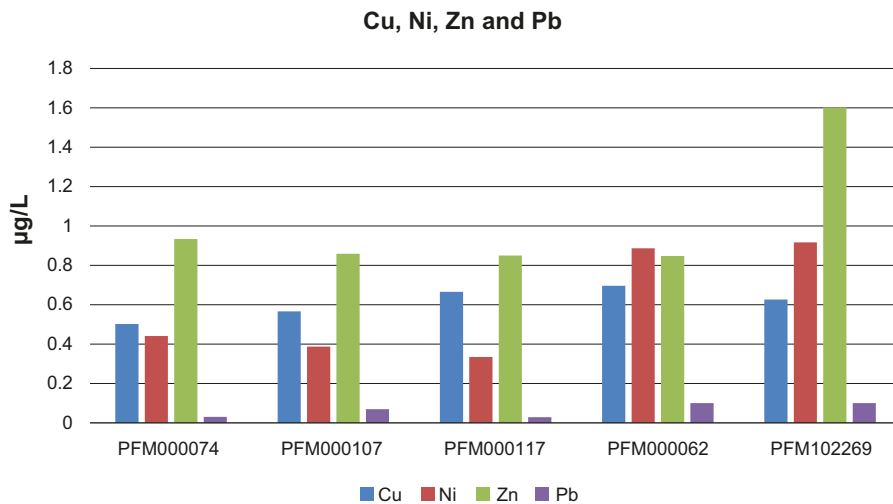


**Figure 3-15.** Mean concentrations of total nitrogen (N-tot) and total phosphorus (P-tot) during the years 2008–2020 at the sampling locations in the four streams (PFM000066, PFM000068, PFM000069 and PFM000070), three lakes (PFM000074, PFM000107 and PFM000117) and the sea (PFM000062, PFM102269, PFM007783, PFM000083, PFM000084, PFM007910, PFM007911 and PFM007912). Note that the four sea locations PFM102269, PFM007783, PFM000083 and PFM000084 only have data from 2016–2020 and the three locations PFM007910, PFM007911 and PFM007912 only have data from 2017–2020.

### 3.5.6 Metals

The analyses of metals, trace and rare earth elements include Ag, Al, As, B, Ba, Cd, Cr, Cu, Co, Hg, Nb, Ni, Mo, Pb, Pd, Se, Sn, V, Zn, U, Th, Sc, Rb, Y, Zr, Sb, Cs, La, Hf, Tl, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu. The trace element data are compiled in Appendix 2.

The yearly average concentrations of copper (Cu), nickel (Ni), zinc (Zn) and lead (Pb) in three lakes (PFM74, PFM107 and PFM117) and two sea locations (PFM62 and PFM102269) are shown in Figure 3-16. The average concentration of copper was highest in the sea location PFM62 and the lake PFM117, the concentration of nickel was highest in the sea locations PFM62 and PFM102269 and the concentration of zinc was highest in the sea location PFM102269. The concentration of lead was low in all the compared locations. The average concentration of lead should also be treated with caution since many of the values were below the reporting limit of lead (< 0.1 mg/L).

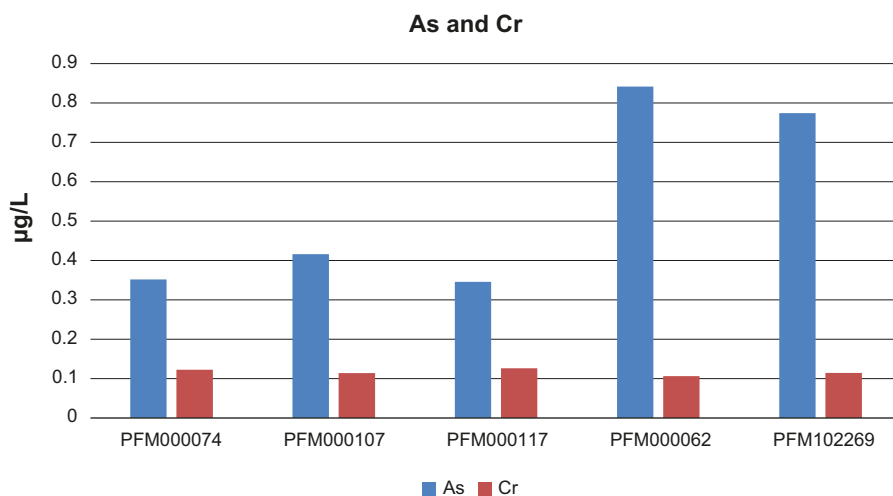


**Figure 3-16.** The yearly average concentrations of copper (Cu), nickel (Ni), zinc (Zn) and lead (Pb) in three lakes (PFM74, PFM107 and PFM117) and two sea locations (PFM62 and PFM102269). Average from the sampling during 2020.

The concentrations of these metals were compared to the limits of good ecological status according to Havs- och vattenmyndigheten (2016, 2019). The limits of good ecological status of these four metals in lakes (as well as copper in the sea) are presented as bioavailable concentrations. Therefore, the program Bio-met was used to calculate the lake concentrations of bioavailable metals. To do this the sample DOC- and calcium concentrations as well as pH was used. For the sea locations the formula (Copper concentration (µg/L) / ((DOC/2)<sup>0.6136</sup>)) was used according to Havs- och vattenmyndigheten (2019). For zinc the natural background concentrations were considered according to Havs- och vattenmyndigheten (2016, 2019) and Herbert et al. (2009).

The bioavailable concentrations of these four metals were lower than the limit for good ecological status in the five compared locations. Metals can be toxic for water living organisms which means that a low concentration is positive.

The average concentrations of arsenic (As) were highest in the sea locations PFM62 and PFM102269 while the average chromium (Cr) concentrations were similar between the compared locations, Figure 3-17.

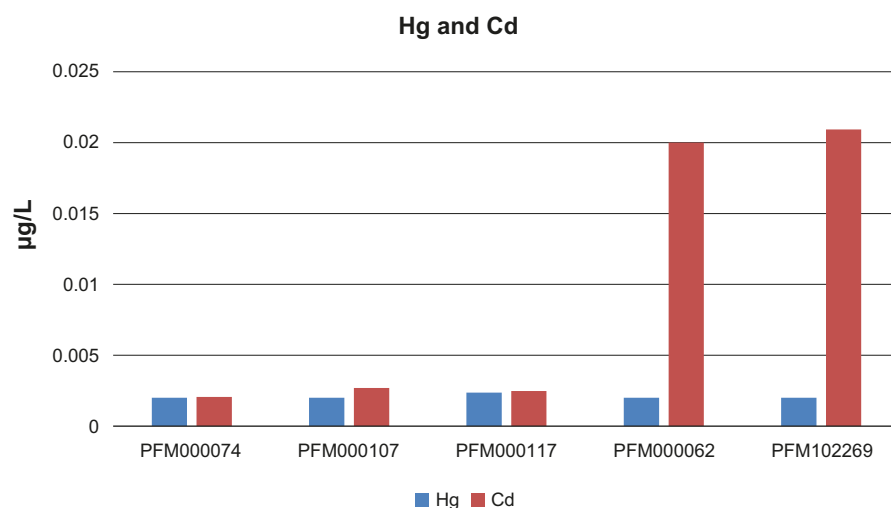


**Figure 3-17.** The yearly average concentrations of arsenic (As) and chromium (Cr) in three lakes (PFM74, PFM107 and PFM117) and two sea locations (PFM62 and PFM102269). Average from the sampling during 2020.



The concentrations of these metals were compared to the limits of good ecological status according to Havs- och vattenmyndigheten (2016, 2019). For arsenic the natural background concentrations were considered according to Havs- och vattenmyndigheten (2019), Herbert et al. (2009) and Vattenmyndigheterna (2016). The concentrations of chromium and arsenic in lakes were below the limits, which is positive since these metals could be toxic to water living organisms. However, the mean concentrations of arsenic in the sea locations were just above the limit of good status according to Havs- och vattenmyndigheten (2019). In this report, 0.2 µg/L was used as the natural background concentration of arsenic, according to Vattenmyndigheterna (2016). This natural background concentration in sea water is highly uncertain and could be higher (Vattenmyndigheterna 2016), which would put the arsenic concentrations in the sea water locations below the limit of good status. Arsenic, which is toxic, has been used in different industries (e.g. wood and metal industries) and is also deposited through the air from e.g. burning of coal and oil. The monitoring of this metal is therefore important.

The average concentrations of cadmium (Cd) were highest in the sea locations PFM62 and PFM102269 while the average mercury (Hg) concentrations were similar between the compared locations, Figure 3-18. These average concentrations should be treated with caution since many of the values were below the reporting limits. The concentrations of these metals were below the limits for good status (according to Havs- och vattenmyndigheten 2019) which is positive since these metals could be toxic to water living organisms.



**Figure 3-18.** The yearly average concentrations of mercury (Hg) and cadmium (Cd) in three lakes (PFM74, PFM107 and PFM117) and two sea locations (PFM62 and PFM102269). Average from the sampling during 2020.

### 3.6 Summary and discussion

The chemical investigation routines for surface water are well established and this period of the long-term surface water monitoring programme has passed without any major nonconformities or surprises.

The main experiences and conclusions from surface water sampling and analyses during the sampling period January to December 2020 are summarised below:

- Previous data indicates periodic tritium contamination from the adjacent nuclear power plant in water samples from near the cooling water outlet. Due to covid-19 and the following lockdown, tritium analyses have been seriously delayed. By the time this report was written, only results from January to April 2020 were available. No elevated tritium concentrations were measured between January and April 2020.
- The proportions of the major ions in the sampled freshwaters and the shallow sea bay were similar to previous years. In 2015, 2016 and 2017 the concentration of  $\text{Na}^+$  and  $\text{Cl}^-$  in Lake Bolundsfjärden, PFM000107, were higher compared to 2013 and 2014, indicating saltwater inflows. In 2018 and 2019 the proportion of these ions were lower, suggesting that no saltwater inflow happened in Lake Bolundsfjärden. In 2020 the concentrations of these ions were higher compared to 2018 and 2019 suggesting it might have been influenced by the sea.
- The concentrations of total nitrogen and total phosphorus in the sampled freshwaters and shallow sea locations were similar to previous years.

## 4 Precipitation

### 4.1 Objective and scope

Information on the chemical composition of precipitation and its variation in Forsmark is useful in the following context:

- to improve the understanding of groundwater formation and other hydrogeological conditions at the site,
- to provide complete information for constructing a facility that is maximum customized to the bedrock properties,
- to further develop the safety assessments and to control of the environmental impact.

Precipitation sampling started at the end of 2002 within the hydrochemical monitoring program and continued until June 2008 when a decision was made to interrupt this activity in Forsmark. After the site selection, the sampling was resumed for about two years, 2010–2012, with emphasis on the collection of trace metals that had not previously been included in a hydrochemical monitoring program 2002–2008 (Berg et al. 2015, Nilsson 2005, Berg 2007, Qvarfordt et al. 2008). After some years a need to resume precipitation sampling was identified and a new monitoring program started September 2016 and has since continued. In 2019 the location of precipitation sampling was changed to the new point, PFM008126 from the previous point PFM002564 (Wallin et al. 2021). Performance of this activity is controlled by an internal document, AP SFK-20-002, which describes a plan for sampling and analyses of precipitation 2020. Figure 4-1 shows the location of precipitation samples in Forsmark study area during 2020.

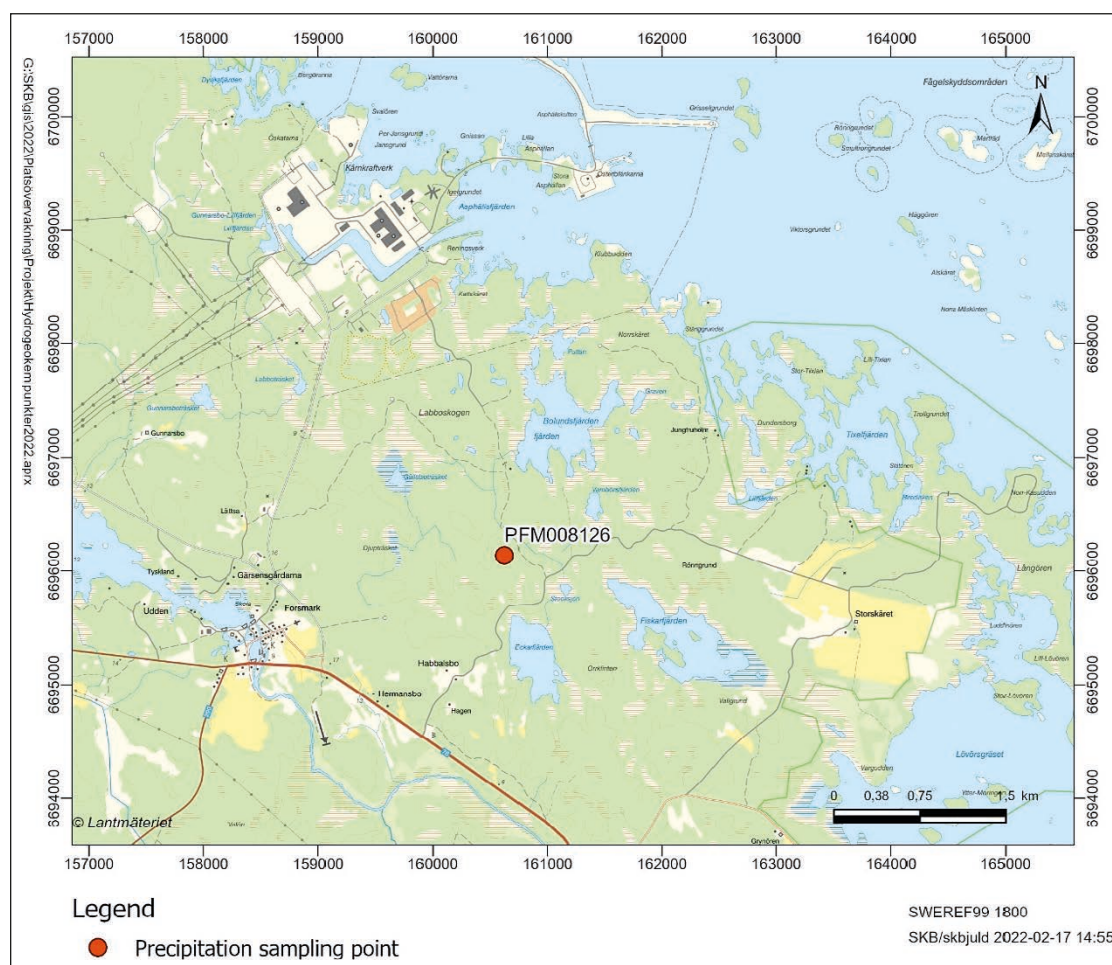


Figure 4-1. Location of the samplers for precipitation, PFM008126, within the Forsmark investigation area.

## 4.2 Equipment

The equipment for precipitation consists of separate polyethylene containers that were placed on mounting stands that were ca 1.5 m high. There were two types of polyethylene containers, a summer type for collecting rain and a winter type for collecting snow. The summer container is funnel-shaped and is fitted with a sieve to prevent contamination of samples with debris and insects, see Figure 4-2. The winter type, the polyethylene container is jar-shaped. The sample containers are designed and developed by NILU, Norway, and are ISO-certified.



*Figure 4-2. Precipitation sampler setup of six funnel-shaped polyethylene containers (summer type) at location PFM008126.*

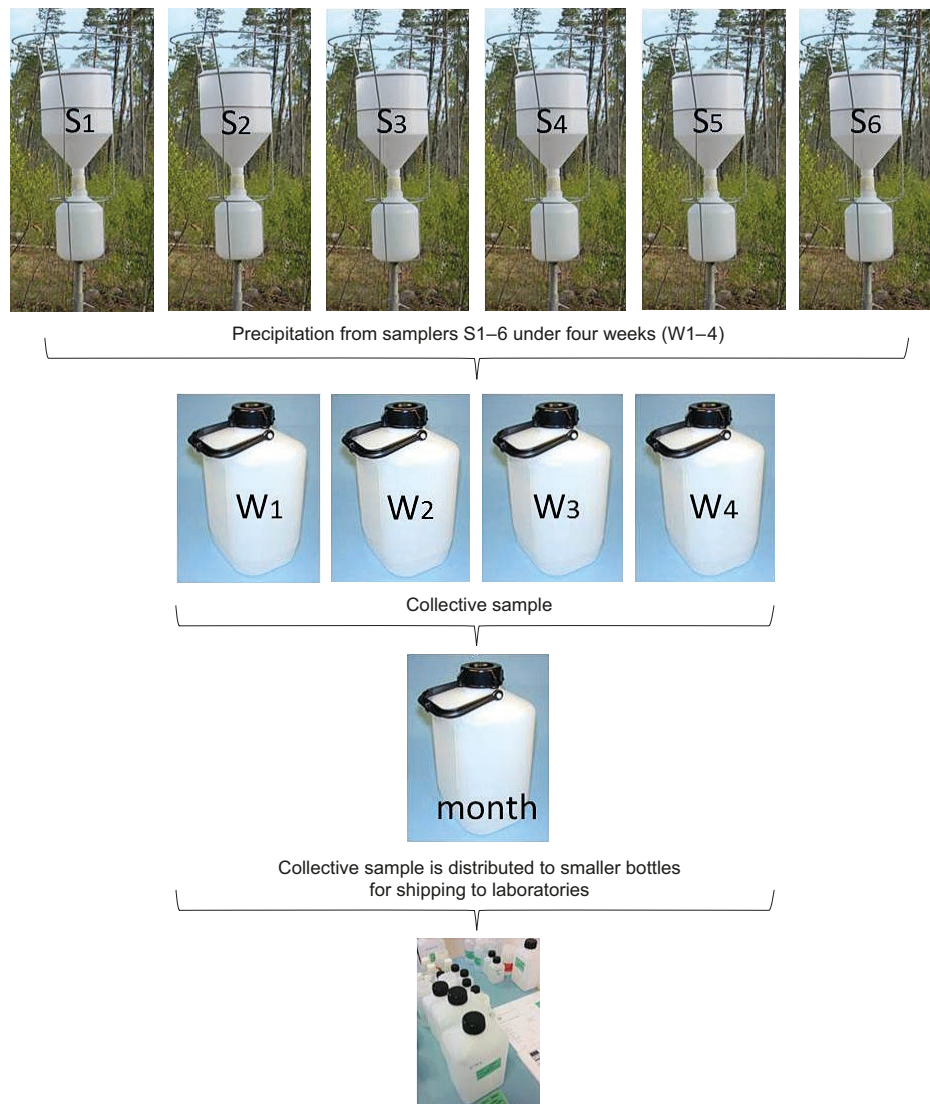


## 4.3 Performance

### 4.3.1 Sampling

Sampling of precipitation within the Forsmark area was carried out according to activity plan AP SFK-20-002 following the method described in SKB MD 423.003.

Sampling procedure and sampling treatment are shown in Figure 4-3. The polyethylene samplers were emptied once a week, regardless of whether or amount of rainfall. Water/snow were collected from six samplers to achieve the volume of water required for the chemical analyses.



**Figure 4-3.** Schematic outline of sample handling procedure.

Weekly collected samples, after the volume has been determined, were transferred into customised plastic containers and were stored in a refrigerator. After a month, weekly samples were combined into a one (month) batch sample and distributed into smaller bottles for sample dispatch. That generates twelve analysed batch samples per year. Number of weekly samples combined to each monthly batch sample during this year is presented in Table 4-1.

**Table 4-1. Number of collective weekly samples collected each month.**

| Month<br>(2020)                 | Precipitation sampling period |            | Number of      |                 |
|---------------------------------|-------------------------------|------------|----------------|-----------------|
|                                 | Start                         | Stop       | Weekly samples | Monthly (batch) |
| January                         | 2020-01-17                    | 2020-02-04 | 4              | 1               |
| February                        | 2020-02-04                    | 2020-03-03 | 4              | 1               |
| March                           | 2020-03-03                    | 2020-04-01 | 1              | 1               |
| April                           | 2020-04-01                    | 2020-05-04 | 4              | 1               |
| May                             | 2020-05-04                    | 2020-06-03 | 3              | 1               |
| June                            | 2020-06-03                    | 2020-06-30 | 4              | 1               |
| July                            | 2020-06-30                    | 2020-08-11 | 4              | 1               |
| August                          | 2020-08-11                    | 2020-09-01 | 3              | 1               |
| September                       | 2020-09-01                    | 2020-10-06 | 4              | 1               |
| October                         | 2020-10-06                    | 2020-11-05 | 3              | 1               |
| November                        | 2020-11-05                    | 2020-12-01 | 4              | 1               |
| December                        | 2020-12-01                    | 2021-01-05 | 5              | 1               |
| <b>SUM (Number of samples):</b> |                               |            | <b>43</b>      | <b>12</b>       |

### 4.3.2 Chemical analyses

Field measurements, see Table 4-2, were performed at the sampling site when rain was sampled or directly after sampling, in laboratory. Snow was collected and after melting in the laboratory, pH and conductivity were measured.

Sample of precipitation collected under one month were analysed for chemical analyses, see Table 4-2. Due to low concentrations of elements in precipitates, selection of chemical components that were included in analyses deviate from SKB's chemical classes. For a small amount of rainfall during a month, the analyses would be performed in descending order:  $\delta D$ ,  $\delta^{18}O$ , pH, EC, anions, cations,  $^3H$  and archival samples. Chemical analyses were performed, in the first place, by accredited chemical laboratories at Äspö or in Forsmark, and in another case – in external laboratories.

**Table 4-2. Chemical analyses performed for precipitation samples.**

| Component  | Sample bottles volume (mL) | Sample preparation  | Laboratory/Field                  |
|--|----------------------------|---|-----------------------------------|
| pH, electric conductivity (EC), temperature              | -                          | -   | Field measurements                |
| pH, electric conductivity (EC), Alkalinity ( $HCO_3^-$ ) | 100                        | -   | Forsmark chemical laboratory      |
| Bromide ( $Br^-$ )                                       | 50                         | -   | External laboratory               |
| Na, K, Ca, Mg, Si, Fe, Mn, Li, Sr and trace elements*    | 125*                       | Filtered through 0.4 $\mu m$ filter, and acidified with 1 % $HNO_3$ . | External laboratory               |
| $Cl^-$ , $Br^-$ , $SO_4^{2-}$ and $F^-$                  | 250                        | -   | Äspö chemical laboratory          |
| $\delta^3H$  | 500                        | Sub-sampler is fully filled, avoiding air bubbles                     | External laboratory               |
| $\delta D$ , $\delta^{18}O$                              | 100                        | Sub-sampler is fully filled, avoiding air bubbles                     | External/Äspö chemical laboratory |

\* Trace elements according to SKB:s nomenclature, chemical class IV, include Ag, Al, As, B, Ba, Cd, Co, Cr, Cs, Hg, Ni, Nb, Pd, Rb, Sb, Se, Sn, V, Zr.

The handling of hydrochemical data follow the same routine for quality control and data management independently of sampling method or type of sampling object.



## 4.4 Results

### 4.4.1 Field measurements

Field measurements include pH, water temperature and EC. The field measurements that were performed on weekly collected samples are compiled in Appendix 3, Table 3-1.

### 4.4.2 Water Analysis

The chemical analyses that were performed for collective samples are compiled in Appendix 3, Table A4-2. The basic water analyses include the major components Al, Ca,  $\text{Cl}^-$ ,  $\text{HCO}_3^-$ , Fe, Ka, Mg, Na, S, Si,  $\text{SO}_4^{2-}$  and Si as well as the minor constituents  $\text{Br}^-$ , Li, Mn and Sr. Furthermore, measurements of pH and EC were conducted.

The analyses of trace elements include Ag, As, B, Ba, Cd, Cr, Cu, Co, Hg, Nb, Ni, Mo, Pb, Pd, Se, Sn, V, Zn, Rb, Zr, Sb, Cs and Nd. Concentrations of elements are, as expected, very low and often are below/close to reporting limits. This largely impacts the charge balance. Therefore, it often exceeds designated accepted limits for surface water,  $\pm 10\%$ , or is unable to calculate. Reported results of zinc analysis do however show some values of higher concentrations, likely due to contamination. The risk of contamination is high for these common metals due to low natural concentrations and frequent use in different equipment.

Isotope determinations include the stable isotopes  $\delta\text{D}$  and  $\delta^{18}\text{O}$  as well as the radioactive isotope tritium ( $^3\text{H}$ ). The isotope data are compiled in Appendix 3, Table A4-2. A plot of  $\delta^{18}\text{O}$  (‰VSMOW (Vienna standard mean ocean water)) versus  $\delta\text{D}$  (‰VSMOW) corresponds well with the Global Meteoric Water Line based on precipitation data from around the world (Craig 1961), see Figure 4-4. This indicates that the isotope data on precipitation are reasonable and are not biased by evaporation during summer time. Tritium content is between 5.50 and 9.60 TU, Figure 4-5. This corresponds to the same levels observed under monitoring program 2002–2008 (Nilsson 2005, Berg 2007, Qvarfordt et al. 2008).

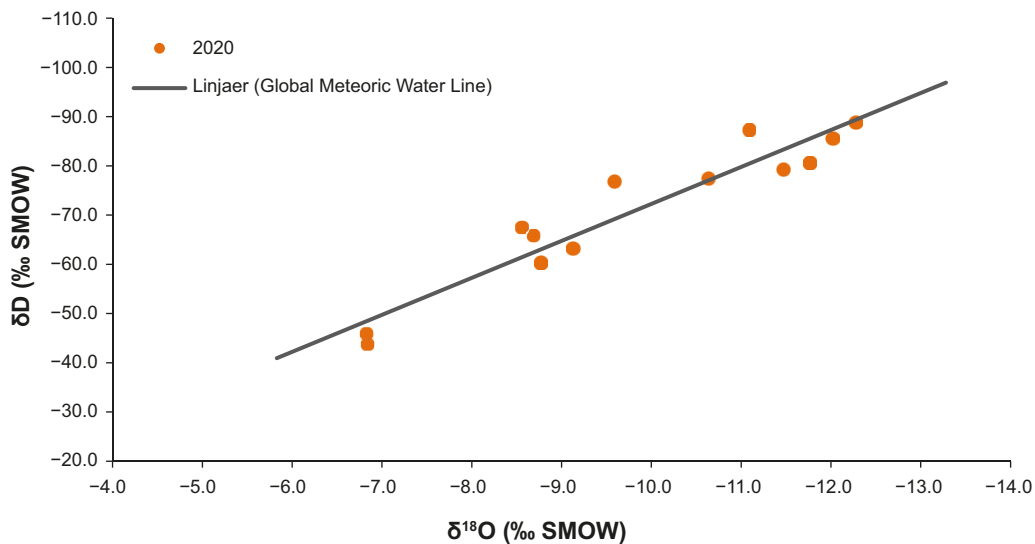
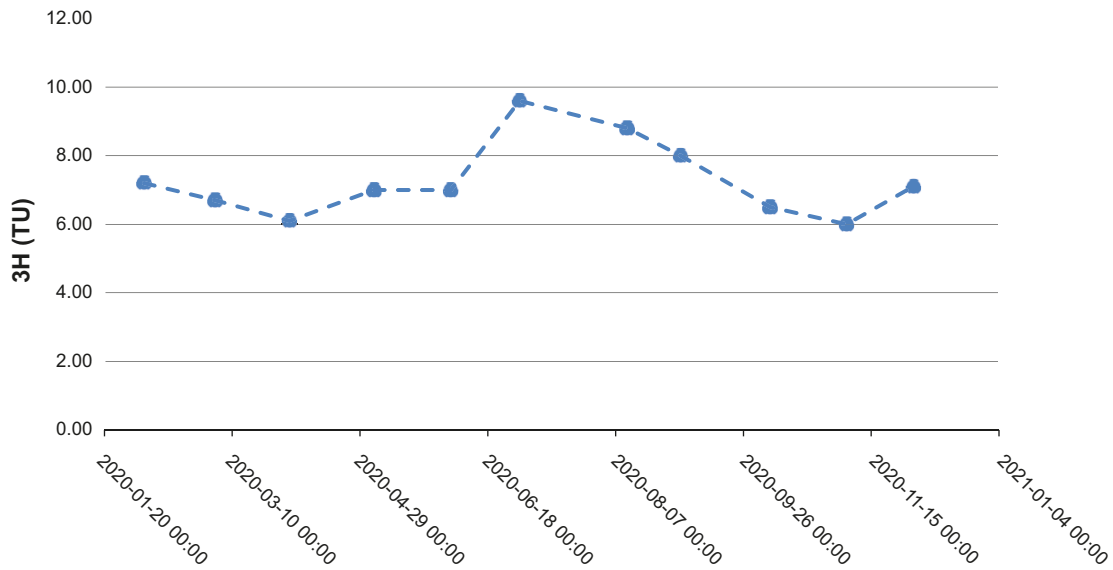


Figure 4-4.  $\delta^{18}\text{O}$  plotted versus  $\delta\text{D}$  and compared with the Global Meteoric Water Line (Craig 1961).



*Figure 4-5. Tritium contents in monthly collected samples at the Forsmark site.*

## 4.5 Summary

The precipitation results that were collected 2020, do not show significant deviation from previously reported results obtained under monitoring program 2002–2008. However, the change of location of precipitation sampling is to be considered when comparing results from previous years. Precipitation sampling location was changed during 2019 to a new location where measurements and sampling were performed from then on.

Most trace metals results were reported below the reporting limit. Where results showed above reporting limit, risk of contamination is to be considered.

## References

SKB's (Svensk Kärnbränslehantering AB) publications can be found at [www.skb.com/publications](http://www.skb.com/publications). SKBdoc documents will be submitted upon request to [document@skb.se](mailto:document@skb.se).

**Berg C, 2007.** Forsmark site investigation. Sampling and analysis of precipitation, September 2005 to June 2007. SKB P-07-170, Svensk Kärnbränslehantering AB.

**Berg C, Borgiel M, Qvarfordt S, 2015.** Hydrochemical monitoring of near surface groundwaters, surface waters and precipitation. Results from the sampling period January 2011 – December 2011 in the Forsmark area. SKBdoc 1386267 ver 1.0, Svensk Kärnbränslehantering AB.

**Craig H, 1961.** Isotopic variations in meteoric waters. *Science* 133, 1702–1703.

**Havs- och vattenmyndigheten, 2016.** Miljögifter i vatten – klassificering av ytvattenstatus. Vägledning för tillämpning av HVMFS 2013:19. Rapport 2016:26, Havs- och vattenmyndigheten (Swedish Agency for Marine and Water Management).

**Havs- och vattenmyndigheten, 2019.** Havs- och vattenmyndighetens författningssamling. HVMFS 2019:25. Havs- och vattenmyndighetens föreskrifter om klassificering och miljö kvalitetsnormer avseende ytvatten. Göteborg: Havs- och vattenmyndigheten (Swedish Agency for Marine and Water Management). (In Swedish.)

**Herbert R, Björkvald L, Wällstedt T, Johansson K, 2009.** Bakgrundshalter av metaller i Svenska inlands- och kustvatten. Rapport 2009:12, SLU, Sweden. (In Swedish.)

**Johansson P-O, 2005.** Forsmark site investigation. Manual discharge measurements in brooks, April 2002 – April 2005. SKB P-05-153, Svensk Kärnbränslehantering AB.

**Nilsson A-C, Borgiel M, 2005.** Forsmark site investigation. Sampling and analyses of surface waters. Results from sampling in the Forsmark area, March 2004 – June 2005. SKB P-05-274, Svensk Kärnbränslehantering AB.

**Nilsson A-C, Karlsson S, Borgiel M, 2003.** Forsmark site investigation. Sampling and analyses of surface water. Results from sampling in the Forsmark area, March 2002 to March 2003. SKB P-03-27, Svensk Kärnbränslehantering AB.

**Nilsson A-C (ed), Berg C, Harrström J, Jönsson S, Thur P, Borgiel M, Qvarfordt S, 2010.** Forsmark site investigation. Hydrochemical monitoring of groundwaters and surface waters. Results from water sampling in the Forsmark area, January–December 2009. SKB P-10-40, Svensk Kärnbränslehantering AB.

**Nilsson D, 2005.** Forsmark site investigation. Sampling and analysis of precipitation, years 2002 to 2005. SKB P-05-143, Svensk Kärnbränslehantering AB.

**Qvarfordt S, Borgiel M, Berg C, Nilsson A-C, 2008.** Forsmark site investigation. Hydrochemical monitoring of near surface groundwater, surface waters and precipitation. Results from sampling in the Forsmark area, August 2007 – December 2007. SKB P-08-55, Svensk Kärnbränslehantering AB.

**SKB, 2001.** Site investigations. Investigation methods and general execution programme. SKB TR-01-29, Svensk Kärnbränslehantering AB.

**SKB, 2005.** Forsmark site investigation. Programme for further investigations of geosphere and biosphere. SKB R-05-14, Svensk Kärnbränslehantering AB.

**SKB, 2007.** Programme for long-term observations of geosphere and biosphere after completed site investigations. SKB R-07-34, Svensk Kärnbränslehantering AB.

**Sonesten L, 2005.** Chemical characteristics of surface waters in the Forsmark area. Evaluation of data from lakes, streams and coastal sites. SKB R-05-41, Svensk Kärnbränslehantering AB.

**Vattenmyndigheterna, 2016.** Miljögifter i ytvatten – Vattenmyndigheternas kompletterande riktlinjer för statusklassificering och riskbedömning under vattenförvaltningscykel 2016–2021. VISS-ID: 54499, Vattenmyndigheterna i Sveriges fem vattendistrikt. (In Swedish.)

**Wallin A, Qvarfordt S, Borgiel M, Dahlström J, 2021.** Hydrochemical monitoring of near surface groundwater, surface waters and precipitation. Results from the sampling period January–December 2019. SKB P-20-30, Svensk Kärnbränslehantering AB.

## Near surface groundwater

Table A1-1. Field measurements.

| Id-code | Measuring date<br>(yyyy-mm-dd) | Sample<br>No. | Water temp.<br>(°C) | pH   | EC<br>(mS/m) | Salinity<br>(psu) | O <sub>2</sub> diss.<br>(mg/L) | Oxygen<br>(%) | ORP<br>(mV) |
|---------|--------------------------------|---------------|---------------------|------|--------------|-------------------|--------------------------------|---------------|-------------|
| SFM0001 | 2020-01-15                     | 74877         | 6.8                 | 7.38 | 63.9         | 0.31              | -0.08                          | -0.6          | -187.40     |
| SFM0001 | 2020-05-04                     | 77254         | 5.5                 | 7.18 | 78.2         | 0.38              | -0.06                          | -0.5          | -6.90       |
| SFM0001 | 2020-08-11                     | 80518         | 8.7                 | 7.30 | 119.9        | 0.60              | -0.07                          | -0.6          | -89.30      |
| SFM0001 | 2020-10-13                     | 83704         | 9.1                 | 7.36 | 147.4        | 0.74              | -0.06                          | -0.5          | -118.60     |
| SFM0002 | 2020-01-14                     | 74878         | 7.0                 | 7.17 | 70.1         | 0.34              | -0.01                          | -0.1          | -115.70     |
| SFM0002 | 2020-05-04                     | 77255         | 6.0                 | 6.98 | 71.7         | 0.35              | 0.02                           | 0.2           | 5.60        |
| SFM0002 | 2020-08-10                     | 80519         | 9.8                 | 7.03 | 71.2         | 0.35              | -0.06                          | -0.5          | -69.30      |
| SFM0002 | 2020-10-13                     | 83705         | 9.5                 | 7.09 | 70.8         | 0.35              | -0.04                          | -0.4          | -87.40      |
| SFM0011 | 2020-01-13                     | 74879         | 6.4                 | 7.57 | 656.9        | 3.58              | -0.08                          | -0.7          | -116.20     |
| SFM0011 | 2020-05-05                     | 77256         | 6.6                 | 7.51 | 538.2        | 2.90              | -0.01                          | -0.1          | -24.20      |
| SFM0011 | 2020-08-11                     | 80520         | 9.3                 | 7.50 | 591.2        | 3.22              | -0.06                          | -0.6          | -79.00      |
| SFM0011 | 2020-10-12                     | 83706         | 9.0                 | 7.55 | 647.8        | 3.55              | -0.06                          | -0.5          | -103.80     |
| SFM0032 | 2020-01-15                     | 74896         | 5.3                 | 7.15 | 78.1         | 0.38              | -0.07                          | -0.6          | -133.10     |
| SFM0032 | 2020-05-05                     | 77257         | 5.5                 | 7.10 | 82.6         | 0.41              | 0.04                           | 0.4           | 0.10        |
| SFM0032 | 2020-08-10                     | 80521         | 11.5                | 6.89 | 80.0         | 0.39              | -0.02                          | -0.2          | -81.10      |
| SFM0032 | 2020-10-12                     | 83707         | 10.1                | 7.12 | 86.5         | 0.43              | -0.02                          | -0.2          | -119.40     |
| SFM0037 | 2020-01-15                     | 74897         | 4.1                 | 7.05 | 52.6         | 0.25              | 0.03                           | 0.3           | -195.70     |
| SFM0037 | 2020-05-04                     | 77258         | 6.2                 | 6.70 | 55.3         | 0.27              | 0.02                           | 0.1           | -25.30      |
| SFM0037 | 2020-08-11                     | 80522         | 11.8                | 6.95 | 82.3         | 0.41              | -0.01                          | -0.1          | -53.60      |
| SFM0037 | 2020-10-13                     | 83708         | 10.2                | 7.09 | 82.5         | 0.41              | 0.76                           | 6.7           | 15.60       |
| SFM0049 | 2020-01-13                     | 74898         | 3.7                 | 6.97 | 35.3         | 0.17              | -0.10                          | -0.8          | -132.30     |
| SFM0049 | 2020-05-06                     | 77259         | 6.0                 | 6.84 | 38.4         | 0.18              | -0.07                          | -0.6          | 30.00       |
| SFM0049 | 2020-08-10                     | 80524         | 12.7                | 6.72 | 48.2         | 0.23              | -0.04                          | -0.4          | -76.70      |
| SFM0049 | 2020-10-12                     | 83709         | 11.5                | 6.92 | 45.3         | 0.22              | -0.05                          | -0.5          | -110.10     |
| SFM0057 | 2020-01-14                     | 74899         | 6.2                 | 7.19 | 44.2         | 0.21              | -0.02                          | -0.2          | 6.80        |
| SFM0057 | 2020-05-05                     | 77260         | 5.3                 | 6.86 | 55.0         | 0.27              | 0.09                           | 0.7           | 140.40      |
| SFM0057 | 2020-08-10                     | 80525         | 10.1                | 6.94 | 55.2         | 0.27              | -0.04                          | -0.4          | 15.00       |
| SFM0057 | 2020-10-14                     | 83710         | 9.4                 | 6.90 | 59.7         | 0.29              | 0.10                           | 0.9           | 26.00       |



Table A1-2a. Major components.

| Id-code | Secup<br>(m) | Seclow<br>(m) | Date<br>(yyyy-mm-dd) | Sample<br>No. | RCB<br>(%) | Na<br>(mg/L) | K<br>(mg/L) | Ca<br>(mg/L) | Mg<br>(mg/L) | HCO <sub>3</sub> <sup>-</sup><br>(mg/L) | Cl <sup>-</sup><br>(mg/L) | SO <sub>4</sub><br>(mg/L) | SO <sub>4</sub> -S<br>(mg/L) | Br<br>(mg/L) | F <sup>-</sup><br>(mg/L) |
|---------|--------------|---------------|----------------------|---------------|------------|--------------|-------------|--------------|--------------|---|---------------------------|---------------------------|------------------------------|--------------|--------------------------|
| SFM0001 | 3.95         | 4.95          | 2020-01-15           | 74877         | 4.62       | 58.6         | 9.76        | 66.9         | 14.20        | 287                                     | 44.0                      | 32.0                      | 11.80                        | 0.235        | 0.62                     |
| SFM0001 | 3.95         | 4.95          | 2020-05-04           | 77254         | 3.84       | 75.7         | 9.32        | 77.8         | 15.10        | 318                                     | 61.0                      | 49.0                      | 17.80                        | 0.305        | 0.61                     |
| SFM0001 | 3.95         | 4.95          | 2020-08-11           | 80518         | 1.69       | 161.0        | 12.20       | 77.2         | 20.50        | 397                                     | 149.0                     | 79.0                      | 27.90                        | 0.786        | 0.74                     |
| SFM0001 | 3.95         | 4.95          | 2020-10-13           | 83704         | 2.98       | 210.0        | 15.00       | 86.8         | 25.60        | 447                                     | 195.0                     | 102.0                     | 35.80                        | 0.830        | 0.80                     |
| SFM0002 | 4.21         | 5.21          | 2020-01-14           | 74878         | 0.37       | 16.6         | 4.43        | 118.0        | 9.47         | 352                                     | 53.0                      | 11.4                      | 4.23                         | 0.571        | 0.51                     |
| SFM0002 | 4.21         | 5.21          | 2020-05-04           | 77255         | 3.05       | 16.3         | 4.29        | 125.0        | 9.24         | 341                                     | 56.0                      | 11.4                      | 4.25                         | 0.655        | 0.53                     |
| SFM0002 | 4.21         | 5.21          | 2020-08-10           | 80519         | 1.04       | 16.5         | 4.29        | 118.0        | 9.44         | 341                                     | 56.0                      | 10.8                      | 3.90                         | 0.820        | 0.52                     |
| SFM0002 | 4.21         | 5.21          | 2020-10-13           | 83705         | 2.04       | 16.8         | 4.57        | 120.0        | 9.35         | 341                                     | 55.0                      | 10.6                      | 3.79                         | 0.759        | 0.56                     |
| SFM0011 | 3.50         | 4.50          | 2020-01-13           | 74879         | 0.41       | 1180.0       | 26.10       | 166.0        | 74.90        | 320                                     | 1950.0                    | 255.0                     | 89.50                        | 8.090        | 0.92                     |
| SFM0011 | 3.50         | 4.50          | 2020-05-05           | 77256         | -0.90      | 945.0        | 23.90       | 122.0        | 59.00        | 368                                     | 1510.0                    | 226.0                     | 78.90                        | 5.740        | 0.93                     |
| SFM0011 | 3.50         | 4.50          | 2020-08-11           | 80520         | 2.48       | 1080.0       | 29.40       | 152.0        | 68.40        | 335                                     | 1670.0                    | 233.0                     | 85.60                        | 6.500        | 0.86                     |
| SFM0011 | 3.50         | 4.50          | 2020-10-12           | 83706         | -0.22      | 1110.0       | 27.90       | 162.0        | 75.40        | 316                                     | 1870.0                    | 234.0                     | 89.40                        | 7.430        | 0.85                     |
| SFM0032 | 3.00         | 4.00          | 2020-01-15           | 74896         | 0.41       | 28.8         | 6.01        | 126.0        | 10.00        | 360                                     | 55.0                      | 49.0                      | 17.00                        | 0.401        | 0.67                     |
| SFM0032 | 3.00         | 4.00          | 2020-05-05           | 77257         | 1.90       | 29.9         | 6.00        | 135.0        | 10.20        | 365                                     | 60.0                      | 50.0                      | 17.30                        | 0.478        | 0.69                     |
| SFM0032 | 3.00         | 4.00          | 2020-08-10           | 80521         | 0.23       | 27.1         | 6.23        | 127.0        | 9.80         | 343                                     | 43.0                      | 80.0                      | 27.10                        | 0.333        | 0.67                     |
| SFM0032 | 3.00         | 4.00          | 2020-10-12           | 83707         | 1.02       | 34.2         | 7.03        | 149.0        | 11.40        | 331                                     | 50.0                      | 131.0                     | 49.20                        | 0.412        | 0.71                     |
| SFM0037 | 2.00         | 3.00          | 2020-01-15           | 74897         | 1.93       | 12.5         | 3.71        | 94.6         | 8.33         | 308                                     | 7.9                       | 25.0                      | 9.04                         | 0.128        | 0.59                     |
| SFM0037 | 2.00         | 3.00          | 2020-05-04           | 77258         | 3.41       | 13.3         | 3.15        | 101.0        | 8.57         | 305                                     | 8.4                       | 36.0                      | 12.70                        | 0.131        | 0.65                     |
| SFM0037 | 2.00         | 3.00          | 2020-08-11           | 80522         | -0.06      | 32.5         | 4.25        | 133.0        | 14.80        | 331                                     | 10.8                      | 170.0                     | 58.60                        | 0.126        | 0.67                     |
| SFM0037 | 2.00         | 3.00          | 2020-10-13           | 83708         | 3.00       | 41.8         | 5.58        | 128.0        | 16.80        | 256                                     | 18.5                      | 202.0                     | 70.90                        | 0.142        | 0.72                     |
| SFM0049 | 4.00         | 5.00          | 2020-01-13           | 74898         | 1.26       | 13.4         | 3.08        | 55.3         | 4.83         | 195                                     | 14.4                      | 5.0                       | 1.99                         | 0.053        | 0.36                     |
| SFM0049 | 4.00         | 5.00          | 2020-05-06           | 77259         | 3.02       | 16.9         | 3.17        | 60.1         | 4.79         | 201                                     | 18.8                      | 5.5                       | 2.21                         | 0.062        | 0.40                     |
| SFM0049 | 4.00         | 5.00          | 2020-08-10           | 80524         | 0.90       | 21.0         | 3.52        | 73.3         | 5.85         | 266                                     | 22.0                      | 2.4                       | 1.33                         | 0.106        | 0.41                     |
| SFM0049 | 4.00         | 5.00          | 2020-10-12           | 83709         | 2.47       | 20.1         | 3.05        | 72.3         | 5.45         | 228                                     | 20.0                      | 20.0                      | 7.51                         | 0.062        | 0.42                     |
| SFM0057 | 3.55         | 4.55          | 2020-01-14           | 74899         | -0.09      | 4.4          | 2.24        | 86.9         | 4.04         | 285                                     | 5.1                       | 4.7                       | 1.63                         | 0.057        | 0.25                     |
| SFM0057 | 3.55         | 4.55          | 2020-05-05           | 77260         | 1.65       | 6.0          | 2.54        | 114.0        | 4.99         | 362                                     | 4.9                       | 6.3                       | 2.13                         | 0.061        | 0.27                     |
| SFM0057 | 3.55         | 4.55          | 2020-08-10           | 80525         | -0.07      | 6.2          | 2.91        | 108.0        | 5.26         | 357                                     | 4.4                       | 8.5                       | 3.02                         | 0.068        | 0.26                     |
| SFM0057 | 3.55         | 4.55          | 2020-10-14           | 83710         | -0.25      | 8.0          | 3.30        | 116.0        | 5.94         | 388                                     | 6.4                       | 8.8                       | 3.08                         | 0.081        | 0.28                     |

Table A1-2a. Continued.

| Id-code | Secup<br>(m) | Seclow<br>(m) | Date<br>(yyyy-mm-dd) | Sample<br>No. | Si<br>(mg/L) | Fe<br>(mg/L) | Fe(tot)<br>(mg/L) | Fe(II)<br>(mg/L) | Mn<br>(mg/L) | Li<br>(mg/L) | Sr<br>(mg/L) | pH<br>(pH unit) | EC (lab)<br>(mS/m) | S <sup>2-</sup><br>(mg/L) | I <sup>-</sup><br>(mg/L) |
|---------|--------------|---------------|----------------------|---------------|--------------|--------------|-------------------|------------------|--------------|--------------|--------------|-----------------|--------------------|---------------------------|--------------------------|
| SFM0001 | 3.95         | 4.95          | 2020-01-15           | 74877         | 6.81         | 1.660        | 1.55              | 1.53             | 0.115        | 0.007        | 0.192        | 7.23            | 65                 | 0.120                     | 0.0071                   |
| SFM0001 | 3.95         | 4.95          | 2020-05-04           | 77254         | 6.68         | 1.830        | 1.82              | 1.71             | 0.130        | 0.009        | 0.205        | 7.18            | 78                 | 0.100                     | 0.0074                   |
| SFM0001 | 3.95         | 4.95          | 2020-08-11           | 80518         | 6.81         | 1.880        | 1.97              | 1.86             | 0.139        | 0.010        | 0.250        | 7.35            | 122                | 0.110                     | 0.0109                   |
| SFM0001 | 3.95         | 4.95          | 2020-10-13           | 83704         | 7.49         | 2.130        | 2.10              | 2.08             | 0.155        | 0.014        | 0.301        | 7.32            | 148                | 0.110                     | 0.0106                   |
| SFM0002 | 4.21         | 5.21          | 2020-01-14           | 74878         | 5.88         | 2.900        | 2.96              | 2.99             | 0.144        | 0.004        | 0.190        | 7.03            | 72                 | 0.030                     | 0.0069                   |
| SFM0002 | 4.21         | 5.21          | 2020-05-04           | 77255         | 5.73         | 3.340        | 3.20              | 3.20             | 0.139        | 0.005        | 0.187        | 7.01            | 72                 | 0.033                     | 0.0069                   |
| SFM0002 | 4.21         | 5.21          | 2020-08-10           | 80519         | 5.85         | 3.140        | 2.97              | 2.96             | 0.136        | < 0.004      | 0.184        | 7.12            | 72                 | 0.037                     | 0.0073                   |
| SFM0002 | 4.21         | 5.21          | 2020-10-13           | 83705         | 5.99         | 3.170        | 3.10              | 3.10             | 0.135        | 0.004        | 0.185        | 7.09            | 72                 | 0.031                     | 0.0074                   |
| SFM0011 | 3.50         | 4.50          | 2020-01-13           | 74879         | 6.43         | 1.250        | 1.28              | 1.27             | 0.220        | 0.027        | 1.440        | 7.38            | 662                | < 0.019                   | 0.0200                   |
| SFM0011 | 3.50         | 4.50          | 2020-05-05           | 77256         | 6.38         | 0.995        | 0.95              | 0.95             | 0.160        | 0.029        | 0.999        | 7.57            | 530                | < 0.019                   | 0.0190                   |
| SFM0011 | 3.50         | 4.50          | 2020-08-11           | 80520         | 6.65         | 1.150        | 1.12              | 1.13             | 0.282        | 0.026        | 1.260        | 7.52            | 584                | < 0.019                   | 0.0173                   |
| SFM0011 | 3.50         | 4.50          | 2020-10-12           | 83706         | 6.71         | 1.280        | 1.31              | 1.30             | 0.202        | 0.033        | 1.340        | 7.43            | 647                | 0.025                     | 0.0217                   |
| SFM0032 | 3.00         | 4.00          | 2020-01-15           | 74896         | 6.41         | 2.580        | 2.67              | 2.68             | 0.198        | 0.006        | 0.241        | 6.93            | 80                 | 0.031                     | 0.0048                   |
| SFM0032 | 3.00         | 4.00          | 2020-05-05           | 77257         | 6.22         | 2.970        | 2.87              | 2.68             | 0.211        | 0.008        | 0.246        | 7.10            | 82                 | 0.030                     | 0.0052                   |
| SFM0032 | 3.00         | 4.00          | 2020-08-10           | 80521         | 7.13         | 3.170        | 3.20              | 3.10             | 0.223        | 0.008        | 0.250        | 6.97            | 80                 | 0.110                     | 0.0047                   |
| SFM0032 | 3.00         | 4.00          | 2020-10-12           | 83707         | 7.18         | 2.940        | 2.89              | 2.84             | 0.225        | 0.009        | 0.293        | 7.01            | 90                 | 0.088                     | 0.0052                   |
| SFM0037 | 2.00         | 3.00          | 2020-01-15           | 74897         | 5.86         | 1.400        | 1.36              | 1.34             | 0.111        | 0.004        | 0.160        | 6.99            | 54                 | 0.660                     | 0.0093                   |
| SFM0037 | 2.00         | 3.00          | 2020-05-04           | 77258         | 7.86         | 2.300        | 2.24              | 2.24             | 0.134        | 0.005        | 0.171        | 6.79            | 56                 | 0.610                     | 0.0070                   |
| SFM0037 | 2.00         | 3.00          | 2020-08-11           | 80522         | 6.32         | 0.809        | 0.80              | 0.76             | 0.150        | 0.008        | 0.272        | 7.06            | 83                 | 0.058                     | 0.0037                   |
| SFM0037 | 2.00         | 3.00          | 2020-10-13           | 83708         | 5.96         | 0.391        | 0.37              | 0.37             | 0.091        | 0.011        | 0.289        | 7.10            | 83                 | < 0.019                   | 0.0024                   |
| SFM0049 | 4.00         | 5.00          | 2020-01-13           | 74898         | 5.01         | 0.521        | 0.53              | 0.52             | 0.083        | 0.002        | 0.089        | 6.93            | 36                 | 0.087                     | 0.0022                   |
| SFM0049 | 4.00         | 5.00          | 2020-05-06           | 77259         | 5.11         | 0.605        | 0.59              | 0.55             | 0.067        | 0.002        | 0.091        | 6.99            | 39                 | 0.120                     | 0.0031                   |
| SFM0049 | 4.00         | 5.00          | 2020-08-10           | 80524         | 4.68         | 0.833        | 0.85              | 0.84             | 0.104        | 0.002        | 0.117        | 6.79            | 49                 | 0.280                     | 0.0088                   |
| SFM0049 | 4.00         | 5.00          | 2020-10-12           | 83709         | 4.55         | 0.623        | 0.71              | 0.61             | 0.101        | 0.002        | 0.110        | 6.79            | 47                 | 0.350                     | 0.0033                   |
| SFM0057 | 3.55         | 4.55          | 2020-01-14           | 74899         | 4.15         | 0.046        | 0.05              | 0.04             | 0.022        | 0.001        | 0.139        | 7.07            | 46                 | < 0.019                   | 0.0057                   |
| SFM0057 | 3.55         | 4.55          | 2020-05-05           | 77260         | 4.19         | 0.039        | 0.04              | 0.04             | 0.043        | 0.001        | 0.164        | 6.98            | 57                 | < 0.019                   | 0.0073                   |
| SFM0057 | 3.55         | 4.55          | 2020-08-10           | 80525         | 4.58         | 0.041        | 0.05              | 0.05             | 0.042        | 0.001        | 0.169        | 7.01            | 57                 | < 0.019                   | 0.0048                   |
| SFM0057 | 3.55         | 4.55          | 2020-10-14           | 83710         | 4.93         | 0.057        | 0.06              | 0.06             | 0.047        | 0.001        | 0.186        | 6.94            | 61                 | < 0.019                   | 0.0062                   |

Table A1-2b. Biochemical constituents.

| Id-code | Secup<br>(m) | Seclow<br>(m) | Date<br>(yyyy-mm-dd) | Sample<br>No. | NH <sub>4</sub> -N<br>(mg/L) | NO <sub>2</sub> -N<br>(mg/L) | NO <sub>3</sub> -N+NO <sub>2</sub> -N<br>(mg/L) | NO <sub>3</sub> -N<br>(mg/L) | N-tot<br>(mg/L) | P-tot<br>(mg/L) | PO <sub>4</sub> -P<br>(mg/L) | PO <sub>4</sub> -P hlysis<br>(mg/L) | SiO <sub>2</sub> -Si<br>(mg/L) | TOC<br>(mg/L) | DOC<br>(mg/L) | DIC<br>(mg/L) |
|---------|--------------|---------------|----------------------|---------------|------------------------------|------------------------------|---|------------------------------|-----------------|-----------------|------------------------------|-------------------------------------|--------------------------------|---------------|---------------|---------------|
| SFM0001 | 3.95         | 4.95          | 2020-01-15           | 74877         | 0.1100                       | 0.0009                       | 0.0004  | < 0.0003                     | 1.4100          | 0.0320          | 0.0229                       | 0.0249                              | 6.65                           | 45.0          | 45.0          | 53.1          |
| SFM0001 | 3.95         | 4.95          | 2020-05-04           | 77254         | 0.1200                       | 0.0004                       | 0.0005  | < 0.0003                     | 1.1700          | 0.0317          | 0.0249                       | 0.0283                              | 6.73                           | 38.0          | 38.0          | 63.2          |
| SFM0001 | 3.95         | 4.95          | 2020-08-11           | 80518         | 0.1660                       | 0.0004                       | 0.0005  | < 0.0003                     | 1.1900          | 0.0407          | 0.0163                       | 0.0377                              | A                              | 36.0          | 37.0          | 70.3          |
| SFM0001 | 3.95         | 4.95          | 2020-10-13           | 83704         | 0.1990                       | 0.0005                       | 0.0007  | < 0.0003                     | 1.1700          | 0.0452          | 0.0354                       | 0.0425                              | 7.56                           | 35.0          | 35.0          | 84.3          |
| SFM0002 | 4.21         | 5.21          | 2020-01-14           | 74878         | 0.0613                       | < 0.0002                     | 0.0022  | 0.0021                       | 0.4750          | 0.0077          | 0.0026                       | 0.0065                              | 5.84                           | 14.7          | 13.6          | 58.9          |
| SFM0002 | 4.21         | 5.21          | 2020-05-04           | 77255         | 0.0641                       | < 0.0002                     | < 0.0003  | < 0.0003                     | 0.4680          | 0.0094          | 0.0023                       | 0.0085                              | 5.58                           | 16.8          | 16.9          | 66.2          |
| SFM0002 | 4.21         | 5.21          | 2020-08-10           | 80519         | 0.0655                       | < 0.0002                     | 0.0003  | < 0.0003                     | 0.4920          | 0.0101          | 0.0008                       | 0.0097                              | A                              | 18.8          | 18.5          | 58.1          |
| SFM0002 | 4.21         | 5.21          | 2020-10-13           | 83705         | 0.0683                       | 0.0005                       | 0.0005  | < 0.0003                     | 0.4740          | 0.0105          | 0.0021                       | 0.0100                              | 5.97                           | 17.9          | 17.9          | 61.5          |
| SFM0011 | 3.50         | 4.50          | 2020-01-13           | 74879         | 0.9430                       | 0.0004                       | 0.0035  | 0.0031                       | 1.0700          | 0.0276          | 0.0014                       | 0.0103                              | 6.59                           | 5.0           | 5.0           | 50.4          |
| SFM0011 | 3.50         | 4.50          | 2020-05-05           | 77256         | 0.6890                       | 0.0005                       | 0.0009  | 0.0004                       | 0.9180          | 0.0588          | 0.0030                       | 0.0137                              | 6.35                           | 6.4           | 6.6           | 64.2          |
| SFM0011 | 3.50         | 4.50          | 2020-08-11           | 80520         | 0.8350                       | 0.0005                       | 0.0144  | 0.0139                       | 0.9700          | 0.0163          | 0.0019                       | 0.0134                              | A                              | 6.6           | 6.6           | 54.5          |
| SFM0011 | 3.50         | 4.50          | 2020-10-12           | 83706         | 0.8500                       | 0.0021                       | 0.0354  | 0.0333                       | 1.0800          | 0.0243          | 0.0069                       | 0.0123                              | 6.66                           | 5.7           | 5.7           | 46.0          |
| SFM0032 | 3.00         | 4.00          | 2020-01-15           | 74896         | 0.0847                       | 0.0004                       | 0.0016  | 0.0012                       | 0.6980          | 0.0111          | 0.0048                       | 0.0095                              | 6.42                           | 19.8          | 20.0          | 69.6          |
| SFM0032 | 3.00         | 4.00          | 2020-05-05           | 77257         | 0.0838                       | 0.0003                       | 0.0004  | < 0.0003                     | 0.6440          | 0.0114          | 0.0030                       | 0.0104                              | 6.15                           | 19.4          | 19.6          | 76.1          |
| SFM0032 | 3.00         | 4.00          | 2020-08-10           | 80521         | 0.0262                       | < 0.0002                     | 0.0018  | 0.0017                       | 0.7980          | 0.0112          | 0.0006                       | 0.0067                              | A                              | 25.0          | 25.0          | 61.9          |
| SFM0032 | 3.00         | 4.00          | 2020-10-12           | 83707         | 0.0403                       | 0.0005                       | 0.0005  | < 0.0003                     | 0.6420          | 0.0102          | 0.0015                       | 0.0085                              | 7.28                           | 21.0          | 21.0          | 59.2          |
| SFM0037 | 2.00         | 3.00          | 2020-01-15           | 74897         | 0.0119                       | 0.0006                       | 0.0019  | 0.0013                       | 1.2800          | 0.0246          | 0.0045                       | 0.0053                              | 5.93                           | 42.0          | 42.0          | 61.8          |
| SFM0037 | 2.00         | 3.00          | 2020-05-04           | 77258         | 0.1490                       | 0.0004                       | 0.0004  | < 0.0003                     | 1.7600          | 0.0570          | 0.0049                       | 0.0054                              | 7.87                           | 42.0          | 41.0          | 68.8          |
| SFM0037 | 2.00         | 3.00          | 2020-08-11           | 80522         | 0.1080                       | 0.0003                       | 0.0013  | 0.0010                       | 1.0800          | 0.0271          | 0.0075                       | 0.0135                              | A                              | 30.0          | 30.0          | 65.3          |
| SFM0037 | 2.00         | 3.00          | 2020-10-13           | 83708         | 0.0431                       | 0.0080                       | 0.8310  | 0.8230                       | 1.8300          | 0.0345          | 0.0041                       | 0.0054                              | 5.91                           | 32.0          | 31.0          | 47.6          |
| SFM0049 | 4.00         | 5.00          | 2020-01-13           | 74898         | 0.0446                       | 0.0005                       | 0.0003  | < 0.0003                     | 0.5450          | 0.0086          | 0.0047                       | 0.0057                              | 5.14                           | 18.9          | 18.2          | 38.6          |
| SFM0049 | 4.00         | 5.00          | 2020-05-06           | 77259         | 0.0456                       | < 0.0002                     | < 0.0003  | < 0.0003                     | 0.5740          | 0.0092          | 0.0051                       | 0.0065                              | 5.16                           | 20.0          | 21.0          | 43.7          |
| SFM0049 | 4.00         | 5.00          | 2020-08-10           | 80524         | 0.1370                       | < 0.0002                     | < 0.0003  | < 0.0003                     | 0.8980          | 0.0149          | 0.0065                       | 0.0116                              | A                              | 28.0          | 28.0          | 50.7          |
| SFM0049 | 4.00         | 5.00          | 2020-10-12           | 83709         | 0.1290                       | 0.0002                       | 0.0005  | < 0.0003                     | 0.7510          | 0.0149          | 0.0096                       | 0.0123                              | 4.76                           | 23.0          | 24.0          | 50.1          |
| SFM0057 | 3.55         | 4.55          | 2020-01-14           | 74899         | 0.0051                       | 0.0003                       | 0.0006  | 0.0003                       | 0.4760          | 0.0075          | 0.0036                       | 0.0038                              | 4.23                           | 15.7          | 15.0          | 51.3          |
| SFM0057 | 3.55         | 4.55          | 2020-05-05           | 77260         | 0.0058                       | < 0.0002                     | 0.0016  | 0.0015                       | 0.3600          | 0.0064          | 0.0033                       | 0.0035                              | 4.15                           | 12.3          | 11.9          | 62.2          |
| SFM0057 | 3.55         | 4.55          | 2020-08-10           | 80525         | 0.0070                       | < 0.0002                     | 0.0003  | < 0.0003                     | 0.4260          | 0.0086          | 0.0020                       | 0.0043                              | A                              | 14.1          | 14.0          | 57.0          |
| SFM0057 | 3.55         | 4.55          | 2020-10-14           | 83710         | 0.0231                       | 0.0004                       | 0.0220  | 0.0216                       | 0.4600          | 0.0089          | 0.0054                       | 0.0054                              | 5.18                           | 13.7          | 13.4          | 67.4          |

A: The sample was not analyzed by the contracted laboratory.

**Table A1-2c. Isotopes I.**

| <b>Id-code</b> | <b>Secup<br/>(m)</b> | <b>Seclow<br/>(m)</b> | <b>Date<br/>(yyyy-mm-dd)</b> | <b>Sample<br/>No.</b> | <b><math>\delta D</math><br/>(‰ SMOW)</b> | <b><math>^3H</math><br/>(TU)</b> | <b><math>\delta^{18}O</math><br/>(‰ SMOW)</b> |
|----------------|----------------------|-----------------------|------------------------------|-----------------------|---|----------------------------------|---|
| SFM0001        | 3.95                 | 4.95                  | 2020-01-15                   | 74877                 | -82.5                                     | 8.10                             | -11.56  |
| SFM0001        | 3.95                 | 4.95                  | 2020-05-04                   | 77254                 | -84.0                                     | 7.60                             | -11.77  |
| SFM0001        | 3.95                 | 4.95                  | 2020-08-11                   | 80518                 | -81.5                                     | 5.40                             | -11.40  |
| SFM0001        | 3.95                 | 4.95                  | 2020-10-13                   | 83704                 | -79.3                                     | 5.80                             | -11.17  |
| SFM0002        | 4.21                 | 5.21                  | 2020-01-14                   | 74878                 | -85.3                                     | 6.40                             | -11.96  |
| SFM0002        | 4.21                 | 5.21                  | 2020-05-04                   | 77255                 | -85.6                                     | 7.00                             | -11.99  |
| SFM0002        | 4.21                 | 5.21                  | 2020-08-10                   | 80519                 | -85.1                                     | 6.90                             | -11.85  |
| SFM0002        | 4.21                 | 5.21                  | 2020-10-13                   | 83705                 | -84.4                                     | 5.80                             | -11.86  |
| SFM0011        | 3.50                 | 4.50                  | 2020-01-13                   | 74879                 | -70.2                                     | 1.80                             | -9.39   |
| SFM0011        | 3.50                 | 4.50                  | 2020-05-05                   | 77256                 | -71.9                                     | 1.60                             | -9.83   |
| SFM0011        | 3.50                 | 4.50                  | 2020-08-11                   | 80520                 | -71.6                                     | -0.80                            | -9.73   |
| SFM0011        | 3.50                 | 4.50                  | 2020-10-12                   | 83706                 | -65.4                                     | 1.20                             | -8.68   |
| SFM0032        | 3.00                 | 4.00                  | 2020-01-15                   | 74896                 | -82.8                                     | 6.40                             | -11.61  |
| SFM0032        | 3.00                 | 4.00                  | 2020-05-05                   | 77257                 | -83.2                                     | 7.30                             | -11.50  |
| SFM0032        | 3.00                 | 4.00                  | 2020-08-10                   | 80521                 | -78.5                                     | 6.70                             | -11.07  |
| SFM0032        | 3.00                 | 4.00                  | 2020-10-12                   | 83707                 | -79.0                                     | 7.10                             | -11.17  |
| SFM0037        | 2.00                 | 3.00                  | 2020-01-15                   | 74897                 | -82.1                                     | 8.80                             | -11.62  |
| SFM0037        | 2.00                 | 3.00                  | 2020-05-04                   | 77258                 | -76.2                                     | 7.00                             | -10.50  |
| SFM0037        | 2.00                 | 3.00                  | 2020-08-11                   | 80522                 | -72.2                                     | 5.80                             | -10.04  |
| SFM0037        | 2.00                 | 3.00                  | 2020-10-13                   | 83708                 | -67.0                                     | 8.60                             | -9.59   |
| SFM0049        | 4.00                 | 5.00                  | 2020-01-13                   | 74898                 | -81.1                                     | 8.80                             | -11.29  |
| SFM0049        | 4.00                 | 5.00                  | 2020-05-06                   | 77259                 | -76.7                                     | 8.70                             | -10.36  |
| SFM0049        | 4.00                 | 5.00                  | 2020-08-10                   | 80524                 | -69.9                                     | 6.60                             | -9.18   |
| SFM0049        | 4.00                 | 5.00                  | 2020-10-12                   | 83709                 | -70.2                                     | 8.70                             | -9.09   |
| SFM0057        | 3.55                 | 4.55                  | 2020-01-14                   | 74899                 | -89.3                                     | 8.50                             | -12.60  |
| SFM0057        | 3.55                 | 4.55                  | 2020-05-05                   | 77260                 | -85.7                                     | 8.60                             | -12.04  |
| SFM0057        | 3.55                 | 4.55                  | 2020-08-10                   | 80525                 | -85.1                                     | 5.70                             | -11.92  |
| SFM0057        | 3.55                 | 4.55                  | 2020-10-14                   | 83710                 | -84.7                                     | 6.90                             | -11.85  |

Table A1-2d. Trace elements I.

| Id-code | Secup<br>(m) | Seclow<br>(m) | Date<br>(yyyy-mm-dd) | Sample<br>No. | Ag<br>(µg/L) | Al<br>(µg/L) | As<br>(µg/L) | B<br>(µg/L) | Ba<br>(µg/L) | Cd<br>(µg/L) | Cr<br>(µg/L) | Cu<br>(µg/L) | Co<br>(µg/L) | Hg<br>(µg/L) |
|---------|--------------|---------------|----------------------|---------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| SFM0001 | 3.95         | 4.95          | 2020-01-15           | 74877         | < 0.05       | 85.2         | 1.920        | 95.2        | 19.9         | < 0.002      | 0.397        |              | 0.100        | 0.003        |
| SFM0001 | 3.95         | 4.95          | 2020-05-04           | 77254         | < 0.05       | 44.9         | 1.480        | 100.0       | 24.9         | < 0.002      | 0.462        | 0.431        | 0.087        | 0.002        |
| SFM0001 | 3.95         | 4.95          | 2020-08-11           | 80518         | < 0.05       | 35.2         | 1.380        | 182.0       | 34.5         | < 0.002      | 0.354        | 0.168        | 0.106        | < 0.002      |
| SFM0001 | 3.95         | 4.95          | 2020-10-13           | 83704         | < 0.05       | 30.7         | 1.440        | 243.0       | 43.2         | 0.0025       | 0.431        | 0.224        | 0.110        | < 0.002      |
| SFM0002 | 4.21         | 5.21          | 2020-01-14           | 74878         | < 0.05       | 22.8         | 0.306        | 17.8        | 100.0        | < 0.002      | 0.319        |              | 0.047        | < 0.002      |
| SFM0002 | 4.21         | 5.21          | 2020-05-04           | 77255         | < 0.05       | 21.6         | 0.435        | 17.7        | 98.8         | < 0.002      | 0.337        | 0.143        | 0.053        | < 0.002      |
| SFM0002 | 4.21         | 5.21          | 2020-08-10           | 80519         | < 0.05       | 23.7         | 0.491        | 17.0        | 100.0        | < 0.002      | 0.344        | < 0.1        | 0.073        | < 0.002      |
| SFM0002 | 4.21         | 5.21          | 2020-10-13           | 83705         | < 0.05       | 21.9         | 0.460        | 18.4        | 102.0        | 0.0029       | 0.466        | < 0.1        | 0.074        | < 0.002      |
| SFM0011 | 3.50         | 4.50          | 2020-01-13           | 74879         | < 0.3        | 0.7          | 3.210        | 415.0       | 49.8         | < 0.02       | < 0.04       |              | 0.084        | < 0.002      |
| SFM0011 | 3.50         | 4.50          | 2020-05-05           | 77256         | < 0.3        | 1.3          | 4.140        | 409.0       | 48.1         | < 0.02       | 0.056        | 0.269        | 0.066        | < 0.002      |
| SFM0011 | 3.50         | 4.50          | 2020-08-11           | 80520         | < 0.3        | 0.9          | 3.540        | 475.0       | 48.3         | < 0.02       | 0.060        | < 0.2        | 0.045        | < 0.002      |
| SFM0011 | 3.50         | 4.50          | 2020-10-12           | 83706         | < 0.3        | 1.4          | 3.470        | 425.0       | 55.7         | < 0.02       | 0.109        | < 0.2        | 0.061        | < 0.002      |
| SFM0032 | 3.00         | 4.00          | 2020-01-15           | 74896         | < 0.05       | 18.0         | 1.310        | 35.7        | 62.3         | < 0.002      | 0.214        |              | 0.095        | < 0.002      |
| SFM0032 | 3.00         | 4.00          | 2020-05-05           | 77257         | < 0.05       | 14.7         | 1.010        | 36.0        | 64.3         | < 0.002      | 0.232        | 0.248        | 0.084        | < 0.002      |
| SFM0032 | 3.00         | 4.00          | 2020-08-10           | 80521         | < 0.05       | 20.8         | 0.963        | 65.5        | 65.8         | 0.0022       | 0.472        | 0.195        | 0.080        | < 0.002      |
| SFM0032 | 3.00         | 4.00          | 2020-10-12           | 83707         | < 0.05       | 15.7         | 1.350        | 63.2        | 77.1         | 0.0027       | 0.379        | < 0.1        | 0.064        | < 0.002      |
| SFM0037 | 2.00         | 3.00          | 2020-01-15           | 74897         | < 0.05       | 58.8         | 0.665        | 24.9        | 45.0         | < 0.002      | 0.321        |              | 0.174        | 0.004        |
| SFM0037 | 2.00         | 3.00          | 2020-05-04           | 77258         | < 0.05       | 39.7         | 0.734        | 38.4        | 43.6         | < 0.002      | 0.396        | 0.402        | 0.173        | < 0.002      |
| SFM0037 | 2.00         | 3.00          | 2020-08-11           | 80522         | < 0.05       | 35.5         | 1.580        | 113.0       | 89.3         | 0.0262       | 0.532        | 1.110        | 0.452        | < 0.002      |
| SFM0037 | 2.00         | 3.00          | 2020-10-13           | 83708         | < 0.05       | 24.3         | 0.688        | 110.0       | 95.7         | 0.0423       | 0.485        | 9.830        | 0.277        | < 0.002      |
| SFM0049 | 4.00         | 5.00          | 2020-01-13           | 74898         | < 0.05       | 21.8         | 0.581        | < 10        | 22.5         | < 0.002      | 0.182        |              | 0.066        | < 0.002      |
| SFM0049 | 4.00         | 5.00          | 2020-05-06           | 77259         | < 0.05       | 19.7         | 0.432        | < 10        | 24.0         | < 0.002      | 0.171        | 0.174        | 0.103        | < 0.002      |
| SFM0049 | 4.00         | 5.00          | 2020-08-10           | 80524         | < 0.05       | 32.1         | 0.614        | 15.3        | 33.0         | < 0.002      | 0.282        | 0.115        | 0.096        | < 0.002      |
| SFM0049 | 4.00         | 5.00          | 2020-10-12           | 83709         | < 0.05       | 24.5         | 0.348        | 16.8        | 33.5         | < 0.002      | 0.294        | < 0.1        | 0.054        | < 0.002      |
| SFM0057 | 3.55         | 4.55          | 2020-01-14           | 74899         | < 0.05       | 76.1         | 0.588        | < 10        | 34.1         | 0.0217       | 0.300        |              | 0.161        | 0.005        |
| SFM0057 | 3.55         | 4.55          | 2020-05-05           | 77260         | < 0.05       | 39.8         | 0.424        | < 10        | 45.0         | 0.0220       | 0.228        | 4.230        | 0.138        | 0.003        |
| SFM0057 | 3.55         | 4.55          | 2020-08-10           | 80525         | < 0.05       | 38.0         | 0.477        | 10.1        | 51.1         | 0.0196       | 0.221        | 4.450        | 0.190        | < 0.002      |
| SFM0057 | 3.55         | 4.55          | 2020-10-14           | 83710         | < 0.05       | 44.1         | 0.521        | 11.9        | 55.1         | 0.0255       | 0.361        | 3.570        | 0.178        | 0.003        |



Table A1-2d. Continued.

| Id-code | Secup<br>(m) | Seclow<br>(m) | Date<br>(yyyy-mm-dd) | Sample<br>No. | Nb<br>(µg/L) | Ni<br>(µg/L) | Mo<br>(µg/L) | Pb<br>(µg/L) | Pd<br>(µg/L) | Se<br>(µg/L) | Sn<br>(µg/L) | V<br>(µg/L) | Zn<br>(µg/L) |
|---------|--------------|---------------|----------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|
| SFM0001 | 3.95         | 4.95          | 2020-01-15           | 74877         | 0.176        | 1.600        |              |              | 0.0127       | 0.556        | < 0.05       | 2.990       |              |
| SFM0001 | 3.95         | 4.95          | 2020-05-04           | 77254         | 0.160        | 1.040        | 0.965        | 0.1230       | 1.7100       | < 0.5        | < 0.05       | 2.740       | 0.695        |
| SFM0001 | 3.95         | 4.95          | 2020-08-11           | 80518         | 0.143        | 0.712        | 1.640        | 0.0766       | 0.1010       | < 0.5        | < 0.05       | 3.350       | 0.292        |
| SFM0001 | 3.95         | 4.95          | 2020-10-13           | 83704         | 0.142        | 0.625        | 1.560        | 0.0609       | 0.0361       | < 0.5        | < 0.05       | 3.100       | 0.461        |
| SFM0002 | 4.21         | 5.21          | 2020-01-14           | 74878         | 0.270        | 0.339        |              |              | 0.0256       | < 0.5        | < 0.05       | 2.450       |              |
| SFM0002 | 4.21         | 5.21          | 2020-05-04           | 77255         | 0.266        | 0.258        | 0.937        | 0.0304       | 2.3200       | < 0.5        | 0.0771       | 2.550       | 0.623        |
| SFM0002 | 4.21         | 5.21          | 2020-08-10           | 80519         | 0.260        | 0.448        | 1.130        | 0.0249       | 0.0855       | < 0.5        | < 0.05       | 2.710       | 0.373        |
| SFM0002 | 4.21         | 5.21          | 2020-10-13           | 83705         | 0.259        | 0.439        | 1.130        | 0.0395       | 0.0276       | < 0.5        | < 0.05       | 2.670       | 0.635        |
| SFM0011 | 3.50         | 4.50          | 2020-01-13           | 74879         | 0.018        | 0.239        |              |              | 0.0112       | 4.280        | < 0.3        | 0.165       |              |
| SFM0011 | 3.50         | 4.50          | 2020-05-05           | 77256         | 0.019        | 0.227        | 7.880        | < 0.1        | 0.2960       | < 3          | < 0.3        | 0.347       | 1.430        |
| SFM0011 | 3.50         | 4.50          | 2020-08-11           | 80520         | 0.015        | < 0.2        | 7.870        | < 0.1        | 0.0123       | < 3          | < 0.3        | 0.230       | < 0.8        |
| SFM0011 | 3.50         | 4.50          | 2020-10-12           | 83706         | 0.084        | 0.256        | 7.200        | < 0.1        | 0.0089       | < 3          | < 0.3        | 0.168       | < 0.8        |
| SFM0032 | 3.00         | 4.00          | 2020-01-15           | 74896         | 0.107        | 0.672        |              |              | 0.0143       | < 0.5        | < 0.05       | 1.600       |              |
| SFM0032 | 3.00         | 4.00          | 2020-05-05           | 77257         | 0.090        | 0.661        | 1.770        | 0.0289       | 1.2800       | < 0.5        | < 0.05       | 1.380       | 1.060        |
| SFM0032 | 3.00         | 4.00          | 2020-08-10           | 80521         | 0.101        | 0.709        | 2.960        | 0.0304       | 0.0396       | < 0.5        | < 0.05       | 2.100       | 0.244        |
| SFM0032 | 3.00         | 4.00          | 2020-10-12           | 83707         | 0.093        | 0.465        | 2.500        | 0.0243       | 0.0151       | < 0.5        | < 0.05       | 1.770       | 0.275        |
| SFM0037 | 2.00         | 3.00          | 2020-01-15           | 74897         | 0.086        | 1.460        |              |              | 0.0096       | 0.682        | < 0.05       | 1.360       |              |
| SFM0037 | 2.00         | 3.00          | 2020-05-04           | 77258         | 0.070        | 1.740        | 0.477        | 0.0622       | 0.4480       | < 0.5        | < 0.05       | 1.200       | 0.678        |
| SFM0037 | 2.00         | 3.00          | 2020-08-11           | 80522         | 0.116        | 2.330        | 4.070        | 0.6650       | 0.0354       | < 0.5        | < 0.05       | 3.750       | 1.930        |
| SFM0037 | 2.00         | 3.00          | 2020-10-13           | 83708         | 0.074        | 2.400        | 4.550        | 0.3160       | 0.0124       | < 0.5        | < 0.05       | 1.650       | 1.280        |
| SFM0049 | 4.00         | 5.00          | 2020-01-13           | 74898         | 0.054        | 0.246        |              |              | 0.0013       | 0.841        | < 0.05       | 0.547       |              |
| SFM0049 | 4.00         | 5.00          | 2020-05-06           | 77259         | 0.049        | 0.281        | 0.071        | 0.1060       | 0.0838       | < 0.5        | < 0.05       | 0.561       | 0.425        |
| SFM0049 | 4.00         | 5.00          | 2020-08-10           | 80524         | 0.100        | 0.272        | 0.079        | 0.1000       | 0.0037       | < 0.5        | < 0.05       | 1.140       | 0.225        |
| SFM0049 | 4.00         | 5.00          | 2020-10-12           | 83709         | 0.086        | 0.242        | 0.095        | 0.0854       | 0.0027       | < 0.5        | < 0.05       | 0.939       | 0.210        |
| SFM0057 | 3.55         | 4.55          | 2020-01-14           | 74899         | 0.044        | 0.868        |              |              | 0.0069       | < 0.5        | < 0.05       | 0.588       |              |
| SFM0057 | 3.55         | 4.55          | 2020-05-05           | 77260         | 0.042        | 0.899        | 0.409        | 0.1100       | 0.4560       | < 0.5        | < 0.05       | 0.598       | 0.982        |
| SFM0057 | 3.55         | 4.55          | 2020-08-10           | 80525         | 0.041        | 0.967        | 0.618        | 0.0986       | 0.0128       | < 0.5        | < 0.05       | 0.582       | 0.405        |
| SFM0057 | 3.55         | 4.55          | 2020-10-14           | 83710         | 0.051        | 1.020        | 0.509        | 0.1500       | 0.0042       | < 0.5        | < 0.05       | 1.010       | 0.458        |

Table A1-2e. Trace elements II.

| Id-code | Secup<br>(m) | Seclow<br>(m) | Date<br>(yyyy-mm-dd) | Sample<br>No. | U<br>(µg/L) | Th<br>(µg/L) | Sc<br>(µg/L) | Rb<br>(µg/L) | Y<br>(µg/L) | Zr<br>(µg/L) | Sb<br>(µg/L) | Cs<br>(µg/L) | La<br>(µg/L) | Hf<br>(µg/L) | Tl<br>(µg/L) | Ce<br>(µg/L) |
|---------|--------------|---------------|----------------------|---------------|-------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| SFM0001 | 3.95         | 4.95          | 2020-01-15           | 74877         | 5.62        |              |              | 1.91         |             | 6.26         | 0.0881       | < 0.03       |              |              |              |              |
| SFM0001 | 3.95         | 4.95          | 2020-05-04           | 77254         | 5.03        |              |              | 1.86         |             | 6.69         | 0.0529       | < 0.03       |              |              |              |              |
| SFM0001 | 3.95         | 4.95          | 2020-08-11           | 80518         | 5.58        | 0.371        | 0.2000       | 2.48         | 3.580       | 10.20        | 0.0533       | < 0.03       | 2.020        | 0.0739       | < 0.01       | 4.860        |
| SFM0001 | 3.95         | 4.95          | 2020-10-13           | 83704         | 5.56        | 0.241        |              | 3.15         |             | < 10         | 0.0524       | < 0.03       |              |              |              |              |
| SFM0002 | 4.21         | 5.21          | 2020-01-14           | 74878         | 2.67        |              |              | 1.77         |             | 8.71         | 0.0381       | < 0.03       |              |              |              |              |
| SFM0002 | 4.21         | 5.21          | 2020-05-04           | 77255         | 2.40        |              |              | 1.51         |             | 8.80         | 0.0260       | < 0.03       |              |              |              |              |
| SFM0002 | 4.21         | 5.21          | 2020-08-10           | 80519         | 2.42        | 0.208        | 0.1540       | 1.58         | 2.440       | 8.38         | 0.0386       | < 0.03       | 0.556        | 0.0852       | < 0.01       | 1.380        |
| SFM0002 | 4.21         | 5.21          | 2020-10-13           | 83705         | 2.64        | 0.238        |              | 1.71         |             | < 10         | 0.0372       | < 0.03       |              |              |              |              |
| SFM0011 | 3.50         | 4.50          | 2020-01-13           | 74879         | 8.29        |              |              | 6.95         |             | 0.21         | < 0.1        | < 0.1        |              |              |              |              |
| SFM0011 | 3.50         | 4.50          | 2020-05-05           | 77256         | 8.69        |              |              | 4.90         |             | 0.46         | < 0.1        | < 0.1        |              |              |              |              |
| SFM0011 | 3.50         | 4.50          | 2020-08-11           | 80520         | 8.81        | < 0.2        | < 0.4        | 5.42         | 0.477       | 0.27         | < 0.1        | < 0.1        | 0.190        | < 0.02       | < 0.05       | 0.241        |
| SFM0011 | 3.50         | 4.50          | 2020-10-12           | 83706         | 7.77        | < 0.2        |              | 5.86         |             | < 10         | < 0.1        | < 0.1        |              |              |              |              |
| SFM0032 | 3.00         | 4.00          | 2020-01-15           | 74896         | 7.24        |              |              | 2.07         |             | 5.17         | 0.0473       | < 0.03       |              |              |              |              |
| SFM0032 | 3.00         | 4.00          | 2020-05-05           | 77257         | 7.44        |              |              | 1.83         |             | 4.38         | 0.0339       | < 0.03       |              |              |              |              |
| SFM0032 | 3.00         | 4.00          | 2020-08-10           | 80521         | 4.35        | 0.150        | 0.1020       | 1.89         | 2.070       | 4.32         | 0.0743       | < 0.03       | 0.788        | 0.0360       | < 0.01       | 1.540        |
| SFM0032 | 3.00         | 4.00          | 2020-10-12           | 83707         | 5.13        | 0.126        |              | 2.30         |             | < 10         | 0.0607       | < 0.03       |              |              |              |              |
| SFM0037 | 2.00         | 3.00          | 2020-01-15           | 74897         | 10.40       |              |              | 2.58         |             | 3.20         | 0.1490       | < 0.03       |              |              |              |              |
| SFM0037 | 2.00         | 3.00          | 2020-05-04           | 77258         | 5.99        |              |              | 3.06         |             | 1.67         | 0.0821       | < 0.03       |              |              |              |              |
| SFM0037 | 2.00         | 3.00          | 2020-08-11           | 80522         | 23.10       | 0.293        | 0.1640       | 5.17         | 3.460       | 3.85         | 0.1260       | < 0.03       | 2.140        | 0.0403       | 0.0150       | 4.130        |
| SFM0037 | 2.00         | 3.00          | 2020-10-13           | 83708         | 20.10       | 0.199        |              | 5.06         |             | < 10         | 0.3390       | < 0.03       |              |              |              |              |
| SFM0049 | 4.00         | 5.00          | 2020-01-13           | 74898         | 0.36        |              |              | 2.90         |             | 0.45         | 0.0447       | < 0.03       |              |              |              |              |
| SFM0049 | 4.00         | 5.00          | 2020-05-06           | 77259         | 0.29        |              |              | 2.94         |             | 0.28         | 0.0352       | < 0.03       |              |              |              |              |
| SFM0049 | 4.00         | 5.00          | 2020-08-10           | 80524         | 0.28        | 0.153        | 0.0951       | 4.47         | 0.948       | 0.48         | 0.0372       | < 0.03       | 1.200        | 0.0072       | < 0.01       | 2.420        |
| SFM0049 | 4.00         | 5.00          | 2020-10-12           | 83709         | 0.29        | 0.133        |              | 3.92         |             | < 10         | 0.0341       | < 0.03       |              |              |              |              |
| SFM0057 | 3.55         | 4.55          | 2020-01-14           | 74899         | 4.79        |              |              | 1.54         |             | 1.61         | 0.1360       | < 0.03       |              |              |              |              |
| SFM0057 | 3.55         | 4.55          | 2020-05-05           | 77260         | 6.11        |              |              | 1.92         |             | 1.55         | 0.0896       | < 0.03       |              |              |              |              |
| SFM0057 | 3.55         | 4.55          | 2020-08-10           | 80525         | 7.21        | 0.119        | 0.1280       | 2.24         | 1.710       | 1.43         | 0.1690       | < 0.03       | 1.240        | 0.0153       | 0.0222       | 1.810        |
| SFM0057 | 3.55         | 4.55          | 2020-10-14           | 83710         | 7.52        | 0.158        |              | 2.82         |             | < 10         | 0.1240       | < 0.03       |              |              |              |              |

Table A1-2e. Continued.

| Id-code | Secup<br>(m) | Seclow<br>(m) | Date<br>(yyyy-mm-dd) | Sample<br>No. | Pr<br>(µg/L) | Nd<br>(µg/L) | Sm<br>(µg/L) | Eu<br>(µg/L) | Gd<br>(µg/L) | Tb<br>(µg/L) | Dy<br>(µg/L) | Ho<br>(µg/L) | Er<br>(µg/L) | Tm<br>(µg/L) | Yb<br>(µg/L) | Lu<br>(µg/L) |
|---------|--------------|---------------|----------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| SFM0001 | 3.95         | 4.95          | 2020-01-15           | 74877         |              | 4.790        |              |              |              |              |              |              |              |              |              |              |
| SFM0001 | 3.95         | 4.95          | 2020-05-04           | 77254         |              | 1.370        |              |              |              |              |              |              |              |              |              |              |
| SFM0001 | 3.95         | 4.95          | 2020-08-11           | 80518         | 0.4950       | 2.280        | 0.4870       | 0.0514       | 0.4790       | 0.0747       | 0.5020       | 0.1130       | 0.3470       | 0.0469       | 0.3280       | 0.0514       |
| SFM0001 | 3.95         | 4.95          | 2020-10-13           | 83704         |              | 2.060        |              |              |              |              |              |              |              |              |              |              |
| SFM0002 | 4.21         | 5.21          | 2020-01-14           | 74878         |              | 0.842        |              |              |              |              |              |              |              |              |              |              |
| SFM0002 | 4.21         | 5.21          | 2020-05-04           | 77255         |              | 0.376        |              |              |              |              |              |              |              |              |              |              |
| SFM0002 | 4.21         | 5.21          | 2020-08-10           | 80519         | 0.1540       | 0.779        | 0.1940       | 0.0228       | 0.2240       | 0.0369       | 0.2800       | 0.0764       | 0.2610       | 0.0397       | 0.3010       | 0.0526       |
| SFM0002 | 4.21         | 5.21          | 2020-10-13           | 83705         |              | 0.865        |              |              |              |              |              |              |              |              |              |              |
| SFM0011 | 3.50         | 4.50          | 2020-01-13           | 74879         |              | 0.214        |              |              |              |              |              |              |              |              |              |              |
| SFM0011 | 3.50         | 4.50          | 2020-05-05           | 77256         |              | 0.084        |              |              |              |              |              |              |              |              |              |              |
| SFM0011 | 3.50         | 4.50          | 2020-08-11           | 80520         | 0.0388       | 0.189        | 0.0345       | < 0.02       | 0.0384       | < 0.02       | 0.0364       | 0.0226       | 0.0335       | < 0.02       | 0.0234       | < 0.02       |
| SFM0011 | 3.50         | 4.50          | 2020-10-12           | 83706         |              | 0.174        |              |              |              |              |              |              |              |              |              |              |
| SFM0032 | 3.00         | 4.00          | 2020-01-15           | 74896         |              | 0.956        |              |              |              |              |              |              |              |              |              |              |
| SFM0032 | 3.00         | 4.00          | 2020-05-05           | 77257         |              | 0.347        |              |              |              |              |              |              |              |              |              |              |
| SFM0032 | 3.00         | 4.00          | 2020-08-10           | 80521         | 0.1910       | 0.954        | 0.2010       | 0.0226       | 0.2250       | 0.0360       | 0.2490       | 0.0613       | 0.1970       | 0.0288       | 0.2000       | 0.0338       |
| SFM0032 | 3.00         | 4.00          | 2020-10-12           | 83707         |              | 0.866        |              |              |              |              |              |              |              |              |              |              |
| SFM0037 | 2.00         | 3.00          | 2020-01-15           | 74897         |              | 2.510        |              |              |              |              |              |              |              |              |              |              |
| SFM0037 | 2.00         | 3.00          | 2020-05-04           | 77258         |              | 1.090        |              |              |              |              |              |              |              |              |              |              |
| SFM0037 | 2.00         | 3.00          | 2020-08-11           | 80522         | 0.4920       | 2.170        | 0.4490       | 0.0482       | 0.4340       | 0.0682       | 0.4690       | 0.1050       | 0.3240       | 0.0475       | 0.3200       | 0.0494       |
| SFM0037 | 2.00         | 3.00          | 2020-10-13           | 83708         |              | 1.760        |              |              |              |              |              |              |              |              |              |              |
| SFM0049 | 4.00         | 5.00          | 2020-01-13           | 74898         |              | 0.879        |              |              |              |              |              |              |              |              |              |              |
| SFM0049 | 4.00         | 5.00          | 2020-05-06           | 77259         |              | 0.408        |              |              |              |              |              |              |              |              |              |              |
| SFM0049 | 4.00         | 5.00          | 2020-08-10           | 80524         | 0.2720       | 1.150        | 0.2280       | 0.0234       | 0.1840       | 0.0263       | 0.1650       | 0.0333       | 0.0937       | 0.0125       | 0.0899       | 0.0135       |
| SFM0049 | 4.00         | 5.00          | 2020-10-12           | 83709         |              | 1.030        |              |              |              |              |              |              |              |              |              |              |
| SFM0057 | 3.55         | 4.55          | 2020-01-14           | 74899         |              | 1.860        |              |              |              |              |              |              |              |              |              |              |
| SFM0057 | 3.55         | 4.55          | 2020-05-05           | 77260         |              | 0.510        |              |              |              |              |              |              |              |              |              |              |
| SFM0057 | 3.55         | 4.55          | 2020-08-10           | 80525         | 0.2770       | 1.250        | 0.2550       | 0.0341       | 0.2370       | 0.0351       | 0.2380       | 0.0521       | 0.1560       | 0.0221       | 0.1460       | 0.0223       |
| SFM0057 | 3.55         | 4.55          | 2020-10-14           | 83710         |              | 1.510        |              |              |              |              |              |              |              |              |              |              |

**Table A1-2f. Private well analysis.**

| <b>Id-code</b> | <b>Date</b><br>(yyyy-mm-dd) | <b>Sample</b><br><b>No.</b> | <b>Choli. 35</b><br>(cfu*/100 ml) <sup>1</sup> | <b>No. Microbes</b><br>(cfu*/100 ml) <sup>1</sup> | <b>pH</b><br>(pH unit) | <b>Temp (lab)</b><br>°C | <b>EC (lab)</b><br>(mS/m) | <b>HCO<sub>3</sub></b><br>(mg/L) | <b>As</b><br>(µg/L) | <b>Ca</b><br>(mg/L) | <b>Cl</b><br>(mg/L) | <b>COD-Mn</b><br>(mg/L) | <b>Cu</b><br>(mg/L) | <b>F</b><br>(mg/L) | <b>Fe</b><br>(mg/L) | <b>K</b><br>(mg/L) | <b>Mg</b><br>(mg/L) |
|----------------|-----------------------------|-----------------------------|--|---|------------------------|-------------------------|---------------------------|----------------------------------|---------------------|---------------------|---------------------|-------------------------|---------------------|--------------------|---------------------|--------------------|---------------------|
| PFM006382      | 2020-12-02                  | 85567                       | 16   | 140   | 7.2                    | 23.10                   | 270.0                     | 370.0                            | 1.0                 | 190.0               | 640.0               | 16.0                    | 0.03                | 0.47               | 4.70                | 10.0               | 25.0                |

<sup>1</sup> Colony forming units.

**Table A1-2f. Continued.**

| <b>Id-code</b> | <b>Date</b><br>(yyyy-mm-dd) | <b>Sample</b><br><b>No.</b> | <b>Mn</b><br>(mg/L) | <b>Na</b><br>(mg/L) | <b>NH<sub>4</sub>N</b><br>(mg/L) | <b>NH<sub>4</sub></b><br>(mg/L) | <b>NO<sub>3</sub>N</b><br>(mg/L) | <b>NO<sub>3</sub></b><br>(mg/L) | <b>NO<sub>2</sub>N</b><br>(mg/L) | <b>NO<sub>2</sub></b><br>(mg/L) | <b>NO<sub>2</sub>NO<sub>3</sub></b><br>(mg/L) | <b>PO<sub>4</sub>P</b><br>(mg/L) | <b>PO<sub>4</sub></b><br>(mg/L) | <b>Pb</b><br>(µg/L) | <b>Rn</b><br>(Bq/L) | <b>SO<sub>4</sub></b><br>(mg/l) | <b>U</b><br>(µg/L) |
|----------------|-----------------------------|-----------------------------|---------------------|---------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|---|----------------------------------|---------------------------------|---------------------|---------------------|---------------------------------|--------------------|
| PFM006382      | 2020-12-02                  | 85567                       | 0.03                | 290.0               | < 0.01                           | < 0.01                          | 0.6                              | 2.7                             | < 0.002                          | < 0.007                         | < 1   | < 0.005                          | < 0.02                          | 4.8                 | 35.0                | 89.0                            | 19.00              |

<sup>1</sup> Colony forming units.

## Surface water

Table A2-1. Field measurements.

| Id-code   | Measuring date<br>(yyyy-mm-dd) | Depth<br>(m) | Water depth<br>(m) | Sample<br>No. | Temp.<br>(°C) | pH   | EC<br>(mS/m) | Salinity<br>(per mill) | Turb<br>(NTU) | O <sub>2</sub> diss.<br>(mg/L) | O <sub>2</sub> sat.<br>(%) | ORP<br>(mV) |
|-----------|--------------------------------|--------------|--------------------|---------------|---------------|------|--------------|------------------------|---------------|--------------------------------|----------------------------|-------------|
| PFM000062 | 2020-01-13                     | 0.5          | 4.1                | 74916         | 2.3           | 6.82 | 846.4        | 4.63                   | 1.5           | 12.81                          | 96.3                       | 228.5       |
| PFM000062 | 2020-01-13                     | 1.0          | 4.1                |               | 2.3           | 6.92 | 846.3        | 4.63                   | 1.4           | 12.82                          | 96.3                       | 230.6       |
| PFM000062 | 2020-01-13                     | 2.0          | 4.1                |               | 2.3           | 7.02 | 846.2        | 4.63                   | 1.6           | 12.81                          | 96.3                       | 232.0       |
| PFM000062 | 2020-01-13                     | 3.0          | 4.1                |               | 2.3           | 7.07 | 846.1        | 4.63                   | 1.4           | 12.81                          | 96.2                       | 232.0       |
| PFM000062 | 2020-04-21                     | 0.5          | 4.0                | 77261         | 6.4           | 8.11 | 908.6        | 5.07                   | 1.0           | 12.69                          | 106.4                      | 140.1       |
| PFM000062 | 2020-04-21                     | 1.0          | 4.0                |               | 6.4           | 8.12 | 908.6        | 5.07                   | 0.8           | 12.73                          | 106.8                      | 143.4       |
| PFM000062 | 2020-04-21                     | 2.0          | 4.0                |               | 6.4           | 8.13 | 908.5        | 5.07                   | 0.9           | 12.74                          | 106.8                      | 146.1       |
| PFM000062 | 2020-04-21                     | 3.0          | 4.0                |               | 6.4           | 8.13 | 908.6        | 5.07                   | 1.0           | 12.73                          | 106.8                      | 148.3       |
| PFM000062 | 2020-05-26                     | 0.5          | 4.0                | 78567         | 8.5           | 7.88 | 912.5        | 5.11                   | 0.6           | 11.54                          | 102.0                      | 152.7       |
| PFM000062 | 2020-05-26                     | 1.0          | 4.0                |               | 8.6           | 7.87 | 912.4        | 5.11                   | 0.6           | 11.54                          | 102.1                      | 155.4       |
| PFM000062 | 2020-05-26                     | 2.0          | 4.0                |               | 8.5           | 7.87 | 912.7        | 5.11                   | 0.6           | 11.54                          | 102.0                      | 158.1       |
| PFM000062 | 2020-05-26                     | 3.0          | 4.0                |               | 8.5           | 7.86 | 912.6        | 5.11                   | 0.6           | 11.53                          | 101.9                      | 159.0       |
| PFM000062 | 2020-05-26                     | 3.5          | 4.0                |               | 8.5           | 7.86 | 912.6        | 5.11                   | 0.6           | 11.53                          | 101.9                      | 159.8       |
| PFM000062 | 2020-06-22                     | 0.5          | 3.9                | 79850         | 19.5          | 8.29 | 921.5        | 5.18                   | 1.0           | 10.05                          | 112.9                      | 137.3       |
| PFM000062 | 2020-06-22                     | 1.0          | 3.9                |               | 19.5          | 8.30 | 924.0        | 5.20                   | 1.1           | 10.06                          | 112.9                      | 137.7       |
| PFM000062 | 2020-06-22                     | 2.0          | 3.9                |               | 19.5          | 8.30 | 924.3        | 5.20                   | 1.0           | 10.06                          | 113.0                      | 137.6       |
| PFM000062 | 2020-06-22                     | 3.0          | 3.9                |               | 19.5          | 8.30 | 924.5        | 5.20                   | 1.0           | 10.07                          | 113.1                      | 137.8       |
| PFM000062 | 2020-08-12                     | 0.5          | 4.1                | 80494         | 19.1          | 8.33 | 906.8        | 5.09                   | 0.8           | 9.06                           | 100.8                      | 121.7       |
| PFM000062 | 2020-08-12                     | 1.0          | 4.1                |               | 19.1          | 8.24 | 907.0        | 5.09                   | 0.7           | 9.04                           | 100.7                      | 121.2       |
| PFM000062 | 2020-08-12                     | 2.0          | 4.1                |               | 19.1          | 8.21 | 907.1        | 5.10                   | 0.7           | 9.03                           | 100.6                      | 122.1       |
| PFM000062 | 2020-08-12                     | 3.0          | 4.1                |               | 19.1          | 8.18 | 907.1        | 5.10                   | 0.7           | 9.03                           | 100.6                      | 123.6       |
| PFM000062 | 2020-09-16                     | 0.5          | 4.2                | 82529         | 14.8          | 7.88 | 909.4        | 5.12                   | 0.5           | 9.53                           | 97.0                       | 127.4       |
| PFM000062 | 2020-09-16                     | 1.0          | 4.2                |               | 14.8          | 7.87 | 909.2        | 5.12                   | 0.5           | 9.53                           | 97.2                       | 132.0       |
| PFM000062 | 2020-09-16                     | 2.0          | 4.2                |               | 14.8          | 7.88 | 909.2        | 5.12                   | 0.6           | 9.53                           | 97.1                       | 136.2       |
| PFM000062 | 2020-09-16                     | 3.0          | 4.2                |               | 14.8          | 7.88 | 909.3        | 5.12                   | 0.6           | 9.52                           | 97.0                       | 139.0       |
| PFM000062 | 2020-10-13                     | 0.5          | 4.1                | 83394         | 10.5          | 8.12 | 920.2        | 5.17                   | 0.8           | 9.91                           | 91.7                       | 165.8       |
| PFM000062 | 2020-10-13                     | 1.0          | 4.1                |               | 10.5          | 8.00 | 920.1        | 5.17                   | 0.8           | 9.89                           | 91.6                       | 168.8       |
| PFM000062 | 2020-10-13                     | 2.0          | 4.1                |               | 10.5          | 7.96 | 920.2        | 5.17                   | 0.8           | 9.88                           | 91.4                       | 169.9       |
| PFM000062 | 2020-10-13                     | 3.0          | 4.1                |               | 10.5          | 7.94 | 920.2        | 5.17                   | 0.9           | 9.87                           | 91.4                       | 170.9       |
| PFM000066 | 2020-01-14                     | 0.1          | 0.4                | 74918         | 1.0           | 7.30 | 34.4         | 0.16                   | -0.1          | 6.68                           | 47.0                       | 221.0       |
| PFM000066 | 2020-02-10                     | 0.1          | 0.4                | 75765         | 2.5           | 7.58 | 34.7         | 0.16                   | 0.1           | 8.73                           | 64.0                       | 218.5       |
| PFM000066 | 2020-03-16                     | 0.1          | 0.4                | 76682         | 2.9           | 7.32 | 31.9         | 0.15                   | 0.4           | 10.18                          | 75.5                       | 217.6       |
| PFM000066 | 2020-04-20                     | 0.1          | 0.3                | 77269         | 9.6           | 7.69 | 34.4         | 0.17                   | 0.6           | 9.79                           | 86.1                       | 174.1       |
| PFM000066 | 2020-05-25                     | 0.1          | 0.3                | 78575         | 12.7          | 7.58 | 31.8         | 0.15                   | 0.5           | 9.71                           | 91.7                       | 176.2       |
| PFM000066 | 2020-06-22                     | 0.1          | 0.2                | 79859         | 16.6          | 7.48 | 28.3         | 0.14                   | 1.0           | 6.31                           | 64.8                       | 207.6       |
| PFM000066 | 2020-08-11                     | 0.1          |                    |               |               |      |              |                        |               |                                |                            |             |
| PFM000066 | 2020-09-16                     | 0.1          |                    |               |               |      |              |                        |               |                                |                            |             |
| PFM000066 | 2020-10-12                     | 0.1          |                    |               |               |      |              |                        |               |                                |                            |             |
| PFM000066 | 2020-11-09                     | 0.1          | 0.2                | 80503         | 5.4           | 7.14 | 31.6         | 0.15                   | 0.3           | 8.58                           | 67.9                       | 220.1       |
| PFM000066 | 2020-12-06                     | 0.1          | 0.3                | 82574         | 4.1           | 7.06 | 33.9         | 0.16                   | -0.8          | 8.73                           | 66.8                       | 232.7       |
| PFM000068 | 2020-01-13                     | 0.1          | 0.7                | 74919         | 0.3           | 6.74 | 32.2         | 0.15                   | 0.5           | 7.06                           | 48.8                       | 98.4        |
| PFM000068 | 2020-02-10                     | 0.1          | 0.6                | 75766         | 2.6           | 7.35 | 33.6         | 0.16                   | 0.6           | 8.30                           | 61.1                       | 201.0       |
| PFM000068 | 2020-03-16                     | 0.1          | 0.7                | 76683         | 2.5           | 7.10 | 30.3         | 0.14                   | 0.6           | 8.80                           | 64.5                       | 195.1       |
| PFM000068 | 2020-04-20                     | 0.1          | 0.6                | 77270         | 5.5           | 7.24 | 39.0         | 0.19                   | 1.3           | 8.77                           | 69.7                       | 250.6       |
| PFM000068 | 2020-05-25                     | 0.1          | 0.6                | 78576         | 8.7           | 7.03 | 36.1         | 0.17                   | 0.8           | 8.17                           | 70.3                       | 161.4       |
| PFM000068 | 2020-06-22                     | 0.1          | 0.5                | 79860         | 14.3          | 7.42 | 43.5         | 0.21                   | 0.8           | 5.57                           | 54.4                       | 215.0       |
| PFM000068 | 2020-08-11                     | 0.1          |                    |               |               |      |              |                        |               |                                |                            |             |
| PFM000068 | 2020-09-16                     | 0.1          |                    |               |               |      |              |                        |               |                                |                            |             |



**Table A2-1. Continued.**

| <b>Id-code</b> | <b>Measuring date<br/>(yyyy-mm-dd)</b> | <b>Depth<br/>(m)</b> | <b>Water depth<br/>(m)</b> | <b>Sample<br/>No.</b> | <b>Temp.<br/>(°C)</b> | <b>pH</b> | <b>EC<br/>(mS/m)</b> | <b>Salinity<br/>(per mill)</b> | <b>Turb<br/>(NTU)</b> | <b>O<sub>2</sub> diss.<br/>(mg/L)</b> | <b>O<sub>2</sub> sat.<br/>(%)</b> | <b>ORP<br/>(mV)</b> |
|----------------|--|----------------------|----------------------------|-----------------------|-----------------------|-----------|----------------------|--------------------------------|-----------------------|---------------------------------------|-----------------------------------|---------------------|
| PFM000068      | 2020-10-12                             | 0.1                  |                            |                       |                       |           |                      |                                |                       |                                       |                                   |                     |
| PFM000068      | 2020-11-09                             | 0.1                  | 0.5                        | 80504                 | 5.6                   | 7.42      | 46.6                 | 0.23                           | 1.1                   | 7.30                                  | 58.2                              | 192.6               |
| PFM000068      | 2020-12-06                             | 0.1                  | 0.6                        | 82575                 | 5.3                   | 6.20      | 44.1                 | 0.21                           | -0.7                  | 7.79                                  | 61.5                              | 244.5               |
| PFM000069      | 2020-01-13                             | 0.1                  | 0.3                        | 74920                 | 0.6                   | 6.77      | 38.1                 | 0.18                           | 0.9                   | 4.10                                  | 28.5                              | 98.1                |
| PFM000069      | 2020-02-10                             | 0.1                  | 0.2                        | 75767                 | 2.9                   | 7.35      | 41.0                 | 0.20                           | 0.7                   | 5.97                                  | 44.3                              | 193.6               |
| PFM000069      | 2020-03-16                             | 0.1                  | 0.3                        | 76684                 | 2.9                   | 7.04      | 35.4                 | 0.17                           | 0.6                   | 6.57                                  | 48.7                              | 194.4               |
| PFM000069      | 2020-04-20                             | 0.1                  | 0.1                        | 77271                 | 5.4                   | 7.20      | 41.7                 | 0.20                           | 1.9                   | 7.86                                  | 62.2                              | 209.6               |
| PFM000069      | 2020-05-25                             | 0.1                  | 0.2                        | 78577                 | 8.6                   | 7.12      | 40.5                 | 0.20                           | 1.3                   | 7.36                                  | 63.1                              | 164.0               |
| PFM000069      | 2020-06-22                             | 0.1                  | 0.1                        | 79861                 | 14.5                  | 7.53      | 42.2                 | 0.20                           | 0.7                   | 7.09                                  | 69.6                              | 200.2               |
| PFM000069      | 2020-08-11                             | 0.1                  |                            |                       |                       |           |                      |                                |                       |                                       |                                   |                     |
| PFM000069      | 2020-09-16                             | 0.1                  |                            |                       |                       |           |                      |                                |                       |                                       |                                   |                     |
| PFM000069      | 2020-10-12                             | 0.1                  |                            |                       |                       |           |                      |                                |                       |                                       |                                   |                     |
| PFM000069      | 2020-11-09                             | 0.1                  | 0.1                        | 80505                 | 5.4                   | 7.14      | 43.2                 | 0.21                           | 0.2                   | 7.37                                  | 58.3                              | 209.6               |
| PFM000069      | 2020-12-06                             | 0.1                  | 0.2                        | 82576                 | 5.3                   | 6.65      | 44.6                 | 0.22                           | -0.8                  | 6.67                                  | 52.7                              | 224.7               |
| PFM000070      | 2020-01-14                             | 0.1                  | 0.3                        | 74921                 | 1.3                   | 7.76      | 24.6                 | 0.12                           | 0.4                   | 12.24                                 | 86.9                              | 272.7               |
| PFM000070      | 2020-02-10                             | 0.1                  | 0.2                        | 75768                 | 2.3                   | 7.91      | 23.4                 | 0.11                           | 0.8                   | 12.24                                 | 89.3                              | 249.4               |
| PFM000070      | 2020-03-16                             | 0.1                  | 0.3                        | 76685                 | 4.1                   | 7.71      | 25.6                 | 0.12                           | 0.3                   | 12.17                                 | 93.2                              | 225.3               |
| PFM000070      | 2020-04-20                             | 0.1                  | 0.2                        | 77272                 | 9.7                   | 7.47      | 26.0                 | 0.12                           | 2.7                   | 8.88                                  | 78.2                              | 183.7               |
| PFM000070      | 2020-05-25                             | 0.1                  | 0.2                        | 78578                 | 12.4                  | 7.52      | 24.8                 | 0.12                           | 0.3                   | 8.02                                  | 75.1                              | 164.0               |
| PFM000070      | 2020-06-22                             | 0.1                  | 0.1                        | 79862                 | 17.8                  | 7.14      | 27.3                 | 0.13                           | 0.6                   | 5.13                                  | 54.0                              | 116.5               |
| PFM000070      | 2020-08-11                             | 0.1                  |                            |                       |                       |           |                      |                                |                       |                                       |                                   |                     |
| PFM000070      | 2020-09-16                             | 0.1                  |                            |                       |                       |           |                      |                                |                       |                                       |                                   |                     |
| PFM000070      | 2020-10-12                             | 0.1                  |                            |                       |                       |           |                      |                                |                       |                                       |                                   |                     |
| PFM000070      | 2020-11-09                             | 0.1                  | 0.1                        | 80506                 | 6.1                   | 6.89      | 26.6                 | 0.13                           | 0.7                   | 5.40                                  | 43.5                              | 157.1               |
| PFM000070      | 2020-12-06                             | 0.1                  | 0.1                        | 82577                 | 5.8                   | 6.82      | 17.7                 | 0.08                           | -1.0                  | 7.56                                  | 60.5                              | 214.5               |
| PFM000074      | 2020-01-13                             | 0.5                  |                            |                       |                       |           |                      |                                |                       |                                       |                                   |                     |
| PFM000074      | 2020-04-20                             | 0.5                  | 0.9                        | 74922                 | 11.1                  | 7.66      | 38.5                 | 0.19                           | 0.1                   | 10.46                                 | 95.1                              | 182.0               |
| PFM000074      | 2020-08-10                             | 0.5                  | 0.8                        | 80507                 | 19.5                  | 7.86      | 35.7                 | 0.17                           | 0.4                   | 7.04                                  | 76.7                              | 95.1                |
| PFM000074      | 2020-10-12                             | 0.5                  | 0.9                        | 83403                 | 8.7                   | 7.74      | 35.2                 | 0.17                           | 1.1                   | 10.49                                 | 90.2                              | 199.9               |
| PFM000083      | 2020-04-21                             | 0.5                  |                            | 77262                 | 7.5                   | 8.19      | 904.8                | 5.06                           | 0.7                   | 12.61                                 | 108.8                             | 178.1               |
| PFM000083      | 2020-05-26                             | 0.5                  |                            | 78568                 | 9.8                   | 8.09      | 905.0                | 5.08                           | 0.6                   | 12.09                                 | 110.2                             | 170.0               |
| PFM000083      | 2020-06-22                             | 0.5                  |                            | 79851                 | 19.6                  | 8.27      | 928.9                | 5.23                           | 2.0                   | 9.97                                  | 112.2                             | 104.9               |
| PFM000083      | 2020-08-12                             | 0.5                  |                            | 80495                 | 19.5                  | 8.22      | 909.0                | 5.11                           | 0.7                   | 9.26                                  | 103.9                             | 115.4               |
| PFM000083      | 2020-09-16                             | 0.5                  |                            | 82530                 | 14.7                  | 8.01      | 910.0                | 5.12                           | 0.8                   | 9.42                                  | 95.8                              | 147.2               |
| PFM000083      | 2020-10-13                             | 0.5                  |                            | 83395                 | 10.5                  | 7.90      | 918.9                | 5.16                           | 1.5                   | 10.19                                 | 94.4                              | 186.6               |
| PFM000084      | 2020-04-21                             | 0.5                  |                            | 77263                 | 9.6                   | 8.40      | 535.3                | 2.90                           | 5.4                   | 12.97                                 | 116.0                             | 174.2               |
| PFM000084      | 2020-05-26                             | 0.5                  |                            | 78569                 | 14.5                  | 8.39      | 620.6                | 3.40                           | 4.7                   | 13.05                                 | 130.7                             | 154.8               |
| PFM000084      | 2020-06-22                             | 0.5                  |                            | 79950                 | 24.0                  | 8.56      | 481.6                | 2.58                           | 3.9                   | 9.85                                  | 118.7                             | 123.0               |
| PFM000084      | 2020-08-12                             | 0.5                  |                            | 80496                 | 20.1                  | 8.16      | 857.0                | 4.79                           | 6.5                   | 9.40                                  | 106.6                             | 130.3               |
| PFM000084      | 2020-09-16                             | 0.5                  |                            | 82531                 | 14.1                  | 8.05      | 884.5                | 4.97                           | 2.0                   | 9.79                                  | 98.1                              | 151.1               |
| PFM000084      | 2020-10-13                             | 0.5                  |                            | 83396                 | 10.0                  | 7.92      | 874.6                | 4.89                           | 1.0                   | 10.39                                 | 94.9                              | 173.7               |
| PFM000097      | 2020-01-14                             | 0.5                  | 0.8                        |                       | 2.2                   | 7.56      | 30.0                 | 0.14                           | 0.5                   | 11.24                                 | 81.8                              | 220.6               |
| PFM000097      | 2020-02-11                             | 0.5                  |                            |                       |                       |           |                      |                                |                       |                                       |                                   |                     |
| PFM000097      | 2020-03-17                             | 0.5                  | 1.2                        |                       | 3.2                   | 7.74      | 77.9                 | 0.38                           | 0.2                   | 13.94                                 | 104.4                             | 195.8               |
| PFM000097      | 2020-04-24                             | 0.5                  | 1.0                        |                       | 11.2                  | 8.47      | 47.1                 | 0.23                           | 1.0                   | 11.32                                 | 103.3                             | 137.4               |
| PFM000097      | 2020-05-28                             | 0.5                  | 0.7                        |                       | 13.9                  | 8.71      | 29.6                 | 0.14                           | 0.8                   | 11.10                                 | 107.5                             | 110.5               |
| PFM000097      | 2020-06-22                             | 0.5                  | 0.8                        |                       | 27.1                  | 9.19      | 50.8                 | 0.24                           | 1.0                   | 14.07                                 | 177.2                             | 174.2               |
| PFM000097      | 2020-08-12                             | 0.5                  | 0.7                        |                       | 24.7                  | 9.60      | 85.0                 | 0.42                           | 1.4                   | 14.93                                 | 179.9                             | 80.5                |
| PFM000097      | 2020-09-16                             | 0.5                  | 0.8                        |                       | 14.8                  | 9.16      | 98.1                 | 0.49                           | -0.3                  | 12.38                                 | 122.6                             | 124.0               |
| PFM000097      | 2020-10-12                             | 0.5                  | 0.3                        |                       | 9.0                   | 8.01      | 109.6                | 0.55                           | 1.4                   | 11.95                                 | 103.9                             | 185.6               |
| PFM000097      | 2020-11-10                             | 0.5                  |                            |                       | 4.1                   | 8.05      | 94.9                 | 0.47                           | 0.8                   | 12.26                                 | 94.0                              | 170.8               |
| PFM000097      | 2020-12-07                             | 0.5                  | 0.9                        |                       | 4.7                   | 7.29      | 97.8                 | 0.48                           | 0.1                   | 11.39                                 | 88.8                              | 154.0               |
| PFM000107      | 2020-01-13                             | 0.5                  |                            |                       |                       |           |                      |                                |                       |                                       |                                   |                     |
| PFM000107      | 2020-04-20                             | 0.5                  | 1.9                        | 74923                 | 10.4                  | 8.54      | 33.6                 | 0.16                           | 0.5                   | 13.02                                 | 116.6                             | 165.4               |

**Table A2-1. Continued.**

| <b>Id-code</b> | <b>Measuring date<br/>(yyyy-mm-dd)</b> | <b>Depth<br/>(m)</b> | <b>Water depth<br/>(m)</b> | <b>Sample<br/>No.</b> | <b>Temp.<br/>(°C)</b> | <b>pH</b> | <b>EC<br/>(mS/m)</b> | <b>Salinity<br/>(per mill)</b> | <b>Turb<br/>(NTU)</b> | <b>O<sub>2</sub> diss.<br/>(mg/L)</b> | <b>O<sub>2</sub> sat.<br/>(%)</b> | <b>ORP<br/>(mV)</b> |
|----------------|--|----------------------|----------------------------|-----------------------|-----------------------|-----------|----------------------|--------------------------------|-----------------------|---------------------------------------|-----------------------------------|---------------------|
| PFM000107      | 2020-04-20                             | 1.0                  | 1.9                        |                       | 10.4                  | 8.54      | 33.6                 | 0.16                           | 0.4                   | 13.04                                 | 116.7                             | 168.6               |
| PFM000107      | 2020-08-10                             | 0.5                  | 1.7                        | 80508                 | 21.6                  | 9.19      | 25.5                 | 0.12                           | 1.0                   | 10.21                                 | 116.0                             | 83.4                |
| PFM000107      | 2020-08-10                             | 1.0                  | 1.7                        |                       | 21.6                  | 9.23      | 25.5                 | 0.12                           | 1.0                   | 10.29                                 | 116.9                             | 84.9                |
| PFM000107      | 2020-10-12                             | 0.5                  | 1.8                        | 83404                 | 9.4                   | 8.18      | 32.0                 | 0.15                           | 0.7                   | 10.88                                 | 95.0                              | 192.6               |
| PFM000107      | 2020-10-12                             | 1.0                  | 1.8                        |                       | 9.4                   | 8.19      | 32.0                 | 0.15                           | 0.7                   | 10.89                                 | 95.1                              | 193.3               |
| PFM000107      | 2020-10-12                             | 1.5                  | 1.8                        |                       | 9.4                   | 8.20      | 32.0                 | 0.15                           | 2.6                   | 10.87                                 | 95.0                              | 183.2               |
| PFM000117      | 2020-01-13                             | 0.5                  |                            |                       |                       |           |                      |                                |                       |                                       |                                   |                     |
| PFM000117      | 2020-04-21                             | 0.5                  | 2.0                        | 74924                 | 11.6                  | 8.68      | 26.3                 | 0.13                           | 0.4                   | 12.60                                 | 116.0                             | 168.1               |
| PFM000117      | 2020-04-21                             | 1.0                  | 2.0                        |                       | 10.0                  | 8.69      | 26.0                 | 0.12                           | 0.3                   | 13.18                                 | 116.9                             | 175.2               |
| PFM000117      | 2020-04-21                             | 1.5                  | 2.0                        |                       | 9.1                   | 8.67      | 26.1                 | 0.12                           | 0.5                   | 13.10                                 | 113.7                             | 178.6               |
| PFM000117      | 2020-08-10                             | 0.5                  | 1.8                        | 80509                 | 22.8                  | 9.10      | 14.9                 | 0.07                           | 0.7                   | 11.21                                 | 130.2                             | 89.8                |
| PFM000117      | 2020-08-10                             | 1.0                  | 1.8                        |                       | 22.5                  | 9.18      | 14.9                 | 0.07                           | 0.7                   | 11.77                                 | 135.9                             | 90.1                |
| PFM000117      | 2020-08-10                             | 1.5                  | 1.8                        |                       | 21.9                  | 9.20      | 14.8                 | 0.07                           | 0.9                   | 12.27                                 | 140.0                             | 92.8                |
| PFM000117      | 2020-10-12                             | 0.5                  | 2.1                        | 83405                 | 10.3                  | 8.57      | 16.8                 | 0.08                           | 0.3                   | 11.08                                 | 99.0                              | 131.3               |
| PFM000117      | 2020-10-12                             | 1.0                  | 2.1                        |                       | 10.3                  | 8.58      | 16.8                 | 0.08                           | 0.3                   | 11.08                                 | 99.0                              | 148.9               |
| PFM000117      | 2020-10-12                             | 1.5                  | 2.1                        |                       | 10.3                  | 8.59      | 16.8                 | 0.08                           | 0.7                   | 11.07                                 | 98.9                              | 154.6               |
| PFM007783      | 2020-04-21                             | 0.5                  |                            | 77264                 | 8.5                   | 8.11      | 898.8                | 5.03                           | 0.5                   | 12.50                                 | 110.2                             | 168.4               |
| PFM007783      | 2020-05-25                             | 0.5                  |                            | 78570                 | 12.0                  | 8.21      | 906.4                | 5.09                           | 0.5                   | 11.55                                 | 110.6                             | 161.0               |
| PFM007783      | 2020-06-22                             | 0.5                  |                            | 79951                 | 22.2                  | 8.69      | 925.5                | 5.19                           | 0.3                   | 10.85                                 | 128.5                             | 201.2               |
| PFM007783      | 2020-08-11                             | 0.5                  |                            | 80497                 | 19.7                  | 8.20      | 914.2                | 5.14                           | 0.5                   | 10.26                                 | 115.5                             | 189.0               |
| PFM007783      | 2020-09-16                             | 0.5                  |                            | 82532                 | 14.7                  | 7.97      | 898.6                | 5.05                           | -0.7                  | 9.38                                  | 95.4                              | 167.7               |
| PFM007783      | 2020-10-12                             | 0.5                  |                            | 83397                 | 11.0                  | 8.16      | 899.9                | 5.05                           | 0.2                   | 10.91                                 | 102.2                             | 163.4               |
| PFM007910      | 2020-04-21                             | 0.5                  | 2.1                        | 77266                 | 8.0                   | 8.10      | 885.6                | 4.95                           | 1.0                   | 12.17                                 | 106.0                             | 162.2               |
| PFM007910      | 2020-04-21                             | 1.0                  | 2.1                        |                       | 7.9                   | 8.10      | 886.3                | 4.95                           | 1.3                   | 12.20                                 | 106.1                             | 165.4               |
| PFM007910      | 2020-04-21                             | 1.5                  | 2.1                        |                       | 7.9                   | 8.10      | 886.8                | 4.95                           | 1.2                   | 12.21                                 | 106.2                             | 143.8               |
| PFM007910      | 2020-04-21                             | 2.0                  | 2.1                        |                       | 7.7                   | 8.12      | 891.3                | 4.98                           | 1.8                   | 12.25                                 | 106.1                             | 142.2               |
| PFM007910      | 2020-05-26                             | 0.5                  | 2.2                        | 78572                 | 12.5                  | 8.06      | 894.3                | 5.02                           | 0.6                   | 11.09                                 | 107.3                             | 165.1               |
| PFM007910      | 2020-05-26                             | 1.0                  | 2.2                        |                       | 12.1                  | 8.06      | 895.1                | 5.03                           | 0.6                   | 11.12                                 | 106.8                             | 166.7               |
| PFM007910      | 2020-05-26                             | 1.5                  | 2.2                        |                       | 11.6                  | 8.05      | 893.5                | 5.02                           | 0.6                   | 11.08                                 | 105.1                             | 164.3               |
| PFM007910      | 2020-06-22                             | 0.5                  | 1.9                        | 79954                 | 21.3                  | 8.46      | 920.9                | 5.17                           | 0.8                   | 9.83                                  | 114.3                             | 131.3               |
| PFM007910      | 2020-06-22                             | 1.0                  | 1.9                        |                       | 21.2                  | 8.49      | 920.1                | 5.17                           | 1.0                   | 9.96                                  | 115.5                             | 133.5               |
| PFM007910      | 2020-06-22                             | 1.5                  | 1.9                        |                       | 20.8                  | 8.51      | 920.1                | 5.17                           | 1.3                   | 10.04                                 | 115.7                             | 136.5               |
| PFM007910      | 2020-08-12                             | 0.5                  | 2.0                        | 80499                 | 19.3                  | 8.20      | 908.9                | 5.11                           | 0.8                   | 9.43                                  | 105.4                             | 118.5               |
| PFM007910      | 2020-08-12                             | 1.0                  | 2.0                        |                       | 19.2                  | 8.20      | 908.9                | 5.11                           | 0.8                   | 9.43                                  | 105.3                             | 120.1               |
| PFM007910      | 2020-08-12                             | 1.5                  | 2.0                        |                       | 19.2                  | 8.21      | 908.5                | 5.10                           | 0.9                   | 9.41                                  | 105.0                             | 121.1               |
| PFM007910      | 2020-09-16                             | 0.5                  | 2.2                        | 82534                 | 14.7                  | 7.90      | 897.9                | 5.05                           | 0.5                   | 9.30                                  | 94.6                              | 135.5               |
| PFM007910      | 2020-09-16                             | 1.0                  | 2.2                        |                       | 14.7                  | 7.90      | 897.8                | 5.05                           | 0.5                   | 9.36                                  | 95.1                              | 136.9               |
| PFM007910      | 2020-09-16                             | 1.5                  | 2.2                        |                       | 14.7                  | 7.89      | 897.8                | 5.05                           | 0.5                   | 9.34                                  | 94.9                              | 139.9               |
| PFM007910      | 2020-09-16                             | 2.0                  | 2.2                        |                       | 14.7                  | 7.88      | 897.9                | 5.05                           | 0.9                   | 9.40                                  | 95.6                              | 142.2               |
| PFM007910      | 2020-10-13                             | 0.5                  | 2.0                        | 83399                 | 10.9                  | 7.88      | 902.3                | 5.07                           | 0.3                   | 9.92                                  | 92.6                              | 159.0               |
| PFM007910      | 2020-10-13                             | 1.0                  | 2.0                        |                       | 10.9                  | 7.87      | 902.2                | 5.06                           | 0.3                   | 9.94                                  | 92.8                              | 160.5               |
| PFM007910      | 2020-10-13                             | 1.5                  | 2.0                        |                       | 10.9                  | 7.86      | 902.1                | 5.06                           | 0.3                   | 9.94                                  | 92.8                              | 163.3               |
| PFM007911      | 2020-04-21                             | 0.5                  | 5.5                        | 77267                 | 7.1                   | 8.17      | 895.5                | 5.00                           | 0.7                   | 12.57                                 | 107.3                             | 179.2               |
| PFM007911      | 2020-04-21                             | 1.0                  | 5.5                        |                       | 7.1                   | 8.17      | 895.3                | 5.00                           | 0.7                   | 12.58                                 | 107.4                             | 179.9               |
| PFM007911      | 2020-04-21                             | 2.0                  | 5.5                        |                       | 7.1                   | 8.17      | 895.3                | 5.00                           | 0.7                   | 12.58                                 | 107.3                             | 180.6               |
| PFM007911      | 2020-04-21                             | 3.0                  | 5.5                        |                       | 7.0                   | 8.18      | 895.4                | 5.00                           | 0.6                   | 12.57                                 | 107.1                             | 181.6               |
| PFM007911      | 2020-04-21                             | 4.0                  | 5.5                        |                       | 7.0                   | 8.17      | 895.3                | 4.99                           | 0.7                   | 12.53                                 | 106.7                             | 183.2               |
| PFM007911      | 2020-04-21                             | 5.0                  | 5.5                        |                       | 6.7                   | 8.13      | 896.0                | 4.99                           | 1.0                   | 12.47                                 | 105.2                             | 184.7               |
| PFM007911      | 2020-05-26                             | 0.5                  | 5.8                        | 78573                 | 11.8                  | 8.06      | 901.6                | 5.06                           | 0.6                   | 11.15                                 | 106.4                             | 149.5               |
| PFM007911      | 2020-05-26                             | 1.0                  | 5.8                        |                       | 11.7                  | 8.06      | 901.5                | 5.06                           | 0.6                   | 11.16                                 | 106.2                             | 151.6               |
| PFM007911      | 2020-05-26                             | 2.0                  | 5.8                        |                       | 11.3                  | 8.06      | 902.6                | 5.07                           | 0.6                   | 11.22                                 | 105.7                             | 154.9               |
| PFM007911      | 2020-05-26                             | 3.0                  | 5.8                        |                       | 11.1                  | 8.06      | 902.8                | 5.07                           | 0.5                   | 11.21                                 | 105.1                             | 157.1               |
| PFM007911      | 2020-05-26                             | 4.0                  | 5.8                        |                       | 10.7                  | 8.05      | 903.7                | 5.07                           | 0.5                   | 11.22                                 | 104.4                             | 160.1               |
| PFM007911      | 2020-05-26                             | 5.0                  | 5.8                        |                       | 10.6                  | 8.03      | 903.8                | 5.07                           | 0.6                   | 11.18                                 | 103.7                             | 163.5               |

**Table A2-1. Continued.**

| <b>Id-code</b> | <b>Measuring date<br/>(yyyy-mm-dd)</b> | <b>Depth<br/>(m)</b> | <b>Water depth<br/>(m)</b> | <b>Sample<br/>No.</b> | <b>Temp.<br/>(°C)</b> | <b>pH</b> | <b>EC<br/>(mS/m)</b> | <b>Salinity<br/>(per mill)</b> | <b>Turb<br/>(NTU)</b> | <b>O<sub>2</sub> diss.<br/>(mg/L)</b> | <b>O<sub>2</sub> sat.<br/>(%)</b> | <b>ORP<br/>(mV)</b> |
|----------------|--|----------------------|----------------------------|-----------------------|-----------------------|-----------|----------------------|--------------------------------|-----------------------|---------------------------------------|-----------------------------------|---------------------|
| PFM007911      | 2020-06-22                             | 0.5                  | 5.5                        | 79953                 | 20.7                  | 8.50      | 921.7                | 5.18                           | 0.5                   | 10.09                                 | 115.9                             | 140.6               |
| PFM007911      | 2020-06-22                             | 1.0                  | 5.5                        |                       | 20.7                  | 8.51      | 921.7                | 5.18                           | 0.4                   | 10.09                                 | 115.9                             | 142.0               |
| PFM007911      | 2020-06-22                             | 2.0                  | 5.5                        |                       | 20.5                  | 8.50      | 922.1                | 5.18                           | 0.5                   | 10.15                                 | 116.2                             | 143.6               |
| PFM007911      | 2020-06-22                             | 3.0                  | 5.5                        |                       | 19.2                  | 8.43      | 921.5                | 5.18                           | 0.6                   | 10.22                                 | 114.0                             | 146.3               |
| PFM007911      | 2020-06-22                             | 4.0                  | 5.5                        |                       | 18.5                  | 8.37      | 921.9                | 5.19                           | 0.6                   | 10.26                                 | 112.9                             | 148.1               |
| PFM007911      | 2020-06-22                             | 5.0                  | 5.5                        |                       | 17.0                  | 8.18      | 923.6                | 5.20                           | 0.9                   | 10.32                                 | 110.3                             | 151.9               |
| PFM007911      | 2020-08-12                             | 0.5                  | 5.0                        | 80500                 | 19.2                  | 8.19      | 906.8                | 5.09                           | 0.8                   | 9.53                                  | 106.3                             | 121.1               |
| PFM007911      | 2020-08-12                             | 1.0                  | 5.0                        |                       | 19.2                  | 8.21      | 906.9                | 5.09                           | 0.8                   | 9.53                                  | 106.2                             | 123.1               |
| PFM007911      | 2020-08-12                             | 2.0                  | 5.0                        |                       | 19.1                  | 8.21      | 907.3                | 5.10                           | 1.0                   | 9.49                                  | 105.7                             | 124.1               |
| PFM007911      | 2020-08-12                             | 3.0                  | 5.0                        |                       | 19.0                  | 8.18      | 907.4                | 5.10                           | 1.2                   | 9.08                                  | 100.9                             | 125.6               |
| PFM007911      | 2020-08-12                             | 4.0                  | 5.0                        |                       | 18.8                  | 8.11      | 905.7                | 5.09                           | 1.0                   | 8.83                                  | 97.8                              | 128.7               |
| PFM007911      | 2020-08-12                             | 4.5                  | 5.0                        |                       | 18.7                  | 8.02      | 904.6                | 5.08                           | 1.0                   | 8.47                                  | 93.5                              | 128.4               |
| PFM007911      | 2020-09-16                             | 0.5                  | 5.5                        | 82535                 | 14.6                  | 7.98      | 897.9                | 5.05                           | 0.5                   | 9.80                                  | 99.3                              | 148.4               |
| PFM007911      | 2020-09-16                             | 1.0                  | 5.5                        |                       | 14.6                  | 7.98      | 898.0                | 5.05                           | 0.6                   | 9.79                                  | 99.2                              | 152.9               |
| PFM007911      | 2020-09-16                             | 2.0                  | 5.5                        |                       | 14.6                  | 7.98      | 897.9                | 5.05                           | 0.5                   | 9.77                                  | 99.0                              | 157.1               |
| PFM007911      | 2020-09-16                             | 3.0                  | 5.5                        |                       | 14.6                  | 7.98      | 897.8                | 5.05                           | 0.6                   | 9.77                                  | 99.0                              | 158.7               |
| PFM007911      | 2020-09-16                             | 4.0                  | 5.5                        |                       | 14.5                  | 7.97      | 897.9                | 5.05                           | 0.5                   | 9.70                                  | 98.2                              | 160.7               |
| PFM007911      | 2020-09-16                             | 5.0                  | 5.5                        |                       | 14.5                  | 7.96      | 897.8                | 5.05                           | 0.5                   | 9.64                                  | 97.6                              | 161.5               |
| PFM007911      | 2020-10-13                             | 0.5                  | 5.6                        | 83400                 | 11.2                  | 7.93      | 902.0                | 5.07                           | 0.3                   | 10.12                                 | 95.3                              | 160.9               |
| PFM007911      | 2020-10-13                             | 1.0                  | 5.6                        |                       | 11.2                  | 7.91      | 901.8                | 5.06                           | 0.3                   | 10.11                                 | 95.2                              | 166.5               |
| PFM007911      | 2020-10-13                             | 2.0                  | 5.6                        |                       | 11.2                  | 7.90      | 902.1                | 5.07                           | 0.3                   | 10.10                                 | 95.1                              | 167.2               |
| PFM007911      | 2020-10-13                             | 3.0                  | 5.6                        |                       | 11.2                  | 7.90      | 902.2                | 5.07                           | 0.3                   | 10.09                                 | 95.0                              | 168.7               |
| PFM007911      | 2020-10-13                             | 4.0                  | 5.6                        |                       | 11.2                  | 7.89      | 902.2                | 5.07                           | 0.3                   | 10.08                                 | 94.9                              | 170.3               |
| PFM007911      | 2020-10-13                             | 5.0                  | 5.6                        |                       | 11.2                  | 7.89      | 902.5                | 5.07                           | 0.4                   | 10.07                                 | 94.8                              | 172.3               |
| PFM007912      | 2020-04-21                             | 0.5                  | 9.0                        | 77268                 | 5.8                   | 8.14      | 897.7                | 4.99                           | 0.8                   | 12.71                                 | 105.0                             | 167.2               |
| PFM007912      | 2020-04-21                             | 1.0                  | 9.0                        |                       | 5.8                   | 8.15      | 897.7                | 4.99                           | 0.8                   | 12.73                                 | 105.1                             | 169.2               |
| PFM007912      | 2020-04-21                             | 2.0                  | 9.0                        |                       | 5.8                   | 8.15      | 897.7                | 4.99                           | 0.7                   | 12.72                                 | 105.1                             | 170.3               |
| PFM007912      | 2020-04-21                             | 3.0                  | 9.0                        |                       | 5.8                   | 8.15      | 897.7                | 4.99                           | 0.8                   | 12.72                                 | 105.0                             | 171.1               |
| PFM007912      | 2020-04-21                             | 4.0                  | 9.0                        |                       | 5.7                   | 8.16      | 898.0                | 5.00                           | 0.9                   | 12.71                                 | 104.9                             | 173.1               |
| PFM007912      | 2020-04-21                             | 5.0                  | 9.0                        |                       | 5.7                   | 8.16      | 897.8                | 4.99                           | 0.8                   | 12.71                                 | 104.8                             | 175.0               |
| PFM007912      | 2020-04-21                             | 6.0                  | 9.0                        |                       | 5.7                   | 8.16      | 895.8                | 4.98                           | 0.8                   | 12.69                                 | 104.7                             | 143.2               |
| PFM007912      | 2020-04-21                             | 7.0                  | 9.0                        |                       | 5.7                   | 8.16      | 896.0                | 4.98                           | 0.8                   | 12.68                                 | 104.6                             | 153.7               |
| PFM007912      | 2020-04-21                             | 8.0                  | 9.0                        |                       | 5.7                   | 8.15      | 896.1                | 4.98                           | 0.9                   | 12.62                                 | 104.1                             | 167.1               |
| PFM007912      | 2020-05-26                             | 0.5                  | 8.4                        | 78574                 | 10.8                  | 8.03      | 901.2                | 5.06                           | 0.5                   | 11.23                                 | 104.7                             | 159.9               |
| PFM007912      | 2020-05-26                             | 1.0                  | 8.4                        |                       | 10.9                  | 8.03      | 900.8                | 5.06                           | 0.5                   | 11.24                                 | 105.1                             | 162.6               |
| PFM007912      | 2020-05-26                             | 2.0                  | 8.4                        |                       | 10.7                  | 8.03      | 901.1                | 5.06                           | 0.6                   | 11.24                                 | 104.4                             | 164.1               |
| PFM007912      | 2020-05-26                             | 3.0                  | 8.4                        |                       | 10.5                  | 8.03      | 901.8                | 5.06                           | 0.5                   | 11.25                                 | 104.2                             | 166.0               |
| PFM007912      | 2020-05-26                             | 4.0                  | 8.4                        |                       | 10.5                  | 8.04      | 902.0                | 5.06                           | 0.6                   | 11.26                                 | 104.1                             | 168.2               |
| PFM007912      | 2020-05-26                             | 5.0                  | 8.4                        |                       | 10.3                  | 8.03      | 904.4                | 5.07                           | 0.5                   | 11.29                                 | 104.0                             | 171.6               |
| PFM007912      | 2020-05-26                             | 6.0                  | 8.4                        |                       | 10.1                  | 8.04      | 905.4                | 5.08                           | 0.5                   | 11.40                                 | 104.6                             | 173.9               |
| PFM007912      | 2020-05-26                             | 7.0                  | 8.4                        |                       | 9.9                   | 8.02      | 906.9                | 5.09                           | 0.5                   | 11.41                                 | 104.2                             | 177.2               |
| PFM007912      | 2020-05-26                             | 8.0                  | 8.4                        |                       | 9.6                   | 7.97      | 907.9                | 5.09                           | 1.0                   | 11.26                                 | 102.1                             | 179.5               |
| PFM007912      | 2020-06-22                             | 0.5                  | 8.5                        | 79857                 | 19.8                  | 8.42      | 917.2                | 5.15                           | 0.4                   | 10.06                                 | 113.6                             | 141.8               |
| PFM007912      | 2020-06-22                             | 1.0                  | 8.5                        |                       | 19.8                  | 8.43      | 917.3                | 5.15                           | 0.4                   | 10.08                                 | 113.8                             | 142.4               |
| PFM007912      | 2020-06-22                             | 2.0                  | 8.5                        |                       | 19.7                  | 8.43      | 917.5                | 5.16                           | 0.4                   | 10.11                                 | 114.1                             | 143.9               |
| PFM007912      | 2020-06-22                             | 3.0                  | 8.5                        |                       | 19.6                  | 8.44      | 918.3                | 5.16                           | 0.4                   | 10.18                                 | 114.6                             | 146.3               |
| PFM007912      | 2020-06-22                             | 4.0                  | 8.5                        |                       | 19.0                  | 8.42      | 911.5                | 5.12                           | 0.3                   | 10.35                                 | 115.0                             | 148.0               |
| PFM007912      | 2020-06-22                             | 5.0                  | 8.5                        |                       | 18.7                  | 8.37      | 918.6                | 5.17                           | 0.3                   | 10.34                                 | 114.1                             | 150.1               |
| PFM007912      | 2020-06-22                             | 6.0                  | 8.5                        |                       | 15.3                  | 8.05      | 927.8                | 5.23                           | 0.5                   | 9.62                                  | 99.1                              | 156.0               |
| PFM007912      | 2020-06-22                             | 7.0                  | 8.5                        |                       | 13.4                  | 7.77      | 931.5                | 5.25                           | 0.5                   | 8.74                                  | 86.4                              | 160.5               |
| PFM007912      | 2020-06-22                             | 8.0                  | 8.5                        |                       | 12.0                  | 7.60      | 934.5                | 5.26                           | 0.7                   | 7.22                                  | 69.2                              | 163.6               |
| PFM007912      | 2020-08-12                             | 0.5                  | 8.7                        | 80501                 | 18.7                  | 8.21      | 902.4                | 5.07                           | 0.5                   | 9.50                                  | 104.9                             | 132.2               |
| PFM007912      | 2020-08-12                             | 1.0                  | 8.7                        |                       | 18.7                  | 8.19      | 902.5                | 5.07                           | 0.5                   | 9.50                                  | 104.9                             | 134.5               |
| PFM007912      | 2020-08-12                             | 2.0                  | 8.7                        |                       | 18.7                  | 8.19      | 902.6                | 5.07                           | 0.5                   | 9.48                                  | 104.7                             | 135.4               |

**Table A2-1. Continued.**

| Id-code   | Measuring date<br>(yyyy-mm-dd) | Depth<br>(m) | Water depth<br>(m) | Sample<br>No. | Temp.<br>(°C) | pH   | EC<br>(mS/m) | Salinity<br>(per mill) | Turb<br>(NTU) | O <sub>2</sub> diss.<br>(mg/L) | O <sub>2</sub> sat.<br>(%) | ORP<br>(mV) |
|-----------|--------------------------------|--------------|--------------------|---------------|---------------|------|--------------|------------------------|---------------|--------------------------------|----------------------------|-------------|
| PFM007912 | 2020-08-12                     | 3.0          | 8.7                |               | 18.6          | 8.18 | 902.9        | 5.07                   | 0.5           | 9.44                           | 104.1                      | 136.4       |
| PFM007912 | 2020-08-12                     | 4.0          | 8.7                |               | 18.6          | 8.17 | 903.1        | 5.07                   | 0.5           | 9.40                           | 103.6                      | 137.4       |
| PFM007912 | 2020-08-12                     | 5.0          | 8.7                |               | 18.6          | 8.17 | 903.3        | 5.07                   | 0.5           | 9.37                           | 103.3                      | 139.0       |
| PFM007912 | 2020-08-12                     | 6.0          | 8.7                |               | 18.6          | 8.16 | 903.3        | 5.07                   | 0.6           | 9.34                           | 102.9                      | 139.8       |
| PFM007912 | 2020-08-12                     | 7.0          | 8.7                |               | 18.6          | 8.15 | 903.2        | 5.07                   | 0.6           | 9.30                           | 102.4                      | 140.8       |
| PFM007912 | 2020-08-12                     | 8.0          | 8.7                |               | 17.9          | 7.96 | 899.1        | 5.05                   | 0.8           | 7.78                           | 84.5                       | 144.4       |
| PFM007912 | 2020-09-16                     | 0.5          | 9.8                | 82536         | 14.3          | 7.92 | 894.2        | 5.02                   | 0.4           | 9.68                           | 97.6                       | 151.3       |
| PFM007912 | 2020-09-16                     | 1.0          | 9.8                |               | 14.3          | 7.92 | 894.2        | 5.02                   | 0.4           | 9.68                           | 97.6                       | 153.7       |
| PFM007912 | 2020-09-16                     | 2.0          | 9.8                |               | 14.3          | 7.92 | 894.2        | 5.02                   | 0.5           | 9.68                           | 97.5                       | 154.5       |
| PFM007912 | 2020-09-16                     | 3.0          | 9.8                |               | 14.3          | 7.92 | 894.2        | 5.02                   | 0.4           | 9.67                           | 97.5                       | 156.9       |
| PFM007912 | 2020-09-16                     | 4.0          | 9.8                |               | 14.3          | 7.93 | 894.2        | 5.02                   | 0.5           | 9.66                           | 97.4                       | 159.0       |
| PFM007912 | 2020-09-16                     | 5.0          | 9.8                |               | 14.3          | 7.93 | 894.3        | 5.03                   | 0.4           | 9.66                           | 97.3                       | 162.1       |
| PFM007912 | 2020-09-16                     | 6.0          | 9.8                |               | 14.3          | 7.93 | 894.2        | 5.02                   | 0.5           | 9.65                           | 97.3                       | 163.6       |
| PFM007912 | 2020-09-16                     | 7.0          | 9.8                |               | 14.3          | 7.93 | 894.2        | 5.02                   | 0.5           | 9.65                           | 97.3                       | 164.5       |
| PFM007912 | 2020-09-16                     | 8.0          | 9.8                |               | 14.3          | 7.93 | 894.3        | 5.02                   | 0.4           | 9.64                           | 97.2                       | 165.4       |
| PFM007912 | 2020-10-13                     | 0.5          | 9.7                | 83401         | 11.4          | 7.99 | 907.3        | 5.10                   | 0.4           | 10.19                          | 96.2                       | 178.3       |
| PFM007912 | 2020-10-13                     | 1.0          | 9.7                |               | 11.4          | 7.98 | 907.4        | 5.10                   | 0.5           | 10.17                          | 96.1                       | 179.0       |
| PFM007912 | 2020-10-13                     | 2.0          | 9.7                |               | 11.4          | 7.96 | 907.4        | 5.10                   | 0.5           | 10.16                          | 96.0                       | 179.8       |
| PFM007912 | 2020-10-13                     | 3.0          | 9.7                |               | 11.4          | 7.94 | 907.3        | 5.10                   | 0.4           | 10.15                          | 95.9                       | 180.9       |
| PFM007912 | 2020-10-13                     | 4.0          | 9.7                |               | 11.4          | 7.94 | 907.3        | 5.10                   | 0.4           | 10.14                          | 95.9                       | 181.8       |
| PFM007912 | 2020-10-13                     | 5.0          | 9.7                |               | 11.4          | 7.93 | 907.2        | 5.10                   | 0.4           | 10.14                          | 95.8                       | 182.6       |
| PFM007912 | 2020-10-13                     | 6.0          | 9.7                |               | 11.4          | 7.92 | 907.1        | 5.10                   | 0.4           | 10.13                          | 95.7                       | 183.8       |
| PFM007912 | 2020-10-13                     | 7.0          | 9.7                |               | 11.4          | 7.91 | 907.1        | 5.10                   | 0.5           | 10.11                          | 95.5                       | 184.5       |
| PFM007912 | 2020-10-13                     | 8.0          | 9.7                |               | 11.4          | 7.91 | 907.1        | 5.10                   | 0.5           | 10.11                          | 95.5                       | 185.2       |
| PFM007912 | 2020-10-13                     | 8.5          | 9.7                |               | 11.4          | 7.90 | 907.0        | 5.10                   | 0.4           | 10.09                          | 95.3                       | 156.7       |
| PFM008211 | 2020-04-21                     | 0.5          |                    | 77607         | 6.3           | 8.16 | 909.3        | 5.07                   | 0.6           | 12.93                          | 108.2                      | 174.0       |
| PFM008211 | 2020-05-26                     | 0.5          |                    | 78579         | 10.2          | 8.07 | 911.6        | 5.12                   | 0.3           | 11.77                          | 108.3                      | 161.5       |
| PFM008211 | 2020-06-22                     | 0.5          |                    | 79858         | 19.2          | 8.29 | 926.8        | 5.21                   | 0.4           | 10.15                          | 113.3                      | 125.9       |
| PFM008211 | 2020-08-12                     | 0.5          | 38.0               | 80502         | 19.3          | 8.28 | 908.8        | 5.10                   | 0.5           | 9.76                           | 109.2                      | 136.1       |
| PFM008211 | 2020-09-16                     | 0.5          |                    |               |               |      |              |                        |               |                                |                            |             |
| PFM008211 | 2020-10-13                     | 0.5          |                    | 83402         | 11.0          | 7.94 | 917.1        | 5.16                   | 3.1           | 10.29                          | 96.4                       | 172.5       |
| PFM102269 | 2020-01-14                     | 0.5          |                    | 74917         | 12.6          | 7.86 | 829.8        | 4.64                   | 1.9           | 12.41                          | 120.1                      | 283.0       |
| PFM102269 | 2020-02-10                     | 0.5          |                    | 75769         | 13.1          | 8.02 | 861.2        | 4.83                   | 1.1           | 12.59                          | 123.4                      | 247.8       |
| PFM102269 | 2020-03-16                     | 0.5          |                    | 76686         | 13.6          | 7.98 | 878.7        | 4.93                   | 1.8           | 13.38                          | 132.7                      | 203.7       |
| PFM102269 | 2020-04-21                     | 0.5          |                    | 77265         | 16.6          | 8.14 | 898.2        | 5.05                   | 2.1           | 12.62                          | 133.6                      | 174.1       |
| PFM102269 | 2020-05-25                     | 0.5          |                    | 78571         | 19.6          | 7.92 | 912.2        | 5.12                   | 1.4           | 11.31                          | 127.1                      | 176.1       |
| PFM102269 | 2020-06-22                     | 0.5          |                    | 79952         | 20.5          | 8.19 | 913.3        | 5.13                   | 0.3           | 10.10                          | 115.5                      | 213.2       |
| PFM102269 | 2020-08-10                     | 0.5          |                    | 80498         | 29.9          | 8.18 | 919.0        | 5.10                   | 1.2           | 8.94                           | 121.5                      | 149.0       |
| PFM102269 | 2020-09-16                     | 0.5          |                    | 82533         | 18.3          | 7.86 | 906.7        | 5.10                   | -0.4          | 9.17                           | 100.4                      | 175.8       |
| PFM102269 | 2020-10-12                     | 0.5          |                    | 83398         | 21.2          | 7.87 | 921.7        | 5.18                   | 0.3           | 9.71                           | 112.6                      | 189.2       |
| PFM102269 | 2020-11-09                     | 0.5          |                    | 84851         | 18.4          | 7.65 | 893.6        | 5.02                   | 0.3           | 10.77                          | 118.2                      | 218.4       |
| PFM102269 | 2020-12-06                     | 0.5          |                    | 85492         | 15.9          | 7.16 | 884.1        | 4.96                   | 0.3           | 11.32                          | 118.0                      | 220.9       |

**Table A2-2. Water flow measurements.**

| <b>Id-code</b> | <b>Measuring date (yyyy-mm-dd)</b> | <b>Simple flow rate (m<sup>3</sup>/s)</b> | <b>Comment Code</b> |
|----------------|------------------------------------|---|---------------------|
| PFM000066      | 2020-01-14                         | 0.0510                                    | L                   |
| PFM000066      | 2020-02-10                         | 0.0650                                    | L                   |
| PFM000066      | 2020-03-16                         | 0.0750                                    | L                   |
| PFM000066      | 2020-04-20                         | 0.0220                                    | L                   |
| PFM000066      | 2020-05-25                         | 0.0380                                    | L                   |
| PFM000066      | 2020-06-22                         |   | F                   |
| PFM000066      | 2020-08-11                         |   | G                   |
| PFM000066      | 2020-09-16                         |   | G                   |
| PFM000066      | 2020-10-12                         |   | G                   |
| PFM000066      | 2020-11-09                         | 0.0400                                    | L                   |
| PFM000066      | 2020-12-06                         | 0.0280                                    | L                   |
| PFM000068      | 2020-01-13                         | 0.1660                                    | L                   |
| PFM000068      | 2020-02-10                         | 0.1750                                    | L                   |
| PFM000068      | 2020-03-16                         | 0.2040                                    | L                   |
| PFM000068      | 2020-04-20                         |   | B                   |
| PFM000068      | 2020-05-25                         |   | B                   |
| PFM000068      | 2020-06-22                         |   | B                   |
| PFM000068      | 2020-08-11                         |   | G                   |
| PFM000068      | 2020-09-16                         |   | G                   |
| PFM000068      | 2020-10-12                         |   | G                   |
| PFM000068      | 2020-11-09                         | 0.0120                                    | L                   |
| PFM000068      | 2020-12-06                         | 0.0570                                    | L                   |
| PFM000069      | 2020-01-13                         | 0.0750                                    | L                   |
| PFM000069      | 2020-02-10                         | 0.0560                                    | L                   |
| PFM000069      | 2020-03-16                         | 0.0720                                    | L                   |
| PFM000069      | 2020-04-20                         | 0.0350                                    | L                   |
| PFM000069      | 2020-05-25                         | 0.0360                                    | L                   |
| PFM000069      | 2020-06-22                         | 0.0090                                    | L                   |
| PFM000069      | 2020-08-11                         |   | G                   |
| PFM000069      | 2020-09-16                         |   | G                   |
| PFM000069      | 2020-10-12                         |   | G                   |
| PFM000069      | 2020-11-09                         | 0.0136                                    | L                   |
| PFM000069      | 2020-12-06                         | 0.0330                                    | L                   |
| PFM000070      | 2020-01-14                         | 0.1000                                    | L                   |
| PFM000070      | 2020-02-10                         | 0.0600                                    | L                   |
| PFM000070      | 2020-03-16                         | 0.0810                                    | L                   |
| PFM000070      | 2020-04-20                         |   | B                   |
| PFM000070      | 2020-05-25                         |   | B                   |
| PFM000070      | 2020-06-22                         |   | B                   |
| PFM000070      | 2020-08-11                         |   | G                   |
| PFM000070      | 2020-09-16                         |   | G                   |
| PFM000070      | 2020-10-12                         |   | G                   |
| PFM000070      | 2020-11-09                         |   | F                   |
| PFM000070      | 2020-12-06                         |   | F                   |

| <b>Code</b> | <b>Code description</b>                   | <b>Code</b> | <b>Code description</b>                |
|-------------|---|-------------|--|
| A           | Blocked flow; no measurement              | I           | Measurement not possible, see protocol |
| B           | Too much water vegetation, no measurement | K           | Comment missing                        |
| C           | Water completely frozen, no measurement   | L           | Flow rate value available              |
| D           | Too much ice, no measurement              | M           | Low water level                        |
| E           | Flow rate too high, no measurement        | N           | Lake, sea, no measurement              |
| F           | Flow rate too low, no measurement         | O           | Too much wind, no measurement          |
| G           | Dry conditions, no measurements           | P           | Stationary water                       |
| H           | Measurement not possible, estimated value |             |  |



Table A2-3a. Major components.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Depth<br>(m) | RCB<br>(%) | Na<br>(mg/L) | K<br>(mg/L) | Ca<br>(mg/L) | Mg<br>(mg/L) | Alk<br>(mg/L) | Cl<br>(mg/L) | SO <sub>4</sub><br>(mg/L) | SO <sub>4</sub> -S<br>(mg/L) | Br<br>(mg/L) | F<br>(mg/L) | Si<br>(mg/L) |
|-----------|-------------------------------|---------------|--------------|------------|--------------|-------------|--------------|--------------|---------------|--------------|---------------------------|------------------------------|--------------|-------------|--------------|
| PFM000062 | 2020-01-13                    | 74916         | 0.50         | 2.31       | 1540         | 56.6        | 71.5         | 170.0        | 76.1          | 2570         | 369.0                     | 132.0                        | 10.20        | 0.350       | 1.040        |
| PFM000062 | 2020-04-21                    | 77261         | 0.50         | 0.33       | 1620         | 58.8        | 76.4         | 174.0        | 79.2          | 2820         | 386.0                     | 137.0                        | 9.10         | 0.310       | 0.413        |
| PFM000062 | 2020-05-26                    | 78567         | 0.50         | 2.11       | 1670         | 61.3        | 78.8         | 180.0        | 81.3          | 2790         | 396.0                     | 143.0                        | 12.70        | 0.290       | 0.540        |
| PFM000062 | 2020-06-22                    | 79850         | 0.50         | -1.25      | 1600         | 62.1        | 75.3         | 185.0        | 80.5          | 2910         | 406.0                     | 143.0                        | 9.94         | 0.290       | 0.228        |
| PFM000062 | 2020-08-12                    | 80494         | 0.50         | -0.17      | 1600         | 59.0        | 72.8         | 180.0        | 78.8          | 2830         | 401.0                     | 138.0                        | 10.00        | 0.260       | 0.512        |
| PFM000062 | 2020-09-16                    | 82529         | 0.50         | -0.34      | 1590         | 60.8        | 74.9         | 184.0        | 79.3          | 2840         | 399.0                     | 139.0                        | 10.40        | 0.290       | 0.706        |
| PFM000062 | 2020-10-13                    | 83394         | 0.50         | -0.61      | 1600         | 60.9        | 74.9         | 182.0        | 80.7          | 2860         | 393.0                     | 142.0                        | 10.00        | 0.280       | 0.732        |
| PFM000066 | 2020-01-14                    | 74918         | 0.10         | 2.22       | 4.81         | 2.4         | 67.8         | 3.2          | 214.0         | 4.60         | 3.60                      | 1.57                         | 0.16         | 0.250       | 6.040        |
| PFM000066 | 2020-02-10                    | 75765         | 0.10         | 4.06       | 5.12         | 2.2         | 70.3         | 3.2          | 213.0         | 4.80         | 3.50                      | 1.51                         | 0.06         | 0.230       | 5.720        |
| PFM000066 | 2020-03-16                    | 76682         | 0.10         | 3.19       | 4.98         | 2.1         | 63.1         | 2.9          | 195.0         | 4.40         | 4.00                      | 1.58                         | 0.04         | 0.230       | 4.930        |
| PFM000066 | 2020-04-20                    | 77269         | 0.10         | 3.24       | 5.61         | 2.2         | 68.2         | 3.1          | 211.0         | 5.00         | 4.40                      | 1.61                         | 0.06         | 0.270       | 4.110        |
| PFM000066 | 2020-05-25                    | 78575         | 0.10         | 4.57       | 7.98         | 2.3         | 61.4         | 3.3          | 193.0         | 5.10         | 2.70                      | 1.50                         | 0.06         | 0.240       | 3.230        |
| PFM000066 | 2020-06-22                    | 79859         | 0.10         | 2.67       | 6.59         | 1.9         | 50.7         | 3.2          | 167.0         | 4.90         | 2.40                      | 1.20                         | 0.06         | 0.260       | 3.480        |
| PFM000066 | 2020-11-09                    | 80503         | 0.10         | 2.66       | 6.36         | 2.8         | 57.7         | 3.1          | 168.0         | 6.10         | 16.60                     | 5.89                         | < 0.02       | 0.220       | 4.410        |
| PFM000066 | 2020-12-06                    | 82574         | 0.10         | 3.71       | 6.71         | 2.8         | 64.7         | 3.2          | 183.0         | 6.50         | 17.30                     | 6.23                         | < 0.01       | 0.210       | 4.840        |
| PFM000068 | 2020-01-13                    | 74919         | 0.10         | 4.43       | 10.40        | 2.3         | 56.2         | 3.9          | 169.0         | 12.50        | 7.60                      | 3.11                         | 0.09         | 0.290       | 5.090        |
| PFM000068 | 2020-02-10                    | 75766         | 0.10         | 4.19       | 12.00        | 2.1         | 58.0         | 4.0          | 173.0         | 16.10        | 7.70                      | 3.08                         | 0.14         | 0.270       | 5.060        |
| PFM000068 | 2020-03-16                    | 76683         | 0.10         | 4.52       | 9.61         | 2.0         | 53.4         | 3.4          | 157.0         | 11.90        | 8.20                      | 3.16                         | 0.07         | 0.270       | 4.250        |
| PFM000068 | 2020-04-20                    | 77270         | 0.10         | 4.10       | 17.40        | 2.3         | 62.9         | 4.8          | 185.0         | 25.00        | 10.40                     | 4.03                         | 0.16         | 0.340       | 4.940        |
| PFM000068 | 2020-05-25                    | 78576         | 0.10         | 4.97       | 16.80        | 2.5         | 58.1         | 4.4          | 170.0         | 23.00        | 8.40                      | 3.54                         | 0.16         | 0.300       | 3.670        |
| PFM000068 | 2020-06-22                    | 79860         | 0.10         | 3.04       | 23.60        | 2.6         | 62.6         | 5.6          | 193.0         | 35.00        | 9.10                      | 3.68                         | 0.19         | 0.360       | 5.440        |
| PFM000068 | 2020-11-09                    | 80504         | 0.10         | 3.54       | 25.00        | 2.7         | 66.3         | 6.1          | 163.0         | 38.00        | 40.00                     | 14.00                        | < 0.02       | 0.270       | 5.390        |
| PFM000068 | 2020-12-06                    | 82575         | 0.10         | 3.12       | 20.80        | 2.8         | 66.0         | 5.6          | 161.0         | 32.00        | 41.00                     | 14.20                        | 0.11         | 0.280       | 5.750        |
| PFM000069 | 2020-01-13                    | 74920         | 0.10         | 2.36       | 13.90        | 2.6         | 62.4         | 4.5          | 193.0         | 18.70        | 10.30                     | 4.06                         | 0.10         | 0.320       | 5.980        |
| PFM000069 | 2020-02-10                    | 75767         | 0.10         | 4.56       | 17.80        | 2.4         | 66.8         | 5.0          | 196.0         | 25.00        | 9.80                      | 3.94                         | 0.18         | 0.310       | 6.310        |
| PFM000069 | 2020-03-16                    | 76684         | 0.10         | 4.24       | 13.20        | 2.2         | 59.9         | 4.1          | 174.0         | 17.60        | 11.20                     | 4.27                         | 0.09         | 0.300       | 5.180        |
| PFM000069 | 2020-04-20                    | 77271         | 0.10         | 2.84       | 20.10        | 2.4         | 63.5         | 5.1          | 191.0         | 30.00        | 12.00                     | 4.47                         | 0.18         | 0.360       | 5.560        |
| PFM000069 | 2020-05-25                    | 78577         | 0.10         | 2.87       | 20.80        | 2.5         | 59.1         | 4.8          | 177.0         | 32.00        | 10.10                     | 4.08                         | 0.18         | 0.330       | 4.610        |
| PFM000069 | 2020-06-22                    | 79861         | 0.10         | 2.37       | 23.50        | 2.5         | 59.6         | 5.5          | 188.0         | 36.00        | 6.90                      | 2.98                         | 0.17         | 0.350       | 5.400        |
| PFM000069 | 2020-11-09                    | 80505         | 0.10         | 2.96       | 25.60        | 2.3         | 59.0         | 5.7          | 171.0         | 40.00        | 16.20                     | 6.00                         | 0.02         | 0.270       | 5.230        |
| PFM000069 | 2020-12-06                    | 82576         | 0.10         | 3.58       | 24.40        | 2.6         | 65.2         | 5.6          | 173.0         | 37.00        | 27.00                     | 9.88                         | 0.09         | 0.270       | 6.120        |
| PFM000070 | 2020-01-14                    | 74921         | 0.10         | 6.37       | 6.46         | 2.1         | 48.2         | 2.8          | 140.0         | 6.00         | 5.40                      | 2.22                         | 0.04         | 0.240       | 3.020        |
| PFM000070 | 2020-02-10                    | 75768         | 0.10         | 5.15       | 5.53         | 1.7         | 44.1         | 2.4          | 131.0         | 5.30         | 4.30                      | 1.78                         | 0.04         | 0.210       | 2.600        |

Table A2-3a. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Depth<br>(m) | RCB<br>(%) | Na<br>(mg/L) | K<br>(mg/L) | Ca<br>(mg/L) | Mg<br>(mg/L) | Alk<br>(mg/L) | Cl<br>(mg/L) | SO <sub>4</sub><br>(mg/L) | SO <sub>4</sub> -S<br>(mg/L) | Br<br>(mg/L) | F<br>(mg/L) | Si<br>(mg/L) |
|-----------|-------------------------------|---------------|--------------|------------|--------------|-------------|--------------|--------------|---------------|--------------|---------------------------|------------------------------|--------------|-------------|--------------|
| PFM000070 | 2020-03-16                    | 76685         | 0.10         | 6.54       | 6.77         | 1.8         | 49.7         | 2.7          | 145.0         | 5.80         | 4.50                      | 1.88                         | 0.04         | 0.220       | 2.970        |
| PFM000070 | 2020-04-20                    | 77272         | 0.10         | 5.46       | 6.22         | 1.9         | 49.8         | 2.7          | 148.0         | 5.90         | 4.50                      | 1.74                         | 0.05         | 0.250       | 1.780        |
| PFM000070 | 2020-05-25                    | 78578         | 0.10         | 5.20       | 6.45         | 1.9         | 46.2         | 2.6          | 140.0         | 5.80         | 3.50                      | 1.61                         | 0.04         | 0.230       | 0.554        |
| PFM000070 | 2020-06-22                    | 79862         | 0.10         | 4.20       | 7.22         | 1.1         | 50.1         | 3.1          | 160.0         | 5.20         | 2.20                      | 1.14                         | 0.05         | 0.240       | 2.480        |
| PFM000070 | 2020-11-09                    | 80506         | 0.10         | 4.59       | 6.99         | 1.3         | 46.1         | 2.8          | 115.0         | 6.50         | 25.00                     | 8.90                         | < 0.02       | < 0.2       | 3.430        |
| PFM000070 | 2020-12-06                    | 82577         | 0.10         | 7.98       | 6.86         | 2.0         | 43.6         | 2.6          | 104.0         | 7.00         | 18.60                     | 6.98                         | < 0.01       | < 0.2       | 3.510        |
| PFM000074 | 2020-04-20                    | 74922         | 0.50         | 4.06       | 11.50        | 2.4         | 71.1         | 3.5          | 216.0         | 13.60        | 5.00                      | 1.85                         | 0.07         | 0.290       | 3.540        |
| PFM000074 | 2020-08-10                    | 80507         | 0.50         | 2.17       | 18.70        | 1.9         | 51.4         | 4.0          | 171.0         | 24.00        | 2.90                      | 1.60                         | 0.14         | 0.280       | 5.120        |
| PFM000074 | 2020-10-12                    | 83403         | 0.50         | 1.49       | 19.20        | 1.9         | 50.1         | 3.8          | 170.0         | 25.00        | 2.30                      | 1.27                         | 0.09         | 0.300       | 5.880        |
| PFM000083 | 2020-04-21                    | 77262         | 0.50         | 0.56       | 1620         | 58.5        | 75.7         | 172.0        | 79.1          | 2800         | 422.0                     | 136.0                        | 9.45         | 0.320       | 0.298        |
| PFM000083 | 2020-05-26                    | 78568         | 0.50         | 1.45       | 1660         | 62.0        | 79.8         | 182.0        | 81.9          | 2820         | 395.0                     | 145.0                        | 12.60        | 0.260       | 0.559        |
| PFM000083 | 2020-06-22                    | 79851         | 0.50         | -1.11      | 1610         | 62.7        | 75.4         | 186.0        | 80.9          | 2920         | 409.0                     | 143.0                        | 10.20        | 0.280       | 0.259        |
| PFM000083 | 2020-08-12                    | 80495         | 0.50         | -0.84      | 1570         | 59.4        | 74.6         | 181.0        | 79.2          | 2830         | 399.0                     | 139.0                        | 10.10        | 0.260       | 0.571        |
| PFM000083 | 2020-09-16                    | 82530         | 0.50         | 0.72       | 1610         | 60.8        | 74.9         | 183.0        | 79.3          | 2800         | 408.0                     | 139.0                        | 10.40        | 0.290       | 0.724        |
| PFM000083 | 2020-10-13                    | 83395         | 0.50         | -1.00      | 1590         | 60.4        | 74.6         | 181.0        | 80.7          | 2870         | 387.0                     | 140.0                        | 9.86         | 0.280       | 0.731        |
| PFM000084 | 2020-04-21                    | 77263         | 0.50         | -0.91      | 859          | 32.2        | 67.0         | 93.8         | 109.0         | 1540         | 236.0                     | 77.8                         | 5.74         | 0.260       | 1.350        |
| PFM000084 | 2020-05-26                    | 78569         | 0.50         | -2.22      | 1010         | 41.7        | 69.4         | 117.0        | 108.0         | 1870         | 267.0                     | 98.2                         | 6.31         | 0.260       | 1.130        |
| PFM000084 | 2020-06-22                    | 79950         | 0.50         | 1.86       | 798          | 32.3        | 67.7         | 94.3         | 127.0         | 1350         | 210.0                     | 75.8                         | 5.71         | 0.250       | 0.540        |
| PFM000084 | 2020-08-12                    | 80496         | 0.50         | 1.58       | 1560         | 55.7        | 72.8         | 169.0        | 86.5          | 2640         | 376.0                     | 130.0                        | 9.35         | 0.260       | 0.736        |
| PFM000084 | 2020-09-16                    | 82531         | 0.50         | 1.08       | 1570         | 59.0        | 74.4         | 178.0        | 82.5          | 2710         | 385.0                     | 134.0                        | 9.66         | 0.290       | 0.834        |
| PFM000084 | 2020-10-13                    | 83396         | 0.50         | -0.87      | 1500         | 57.2        | 73.2         | 171.0        | 85.0          | 2700         | 364.0                     | 132.0                        | 9.57         | 0.280       | 0.767        |
| PFM000107 | 2020-04-20                    | 74923         | 0.50         | 4.84       | 16.40        | 2.54        | 53.30        | 4.40         | 156.00        | 23.00        | 10.00                     | 3.64                         | 0.14         | 0.300       | 1.550        |
| PFM000107 | 2020-08-10                    | 80508         | 0.50         | 4.24       | 23.20        | 2.74        | 22.20        | 4.78         | 73.20         | 33.00        | 8.40                      | 3.55                         | 0.17         | 0.330       | 0.332        |
| PFM000107 | 2020-10-12                    | 83404         | 0.50         | 4.89       | 27.50        | 3.29        | 33.10        | 5.58         | 111.00        | 37.00        | 7.30                      | 3.09                         | 0.20         | 0.350       | 0.148        |
| PFM000117 | 2020-04-21                    | 74924         | 0.50         | 6.67       | 6.52         | 2.18        | 52.10        | 2.67         | 151.00        | 5.80         | 4.30                      | 1.82                         | 0.05         | 0.220       | 1.560        |
| PFM000117 | 2020-08-10                    | 80509         | 0.50         | 5.86       | 7.22         | 1.67        | 21.10        | 2.68         | 70.70         | 6.40         | 3.40                      | 1.57                         | 0.05         | 0.240       | 0.535        |
| PFM000117 | 2020-10-12                    | 83405         | 0.50         | 6.38       | 7.88         | 1.80        | 25.90        | 2.80         | 85.20         | 6.50         | 3.00                      | 1.41                         | 0.05         | 0.280       | 0.595        |
| PFM007783 | 2020-04-21                    | 77264         | 0.50         | 0.55       | 1600         | 58.5        | 75.8         | 171.0        | 79.3          | 2770         | 383.0                     | 135.0                        | 9.32         | 0.320       | 0.239        |
| PFM007783 | 2020-05-25                    | 78570         | 0.50         | 0.91       | 1660         | 61.0        | 78.2         | 179.0        | 80.0          | 2850         | 398.0                     | 142.0                        | 12.80        | 0.290       | < 0.2        |
| PFM007783 | 2020-06-22                    | 79951         | 0.50         | -1.01      | 1600         | 62.4        | 73.9         | 183.0        | 80.6          | 2890         | 398.0                     | 141.0                        | 11.20        | 0.290       | 0.157        |
| PFM007783 | 2020-08-11                    | 80497         | 0.50         | -0.42      | 1600         | 59.8        | 73.7         | 182.0        | 78.6          | 2850         | 397.0                     | 140.0                        | 10.10        | 0.250       | 0.607        |
| PFM007783 | 2020-09-16                    | 82532         | 0.50         | 0.40       | 1570         | 60.1        | 74.0         | 182.0        | 77.5          | 2760         | 397.0                     | 137.0                        | 9.91         | 0.290       | 0.788        |
| PFM007783 | 2020-10-12                    | 83397         | 0.50         | -0.59      | 1560         | 59.1        | 72.2         | 177.0        | 77.4          | 2790         | 377.0                     | 136.0                        | 10.10        | 0.280       | 0.761        |
| PFM007910 | 2020-04-21                    | 77266         | 0.50         | 0.45       | 1580         | 57.8        | 76.2         | 169.0        | 82.2          | 2740         | 378.0                     | 134.0                        | 9.53         | 0.310       | 0.320        |
| PFM007910 | 2020-05-26                    | 78572         | 0.50         | 1.56       | 1640         | 59.4        | 76.9         | 175.0        | 81.3          | 2770         | 399.0                     | 139.0                        | 12.50        | 0.280       | 0.314        |

Table A2-3a. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Depth<br>(m) | RCB<br>(%) | Na<br>(mg/L) | K<br>(mg/L) | Ca<br>(mg/L) | Mg<br>(mg/L) | Alk<br>(mg/L) | Cl<br>(mg/L) | SO <sub>4</sub><br>(mg/L) | SO <sub>4</sub> -S<br>(mg/L) | Br<br>(mg/L) | F<br>(mg/L) | Si<br>(mg/L) |
|-----------|-------------------------------|---------------|--------------|------------|--------------|-------------|--------------|--------------|---------------|--------------|---------------------------|------------------------------|--------------|-------------|--------------|
| PFM007910 | 2020-06-22                    | 79954         | 0.50         | -1.06      | 1610         | 62.4        | 74.5         | 183.0        | 81.0          | 2910         | 394.0                     | 141.0                        | 11.00        | 0.290       | 0.262        |
| PFM007910 | 2020-08-12                    | 80499         | 0.50         | -1.01      | 1570         | 59.3        | 72.9         | 181.0        | 79.0          | 2840         | 395.0                     | 138.0                        | 10.10        | 0.250       | 0.525        |
| PFM007910 | 2020-09-16                    | 82534         | 0.50         | 0.46       | 1580         | 59.8        | 73.4         | 181.0        | 77.0          | 2770         | 395.0                     | 136.0                        | 10.00        | 0.280       | 0.716        |
| PFM007910 | 2020-10-13                    | 83399         | 0.50         | -1.35      | 1550         | 59.0        | 72.6         | 177.0        | 77.8          | 2820         | 395.0                     | 137.0                        | 10.20        | 0.270       | 0.763        |
| PFM007911 | 2020-04-21                    | 77267         | 0.50         | 0.59       | 1610         | 57.8        | 75.0         | 170.0        | 79.6          | 2780         | 387.0                     | 134.0                        | 9.15         | 0.310       | 0.289        |
| PFM007911 | 2020-05-26                    | 78573         | 0.50         | 0.51       | 1610         | 60.4        | 78.6         | 179.0        | 80.2          | 2800         | 396.0                     | 142.0                        | 12.30        | 0.290       | 0.305        |
| PFM007911 | 2020-06-22                    | 79953         | 0.50         | -0.11      | 1630         | 62.6        | 74.6         | 184.0        | 81.9          | 2880         | 398.0                     | 142.0                        | 10.90        | 0.290       | 0.201        |
| PFM007911 | 2020-08-12                    | 80500         | 0.50         | -0.12      | 1580         | 59.3        | 73.2         | 181.0        | 78.4          | 2800         | 395.0                     | 138.0                        | 10.30        | 0.260       | 0.601        |
| PFM007911 | 2020-09-16                    | 82535         | 0.50         | -0.11      | 1570         | 59.8        | 73.6         | 181.0        | 77.2          | 2790         | 396.0                     | 136.0                        | 10.10        | 0.280       | 0.795        |
| PFM007911 | 2020-10-13                    | 83400         | 0.50         | -1.08      | 1560         | 59.3        | 71.9         | 177.0        | 77.8          | 2820         | 386.0                     | 136.0                        | 10.30        | 0.280       | 0.803        |
| PFM007912 | 2020-04-21                    | 77268         | 0.50         | 0.26       | 1590         | 58.1        | 74.7         | 170.0        | 78.7          | 2770         | 386.0                     | 134.0                        | 8.82         | 0.310       | 0.373        |
| PFM007912 | 2020-05-26                    | 78574         | 0.50         | 0.39       | 1610         | 59.6        | 76.4         | 176.0        | 79.2          | 2800         | 395.0                     | 140.0                        | 11.70        | 0.290       | 0.368        |
| PFM007912 | 2020-06-22                    | 79857         | 0.50         | -1.13      | 1590         | 61.9        | 74.3         | 182.0        | 79.9          | 2880         | 400.0                     | 141.0                        | 10.00        | 0.280       | 0.198        |
| PFM007912 | 2020-08-12                    | 80501         | 0.50         | -0.51      | 1570         | 59.2        | 73.6         | 181.0        | 78.2          | 2810         | 398.0                     | 138.0                        | 10.40        | 0.260       | 0.583        |
| PFM007912 | 2020-09-16                    | 82536         | 0.50         | -1.20      | 1540         | 59.8        | 71.3         | 177.0        | 77.4          | 2800         | 402.0                     | 134.0                        | 10.30        | 0.280       | 0.665        |
| PFM007912 | 2020-10-13                    | 83401         | 0.50         | -1.20      | 1560         | 59.6        | 72.9         | 178.0        | 78.9          | 2830         | 390.0                     | 137.0                        | 9.90         | 0.280       | 0.780        |
| PFM008211 | 2020-04-21                    | 77607         | 0.50         | 0.74       | 1640         | 58.9        | 75.7         | 172.0        | 79.4          | 2820         | 387.0                     | 136.0                        | 8.35         | 0.310       | 0.467        |
| PFM008211 | 2020-05-26                    | 78579         | 0.50         | 0.50       | 1630         | 62.1        | 80.0         | 183.0        | 80.4          | 2840         | 398.0                     | 145.0                        | 12.60        | 0.260       | 0.500        |
| PFM008211 | 2020-06-22                    | 79858         | 0.50         | -0.53      | 1630         | 62.8        | 75.1         | 185.0        | 80.8          | 2910         | 418.0                     | 143.0                        | 10.00        | 0.290       | 0.336        |
| PFM008211 | 2020-08-12                    | 80502         | 0.50         | 0.37       | 1610         | 60.7        | 74.5         | 184.0        | 79.3          | 2820         | 395.0                     | 141.0                        | 10.20        | 0.250       | 0.574        |
| PFM008211 | 2020-10-13                    | 83402         | 0.50         | -1.13      | 1580         | 60.3        | 73.7         | 180.0        | 80.4          | 2860         | 390.0                     | 139.0                        | 10.50        | 0.280       | 0.700        |
| PFM102269 | 2020-01-14                    | 74917         | 0.50         | -0.17      | 1460         | 54.5        | 68.8         | 163.0        | 76.7          | 2580         | 363.0                     | 126.0                        | 9.98         | 0.270       | 1.030        |
| PFM102269 | 2020-02-10                    | 75769         | 0.50         | 0.07       | 1520         | 57.3        | 74.4         | 171.0        | 78.9          | 2680         | 380.0                     | 132.0                        | 9.89         | 0.310       | 0.930        |
| PFM102269 | 2020-03-16                    | 76686         | 0.50         | 1.40       | 1620         | 57.8        | 76.2         | 173.0        | 80.2          | 2750         | 398.0                     | 136.0                        | 9.54         | 0.390       | 0.540        |
| PFM102269 | 2020-04-21                    | 77265         | 0.50         | 1.96       | 1630         | 58.8        | 75.3         | 172.0        | 79.1          | 2730         | 389.0                     | 135.0                        | 9.35         | 0.300       | 0.394        |
| PFM102269 | 2020-05-25                    | 78571         | 0.50         | 1.36       | 1720         | 62.9        | 80.4         | 184.0        | 80.4          | 2920         | 397.0                     | 147.0                        | 12.40        | 0.280       | 0.557        |
| PFM102269 | 2020-06-22                    | 79952         | 0.50         | -1.01      | 1600         | 62.4        | 74.6         | 183.0        | 80.1          | 2890         | 403.0                     | 142.0                        | 10.20        | 0.290       | 0.249        |
| PFM102269 | 2020-08-10                    | 80498         | 0.50         | -0.57      | 1570         | 59.2        | 73.2         | 180.0        | 78.8          | 2810         | 399.0                     | 138.0                        | 10.10        | 0.260       | 0.574        |
| PFM102269 | 2020-09-16                    | 82533         | 0.50         | 0.65       | 1620         | 60.6        | 74.9         | 183.0        | 79.4          | 2820         | 401.0                     | 139.0                        | 10.10        | 0.280       | 0.676        |
| PFM102269 | 2020-10-12                    | 83398         | 0.50         | -1.32      | 1590         | 60.4        | 74.6         | 181.0        | 81.1          | 2890         | 389.0                     | 140.0                        | 10.10        | 0.280       | 0.722        |
| PFM102269 | 2020-11-09                    | 84851         | 0.50         | 1.15       | 1580         | 58.5        | 74.2         | 176.0        | 78.2          | 2730         | 418.0                     | 130.0                        | 14.10        | 0.280       | 0.707        |
| PFM102269 | 2020-12-06                    | 85492         | 0.50         | 1.85       | 1620         | 58.7        | 75.8         | 173.0        | 79.6          | 2730         | 395.0                     | 132.0                        | 14.20        | 0.270       | 0.881        |

Table A2-3a. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Depth<br>(m) | RCB<br>(%) | Fe<br>(mg/L) | Mn<br>(mg/L) | Li<br>(mg/L) | Sr<br>(mg/L) | I<br>(mg/L) | Temp_F<br>(°C) | pH_F<br>(pH unit) | pH_L<br>(pH unit) | EC_F<br>(mS/m) | EC_L<br>(mS/m) |
|-----------|-------------------------------|---------------|--------------|------------|--------------|--------------|--------------|--------------|-------------|----------------|-------------------|-------------------|----------------|----------------|
| PFM000062 | 2020-01-13                    | 74916         | 0.50         | 2.31       | 0.021        | 0.002        | 0.023        | 1.190        | 0.012       | 2.3            | 6.820             | 7.670             | 846.4          | 813.0          |
| PFM000062 | 2020-04-21                    | 77261         | 0.50         | 0.33       | 0.006        | 0.002        | 0.027        | 1.210        | 0.013       | 6.4            | 8.110             | 7.990             | 908.6          | 890.0          |
| PFM000062 | 2020-05-26                    | 78567         | 0.50         | 2.11       | 0.006        | 0.006        | 0.029        | 1.270        | 0.016       | 8.5            | 7.880             | 7.760             | 912.5          | 905.0          |
| PFM000062 | 2020-06-22                    | 79850         | 0.50         | -1.25      | 0.002        | 0.001        | 0.028        | 1.290        | 0.013       | 19.5           | 8.290             | 8.130             | 921.5          | 917.0          |
| PFM000062 | 2020-08-12                    | 80494         | 0.50         | -0.17      | 0.007        | 0.000        | 0.026        | 1.250        | 0.012       | 19.1           | 8.330             | 8.010             | 906.8          | 897.0          |
| PFM000062 | 2020-09-16                    | 82529         | 0.50         | -0.34      | 0.005        | 0.001        | 0.023        | 1.260        | 0.014       | 14.8           | 7.880             | 7.870             | 909.4          | 907.0          |
| PFM000062 | 2020-10-13                    | 83394         | 0.50         | -0.61      | 0.011        | 0.003        | 0.027        | 1.280        | 0.012       | 10.5           | 8.120             | 7.690             | 920.2          | 914.0          |
| PFM000066 | 2020-01-14                    | 74918         | 0.10         | 2.22       | 0.126        | 0.016        | 0.001        | 0.079        | 0.007       | 1.0            | 7.300             | 7.200             | 34.4           | 36.0           |
| PFM000066 | 2020-02-10                    | 75765         | 0.10         | 4.06       | 0.091        | 0.012        | < 0.004      | 0.076        | 0.009       | 2.5            | 7.580             | 7.480             | 34.7           | 35.0           |
| PFM000066 | 2020-03-16                    | 76682         | 0.10         | 3.19       | 0.053        | 0.005        | 0.001        | 0.071        | 0.005       | 2.9            | 7.320             | 7.400             | 31.9           | 33.0           |
| PFM000066 | 2020-04-20                    | 77269         | 0.10         | 3.24       | 0.084        | 0.025        | 0.002        | 0.080        | 0.009       | 9.6            | 7.690             | 7.670             | 34.4           | 35.0           |
| PFM000066 | 2020-05-25                    | 78575         | 0.10         | 4.57       | 0.076        | 0.013        | 0.002        | 0.080        | 0.007       | 12.7           | 7.580             | 7.730             | 31.8           | 33.0           |
| PFM000066 | 2020-06-22                    | 79859         | 0.10         | 2.67       | 0.094        | 0.005        | 0.002        | 0.076        | 0.008       | 16.6           | 7.480             | 7.220             | 28.3           | 29.0           |
| PFM000066 | 2020-11-09                    | 80503         | 0.10         | 2.66       | 0.065        | 0.001        | < 0.004      | 0.075        | 1.340       | 5.4            | 7.140             | 7.430             | 31.6           | 33.0           |
| PFM000066 | 2020-12-06                    | 82574         | 0.10         | 3.71       | 0.052        | 0.003        | < 0.004      | 0.079        | 0.005       | 4.1            | 7.060             | 7.350             | 33.9           | 35.0           |
| PFM000068 | 2020-01-13                    | 74919         | 0.10         | 4.43       | 0.355        | 0.045        | 0.002        | 0.086        | 0.009       | 0.3            | 6.740             | 7.200             | 32.2           | 33.0           |
| PFM000068 | 2020-02-10                    | 75766         | 0.10         | 4.19       | 0.234        | 0.029        | < 0.004      | 0.087        | 0.011       | 2.6            | 7.350             | 7.230             | 33.6           | 34.0           |
| PFM000068 | 2020-03-16                    | 76683         | 0.10         | 4.52       | 0.127        | 0.009        | 0.001        | 0.077        | 0.006       | 2.5            | 7.100             | 7.310             | 30.3           | 31.0           |
| PFM000068 | 2020-04-20                    | 77270         | 0.10         | 4.10       | 0.240        | 0.047        | 0.002        | 0.103        | 0.011       | 5.5            | 7.240             | 7.430             | 39.0           | 41.0           |
| PFM000068 | 2020-05-25                    | 78576         | 0.10         | 4.97       | 0.254        | 0.039        | 0.002        | 0.099        | 0.009       | 8.7            | 7.030             | 7.420             | 36.1           | 37.0           |
| PFM000068 | 2020-06-22                    | 79860         | 0.10         | 3.04       | 0.393        | 0.032        | 0.003        | 0.124        | 0.013       | 14.3           | 7.420             | 7.400             | 43.5           | 44.0           |
| PFM000068 | 2020-11-09                    | 80504         | 0.10         | 3.54       | 0.192        | 0.006        | < 0.004      | 0.133        | 1.450       | 5.6            | 7.420             | 7.210             | 46.6           | 48.0           |
| PFM000068 | 2020-12-06                    | 82575         | 0.10         | 3.12       | 0.188        | 0.014        | < 0.004      | 0.127        | 0.010       | 5.3            | 6.200             | 7.190             | 44.1           | 45.0           |
| PFM000069 | 2020-01-13                    | 74920         | 0.10         | 2.36       | 0.282        | 0.055        | 0.002        | 0.096        | 0.009       | 0.6            | 6.770             | 7.100             | 38.1           | 39.0           |
| PFM000069 | 2020-02-10                    | 75767         | 0.10         | 4.56       | 0.217        | 0.030        | < 0.004      | 0.104        | 0.012       | 2.9            | 7.350             | 7.140             | 41.0           | 42.0           |
| PFM000069 | 2020-03-16                    | 76684         | 0.10         | 4.24       | 0.105        | 0.007        | 0.002        | 0.090        | 0.007       | 2.9            | 7.040             | 7.190             | 35.4           | 36.0           |
| PFM000069 | 2020-04-20                    | 77271         | 0.10         | 2.84       | 0.165        | 0.021        | 0.002        | 0.105        | 0.011       | 5.4            | 7.200             | 7.310             | 41.7           | 43.0           |
| PFM000069 | 2020-05-25                    | 78577         | 0.10         | 2.87       | 0.169        | 0.021        | 0.002        | 0.103        | 0.009       | 8.6            | 7.120             | 7.340             | 40.5           | 41.0           |
| PFM000069 | 2020-06-22                    | 79861         | 0.10         | 2.37       | 0.141        | 0.008        | 0.003        | 0.116        | 0.011       | 14.5           | 7.530             | 7.530             | 42.2           | 43.0           |
| PFM000069 | 2020-11-09                    | 80505         | 0.10         | 2.96       | 0.145        | 0.007        | < 0.004      | 0.112        | 1.380       | 5.4            | 7.140             | 7.170             | 43.2           | 44.0           |
| PFM000069 | 2020-12-06                    | 82576         | 0.10         | 3.58       | 0.123        | 0.020        | < 0.004      | 0.117        | 0.009       | 5.3            | 6.650             | 7.090             | 44.6           | 45.0           |
| PFM000070 | 2020-01-14                    | 74921         | 0.10         | 6.37       | 0.081        | 0.005        | 0.001        | 0.061        | 0.007       | 1.3            | 7.760             | 7.580             | 24.6           | 26.0           |
| PFM000070 | 2020-02-10                    | 75768         | 0.10         | 5.15       | 0.064        | 0.008        | < 0.004      | 0.051        | 0.007       | 2.3            | 7.910             | 7.660             | 23.4           | 24.0           |

Table A2-3a. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Depth<br>(m) | RCB<br>(%) | Fe<br>(mg/L) | Mn<br>(mg/L) | Li<br>(mg/L) | Sr<br>(mg/L) | I<br>(mg/L) | Temp_F<br>(°C) | pH_F<br>(pH unit) | pH_L<br>(pH unit) | EC_F<br>(mS/m) | EC_L<br>(mS/m) |
|-----------|-------------------------------|---------------|--------------|------------|--------------|--------------|--------------|--------------|-------------|----------------|-------------------|-------------------|----------------|----------------|
| PFM000070 | 2020-03-16                    | 76685         | 0.10         | 6.54       | 0.108        | 0.008        | 0.001        | 0.059        | 0.007       | 4.1            | 7.710             | 7.880             | 25.6           | 27.0           |
| PFM000070 | 2020-04-20                    | 77272         | 0.10         | 5.46       | 0.071        | 0.105        | 0.001        | 0.057        | 0.010       | 9.7            | 7.470             | 7.440             | 26.0           | 27.0           |
| PFM000070 | 2020-05-25                    | 78578         | 0.10         | 5.20       | 0.066        | 0.062        | 0.001        | 0.057        | 0.007       | 12.4           | 7.520             | 7.470             | 24.8           | 26.0           |
| PFM000070 | 2020-06-22                    | 79862         | 0.10         | 4.20       | 0.143        | 0.082        | 0.001        | 0.070        | 0.013       | 17.8           | 7.140             | 7.200             | 27.3           | 28.0           |
| PFM000070 | 2020-11-09                    | 80506         | 0.10         | 4.59       | 0.122        | 0.097        | < 0.004      | 0.059        | < 1         | 6.1            | 6.890             | 6.970             | 26.6           | 27.0           |
| PFM000070 | 2020-12-06                    | 82577         | 0.10         | 7.98       | 0.101        | 0.045        | < 0.004      | 0.054        | 0.004       | 5.8            | 6.820             | 6.860             | 17.7           | 24.0           |
| PFM000074 | 2020-04-20                    | 74922         | 0.50         | 4.06       | 0.040        | 0.013        | 0.002        | 0.086        | 0.010       | 11.1           | 7.660             | 7.520             | 38.5           | 39.0           |
| PFM000074 | 2020-08-10                    | 80507         | 0.50         | 2.17       | 0.038        | 0.017        | 0.002        | 0.092        | 0.017       | 19.5           | 7.860             | 7.460             | 35.7           | 36.0           |
| PFM000074 | 2020-10-12                    | 83403         | 0.50         | 1.49       | 0.020        | 0.005        | 0.002        | 0.084        | 0.007       | 8.7            | 7.740             | 7.730             | 35.2           | 36.0           |
| PFM000083 | 2020-04-21                    | 77262         | 0.50         | 0.56       | 0.006        | 0.002        | 0.027        | 1.200        | 0.013       | 7.5            | 8.190             | 8.000             | 904.8          | 887.0          |
| PFM000083 | 2020-05-26                    | 78568         | 0.50         | 1.45       | 0.005        | 0.007        | 0.029        | 1.280        | 0.018       | 9.8            | 8.090             | 7.850             | 905.0          | 895.0          |
| PFM000083 | 2020-06-22                    | 79851         | 0.50         | -1.11      | 0.005        | 0.003        | 0.027        | 1.300        | 0.014       | 19.6           | 8.270             | 8.090             | 928.9          | 922.0          |
| PFM000083 | 2020-08-12                    | 80495         | 0.50         | -0.84      | 0.006        | 0.001        | 0.026        | 1.260        | 0.015       | 19.5           | 8.220             | 8.040             | 909.0          | 895.0          |
| PFM000083 | 2020-09-16                    | 82530         | 0.50         | 0.72       | 0.003        | 0.001        | 0.023        | 1.250        | 0.017       | 14.7           | 8.010             | 7.850             | 910.0          | 907.0          |
| PFM000083 | 2020-10-13                    | 83395         | 0.50         | -1.00      | 0.005        | 0.003        | 0.026        | 1.270        | 0.012       | 10.5           | 7.900             | 7.770             | 918.9          | 910.0          |
| PFM000084 | 2020-04-21                    | 77263         | 0.50         | -0.91      | 0.086        | 0.040        | 0.019        | 0.690        | 0.014       | 9.6            | 8.400             | 8.130             | 535.3          | 523.0          |
| PFM000084 | 2020-05-26                    | 78569         | 0.50         | -2.22      | 0.055        | 0.048        | 0.023        | 0.822        | 0.015       | 14.5           | 8.390             | 8.050             | 620.6          | 612.0          |
| PFM000084 | 2020-06-22                    | 79950         | 0.50         | 1.86       | 0.026        | 0.003        | 0.018        | 0.697        | 0.021       | 24.0           | 8.560             | 8.300             | 481.6          | 468.0          |
| PFM000084 | 2020-08-12                    | 80496         | 0.50         | 1.58       | 0.011        | 0.011        | 0.026        | 1.190        | 0.016       | 20.1           | 8.160             | 8.070             | 857.0          | 842.0          |
| PFM000084 | 2020-09-16                    | 82531         | 0.50         | 1.08       | 0.005        | 0.002        | 0.022        | 1.220        | 0.012       | 14.1           | 8.050             | 7.910             | 884.5          | 878.0          |
| PFM000084 | 2020-10-13                    | 83396         | 0.50         | -0.87      | 0.007        | 0.007        | 0.025        | 1.210        | 0.012       | 10.0           | 7.920             | 7.780             | 874.6          | 866.0          |
| PFM000107 | 2020-04-20                    | 74923         | 0.50         | 4.84       | 0.071        | 0.002        | 0.002        | 0.082        | 0.009       | 10.4           | 8.540             | 8.350             | 33.6           | 35.0           |
| PFM000107 | 2020-08-10                    | 80508         | 0.50         | 4.24       | 0.046        | 0.004        | 0.003        | 0.070        | 0.007       | 21.6           | 9.190             | 9.320             | 25.5           | 26.0           |
| PFM000107 | 2020-10-12                    | 83404         | 0.50         | 4.89       | 0.021        | 0.002        | 0.003        | 0.084        | 0.006       | 9.4            | 8.180             | 8.220             | 32.0           | 33.0           |
| PFM000117 | 2020-04-21                    | 74924         | 0.50         | 6.67       | 0.050        | 0.002        | 0.001        | 0.057        | 0.010       | 11.6           | 8.680             | 8.370             | 26.3           | 27.0           |
| PFM000117 | 2020-08-10                    | 80509         | 0.50         | 5.86       | 0.005        | 0.003        | 0.001        | 0.047        | 0.006       | 22.8           | 9.100             | 9.290             | 14.9           | 15.3           |
| PFM000117 | 2020-10-12                    | 83405         | 0.50         | 6.38       | 0.005        | 0.001        | 0.001        | 0.050        | 0.006       | 10.3           | 8.570             | 8.510             | 16.8           | 17.4           |
| PFM007783 | 2020-04-21                    | 77264         | 0.50         | 0.55       | 0.004        | 0.003        | 0.027        | 1.200        | 0.012       | 8.5            | 8.110             | 7.960             | 898.8          | 881.0          |
| PFM007783 | 2020-05-25                    | 78570         | 0.50         | 0.91       | 0.008        | 0.002        | 0.028        | 1.250        | 0.017       | 12.0           | 8.210             | 7.940             | 906.4          | 900.0          |
| PFM007783 | 2020-06-22                    | 79951         | 0.50         | -1.01      | 0.015        | 0.002        | 0.029        | 1.280        | 0.015       | 22.2           | 8.690             | 8.600             | 925.5          | 911.0          |
| PFM007783 | 2020-08-11                    | 80497         | 0.50         | -0.42      | 0.009        | 0.004        | 0.025        | 1.270        | 0.014       | 19.7           | 8.200             | 8.290             | 914.2          | 903.0          |
| PFM007783 | 2020-09-16                    | 82532         | 0.50         | 0.40       | 0.009        | 0.004        | 0.023        | 1.240        | 0.012       | 14.7           | 7.970             | 7.840             | 898.6          | 892.0          |
| PFM007783 | 2020-10-12                    | 83397         | 0.50         | -0.59      | 0.008        | 0.002        | 0.024        | 1.240        | 0.012       | 11.0           | 8.160             | 7.900             | 899.9          | 901.0          |
| PFM007910 | 2020-04-21                    | 77266         | 0.50         | 0.45       | 0.008        | 0.005        | 0.026        | 1.190        | 0.013       | 8.0            | 8.100             | 7.940             | 885.6          | 875.0          |



Table A2-3a. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample No. | Depth<br>(m) | RCB<br>(%) | Fe<br>(mg/L) | Mn<br>(mg/L) | Li<br>(mg/L) | Sr<br>(mg/L) | I<br>(mg/L) | Temp_F<br>(°C) | pH_F<br>(pH unit) | pH_L<br>(pH unit) | EC_F<br>(mS/m) | EC_L<br>(mS/m) |
|-----------|-------------------------------|------------|--------------|------------|--------------|--------------|--------------|--------------|-------------|----------------|-------------------|-------------------|----------------|----------------|
| PFM007910 | 2020-05-26                    | 78572      | 0.50         | 1.56       | 0.011        | 0.003        | 0.028        | 1.220        | 0.017       | 12.5           | 8.060             | 7.900             | 894.3          | 882.0          |
| PFM007910 | 2020-06-22                    | 79954      | 0.50         | -1.06      | 0.014        | 0.002        | 0.030        | 1.280        | 0.014       | 21.3           | 8.460             | 8.340             | 920.9          | 913.0          |
| PFM007910 | 2020-08-12                    | 80499      | 0.50         | -1.01      | 0.008        | 0.001        | 0.026        | 1.260        | 0.014       | 19.3           | 8.200             | 8.130             | 908.9          | 896.0          |
| PFM007910 | 2020-09-16                    | 82534      | 0.50         | 0.46       | 0.010        | 0.005        | 0.023        | 1.230        | 0.010       | 14.7           | 7.900             | 7.760             | 897.9          | 890.0          |
| PFM007910 | 2020-10-13                    | 83399      | 0.50         | -1.35      | 0.007        | 0.003        | 0.025        | 1.240        | 0.012       | 10.9           | 7.880             | 7.710             | 902.3          | 895.0          |
| PFM007911 | 2020-04-21                    | 77267      | 0.50         | 0.59       | 0.006        | 0.003        | 0.026        | 1.180        | 0.012       | 7.1            | 8.170             | 7.970             | 895.5          | 883.0          |
| PFM007911 | 2020-05-26                    | 78573      | 0.50         | 0.51       | 0.010        | 0.002        | 0.030        | 1.250        | 0.016       | 11.8           | 8.060             | 7.890             | 901.6          | 884.0          |
| PFM007911 | 2020-06-22                    | 79953      | 0.50         | -0.11      | 0.007        | 0.001        | 0.029        | 1.290        | 0.013       | 20.7           | 8.500             | 8.340             | 921.7          | 910.0          |
| PFM007911 | 2020-08-12                    | 80500      | 0.50         | -0.12      | 0.006        | 0.000        | 0.026        | 1.260        | 0.013       | 19.2           | 8.190             | 8.160             | 906.8          | 891.0          |
| PFM007911 | 2020-09-16                    | 82535      | 0.50         | -0.11      | 0.004        | 0.001        | 0.023        | 1.230        | 0.013       | 14.6           | 7.980             | 7.880             | 897.9          | 896.0          |
| PFM007911 | 2020-10-13                    | 83400      | 0.50         | -1.08      | 0.006        | 0.002        | 0.024        | 1.240        | 0.012       | 11.2           | 7.930             | 7.790             | 902.0          | 896.0          |
| PFM007912 | 2020-04-21                    | 77268      | 0.50         | 0.26       | 0.006        | 0.002        | 0.027        | 1.180        | 0.012       | 5.8            | 8.140             | 7.930             | 897.7          | 884.0          |
| PFM007912 | 2020-05-26                    | 78574      | 0.50         | 0.39       | 0.007        | 0.002        | 0.027        | 1.230        | 0.015       | 10.8           | 8.030             | 7.890             | 901.2          | 887.0          |
| PFM007912 | 2020-06-22                    | 79857      | 0.50         | -1.13      | 0.039        | 0.001        | 0.030        | 1.280        | 0.014       | 19.8           | 8.420             | 8.240             | 917.2          | 905.0          |
| PFM007912 | 2020-08-12                    | 80501      | 0.50         | -0.51      | 0.006        | 0.001        | 0.024        | 1.260        | 0.015       | 18.7           | 8.210             | 8.110             | 902.4          | 892.0          |
| PFM007912 | 2020-09-16                    | 82536      | 0.50         | -1.20      | 0.003        | 0.001        | 0.027        | 1.220        | 0.012       | 14.3           | 7.920             | 7.860             | 894.2          | 887.0          |
| PFM007912 | 2020-10-13                    | 83401      | 0.50         | -1.20      | 0.004        | 0.002        | 0.024        | 1.250        | 0.012       | 11.4           | 7.990             | 7.800             | 907.3          | 897.0          |
| PFM008211 | 2020-04-21                    | 77607      | 0.50         | 0.74       | 0.005        | 0.002        | 0.026        | 1.200        | 0.012       | 6.3            | 8.160             | 8.000             | 909.3          | 896.0          |
| PFM008211 | 2020-05-26                    | 78579      | 0.50         | 0.50       | 0.003        | 0.002        | 0.030        | 1.280        | 0.018       | 10.2           | 8.070             | 7.930             | 911.6          | 902.0          |
| PFM008211 | 2020-06-22                    | 79858      | 0.50         | -0.53      | < 0.002      | 0.000        | 0.031        | 1.300        | 0.014       | 19.2           | 8.290             | 8.140             | 926.8          | 919.0          |
| PFM008211 | 2020-08-12                    | 80502      | 0.50         | 0.37       | 0.004        | 0.001        | 0.025        | 1.290        | 0.012       | 19.3           | 8.280             | 8.200             | 908.8          | 895.0          |
| PFM008211 | 2020-10-13                    | 83402      | 0.50         | -1.13      | 0.002        | 0.002        | 0.025        | 1.260        | 0.013       | 11.0           | 7.940             | 7.840             | 917.1          | 911.0          |
| PFM102269 | 2020-01-14                    | 74917      | 0.50         | -0.17      | 0.017        | 0.002        | 0.022        | 1.150        | 0.012       | 12.6           | 7.860             | 7.640             | 829.8          | 799.0          |
| PFM102269 | 2020-02-10                    | 75769      | 0.50         | 0.07       | 0.017        | 0.003        | 0.030        | 1.180        | 0.014       | 13.1           | 8.020             | 7.720             | 861.2          | 848.0          |
| PFM102269 | 2020-03-16                    | 76686      | 0.50         | 1.40       | 0.006        | 0.001        | 0.026        | 1.220        | 0.012       | 13.6           | 7.980             | 7.920             | 878.7          | 873.0          |
| PFM102269 | 2020-04-21                    | 77265      | 0.50         | 1.96       | 0.005        | 0.002        | 0.028        | 1.200        | 0.013       | 16.6           | 8.140             | 8.040             | 898.2          | 890.0          |
| PFM102269 | 2020-05-25                    | 78571      | 0.50         | 1.36       | 0.005        | 0.006        | 0.029        | 1.290        | 0.017       | 19.6           | 7.920             | 7.890             | 912.2          | 901.0          |
| PFM102269 | 2020-06-22                    | 79952      | 0.50         | -1.01      | 0.005        | 0.002        | 0.030        | 1.280        | 0.013       | 20.5           | 8.190             | 8.280             | 913.3          | 914.0          |
| PFM102269 | 2020-08-10                    | 80498      | 0.50         | -0.57      | 0.003        | 0.003        | 0.023        | 1.260        | 0.014       | 29.9           | 8.180             | 8.010             | 919.0          | 895.0          |
| PFM102269 | 2020-09-16                    | 82533      | 0.50         | 0.65       | 0.006        | 0.001        | 0.022        | 1.250        | 0.017       | 18.3           | 7.860             | 7.830             | 906.7          | 905.0          |
| PFM102269 | 2020-10-12                    | 83398      | 0.50         | -1.32      | 0.003        | 0.003        | 0.027        | 1.270        | 0.013       | 21.2           | 7.870             | 7.710             | 921.7          | 918.0          |
| PFM102269 | 2020-11-09                    | 84851      | 0.50         | 1.15       | 0.008        | 0.002        | 0.025        | 1.230        | 0.014       | 18.4           | 7.650             | 7.770             | 893.6          | 889.0          |
| PFM102269 | 2020-12-06                    | 85492      | 0.50         | 1.85       | 0.058        | 0.002        | 0.030        | 1.230        | 0.019       | 15.9           | 7.160             | 7.640             | 884.1          | 875.0          |

Table A2-3b. Biochemical components.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | NH <sub>4</sub> -N<br>(mg/L) | NO <sub>2</sub> -N<br>(mg/L) | NO <sub>3</sub> -N+NO <sub>2</sub> -N<br>(mg/L) | NO <sub>3</sub> -N<br>(mg/L) | N-TOT<br>(mg/L) | P-TOT<br>(mg/L) | PO <sub>4</sub> -P<br>(mg/L) | POP<br>(mg/L) | PON<br>(mg/L) | SIO <sub>2</sub> -SI<br>(mg/L) |
|-----------|-------------------------------|---------------|------------------------------|------------------------------|---|------------------------------|-----------------|-----------------|------------------------------|---------------|---------------|--------------------------------|
| PFM000062 | 2020-01-13                    | 74916         | 0.003                        | 0.002                        | 0.094   | 0.092                        | 0.337           | 0.016           | 0.008                        | 0.003         | 0.011         | 1.070                          |
| PFM000062 | 2020-04-21                    | 77261         | 0.002                        | 0.000                        | 0.000   | < 0.0003                     | 0.226           | 0.011           | 0.001                        | 0.004         | 0.054         | 0.460                          |
| PFM000062 | 2020-05-26                    | 78567         | 0.001                        | < 0.0002                     | < 0.0003  | < 0.0003                     | 0.242           | 0.014           | 0.002                        | 0.006         | 0.032         | 0.558                          |
| PFM000062 | 2020-06-22                    | 79850         | 0.002                        | < 0.0002                     | 0.000   | < 0.0003                     | 0.264           | 0.015           | 0.002                        | 0.005         | 0.025         | 0.217                          |
| PFM000062 | 2020-08-12                    | 80494         | 0.002                        | < 0.0002                     | 0.001   | 0.000                        | 0.283           | 0.015           | 0.001                        | 0.007         | 0.048         |                                |
| PFM000062 | 2020-09-16                    | 82529         | 0.002                        | < 0.0002                     | 0.001   | 0.001                        | 0.264           | 0.013           | 0.001                        | 0.006         | 0.044         | 0.725                          |
| PFM000062 | 2020-10-13                    | 83394         | 0.005                        | 0.002                        | 0.023   | 0.022                        | 0.264           | 0.018           | 0.007                        | 0.006         | 0.025         | 0.772                          |
| PFM000066 | 2020-01-14                    | 74918         | 0.016                        | 0.001                        | 0.004   | 0.004                        | 0.744           | 0.006           | 0.001                        | 0.002         | 0.009         | 6.020                          |
| PFM000066 | 2020-02-10                    | 75765         | 0.016                        | 0.001                        | 0.009   | 0.009                        | 0.691           | 0.007           | 0.001                        | 0.002         | 0.012         | 5.760                          |
| PFM000066 | 2020-03-16                    | 76682         | 0.008                        | 0.000                        | 0.006   | 0.005                        | 0.639           | 0.007           | 0.001                        | 0.002         | 0.009         | 4.900                          |
| PFM000066 | 2020-04-20                    | 77269         | 0.024                        | 0.001                        | 0.008   | 0.008                        | 0.757           | 0.011           | 0.002                        | 0.006         | 0.030         | 4.210                          |
| PFM000066 | 2020-05-25                    | 78575         | 0.010                        | 0.000                        | 0.002   | 0.001                        | 0.761           | 0.011           | 0.002                        | 0.005         | 0.034         | 3.260                          |
| PFM000066 | 2020-06-22                    | 79859         | 0.040                        | 0.001                        | 0.010   | 0.009                        | 0.938           | 0.018           | 0.006                        | 0.006         | 0.034         | 3.550                          |
| PFM000066 | 2020-11-09                    | 80503         | 0.007                        | 0.000                        | 0.005   | 0.004                        | 0.865           | 0.010           | 0.001                        | 0.004         | 0.024         | 4.580                          |
| PFM000066 | 2020-12-06                    | 82574         | 0.011                        | 0.001                        | 0.018   | 0.017                        | 0.858           | 0.008           | 0.001                        | 0.003         | 0.019         | 4.880                          |
| PFM000068 | 2020-01-13                    | 74919         | 0.024                        | 0.001                        | 0.027   | 0.026                        | 1.020           | 0.009           | < 0.0005                     | 0.003         | 0.019         | 5.090                          |
| PFM000068 | 2020-02-10                    | 75766         | 0.034                        | 0.001                        | 0.040   | 0.039                        | 0.923           | 0.009           | 0.001                        | 0.003         | 0.020         | 5.130                          |
| PFM000068 | 2020-03-16                    | 76683         | 0.013                        | 0.001                        | 0.026   | 0.025                        | 0.828           | 0.009           | 0.001                        | 0.003         | 0.025         | 4.260                          |
| PFM000068 | 2020-04-20                    | 77270         | 0.054                        | 0.001                        | 0.015   | 0.014                        | 0.915           | 0.014           | 0.003                        | 0.006         | 0.042         | 5.010                          |
| PFM000068 | 2020-05-25                    | 78576         | 0.021                        | 0.001                        | 0.008   | 0.007                        | 0.892           | 0.014           | 0.003                        | 0.006         | 0.033         | 3.650                          |
| PFM000068 | 2020-06-22                    | 79860         | 0.104                        | 0.006                        | 0.020   | 0.014                        | 1.040           | 0.028           | 0.013                        | 0.007         | 0.037         | 5.520                          |
| PFM000068 | 2020-11-09                    | 80504         | 0.011                        | 0.001                        | 0.013   | 0.013                        | 0.991           | 0.011           | 0.001                        | 0.004         | 0.019         | 5.490                          |
| PFM000068 | 2020-12-06                    | 82575         | 0.017                        | 0.001                        | 0.068   | 0.067                        | 0.989           | 0.010           | 0.001                        | 0.004         | 0.021         | 5.830                          |
| PFM000069 | 2020-01-13                    | 74920         | 0.003                        | 0.000                        | 0.001   | 0.001                        | 0.914           | 0.009           | < 0.0005                     | 0.003         | 0.017         | 6.180                          |
| PFM000069 | 2020-02-10                    | 75767         | 0.009                        | 0.000                        | 0.003   | 0.003                        | 0.839           | 0.010           | 0.001                        | 0.003         | 0.017         | 6.370                          |
| PFM000069 | 2020-03-16                    | 76684         | 0.007                        | 0.000                        | 0.018   | 0.018                        | 0.748           | 0.009           | 0.001                        | 0.003         | 0.013         | 5.140                          |
| PFM000069 | 2020-04-20                    | 77271         | 0.018                        | 0.000                        | 0.001   | 0.001                        | 0.827           | 0.013           | 0.002                        | 0.004         | 0.033         | 5.800                          |
| PFM000069 | 2020-05-25                    | 78577         | 0.013                        | 0.000                        | 0.003   | 0.002                        | 0.817           | 0.014           | 0.002                        | 0.005         | 0.042         | 4.740                          |
| PFM000069 | 2020-06-22                    | 79861         | 0.046                        | 0.001                        | 0.004   | 0.004                        | 0.922           | 0.017           | 0.006                        | 0.004         | 0.032         | 5.500                          |
| PFM000069 | 2020-11-09                    | 80505         | 0.009                        | 0.000                        | 0.006   | 0.006                        | 0.886           | 0.010           | 0.001                        | 0.003         | 0.025         | 5.410                          |
| PFM000069 | 2020-12-06                    | 82576         | 0.010                        | 0.000                        | 0.013   | 0.012                        | 0.823           | 0.009           | 0.001                        | 0.004         | 0.023         | 6.160                          |
| PFM000070 | 2020-01-14                    | 74921         | 0.148                        | 0.001                        | 0.028   | 0.027                        | 1.110           | 0.008           | 0.001                        | 0.004         | 0.054         | 2.950                          |
| PFM000070 | 2020-02-10                    | 75768         | 0.112                        | 0.001                        | 0.030   | 0.029                        | 1.030           | 0.011           | 0.001                        | 0.006         | 0.107         | 2.670                          |

Table A2-3b. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | NH <sub>4</sub> -N<br>(mg/L) | NO <sub>2</sub> -N<br>(mg/L) | NO <sub>3</sub> -N+NO <sub>2</sub> -N<br>(mg/L) | NO <sub>3</sub> -N<br>(mg/L) | N-TOT<br>(mg/L) | P-TOT<br>(mg/L) | PO <sub>4</sub> -P<br>(mg/L) | POP<br>(mg/L) | PON<br>(mg/L) | SiO <sub>2</sub> -SI<br>(mg/L) |
|-----------|-------------------------------|---------------|------------------------------|------------------------------|---|------------------------------|-----------------|-----------------|------------------------------|---------------|---------------|--------------------------------|
| PFM000070 | 2020-03-16                    | 76685         | 0.023                        | 0.001                        | 0.016   | 0.015                        | 0.912           | 0.007           | < 0.0005                     | 0.004         | 0.048         | 3.040                          |
| PFM000070 | 2020-04-20                    | 77272         | 0.049                        | 0.001                        | 0.019   | 0.018                        | 0.930           | 0.009           | 0.001                        | 0.005         | 0.050         | 1.890                          |
| PFM000070 | 2020-05-25                    | 78578         | 0.011                        | 0.000                        | 0.004   | 0.004                        | 0.884           | 0.008           | 0.001                        | 0.004         | 0.034         | 0.573                          |
| PFM000070 | 2020-06-22                    | 79862         | 0.039                        | 0.000                        | 0.002   | 0.001                        | 0.905           | 0.009           | 0.001                        | 0.004         | 0.055         | 2.490                          |
| PFM000070 | 2020-11-09                    | 80506         | 0.052                        | 0.001                        | 0.027   | 0.026                        | 1.060           | 0.008           | 0.001                        | 0.003         | 0.021         | 3.610                          |
| PFM000070 | 2020-12-06                    | 82577         | 0.029                        | 0.002                        | 0.239   | 0.237                        | 1.160           | 0.006           | < 0.0005                     | 0.003         | 0.013         | 3.430                          |
| PFM000074 | 2020-04-20                    | 74922         | 0.006                        | 0.000                        | 0.000   | < 0.0003                     | 0.716           | 0.007           | 0.001                        | 0.004         | 0.035         | 3.580                          |
| PFM000074 | 2020-08-10                    | 80507         | 0.012                        | < 0.0002                     | 0.000   | < 0.0003                     | 1.150           | 0.014           | 0.001                        | 0.006         | 0.077         |                                |
| PFM000074 | 2020-10-12                    | 83403         | 0.023                        | < 0.0002                     | 0.001   | 0.001                        | 0.938           | 0.008           | 0.001                        | 0.004         | 0.078         | 6.240                          |
| PFM000083 | 2020-04-21                    | 77262         | 0.001                        | 0.000                        | 0.000   | < 0.0003                     | 0.225           | 0.011           | 0.001                        | 0.006         | 0.026         | 0.387                          |
| PFM000083 | 2020-05-26                    | 78568         | 0.001                        | < 0.0002                     | 0.000   | < 0.0003                     | 0.246           | 0.014           | 0.001                        | 0.008         | 0.031         | 0.546                          |
| PFM000083 | 2020-06-22                    | 79851         | 0.002                        | 0.000                        | 0.001   | 0.001                        | 0.273           | 0.016           | 0.002                        | 0.007         | 0.042         | 0.268                          |
| PFM000083 | 2020-08-12                    | 80495         | 0.001                        | < 0.0002                     | 0.000   | < 0.0003                     | 0.286           | 0.013           | 0.001                        | 0.007         | 0.051         |                                |
| PFM000083 | 2020-09-16                    | 82530         | 0.001                        | 0.000                        | 0.001   | 0.001                        | 0.255           | 0.014           | 0.002                        | 0.007         | 0.054         | 0.762                          |
| PFM000083 | 2020-10-13                    | 83395         | 0.003                        | 0.001                        | 0.018   | 0.017                        | 0.275           | 0.019           | 0.006                        | 0.007         | 0.025         | 0.748                          |
| PFM000084 | 2020-04-21                    | 77263         | 0.007                        | 0.003                        | 0.089   | 0.087                        | 0.717           | 0.026           | 0.002                        | 0.014         | 0.122         | 1.450                          |
| PFM000084 | 2020-05-26                    | 78569         | 0.005                        | 0.002                        | 0.046   | 0.043                        | 0.872           | 0.048           | 0.007                        | 0.027         | 0.235         | 1.170                          |
| PFM000084 | 2020-06-22                    | 79950         | 0.005                        | 0.000                        | 0.001   | < 0.0003                     | 0.770           | 0.037           | 0.002                        | 0.017         | 0.116         | 0.520                          |
| PFM000084 | 2020-08-12                    | 80496         | 0.001                        | 0.000                        | 0.001   | < 0.0003                     | 0.424           | 0.037           | 0.005                        | 0.018         | 0.098         |                                |
| PFM000084 | 2020-09-16                    | 82531         | 0.001                        | 0.000                        | 0.001   | 0.001                        | 0.350           | 0.027           | 0.003                        | 0.014         | 0.082         | 0.851                          |
| PFM000084 | 2020-10-13                    | 83396         | 0.003                        | 0.002                        | 0.021   | 0.019                        | 0.345           | 0.025           | 0.006                        | 0.011         | 0.063         | 0.815                          |
| PFM000107 | 2020-04-20                    | 74923         | 0.008                        | 0.000                        | 0.001   | < 0.0003                     | 0.963           | 0.014           | 0.002                        | 0.008         | 0.089         | 1.630                          |
| PFM000107 | 2020-08-10                    | 80508         | 0.004                        | < 0.0002                     | < 0.0003  | < 0.0003                     | 1.310           | 0.015           | 0.001                        | 0.006         | 0.081         |                                |
| PFM000107 | 2020-10-12                    | 83404         | 0.026                        | < 0.0002                     | 0.002   | 0.001                        | 1.250           | 0.014           | 0.001                        | 0.008         | 0.064         | 0.157                          |
| PFM000117 | 2020-04-21                    | 74924         | 0.005                        | 0.000                        | 0.001   | 0.000                        | 0.929           | 0.008           | 0.001                        | 0.005         | 0.048         | 1.620                          |
| PFM000117 | 2020-08-10                    | 80509         | 0.004                        | < 0.0002                     | 0.000   | 0.000                        | 1.100           | 0.008           | 0.001                        | 0.003         | 0.052         |                                |
| PFM000117 | 2020-10-12                    | 83405         | 0.012                        | < 0.0002                     | 0.002   | 0.002                        | 1.040           | 0.006           | 0.001                        | 0.003         | 0.038         | 0.617                          |
| PFM007783 | 2020-04-21                    | 77264         | 0.002                        | 0.000                        | 0.001   | 0.000                        | 0.244           | 0.011           | 0.001                        | 0.006         | 0.023         | 0.414                          |
| PFM007783 | 2020-05-25                    | 78570         | 0.002                        | 0.000                        | 0.002   | 0.001                        | 0.283           | 0.016           | 0.001                        | 0.009         | 0.066         | 0.177                          |
| PFM007783 | 2020-06-22                    | 79951         | 0.002                        | < 0.0002                     | 0.001   | 0.001                        | 0.304           | 0.013           | 0.001                        | 0.005         | 0.063         | 0.123                          |
| PFM007783 | 2020-08-11                    | 80497         | 0.003                        | 0.000                        | 0.008   | 0.007                        | 0.336           | 0.018           | 0.002                        | 0.011         | 0.071         |                                |
| PFM007783 | 2020-09-16                    | 82532         | 0.003                        | 0.000                        | 0.003   | 0.003                        | 0.309           | 0.017           | 0.001                        | 0.009         | 0.069         | 0.805                          |
| PFM007783 | 2020-10-12                    | 83397         | 0.007                        | 0.001                        | 0.009   | 0.008                        | 0.295           | 0.015           | 0.002                        | 0.007         | 0.032         | 0.789                          |
| PFM007910 | 2020-04-21                    | 77266         | 0.002                        | 0.000                        | 0.001   | < 0.0003                     | 0.284           | 0.015           | 0.001                        | 0.011         | 0.043         | 0.306                          |
| PFM007910 | 2020-05-26                    | 78572         | 0.002                        | 0.000                        | 0.000   | < 0.0003                     | 0.274           | 0.016           | 0.001                        | 0.009         | 0.056         | 0.341                          |

Table A2-3b. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | NH <sub>4</sub> -N<br>(mg/L) | NO <sub>2</sub> -N<br>(mg/L) | NO <sub>3</sub> -N+NO <sub>2</sub> -N<br>(mg/L) | NO <sub>3</sub> -N<br>(mg/L) | N-TOT<br>(mg/L) | P-TOT<br>(mg/L) | PO <sub>4</sub> -P<br>(mg/L) | POP<br>(mg/L) | PON<br>(mg/L) | SiO <sub>2</sub> -SI<br>(mg/L) |
|-----------|-------------------------------|---------------|------------------------------|------------------------------|---|------------------------------|-----------------|-----------------|------------------------------|---------------|---------------|--------------------------------|
| PFM007910 | 2020-06-22                    | 79954         | 0.002                        | < 0.0002                     | 0.000   | 0.000                        | 0.295           | 0.015           | 0.001                        | 0.007         | 0.058         | 0.173                          |
| PFM007910 | 2020-08-12                    | 80499         | 0.001                        | < 0.0002                     | < 0.0003  | < 0.0003                     | 0.328           | 0.020           | 0.001                        | 0.011         | 0.063         |                                |
| PFM007910 | 2020-09-16                    | 82534         | 0.001                        | < 0.0002                     | < 0.0003  | < 0.0003                     | 0.315           | 0.018           | 0.001                        | 0.011         | 0.062         | 0.742                          |
| PFM007910 | 2020-10-13                    | 83399         | 0.006                        | 0.001                        | 0.007   | 0.006                        | 0.281           | 0.015           | 0.002                        | 0.006         | 0.036         | 0.792                          |
| PFM007911 | 2020-04-21                    | 77267         | 0.002                        | 0.000                        | 0.000   | < 0.0003                     | 0.253           | 0.013           | 0.001                        | 0.007         | 0.035         | 0.383                          |
| PFM007911 | 2020-05-26                    | 78573         | 0.001                        | < 0.0002                     | 0.000   | < 0.0003                     | 0.267           | 0.015           | 0.001                        | 0.009         | 0.046         | 0.320                          |
| PFM007911 | 2020-06-22                    | 79953         | 0.002                        | < 0.0002                     | 0.000   | < 0.0003                     | 0.315           | 0.017           | 0.001                        | 0.009         | 0.059         | 0.238                          |
| PFM007911 | 2020-08-12                    | 80500         | 0.001                        | < 0.0002                     | 0.001   | 0.001                        | 0.303           | 0.020           | 0.001                        | 0.013         | 0.072         |                                |
| PFM007911 | 2020-09-16                    | 82535         | 0.001                        | < 0.0002                     | 0.001   | 0.001                        | 0.310           | 0.018           | < 0.0005                     | 0.011         | 0.065         | 0.821                          |
| PFM007911 | 2020-10-13                    | 83400         | 0.006                        | 0.001                        | 0.008   | 0.007                        | 0.291           | 0.015           | 0.001                        | 0.006         | 0.036         | 0.847                          |
| PFM007912 | 2020-04-21                    | 77268         | 0.001                        | 0.000                        | < 0.0003  | < 0.0003                     | 0.241           | 0.012           | 0.001                        | 0.007         | 0.034         | 0.365                          |
| PFM007912 | 2020-05-26                    | 78574         | 0.001                        | < 0.0002                     | 0.000   | < 0.0003                     | 0.237           | 0.012           | 0.001                        | 0.006         | 0.035         | 0.385                          |
| PFM007912 | 2020-06-22                    | 79857         | 0.001                        | < 0.0002                     | 0.001   | 0.001                        | 0.261           | 0.012           | 0.001                        | 0.005         | 0.038         | 0.177                          |
| PFM007912 | 2020-08-12                    | 80501         | 0.002                        | < 0.0002                     | 0.001   | 0.000                        | 0.287           | 0.016           | < 0.0005                     | 0.009         | 0.059         |                                |
| PFM007912 | 2020-09-16                    | 82536         | 0.001                        | < 0.0002                     | 0.001   | 0.001                        | 0.278           | 0.014           | 0.001                        | 0.007         | 0.045         | 0.698                          |
| PFM007912 | 2020-10-13                    | 83401         | 0.002                        | 0.001                        | 0.011   | 0.010                        | 0.270           | 0.015           | 0.003                        | 0.005         | 0.047         | 0.820                          |
| PFM008211 | 2020-04-21                    | 77607         | 0.001                        | 0.000                        | 0.001   | 0.001                        | 0.227           | 0.010           | 0.001                        | 0.004         | 0.016         | 0.472                          |
| PFM008211 | 2020-05-26                    | 78579         | 0.001                        | < 0.0002                     | < 0.0003  | < 0.0003                     | 0.234           | 0.012           | 0.001                        | 0.005         | 0.036         | 0.508                          |
| PFM008211 | 2020-06-22                    | 79858         | 0.001                        | < 0.0002                     | 0.001   | 0.001                        | 0.248           | 0.012           | 0.001                        | 0.006         | 0.039         | 0.329                          |
| PFM008211 | 2020-08-12                    | 80502         | 0.002                        | < 0.0002                     | 0.000   | < 0.0003                     | 0.280           | 0.014           | < 0.0005                     | 0.007         | 0.053         |                                |
| PFM008211 | 2020-10-13                    | 83402         | 0.004                        | 0.002                        | 0.015   | 0.014                        | 0.278           | 0.022           | 0.005                        | 0.008         | 0.051         | 0.733                          |
| PFM102269 | 2020-01-14                    | 74917         | 0.005                        | 0.002                        | 0.096   | 0.095                        | 0.343           | 0.017           | 0.009                        | 0.002         | 0.012         | 1.080                          |
| PFM102269 | 2020-02-10                    | 75769         | 0.004                        | 0.002                        | 0.070   | 0.068                        | 0.310           | 0.016           | 0.009                        | 0.002         | 0.010         | 1.030                          |
| PFM102269 | 2020-03-16                    | 76686         | 0.004                        | 0.001                        | 0.010   | 0.010                        | 0.271           | 0.015           | 0.002                        | 0.007         | 0.051         | 0.653                          |
| PFM102269 | 2020-04-21                    | 77265         | 0.003                        | 0.000                        | 0.002   | 0.002                        | 0.232           | 0.014           | 0.004                        | 0.005         |               | 0.480                          |
| PFM102269 | 2020-05-25                    | 78571         | 0.006                        | 0.000                        | 0.002   | 0.002                        | 0.244           | 0.015           | 0.004                        | 0.005         | 0.020         | 0.529                          |
| PFM102269 | 2020-06-22                    | 79952         | 0.001                        | 0.000                        | 0.004   | 0.004                        | 0.253           | 0.014           | 0.002                        | 0.006         | 0.035         | 0.233                          |
| PFM102269 | 2020-08-10                    | 80498         | 0.018                        | 0.001                        | 0.010   | 0.010                        | 0.320           | 0.018           | 0.005                        | 0.005         | 0.047         |                                |
| PFM102269 | 2020-09-16                    | 82533         | 0.001                        | < 0.0002                     | < 0.0003  | < 0.0003                     | 0.272           | 0.015           | < 0.0005                     | 0.006         | 0.046         | 0.711                          |
| PFM102269 | 2020-10-12                    | 83398         | 0.014                        | 0.002                        | 0.035   | 0.033                        | 0.268           | 0.017           | 0.010                        | 0.004         | 0.021         | 0.762                          |
| PFM102269 | 2020-11-09                    | 84851         | 0.013                        | 0.004                        | 0.030   | 0.026                        | 0.268           | 0.014           | 0.007                        | 0.002         | 0.011         | 0.731                          |
| PFM102269 | 2020-12-06                    | 85492         | 0.010                        | 0.003                        | 0.063   | 0.060                        | 0.290           | 0.016           | 0.010                        | 0.002         | 0.009         | 0.882                          |

Table A2-3b. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Chl. A<br>(µg/L) | Chl. C<br>(µg/L) | Pheop.<br>(µg/L) | POC<br>(mg/L) | TOC<br>(mg/L) | DOC<br>(mg/L) | DIC<br>(mg/L) | Abs. coeff.<br>(1/m) | absorbance_436<br>(number) | Susp. mtrl.<br>(mg/L) |
|-----------|-------------------------------|---------------|------------------|------------------|------------------|---------------|---------------|---------------|---------------|----------------------|----------------------------|-----------------------|
| PFM000062 | 2020-01-13                    | 74916         | 0.740            | < 0.5            | < 0.5            | 0.118         | 4.90          | 4.80          | 16.60         | 0.52                 | 0.026                      | 1.6                   |
| PFM000062 | 2020-04-21                    | 77261         | 0.900            | < 0.5            | < 0.5            | 0.452         | 4.20          | 4.10          | 15.10         | 0.38                 | 0.019                      | 1.4                   |
| PFM000062 | 2020-05-26                    | 78567         | 1.920            | < 0.5            | 0.610            | 0.254         | 4.20          | 4.40          | 15.60         | 0.34                 | 0.017                      | 1.4                   |
| PFM000062 | 2020-06-22                    | 79850         | 1.230            | < 0.5            | 0.580            | 0.154         | 4.60          | 4.40          | 14.90         | 0.32                 | 0.016                      | 2.1                   |
| PFM000062 | 2020-08-12                    | 80494         | 2.330            | < 0.5            | 3.780            | 0.318         | 4.60          | 4.50          | 14.60         | 0.24                 | 0.012                      | 0.9                   |
| PFM000062 | 2020-09-16                    | 82529         | 2.800            | 0.570            | 0.660            | 0.298         | 4.20          | 4.20          | 13.40         | 0.22                 | 0.011                      | 0.2                   |
| PFM000062 | 2020-10-13                    | 83394         | 1.240            | < 0.5            | 0.720            | 0.194         | 4.20          | 4.00          | 15.60         | 0.34                 | 0.017                      | 1.8                   |
| PFM000066 | 2020-01-14                    | 74918         |                  |                  |                  | 0.092         | 22.00         | 21.00         | 36.60         | 3.22                 | 0.161                      | 0.5                   |
| PFM000066 | 2020-02-10                    | 75765         |                  |                  |                  | 0.132         | 19.20         | 19.00         | 40.80         | 2.68                 | 0.134                      | 0.6                   |
| PFM000066 | 2020-03-16                    | 76682         |                  |                  |                  | 0.090         | 16.40         | 17.30         | 38.70         | 2.48                 | 0.124                      | 0.6                   |
| PFM000066 | 2020-04-20                    | 77269         |                  |                  |                  | 0.307         | 18.00         | 18.00         | 26.70         | 2.42                 | 0.121                      | 1.1                   |
| PFM000066 | 2020-05-25                    | 78575         |                  |                  |                  | 0.294         | 19.40         | 19.20         | 27.00         | 2.44                 | 0.122                      | 1.3                   |
| PFM000066 | 2020-06-22                    | 79859         |                  |                  |                  | 0.261         | 22.00         | 22.00         | 24.80         | 2.82                 | 0.141                      | 0.7                   |
| PFM000066 | 2020-11-09                    | 80503         |                  |                  |                  | 0.217         | 19.40         | 19.80         | 29.40         | 2.20                 | 0.110                      | 0.6                   |
| PFM000066 | 2020-12-06                    | 82574         |                  |                  |                  | 0.163         | 21.00         | 20.00         | 29.70         | 2.38                 | 0.119                      | 0.1                   |
| PFM000068 | 2020-01-13                    | 74919         |                  |                  |                  | 0.187         | 28.00         | 28.00         | 30.10         | 4.94                 | 0.247                      | 0.6                   |
| PFM000068 | 2020-02-10                    | 75766         |                  |                  |                  | 0.203         | 25.00         | 25.00         | 34.50         | 3.94                 | 0.197                      | 0.6                   |
| PFM000068 | 2020-03-16                    | 76683         |                  |                  |                  | 0.206         | 23.00         | 23.00         | 31.50         | 3.58                 | 0.179                      | 0.9                   |
| PFM000068 | 2020-04-20                    | 77270         |                  |                  |                  | 0.492         | 22.00         | 23.00         | 30.40         | 3.48                 | 0.174                      | 1.6                   |
| PFM000068 | 2020-05-25                    | 78576         |                  |                  |                  | 0.325         | 24.00         | 23.00         | 28.80         | 3.70                 | 0.185                      | 1.3                   |
| PFM000068 | 2020-06-22                    | 79860         |                  |                  |                  | 0.331         | 25.00         | 26.00         | 30.20         | 4.48                 | 0.224                      | 1.0                   |
| PFM000068 | 2020-11-09                    | 80504         |                  |                  |                  | 0.172         | 26.00         | 25.00         | 30.90         | 3.56                 | 0.178                      | 0.6                   |
| PFM000068 | 2020-12-06                    | 82575         |                  |                  |                  | 0.189         | 23.00         | 24.00         | 29.70         | 3.40                 | 0.170                      | 0.1                   |
| PFM000069 | 2020-01-13                    | 74920         |                  |                  |                  | 0.169         | 28.00         | 27.00         | 38.40         | 4.86                 | 0.243                      | 0.8                   |
| PFM000069 | 2020-02-10                    | 75767         |                  |                  |                  | 0.190         | 24.00         | 24.00         | 41.70         | 4.06                 | 0.203                      | 0.5                   |
| PFM000069 | 2020-03-16                    | 76684         |                  |                  |                  | 0.114         | 21.00         | 21.00         | 36.60         | 3.42                 | 0.171                      | 1.0                   |
| PFM000069 | 2020-04-20                    | 77271         |                  |                  |                  | 0.470         | 20.00         | 21.00         | 35.30         | 3.34                 | 0.167                      | 2.7                   |
| PFM000069 | 2020-05-25                    | 78577         |                  |                  |                  | 0.333         | 22.00         | 22.00         | 31.70         | 3.52                 | 0.176                      | 1.1                   |
| PFM000069 | 2020-06-22                    | 79861         |                  |                  |                  | 0.223         | 23.00         | 23.00         | 32.60         | 4.00                 | 0.200                      | 1.0                   |
| PFM000069 | 2020-11-09                    | 80505         |                  |                  |                  | 0.161         | 23.00         | 23.00         | 33.00         | 3.24                 | 0.162                      | 1.1                   |
| PFM000069 | 2020-12-06                    | 82576         |                  |                  |                  | 0.161         | 21.00         | 29.00         | 31.60         | 3.00                 | 0.150                      | 0.1                   |
| PFM000070 | 2020-01-14                    | 74921         |                  |                  |                  | 0.446         | 24.00         | 25.00         | 23.00         | 3.42                 | 0.171                      | 0.7                   |
| PFM000070 | 2020-02-10                    | 75768         |                  |                  |                  | 0.857         | 23.00         | 22.00         | 23.70         | 3.18                 | 0.159                      | 1.1                   |

Table A2-3b. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Chl. A<br>(µg/L) | Chl. C<br>(µg/L) | Pheop.<br>(µg/L) | POC<br>(mg/L) | TOC<br>(mg/L) | DOC<br>(mg/L) | DIC<br>(mg/L) | Abs. coeff.<br>(1/m) | absorbance_436<br>(number) | Susp. mtrl.<br>(mg/L) |
|-----------|-------------------------------|---------------|------------------|------------------|------------------|---------------|---------------|---------------|---------------|----------------------|----------------------------|-----------------------|
| PFM000070 | 2020-03-16                    | 76685         |                  |                  |                  | 0.478         | 25.00         | 24.00         | 27.80         | 3.34                 | 0.167                      | 0.7                   |
| PFM000070 | 2020-04-20                    | 77272         |                  |                  |                  | 0.470         | 22.00         | 22.00         | 26.40         | 2.70                 | 0.135                      | 0.8                   |
| PFM000070 | 2020-05-25                    | 78578         |                  |                  |                  | 0.269         | 24.00         | 24.00         | 25.20         | 2.52                 | 0.126                      | 0.6                   |
| PFM000070 | 2020-06-22                    | 79862         |                  |                  |                  | 0.272         | 23.00         | 23.00         | 29.40         | 2.96                 | 0.148                      | 0.9                   |
| PFM000070 | 2020-11-09                    | 80506         |                  |                  |                  | 0.163         | 28.00         | 29.00         | 24.90         | 3.42                 | 0.171                      | 0.9                   |
| PFM000070 | 2020-12-06                    | 82577         |                  |                  |                  | 0.167         | 24.00         | 25.00         | 15.50         | 2.72                 | 0.136                      | 0.1                   |
| PFM000074 | 2020-04-20                    | 74922         | 1.780            | < 0.5            | 2.140            | 0.292         | 18.50         | 17.60         | 29.50         | 2.34                 | 0.117                      | 0.5                   |
| PFM000074 | 2020-08-10                    | 80507         | 1.840            | < 0.5            | 0.830            | 0.668         | 23.00         | 24.00         | 24.30         | 2.28                 | 0.114                      | 0.7                   |
| PFM000074 | 2020-10-12                    | 83403         | 2.080            | 0.590            | 1.060            | 0.702         | 21.00         | 21.00         | 22.70         | 1.70                 | 0.085                      | 1.1                   |
| PFM000083 | 2020-04-21                    | 77262         | 0.820            | < 0.5            | 1.160            | 0.245         | 4.60          | 4.10          | 15.10         | 0.36                 | 0.018                      | 1.3                   |
| PFM000083 | 2020-05-26                    | 78568         | 1.940            | < 0.5            | 0.650            | 0.255         | 4.50          | 4.60          | 15.60         | 0.36                 | 0.018                      | 1.1                   |
| PFM000083 | 2020-06-22                    | 79851         | 2.620            | < 0.5            | 0.760            | 0.273         | 4.50          | 4.50          | 15.10         | 0.30                 | 0.015                      | 2.0                   |
| PFM000083 | 2020-08-12                    | 80495         | 1.960            | < 0.5            | 2.490            | 0.358         | 4.60          | 4.40          | 14.70         | 0.22                 | 0.011                      | 0.8                   |
| PFM000083 | 2020-09-16                    | 82530         | 4.540            | 0.870            | 1.530            | 0.369         | 4.20          | 4.10          | 14.10         | 0.24                 | 0.012                      | 1.3                   |
| PFM000083 | 2020-10-13                    | 83395         | 1.470            | < 0.5            | < 0.5            | 0.188         | 4.10          | 4.00          | 15.50         | 0.20                 | 0.010                      | 2.6                   |
| PFM000084 | 2020-04-21                    | 77263         | 8.830            | 1.920            | 4.670            | 0.945         | 12.60         | 11.90         | 19.90         | 1.96                 | 0.098                      | 6.3                   |
| PFM000084 | 2020-05-26                    | 78569         | 11.200           | 1.840            | 7.970            | 1.500         | 11.60         | 10.90         | 19.40         | 1.54                 | 0.077                      | 5.6                   |
| PFM000084 | 2020-06-22                    | 79950         | 5.190            | 1.240            | 4.480            | 0.728         | 15.30         | 14.70         | 22.80         | 1.94                 | 0.097                      | 3.7                   |
| PFM000084 | 2020-08-12                    | 80496         | 3.650            | 0.630            | 1.400            | 0.607         | 6.60          | 6.00          | 15.10         | 0.48                 | 0.024                      | 9.7                   |
| PFM000084 | 2020-09-16                    | 82531         | 5.160            | 1.010            | 1.340            | 0.580         | 5.20          | 5.00          | 12.30         | 0.28                 | 0.014                      | 2.3                   |
| PFM000084 | 2020-10-13                    | 83396         | 4.820            | 1.040            | 1.090            | 0.432         | 5.20          | 5.00          | 16.40         | 0.36                 | 0.018                      | 1.4                   |
| PFM000107 | 2020-04-20                    | 74923         | 3.650            | 0.820            | 1.140            | 0.726         | 26.00         | 26.00         | 22.10         | 3.26                 | 0.163                      | 1.6                   |
| PFM000107 | 2020-08-10                    | 80508         | 2.830            | < 0.5            | < 0.5            | 0.630         | 27.00         | 27.00         | 9.82          | 1.04                 | 0.052                      | 2.2                   |
| PFM000107 | 2020-10-12                    | 83404         | 1.490            | 0.750            | 1.890            | 0.603         | 26.00         | 26.00         | 16.80         | 0.92                 | 0.046                      | 1.0                   |
| PFM000117 | 2020-04-21                    | 74924         | 2.110            | < 0.5            | 1.270            | 0.439         | 24.00         | 24.00         | 22.70         | 2.96                 | 0.148                      | 1.2                   |
| PFM000117 | 2020-08-10                    | 80509         | 1.900            | < 0.5            | < 0.5            | 0.435         | 24.00         | 25.00         | 8.96          | 1.08                 | 0.054                      | 1.5                   |
| PFM000117 | 2020-10-12                    | 83405         | 1.360            | < 0.5            | < 0.5            | 0.405         | 25.00         | 25.00         | 12.60         | 0.88                 | 0.044                      | 1.0                   |
| PFM007783 | 2020-04-21                    | 77264         | 0.750            | < 0.5            | 0.750            | 0.211         | 4.20          | 4.40          | 15.30         | 0.34                 | 0.017                      | 1.1                   |
| PFM007783 | 2020-05-25                    | 78570         | 1.340            | < 0.5            | < 0.5            | 0.490         | 4.50          | 4.30          | 15.10         | 0.30                 | 0.015                      | 1.8                   |
| PFM007783 | 2020-06-22                    | 79951         | 2.210            | 0.540            | < 0.5            | 0.378         | 4.80          | 4.80          | 13.90         | 0.32                 | 0.016                      | 0.6                   |
| PFM007783 | 2020-08-11                    | 80497         | 3.560            | 0.560            | 1.250            | 0.448         | 5.20          | 4.90          | 14.00         | 0.24                 | 0.012                      | 1.5                   |
| PFM007783 | 2020-09-16                    | 82532         | 1.340            | < 0.5            | < 0.5            | 0.455         | 4.50          | 4.30          | 13.70         | 0.24                 | 0.012                      | 0.8                   |
| PFM007783 | 2020-10-12                    | 83397         | 2.850            | 0.600            | 1.320            | 0.194         | 4.60          | 4.30          | 14.60         | 0.30                 | 0.015                      | 0.8                   |



Table A2-3b. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Chl. A<br>(µg/L) | Chl. C<br>(µg/L) | Pheop.<br>(µg/L) | POC<br>(mg/L) | TOC<br>(mg/L) | DOC<br>(mg/L) | DIC<br>(mg/L) | Abs. coeff.<br>(1/m) | absorbance_436<br>(number) | Susp. mtrl.<br>(mg/L) |
|-----------|-------------------------------|---------------|------------------|------------------|------------------|---------------|---------------|---------------|---------------|----------------------|----------------------------|-----------------------|
| PFM007910 | 2020-04-21                    | 77266         | 0.950            | 0.740            | < 0.5            | 0.345         | 5.10          | 4.80          | 15.60         | 0.40                 | 0.020                      | 2.3                   |
| PFM007910 | 2020-05-26                    | 78572         | 1.350            | < 0.5            | < 0.5            | 0.351         | 4.60          | 4.40          | 15.30         | 0.36                 | 0.018                      | 1.2                   |
| PFM007910 | 2020-06-22                    | 79954         | 2.670            | 0.600            | 1.800            | 0.353         | 5.00          | 4.50          | 14.80         | 0.32                 | 0.016                      | 1.0                   |
| PFM007910 | 2020-08-12                    | 80499         | 3.580            | 0.660            | 2.400            | 0.458         | 5.30          | 4.70          | 13.50         | 0.26                 | 0.013                      | 1.1                   |
| PFM007910 | 2020-09-16                    | 82534         | 3.560            | 0.540            | 0.830            | 0.437         | 4.60          | 4.30          | 12.40         | 0.36                 | 0.018                      | 1.0                   |
| PFM007910 | 2020-10-13                    | 83399         | 2.020            | < 0.5            | 0.540            | 0.233         | 4.30          | 4.20          | 15.00         | 0.26                 | 0.013                      | 0.3                   |
| PFM007911 | 2020-04-21                    | 77267         | 0.860            | < 0.5            | 0.750            | 0.308         | 4.60          | 4.50          | 15.20         | 0.38                 | 0.019                      | 1.6                   |
| PFM007911 | 2020-05-26                    | 78573         | 1.430            | < 0.5            | 0.740            | 0.337         | 4.70          | 4.40          | 15.20         | 0.34                 | 0.017                      | 1.2                   |
| PFM007911 | 2020-06-22                    | 79953         | 2.500            | < 0.5            | < 0.5            | 0.380         | 4.70          | 4.40          | 15.00         | 0.32                 | 0.016                      | 1.5                   |
| PFM007911 | 2020-08-12                    | 80500         | 2.270            | < 0.5            | 3.100            | 0.543         | 5.10          | 4.50          | 14.30         | 0.26                 | 0.013                      | 0.9                   |
| PFM007911 | 2020-09-16                    | 82535         | 2.810            | < 0.5            | < 0.5            | 0.442         | 4.70          | 4.30          | 13.40         | 0.22                 | 0.011                      | 0.8                   |
| PFM007911 | 2020-10-13                    | 83400         | 2.110            | 0.560            | < 0.5            | 0.218         | 4.40          | 4.20          | 14.90         | 0.28                 | 0.014                      | 0.9                   |
| PFM007912 | 2020-04-21                    | 77268         | 0.950            | 0.750            | < 0.5            | 0.296         | 4.50          | 4.30          | 14.70         | 0.40                 | 0.020                      | 1.5                   |
| PFM007912 | 2020-05-26                    | 78574         | 1.220            | < 0.5            | < 0.5            | 0.249         | 4.20          | 4.30          | 15.00         | 0.30                 | 0.015                      | 0.7                   |
| PFM007912 | 2020-06-22                    | 79857         | 2.440            | < 0.5            | 2.880            | 0.256         | 4.50          | 4.10          | 14.70         | 0.38                 | 0.019                      | 1.2                   |
| PFM007912 | 2020-08-12                    | 80501         | 4.130            | 0.690            | 4.650            | 0.462         | 5.00          | 4.60          | 14.30         | 0.26                 | 0.013                      | 0.4                   |
| PFM007912 | 2020-09-16                    | 82536         | 2.370            | < 0.5            | 0.650            | 0.311         | 4.30          | 4.20          | 12.90         | 0.28                 | 0.014                      | 0.6                   |
| PFM007912 | 2020-10-13                    | 83401         | 1.730            | < 0.5            | 0.610            | 0.453         | 4.30          | 4.10          | 15.00         | 0.26                 | 0.013                      | 1.2                   |
| PFM008211 | 2020-04-21                    | 77607         | 0.640            | < 0.5            | < 0.5            | 0.142         | 4.40          | 4.10          | 15.10         | 0.38                 | 0.019                      | 1.0                   |
| PFM008211 | 2020-05-26                    | 78579         | 1.480            | < 0.5            | 1.410            | 0.217         | 4.20          | 4.10          | 15.30         | 0.38                 | 0.019                      | 0.7                   |
| PFM008211 | 2020-06-22                    | 79858         | 2.980            | 0.510            | < 0.5            | 0.264         | 4.30          | 4.20          | 15.20         | 0.26                 | 0.013                      | 0.5                   |
| PFM008211 | 2020-08-12                    | 80502         | 5.340            | < 0.5            | 0.960            | 0.340         | 4.70          | 4.30          | 14.20         | 0.24                 | 0.012                      | 0.8                   |
| PFM008211 | 2020-10-13                    | 83402         | 2.670            | < 0.5            | 0.710            | 0.409         | 4.20          | 3.90          | 15.40         | 0.26                 | 0.013                      | 5.4                   |
| PFM102269 | 2020-01-14                    | 74917         | 0.670            | < 0.5            | < 0.5            | 0.113         | 5.10          | 5.10          | 14.90         | 0.52                 | 0.026                      | 2.9                   |
| PFM102269 | 2020-02-10                    | 75769         | 0.700            | < 0.5            |                  | 0.134         | 3.80          | 4.30          | 15.30         | 0.42                 | 0.021                      | 1.1                   |
| PFM102269 | 2020-03-16                    | 76686         | 4.790            | 1.130            | 0.810            | 0.321         | 4.30          | 4.30          | 15.60         | 0.38                 | 0.019                      | 2.5                   |
| PFM102269 | 2020-04-21                    | 77265         | 1.100            | < 0.5            | < 0.5            | 0.171         | 4.10          | 4.20          | 15.10         | 0.36                 | 0.018                      | 1.5                   |
| PFM102269 | 2020-05-25                    | 78571         | 1.500            | < 0.5            | 1.530            | 0.174         | 4.30          | 4.10          | 15.30         | 0.32                 | 0.016                      | 1.7                   |
| PFM102269 | 2020-06-22                    | 79952         | 2.380            | < 0.5            | < 0.5            | 0.233         | 4.20          | 4.30          | 14.50         | 0.30                 | 0.015                      | 1.2                   |
| PFM102269 | 2020-08-10                    | 80498         | 1.410            | < 0.5            |                  | 0.373         | 4.50          | 4.50          | 14.90         | 0.22                 | 0.011                      | 2.6                   |
| PFM102269 | 2020-09-16                    | 82533         | 1.540            | < 0.5            | 0.520            | 0.282         | 4.20          | 4.10          | 14.10         | 0.22                 | 0.011                      | 1.3                   |
| PFM102269 | 2020-10-12                    | 83398         | 0.820            | < 0.5            | < 0.5            | 0.119         | 4.00          | 4.10          | 15.70         | 0.24                 | 0.012                      | 0.9                   |
| PFM102269 | 2020-11-09                    | 84851         | 1.100            | < 0.5            |                  | 0.106         | 4.00          | 3.90          | 15.40         | 0.24                 | 0.012                      | 0.9                   |
| PFM102269 | 2020-12-06                    | 85492         | 0.590            | < 0.5            | < 0.5            | 0.116         | 4.20          | 4.00          | 19.90         | 0.20                 | 0.010                      | 0.1                   |

**Table A2-3c. Isotopes.**

| <b>Id-code</b> | <b>Sampling date<br/>(yyyy-mm-dd)</b> | <b>Sample<br/>No.</b> | <b><math>\delta</math>D<br/>‰ SMOW</b> | <b><math>^3</math>H<br/>TU</b> | <b><math>\delta^{18}</math>O<br/>‰ SMOW</b> |
|----------------|---------------------------------------|-----------------------|--|--------------------------------|---|
| PFM000062      | 2020-01-13                            | 74916                 | -62.3                                  | 5.30                           | -8.25                                       |
| PFM000062      | 2020-04-21                            | 77261                 | -60.8                                  | 5.30                           | -8.08                                       |
| PFM000062      | 2020-05-26                            | 78567                 | -60.3                                  | 7.70                           | -7.92                                       |
| PFM000062      | 2020-06-22                            | 79850                 | -58.9                                  | 5.80                           | -7.82                                       |
| PFM000062      | 2020-08-12                            | 80494                 |  | 5.60                           |   |
| PFM000062      | 2020-09-16                            | 82529                 | -59.6                                  | 5.10                           | -7.80                                       |
| PFM000062      | 2020-10-13                            | 83394                 | -58.9                                  | 4.60                           | -7.82                                       |
| PFM000066      | 2020-01-14                            | 74918                 | -82.7                                  | 7.50                           | -11.83                                      |
| PFM000066      | 2020-02-10                            | 75765                 | -81.6                                  | 8.90                           | -11.46                                      |
| PFM000066      | 2020-03-16                            | 76682                 | -81.7                                  | 7.20                           | -11.59                                      |
| PFM000066      | 2020-04-20                            | 77269                 | -78.6                                  | 8.20                           | -10.85                                      |
| PFM000066      | 2020-05-25                            | 78575                 | -76.4                                  | 4.90                           | -10.42                                      |
| PFM000066      | 2020-06-22                            | 79859                 | -68.1                                  | 5.40                           | -8.84                                       |
| PFM000066      | 2020-11-09                            | 80503                 | -67.4                                  | 8.10                           | -8.78                                       |
| PFM000066      | 2020-12-06                            | 82574                 | -70.1                                  | 6.60                           | -9.32                                       |
| PFM000068      | 2020-01-13                            | 74919                 | -78.6                                  | 9.40                           | -10.84                                      |
| PFM000068      | 2020-02-10                            | 75766                 | -77.3                                  | 8.20                           | -10.63                                      |
| PFM000068      | 2020-03-16                            | 76683                 | -79.0                                  | 7.70                           | -10.96                                      |
| PFM000068      | 2020-04-20                            | 77270                 | -77.4                                  | 7.50                           | -10.70                                      |
| PFM000068      | 2020-05-25                            | 78576                 | -73.5                                  | 5.80                           | -9.97                                       |
| PFM000068      | 2020-06-22                            | 79860                 | -73.5                                  | 5.50                           | -10.02                                      |
| PFM000068      | 2020-11-09                            | 80504                 | -70.6                                  | 7.90                           | -9.54                                       |
| PFM000068      | 2020-12-06                            | 82575                 | -72.2                                  | 6.60                           | -9.86                                       |
| PFM000069      | 2020-01-13                            | 74920                 | -84.4                                  | 6.90                           | -12.01                                      |
| PFM000069      | 2020-02-10                            | 75767                 | -81.8                                  | 8.80                           | -11.44                                      |
| PFM000069      | 2020-03-16                            | 76684                 | -82.5                                  | 7.70                           | -11.44                                      |
| PFM000069      | 2020-04-20                            | 77271                 | -79.4                                  | 7.50                           | -11.00                                      |
| PFM000069      | 2020-05-25                            | 78577                 | -76.7                                  | 7.50                           | -10.53                                      |
| PFM000069      | 2020-06-22                            | 79861                 | -75.0                                  | 6.00                           | -10.22                                      |
| PFM000069      | 2020-11-09                            | 80505                 | -71.9                                  | 7.20                           | -9.60                                       |
| PFM000069      | 2020-12-06                            | 82576                 | -69.4                                  | 8.50                           | -9.35                                       |
| PFM000070      | 2020-01-14                            | 74921                 | -71.4                                  | 7.10                           | -9.23                                       |
| PFM000070      | 2020-02-10                            | 75768                 | -71.1                                  | 7.90                           | -9.36                                       |
| PFM000070      | 2020-03-16                            | 76685                 | -72.6                                  | 7.70                           | -9.80                                       |
| PFM000070      | 2020-04-20                            | 77272                 | -70.0                                  | 7.40                           | -9.07                                       |
| PFM000070      | 2020-05-25                            | 78578                 | -67.3                                  | 6.30                           | -8.47                                       |
| PFM000070      | 2020-06-22                            | 79862                 | -63.6                                  | 6.60                           | -8.16                                       |
| PFM000070      | 2020-11-09                            | 80506                 | -64.8                                  | 6.90                           | -8.37                                       |
| PFM000070      | 2020-12-06                            | 82577                 | -65.3                                  | 7.50                           | -8.44                                       |
| PFM000074      | 2020-04-20                            | 74922                 | -78.3                                  | 8.80                           | -10.85                                      |
| PFM000074      | 2020-08-10                            | 80507                 |  | 9.10                           |   |
| PFM000074      | 2020-10-12                            | 83403                 | -57.7                                  | 8.20                           | -6.71                                       |
| PFM000083      | 2020-04-21                            | 77262                 | -60.1                                  | 5.90                           | -7.96                                       |
| PFM000083      | 2020-05-26                            | 78568                 | -59.9                                  | 6.40                           | -8.01                                       |
| PFM000083      | 2020-06-22                            | 79851                 | -59.4                                  | 8.30                           | -7.74                                       |
| PFM000083      | 2020-08-12                            | 80495                 |  | 5.30                           |   |
| PFM000083      | 2020-09-16                            | 82530                 | -59.6                                  | 5.10                           | -7.85                                       |
| PFM000083      | 2020-10-13                            | 83395                 | -58.6                                  | 4.30                           | -7.79                                       |
| PFM000084      | 2020-04-21                            | 77263                 | -67.2                                  | 5.20                           | -9.07                                       |
| PFM000084      | 2020-05-26                            | 78569                 | -65.8                                  | 5.60                           | -8.86                                       |
| PFM000084      | 2020-06-22                            | 79950                 | -63.8                                  | 7.90                           | -8.33                                       |
| PFM000084      | 2020-08-12                            | 80496                 |  | 6.20                           |   |
| PFM000084      | 2020-09-16                            | 82531                 | -60.1                                  | 4.60                           | -7.71                                       |
| PFM000084      | 2020-10-13                            | 83396                 | -59.9                                  | 5.70                           | -7.76                                       |

**Table A2-3c. Continued.**

| <b>Id-code</b> | <b>Sampling date<br/>(yyyy-mm-dd)</b> | <b>Sample<br/>No.</b> | <b><math>\delta</math>D<br/>‰ SMOW</b> | <b><math>^3</math>H<br/>TU</b> | <b><math>\delta^{18}</math>O<br/>‰ SMOW</b> |
|----------------|---------------------------------------|-----------------------|--|--------------------------------|---|
| PFM000107      | 2020-04-20                            | 74923                 | -70.9                                  | 8.00                           | -9.43                                       |
| PFM000107      | 2020-08-10                            | 80508                 |  | 9.50                           |   |
| PFM000107      | 2020-10-12                            | 83404                 | -42.1                                  | 9.00                           | -3.85                                       |
| PFM000117      | 2020-04-21                            | 74924                 | -69.2                                  | 7.10                           | -9.09                                       |
| PFM000117      | 2020-08-10                            | 80509                 |  | 8.10                           |   |
| PFM000117      | 2020-10-12                            | 83405                 | -49.9                                  | 7.60                           | -4.95                                       |
| PFM007783      | 2020-04-21                            | 77264                 | -60.1                                  | 5.80                           | -7.94                                       |
| PFM007783      | 2020-05-25                            | 78570                 | -59.2                                  | 5.50                           | -7.79                                       |
| PFM007783      | 2020-06-22                            | 79951                 | -59.6                                  | 7.00                           | -7.89                                       |
| PFM007783      | 2020-08-11                            | 80497                 |  | 5.90                           |   |
| PFM007783      | 2020-09-16                            | 82532                 | -60.6                                  | 5.30                           | -7.79                                       |
| PFM007783      | 2020-10-12                            | 83397                 | -58.4                                  | 6.10                           | -7.75                                       |
| PFM007910      | 2020-04-21                            | 77266                 | -60.3                                  | 6.70                           | -7.95                                       |
| PFM007910      | 2020-05-26                            | 78572                 | -59.8                                  | 4.60                           | -7.96                                       |
| PFM007910      | 2020-06-22                            | 79954                 | -58.5                                  | 6.10                           | -7.82                                       |
| PFM007910      | 2020-08-12                            | 80499                 |  | 5.00                           |   |
| PFM007910      | 2020-09-16                            | 82534                 | -60.3                                  | A                              | -7.85                                       |
| PFM007910      | 2020-10-13                            | 83399                 | -59.8                                  | 4.40                           | -7.84                                       |
| PFM007911      | 2020-04-21                            | 77267                 | -60.8                                  | 6.10                           | -7.88                                       |
| PFM007911      | 2020-05-26                            | 78573                 | -59.6                                  | A                              | -7.92                                       |
| PFM007911      | 2020-06-22                            | 79953                 | -58.8                                  | 5.00                           | -7.79                                       |
| PFM007911      | 2020-08-12                            | 80500                 |  | 4.40                           |   |
| PFM007911      | 2020-09-16                            | 82535                 | -60.6                                  | 5.70                           | -7.88                                       |
| PFM007911      | 2020-10-13                            | 83400                 | -59.8                                  | 4.70                           | -7.84                                       |
| PFM007912      | 2020-04-21                            | 77268                 | -61.1                                  | 6.00                           | -8.02                                       |
| PFM007912      | 2020-05-26                            | 78574                 | -59.8                                  | 5.60                           | -7.91                                       |
| PFM007912      | 2020-06-22                            | 79857                 | -59.7                                  | 4.70                           | -7.99                                       |
| PFM007912      | 2020-08-12                            | 80501                 |  | 3.90                           |   |
| PFM007912      | 2020-09-16                            | 82536                 | -61.3                                  | 5.10                           | -7.78                                       |
| PFM007912      | 2020-10-13                            | 83401                 | -59.4                                  | 5.50                           | -7.85                                       |
| PFM008211      | 2020-04-21                            | 77607                 | -60.7                                  | 5.60                           | -8.14                                       |
| PFM008211      | 2020-05-26                            | 78579                 | -60.9                                  | 7.80                           | -7.91                                       |
| PFM008211      | 2020-06-22                            | 79858                 | -60.5                                  | 5.70                           | -7.98                                       |
| PFM008211      | 2020-08-12                            | 80502                 |  | 4.90                           |   |
| PFM008211      | 2020-10-13                            | 83402                 | -58.8                                  | 3.70                           | -7.85                                       |
| PFM102269      | 2020-01-14                            | 74917                 | -62.1                                  | 5.80                           | -8.19                                       |
| PFM102269      | 2020-02-10                            | 75769                 | -61.9                                  | 6.70                           | -8.07                                       |
| PFM102269      | 2020-03-16                            | 76686                 | -61.1                                  | 7.10                           | -7.98                                       |
| PFM102269      | 2020-04-21                            | 77265                 | -60.3                                  | 6.70                           | -7.93                                       |
| PFM102269      | 2020-05-25                            | 78571                 | -61.1                                  | 5.60                           | -7.93                                       |
| PFM102269      | 2020-06-22                            | 79952                 | -59.4                                  | 6.10                           | -7.76                                       |
| PFM102269      | 2020-08-10                            | 80498                 |  | 5.40                           |   |
| PFM102269      | 2020-09-16                            | 82533                 | -59.7                                  | 5.60                           | -7.82                                       |
| PFM102269      | 2020-10-12                            | 83398                 | -59.4                                  | 5.60                           | -7.87                                       |
| PFM102269      | 2020-11-09                            | 84851                 | -59.9                                  | 5.20                           | -7.80                                       |
| PFM102269      | 2020-12-06                            | 85492                 | -60.7                                  | 4.70                           | -8.02                                       |

A: Analysis missing, sample not recieved.

**Table A2-3d. Trace elements I.**

| <b>Id-code</b> | <b>Sampling date<br/>(yyyy-mm-dd)</b> | <b>Sample<br/>No.</b> | <b>Ag<br/>(µg/L)</b> | <b>Al<br/>(µg/L)</b> | <b>As<br/>(µg/L)</b> | <b>B<br/>(µg/L)</b> | <b>Ba<br/>(µg/L)</b> | <b>Cd<br/>(µg/L)</b> | <b>Cr<br/>(µg/L)</b> | <b>Cu<br/>(µg/L)</b> | <b>Co<br/>(µg/L)</b> | <b>Hg<br/>(µg/L)</b> |
|----------------|---------------------------------------|-----------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| PFM000062      | 2020-01-13                            | 74916                 | < 0.3                | 6.26                 | 0.824                | 616.0               | 15.50                | < 0.02               | 0.081                |                      | 0.031                | < 0.002              |
| PFM000062      | 2020-04-21                            | 77261                 | < 0.3                | 1.57                 | 0.888                | 635.0               | 15.90                | < 0.02               | 0.106                | 0.772                | < 0.02               | < 0.002              |
| PFM000062      | 2020-05-26                            | 78567                 | < 0.3                | 1.28                 | 0.840                | 663.0               | 18.40                | < 0.02               | 0.088                | 0.903                | 0.042                | < 0.002              |
| PFM000062      | 2020-06-22                            | 79850                 | < 0.3                | 5.43                 | 0.793                | 662.0               | 17.10                | < 0.02               | 0.067                | 0.723                | < 0.02               | < 0.002              |
| PFM000062      | 2020-08-12                            | 80494                 | < 0.3                | 0.99                 | 0.821                | 656.0               | 17.00                | < 0.02               | 0.124                | 0.562                | < 0.02               | < 0.002              |
| PFM000062      | 2020-09-16                            | 82529                 | < 0.3                | 1.27                 | 1.000                | 659.0               | 16.00                | < 0.02               | 0.136                | 0.514                | < 0.02               | < 0.002              |
| PFM000062      | 2020-10-13                            | 83394                 | < 0.3                | 1.33                 | 0.727                | 669.0               | 16.00                | < 0.02               | 0.143                | 0.705                | < 0.02               | < 0.002              |
| PFM000066      | 2020-01-14                            | 74918                 | < 0.05               | 18.60                | 0.382                | < 10                | 22.70                | < 0.002              | 0.262                |                      | 0.113                | < 0.002              |
| PFM000066      | 2020-02-10                            | 75765                 | < 0.05               | 13.40                | 0.321                | < 10                | 23.60                | 0.003                | 0.206                |                      | 0.077                | < 0.002              |
| PFM000066      | 2020-03-16                            | 76682                 | < 0.05               | 15.20                | 0.279                | < 10                | 21.30                | 0.004                | 0.222                |                      | 0.072                | < 0.002              |
| PFM000066      | 2020-04-20                            | 77269                 | < 0.05               | 6.37                 | 0.341                | < 10                | 24.80                | 0.004                | 0.169                | 0.812                | 0.070                | < 0.002              |
| PFM000066      | 2020-05-25                            | 78575                 | < 0.05               | 4.54                 | 0.365                | 11.8                | 21.90                | < 0.002              | 0.137                | 0.651                | 0.061                | < 0.002              |
| PFM000066      | 2020-06-22                            | 79859                 | < 0.05               | 9.04                 | 0.462                | 11.8                | 20.00                | < 0.002              | 0.112                | 0.394                | 0.072                | < 0.002              |
| PFM000066      | 2020-11-09                            | 80503                 | < 0.05               | 6.00                 | 0.394                | 14.0                | 23.90                | 0.003                | 0.125                | 1.060                | 0.050                | < 0.002              |
| PFM000066      | 2020-12-06                            | 82574                 | < 0.05               | 6.42                 | 0.363                | 13.3                | 24.00                | 0.003                | 0.210                | 0.950                | 0.059                | < 0.002              |
| PFM000068      | 2020-01-13                            | 74919                 | < 0.05               | 38.10                | 0.467                | 10.4                | 19.20                | 0.005                | 0.283                |                      | 0.165                | 0.002                |
| PFM000068      | 2020-02-10                            | 75766                 | < 0.05               | 28.20                | 0.486                | 12.7                | 20.70                | 0.003                | 0.236                |                      | 0.115                | < 0.002              |
| PFM000068      | 2020-03-16                            | 76683                 | < 0.05               | 24.70                | 0.374                | 10.7                | 17.50                | 0.006                | 0.235                |                      | 0.062                | 0.002                |
| PFM000068      | 2020-04-20                            | 77270                 | < 0.05               | 16.80                | 0.454                | 15.1                | 23.50                | 0.004                | 0.190                | 0.666                | 0.143                | < 0.002              |
| PFM000068      | 2020-05-25                            | 78576                 | < 0.05               | 15.50                | 0.407                | 19.7                | 21.30                | 0.003                | 0.142                | 0.518                | 0.096                | < 0.002              |
| PFM000068      | 2020-06-22                            | 79860                 | < 0.05               | 19.10                | 0.478                | 26.9                | 36.90                | < 0.002              | 0.191                | 0.378                | 0.157                | < 0.002              |
| PFM000068      | 2020-11-09                            | 80504                 | < 0.05               | 20.00                | 0.469                | 34.5                | 28.60                | 0.006                | 0.178                | 1.210                | 0.091                | < 0.002              |
| PFM000068      | 2020-12-06                            | 82575                 | < 0.05               | 25.40                | 0.397                | 27.4                | 28.30                | 0.008                | 0.277                | 1.580                | 0.096                | < 0.002              |
| PFM000069      | 2020-01-13                            | 74920                 | < 0.05               | 37.80                | 0.607                | 12.1                | 25.50                | 0.005                | 0.321                |                      | 0.175                | 0.003                |
| PFM000069      | 2020-02-10                            | 75767                 | < 0.05               | 22.70                | 0.409                | 17.1                | 25.70                | 0.003                | 0.256                |                      | 0.095                | < 0.002              |
| PFM000069      | 2020-03-16                            | 76684                 | < 0.05               | 22.80                | 0.317                | 13.9                | 22.30                | 0.006                | 0.253                |                      | 0.070                | < 0.002              |
| PFM000069      | 2020-04-20                            | 77271                 | < 0.05               | 16.70                | 0.428                | 16.6                | 24.70                | 0.004                | 0.216                | 0.765                | 0.099                | < 0.002              |
| PFM000069      | 2020-05-25                            | 78577                 | < 0.05               | 14.80                | 0.350                | 20.2                | 23.00                | < 0.002              | 0.167                | 0.332                | 0.066                | < 0.002              |
| PFM000069      | 2020-06-22                            | 79861                 | < 0.05               | 21.20                | 0.427                | 25.5                | 31.80                | < 0.002              | 0.164                | 0.326                | 0.081                | < 0.002              |
| PFM000069      | 2020-11-09                            | 80505                 | < 0.05               | 17.30                | 0.401                | 31.2                | 25.80                | 0.003                | 0.122                | 0.472                | 0.071                | < 0.002              |
| PFM000069      | 2020-12-06                            | 82576                 | < 0.05               | 16.20                | 0.382                | 26.9                | 28.10                | 0.002                | 0.146                | 0.553                | 0.078                | < 0.002              |
| PFM000070      | 2020-01-14                            | 74921                 | < 0.05               | 28.60                | 0.411                | < 10                | 14.60                | < 0.002              | 0.186                |                      | 0.047                | < 0.002              |
| PFM000070      | 2020-02-10                            | 75768                 | < 0.05               | 22.10                | 0.268                | < 10                | 14.40                | 0.003                | 0.167                |                      | 0.041                | 0.002                |
| PFM000070      | 2020-03-16                            | 76685                 | < 0.05               | 18.70                | 0.367                | < 10                | 15.70                | 0.004                | 0.217                |                      | 0.061                | < 0.002              |
| PFM000070      | 2020-04-20                            | 77272                 | < 0.05               | 10.10                | 0.317                | < 10                | 17.90                | 0.004                | 0.160                | 0.754                | 0.085                | < 0.002              |
| PFM000070      | 2020-05-25                            | 78578                 | < 0.05               | 5.91                 | 0.291                | < 10                | 16.00                | 0.002                | 0.129                | 0.628                | 0.066                | < 0.002              |
| PFM000070      | 2020-06-22                            | 79862                 | < 0.05               | 13.80                | 0.344                | 13.1                | 24.10                | < 0.002              | 0.109                | 0.151                | 0.105                | < 0.002              |
| PFM000070      | 2020-11-09                            | 80506                 | < 0.05               | 15.50                | 0.131                | 17.3                | 19.90                | 0.004                | 0.160                | 0.650                | 0.127                | < 0.002              |
| PFM000070      | 2020-12-06                            | 82577                 | < 0.05               | 11.10                | 0.377                | 15.8                | 16.20                | 0.002                | 0.158                | 0.431                | 0.072                | < 0.002              |
| PFM000074      | 2020-04-20                            | 74922                 | < 0.05               | 5.43                 | 0.399                | < 10                | 26.10                | 0.002                | 0.188                | 1.010                | 0.053                | < 0.002              |
| PFM000074      | 2020-08-10                            | 80507                 | < 0.05               | 1.94                 | 0.390                | 23.3                | 28.10                | < 0.002              | 0.067                | 0.322                | 0.045                | < 0.002              |
| PFM000074      | 2020-10-12                            | 83403                 | < 0.05               | 1.66                 | 0.266                | 17.5                | 24.20                | < 0.002              | 0.112                | 0.174                | 0.028                | < 0.002              |
| PFM000083      | 2020-04-21                            | 77262                 | < 0.3                | 1.78                 | 0.677                | 625.0               | 15.50                | < 0.02               | 0.116                | 0.591                | < 0.02               | < 0.002              |
| PFM000083      | 2020-05-26                            | 78568                 | < 0.3                | 1.80                 | 0.761                | 669.0               | 18.10                | < 0.02               | 0.060                | 0.795                | 0.045                | < 0.002              |
| PFM000083      | 2020-06-22                            | 79851                 | < 0.3                | 7.09                 | 0.932                | 673.0               | 17.80                | < 0.02               | < 0.04               | 0.628                | 0.031                | < 0.002              |
| PFM000083      | 2020-08-12                            | 80495                 | < 0.3                | 1.92                 | 0.821                | 656.0               | 16.30                | < 0.02               | 0.094                | 0.938                | < 0.02               | < 0.002              |
| PFM000083      | 2020-09-16                            | 82530                 | < 0.3                | 3.85                 | 0.750                | 657.0               | 18.10                | < 0.02               | 0.132                | 0.785                | < 0.02               | < 0.002              |
| PFM000083      | 2020-10-13                            | 83395                 | < 0.3                | 1.00                 | 0.841                | 666.0               | 15.70                | < 0.02               | 0.128                | 0.576                | < 0.02               | < 0.002              |
| PFM000084      | 2020-04-21                            | 77263                 | < 0.3                | 22.50                | 0.774                | 351.0               | 17.90                | < 0.02               | 0.181                | 1.230                | 0.298                | < 0.002              |
| PFM000084      | 2020-05-26                            | 78569                 | < 0.3                | 26.90                | 0.706                | 423.0               | 19.10                | < 0.02               | 0.130                | 1.380                | 0.283                | < 0.002              |
| PFM000084      | 2020-06-22                            | 79950                 | < 0.05               | 16.20                | 0.821                | 342.0               | 20.20                | 0.007                | 0.110                | 1.350                | 0.166                | < 0.002              |
| PFM000084      | 2020-08-12                            | 80496                 | < 0.3                | 3.11                 | 0.922                | 614.0               | 14.10                | < 0.02               | 0.096                | 0.954                | 0.079                | < 0.002              |
| PFM000084      | 2020-09-16                            | 82531                 | < 0.3                | 5.17                 | 0.919                | 640.0               | 19.60                | < 0.02               | 0.153                | 0.846                | 0.024                | < 0.002              |
| PFM000084      | 2020-10-13                            | 83396                 | < 0.3                | 1.80                 | 0.877                | 627.0               | 17.50                | < 0.02               | 0.112                | 0.493                | 0.044                | < 0.002              |

Table A2-3d. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Ag<br>(µg/L) | Al<br>(µg/L) | As<br>(µg/L) | B<br>(µg/L) | Ba<br>(µg/L) | Cd<br>(µg/L) | Cr<br>(µg/L) | Cu<br>(µg/L) | Co<br>(µg/L) | Hg<br>(µg/L) |
|-----------|-------------------------------|---------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| PFM000107 | 2020-04-20                    | 74923         | < 0.05       | 6.32         | 0.374        | 13.8        | 17.60        | 0.004        | 0.090        | 0.761        | 0.062        | < 0.002      |
| PFM000107 | 2020-08-10                    | 80508         | < 0.05       | 21.00        | 0.475        | 24.9        | 12.00        | < 0.002      | 0.098        | 0.603        | 0.072        | < 0.002      |
| PFM000107 | 2020-10-12                    | 83404         | < 0.05       | 4.72         | 0.399        | 27.7        | 15.50        | < 0.002      | 0.154        | 0.334        | 0.039        | < 0.002      |
| PFM000117 | 2020-04-21                    | 74924         | < 0.05       | 12.90        | 0.383        | < 10        | 16.90        | 0.003        | 0.186        | 0.975        | 0.034        | 0.003        |
| PFM000117 | 2020-08-10                    | 80509         | < 0.05       | 15.50        | 0.341        | < 10        | 4.57         | 0.002        | 0.052        | 0.629        | 0.051        | < 0.002      |
| PFM000117 | 2020-10-12                    | 83405         | < 0.05       | 5.82         | 0.313        | < 10        | 7.95         | < 0.002      | 0.140        | 0.392        | 0.038        | < 0.002      |
| PFM007783 | 2020-04-21                    | 77264         | < 0.3        | 1.19         | 0.705        | 630.0       | 16.80        | 0.026        | 0.116        | 0.704        | < 0.02       | < 0.002      |
| PFM007783 | 2020-05-25                    | 78570         | < 0.3        | 0.87         | 0.737        | 651.0       | 18.40        | < 0.02       | 0.062        | 0.617        | 0.024        | < 0.002      |
| PFM007783 | 2020-06-22                    | 79951         | < 0.3        | 2.43         | 0.694        | 661.0       | 18.40        | < 0.02       | 0.079        | 0.897        | 0.032        | < 0.002      |
| PFM007783 | 2020-08-11                    | 80497         | < 0.3        | 1.42         | 0.906        | 655.0       | 17.90        | < 0.02       | 0.111        | 0.795        | 0.021        | < 0.002      |
| PFM007783 | 2020-09-16                    | 82532         | < 0.3        | 5.65         | 0.884        | 651.0       | 18.00        | < 0.02       | 0.130        | 0.983        | < 0.02       | < 0.002      |
| PFM007783 | 2020-10-12                    | 83397         | < 0.3        | 1.24         | 0.798        | 645.0       | 16.70        | < 0.02       | 0.162        | 0.721        | 0.022        | < 0.002      |
| PFM007910 | 2020-04-21                    | 77266         | < 0.3        | 1.07         | 0.789        | 624.0       | 16.50        | 0.023        | 0.096        | 0.751        | 0.022        | < 0.002      |
| PFM007910 | 2020-05-26                    | 78572         | < 0.3        | 1.04         | 0.793        | 650.0       | 18.00        | < 0.02       | 0.071        | 0.599        | 0.023        | < 0.002      |
| PFM007910 | 2020-06-22                    | 79954         | < 0.3        | 6.62         | 0.820        | 656.0       | 18.20        | < 0.02       | 0.083        | 0.730        | 0.027        | < 0.002      |
| PFM007910 | 2020-08-12                    | 80499         | < 0.3        | 1.36         | 0.930        | 652.0       | 16.90        | < 0.02       | 0.080        | 0.803        | < 0.02       | < 0.002      |
| PFM007910 | 2020-09-16                    | 82534         | < 0.3        | 1.06         | 0.807        | 643.0       | 16.30        | < 0.02       | 0.120        | 0.534        | < 0.02       | < 0.002      |
| PFM007910 | 2020-10-13                    | 83399         | < 0.3        | 1.02         | 0.806        | 649.0       | 17.20        | < 0.02       | 0.127        | 0.597        | < 0.02       | < 0.002      |
| PFM007911 | 2020-04-21                    | 77267         | < 0.3        | 0.92         | 0.685        | 622.0       | 15.40        | 0.027        | 0.115        | 0.406        | < 0.02       | < 0.002      |
| PFM007911 | 2020-05-26                    | 78573         | < 0.3        | 0.73         | 0.699        | 655.0       | 18.20        | < 0.02       | 0.062        | 0.820        | 0.036        | < 0.002      |
| PFM007911 | 2020-06-22                    | 79953         | < 0.3        | 6.46         | 1.030        | 661.0       | 19.00        | < 0.02       | 0.092        | 0.774        | 0.035        | < 0.002      |
| PFM007911 | 2020-08-12                    | 80500         | < 0.3        | 1.10         | 0.860        | 651.0       | 16.10        | < 0.02       | < 0.04       | 0.682        | < 0.02       | < 0.002      |
| PFM007911 | 2020-09-16                    | 82535         | < 0.3        | 1.35         | 0.805        | 646.0       | 16.70        | < 0.02       | 0.120        | 0.434        | 0.025        | < 0.002      |
| PFM007911 | 2020-10-13                    | 83400         | < 0.3        | 0.93         | 0.788        | 645.0       | 17.30        | < 0.02       | 0.146        | 0.580        | < 0.02       | < 0.002      |
| PFM007912 | 2020-04-21                    | 77268         | < 0.3        | 1.76         | 0.847        | 627.0       | 14.60        | < 0.02       | 0.099        | 0.862        | < 0.02       | < 0.002      |
| PFM007912 | 2020-05-26                    | 78574         | < 0.3        | 0.92         | 0.797        | 647.0       | 18.00        | < 0.02       | 0.086        | 0.753        | < 0.02       | < 0.002      |
| PFM007912 | 2020-06-22                    | 79857         | < 0.3        | 5.42         | 0.738        | 655.0       | 17.20        | < 0.02       | 0.108        | 0.742        | 0.025        | < 0.002      |
| PFM007912 | 2020-08-12                    | 80501         | < 0.3        | 1.76         | 0.748        | 655.0       | 16.90        | < 0.02       | 0.115        | 0.766        | 0.025        | < 0.002      |
| PFM007912 | 2020-09-16                    | 82536         | < 0.3        | 0.85         | 0.851        | 639.0       | 16.80        | < 0.02       | 0.114        | 0.857        | < 0.02       | < 0.002      |
| PFM007912 | 2020-10-13                    | 83401         | < 0.3        | 1.00         | 0.922        | 654.0       | 16.60        | < 0.02       | 0.147        | 0.843        | < 0.02       | < 0.002      |
| PFM008211 | 2020-04-21                    | 77607         | < 0.3        | 2.04         | 0.691        | 628.0       | 15.10        | < 0.02       | 0.122        | 0.870        | < 0.02       | < 0.002      |
| PFM008211 | 2020-05-26                    | 78579         | < 0.3        | 1.34         | 0.837        | 672.0       | 17.80        | < 0.02       | 0.059        | 0.848        | 0.026        | < 0.002      |
| PFM008211 | 2020-06-22                    | 79858         | < 0.3        | 5.69         | 0.846        | 661.0       | 17.50        | < 0.02       | 0.049        | 0.710        | 0.022        | < 0.002      |
| PFM008211 | 2020-08-12                    | 80502         | < 0.3        | 2.08         | 0.892        | 666.0       | 14.60        | < 0.02       | 0.060        | 0.741        | < 0.02       | < 0.002      |
| PFM008211 | 2020-10-13                    | 83402         | < 0.3        | 0.95         | 0.892        | 657.0       | 16.40        | < 0.02       | 0.118        | 0.787        | < 0.02       | < 0.002      |
| PFM102269 | 2020-01-14                    | 74917         | < 0.3        | 7.27         | 0.878        | 590.0       | 14.10        | < 0.02       | < 0.04       |              | 0.021        | < 0.002      |
| PFM102269 | 2020-02-10                    | 75769         | < 0.3        | 7.86         | 0.751        | 627.0       | 16.50        | 0.030        | 0.135        |              | < 0.02       | < 0.002      |
| PFM102269 | 2020-03-16                    | 76686         | < 0.3        | 6.54         | 0.814        | 632.0       | 17.30        | < 0.02       | 0.165        |              | < 0.02       | < 0.002      |
| PFM102269 | 2020-04-21                    | 77265         | < 0.3        | 1.48         | 0.738        | 629.0       | 15.60        | < 0.02       | 0.075        | 0.299        | < 0.02       | < 0.002      |
| PFM102269 | 2020-05-25                    | 78571         | < 0.3        | 1.06         | 0.721        | 676.0       | 18.20        | < 0.02       | 0.062        | 0.747        | 0.024        | < 0.002      |
| PFM102269 | 2020-06-22                    | 79952         | < 0.3        | 8.27         | 0.786        | 660.0       | 17.70        | < 0.02       | < 0.04       | 1.140        | 0.026        | < 0.002      |
| PFM102269 | 2020-08-10                    | 80498         | < 0.3        | 1.47         | 0.851        | 656.0       | 15.70        | < 0.02       | 0.082        | 0.418        | 0.024        | < 0.002      |
| PFM102269 | 2020-09-16                    | 82533         | < 0.3        | 0.96         | 0.935        | 652.0       | 18.10        | < 0.02       | 0.126        | 0.753        | < 0.02       | < 0.002      |
| PFM102269 | 2020-10-12                    | 83398         | < 0.3        | 1.30         | 0.689        | 658.0       | 15.60        | < 0.02       | 0.144        | 0.497        | 0.028        | < 0.002      |
| PFM102269 | 2020-11-09                    | 84851         | < 0.3        | 1.25         | 0.549        | 642.0       | 16.00        | < 0.02       | 0.129        | 0.738        | < 0.02       | < 0.002      |
| PFM102269 | 2020-12-06                    | 85492         | < 0.3        | 2.95         | 0.802        | 643.0       | 16.90        | < 0.02       | 0.261        | 0.420        | 0.026        | < 0.002      |

Table A2-3d. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Nb<br>(µg/L) | Ni<br>(µg/L) | Mo<br>(µg/L) | Pb<br>(µg/L) | Pd<br>(µg/L) | Se<br>(µg/L) | Sn<br>(µg/L) | V<br>(µg/L) | Zn<br>(µg/L) |
|-----------|-------------------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|
| PFM000062 | 2020-01-13                    | 74916         | 0.015        | 0.999        |              |              | 0.006        | 9.610        | < 0.3        | 0.141       |              |
| PFM000062 | 2020-04-21                    | 77261         | 0.013        | 0.866        | 1.400        | < 0.1        | 0.692        | 2.570        | < 0.3        | 0.133       | < 0.8        |
| PFM000062 | 2020-05-26                    | 78567         | 0.010        | 1.060        | 1.540        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.183       | < 0.8        |
| PFM000062 | 2020-06-22                    | 79850         | 0.010        | 0.693        | 1.510        | < 0.1        | 0.005        | < 3          | < 0.3        | 0.418       | 0.945        |
| PFM000062 | 2020-08-12                    | 80494         | 0.006        | 0.792        | 1.360        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.139       | < 0.8        |
| PFM000062 | 2020-09-16                    | 82529         | 0.008        | 0.885        | 1.400        | < 0.1        | 0.006        | < 3          | < 0.3        | 0.152       | < 0.8        |
| PFM000062 | 2020-10-13                    | 83394         | 0.051        | 0.912        | 1.390        | < 0.1        | 0.018        | < 3          | < 0.3        | 0.170       | 0.938        |
| PFM000066 | 2020-01-14                    | 74918         | 0.019        | 0.801        |              |              | 0.002        | < 0.5        | < 0.05       | 0.169       |              |
| PFM000066 | 2020-02-10                    | 75765         | 0.024        | 0.676        |              |              | 0.004        | < 0.5        | < 0.05       | 0.180       |              |
| PFM000066 | 2020-03-16                    | 76682         | 0.014        | 0.687        |              |              | 0.002        | < 0.5        | 0.076        | 0.205       |              |
| PFM000066 | 2020-04-20                    | 77269         | 0.011        | 0.666        | 0.577        | 0.038        | 0.088        | < 0.5        | < 0.05       | 0.232       | 1.710        |
| PFM000066 | 2020-05-25                    | 78575         | 0.010        | 0.545        | 0.542        | 0.025        | < 0.001      | < 0.5        | < 0.05       | 0.204       | 0.700        |
| PFM000066 | 2020-06-22                    | 79859         | 0.007        | 0.535        | 0.393        | 0.034        | < 0.001      | < 0.5        | < 0.05       | 0.540       | 0.595        |
| PFM000066 | 2020-11-09                    | 80503         | 0.007        | 0.575        | 0.791        | 0.028        | < 0.001      | < 0.3        | < 0.05       | 0.299       | 1.500        |
| PFM000066 | 2020-12-06                    | 82574         | 0.009        | 0.573        | 0.582        | 0.034        | 0.002        | < 0.3        | < 0.05       | 0.179       | 1.880        |
| PFM000068 | 2020-01-13                    | 74919         | 0.026        | 0.891        |              |              | 0.003        | < 0.5        | < 0.05       | 0.273       |              |
| PFM000068 | 2020-02-10                    | 75766         | 0.030        | 0.818        |              |              | 0.010        | < 0.5        | < 0.05       | 0.230       |              |
| PFM000068 | 2020-03-16                    | 76683         | 0.020        | 0.778        |              |              | 0.002        | < 0.5        | < 0.05       | 0.241       |              |
| PFM000068 | 2020-04-20                    | 77270         | 0.014        | 0.691        | 0.775        | 0.064        | 0.159        | < 0.5        | < 0.05       | 0.278       | 1.890        |
| PFM000068 | 2020-05-25                    | 78576         | 0.015        | 0.667        | 0.447        | 0.049        | 0.003        | < 0.5        | < 0.05       | 0.239       | 1.080        |
| PFM000068 | 2020-06-22                    | 79860         | 0.015        | 0.634        | 0.280        | 0.063        | 0.002        | < 0.5        | < 0.05       | 0.639       | 0.801        |
| PFM000068 | 2020-11-09                    | 80504         | 0.017        | 0.824        | 0.778        | 0.045        | 0.001        | < 0.3        | < 0.05       | 0.348       | 2.600        |
| PFM000068 | 2020-12-06                    | 82575         | 0.022        | 1.180        | 1.020        | 0.057        | 0.003        | < 0.3        | < 0.05       | 0.311       | 2.590        |
| PFM000069 | 2020-01-13                    | 74920         | 0.026        | 1.000        |              |              | 0.003        | < 0.5        | < 0.05       | 0.229       |              |
| PFM000069 | 2020-02-10                    | 75767         | 0.026        | 0.782        |              |              | 0.004        | < 0.5        | < 0.05       | 0.244       |              |
| PFM000069 | 2020-03-16                    | 76684         | 0.020        | 0.955        |              |              | 0.001        | < 0.5        | < 0.05       | 0.272       |              |
| PFM000069 | 2020-04-20                    | 77271         | 0.014        | 0.781        | 0.944        | 0.065        | 0.258        | < 0.5        | < 0.05       | 0.249       | 1.110        |
| PFM000069 | 2020-05-25                    | 78577         | 0.013        | 0.628        | 0.454        | 0.043        | < 0.001      | < 0.5        | < 0.05       | 0.197       | 0.765        |
| PFM000069 | 2020-06-22                    | 79861         | 0.012        | 0.530        | 0.240        | 0.051        | 0.001        | < 0.5        | < 0.05       | 0.643       | 0.635        |
| PFM000069 | 2020-11-09                    | 80505         | 0.012        | 0.564        | 0.469        | 0.039        | 0.002        | < 0.3        | < 0.05       | 0.192       | 1.730        |
| PFM000069 | 2020-12-06                    | 82576         | 0.014        | 0.762        | 0.728        | 0.050        | 0.003        | < 0.3        | < 0.05       | 0.190       | 1.530        |
| PFM000070 | 2020-01-14                    | 74921         | 0.015        | 0.575        |              |              | 0.002        | < 0.5        | < 0.05       | 0.266       |              |
| PFM000070 | 2020-02-10                    | 75768         | 0.018        | 0.364        |              |              | 0.003        | < 0.5        | < 0.05       | 0.241       |              |
| PFM000070 | 2020-03-16                    | 76685         | 0.017        | 0.541        |              |              | 0.002        | < 0.5        | < 0.05       | 0.225       |              |
| PFM000070 | 2020-04-20                    | 77272         | 0.012        | 0.400        | 0.273        | 0.046        | 0.306        | < 0.5        | < 0.05       | 0.244       | 1.110        |
| PFM000070 | 2020-05-25                    | 78578         | 0.009        | 0.331        | 0.252        | 0.030        | 0.002        | < 0.5        | < 0.05       | 0.191       | 0.702        |
| PFM000070 | 2020-06-22                    | 79862         | 0.006        | 0.350        | < 0.05       | 0.037        | < 0.001      | < 0.5        | < 0.05       | 0.536       | 0.670        |
| PFM000070 | 2020-11-09                    | 80506         | 0.011        | 0.548        | 0.251        | 0.070        | 0.001        | < 0.3        | < 0.05       | 0.296       | 5.990        |
| PFM000070 | 2020-12-06                    | 82577         | 0.006        | 0.438        | 0.153        | 0.046        | < 0.001      | < 0.3        | < 0.05       | 0.200       | 2.410        |
| PFM000074 | 2020-04-20                    | 74922         | 0.009        | 0.640        | 0.516        | 0.033        | 0.077        | < 0.5        | 0.066        | 0.200       | 1.140        |
| PFM000074 | 2020-08-10                    | 80507         | 0.004        | 0.444        | 0.333        | 0.033        | < 0.001      | < 0.5        | < 0.05       | 0.203       | 1.190        |
| PFM000074 | 2020-10-12                    | 83403         | 0.007        | 0.240        | 0.189        | 0.024        | 0.010        | < 0.5        | < 0.05       | 0.083       | 0.472        |
| PFM000083 | 2020-04-21                    | 77262         | 0.011        | 1.030        | 1.320        | < 0.1        | 0.393        | < 3          | < 0.3        | 0.151       | < 0.8        |
| PFM000083 | 2020-05-26                    | 78568         | 0.010        | 1.100        | 1.480        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.159       | 0.943        |
| PFM000083 | 2020-06-22                    | 79851         | 0.009        | 0.742        | 1.620        | < 0.1        | 0.006        | < 3          | < 0.3        | 0.556       | 0.936        |
| PFM000083 | 2020-08-12                    | 80495         | 0.007        | 0.811        | 1.360        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.240       | < 0.8        |
| PFM000083 | 2020-09-16                    | 82530         | 0.006        | 0.974        | 1.580        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.454       | < 0.8        |
| PFM000083 | 2020-10-13                    | 83395         | 0.040        | 0.763        | 1.330        | < 0.1        | 0.017        | < 3          | < 0.3        | 0.150       | < 0.8        |
| PFM000084 | 2020-04-21                    | 77263         | 0.013        | 1.980        | 1.170        | 0.107        | 0.174        | < 3          | < 0.3        | 0.277       | 1.170        |
| PFM000084 | 2020-05-26                    | 78569         | 0.011        | 2.220        | 1.300        | < 0.1        | 0.009        | < 3          | < 0.3        | 0.248       | 1.040        |
| PFM000084 | 2020-06-22                    | 79950         | 0.010        | 1.810        | 1.250        | 0.031        | 0.002        | < 0.5        | 0.057        | 0.736       | 0.522        |
| PFM000084 | 2020-08-12                    | 80496         | 0.007        | 1.360        | 1.480        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.306       | < 0.8        |
| PFM000084 | 2020-09-16                    | 82531         | < 0.005      | 1.170        | 1.570        | < 0.1        | 0.007        | < 3          | < 0.3        | 0.497       | < 0.8        |
| PFM000084 | 2020-10-13                    | 83396         | 0.035        | 0.803        | 1.360        | < 0.1        | 0.020        | < 3          | < 0.3        | 0.172       | 0.879        |



Table A2-3d. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Nb<br>(µg/L) | Ni<br>(µg/L) | Mo<br>(µg/L) | Pb<br>(µg/L) | Pd<br>(µg/L) | Se<br>(µg/L) | Sn<br>(µg/L) | V<br>(µg/L) | Zn<br>(µg/L) |
|-----------|-------------------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|
| PFM000107 | 2020-04-20                    | 74923         | 0.014        | 0.468        | 0.610        | 0.063        | 0.327        | < 0.5        | < 0.05       | 0.274       | 0.780        |
| PFM000107 | 2020-08-10                    | 80508         | 0.004        | 0.417        | 0.526        | 0.100        | < 0.001      | < 0.5        | < 0.05       | 0.379       | 1.240        |
| PFM000107 | 2020-10-12                    | 83404         | 0.006        | 0.277        | 0.333        | 0.045        | 0.006        | < 0.5        | < 0.05       | 0.108       | 0.557        |
| PFM000117 | 2020-04-21                    | 74924         | 0.012        | 0.479        | 0.288        | 0.043        | 0.412        | < 0.5        | < 0.05       | 0.272       | 1.190        |
| PFM000117 | 2020-08-10                    | 80509         | 0.003        | 0.300        | 0.250        | 0.024        | < 0.001      | < 0.5        | < 0.05       | 0.317       | 1.030        |
| PFM000117 | 2020-10-12                    | 83405         | 0.004        | 0.224        | 0.183        | 0.020        | 0.003        | < 0.5        | < 0.05       | 0.228       | 0.329        |
| PFM007783 | 2020-04-21                    | 77264         | 0.014        | 0.986        | 1.330        | < 0.1        | 0.439        | < 3          | < 0.3        | 0.133       | 1.850        |
| PFM007783 | 2020-05-25                    | 78570         | 0.008        | 0.876        | 1.510        | < 0.1        | 0.008        | < 3          | < 0.3        | 0.141       | < 0.8        |
| PFM007783 | 2020-06-22                    | 79951         | 0.009        | 0.623        | 1.640        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.244       | 1.140        |
| PFM007783 | 2020-08-11                    | 80497         | 0.006        | 0.835        | 1.480        | < 0.1        | 0.007        | < 3          | < 0.3        | 0.213       | 1.910        |
| PFM007783 | 2020-09-16                    | 82532         | 0.009        | 0.973        | 1.360        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.414       | 0.901        |
| PFM007783 | 2020-10-12                    | 83397         | 0.029        | 1.120        | 1.340        | < 0.1        | 0.015        | < 3          | < 0.3        | 0.153       | < 0.8        |
| PFM007910 | 2020-04-21                    | 77266         | 0.011        | 0.755        | 1.450        | < 0.1        | 0.705        | < 3          | < 0.3        | 0.165       | 1.080        |
| PFM007910 | 2020-05-26                    | 78572         | 0.008        | 1.040        | 1.460        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.125       | 1.070        |
| PFM007910 | 2020-06-22                    | 79954         | 0.009        | 0.814        | 1.550        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.599       | 1.710        |
| PFM007910 | 2020-08-12                    | 80499         | 0.007        | 0.871        | 1.410        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.168       | < 0.8        |
| PFM007910 | 2020-09-16                    | 82534         | 0.008        | 0.781        | 1.310        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.147       | < 0.8        |
| PFM007910 | 2020-10-13                    | 83399         | 0.052        | 0.868        | 1.290        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.126       | < 0.8        |
| PFM007911 | 2020-04-21                    | 77267         | 0.011        | 1.010        | 1.280        | < 0.1        | 0.264        | < 3          | < 0.3        | 0.135       | 0.968        |
| PFM007911 | 2020-05-26                    | 78573         | 0.005        | 0.700        | 1.580        | < 0.1        | 0.006        | < 3          | < 0.3        | 0.144       | < 0.8        |
| PFM007911 | 2020-06-22                    | 79953         | 0.009        | 0.878        | 1.620        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.561       | 2.080        |
| PFM007911 | 2020-08-12                    | 80500         | 0.006        | 0.775        | 1.380        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.194       | < 0.8        |
| PFM007911 | 2020-09-16                    | 82535         | 0.006        | 0.848        | 1.480        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.135       | < 0.8        |
| PFM007911 | 2020-10-13                    | 83400         | 0.039        | 0.836        | 1.360        | < 0.1        | 0.007        | < 3          | < 0.3        | 0.129       | 0.915        |
| PFM007912 | 2020-04-21                    | 77268         | 0.010        | 0.950        | 1.270        | < 0.1        | 0.779        | < 3          | < 0.3        | 0.143       | 1.280        |
| PFM007912 | 2020-05-26                    | 78574         | 0.006        | 0.996        | 1.540        | < 0.1        | 0.006        | < 3          | < 0.3        | 0.128       | < 0.8        |
| PFM007912 | 2020-06-22                    | 79857         | 0.009        | 0.892        | 1.510        | < 0.1        | 0.006        | < 3          | < 0.3        | 0.476       | 1.040        |
| PFM007912 | 2020-08-12                    | 80501         | 0.007        | 0.817        | 1.430        | < 0.1        | 0.008        | < 3          | < 0.3        | 0.244       | 0.940        |
| PFM007912 | 2020-09-16                    | 82536         | < 0.005      | 0.697        | 1.520        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.154       | < 0.8        |
| PFM007912 | 2020-10-13                    | 83401         | 0.031        | 0.721        | 1.310        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.155       | < 0.8        |
| PFM008211 | 2020-04-21                    | 77607         | 0.008        | 0.939        | 1.390        | < 0.1        | 0.273        | < 3          | < 0.3        | 0.139       | 0.982        |
| PFM008211 | 2020-05-26                    | 78579         | 0.007        | 0.956        | 1.480        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.153       | 1.360        |
| PFM008211 | 2020-06-22                    | 79858         | 0.008        | 1.070        | 1.500        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.516       | 0.935        |
| PFM008211 | 2020-08-12                    | 80502         | 0.007        | 1.020        | 1.580        | < 0.1        | 0.006        | < 3          | < 0.3        | 0.187       | < 0.8        |
| PFM008211 | 2020-10-13                    | 83402         | 0.027        | 0.845        | 1.400        | < 0.1        | 0.006        | < 3          | < 0.3        | 0.137       | < 0.8        |
| PFM102269 | 2020-01-14                    | 74917         | 0.012        | 0.766        |              |              | < 0.005      | 2.750        | < 0.3        | 0.147       |              |
| PFM102269 | 2020-02-10                    | 75769         | 0.086        | 0.998        |              |              | 0.035        | < 3          | < 0.3        | 0.213       |              |
| PFM102269 | 2020-03-16                    | 76686         | 0.009        | 0.907        |              |              | < 0.005      | < 3          | < 0.3        | 0.145       |              |
| PFM102269 | 2020-04-21                    | 77265         | 0.010        | 1.120        | 1.400        | < 0.1        | 0.259        | < 3          | < 0.3        | 0.137       | 1.570        |
| PFM102269 | 2020-05-25                    | 78571         | 0.012        | 1.010        | 1.560        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.167       | 1.460        |
| PFM102269 | 2020-06-22                    | 79952         | 0.009        | 1.020        | 1.450        | < 0.1        | 0.008        | < 3          | < 0.3        | 0.531       | 3.720        |
| PFM102269 | 2020-08-10                    | 80498         | 0.006        | 0.796        | 1.350        | < 0.1        | < 0.005      | < 3          | < 0.3        | 0.157       | 1.450        |
| PFM102269 | 2020-09-16                    | 82533         | < 0.005      | 1.040        | 1.440        | < 0.1        | < 0.005      | 2.710        | < 0.3        | 0.171       | 1.070        |
| PFM102269 | 2020-10-12                    | 83398         | 0.030        | 0.794        | 1.210        | < 0.1        | 0.012        | < 3          | < 0.3        | 0.178       | 0.849        |
| PFM102269 | 2020-11-09                    | 84851         | < 0.005      | 0.634        | 1.350        | < 0.1        | < 0.005      | < 2          | < 0.3        | 0.149       | 0.890        |
| PFM102269 | 2020-12-06                    | 85492         | 0.016        | 0.998        | 1.410        | < 0.1        | < 0.005      | < 2          | < 0.3        | 0.153       | 1.810        |

Table A2-3e. Trace elements II.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | U<br>(µg/L) | Th<br>(µg/L) | Sc<br>(µg/L) | Rb<br>(µg/L) | Y<br>(µg/L) | Zr<br>(µg/L) | Sb<br>(µg/L) | Cs<br>(µg/L) | La<br>(µg/L) | Hf<br>(µg/L) | Tl<br>(µg/L) | Ce<br>(µg/L) |
|-----------|-------------------------------|---------------|-------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| PFM000062 | 2020-01-13                    | 74916         | 0.660       | < 0.2        | < 0.4        | 18.80        | 0.115       | < 0.1        | < 0.1        | < 0.1        | 0.071        | < 0.02       | < 0.05       | 0.085        |
| PFM000062 | 2020-04-21                    | 77261         | 0.644       | < 0.2        | < 0.4        | 17.60        | 0.036       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM000062 | 2020-08-12                    | 80494         | 0.508       | < 0.2        | < 0.4        | 16.90        | 0.007       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM000062 | 2020-10-13                    | 83394         | 0.580       | < 0.2        | < 0.4        | 16.10        | 0.020       | < 50         | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM000066 | 2020-01-14                    | 74918         | 1.760       | 0.062        | < 0.05       | 2.46         | 0.334       | 0.553        | 0.088        | < 0.03       | 0.147        | 0.009        | < 0.01       | 0.184        |
| PFM000066 | 2020-04-20                    | 77269         | 2.080       | < 0.02       | < 0.05       | 2.21         | 0.085       | 0.320        | 0.074        | < 0.03       | 0.033        | 0.010        | < 0.01       | 0.048        |
| PFM000068 | 2020-01-13                    | 74919         | 4.650       | 0.091        | < 0.05       | 2.61         | 0.570       | 0.809        | 0.105        | < 0.03       | 0.369        | 0.013        | < 0.01       | 0.532        |
| PFM000068 | 2020-04-20                    | 77270         | 6.520       | < 0.02       | < 0.05       | 2.24         | 0.145       | 0.411        | 0.084        | < 0.03       | 0.090        | 0.015        | < 0.01       | 0.141        |
| PFM000069 | 2020-01-13                    | 74920         | 7.860       | 0.090        | < 0.05       | 2.58         | 0.629       | 0.870        | 0.111        | < 0.03       | 0.364        | 0.012        | < 0.01       | 0.454        |
| PFM000069 | 2020-04-20                    | 77271         | 8.610       | < 0.02       | < 0.05       | 2.36         | 0.140       | 0.367        | 0.082        | < 0.03       | 0.075        | 0.014        | < 0.01       | 0.105        |
| PFM000070 | 2020-01-14                    | 74921         | 1.450       | 0.079        | < 0.05       | 2.43         | 0.374       | 0.522        | 0.128        | < 0.03       | 0.188        | 0.008        | < 0.01       | 0.192        |
| PFM000070 | 2020-04-20                    | 77272         | 1.360       | < 0.02       | < 0.05       | 2.13         | 0.103       | 0.293        | 0.079        | < 0.03       | 0.043        | 0.013        | < 0.01       | 0.050        |
| PFM000074 | 2020-04-20                    | 74922         | 2.500       | < 0.02       | < 0.05       | 2.22         | 0.074       | 0.259        | 0.070        | 0.645        | 0.026        | 0.014        | < 0.01       | 0.028        |
| PFM000074 | 2020-08-10                    | 80507         | 0.876       | < 0.02       | < 0.05       | 2.02         | 0.051       | 0.062        | 0.045        | < 0.03       | 0.015        | < 0.005      | < 0.01       | 0.016        |
| PFM000074 | 2020-10-12                    | 83403         | 0.730       | < 0.02       | < 0.05       | 2.13         | 0.036       | < 10         | 0.038        | < 0.03       | 0.011        | 0.014        | < 0.01       | 0.013        |
| PFM000083 | 2020-04-21                    | 77262         | 0.626       | < 0.2        | < 0.4        | 17.00        | 0.035       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM000083 | 2020-08-12                    | 80495         | 0.542       | < 0.2        | < 0.4        | 16.90        | 0.011       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM000083 | 2020-10-13                    | 83395         | 0.587       | < 0.2        | < 0.4        | 17.10        | 0.012       | < 50         | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM000084 | 2020-04-21                    | 77263         | 2.090       | < 0.2        | < 0.4        | 10.40        | 0.137       | 0.219        | 0.112        | < 0.1        | 0.101        | < 0.02       | < 0.05       | 0.143        |
| PFM000084 | 2020-08-12                    | 80496         | 0.713       | < 0.2        | < 0.4        | 16.20        | 0.036       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | 0.022        |
| PFM000084 | 2020-10-13                    | 83396         | 0.630       | < 0.2        | < 0.4        | 16.90        | 0.028       | < 50         | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM000107 | 2020-04-20                    | 74923         | 4.070       | < 0.02       | < 0.05       | 2.40         | 0.112       | 0.334        | 0.082        | < 0.03       | 0.045        | 0.015        | < 0.01       | 0.058        |
| PFM000107 | 2020-08-10                    | 80508         | 1.870       | < 0.02       | < 0.05       | 2.72         | 0.033       | 0.072        | 0.120        | < 0.03       | 0.025        | < 0.005      | < 0.01       | 0.034        |
| PFM000107 | 2020-10-12                    | 83404         | 1.540       | < 0.02       | < 0.05       | 3.26         | 0.036       | < 10         | 0.093        | < 0.03       | 0.018        | 0.017        | < 0.01       | 0.021        |
| PFM000117 | 2020-04-21                    | 74924         | 1.670       | 0.024        | < 0.05       | 2.16         | 0.133       | 0.407        | 0.090        | < 0.03       | 0.042        | 0.018        | < 0.01       | 0.045        |
| PFM000117 | 2020-08-10                    | 80509         | 1.330       | < 0.02       | < 0.05       | 2.01         | 0.021       | 0.092        | 0.109        | < 0.03       | < 0.005      | < 0.005      | < 0.01       | < 0.005      |
| PFM000117 | 2020-10-12                    | 83405         | 1.200       | < 0.02       | < 0.05       | 2.24         | 0.020       | < 10         | 0.096        | < 0.03       | < 0.005      | 0.012        | < 0.01       | < 0.005      |
| PFM007783 | 2020-04-21                    | 77264         | 0.634       | < 0.2        | < 0.4        | 17.00        | 0.026       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM007783 | 2020-08-11                    | 80497         | 0.550       | < 0.2        | < 0.4        | 17.50        | 0.008       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM007783 | 2020-10-12                    | 83397         | 0.537       | < 0.2        | < 0.4        | 16.00        | 0.015       | < 50         | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM007910 | 2020-04-21                    | 77266         | 0.673       | < 0.2        | < 0.4        | 17.00        | 0.037       | < 0.1        | 0.107        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM007910 | 2020-08-12                    | 80499         | 0.510       | < 0.2        | < 0.4        | 17.40        | 0.010       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM007910 | 2020-10-13                    | 83399         | 0.522       | < 0.2        | < 0.4        | 17.00        | 0.019       | < 50         | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |

Table A2-3e. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | U<br>(µg/L) | Th<br>(µg/L) | Sc<br>(µg/L) | Rb<br>(µg/L) | Y<br>(µg/L) | Zr<br>(µg/L) | Sb<br>(µg/L) | Cs<br>(µg/L) | La<br>(µg/L) | Hf<br>(µg/L) | Tl<br>(µg/L) | Ce<br>(µg/L) |
|-----------|-------------------------------|---------------|-------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| PFM007911 | 2020-04-21                    | 77267         | 0.648       | < 0.2        | < 0.4        | 16.30        | 0.034       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM007911 | 2020-08-12                    | 80500         | 0.526       | < 0.2        | < 0.4        | 16.90        | 0.009       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM007911 | 2020-10-13                    | 83400         | 0.532       | < 0.2        | < 0.4        | 17.30        | 0.016       | < 50         | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM007912 | 2020-04-21                    | 77268         | 0.615       | < 0.2        | < 0.4        | 16.90        | 0.034       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM007912 | 2020-08-12                    | 80501         | 0.493       | < 0.2        | < 0.4        | 16.90        | 0.011       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM007912 | 2020-10-13                    | 83401         | 0.538       | < 0.2        | < 0.4        | 16.70        | 0.017       | < 50         | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM008211 | 2020-04-21                    | 77607         | 0.583       | < 0.2        | < 0.4        | 17.60        | 0.032       | < 0.1        | 0.119        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM008211 | 2020-08-12                    | 80502         | 0.553       | < 0.2        | < 0.4        | 17.20        | 0.012       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM008211 | 2020-10-13                    | 83402         | 0.562       | < 0.2        | < 0.4        | 16.70        | 0.022       | < 50         | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM102269 | 2020-01-14                    | 74917         | 0.663       | < 0.2        | < 0.4        | 18.10        | 0.109       | < 0.1        | < 0.1        | < 0.1        | 0.069        | < 0.02       | < 0.05       | 0.074        |
| PFM102269 | 2020-04-21                    | 77265         | 0.636       | < 0.2        | < 0.4        | 18.00        | 0.035       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM102269 | 2020-08-10                    | 80498         | 0.534       | < 0.2        | < 0.4        | 17.10        | 0.012       | < 0.1        | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |
| PFM102269 | 2020-10-12                    | 83398         | 0.573       | < 0.2        | < 0.4        | 15.20        | 0.021       | < 50         | < 0.1        | < 0.1        | < 0.02       | < 0.02       | < 0.05       | < 0.02       |

Table A2-3e. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Pr<br>(µg/L) | Nd<br>(µg/L) | Sm<br>(µg/L) | Eu<br>(µg/L) | Gd<br>(µg/L) | Tb<br>(µg/L) | Dy<br>(µg/L) | Ho<br>(µg/L) | Er<br>(µg/L) | Tm<br>(µg/L) | Yb<br>(µg/L) | Lu<br>(µg/L) |
|-----------|-------------------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| PFM000062 | 2020-01-13                    | 74916         | < 0.02       | 0.071        | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM000062 | 2020-04-21                    | 77261         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM000062 | 2020-08-12                    | 80494         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM000062 | 2020-10-13                    | 83394         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM000066 | 2020-01-14                    | 74918         | 0.046        | 0.188        | 0.047        | 0.007        | 0.044        | 0.008        | 0.050        | 0.011        | 0.037        | 0.006        | 0.034        | 0.006        |
| PFM000066 | 2020-04-20                    | 77269         | 0.011        | 0.046        | 0.011        | < 0.005      | 0.010        | < 0.005      | 0.012        | < 0.005      | 0.009        | < 0.004      | 0.009        | < 0.005      |
| PFM000068 | 2020-01-13                    | 74919         | 0.097        | 0.421        | 0.086        | 0.012        | 0.081        | 0.013        | 0.083        | 0.018        | 0.055        | 0.008        | 0.058        | 0.010        |
| PFM000068 | 2020-04-20                    | 77270         | 0.023        | 0.097        | 0.022        | < 0.005      | 0.020        | < 0.005      | 0.021        | < 0.005      | 0.014        | < 0.004      | 0.015        | < 0.005      |
| PFM000069 | 2020-01-13                    | 74920         | 0.098        | 0.411        | 0.087        | 0.013        | 0.089        | 0.013        | 0.089        | 0.019        | 0.063        | 0.009        | 0.063        | 0.012        |
| PFM000069 | 2020-04-20                    | 77271         | 0.022        | 0.085        | 0.020        | < 0.005      | 0.018        | < 0.005      | 0.020        | < 0.005      | 0.014        | < 0.004      | 0.016        | < 0.005      |
| PFM000070 | 2020-01-14                    | 74921         | 0.054        | 0.237        | 0.051        | 0.008        | 0.049        | 0.009        | 0.058        | 0.013        | 0.037        | 0.006        | 0.042        | 0.007        |
| PFM000070 | 2020-04-20                    | 77272         | 0.012        | 0.053        | 0.012        | < 0.005      | 0.012        | < 0.005      | 0.015        | < 0.005      | 0.010        | < 0.004      | 0.011        | < 0.005      |
| PFM000074 | 2020-04-20                    | 74922         | 0.009        | 0.039        | 0.009        | < 0.005      | 0.008        | < 0.005      | 0.011        | < 0.005      | 0.008        | < 0.004      | 0.008        | < 0.005      |
| PFM000074 | 2020-08-10                    | 80507         | < 0.005      | 0.023        | < 0.005      | < 0.005      | 0.006        | < 0.005      | 0.007        | < 0.005      | 0.006        | < 0.004      | 0.007        | < 0.005      |

Table A2-3e. Continued.

| Id-code   | Sampling date<br>(yyyy-mm-dd) | Sample<br>No. | Pr<br>(µg/L) | Nd<br>(µg/L) | Sm<br>(µg/L) | Eu<br>(µg/L) | Gd<br>(µg/L) | Tb<br>(µg/L) | Dy<br>(µg/L) | Ho<br>(µg/L) | Er<br>(µg/L) | Tm<br>(µg/L) | Yb<br>(µg/L) | Lu<br>(µg/L) |
|-----------|-------------------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| PFM000074 | 2020-10-12                    | 83403         | < 0.005      | 0.017        | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.004      | < 0.005      | < 0.005      |
| PFM000083 | 2020-04-21                    | 77262         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM000083 | 2020-08-12                    | 80495         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM000083 | 2020-10-13                    | 83395         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM000084 | 2020-04-21                    | 77263         | 0.025        | 0.084        | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM000084 | 2020-08-12                    | 80496         | < 0.02       | 0.024        | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | 0.026        | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM000084 | 2020-10-13                    | 83396         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM000107 | 2020-04-20                    | 74923         | 0.014        | 0.054        | 0.013        | < 0.005      | 0.011        | < 0.005      | 0.015        | < 0.005      | 0.011        | < 0.004      | 0.012        | < 0.005      |
| PFM000107 | 2020-08-10                    | 80508         | 0.007        | 0.029        | 0.006        | < 0.005      | 0.005        | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.004      | < 0.005      | < 0.005      |
| PFM000107 | 2020-10-12                    | 83404         | < 0.005      | 0.019        | < 0.005      | < 0.005      | < 0.005      | < 0.005      | 0.005        | < 0.005      | < 0.005      | < 0.004      | < 0.005      | < 0.005      |
| PFM000117 | 2020-04-21                    | 74924         | 0.014        | 0.058        | 0.014        | < 0.005      | 0.014        | < 0.005      | 0.017        | < 0.005      | 0.012        | < 0.004      | 0.014        | < 0.005      |
| PFM000117 | 2020-08-10                    | 80509         | < 0.005      | 0.009        | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.004      | < 0.005      | < 0.005      |
| PFM000117 | 2020-10-12                    | 83405         | < 0.005      | 0.008        | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.005      | < 0.004      | < 0.005      | < 0.005      |
| PFM007783 | 2020-04-21                    | 77264         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM007783 | 2020-08-11                    | 80497         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | 0.027        | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM007783 | 2020-10-12                    | 83397         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM007910 | 2020-04-21                    | 77266         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM007910 | 2020-08-12                    | 80499         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM007910 | 2020-10-13                    | 83399         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM007911 | 2020-04-21                    | 77267         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM007911 | 2020-08-12                    | 80500         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | 0.022        | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM007911 | 2020-10-13                    | 83400         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM007912 | 2020-04-21                    | 77268         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM007912 | 2020-08-12                    | 80501         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM007912 | 2020-10-13                    | 83401         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM008211 | 2020-04-21                    | 77607         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM008211 | 2020-08-12                    | 80502         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM008211 | 2020-10-13                    | 83402         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM102269 | 2020-01-14                    | 74917         | < 0.02       | 0.077        | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM102269 | 2020-04-21                    | 77265         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM102269 | 2020-08-10                    | 80498         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | 0.028        | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| PFM102269 | 2020-10-12                    | 83398         | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       | < 0.02       |



## Precipitation

**Table A3-1. Field measurements.**

| Id-code   | Sample No. | Measuring date (yyyy-mm-dd) | Sampling volume (mL) | pH_F | Temp_F (°C) | EC_F (mS/m) |
|-----------|------------|-----------------------------|----------------------|------|-------------|-------------|
| PFM008126 | 75446      | 2020-01-17                  | 1000                 | 4.80 | 7.5         | 1.3         |
| PFM008126 | 75540      | 2020-01-22                  | 100                  | 4.36 | 10.1        | 2.1         |
| PFM008126 | 75849      | 2020-01-29                  | 480                  | 4.33 | 8.9         | 2.0         |
| PFM008126 | 75955      | 2020-02-04                  | 1620                 | 4.22 | 15.7        | 1.1         |
| PFM008126 | 76169      | 2020-02-12                  | 225                  | 4.36 | 9.3         | 2.7         |
| PFM008126 | 76304      | 2020-02-19                  | 390                  | 4.45 | 9.8         | 2.0         |
| PFM008126 | 76512      | 2020-02-26                  | 350                  | 4.52 | 16.2        | 2.7         |
| PFM008126 | 76578      | 2020-03-03                  | 2900                 | 4.90 | 6.0         | 1.0         |
| PFM008126 | 76728      | 2020-03-12                  | 2540                 | 4.25 | 5.9         | 1.4         |
| PFM008126 | 77533      | 2020-04-06                  |                      | 4.70 | 10.1        | 1.3         |
| PFM008126 | 77658      | 2020-04-14                  | 210                  | 4.97 | 11.1        | 2.7         |
| PFM008126 | 77992      | 2020-04-29                  | 320                  | 4.31 | 11.3        | 2.1         |
| PFM008126 | 78046      | 2020-05-04                  | 1280                 | 5.71 | 11.0        | 1.3         |
| PFM008126 | 78435      | 2020-05-11                  | 2200                 | 5.43 | 14.0        | 1.1         |
| PFM008126 | 78677      | 2020-05-18                  | 3760                 | 5.23 | 13.4        | 0.8         |
| PFM008126 | 78912      | 2020-05-27                  | 400                  | 4.93 | 19.9        | 1.6         |
| PFM008126 | 79585      | 2020-06-08                  | 2300                 | 5.37 | 20.6        | 0.9         |
| PFM008126 | 79845      | 2020-06-15                  | 50                   | 5.49 | 23.7        | 2.7         |
| PFM008126 | 80173      | 2020-06-22                  | 3000                 | 4.53 | 23.9        | 0.9         |
| PFM008126 | 80708      | 2020-06-30                  | 450                  | 4.39 | 21.5        | 2.7         |
| PFM008126 | 80993      | 2020-07-06                  | 3600                 | 5.06 | 19.6        | 0.6         |
| PFM008126 | 81550      | 2020-07-16                  | 2080                 | 4.45 | 26.5        | 1.9         |
| PFM008126 | 81551      | 2020-07-23                  | 400                  | 5.34 | 19.3        | 6.8         |
| PFM008126 | 81552      | 2020-07-31                  | 6960                 | 5.05 | 18.4        | 0.5         |
| PFM008126 | 81553      | 2020-08-20                  | 230                  | 5.94 | 25.3        | 2.4         |
| PFM008126 | 82109      | 2020-08-27                  | 230                  | 5.65 | 21.6        | 2.8         |
| PFM008126 | 82240      | 2020-09-01                  | 3000                 | 5.52 | 19.3        | 0.8         |
| PFM008126 | 82692      | 2020-09-11                  | 1700                 | 6.11 | 6.9         | 1.8         |
| PFM008126 | 82777      | 2020-09-15                  | 550                  | 6.42 | 16.8        | 1.5         |
| PFM008126 | 83381      | 2020-10-02                  | 1075                 | 6.75 | 12.5        | 8.8         |
| PFM008126 | 83389      | 2020-10-06                  | 840                  | 5.53 | 14.0        | 2.1         |
| PFM008126 | 84303      | 2020-10-22                  | 6700                 | 5.28 | 11.8        | 1.2         |
| PFM008126 | 84438      | 2020-10-27                  | 4100                 | 4.80 | 11.8        | 0.9         |
| PFM008126 | 84806      | 2020-11-05                  | 430                  | 5.07 | 8.4         | 0.3         |
| PFM008126 | 84439      | 2020-11-12                  | 200                  | 5.32 | 16.8        | 0.3         |
| PFM008126 | 85423      | 2020-11-16                  | 100                  | 4.35 | 13.2        | 0.6         |
| PFM008126 | 86170      | 2020-11-24                  | 770                  | 5.18 | 1.9         | 1.1         |
| PFM008126 | 85604      | 2020-12-01                  | 1000                 | 4.73 | 3.0         | 1.0         |
| PFM008126 | 85603      | 2020-12-08                  | 1320                 | 4.29 | 5.8         | 2.0         |
| PFM008126 | 86115      | 2020-12-14                  | 800                  | 4.12 | 16.6        | 0.4         |
| PFM008126 | 86171      | 2020-12-21                  | 1200                 | 4.25 | 8.7         | 1.6         |
| PFM008126 | 86291      | 2020-12-29                  | 2540                 |      |             |             |
| PFM008126 | 86292      | 2021-01-05                  | 1400                 | 4.31 | 4.5         | 2.7         |



**Table A3-2a. Major components.**

| Id-code   | Sampling start date<br>(yyyy-mm-dd) | Sampling stop date<br>(yyyy-mm-dd) | Sample<br>No. | Al<br>(mg/L) | Br <sup>-</sup><br>(mg/L) | Ca<br>(mg/L) | Cl <sup>-</sup><br>(mg/L) | F <sup>-</sup><br>(mg/L) | Fe<br>(mg/L) | HCO <sub>3</sub> <sup>-</sup><br>(mg/L) | K<br>(mg/L) | Li<br>(mg/L) | Mg<br>(mg/L) |
|-----------|-------------------------------------|------------------------------------|---------------|--------------|---------------------------|--------------|---------------------------|--------------------------|--------------|---|-------------|--------------|--------------|
| PFM008126 | 2020-11-05                          | 2020-12-01                         | 85606         | 0.005        | < 0.01                    | 0.237        | 2.400                     | < 0.2                    | 0.006        | B                                       | 1.890       | < 0.004      | < 0.09       |
| PFM008126 | 2020-12-01                          | 2021-01-05                         | 85605         | 0.003        | < 0.02                    | 0.155        | 1.500                     | < 0.2                    | 0.006        | B                                       | 0.795       | < 0.004      | < 0.09       |
| PFM008126 | 2020-10-06                          | 2020-11-05                         | 84815         | 0.002        | < 0.02                    | 0.128        | 0.690                     | < 0.2                    | 0.002        | < 2                                     | 0.518       | < 0.004      | < 0.09       |
| PFM008126 | 2020-09-01                          | 2020-10-06                         | 83390         | 0.009        | 0.009                     | 0.595        | 2.700                     | < 0.2                    | 0.009        | 8.900                                   | 2.190       | 0.000        | 0.175        |
| PFM008126 | 2020-08-11                          | 2020-09-01                         | 82242         | 0.003        | < 0.02                    | 0.166        | 1.300                     | < 0.2                    | 0.009        | < 2                                     | 1.090       | 0.000        | < 0.09       |
| PFM008126 | 2020-06-30                          | 2020-08-11                         | 81585         | 0.002        | < 0.02                    | 0.147        | 1.100                     | < 0.2                    | 0.002        | < 2                                     | 1.090       | 0.000        | < 0.09       |
| PFM008126 | 2020-06-03                          | 2020-06-30                         | 80709         | 0.004        | < 0.004                   | 0.456        | 1.100                     | < 0.2                    | 0.005        | < 2                                     | 1.320       | 0.000        | 0.103        |
| PFM008126 | 2020-05-04                          | 2020-06-03                         | 79026         | 0.003        | 0.013                     | 0.140        | 0.890                     | < 0.2                    | 0.004        | < 2                                     | 0.532       | 0.000        | < 0.09       |
| PFM008126 | 2020-04-01                          | 2020-05-04                         | 78047         | 0.006        | < 0.02                    | 0.544        | 1.600                     | < 0.2                    | 0.006        | < 2                                     | 0.918       | 0.000        | 0.102        |
| PFM008126 | 2020-03-03                          | 2020-04-01                         | 77389         | 0.003        | < 0.004                   | < 0.1        | 0.460                     | < 0.2                    | 0.008        | B                                       | < 0.4       | 0.000        | < 0.09       |
| PFM008126 | 2020-02-04                          | 2020-03-03                         | 76579         | 0.003        | 0.007                     | 0.214        | 1.500                     | < 0.2                    | 0.004        | B                                       | 0.644       | 0.000        | < 0.09       |
| PFM008126 | 2020-01-17                          | 2020-02-04                         | 75956         | 0.004        | 0.020                     | 0.186        | 1.400                     | < 0.2                    | 0.004        | B                                       | 0.814       | < 0.004      | < 0.09       |

A: Analysis missing.

B: Alkalinity not measured due to low pH.

**Table A3-2a. Continued.**

| Id-code   | Sampling start date<br>(yyyy-mm-dd) | Sampling stop date<br>(yyyy-mm-dd) | Sample<br>No. | Mn<br>(mg/L) | Na<br>(mg/L) | Si<br>(mg/L) | SO <sub>4</sub> -S<br>(mg/L) | SO <sub>4</sub> <sup>2-</sup><br>(mg/L) | Sr<br>(mg/L) | I <sup>-</sup><br>(mg/L) | TOC<br>(mg/L) | pH_L  | EC_L<br>(mS/m) |
|-----------|-------------------------------------|------------------------------------|---------------|--------------|--------------|--------------|------------------------------|---|--------------|--------------------------|---------------|-------|----------------|
| PFM008126 | 2020-11-05                          | 2020-12-01                         | 85606         | 0.006        | 0.585        | < 0.03       | < 0.2                        | 0.610                                   | < 0.002      | 0.002                    | 0.800         | 5.100 | 2.200          |
| PFM008126 | 2020-12-01                          | 2021-01-05                         | 85605         | 0.004        | 0.622        | < 0.03       | 0.371                        | A                                       | 0.002        | 0.002                    | 1.000         | 4.780 | 2.100          |
| PFM008126 | 2020-10-06                          | 2020-11-05                         | 84815         | 0.008        | 0.340        | < 0.03       | < 0.2                        | 0.440                                   | < 0.002      | 0.001                    | 2.500         | 5.590 | < 2            |
| PFM008126 | 2020-09-01                          | 2020-10-06                         | 83390         | 0.013        | 1.100        | < 0.03       | 0.794                        | 2.000                                   | 0.002        | 0.003                    | 3.300         | 6.570 | 4.200          |
| PFM008126 | 2020-08-11                          | 2020-09-01                         | 82242         | 0.006        | 0.338        | < 0.03       | < 0.2                        | 0.430                                   | 0.002        | 0.002                    | 1.600         | 5.820 | 2.300          |
| PFM008126 | 2020-06-30                          | 2020-08-11                         | 81585         | 0.002        | 0.199        | < 0.03       | < 0.2                        | 0.380                                   | 0.002        | 0.002                    | 3.900         | 5.710 | < 2            |
| PFM008126 | 2020-06-03                          | 2020-06-30                         | 80709         | 0.007        | 0.183        | < 0.03       | 0.216                        | 0.590                                   | 0.001        | 0.001                    | 1.900         | 6.080 | 3.600          |
| PFM008126 | 2020-05-04                          | 2020-06-03                         | 79026         | 0.004        | 0.368        | < 0.03       | < 0.2                        | 0.450                                   | 0.001        | 0.002                    | 3.900         | 5.960 | < 2            |
| PFM008126 | 2020-04-01                          | 2020-05-04                         | 78047         | 0.011        | 0.704        | < 0.03       | 0.287                        | 0.750                                   | 0.003        | 0.003                    | 7.600         | 5.810 | 2.300          |
| PFM008126 | 2020-03-03                          | 2020-04-01                         | 77389         | 0.002        | 0.249        | < 0.03       | 0.237                        | 0.760                                   | < 0.002      | 0.002                    | 1.600         | 4.740 | < 2            |
| PFM008126 | 2020-02-04                          | 2020-03-03                         | 76579         | 0.004        | 0.724        | < 0.03       | < 0.2                        | 0.460                                   | < 0.002      | 0.001                    | 1.700         | 5.080 | < 2            |
| PFM008126 | 2020-01-17                          | 2020-02-04                         | 75956         | 0.003        | 0.589        | < 0.03       | < 0.2                        | 0.360                                   | < 0.002      | 0.002                    | 1.200         | 5.030 | < 2            |

A: Analysis missing.

B: Alkalinity not measured due to low pH.

**Table A3-2b. Isotopes.**

| <b>Id-code</b> | <b>Sampling start date<br/>(yyyy-mm-dd)</b> | <b>Sampling stop date<br/>(yyyy-mm-dd)</b> | <b>Sample<br/>No.</b> | <b><math>\delta</math>D<br/>‰ SMOW</b> | <b><math>^3</math>H<br/>TU</b> | <b><math>\delta^{18}</math>O<br/>‰ SMOW</b> |
|----------------|---|--|-----------------------|--|--------------------------------|---|
| PFM008126      | 2020-01-17                                  | 2020-02-04                                 | 75956                 | -67.5                                  | 7.20                           | -8.56                                       |
| PFM008126      | 2020-02-04                                  | 2020-03-03                                 | 76579                 | -65.8                                  | 6.70                           | -8.69                                       |
| PFM008126      | 2020-03-03                                  | 2020-04-01                                 | 77389                 | -87.3                                  | 6.10                           | -11.09                                      |
| PFM008126      | 2020-04-01                                  | 2020-05-04                                 | 78047                 | -76.8                                  | 7.00                           | -9.59                                       |
| PFM008126      | 2020-05-04                                  | 2020-06-03                                 | 79026                 | -79.2                                  | 7.00                           | -11.47                                      |
| PFM008126      | 2020-06-03                                  | 2020-06-30                                 | 80709                 | -63.2                                  | 9.60                           | -9.13                                       |
| PFM008126      | 2020-06-30                                  | 2020-08-11                                 | 81585                 | -77.4                                  | 8.80                           | -10.64                                      |
| PFM008126      | 2020-08-11                                  | 2020-09-01                                 | 82242                 | -80.6                                  | 8.00                           | -11.77                                      |
| PFM008126      | 2020-09-01                                  | 2020-10-06                                 | 83390                 | -43.8                                  | 6.50                           | -6.84                                       |
| PFM008126      | 2020-10-06                                  | 2020-11-05                                 | 84815                 | -88.8                                  | 6.00                           | -12.28                                      |
| PFM008126      | 2020-11-05                                  | 2020-12-01                                 | 85606                 | -60.3                                  | 7.10                           | -8.77                                       |
| PFM008126      | 2020-12-01                                  | 2021-01-05                                 | 85605                 | -85.5                                  | 5.50                           | -12.02                                      |

Table A3-2c. Trace elements I.

| Id-code   | Sampling start date<br>(yyyy-mm-dd) | Sampling stop date<br>(yyyy-mm-dd) | Sample<br>No. | Ag<br>(ug/L) | As<br>(ug/L) | B<br>(ug/L) | Ba<br>(ug/L) | Cd<br>(ug/L) | Cr<br>(ug/L) | Cu<br>(ug/L) | Co<br>(ug/L) | Hg<br>(ug/L) |
|-----------|-------------------------------------|------------------------------------|---------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| PFM008126 | 2020-01-17                          | 2020-02-04                         | 75956         | 1.330        | 0.079        | < 10        | 0.693        | 0.012        | 0.067        | A            | 0.013        | < 0.002      |
| PFM008126 | 2020-02-04                          | 2020-03-03                         | 76579         | < 0.05       | < 0.05       | < 10        | 0.784        | 0.014        | 0.079        | A            | 0.021        | < 0.002      |
| PFM008126 | 2020-03-03                          | 2020-04-01                         | 77389         | 1.110        | 0.065        | < 10        | 0.567        | 0.025        | 0.092        | 4.780        | 0.013        | < 0.002      |
| PFM008126 | 2020-04-01                          | 2020-05-04                         | 78047         | 0.091        | 0.148        | < 10        | 1.030        | 0.016        | 0.172        | 2.760        | 0.106        | 0.003        |
| PFM008126 | 2020-05-04                          | 2020-06-03                         | 79026         | < 0.05       | 0.099        | < 10        | 0.714        | 0.008        | 0.119        | 1.660        | 0.030        | 0.003        |
| PFM008126 | 2020-06-03                          | 2020-06-30                         | 80709         | 0.059        | 0.230        | < 10        | 0.664        | 0.012        | 0.166        | 2.170        | 0.020        | < 0.002      |
| PFM008126 | 2020-06-30                          | 2020-08-11                         | 81585         | 0.081        | < 0.05       | < 10        | 0.260        | < 0.002      | 0.090        | 1.640        | 0.012        | < 0.002      |
| PFM008126 | 2020-08-11                          | 2020-09-01                         | 82242         | 1.440        | 0.056        | < 10        | 0.585        | 0.010        | 0.358        | 2.180        | 0.049        | < 0.002      |
| PFM008126 | 2020-09-01                          | 2020-10-06                         | 83390         | 6.170        | 0.145        | < 10        | 0.727        | 0.042        | 0.261        | 6.400        | 0.042        | 0.003        |
| PFM008126 | 2020-10-06                          | 2020-11-05                         | 84815         | 0.061        | 0.051        | < 10        | 0.363        | 0.016        | 0.120        | 1.650        | 0.018        | < 0.002      |
| PFM008126 | 2020-11-05                          | 2020-12-01                         | 85606         | 0.093        | 0.099        | < 10        | 0.752        | 0.020        | 0.182        | 1.870        | 0.048        | < 0.002      |
| PFM008126 | 2020-12-01                          | 2021-01-05                         | 85605         | < 0.05       | 0.110        | < 10        | 0.803        | 0.033        | 0.117        | 1.220        | 0.026        | < 0.002      |

A: Analysis missing.

Table A3-2c. Continued.

| Id-code   | Sampling start date<br>(yyyy-mm-dd) | Sampling stop date<br>(yyyy-mm-dd) | Sample<br>No. | Nb<br>(ug/L) | Ni<br>(ug/L) | Mo<br>(ug/L) | Pb<br>(ug/L) | Pd<br>(ug/L) | Se<br>(ug/L) | Sn<br>(ug/L) | V<br>(ug/L) | Zn<br>(ug/L) |
|-----------|-------------------------------------|------------------------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|
| PFM008126 | 2020-01-17                          | 2020-02-04                         | 75956         | 0.005        | 0.295        | A            | A            | < 0.001      | < 0.5        | < 0.05       | 0.123       | A            |
| PFM008126 | 2020-02-04                          | 2020-03-03                         | 76579         | 0.002        | 0.297        | A            | A            | < 0.001      | < 0.5        | < 0.05       | 0.130       | A            |
| PFM008126 | 2020-03-03                          | 2020-04-01                         | 77389         | < 0.001      | 0.276        | < 0.05       | 0.273        | 0.080        | < 0.5        | < 0.05       | 0.186       | 6.160        |
| PFM008126 | 2020-04-01                          | 2020-05-04                         | 78047         | < 0.001      | 1.040        | 0.152        | 0.167        | 0.023        | < 0.5        | < 0.05       | 0.225       | 14.400       |
| PFM008126 | 2020-05-04                          | 2020-06-03                         | 79026         | < 0.001      | 0.381        | 0.071        | 0.137        | < 0.001      | < 0.5        | < 0.05       | 0.133       | 6.020        |
| PFM008126 | 2020-06-03                          | 2020-06-30                         | 80709         | < 0.001      | 0.503        | 0.328        | 0.176        | 0.002        | < 0.5        | < 0.05       | 0.119       | 5.180        |
| PFM008126 | 2020-06-30                          | 2020-08-11                         | 81585         | < 0.001      | 0.489        | < 0.05       | 0.073        | < 0.001      | < 0.5        | < 0.05       | 0.092       | 3.990        |
| PFM008126 | 2020-08-11                          | 2020-09-01                         | 82242         | < 0.001      | 1.500        | 0.179        | 0.088        | < 0.001      | < 0.5        | < 0.05       | 0.095       | 8.980        |
| PFM008126 | 2020-09-01                          | 2020-10-06                         | 83390         | 0.003        | 1.180        | 0.073        | 0.249        | 0.002        | < 0.5        | 0.062        | 0.156       | 13.600       |
| PFM008126 | 2020-10-06                          | 2020-11-05                         | 84815         | < 0.001      | 0.485        | < 0.05       | 0.063        | < 0.001      | < 0.3        | < 0.05       | 0.057       | 6.520        |
| PFM008126 | 2020-11-05                          | 2020-12-01                         | 85606         | < 0.001      | 0.644        | 0.074        | 0.191        | < 0.001      | < 0.3        | < 0.05       | 0.127       | 15.600       |
| PFM008126 | 2020-12-01                          | 2021-01-05                         | 85605         | < 0.001      | 0.455        | 0.063        | 0.525        | < 0.001      | < 0.3        | < 0.05       | 0.117       | 12.900       |

A: Analysis missing.

**Table A3-2d. Trace elements II.**

| <b>Id-code</b> | <b>Sampling stop date<br/>(yyyy-mm-dd)</b> | <b>Sampling start date<br/>(yyyy-mm-dd)</b> | <b>Sample<br/>No.</b> | <b>Rb<br/>(µg/l)</b> | <b>Zr<br/>(µg/l)</b> | <b>Sb<br/>(µg/l)</b> | <b>Cs<br/>(µg/l)</b> | <b>Nd<br/>(µg/l)</b> |
|----------------|--|---|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| PFM008126      | 2020-01-17                                 | 2020-02-04                                  | 75956                 | 0.1800               | < 0.03               | 0.1310               | < 0.03               | < 0.005              |
| PFM008126      | 2020-02-04                                 | 2020-03-03                                  | 76579                 | 0.1730               | 0.0611               | 0.1260               | < 0.03               | < 0.005              |
| PFM008126      | 2020-03-03                                 | 2020-04-01                                  | 77389                 | 0.2220               | 0.0466               | 0.1340               | < 0.03               | < 0.005              |
| PFM008126      | 2020-04-01                                 | 2020-05-04                                  | 78047                 | 0.4680               | < 0.03               | 0.2330               | < 0.03               | 0.0055               |
| PFM008126      | 2020-05-04                                 | 2020-06-03                                  | 79026                 | 0.3300               | < 0.03               | 0.1160               | < 0.03               | 0.0054               |
| PFM008126      | 2020-06-03                                 | 2020-06-30                                  | 80709                 | 1.1500               | < 0.04               | 0.1140               | < 0.03               | A                    |
| PFM008126      | 2020-06-30                                 | 2020-08-11                                  | 81585                 | 0.2030               | < 0.03               | 0.0658               | < 0.03               | A                    |
| PFM008126      | 2020-08-11                                 | 2020-09-01                                  | 82242                 | 0.4050               | 0.0523               | 0.1790               | < 0.03               | < 0.005              |
| PFM008126      | 2020-09-01                                 | 2020-10-06                                  | 83390                 | 1.6000               | < 10                 | 0.1650               | 0.0415               | 0.0224               |
| PFM008126      | 2020-10-06                                 | 2020-11-05                                  | 84815                 | 0.2280               | < 0.03               | 0.0727               | < 0.03               | A                    |
| PFM008126      | 2020-11-05                                 | 2020-12-01                                  | 85606                 | 0.2320               | < 0.03               | 0.2830               | 0.0365               | A                    |
| PFM008126      | 2020-12-01                                 | 2021-01-05                                  | 85605                 | 0.2410               | < 0.03               | 0.1680               | < 0.03               | A                    |

A: Analysis missing.

SKB is responsible for managing spent nuclear fuel and radioactive waste produced by the Swedish nuclear power plants such that man and the environment are protected in the near and distant future.

**skb.se**