

City of Portage la Prairie



2024 Residual Biosolids Land Application Program

As per Environment Licence 1907

**2024 Residual Biosolids Land Application Program
City of Portage la Prairie, Water Pollution Control Facility**

Report to Province of Manitoba- Environment and Climate Change

Introduction

The City of Portage la Prairie (the City) owns and operates a wastewater treatment system known as the Water Pollution Control Facility (WPCF). Flows from the McMillan Industrial Park as well as Poplar Bluff Industrial Park are received into and pre-treated in the Low-Rate Anaerobic Reactor (LRAR). This pre-treated wastewater is combined with municipal flows and conveyed to the Sequencing Batch Reactors (SBRs) that provide secondary treatment. Waste Activated Sludge (WAS) is the residual solids that are generated through this process and required to be removed from the SBRs to ensure ongoing treatment. WAS is thickened through the addition of polymer and dewatered by a gravity belt. The material is then stabilized in the anaerobic digester to produce biosolid material that is suitable for land application as a fertilizer. Biosolids are stored throughout the year in the Bulk Volume Fermenter (BVF) or the Biosolids Storage Tanks (BSTs). Solids also accumulate within the LRAR and require removal to ensure adequate capacity and sludge depth within the Reactor. The process of removing the material to inject on agricultural land as a soil enhancement product begins once weather and harvest conditions allow. Injection of material helps to reduce runoff, prevent vector attraction, and minimize odours.

The removal, hauling, analyses and injection of this stored material constitutes the Biosolids Land Application program and is regulated under Environment Act License (EAL) #1907. During the fall of 2024, the City conducted its annual Residual Biosolids Land Application program and applied 747.3 dry tonnes of material to farmland.

Field Selection Process

After calculating the number acres of land needed based on the quantity of biosolids to be removed, the City of Portage la Prairie administration contacted owners of land located in the Rural Municipality of Portage la Prairie. Initial screening consisted of reviewing the proposed land application area and determining the subsurface geological formation. This was obtained from a map of the Rural Municipality of Portage la Prairie which was

superimposed areas that had met the requirements under EAL 1907. The criteria can be listed as follows:

- i) Depth of clay or clay till of less than 1.5 metres between the soil surface and the water table.
- ii) Within 100 metres of an identifiable boundary of an aquifer which is exposed to the ground surface.
- iii) Where, prior to the application of biosolids, the soil pH is less than 6.0.
- iv) Where the surface slope of the land is greater than 5 percent.
- v) where, prior to application of biosolids, the level of nitrate-nitrogen exceeds 100 kilograms per hectare in the upper 60 cm of the soil: or
- vi) Where, prior to the application of biosolids, the concentration of sodium bicarbonate extractable phosphorous, as P, exceeds 60 micrograms per gram in the upper 15 centimetres of the soil.

Sites that met the above criteria were considered for biosolids application. Potential fields for use were advertised in the local newspaper as well as on the City of Portage la Prairie website. Letters of notification were also sent to the department of Environment and Climate Change and the Rural Municipality of Portage la Prairie. Copies of the ad and letters are included in this report. Areas selected were then subject to soil testing processes and final selection.

Nutrient Testing

Soil testing was conducted on all usable fields to determine the pH, sodium bicarbonate extractable phosphorous, as P, and nitrate nitrogen according to the following criteria as specified in EAL #1907.

Parameter	Depth of Analysis (cm)
Phosphorous	15
pH	15
Potassium	15
Nitrate-Nitrite	60
Total Nitrogen	60

Core samples were obtained from the selected application sites, as per license requirements. One core sample was collected for each 2-hectare area and combined to form a composite sample for analysis. A separate sample for clay analyses and verification of the water table was also taken. The City of Portage la Prairie contracted an external laboratory for soil testing.

Heavy Metals

Soil samples were collected and analyzed for background heavy metal concentrations. Heavy metal application was limited to one-third of the initial maximum addition of each heavy metal to be applied in any single application period per the environment license. All heavy metal analysis was conducted by an external laboratory. See Appendix B for background heavy metal concentration results. Background heavy metal concentrations in the soil not exceeding the following:

Metal	Background Concentration (kg/h)
Cadmium	2.88
Copper	90
Nickel	90
Lead	90
Zinc	270
Mercury	0.9
Chromium	216

Land sections **SE 1-13-7** and **S 33-12-8** were sampled, analyzed, and approved for use. Once a field has been evaluated and selected for application, before application, landowners are required to sign a contract which outlines the process and indicates their agreement to receive biosolids, as well as information on growing restrictions. Copies of these agreements are also included in this report.

Biosolids Sampling and Testing

It is necessary to sample and analyze the residual solids material to determine nutrient and metal levels. This is used to firstly- confirm the material contains levels lower than the maximum allowable concentration before applying and secondly- to determine the application rate that the material can be applied to ensure the cumulative amounts are below license limits.

The BSTs and LRAR biosolids were sampled and analyzed per Clause 1, Appendix A of EAL 1907, for the following components:

- | | |
|----------------------------|--------------|
| a. conductivity | j. lead |
| b. pH | k. mercury |
| c. total solids | l. nickel |
| d. volatile solids | m. potassium |
| e. nitrate nitrogen | n. cadmium |
| f. total Kjeldahl nitrogen | o. copper |
| g. ammonia nitrogen | p. zinc |
| h. organic nitrogen | q. chromium |
| i. total phosphorous | |

Based on the reported results, the materials contained in the BSTs and LRAR met the required criteria and were available for land application.

Sludge Handling

Biosolids Storage Facility

No concerns were noted from the Biosolids Storage Facility. Any spillage observed was attributed to material dripping from the hose after a truck was filled. All material that drips from the overhead filling hose is collected on the concrete spill pad that is washed down into a pit that conveys all material back to the Biosolids Storage Tanks.

Low-Rate Anaerobic Reactor

Sludge was withdrawn from the LRAR using internal lateral sludge lines that are normally used for sludge recirculation within the LRAR. Sludge was pumped directly to the trucks through a sludge transfer port and an overhead fill pipe. City staff continuously monitored the entire filling process and operation of the sludge pumps. Communication was maintained utilizing two-way radios.

Any spillage observed was attributed to material dripping from the hose after a truck was filled. All spillage that occurred was contained on a concrete spill pad that was washed after each load was hauled. The spilled material and wash water were conveyed to the headworks of the LRAR by a pumping station located at the fill site.

Bulk Volume Fermenter

For 2024, no biosolids were removed from the BVF and the material was not sampled. It is not anticipated that this will have any consequences on the operations of the WPCF in 2025.

Biosolids Transportation and Transfer Station

Application began on September 16, 2024. Biosolids were removed simultaneously from the BSTs as well as LRAR. Separate trucks were dedicated to each storage location and the contractor at the field recorded information to determine where the material was being injected. Composite samples from each storage location were also analyzed separately.

The biosolids were hauled via tanker truck to the field. Transportation routes were determined before application and Manitoba Environment and Climate Change, and the RM of Portage la Prairie were notified of the intended routes. Copies of these notification letters are included with this report.

Biosolids were transferred from the tanks via a sludge transfer pump to the nurse tank. The nurse tank can hold approximately four tank loads. Cam-lock connections were used for all hose connections mitigating any spillage, which may have occurred during the sludge transfer stage. The nurse tank directly feeds the Drag-Line injection system.

Injection

All biosolids injection was conducted by a Drag-Line injection system which had been modified to allow for injection and to allow for a furrow spacing of 0.50 metres (20 inches). A total of six furrows were created with each pass.

The injection rate was based on the ground speed of the Dragline and the solids and ammonia information of the sludge. The concentration of percent solids and ammonia data was transferred to the field utilizing two-way radio. This data was used by the operator of the Drag-Line equipment to estimate the speed of the unit using an injection rate chart. Approximately 100 kg/ha of plant-available nitrogen was applied to each application area as based on the following formula:

$$S = \frac{N_p}{(\text{NO}_3\text{-N} + \text{NH}_3\text{-N} + F \times \text{Org-N})}$$

Where:

S= sludge application rate (dry kg/ha)

N_p= plant available nitrogen requirement (kg/ha) = 100 kg/ha

NO₃-N= nitrate nitrogen content of sludge (kg/kg sludge)

NH₃-N= ammonia nitrogen content of sludge (kg/kg sludge)

F= organic nitrogen mineralization factor (0.2 dimensionless)

Org-N= organic nitrogen content of sludge (kg/kg sludge)

Biosolids Testing During Land Application

During the land application program, ongoing testing of samples from the BSTs and LRAR are conducted. One grab sample is collected from every tanker to form a composite sample of five tankers. Each composite is analyzed for solids and ammonia content.

The ammonia and solids testing that occurs during the biosolids hauling process are analyzed in-house by City of Portage lab techs. Solids are determined using a moisture balance and ammonia is determined via Flow Injection Analysis following APHA Standard Methods for the Examination of Water and Wastewater 20th Ed, 1998 Method 4500-NH₃ H. Flow Injection Analysis.

The ongoing testing of ammonia and solids for each composite sample ensures that the application rate is being adjusted accordingly as the program proceeds. The

spreadsheets used to determine rates also calculate the applied quantity of metals, phosphorus, and Nitrogen along with the background soil composition to ensure the cumulative values do not exceed license requirements. This information is documented in the Biosolids Application Recording sheets which are included in this report. A copy of this report is also given to each landowner.

Summary

Residual solids were removed and transported for land application between September 16, 2024, and September 26, 2024. In total, 747.3 dry tonnes were removed and injected including 467.9 tonnes from the LRAR and 279.4 dry tonnes from the Biosolids Storage Tanks. Although there were slight overapplications of Nitrogen from the material from the BST and solids from the LRAR, the overall average for the field was well within all application limits. There were no incidents or spills that occurred during the land application process. Follow-up with the landowner indicated they were content with the application process and are willing to have residual solids applied in future years.

APPENDIX A
LAND SOLICITATION AND ADVERTISING

February 12, 2024

Mr. Tyler Kneeshaw
Regional Supervisor
Manitoba Environment, Climate and Parks
25 Tupper Street North
Portage la Prairie, MB R1N 3K1

Re: 2024 Residual Biosolids Application Program

Dear Tyler Kneeshaw,

The City of Portage la Prairie intends to conduct land application of residual biosolids in the fall of 2024. The following land areas that have been identified as potential application sites and pending soil analysis, biosolids may be applied to the following agricultural lands:

LEGAL LAND DESCRIPTIONS

Owner: MacDonald - NW 1-13-7

Owner: Vanstone – SE 1-13-7

Owner: Westroc – S 33-12-8
W 28-12-8

As required in Environment Act License 1907, Clause 17, notice of intent to land apply to the above noted sites will be printed in the Herald Leader, on February 15, 2024. The notice will also be posted to the City website. A copy of the intended routes of transport as well as a confirmation of start date will be sent once they are confirmed by the contractor. Please contact me at 204-239-8359 if you have or receive any concerns regarding the above sites.

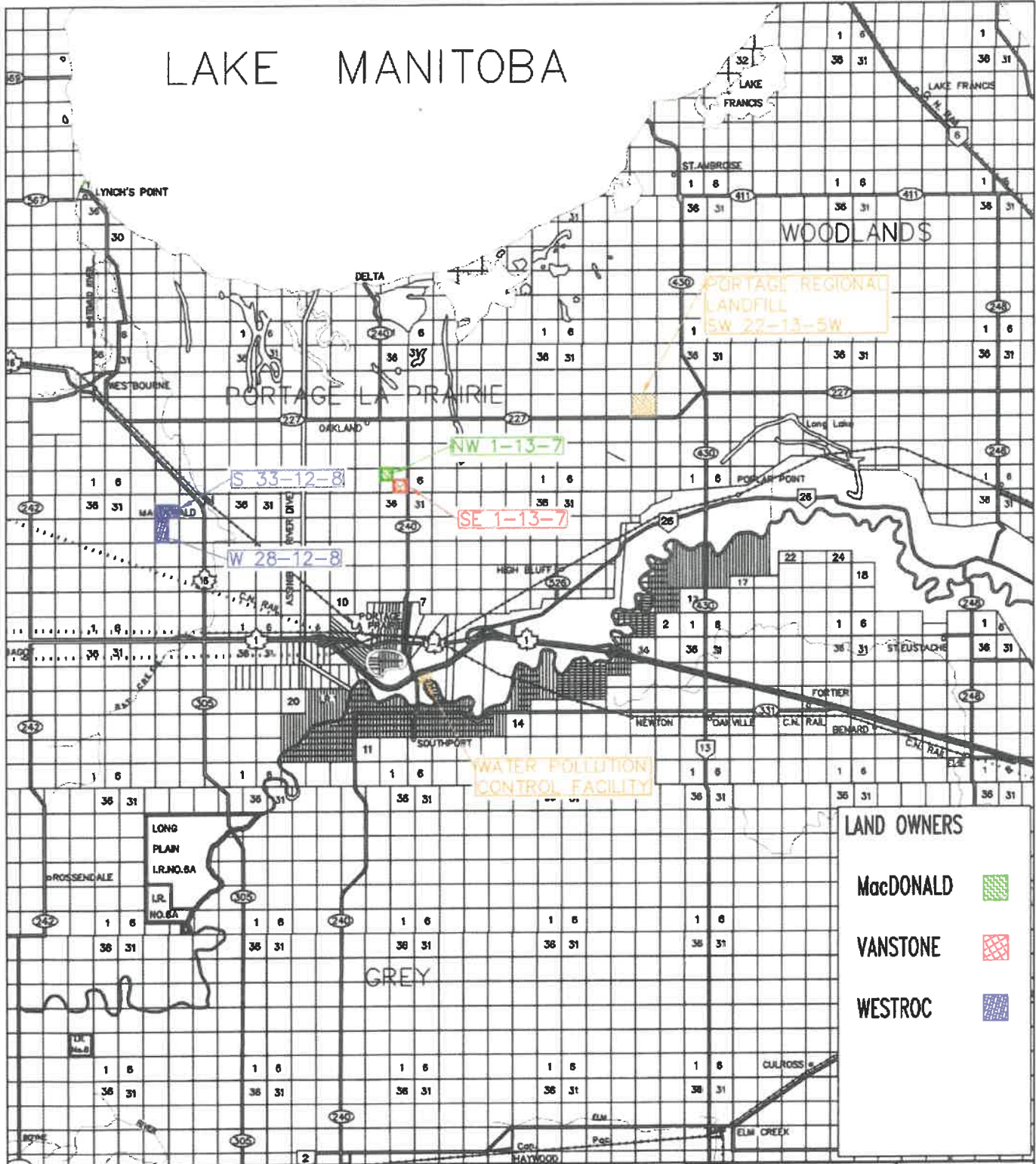
A map of the Portage la Prairie region with fields identified has been included with this letter.

Sincerely,



Karly Friesen
Director of Utility

LAKE MANITOBA



LAND OWNERS

MacDONALD



VANSTONE



WESTROC



Portage La Prairie
City of Possibilities

Project
2024
BIOSOLIDS
APPLICATION
LAND DESCRIPTION

Sheet 1 ym/d 24/02/02
Scale N.T.S.
Drawing No. Rev.
M-214 0

February 12, 2024

Kyle Hamilton
Chief Administrative Officer
Rural Municipality of Portage la Prairie
35 Tupper Street South
Portage la Prairie, MB R1N 1W7

Re: 2024 Residual Biosolids Application Program

Dear Kyle Hamilton,

The City of Portage la Prairie intends to conduct land application of residual biosolids in the fall of 2024. Below you will find the land areas that have been selected. A copy of the land map has been included as well. Pending soil analysis, biosolids **may** be applied to the following agricultural lands:

LEGAL LAND DESCRIPTIONS

Owner: MacDonald - NW 1-13-7

Owner: Vanstone – SE 1-13-7

Owner: Westroc – S 33-12-8
W 28-12-8

As required in Environment Act License 1907, Clause 17, notice of intent to land apply to the above noted sites will be printed in the Herald Leader, on February 15, 2024. The notice will also be posted on the City's website. A copy of the intended routes of transport as well as a confirmation of start date will be sent once they are confirmed by the contractor. Please contact me at 204-239-8359 if you have or receive any concerns regarding the above sites.

A map of the Portage la Prairie region with fields identified has been included with this letter.

Sincerely,



Karly Friesen
Director of Utility

A detailed map of Lake Manitoba and its surrounding areas. The map includes a grid system with coordinates (e.g., 1 6, 36 31) and various place names such as LYNCH'S POINT, MESSBOURNE, PORTAGE LA PRAIRIE, DELTA, ST. AMBROISE, WOODLANDS, POULCAR POINT, STEUSTACHE, FORTIER, NEWTON, GANVILLE, BERNARD, CULROSS, and ELM CREEK. Key features include the PORTAGE REGIONAL LANDFILL (SW 22-13-5W), the WATER POLLUTION CONTROL FACILITY, and the LONG PLAIN L.R. NO. 6A. A legend titled 'LAND OWNERS' identifies three owners: MacDONALD (green checkered pattern), VANSTONE (red checkered pattern), and WESTROC (blue checkered pattern). Specific land parcels are highlighted with colored boxes and labels: S 33-12-8 (blue), NW 1-13-7 (green), SE 1-13-7 (red), and W 28-12-8 (blue). The map also shows major roads like Highway 567, Highway 411, Highway 430, Highway 227, Highway 240, Highway 242, Highway 246, Highway 248, Highway 250, Highway 252, Highway 254, Highway 256, Highway 258, Highway 260, Highway 262, Highway 264, Highway 266, Highway 268, Highway 270, Highway 272, Highway 274, Highway 276, Highway 278, Highway 280, Highway 282, Highway 284, Highway 286, Highway 288, Highway 290, Highway 292, Highway 294, Highway 296, Highway 298, Highway 300, Highway 302, Highway 304, Highway 306, Highway 308, Highway 310, Highway 312, Highway 314, Highway 316, Highway 318, Highway 320, Highway 322, Highway 324, Highway 326, Highway 328, Highway 330, Highway 332, Highway 334, Highway 336, Highway 338, Highway 340, Highway 342, Highway 344, Highway 346, Highway 348, Highway 350, Highway 352, Highway 354, Highway 356, Highway 358, Highway 360, Highway 362, Highway 364, Highway 366, Highway 368, Highway 370, Highway 372, Highway 374, Highway 376, Highway 378, Highway 380, Highway 382, Highway 384, Highway 386, Highway 388, Highway 390, Highway 392, Highway 394, Highway 396, Highway 398, Highway 400, Highway 402, Highway 404, Highway 406, Highway 408, Highway 410, Highway 412, Highway 414, Highway 416, Highway 418, Highway 420, Highway 422, Highway 424, Highway 426, Highway 428, Highway 430, Highway 432, Highway 434, Highway 436, Highway 438, Highway 440, Highway 442, Highway 444, Highway 446, Highway 448, Highway 450, Highway 452, Highway 454, Highway 456, Highway 458, Highway 460, Highway 462, Highway 464, Highway 466, Highway 468, Highway 470, Highway 472, Highway 474, Highway 476, Highway 478, Highway 480, Highway 482, Highway 484, Highway 486, Highway 488, Highway 490, Highway 492, Highway 494, Highway 496, Highway 498, Highway 500, Highway 502, Highway 504, Highway 506, Highway 508, Highway 510, Highway 512, Highway 514, Highway 516, Highway 518, Highway 520, Highway 522, Highway 524, Highway 526, Highway 528, Highway 530, Highway 532, Highway 534, Highway 536, Highway 538, Highway 540, Highway 542, Highway 544, Highway 546, Highway 548, Highway 550, Highway 552, Highway 554, Highway 556, Highway 558, Highway 560, Highway 562, Highway 564, Highway 566, Highway 568, Highway 570, Highway 572, Highway 574, Highway 576, Highway 578, Highway 580, Highway 582, Highway 584, Highway 586, Highway 588, Highway 590, Highway 592, Highway 594, Highway 596, Highway 598, Highway 600, Highway 602, Highway 604, Highway 606, Highway 608, Highway 610, Highway 612, Highway 614, Highway 616, Highway 618, Highway 620, Highway 622, Highway 624, Highway 626, Highway 628, Highway 630, Highway 632, Highway 634, Highway 636, Highway 638, Highway 640, Highway 642, Highway 644, Highway 646, Highway 648, Highway 650, Highway 652, Highway 654, Highway 656, Highway 658, Highway 660, Highway 662, Highway 664, Highway 666, Highway 668, Highway 670, Highway 672, Highway 674, Highway 676, Highway 678, Highway 680, Highway 682, Highway 684, Highway 686, Highway 688, Highway 690, Highway 692, Highway 694, Highway 696, Highway 698, Highway 700, Highway 702, Highway 704, Highway 706, Highway 708, Highway 710, Highway 712, Highway 714, Highway 716, Highway 718, Highway 720, Highway 722, Highway 724, Highway 726, Highway 728, Highway 730, Highway 732, Highway 734, Highway 736, Highway 738, Highway 740, Highway 742, Highway 744, Highway 746, Highway 748, Highway 750, Highway 752, Highway 754, Highway 756, Highway 758, Highway 760, Highway 762, Highway 764, Highway 766, Highway 768, Highway 770, Highway 772, Highway 774, Highway 776, Highway 778, Highway 780, Highway 782, Highway 784, Highway 786, Highway 788, Highway 790, Highway 792, Highway 794, Highway 796, Highway 798, Highway 800, Highway 802, Highway 804, Highway 806, Highway 808, Highway 810, Highway 812, Highway 814, Highway 816, Highway 818, Highway 820, Highway 822, Highway 824, Highway 826, Highway 828, Highway 830, Highway 832, Highway 834, Highway 836, Highway 838, Highway 840, Highway 842, Highway 844, Highway 846, Highway 848, Highway 850, Highway 852, Highway 854, Highway 856, Highway 858, Highway 860, Highway 862, Highway 864, Highway 866, Highway 868, Highway 870, Highway 872, Highway 874, Highway 876, Highway 878, Highway 880, Highway 882, Highway 884, Highway 886, Highway 888, Highway 890, Highway 892, Highway 894, Highway 896, Highway 898, Highway 900, Highway 902, Highway 904, Highway 906, Highway 908, Highway 910, Highway 912, Highway 914, Highway 916, Highway 918, Highway 920, Highway 922, Highway 924, Highway 926, Highway 928, Highway 930, Highway 932, Highway 934, Highway 936, Highway 938, Highway 940, Highway 942, Highway 944, Highway 946, Highway 948, Highway 950, Highway 952, Highway 954, Highway 956, Highway 958, Highway 960, Highway 962, Highway 964, Highway 966, Highway 968, Highway 970, Highway 972, Highway 974, Highway 976, Highway 978, Highway 980, Highway 982, Highway 984, Highway 986, Highway 988, Highway 990, Highway 992, Highway 994, Highway 996, Highway 998, Highway 1000.



Sheet	y/m/d
1	24/02/02
Scale	N.T.S
Drawing No.	Rev.
M-214	0

The City of Portage la Prairie intends to conduct the Residual Biosolids Land Application Program commencing in the fall of 2024.

Pending soil analysis, biosolids **may** be applied to the following agricultural lands:

LEGAL DESCRIPTION

W 28-12-8, S 33-12-8, SE 1-13-7, NW 1-13-7

A map of land locations can be found at www.city-plap.com

Please contact Karly Friesen, Manager, Director of Utility at 204-239-8359 if you have or receive any concerns regarding the above sites.

APPENDIX B
APPLICATION AREA SUMMARY, SOIL TESTING, BIOSOLIDS TESTING AND
ANALYTICAL RESULTS
FALL
SE 1-13-7
S 33-12-8

August 26, 2024

Tyler Kneeshaw
Regional Supervisor
Manitoba Environment, Climate and Parks
25 Tupper Street North
Portage la Prairie, MB R1N 3K1

Re: Truck Routes for 2024 Residual Biosolids Application Program

Dear Mr. Kneeshaw

Please find the enclosed route maps for the fall Residual Biosolids Land application for review and comment. The following four fields have been pre-selected for use;

MacDonald- NW 1-13-7
Vanstone- SE 1-13-7
Westroc- S 33-12-8 & W 28-12-8

Please note the final field selection is dependant on soil testing as well as the quantity of material to be applied. The anticipated start date is September 3rd, pending test results and weather. Please contact me if you have any concerns with the routes provided. I can be reached via phone at 204-239-8359 or email at kfriesen@city-plap.com.

Sincerely,



Karly Friesen
Director of Utility
City of Portage la Prairie

Route to S 33-12-8 and W 28-12-8

15 Norah St

- > Get on Trans-Canada Hwy/MB-1 W
- > Continue on Trans-Canada Hwy/MB-1 W to Macdonald
- > Continue on 69 Rd N Take Rd 46 W to Rd 71N

Portage la Prairie



Return route back to WPCF

15 Norah St

- ↑ Head southwest on Norah St
- ↪ Turn right onto 240 Rd/Rt 240 MB 240 N
- ↪ Turn right onto the MB 1 W/IC ramp to Brandon
- ↪ Merge onto Trans Canada Hwy/MB 1 W
- ↪ Turn right onto MB 16 W (signs for Trans Canada Highway / Saskatoon/Neepawa/Via Head Highway)
- ↪ Turn left onto Rd 71N

Portage la Prairie



Route to NW 1-13-7 and SE 1-13-7

34142 River Rd

1 1/2 mi 1 h

- ↑ Head east on River Rd
- ↩ Turn left at the 1st cross street onto Angle Rd
- ↪ Turn right at the 1st cross street onto Trans-Canada Hwy/MB-1 E
- ↩ Turn left onto MB-26 E
- ↩ Turn left onto Assiniboine Trl/MB-26
- ↪ Turn right onto Rd 33W
- ↩ Turn left onto Rd 73N

Rd 73N



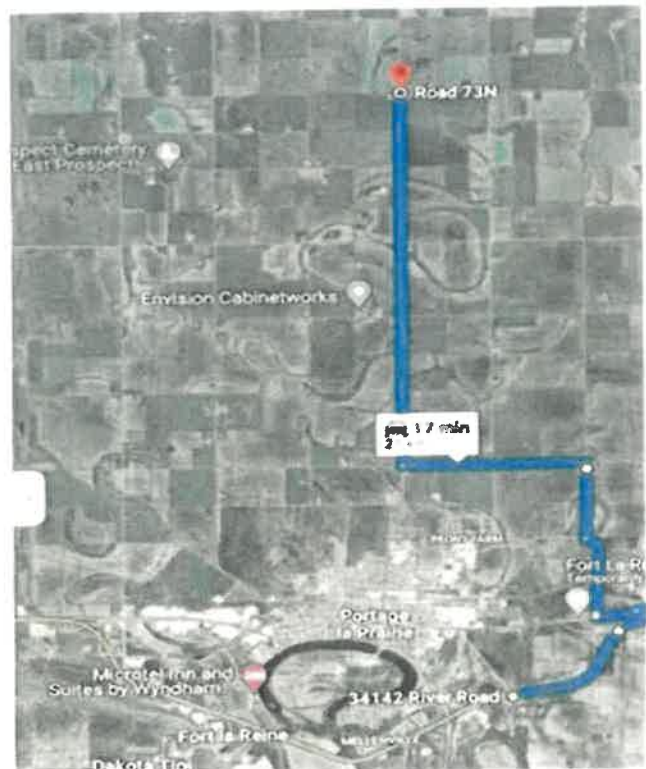
Return route back to WPCF

34142 River Rd

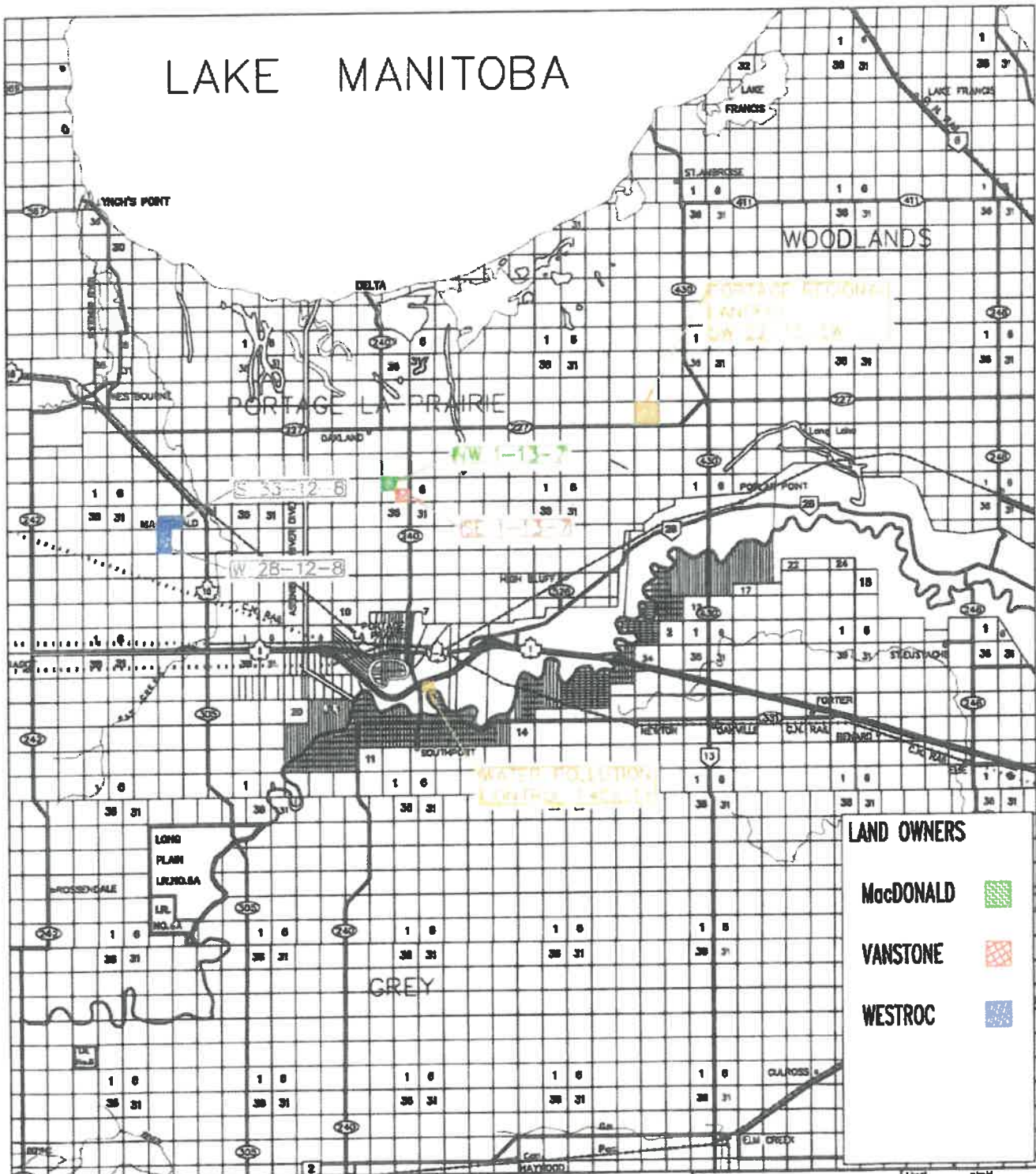
- > Continue to Southport
- > Continue on Trans-Canada Hwy/MB-1 E Take Rd 34 W to Rd 34W
- > Take 68 Rd N to 240 Rd/MB-240 N in High Bluff
- ↪ Turn right onto 240 Rd/MB-240 N
- ↪ Turn right onto Rd 73N

Rd 73N

1



LAKE MANITOBA



LAND OWNERS

MacDONALD



VANSTONE



WESTROC



Portage La Prairie
City of Possibilities

Project
**2024
BIOSOLIDS
APPLICATION
LAND DESCRIPTION**

Sheet 1 of 1
Scale N.T.S.
Drawing No. M-214
Rev. 0

May 17, 2024

Mr. Kyle Hamilton
Chief Administrative Officer
Rural Municipality of Portage la Prairie
35 Tupper Street South
Portage la Prairie, MB R1N 1W7

Re: Truck Routes for 2024 Residual Biosolids Application Program

Dear Mr. Hamilton

Please find the enclosed route maps for the fall Residual Biosolids Land application for review and comment. The following four fields have been pre-selected for use;

MacDonald- NW 1-13-7
Vanstone- SE 1-13-7
Westroc- S 33-12-8 & W 28-12-8

Please note the final field selection is dependant on soil testing as well as the quantity of material to be applied. The start date as well as the order of field use will be communicated to you once it has been confirmed. Please contact me if you have any concerns with the routes provided. I can be reached via phone at 204-239-8359 or email at kfriesen@city-plap.com.

Sincerely,



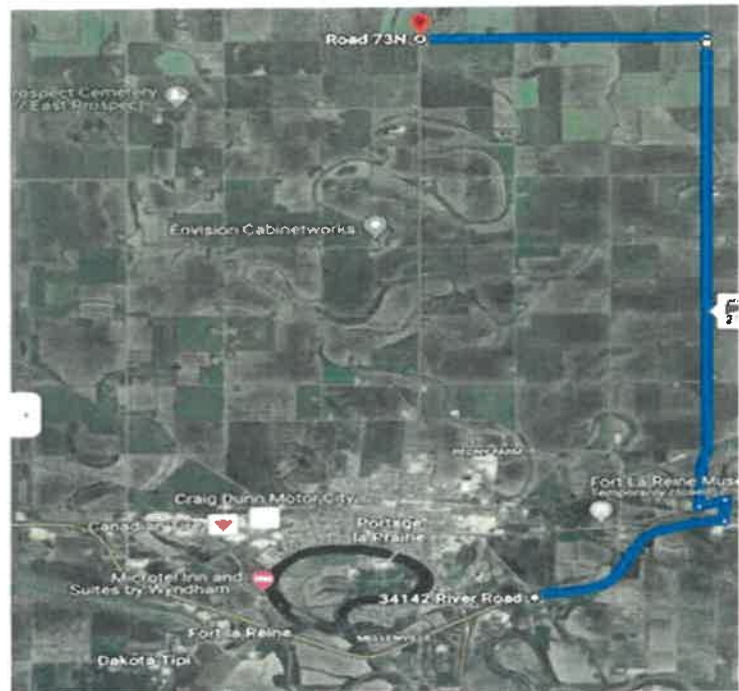
Karly Friesen
Director of Utility
City of Portage la Prairie

Route to NW 1-13-7 and SE 1-13-7

34142 River Rd

- ↑ Head east on River Rd
- ↶ Turn left at the 1st cross street onto Angle Rd
- ↷ Turn right at the 1st cross street onto Trans-Canada Hwy/MB 1 E
- ↶ Turn left onto MB-26 E
- ↶ Turn left onto Assiniboine Trl/MB-26
- ↷ Turn right onto Rd 33W
- ↶ Turn left onto Rd 73N

Rd 73N



Return route back to WPCF

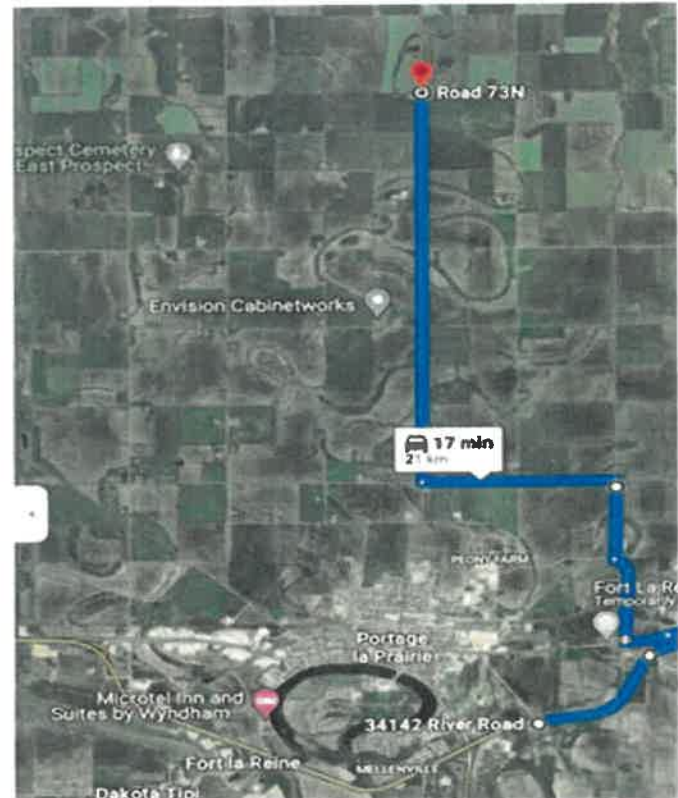
34142 River Rd

Southport, MB R0 - 174.1

- > Continue to Southport
- > Continue on Trans-Canada Hwy/MB-1 E Take Rd 34 W to Rd 34W
- > Take 68 Rd N to 240 Rd/MB-240 N in High Bluff
- ↷ Turn right onto 240 Rd/MB-240 N
- ↷ Turn right onto Rd 73N

Rd 73N

Southport, MB R0 - 174.1



Route to S 33-12-8 and W 28-12-8

15 Norah St

- > Get on Trans-Canada Hwy/MB-1 W
- > Continue on Trans-Canada Hwy/MB-1 W to Macdonald
- > Continue on 69 Rd N Take Rd 46 W to Rd 71 N

Portage la Prairie

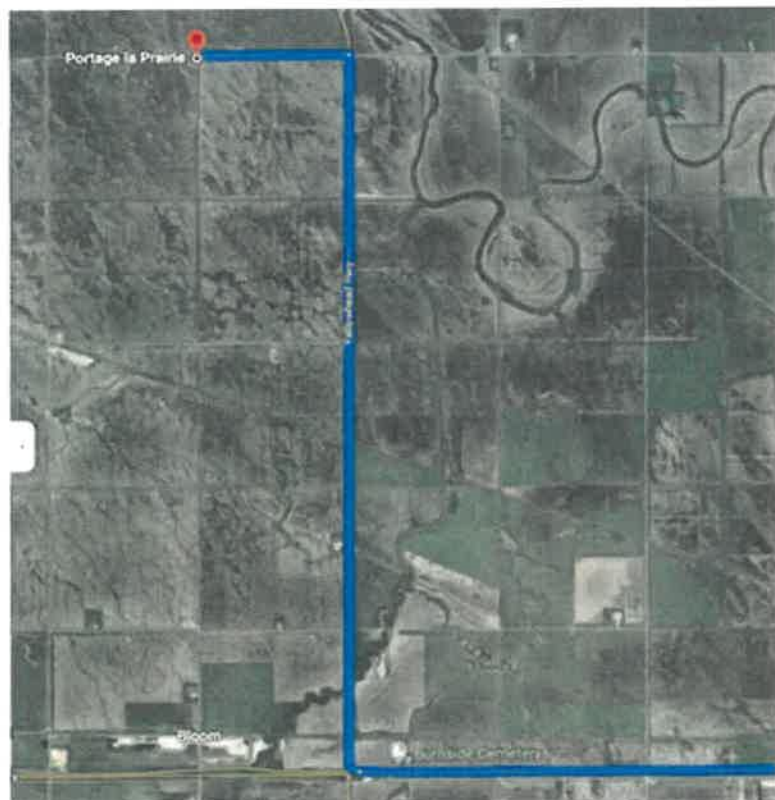


Return route back to WPCF

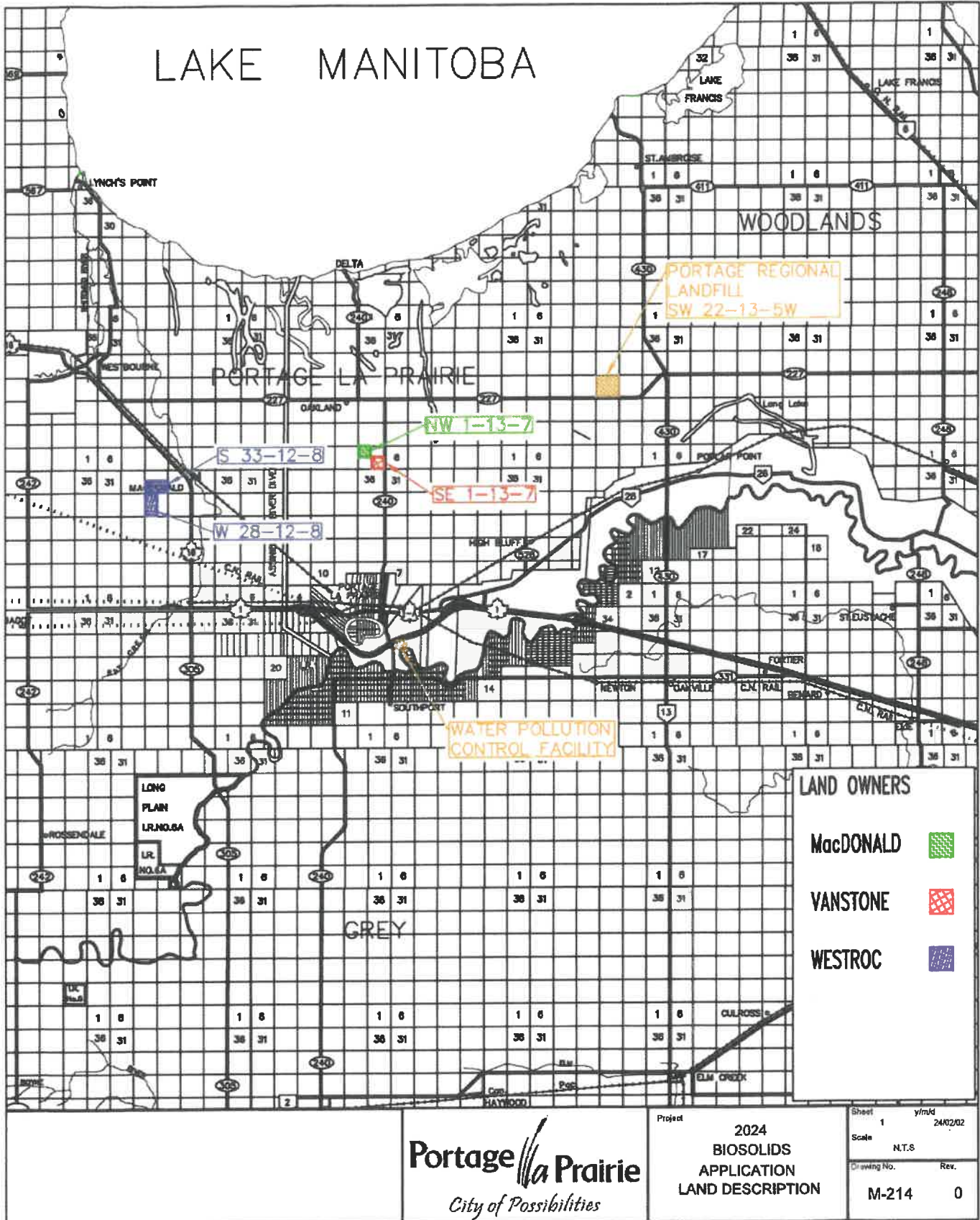
15 Norah St

- ↑ Head southwest on Norah St
- ↪ Turn right onto 240 Rd (River Rd/MB 240 N)
 - ① Continue to Yellow River Rd/MB 240 N
- ↪ Turn left onto the MB 1 W/IC ramp to Brandon
- ↪ Merge onto Trans-Canada Hwy/MB 1 W
- ↪ Turn right onto MB 16 W (signs for Trans-Canada Highway/Saskatoon/Neepawa/Yellow Head Highway)
- ↪ Turn left onto Rd 71 N
 - ① Destination will be on the left

Portage la Prairie



LAKE MANITOBA



Portage La Prairie
City of Possibilities

Project
2024
BIOSOLIDS
APPLICATION
LAND DESCRIPTION

Sheet 1 y/m/d 24/02/02
Scale N.T.S.
Drawing No. Rev.
M-214 0

August 26, 2024

Mr. Kyle Hamilton
Chief Administrative Officer
Rural Municipality of Portage la Prairie
35 Tupper Street South
Portage la Prairie, MB R1N 1W7

Re: Revised Truck Route for 2024 Residual Biosolids Application Program

Dear Mr. Hamilton

As a follow up to the letter sent in May, there has been a revision to the truck route to field SE 1-13-7. Please find the revised route included.

The anticipated start date will be September 3, 2024, pending soil testing and weather. I can be reached via phone at 204-239-8359 or email at kfriesen@city-plap.com if you have any questions.

Sincerely,



Karly Friesen
Director of Utility
City of Portage la Prairie

Karly Friesen

From: assiniboine injections <info@lagooncleaning.com>
Sent: August 26, 2024 12:20 PM
To: Karly Friesen; info Lagooncleaning
Subject: Route going to McDonalds be same as first time for return trip



- Follow River Rd to Trans-Canada Hwy/MB-1 E in Southport

1 min (800 m)

- Continue on Trans-Canada Hwy/MB-1 E to High Bluff

3 min (4.5 km)

- Take Rd 33W and Rd 71N to Rd 72 N

16 min (15.0 km)

Portage la Prairie

Manitoba

Caution: This is an external email. Please take care when clicking links or opening attachments. When in doubt, contact your IT Department.

LETTER OF AGREEMENT

Karly Friesen
Director of Utility
City of Portage la Prairie
97 Saskatchewan Ave. E.
Portage la Prairie, MB
R1N 0L8



Dear Land Owner:

I hereby agree to permit the City of Portage la Prairie to apply wastewater treatment residual biosolids to the land, which I own as described below, on the understanding that:

1. The biosolids will be injected approximately 15 cm below the surface.
2. The biosolids will be injected at a maximum rate of 10 dry tonnes per hectare. (Maximum allowable over 4 years.)
3. Application will occur in the 2024 crop year, or as otherwise indicated.
4. Biosolids application will not be closer than 300 meters to a dwelling not belonging to the owner or lessee of the land on which biosolids are applied.
5. Biosolids will not be applied within 15 meters of a ditch draining less than one section and 30 meters from drains serving a larger watershed.
6. All roadways, access roads, and ditches will be repaired to the original condition upon completion of the application program, to the satisfaction of the City, municipality and the landowner.
7. The City makes no warranties or representations regarding the fertilizer content nor any soil conditioning effect of the biosolids.
8. The City will determine background levels of nutrients, heavy metals, pH, and clay depth before the application of biosolids. This information will be provided to the landowner.
9. The City will assess the quality of the biosolids before the application program and will monitor it throughout the program. Test results will be provided to the landowner.
10. Temporary halting of the application due to wet field conditions will occur upon mutual agreement between representatives of the City, contractor and landowner.
11. Biosolids may be injected at a maximum rate of addition of plant-available nitrogen of 100 kilograms per hectare.
12. The cumulative mass per hectare of each heavy metal in the soil does not exceed the respective value stipulated in the City's Environment Act License, and not more than one-third of the initial maximum addition of each heavy metal will be applied in this year's program.
13. The City will restore the field to a condition similar to that as found before the application program.

LETTER OF AGREEMENT

I, on my part, agree to:

- a) Plant a cereal, oilseed, forage, field pea, or lentil crop at the beginning of the next growing season. Only these listed crops will be grown for three seasons following biosolids application. A crop will not be grown that is a vegetable or a fruit and livestock will not be allowed to graze for three growing seasons after biosolids application on the land.
- b) Provide crop information to the City on an annual basis.
- c) Consider the soil and biosolids test results before applying nitrogen fertilizer in the growing season following biosolids application and restrict the addition of plant-available nitrogen to a maximum of 100 kg/ha, including that derived from the application of biosolids. Fertilizers, including those derived from biosolids, will be applied at the recommended agronomic rates.
- d) Release and discharge the City of Portage la Prairie of and from all claims, demands, actions or causes of actions which I have or may have as the result of the application of wastewater biosolids to my land.
- e) Provide the City with a letter of acceptance upon completing the biosolids application indicating my acceptance of field conditions.
- f) Notify the lessee of the land (if applicable) of this agreement.

Owen Vanstone
Land Owner Name

[Signature]
Land Owner Signature

July 23/24
Date

Karly Friesen
City Representative Name

[Signature]
City Representative Signature

January 25, 2024
Date

Land Location(s): SE 1-13-7

2024 Bio-Solid Application Recording Sheet							
		Reference Sample Soil Material Criteria is SRM 1646a/SRM2709					
		See Appendix Section for Information					
Name of Land Owner		Vanstone					
Legal Description		SE 1-13-7					
Land Owner Authorization		Yes					
Dist. >300m from residences		Yes					
Map Enclosed		Yes					
Year Field previously Used							
GPS		Lat				Long	
		Date	Date	Date	Date	Date	Date
		BST 27/9/2024	BST 27/9/2024 lbs/ac	LRAR 27/9/2024	LRAR 27/9/2024 lbs/ac		Comments
Field Soil Analysis mg/kg 0-15 cm	Cadmium	0.502		0.502			
	Calcium						
	Chromium	20.4		20.4			
	Copper	17.7		17.7			
	Lead	10.1		10.1			
	Mercury	0.0310		0.0310			
	Nickel	22.2		22.2			
	pH	8.06		8.06			
	Phosphorus < 60 ug/g	881		881			
	Potassium	2410		2410			
Soil Nitrate Nitrogen 0-60cm<100kg/ha	4.5		4.5				
Zinc	82.3		82.3				
Bio-Solids Analysis mg/kg	Ammonia Nitrogen	507		186			
	Cadmium	0.01990		0.209			
	Chromium	0.617		1.55			
	Conductivity	4820		2640			
	Copper	9.04		1.02			
	Lead	0.2730		0.590			
	Mercury	0.00446		0.0006220			
	Nickel	0.717		2.37			
	Nitrate Nitrogen	0.400		0.400			
	Organic Nitrogen	1340		2490			
	pH	7.15		6.95			
	Potassium	369		421			
	Total Nitrogen	1850		2680			
	Total Phosphorus	260		187			
	Total Solids	23500		73400			
Volatile Solids	16900		41200				
Zinc	7.57		51.0				
Cumulative Results kg/hectare	Cadmium < 2.88	0.904	0.807	0.904	0.807		
	Chromium < 216	36.722	32.76	36.726	32.77		
	Copper < 90	31.885	28.45	31.946	28.50		
	Lead < 90	18.181	16.22	18.183	16.22		
	Mercury < 0.9	0.056	0.05	0.056	0.05		
	Nickel < 90	39.962	35.65	39.967	35.66		
	Nutrient Appl. Rate PA-N<100/kg	98.06	87.49	98.15	87.57		
	Solids <10	2.970	2.65	9.516	8.49		
	Zinc < 270	148.145	132.17	148.159	132.18		
	Phosphorus	1586.572	1415.51	1588.274	1417.03		
Comments							

FALL OF 2024
CITY OF PORTAGE LA PRAIRIE
DARREN McDONALD SE 1-13-7
ASSINIBOINE INJECTIONS LTD

BOX 160 177 NOTRE DAME AVE NOTRE DAME, MB R0G 1M0 PH. 204-248-2559 FAX. 204-248-2799

DAILY SLUDGE APPLICATION PLAN

DATE: _____

FARMERS NAME: _____

FIELD: SEC. _____ TWP _____ RGE _____

APPLICATION TYPE: INJECTION

DEPTH: _____ 6" HA: _____ CM3: _____

N

SEPT 16

BST

27 ACRES

269,896 CALLONS.

SEPT 17

LRAR

207,597

CALLONS.

154

ACRES

LRAR

7.6 ACRES

101,811

CALLONS.

SEPT 16

SEPT 17

BST

986,341 CALLONS.

28.35 ACRES.

YARD

FALL OF 2024
CITY OF PORTAGE LA PRAIRIE
DARREN McDONALD SE 1-13-7
ASSINIBOINE INJECTIONS LTD

BOX 160 177 NOTRE DAME AVE NOTRE DAME, MB R0G 1M0 PH: 204-248-2559 FAX: 204-248-2799

DAILY SLUDGE APPLICATION PLAN

DATE: _____

FARMERS NAME: _____

FIELD: SEC. _____ TWP _____ RGE _____

APPLICATION TYPE: INJECTION

DEPTH: 6" HA: _____ CM3: _____

N

SEPT 16
BST

27 ACRES

269,896 GALLONS. 15.4 ACRES

SEPT 17
LRAR

207,597 GALLONS.

SEPT 19 BST

380,671 GALLONS.

39 ACRES

LRAR

7.6 ACRES

101,211 GALLONS.

SEPT 16

LRAR

SEPT 19

287,298 GALLONS.

21.36 ACRES.

SEPT 17

BST

286,341 GALLONS.

28.35 ACRES.

YARD

FALL OF 2004
CITY OF PORTAGE LA PRAIRIE
DARREN McDONALD SE 1-13-7
ASSINIBOINE INJECTIONS LTD

BOX 160 177 NOTRE DAME AVE NOTRE DAME, MB R0G 1M0 PH: 204-248-2559 FAX: 204-248-2799

DAILY SLUDGE APPLICATION PLAN

DATE: _____

FARMERS NAME: _____

FIELD: SEC. _____ TWP _____ RGE _____

APPLICATION TYPE: INJECTION

DEPTH: _____ 6" HA: _____ CM3: _____

N

SEPT 16

BST

27 ACRES

269,896 GALLONS. 15.4 ACRES

SEPT 17

LRAR

307,597 GALLONS.

SEPT 19 BST

380,671 GALLONS.

39 ACRES

LRAR

7.6 ACRES

101,811 GALLONS.

SEPT 16

SEPT 30

LRAR

98,765 GALLONS

8.0

ACRES.

SEPT 30

BST

180,558 GALLONS.

14.1 ACRES

LRAR

SEPT 19

287,298 GALLONS.

21.36 ACRES.

SEPT 17

BST

286,341 GALLONS.

28.35 ACRES.

YARD

VANSTONE
SE 1-13-7

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order	: WP2420885	Page	: 1 of 4
Client	: City of Portage la Prairie	Laboratory	: ALS Environmental - Winnipeg
Contact	: Aaron Stechesen	Account Manager	: Judy Dalmajér
Address	: 97 Saskatchewan Avenue East Portage la Prairie MB Canada R1N 0L8 204 239 8361	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg MB Canada R2J 3T4
Telephone		Telephone	: +1 204 255 9720
Project	: Wastewater	Date Samples Received	: 28-Aug-2024 14:03
PO	: W24024	Date Analysis Commenced	: 30-Aug-2024
C-O-C number	: —	Issue Date	: 10-Sep-2024 08:50
Sampler	: —		
Site	: Wastewater		
Quote number	: 2024 Wastewater_V2		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Colby Bingham	Laboratory Supervisor	Inorganics, Saskatoon, Saskatchewan
Feby Gigi	Lab Assistant	Sask Soils, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Jeremy Greuel	Laboratory Assistant	Sask Soils, Saskatoon, Saskatchewan
Milad Khani	Laboratory Analyst	Sask Soils, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory Assistant	Sask Soils, Saskatoon, Saskatchewan
Walt Kippenhuck	Supervisor - Inorganic	Metals, Waterloo, Ontario

Page : 2 of 4
Work Order : WP2420885
Client : City of Portage la Prairie
Project : Wastewater



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	Description
%	percent
°C	degrees celsius
mg/kg	milligrams per kilogram
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



Analytical Results

Sub-Matrix: Soil					Client sample ID		24-08-35	24-08-36	24-08-37	---	---
(Matrix: Soil/Solid)					Client sampling date / time		28-Aug-2024 10:00	28-Aug-2024 10:00	28-Aug-2024 10:00	---	---
Analyte	CAS Number	Method/Lab	LOR	Unit	WP2420885-001	WP2420885-002	WP2420885-003	---	---	---	---
Sample Preparation					Result	Result	Result	---	---	---	---
Temperature, oven	---	EPP441/SK	1	°C	---	<38	---	---	---	---	---
Physical Tests											
Atterberg plastic limit [PL] (moisture)	---	E199/SK	1.0	%	---	---	24.1	---	---	---	---
pH (1:2 soil:water)	---	E108/SK	0.10	pH units	8.06	---	---	---	---	---	---
Atterberg liquid limit [LL] (moisture)	---	E199/SK	1.0	%	---	---	48.8	---	---	---	---
Atterberg plasticity index [PI]	---	E199/SK	1.0	%	---	---	24.7	---	---	---	---
Anions and Nutrients											
Nitrogen, total	7727-37-9	E366/SK	200	mg/kg	---	1810	---	---	---	---	---
Plant Available Nutrients											
Ammonium, available (as N)	14798-03-9	E312A/SK	1.0	mg/kg	---	8.9	---	---	---	---	---
Nitrate + Nitrite, available (as N)	---	E269.N+N/SK	1.0	mg/kg	---	4.5	---	---	---	---	---
Nitrate + Nitrite, available (as N)	---	E269A.N+N/SK	2.0	mg/kg	---	4.0	---	---	---	---	---
Nitrate, available (as N)	14797-55-8	EC269.NO3/SK	2.0	mg/kg	---	4.5	---	---	---	---	---
Nitrite, available (as N)	14797-65-0	E269.NO2/SK	0.40	mg/kg	---	<0.40	---	---	---	---	---
Nitrogen, total available	7727-37-9	EC269A.N/SK	2.2	mg/kg	---	12.9	---	---	---	---	---
Phosphate, available (as P)	14265-44-2	E385/SK	1.0	mg/kg	14.4	---	---	---	---	---	---
Metals											
Cadmium	7440-43-9	E440/WT	0.020	mg/kg	0.502	---	---	---	---	---	---
Chromium	7440-47-3	E440/WT	0.50	mg/kg	20.4	---	---	---	---	---	---
Copper	7440-50-8	E440/WT	0.50	mg/kg	17.7	---	---	---	---	---	---
Lead	7439-92-1	E440/WT	0.50	mg/kg	10.1	---	---	---	---	---	---
Mercury	7439-97-6	E510/WT	0.0050	mg/kg	0.0310	---	---	---	---	---	---
Nickel	7440-02-0	E440/WT	0.50	mg/kg	22.2	---	---	---	---	---	---
Phosphorus	7723-14-0	E440/WT	50	mg/kg	881	---	---	---	---	---	---
Potassium	7440-09-7	E440/WT	100	mg/kg	2410	---	---	---	---	---	---
Zinc	7440-66-6	E440/WT	2.0	mg/kg	82.3	---	---	---	---	---	---

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Work Order : WP2420885
Client : City of Portage la Prairie
Project : Wastewater



Please refer to the General Comments section for an explanation of any result qualifiers detected.
Please refer to the Accreditation section for an explanation of analyte accreditations.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: WP2420885	Page	: 1 of 8
Client	: City of Portage la Prairie	Laboratory	: ALS Environmental - Winnipeg
Contact	: Aaron Stechesen	Account Manager	: Judy Dalmajer
Address	: 97 Saskatchewan Avenue East Portage la Prairie MB Canada R1N 0L8	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: 204 239 8361	Telephone	: +1 204 255 9720
Project	: Wastewater	Date Samples Received	: 28-Aug-2024 14:03
PO	: W24024	Issue Date	: 10-Sep-2024 08:50
C-O-C number	: ---		
Sampler	: ---		
Site	: Wastewater		
Quote number	: 2024 Wastewater_V2		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "—" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers**Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Page : 3 of 8
 Work Order : WP2420885
 Client : City of Portage la Prairie
 Project : Wastewater



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Soil/Solid Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Matrix: Soil/Solid	Evaluation: - = Holding time Exceedance : - With Holding											
Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Eval	Analysis				
			Preparation Date	Holding Times		Analysis Date		Holding Times		Eval		
				Rec	Actual			Rec	Actual			
Anions and Nutrients : Total Nitrogen by Combustion												
LDPE bag 24-08-36	E366	28-Aug-2024	31-Aug-2024	28 days	3 days	✓	31-Aug-2024	28 days	3 days	✓		
Metals : Mercury in Soil/Solid by CVAAS												
LDPE bag 24-08-35	E510	28-Aug-2024	04-Sep-2024	28 days	8 days	✓	05-Sep-2024	28 days	8 days	✓		
Metals : Metals in Soil/Solid by CRC ICPMS												
LDPE bag 24-08-35	E440	28-Aug-2024	04-Sep-2024	180 days	8 days	✓	05-Sep-2024	180 days	8 days	✓		
Physical Tests : Atterberg Limits												
LDPE bag 24-08-37	E199	28-Aug-2024	---	---	---		03-Sep-2024	180 days	6 days	✓		
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)												
LDPE bag 24-08-35	E108	28-Aug-2024	03-Sep-2024	30 days	6 days	✓	03-Sep-2024	30 days	6 days	✓		
Plant Available Nutrients : Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)												
LDPE bag 24-08-36	E312A	28-Aug-2024	03-Sep-2024	---	---		03-Sep-2024	0 days	0 days	✓		
Plant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)												
LDPE bag 24-08-36	E269.N+N	28-Aug-2024	03-Sep-2024	180 days	6 days	✓	03-Sep-2024	3 days	0 days	✓		

Page : 4 of 8
 Work Order : WP2420885
 Client : City of Portage la Prairie
 Project : Wastewater



Matrix: **Soil/Solid**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation					Eval	Analysis		
			Preparation Date	Holding Times		Analysis Date	Holding Times		Eval		
				Rec	Actual		Rec			Actual	
Plant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)											
LDPE bag 24-08-36	E269A.N+N	28-Aug-2024	03-Sep-2024	180 days	6 days	✔	04-Sep-2024	3 days	1 days	✔	
Plant Available Nutrients : Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)											
LDPE bag 24-08-36	E269.NO2	28-Aug-2024	03-Sep-2024	180 days	6 days	✔	03-Sep-2024	3 days	0 days	✔	
Plant Available Nutrients : Available Phosphorus by Colourimetry (Olsen)											
LDPE bag 24-08-35	E385	28-Aug-2024	03-Sep-2024	—	—		03-Sep-2024	0 days	0 days	✔	
Sample Preparation : Dry and Grind in Soil/Solid <38°C											
LDPE bag 24-08-36	EPP441	28-Aug-2024	30-Aug-2024	—	—		---	3 days	2 days	✔	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

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 Work Order : WP2420885
 Client : City of Portage la Prairie
 Project : Wastewater



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Matrix: Soil/Solid			Evaluation: QC Frequency Outside Specification: QC Frequency Within Specification				
Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Atterberg Limits	E199	1629598	1	1	100.0	5.0	✓
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	1628980	1	18	5.5	5.0	✓
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N	1628972	1	20	5.0	5.0	✓
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	1628979	1	1	100.0	5.0	✓
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	1628973	1	3	33.3	5.0	✓
Available Phosphorus by Colourimetry (Olsen)	E385	1628993	1	5	20.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1627576	1	1	100.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1627575	1	5	20.0	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1628935	1	20	5.0	5.0	✓
Total Nitrogen by Combustion	E366	1627853	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Atterberg Limits	E199	1629598	1	1	100.0	5.0	✓
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	1628980	2	18	11.1	10.0	✓
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N	1628972	2	20	10.0	10.0	✓
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	1628979	2	1	200.0	10.0	✓
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	1628973	2	3	66.6	10.0	✓
Available Phosphorus by Colourimetry (Olsen)	E385	1628993	2	5	40.0	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	1627576	2	1	200.0	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1627575	2	5	40.0	10.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1628935	2	20	10.0	10.0	✓
Total Nitrogen by Combustion	E366	1627853	2	16	12.5	10.0	✓
Method Blanks (MB)							
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	1628980	1	18	5.5	5.0	✓
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N	1628972	1	20	5.0	5.0	✓
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	1628979	1	1	100.0	5.0	✓
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	1628973	1	3	33.3	5.0	✓
Available Phosphorus by Colourimetry (Olsen)	E385	1628993	1	5	20.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1627576	1	1	100.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1627575	1	5	20.0	5.0	✓
Total Nitrogen by Combustion	E366	1627853	1	16	6.2	5.0	✓



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Description
pH by Meter (1:2 Soil:Water Extraction)	E108 ALS Environmental - Saskatoon	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally $20 \pm 5^{\circ}\text{C}$), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at $<60^{\circ}\text{C}$) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Atterberg Limits	E199 ALS Environmental - Saskatoon	Soil/Solid	CSSS Ch. 58 (mod)	Atterberg Limits are measures of physical properties of fine grained soils. Liquid Limit (LL) is the water content where soil behaviour changes from plastic to liquid, and is determined by Casagrande cup. Plastic Limit (PL) is the water content where soil begins to exhibit plastic behaviour, and is measured as the moisture content of a 3 mm diameter thread of soil which begins to crumble when rolled. Plasticity Index (PI) is equal to $LL - PL$.
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N ALS Environmental - Saskatoon	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Plant available nitrate and nitrite are analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2 ALS Environmental - Saskatoon	Soil/Solid	Alberta Agriculture/APHA 4500-NO2 B (mod)	Plant available nitrite is analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 6.2/APHA 4500-NO3 I (mod)	Plant available nitrate and nitrite is analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 2N potassium chloride, then shaken well and filtered prior to analysis.
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 6.2/Comm Soil Sci 19(6) (mod)	Plant available ammonium is analyzed by colourimetry on a soil sample extract that has been extracted using 2N Potassium Chloride, then shaken well and filtered prior to analysis.
Total Nitrogen by Combustion	E366 ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 22.4	The sample is ignited in a combustion analyzer where nitrogen in the reduced nitrous oxide gas is determined using a thermal conductivity detector.
Available Phosphorus by Colourimetry (Olsen)	E385 ALS Environmental - Saskatoon	Soil/Solid	Carter CSSS (2008) 8.3	Plant available phosphorus is extracted from air dried soil using a fixed ratio bicarbonate extraction. Phosphorus is determined by colorimetry.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Metals in Soil/Solid by CRC ICPMS	E440 ALS Environmental - Waterloo	Soil/Solid	EPA 6020B (mod)	<p>This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO₃ and HCl.</p> <p>Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines.</p> <p>Analysis is by Collision/Reaction Cell ICPMS.</p>
Mercury in Soil/Solid by CVAAS	E510 ALS Environmental - Waterloo	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO ₃ and HCl, followed by CVAAS analysis.
Available Nitrate by Difference (0.01M Calcium Chloride Ext.)	EC269.NO3 ALS Environmental - Saskatoon	Soil/Solid	Alberta Agriculture/APHA 4500-NO ₃ I (mod)	Available Nitrate is determined by difference between Nitrate+Nitrite-N and Nitrite-N. A soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Total Available Nitrogen (Calculation)	EC269A.N ALS Environmental - Saskatoon	Soil/Solid	Calculation	Total available nitrogen is calculated as the sum of NO ₂ -N+NO ₃ -N and NH ₃ -N extracted from soil using 2N potassium chloride solution.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 ALS Environmental - Saskatoon	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Fixed ratio 0.01M Calcium Chloride extraction for plant available nutrients	EP269 ALS Environmental - Saskatoon	Soil/Solid	Alberta Agriculture	Plant available nutrients (N&S) extracted using 0.01M calcium chloride, then shaken well and filtered prior to analysis.
2N Potassium Chloride extraction for available nutrients	EP269A ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 6.2	A soil sample extract is generated by fixed ratio extraction using 2N Potassium Chloride, then shaken well and filtered prior to analysis.
Bicarbonate extraction for soil	EP365 ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 6.2	Plant available phosphorus is extracted using fixed ratio sodium bicarbonate solution (Olsen method).
Digestion for Metals and Mercury	EP440 ALS Environmental - Waterloo	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO ₃ and HCl. This method is intended to liberate metals that may be environmentally available.

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dry and Grind in Soil/Solid <38°C	EPP441 ALS Environmental - Saskatoon	Soil/Solid	Soil Sampling and Methods of Analysis, Carter 2008	After removal of coarse fragments a portion of homogenized sample is set in a tray and dried at less than 38°C until dry. The sample is then particle size reduced with an automated crusher or mortar and pestle, typically to <2 mm. Further size reduction may be needed for particular tests.
Dry and Grind in Soil/Solid <60°C	EPP442 ALS Environmental - Saskatoon	Soil/Solid	Soil Sampling and Methods of Analysis, Carter 2008	After removal of any coarse fragments and reservation of wet subsamples a portion of homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is then particle size reduced with an automated crusher or mortar and pestle, typically to <2 mm. Further size reduction may be needed for particular tests.

QUALITY CONTROL REPORT

Work Order	: WP2420885	Page	: 1 of 6
Client	: City of Portage la Prairie	Laboratory	: ALS Environmental - Winnipeg
Contact	: Aaron Stechesen	Account Manager	: Judy Dalmaier
Address	: 97 Saskatchewan Avenue East Portage la Prairie MB Canada R1N 0L8	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: 204 239 8361	Telephone	: +1 204 255 9720
Project	: Wastewater	Date Samples Received	: 28-Aug-2024 14:03
PO	: W24024	Date Analysis Commenced	: 30-Aug-2024
C-O-C number	: —	Issue Date	: 10-Sep-2024 08:53
Sampler	: —		
Site	: Wastewater		
Quote number	: 2024 Wastewater_V2		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Colby Bingham	Laboratory Supervisor	Saskatoon Inorganics, Saskatoon, Saskatchewan
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Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan
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Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario

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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "—" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

Sub-Matrix: Soil/Solid					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1628935)											
EO2407426-001	Anonymous	pH (1:2 soil:water)	—	E108	0.10	pH units	6.76	6.71	0.742%	10%	—
Physical Tests (QC Lot: 1629598)											
WP2420885-003	24-08-37	Atterberg liquid limit [LL] (moisture)	—	E199	1.0	%	48.8	48.4	0.774%	20%	—
		Atterberg plastic limit [PL] (moisture)	—	E199	1.0	%	24.1	24.3	0.849%	20%	—
Anions and Nutrients (QC Lot: 1627853)											
VA24C1853-001	Anonymous	Nitrogen, total	7727-37-9	E368	0.020	%	2.67	2.67	0.117%	20%	—
Plant Available Nutrients (QC Lot: 1628972)											
WP2420418-001	Anonymous	Nitrate + Nitrite, available (as N)	—	E269.N+N	1.0	mg/kg	<1.0	<1.0	0.003	Diff <2x LOR	—
Plant Available Nutrients (QC Lot: 1628973)											
WP2420418-001	Anonymous	Nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg	<0.40	<0.40	0.001	Diff <2x LOR	—
Plant Available Nutrients (QC Lot: 1628979)											
YL2401275-001	Anonymous	Nitrate + Nitrite, available (as N)	—	E269A.N+N	194	mg/kg	<193	<194	0	Diff <2x LOR	—
Plant Available Nutrients (QC Lot: 1628980)											
YL2401275-001	Anonymous	Ammonium, available (as N)	14798-03-9	E312A	96.8	mg/kg	<96.5	<96.8	96.8	Diff <2x LOR	—
Plant Available Nutrients (QC Lot: 1628993)											
WP2420553-001	Anonymous	Phosphate, available (as P)	14265-44-2	E385	1.0	mg/kg	1.9	2.5	0.6	Diff <2x LOR	—
Metals (QC Lot: 1627575)											
WP2420885-001	24-08-35	Cadmium	7440-43-9	E440	0.020	mg/kg	0.502	0.488	2.85%	30%	—
		Chromium	7440-47-3	E440	0.50	mg/kg	20.4	19.6	4.10%	30%	—
		Copper	7440-50-8	E440	0.50	mg/kg	17.7	17.4	1.87%	30%	—
		Lead	7439-92-1	E440	0.50	mg/kg	10.1	9.82	2.69%	40%	—
		Nickel	7440-02-0	E440	0.50	mg/kg	22.2	21.5	3.37%	30%	—
		Phosphorus	7723-14-0	E440	50	mg/kg	881	845	4.13%	30%	—
		Potassium	7440-09-7	E440	100	mg/kg	2410	2300	4.70%	40%	—
		Zinc	7440-66-6	E440	2.0	mg/kg	82.3	79.8	3.12%	30%	—
Metals (QC Lot: 1627576)											
WP2420885-001	24-08-35	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0310	0.0310	0.0451%	40%	—

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 1627853)						
Nitrogen, total	7727-37-9	E366	0.02	%	<0.020	—
Plant Available Nutrients (QCLot: 1628972)						
Nitrate + Nitrite, available (as N)	—	E269 N+N	1	mg/kg	<1.0	—
Plant Available Nutrients (QCLot: 1628973)						
Nitrite, available (as N)	14797-85-0	E269 NO2	0.4	mg/kg	<0.40	—
Plant Available Nutrients (QCLot: 1628979)						
Nitrate + Nitrite, available (as N)	—	E269A,N+N	2	mg/kg	<2.0	—
Plant Available Nutrients (QCLot: 1628980)						
Ammonium, available (as N)	14796-03-9	E312A	1	mg/kg	<1.0	—
Plant Available Nutrients (QCLot: 1628993)						
Phosphate, available (as P)	14265-44-2	E385	1	mg/kg	<1.0	—
Metals (QCLot: 1627575)						
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	—
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	—
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	—
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	—
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	—
Phosphorus	7723-14-0	E440	50	mg/kg	<50	—
Potassium	7440-09-7	E440	100	mg/kg	<100	—
Zinc	7440-66-6	E440	2	mg/kg	<2.0	—
Metals (QCLot: 1627576)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	—

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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soli/Solid**

Results are expressed as Percent Recovery, and are used to monitor and control method accuracy and precision; independent of test sample matrix.

Sub-Matrix: Soil/Solid

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1628935)									
pH (1:2 soil:water)	---	E108	---	pH units	7 pH units	101	97.0	103	---
Anions and Nutrients (QCLot: 1627853)									
Nitrogen, total	7727-37-9	E366	0.02	%	22.4 %	98.7	90.0	110	---
Plant Available Nutrients (QCLot: 1628972)									
Nitrate + Nitrite, available (as N)	---	E269.N+N	1	mg/kg	40 mg/kg	116	70.0	130	---
Plant Available Nutrients (QCLot: 1628973)									
Nitrite, available (as N)	14797-65-0	E269.NO2	0.4	mg/kg	20 mg/kg	99.7	70.0	130	---
Plant Available Nutrients (QCLot: 1628979)									
Nitrate + Nitrite, available (as N)	---	E269A.N+N	2	mg/kg	40 mg/kg	105	70.0	130	---
Plant Available Nutrients (QCLot: 1628980)									
Ammonium, available (as N)	14798-03-9	E312A	1	mg/kg	10 mg/kg	103	80.0	120	---
Plant Available Nutrients (QCLot: 1628993)									
Phosphate, available (as P)	14265-44-2	E385	1	mg/kg	20 mg/kg	105	80.0	120	---
Metals (QCLot: 1627575)									
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	109	80.0	120	---
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	104	80.0	120	---
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	104	80.0	120	---
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	105	80.0	120	---
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	104	80.0	120	---
Phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	112	80.0	120	---
Potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	103	80.0	120	---
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	100	80.0	120	---
Metals (QCLot: 1627576)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	110	80.0	120	---

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Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

Sub-Matrix:					Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method			Low	High	
Physical Tests (QCLot: 1628935)									
QC-1628935-002	RM	pH (1:2 soil:water)	---	E108	7.78 pH units	101	96.0	104	---
Physical Tests (QCLot: 1629598)									
QC-1629598-001	RM	Atterberg liquid limit [LL] (moisture)	---	E199	33.7 %	102	80.0	120	---
QC-1629598-001	RM	Atterberg plastic limit [PL] (moisture)	---	E199	20 %	97.7	80.0	120	---
Anions and Nutrients (QCLot: 1627853)									
QC-1627853-003	RM	Nitrogen, total	7727-37-9	E366	0.11 %	91.1	80.0	120	---
Plant Available Nutrients (QCLot: 1628972)									
QC-1628972-003	RM	Nitrate + Nitrite, available (as N)	---	E269.N+N	11.3 mg/kg	113	70.0	130	---
Plant Available Nutrients (QCLot: 1628973)									
QC-1628973-003	RM	Nitrite, available (as N)	14797-65-0	E269.NO2	0.1 mg/kg	93.9	0	570	---
Plant Available Nutrients (QCLot: 1628979)									
QC-1628979-003	RM	Nitrate + Nitrite, available (as N)	---	E269A.N+N	11.1 mg/kg	98.3	70.0	130	---
Plant Available Nutrients (QCLot: 1628980)									
QC-1628980-003	RM	Ammonium, available (as N)	14798-03-9	E312A	70.1 mg/kg	106	80.0	120	---
Plant Available Nutrients (QCLot: 1628993)									
QC-1628993-003	RM	Phosphate, available (as P)	14265-44-2	E385	15.3 mg/kg	107	80.0	120	---
Metals (QCLot: 1627575)									
QC-1627575-003	RM	Cadmium	7440-43-9	E440	2.15 mg/kg	105	70.0	130	---
QC-1627575-003	RM	Chromium	7440-47-3	E440	56.9 mg/kg	100	70.0	130	---
QC-1627575-003	RM	Copper	7440-50-8	E440	96.9 mg/kg	101	70.0	130	---
QC-1627575-003	RM	Lead	7439-92-1	E440	919 mg/kg	97.4	70.0	130	---
QC-1627575-003	RM	Nickel	7440-02-0	E440	1000 mg/kg	103	70.0	130	---
QC-1627575-003	RM	Phosphorus	7723-14-0	E440	880 mg/kg	101	70.0	130	---
QC-1627575-003	RM	Potassium	7440-09-7	E440	10800 mg/kg	96.0	70.0	130	---
QC-1627575-003	RM	Zinc	7440-66-6	E440	828 mg/kg	99.5	70.0	130	---
Metals (QCLot: 1627576)									
QC-1627576-003	RM	Mercury	7439-97-6	E510	0.068 mg/kg	106	70.0	130	---



COC Number: 22 -

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Canada Toll Free: 1 800 858 9878

0182420835

Report To: Contact and company name below will appear on the final report Company: City of Portage La Prairie Address: Avenue Bleckstein 1-234-236-5321 Phone:		Report Form: <input type="checkbox"/> RFP <input type="checkbox"/> BCR <input type="checkbox"/> R001 (R001) <input type="checkbox"/> R002 (R002) <input type="checkbox"/> R003 (R003) <input type="checkbox"/> R004 (R004) <input type="checkbox"/> R005 (R005) <input type="checkbox"/> R006 (R006) <input type="checkbox"/> R007 (R007) <input type="checkbox"/> R008 (R008) <input type="checkbox"/> R009 (R009) <input type="checkbox"/> R010 (R010) <input type="checkbox"/> R011 (R011) <input type="checkbox"/> R012 (R012) <input type="checkbox"/> R013 (R013) <input type="checkbox"/> R014 (R014) <input type="checkbox"/> R015 (R015) <input type="checkbox"/> R016 (R016) <input type="checkbox"/> R017 (R017) <input type="checkbox"/> R018 (R018) <input type="checkbox"/> R019 (R019) <input type="checkbox"/> R020 (R020) <input type="checkbox"/> R021 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RETURN TO BACK PRICE FOR ALL LOCATIONS AND SAMPLING INFORMATION

Sample intake

Client: City Portage La Prairie COC receipt info complete ☒

Expirat TAT: no Yes: 1 day 2 day 3 days 4 days 5 days

Short hold time? no 24 hrs 1 day 2 days 3 days 4 days 5 days

Water no Air no Food/micro no Other no

Source: Water

Yield number of bottles/fractions: 1

Green/white no Yellow/white no Purple/white no Black/white no Brown/white no Pink/white no Grey/white no Light blue/white no Other (specify) no

Comment: 170C

Sample Log In

Receipt window ✓/X Bottles ✓/X R/A

Cell function, metric and substrate ✓/X All received bottles have IDs ✓/X N/A

Check, diff, count, quality, target ✓/X Type volume and location ✓/X N/A

Receipt time/date, no. bottles, etc ✓/X Label and internal COC printed ✓/X N/A

Temp, cooling method, transfer ✓/X Client Contact ✓/X N/A

Sample info ✓/X Report types/formats ✓/X N/A

Sample description ✓/X Post-confirmation ✓/X N/A

Scan time ✓/X Billing information entered ✓/X N/A

Adherent sample/no information ✓/X Action required? ✓/X N/A

COG/OD/Client due dates/meth ✓/X Update default report data ✓/X N/A

Receipt TAT (hours) ✓/X Add sampling item to queue ✓/X N/A

Check naming for all samples ✓/X SIF initiated (add note in comments) ✓/X N/A

Comments: no

Delta Ag Services
City of Portage
MacDonald SE 1-13-7



● Soils SE 1-13-7 - 152.5 Ac
GridPoints
Boundary - 152.5 Ac
Clay Test - 1.5 Ac

Clay Test Site 1,2 & 3 had no
detectable water
table at the 1.5 m depth.

Delta Ag
SERVICES

LETTER OF AGREEMENT

Ms. Karly Friesen
Director of Utility
City of Portage la Prairie
97 Saskatchewan Ave. E.
Portage la Prairie, MB
R1N 0L8



Dear Land Owner:

I hereby agree to permit the City of Portage la Prairie to apply wastewater treatment residual biosolids to the land, which I own as described below, on the understanding that:

1. The biosolids will be injected approximately 15 cm below the surface.
2. The biosolids will be injected to a maximum rate of 10 dry tonnes per hectare. (Maximum allowable over a 4-year period.)
3. Application will occur in the 2024 crop year, or as otherwise indicated.
4. Biosolids application will not be closer than 300 meters to a dwelling not belonging to the owner or lessee of the land on which biosolids are applied.
5. Biosolids will not be applied within 15 meters of a ditch draining less than one section and 30 meters from drains serving a larger watershed.
6. All roadways, access roads, and ditches will be repaired to the original condition upon completion of the application program, to the satisfaction of the City, municipality and the landowner.
7. The City makes no warranties or representations as to the fertilizer content nor any soil conditioning effect of the biosolids.
8. The City will determine background levels of nutrients, heavy metals, pH, and clay depth prior to the application of biosolids. This information will be provided to the landowner.
9. The City will assess the biosolids quality prior to the application program and will monitor it throughout the program. Test results will be provided to the landowner.
10. Temporary halting of the application due to wet field conditions will occur upon mutual agreement between representatives of the City, contractor and landowner.
11. Biosolids may be injected at a maximum rate of addition of plant-available nitrogen of 100 kilograms per hectare.
12. The cumulative mass per hectare of each heavy metal in the soil does not exceed the respective value stipulated in the City's Environment Act License, and that not more than one-third of the initial maximum addition of each heavy metal will be applied in this year's program.
13. The City will restore the field to a condition similar that as found prior to the application program.

LETTER OF AGREEMENT

I, on my part, agree to:

- a) Plant a cereal, oilseed, forage, field pea, or lentil crop at the beginning of the next growing season. Only these listed crops will be grown for three growing seasons following biosolids application. A crop will not be grown that is a vegetable or a fruit and livestock will not be allowed to graze for three growing seasons after biosolids application on the land.
- b) Provide crop information to the City on an annual basis.
- c) Consider the soil and biosolids test results prior to applying nitrogen fertilizer in the growing season following biosolids application and restrict the addition of plant-available nitrogen to a maximum of 100 kg/ha, including that derived from the application of biosolids. Fertilizer, including that derived from biosolids, will be applied at the recommended agronomic rates.
- d) Release and discharge the City of Portage la Prairie of and from all claims, demands, actions or causes of actions which I have or may have as the result of the application of wastewater biosolids to my land.
- e) Provide the City with a letter of acceptance upon completion of the biosolids application indicating my acceptance of field conditions.
- f) Notify the lessee of the land (if applicable) of this agreement.

Joseph Gross
Land Owner Name

Joe Gross
Land Owner Signature

July 24 2024
Date

Karly Friesen
City Representative Name

[Signature]
City Representative Signature

July 23, 2024
Date

Land Location(s): W 28-12-8 46.00'

S 33-12-8 45'

2024 Bio-Solid Application Recording Sheet							
		Reference Sample Soil Material Criteria is SRM 1646a/SRM2709					
		See Appendix Section for Information					
Name of Land Owner		Westroc					
Legal Description		S 33-12-8					
Land Owner Authorization		Yes					
Dist. >300m from residences		Yes					
Map Enclosed		Yes					
Year Field previously Used							
GPS		Lat			Long		
		Date	Date	Date	Date	Date	Date
		BST 27/9/2024	BST 27/9/2024 lbs/ac	LRAR 27/9/2024	LRAR 27/9/2024 lbs/ac		Comments
Field Soil Analysis mg/kg 0-15 cm	Cadmium	0.373		0.373			
	Calcium						
	Chromium	34.1		34.1			
	Copper	25.6		25.6			
	Lead	11.1		11.1			
	Mercury	0.0295		0.0295			
	Nickel	32.7		32.7			
	pH	8.09		8.09			
	Phosphorus < 60 ug/g	573		573			
	Potassium	4520		4520			
	Soil Nitrate Nitrogen 0-60cm<100kg/ha	4.1		4.1			
	Zinc	86.6		86.6			
Bio-Solids Analysis mg/kg	Ammonia Nitrogen	507		186			
	Cadmium	0.01990		0.209			
	Chromium	0.617		1.55			
	Conductivity	4820		2640			
	Copper	9.04		1.02			
	Lead	0.2730		0.590			
	Mercury	0.00446		0.0006220			
	Nickel	0.717		2.37			
	Nitrate Nitrogen	0.400		0.400			
	Organic Nitrogen	1340		2490			
	pH	7.15		6.95			
	Potassium	369		421			
	Total Nitrogen	1850		2680			
	Total Phosphorus	260		187			
	Total Solids	23500		73400			
	Volatile Solids	16900		41200			
	Zinc	7.57		51.0			
Cumulative Results kg/Hectare	Cadmium < 2.88	0.671	0.599	0.672	0.600		
	Chromium < 216	61.382	54.76	61.386	54.77		
	Copper < 90	46.107	41.14	46.165	41.19		
	Lead < 90	19.981	17.83	19.983	17.83		
	Mercury < 0.9	0.053	0.05	0.053	0.05		
	Nickel < 90	58.862	52.52	58.867	52.52		
	Nutrient Appl. Rate PA-N<100/kg	97.39	86.89	93.86	83.74		
	Solids <10	2.998	2.67	9.376	8.37		
	Zinc < 270	155.880	139.07	155.880	139.07		
	Phosphorus	1032.179	920.89	1033.838	922.37		
Comments							

FALL OF 2074
CITY OF PORTAGE LA PRAIRIE
(WESTROCK COLONY)
ASSINIBOINE INJECTIONS LTD

BOX 160 177 NOTRE DAME AVE NOTRE DAME, MB R0G 1M0 PH: 204-248-2559 FAX: 204-248-2799

DAILY SLUDGE APPLICATION PLAN

DATE: _____

FARMERS NAME: _____

FIELD: SEC. _____ TWP _____ RGE _____

APPLICATION TYPE: INJECTION

DEPTH: 6" HA: _____ CM3: _____

N

SEPT 23

BST

250,884 GALLONS

25.47 ACRES.

SEPT 23

LRAR

243,915 GALLONS

18 ACRES.

FALL OF 2074
CITY OF PORTAGE LA PRAIRIE
(WESTROCK COLONY)
ASSINIBOINE INJECTIONS LTD

BOX 160 177 NOTRE DAME AVE NOTRE DAME, MB R0G 1M0 PH: 204-248-2559 FAX: 204-248-2799

DAILY SLUDGE APPLICATION PLAN

DATE: _____

FARMERS NAME: _____

FIELD: SEC. _____ TWP _____ RGE _____

APPLICATION TYPE: INJECTION

DEPTH: 6" HA: _____ CM3: _____

N

DATE	TYPE	GALLONS	ACRES
SEPT 24	LRAR	287,072	18.46
SEPT 23	BST	250,884	25.47
SEPT 23	LRAR	243,915	18
SEPT 24	BST	298,068	33

FALL of 2024
CITY OF PORTAGE LA PRAIRIE
(WESTROCK COLONY)
ASSINIBOINE INJECTIONS LTD

BOX 160 177 NOTRE DAME AVE NOTRE DAME, MB R0G 1M0 PH: 204-248-2559 FAX: 204-248-2799

DAILY SLUDGE APPLICATION PLAN

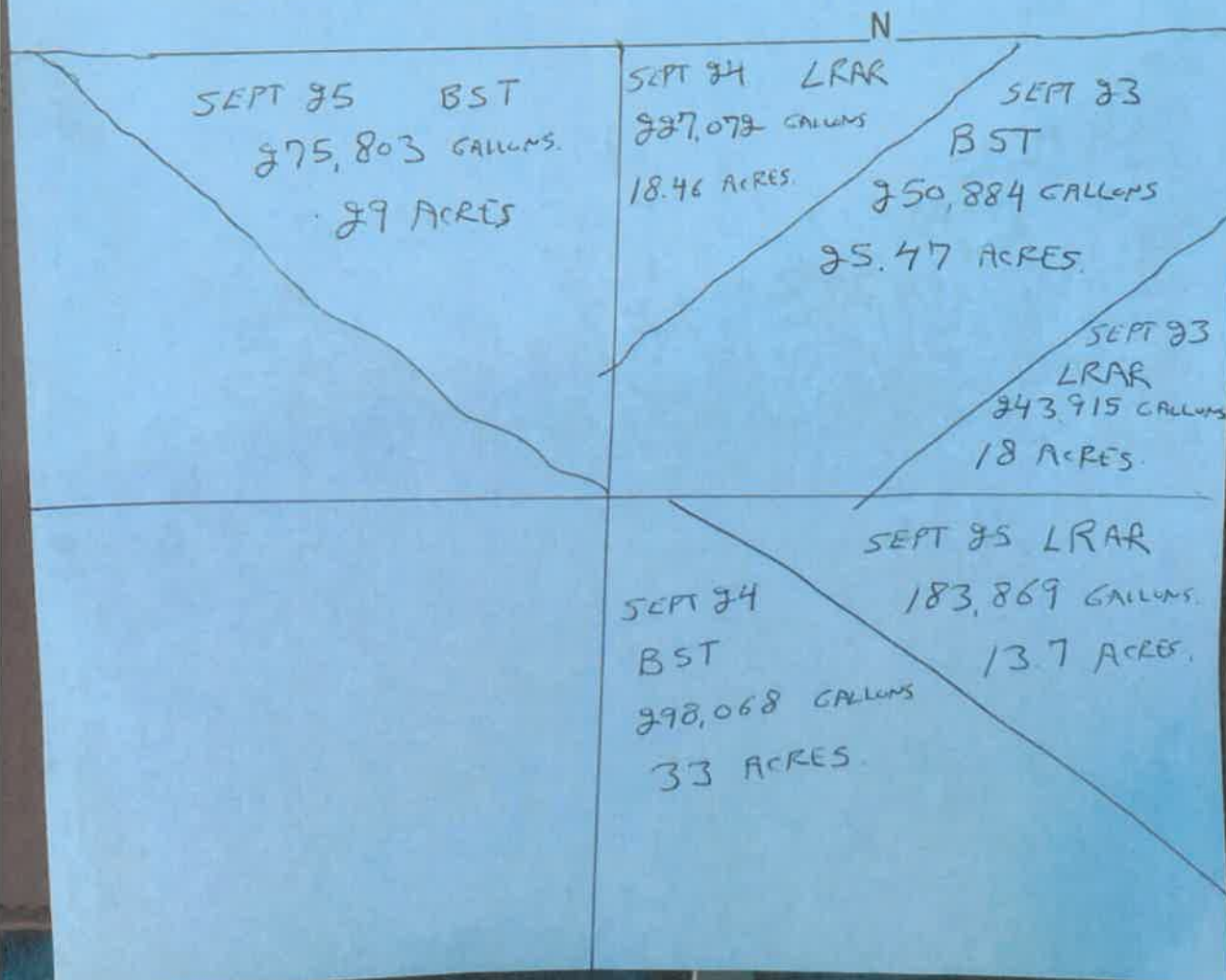
DATE: _____

FARMERS NAME: _____

FIELD: SEC. _____ TWP _____ RGE _____

APPLICATION TYPE: INJECTION

DEPTH: 6" HA: _____ CM3: _____



FALL OF 2074
CITY OF PORTAGE LA PRAIRIE
(WESTROCK COLONY)
ASSINIBOINE INJECTIONS LTD

BOX 180 177 NOTRE DAME AVE NOTRE DAME, MB R0G 1M0 PH: 204-248-2559 FAX: 204-248-2799

DAILY SLUDGE APPLICATION PLAN

DATE: _____

FARMERS NAME: _____

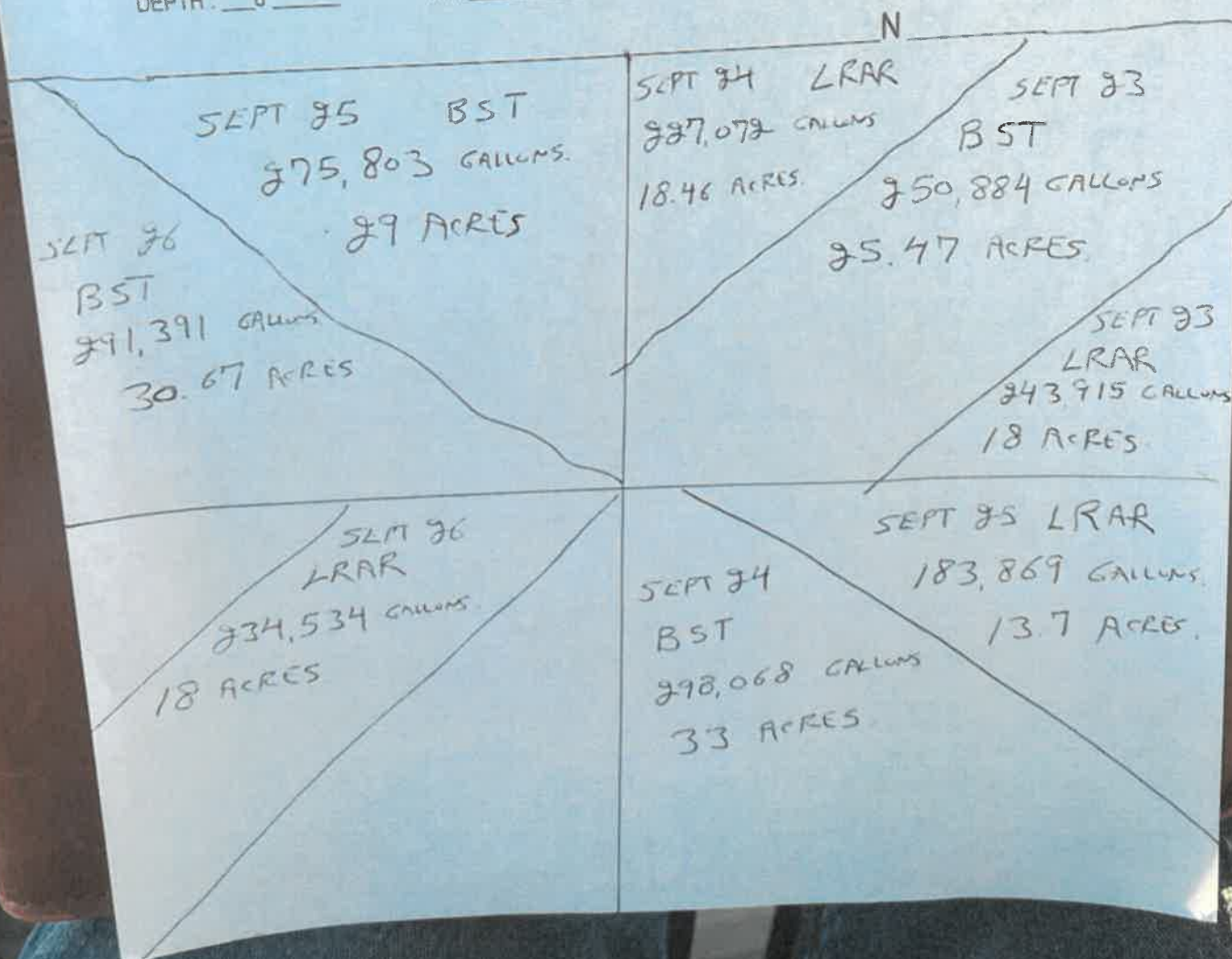
FIELD: SEC. _____ TWP _____ RGE _____

APPLICATION TYPE: INJECTION

DEPTH: 6"

HA: _____

CM3: _____



ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order	: SK2405002	Laboratory	: ALS Environmental - Saskatoon
Amendment	: 1	Account Manager	: Judy Dalmeijer
Client	: City of Portage la Prairie	Address	: 819 58 Street East
Contact	: Aaron Stechesen		: Saskatoon SK Canada S7K 6X5
Address	: 97 Saskatchewan Avenue East	Telephone	: +1 306 668 8370
	: Portage la Prairie Manitoba Canada R1N 0L8	Date Samples Received	: 12-Sep-2024 09:40
Telephone	: 204 239 8361	Date Analysis Commenced	: 12-Sep-2024
Project	: Wastewater	Issue Date	: 11-Oct-2024 13:09
PO	: W24024		
C-O-C number	: —		
Sampler	: Client		
Site	: Wastewater		
Quote number	: 2024 Wastewater		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Colby Bingham	Laboratory Supervisor	Sask Soils, Saskatoon, Saskatchewan
Colby Bingham	Laboratory Supervisor	Metals, Saskatoon, Saskatchewan
Colby Bingham	Laboratory Supervisor	Inorganics, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Sask Soils, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Milad Khani	Laboratory Analyst	Metals, Saskatoon, Saskatchewan
Milad Khani	Laboratory Analyst	Sask Soils, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory Assistant	Sask Soils, Saskatoon, Saskatchewan

Work Order : SK2405002 Amendment 1
Client : City of Portage la Prairie
Project : Wastewater



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	Description
mg/kg	milligrams per kilogram
°C	degrees celsius
pH units	pH units
%	percent

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Accreditation

Accreditation	Description	Laboratory	Address
A	CALA ISO/IEC 17025:2017	SK ALS Environmental - Saskatoon	819 58 Street East, Saskatoon, SK

Applicable accreditations are indicated in the Method/Lab/Accreditation column.

Work Order : SK2405002 Amendment 1
Client : City of Portage la Prairie
Project : Wastewater



Work Order : SK2405002 Amendment 1
Client : City of Portage la Prairie
Project : Wastewater



Analytical Results

Sub-Matrix: Soil

(Matrix: Soil/Solid)

Client sample ID

					24-09-11	24-09-12	24-09-13	---	---
Client sampling data / time					09-Sep-2024 14:15	09-Sep-2024 14:15	09-Sep-2024 14:15	---	---
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	SK2405002-001	SK2405002-002	SK2405002-003	---	---
					Result	Result	Result	---	---
Sample Preparation									
Temperature, oven	---	EPP441/SK	1	°C	---	<38	---	---	---
Physical Tests									
Atterberg plastic limit [PL] (moisture)	---	E199/SK A	1.0	%	---	---	28.7	---	---
pH (1:2 soil:water)	---	E108/SK A	0.10	pH units	8.09	---	---	---	---
Atterberg liquid limit [LL] (moisture)	---	E199/SK A	1.0	%	---	---	62.0	---	---
Atterberg plasticity index [PI]	---	E199/SK A	1.0	%	---	---	33.2	---	---
Anions and Nutrients									
Nitrogen, total	7727-37-9	E366/SK A	200	mg/kg	---	1730	---	---	---
Plant Available Nutrients									
Ammonium, available (as N)	14798-03-9	E312A/SK A	1.0	mg/kg	---	9.2	---	---	---
Nitrate + Nitrite, available (as N)	---	E269A.N+N/S K A	2.0	mg/kg	---	3.7	---	---	---
Nitrate + Nitrite, available (as N)	---	E269.N+N/SK A	1.0	mg/kg	---	4.1	---	---	---
Nitrate, available (as N)	14797-55-8	EC269.NO3/S K	2.0	mg/kg	---	4.1	---	---	---
Nitrite, available (as N)	14797-65-0	E269.NO2/SK A	0.40	mg/kg	---	<0.40	---	---	---
Nitrogen, total available	7727-37-9	EC269A.N/SK	2.2	mg/kg	---	12.9	---	---	---
Phosphate, available (as P)	14265-44-2	E385/SK A	1.0	mg/kg	9.3	---	---	---	---
Metals									
Cadmium	7440-43-9	E440/SK A	0.020	mg/kg	0.373	---	---	---	---
Chromium	7440-47-3	E440/SK A	0.50	mg/kg	34.1	---	---	---	---
Copper	7440-50-8	E440/SK A	0.50	mg/kg	25.6	---	---	---	---
Lead	7439-92-1	E440/SK A	0.50	mg/kg	11.1	---	---	---	---

Work Order : SK2405002 Amendment 1
Client : City of Portage la Prairie
Project : Wastewater



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID		24-09-11	24-09-12	24-09-13	---	---
					Client sampling date / time		09-Sep-2024 14:15	09-Sep-2024 14:15	09-Sep-2024 14:15	---	---
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	SK2405002-001		SK2405002-002	SK2405002-003	---	---	
					Result		Result	Result	---	---	
Metals											
Mercury	7439-97-6	E510/SK	A	0.0050	mg/kg	0.0295	---	---	---	---	---
Nickel	7440-02-0	E440/SK	A	0.50	mg/kg	32.7	---	---	---	---	---
Phosphorus	7723-14-0	E440/SK	A	50	mg/kg	573	---	---	---	---	---
Potassium	7440-09-7	E440/SK	A	100	mg/kg	4520	---	---	---	---	---
Zinc	7440-66-6	E440/SK	A	2.0	mg/kg	86.6	---	---	---	---	---

Please refer to the General Comments section for an explanation of any result qualifiers detected.
Please refer to the Accreditation section for an explanation of analyte accreditations.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order	:SK2405002	Page	: 1 of 8
Amendment	:1		
Client	City of Portage la Prairie	Laboratory	ALS Environmental - Saskatoon
Contact	Aaron Stechesen	Account Manager	Judy Dalmajer
Address	97 Saskatchewan Avenue East Portage la Prairie MB Canada R1N 0L8	Address	819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	204 239 8361	Telephone	: +1 306 668 8370
Project	Wastewater	Date Samples Received	12-Sep-2024 09:40
PO	W24024	Issue Date	11-Oct-2024 13:08
C-O-C number	---		
Sampler	Client		
Site	Wastewater		
Quote number	2024 Wastewater_V2		
No. of samples received	3		
No. of samples analysed	3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers**Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 Work Order : SK2405002 Amendment 1
 Client : City of Portage la Prairie
 Project : Wastewater



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Nitrogen by Combustion										
LDPE bag 24-09-12	E366	09-Sep-2024	13-Sep-2024	28 days	4 days	✓	13-Sep-2024	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
LDPE bag 24-09-11	E510	09-Sep-2024	18-Sep-2024	28 days	9 days	✓	18-Sep-2024	28 days	9 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag 24-09-11	E440	09-Sep-2024	18-Sep-2024	180 days	9 days	✓	18-Sep-2024	180 days	9 days	✓
Physical Tests : Atterberg Limits										
LDPE bag 24-09-13	E199	09-Sep-2024	---	---	---		16-Sep-2024	180 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
LDPE bag 24-09-11	E108	09-Sep-2024	17-Sep-2024	30 days	8 days	✓	17-Sep-2024	30 days	8 days	✓
Plant Available Nutrients : Available Ammonium by Colourimetry (2N Potassium Chloride Est.)										
LDPE bag 24-09-12	E312A	09-Sep-2024	17-Sep-2024	---	---		17-Sep-2024	0 days	0 days	✓
Plant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Est.)										
LDPE bag 24-09-12	E269.N+N	09-Sep-2024	16-Sep-2024	180 days	7 days	✓	17-Sep-2024	3 days	1 days	✓

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 Work Order : SK2405002 Amendment 1
 Client : City of Portage la Prairie
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Matrix: **Soil/Solid**

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation					Eval	Analysis			Eval
			Preparation Date	Holding Times		Analysis Date	Holding Times					
				Rec	Actual		Rec		Actual			
Plant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)												
LDPE bag 24-09-12	E269A.N+N	09-Sep-2024	17-Sep-2024	180 days	8 days	✓	17-Sep-2024	3 days	0 days	✓		
Plant Available Nutrients : Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)												
LDPE bag 24-09-12	E269.NO2	09-Sep-2024	16-Sep-2024	180 days	7 days	✓	17-Sep-2024	3 days	1 days	✓		
Plant Available Nutrients : Available Phosphorus by Colourimetry (Olsen)												
LDPE bag 24-09-11	E385	09-Sep-2024	17-Sep-2024	---	---		17-Sep-2024	0 days	0 days	✓		
Sample Preparation : Dry and Grind in Soil/Solid <38°C												
LDPE bag 24-09-12	EPP441	09-Sep-2024	13-Sep-2024	---	---		---	3 days	4 days	* EHTL		

Legend & Qualifier Definitions

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
 Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type		Count		Frequency (%)			Evaluation
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)							
Atterberg Limits	E199	1653235	1	4	25.0	5.0	✓
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	1653226	1	3	33.3	5.0	✓
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N	1653192	1	17	5.8	5.0	✓
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	1653225	1	2	50.0	5.0	✓
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	1653193	1	3	33.3	5.0	✓
Available Phosphorus by Colourimetry (Olsen)	E385	1654500	1	13	7.6	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1656586	1	9	11.1	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1656587	1	10	10.0	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1654447	1	11	9.0	5.0	✓
Total Nitrogen by Combustion	E366	1650244	1	3	33.3	5.0	✓
Laboratory Control Samples (LCS)							
Atterberg Limits	E199	1653235	1	4	25.0	5.0	✓
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	1653226	2	3	66.6	10.0	✓
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N	1653192	2	17	11.7	10.0	✓
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	1653225	2	2	100.0	10.0	✓
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	1653193	2	3	66.6	10.0	✓
Available Phosphorus by Colourimetry (Olsen)	E385	1654500	2	13	15.3	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	1656586	2	9	22.2	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1656587	2	10	20.0	10.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1654447	2	11	18.1	10.0	✓
Total Nitrogen by Combustion	E366	1650244	2	3	66.6	10.0	✓
Method Blanks (MB)							
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	1653226	1	3	33.3	5.0	✓
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N	1653192	1	17	5.8	5.0	✓
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	1653225	1	2	50.0	5.0	✓
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	1653193	1	3	33.3	5.0	✓
Available Phosphorus by Colourimetry (Olsen)	E385	1654500	1	13	7.6	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	1656586	1	9	11.1	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1656587	1	10	10.0	5.0	✓
Total Nitrogen by Combustion	E366	1650244	1	3	33.3	5.0	✓



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Description
pH by Meter (1:2 Soil:Water Extraction)	E108 ALS Environmental - Saskatoon	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Atterberg Limits	E199 ALS Environmental - Saskatoon	Soil/Solid	CSSS Ch. 58 (mod)	Atterberg Limits are measures of physical properties of fine grained soils. Liquid Limit (LL) is the water content where soil behaviour changes from plastic to liquid, and is determined by Casagrande cup. Plastic Limit (PL) is the water content where soil begins to exhibit plastic behaviour, and is measured as the moisture content of a 3 mm diameter thread of soil which begins to crumble when rolled. Plasticity Index (PI) is equal to LL - PL.
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N ALS Environmental - Saskatoon	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Plant available nitrate and nitrite are analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2 ALS Environmental - Saskatoon	Soil/Solid	Alberta Agriculture/APHA 4500-NO2 B (mod)	Plant available nitrite is analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 6.2/APHA 4500-NO3 I (mod)	Plant available nitrate and nitrite is analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 2N potassium chloride, then shaken well and filtered prior to analysis.
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 6.2/Comm Soil Sci 19(6) (mod)	Plant available ammonium is analyzed by colourimetry on a soil sample extract that has been extracted using 2N Potassium Chloride, then shaken well and filtered prior to analysis.
Total Nitrogen by Combustion	E366 ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 22.4	The sample is ignited in a combustion analyzer where nitrogen in the reduced nitrous oxide gas is determined using a thermal conductivity detector.
Available Phosphorus by Colourimetry (Olsen)	E385 ALS Environmental - Saskatoon	Soil/Solid	Carter CSSS (2008) 8.3	Plant available phosphorus is extracted from air dried soil using a fixed ratio bicarbonate extraction. Phosphorus is determined by colorimetry.

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 Client : City of Portage la Prairie
 Project : Wastewater



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Metals in Soil/Solid by CRC ICPMS	E440 ALS Environmental - Saskatoon	Soil/Solid	EPA 6020B (mod)	<p>This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO₃ and HCl.</p> <p>Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines.</p> <p>Analysis is by Collision/Reaction Cell ICPMS.</p>
Mercury in Soil/Solid by CVAAS	E510 ALS Environmental - Saskatoon	Soil/Solid	EPA 200.2/1631 Appendix (mod)	<p>Samples are dried, then sieved through a 2 mm sieve, and digested with HNO₃ and HCl, followed by CVAAS analysis.</p>
Available Nitrate by Difference (0.01M Calcium Chloride Ext.)	EC269.NO3 ALS Environmental - Saskatoon	Soil/Solid	Alberta Agriculture/APHA 4500-NO ₃ I (mod)	<p>Available Nitrate is determined by difference between Nitrate+Nitrite-N and Nitrite-N. A soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.</p>
Total Available Nitrogen (Calculation)	EC269A.N ALS Environmental - Saskatoon	Soil/Solid	Calculation	<p>Total available nitrogen is calculated as the sum of NO₂-N+NO₃-N and NH₃-N extracted from soil using 2N potassium chloride solution.</p>
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 ALS Environmental - Saskatoon	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	<p>The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.</p>
Fixed ratio 0.01M Calcium Chloride extraction for plant available nutrients	EP269 ALS Environmental - Saskatoon	Soil/Solid	Alberta Agriculture	<p>Plant available nutrients (N&S) extracted using 0.01M calcium chloride, then shaken well and filtered prior to analysis.</p>
2N Potassium Chloride extraction for available nutrients	EP269A ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 6.2	<p>A soil sample extract is generated by fixed ratio extraction using 2N Potassium Chloride, then shaken well and filtered prior to analysis.</p>
Bicarbonate extraction for soil	EP385 ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 8.2	<p>Plant available phosphorus is extracted using fixed ratio sodium bicarbonate solution (Olsen method).</p>
Digestion for Metals and Mercury	EP440 ALS Environmental - Saskatoon	Soil/Solid	EPA 200.2 (mod)	<p>Samples are dried, then sieved through a 2 mm sieve, and digested with HNO₃ and HCl. This method is intended to liberate metals that may be environmentally available.</p>

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dry and Grind in Soil/Solid <38°C	EPP441 ALS Environmental - Saskatoon	Soil/Solid	Soil Sampling and Methods of Analysis, Carter 2008	After removal of coarse fragments a portion of homogenized sample is set in a tray and dried at less than 38°C until dry. The sample is then particle size reduced with an automated crusher or mortar and pestle, typically to <2 mm. Further size reduction may be needed for particular tests.
Dry and Grind in Soil/Solid <60°C	EPP442 ALS Environmental - Saskatoon	Soil/Solid	Soil Sampling and Methods of Analysis, Carter 2008	After removal of any coarse fragments and reservation of wet subsamples a portion of homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is then particle size reduced with an automated crusher or mortar and pestle, typically to <2 mm. Further size reduction may be needed for particular tests.

QUALITY CONTROL REPORT

Work Order	SK2405002	Page	1 of 6
Amendment	1		
Client	City of Portage la Prairie	Laboratory	ALS Environmental - Saskatoon
Contact	Aaron Stechesen	Account Manager	Judy Dalmajier
Address	97 Saskatchewan Avenue East Portage la Prairie MB Canada R1N 0L8	Address	819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	204 239 8361	Telephone	+1 306 668 8370
Project	Wastewater	Date Samples Received	12-Sep-2024 09:40
PO	W24024	Date Analysis Commenced	12-Sep-2024
C-O-C number	—	Issue Date	11-Oct-2024 13:09
Sampler	Client		
Site	Wastewater		
Quote number	2024 Wastewater_V2		
No. of samples received	3		
No. of samples analysed	3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Colby Bingham	Laboratory Supervisor	Saskatoon Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Laboratory Supervisor	Saskatoon Metals, Saskatoon, Saskatchewan
Colby Bingham	Laboratory Supervisor	Saskatoon Sask Soils, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan
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Milad Khani	Laboratory Analyst	Saskatoon Metals, Saskatoon, Saskatchewan
Milad Khani	Laboratory Analyst	Saskatoon Sask Soils, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory Assistant	Saskatoon Sask Soils, Saskatoon, Saskatchewan

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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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 Work Order : SK2405002 Amendment 1
 Client : City of Portage la Prairie
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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1653235)											
SK2405002-003	24-09-13	Atterberg liquid limit [LL] (moisture)	---	E199	1.0	%	62.0	61.4	0.906%	20%	---
		Atterberg plastic limit [PL] (moisture)	---	E199	1.0	%	28.7	28.9	0.794%	20%	---
Physical Tests (QC Lot: 1654447)											
SK2405002-001	24-09-11	pH (1:2 soil:water)	---	E108	0.10	pH units	8.09	8.12	0.370%	10%	---
Anions and Nutrients (QC Lot: 1650244)											
SK2404932-001	Anonymous	Nitrogen, total	7727-37-9	E366	0.020	%	0.378	0.390	3.30%	20%	---
Plant Available Nutrients (QC Lot: 1653192)											
WP2421848-002	Anonymous	Nitrate + Nitrite, available (as N)	---	E269.N+N	5.0	mg/kg	9.7	9.1	0.6	Diff <2x LOR	---
Plant Available Nutrients (QC Lot: 1653193)											
WP2421848-002	Anonymous	Nitrite, available (as N)	14797-85-0	E269.NO2	2.02	mg/kg	<1.98	<2.02	0.04	Diff <2x LOR	---
Plant Available Nutrients (QC Lot: 1653225)											
SK2405002-002	24-09-12	Nitrate + Nitrite, available (as N)	---	E269A.N+N	2.0	mg/kg	3.7	3.6	0.1	Diff <2x LOR	---
Plant Available Nutrients (QC Lot: 1653226)											
SK2405002-002	24-09-12	Ammonium, available (as N)	14798-03-9	E312A	1.0	mg/kg	9.2	9.5	0.4	Diff <2x LOR	---
Plant Available Nutrients (QC Lot: 1654500)											
SK2404969-001	Anonymous	Phosphate, available (as P)	14265-44-2	E385	4.8	mg/kg	48.2	48.8	1.26%	30%	---
Metals (QC Lot: 1656586)											
SK2405002-001	24-09-11	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0295	0.0311	5.11%	40%	---
Metals (QC Lot: 1656587)											
SK2405002-001	24-09-11	Cadmium	7440-43-9	E440	0.020	mg/kg	0.373	0.410	9.35%	30%	---
		Chromium	7440-47-3	E440	0.50	mg/kg	34.1	35.0	2.39%	30%	---
		Copper	7440-50-8	E440	0.50	mg/kg	25.6	26.4	3.08%	30%	---
		Lead	7439-92-1	E440	0.50	mg/kg	11.1	11.5	4.02%	40%	---
		Nickel	7440-02-0	E440	0.50	mg/kg	32.7	32.9	0.528%	30%	---
		Phosphorus	7723-14-0	E440	50	mg/kg	573	595	3.79%	30%	---
		Potassium	7440-09-7	E440	100	mg/kg	4520	4660	2.92%	40%	---
		Zinc	7440-66-6	E440	2.0	mg/kg	86.6	89.5	3.26%	30%	---

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 Work Order : SK2405002 Amendment 1
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 Project : Wastewater



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 1650244)						
Nitrogen, total	7727-37-9	E366	0.02	%	<0.020	—
Plant Available Nutrients (QCLot: 1653192)						
Nitrate + Nitrite, available (as N)	—	E269.N+N	1	mg/kg	<1.0	—
Plant Available Nutrients (QCLot: 1653193)						
Nitrite, available (as N)	14797-65-0	E269.NO2	0.4	mg/kg	<0.40	—
Plant Available Nutrients (QCLot: 1653225)						
Nitrate + Nitrite, available (as N)	—	E269A.N+N	2	mg/kg	<2.0	—
Plant Available Nutrients (QCLot: 1653226)						
Ammonium, available (as N)	14798-03-9	E312A	1	mg/kg	<1.0	—
Plant Available Nutrients (QCLot: 1654500)						
Phosphate, available (as P)	14265-44-2	E385	1	mg/kg	<1.0	—
Metals (QCLot: 1656586)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	—
Metals (QCLot: 1656587)						
Cadmium	7440-43-8	E440	0.02	mg/kg	<0.020	—
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	—
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	—
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	—
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	—
Phosphorus	7723-14-0	E440	50	mg/kg	<50	—
Potassium	7440-09-7	E440	100	mg/kg	<100	—
Zinc	7440-66-6	E440	2	mg/kg	<2.0	—

Page : 5 of 6
 Work Order : SK2405002 Amendment 1
 Client : City of Portage la Prairie
 Project : Wastewater



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1654447)									
pH (1:2 soil:water)	---	E108	---	pH units	7 pH units	101	97.0	103	---
Anions and Nutrients (QCLot: 1650244)									
Nitrogen, total	7727-37-9	E366	0.02	%	22.4 %	100	90.0	110	---
Plant Available Nutrients (QCLot: 1653192)									
Nitrate + Nitrite, available (as N)	---	E269.N+N	1	mg/kg	40 mg/kg	105	70.0	130	---
Plant Available Nutrients (QCLot: 1653193)									
Nitrite, available (as N)	14797-65-0	E269.NO2	0.4	mg/kg	20 mg/kg	103	70.0	130	---
Plant Available Nutrients (QCLot: 1653225)									
Nitrate + Nitrite, available (as N)	---	E269A.N+N	2	mg/kg	40 mg/kg	99.7	70.0	130	---
Plant Available Nutrients (QCLot: 1653226)									
Ammonium, available (as N)	14798-03-9	E312A	1	mg/kg	10 mg/kg	104	80.0	120	---
Plant Available Nutrients (QCLot: 1654500)									
Phosphate, available (as P)	14265-44-2	E385	1	mg/kg	20 mg/kg	103	80.0	120	---
Metals (QCLot: 1656586)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	101	80.0	120	---
Metals (QCLot: 1656587)									
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	100	80.0	120	---
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	107	80.0	120	---
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	106	80.0	120	---
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	108	80.0	120	---
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	105	80.0	120	---
Phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	118	80.0	120	---
Potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	108	80.0	120	---
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	106	80.0	120	---

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 Work Order : SK2405002 Amendment 1
 Client : City of Portage la Prairie
 Project : Wastewater



Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:					Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%)		Qualifier
							Low	High	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method					
Physical Tests (QCLot: 1653235)									
QC-1653235-001	RM	Atterberg liquid limit [LL] (moisture)	---	E199	33.7 %	98.9	80.0	120	---
QC-1653235-001	RM	Atterberg plastic limit [PL] (moisture)	---	E199	20 %	109	80.0	120	---
Physical Tests (QCLot: 1654447)									
QC-1654447-002	RM	pH (1:2 soil:water)	---	E108	7.78 pH units	100	96.0	104	---
Anions and Nutrients (QCLot: 1650244)									
QC-1650244-003	RM	Nitrogen, total	7727-37-9	E366	0.11 %	102	80.0	120	---
Plant Available Nutrients (QCLot: 1653192)									
QC-1653192-003	RM	Nitrate + Nitrite, available (as N)	---	E269,N+N	11.3 mg/kg	106	70.0	130	---
Plant Available Nutrients (QCLot: 1653193)									
QC-1653193-003	RM	Nitrite, available (as N)	14797-65-0	E269,NO2	0.1 mg/kg	66.0	0	570	---
Plant Available Nutrients (QCLot: 1653225)									
QC-1653225-003	RM	Nitrate + Nitrite, available (as N)	---	E269A,N+N	11.1 mg/kg	100	70.0	130	---
Plant Available Nutrients (QCLot: 1653226)									
QC-1653226-003	RM	Ammonium, available (as N)	14798-03-9	E312A	70.1 mg/kg	102	80.0	120	---
Plant Available Nutrients (QCLot: 1654500)									
QC-1654500-003	RM	Phosphate, available (as P)	14265-44-2	E385	15.3 mg/kg	112	80.0	120	---
Metals (QCLot: 1656586)									
QC-1656586-003	RM	Mercury	7439-97-6	E510	0.068 mg/kg	97.1	70.0	130	---
Metals (QCLot: 1656587)									
QC-1656587-003	RM	Cadmium	7440-43-9	E440	2.15 mg/kg	100	70.0	130	---
QC-1656587-003	RM	Chromium	7440-47-3	E440	56.9 mg/kg	102	70.0	130	---
QC-1656587-003	RM	Copper	7440-50-8	E440	969 mg/kg	105	70.0	130	---
QC-1656587-003	RM	Lead	7439-92-1	E440	919 mg/kg	106	70.0	130	---
QC-1656587-003	RM	Nickel	7440-02-0	E440	1000 mg/kg	102	70.0	130	---
QC-1656587-003	RM	Phosphorus	7723-14-0	E440	660 mg/kg	104	70.0	130	---
QC-1656587-003	RM	Potassium	7440-09-7	E440	10800 mg/kg	107	70.0	130	---
QC-1656587-003	RM	Zinc	7440-66-6	E440	828 mg/kg	103	70.0	130	---



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Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1

Environmental Division
Saskatoon
Work Order Reference
SK2405002

Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report	Turnaround Time (TAT) Requested
Company:	City of Portage La Prairie	<input checked="" type="checkbox"/> Routine (R) if received by 3pm M-F - no surcharges ap
Contact:	Aaron Stecheson	<input type="checkbox"/> 4 day (P4) if received by 3pm M-F - 20% rush surchar
Phone:	1-204-239-8361	<input type="checkbox"/> 3 day (P3) if received by 3pm M-F - 25% rush surchar
	Company address below will appear on the final report	<input type="checkbox"/> 2 day (P2) if received by 3pm M-F - 50% rush surchar
Street:	97 Saskatchewan Avenue East	<input type="checkbox"/> 1 day (E) if received by 3pm M-F - 100% rush surchar
City/Province:	Portage La Prairie	<input type="checkbox"/> Same day (E) if received by 10am M-F - 200% rush
Postal Code:	R1N 0L8	Additional fees may apply to rush requests on
Invoice To	Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Date and Time Required for all EAP TATs:
	Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO	For all tests with meth TATs requested, please contact your AM to confirm availability.
Company:		
Contact:		

Telephone : +1 306 688 8370

Analysis Request

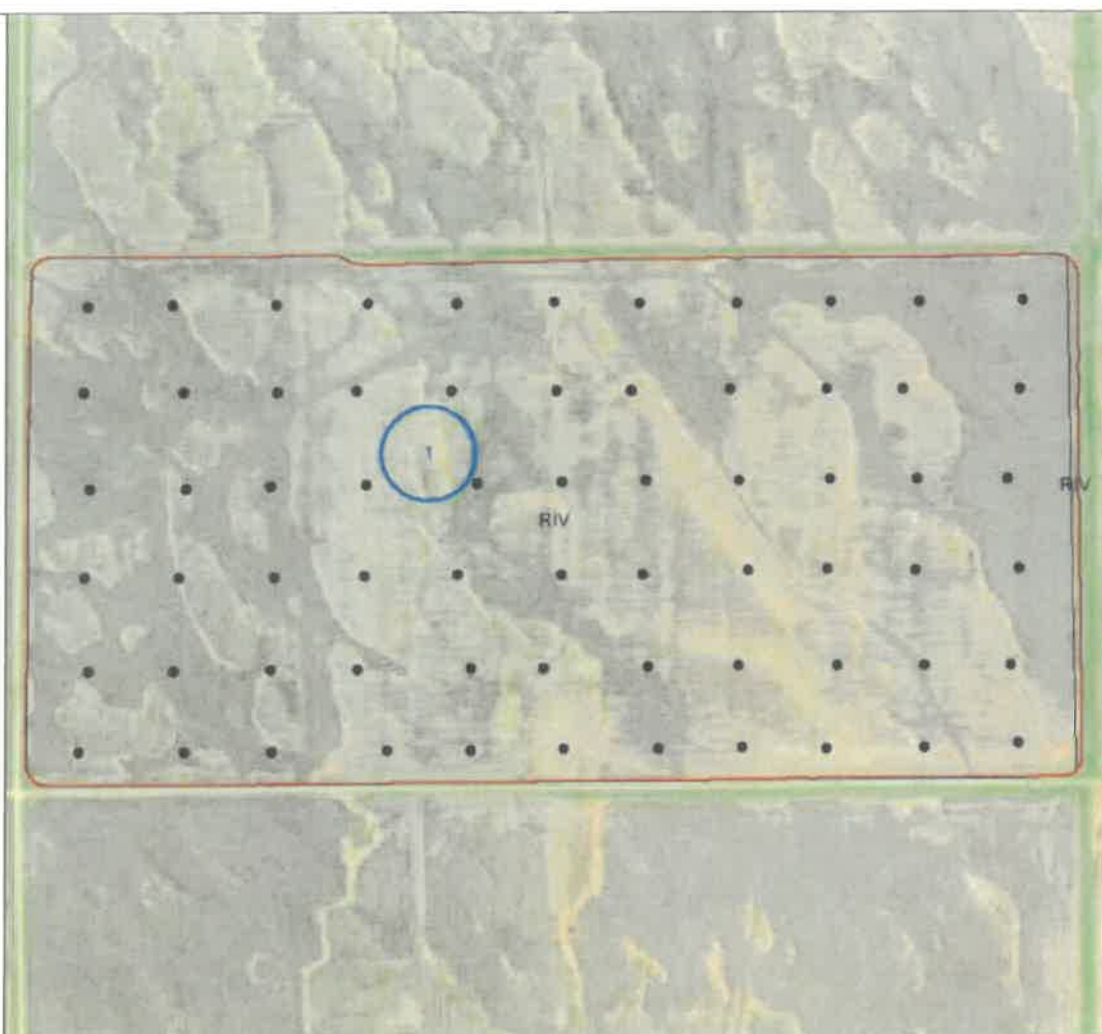
Indicate Filtered (F), Preserved (P) or Filled and Preserved (FP) below

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	GMPP100 / WP2022GMPP1000002	AFS/Cost Center:	PO# W24024
Job #:		Major/Minor Code:	
PO / AFE:	W24024	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):		ALS Contact:	
ALS Sample # (ALS use only)	24-09-21	Time (hh:mm)	14:15
	24-09-12	Time (hh:mm)	14:15
	24-09-13	Time (hh:mm)	14:15

NUMBER OF CONTAINERS			SAMPLES ON HOLD			EXTENDED STORAGE REQUIRED			SUSPECTED HAZARD (see notes)		
Sample #	Sample Type	Date	Time	Sample Type	Time	Sample Type	Time	Sample Type	Sample Type	Sample Type	Sample Type
E108	Soil	9-Sep-24	14:15	E385	Soil	E312A, EC269.N03, E269A.N+N	14:15	EC269.N03, E269.N+N, E269.N02, MOIST-SK	PREP-DRY/GRIND		
E40	Soil	9-Sep-24	14:15	E40	Soil						
E510	Soil	9-Sep-24	14:15	E510	Soil						
E188	Soil	9-Sep-24	14:15	E188	Soil						

Drinking Water (DW) Samples¹ (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO	
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO	
SHIPMENT RELEASE (client use)	INITIAL SHIPMENT RECEPTION (ALS use only)
Released by: Aaron Stecheson	Received by: ME3
Date: 10-Sep-24	Date: 12 Sep 24
Time: 9:30	Time: 9:40
REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION	
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.	
1. If any water samples are taken from a Regulated Drinking Water (DW) System please submit using an Authorized DW COC form	

Delta Ag Services
City of Portage
Westroc S 33-12-08



45 Boundary RTk - 323.4 Ac

QuickMark2-2020

Portage Soils-Clip - 323.4 Ac
Clay Test - 4.1 Ac

Clay Test Site 1 had no detectable water table
at the 1.5 m depth.

Delta Ag
SERVICES

LRAR and Bstg

ALS Canada Ltd.



right solutions.
right partner.

CERTIFICATE OF ANALYSIS

Work Order	: WP2419810	Page	: 1 of 4
Amendment	: 1		
Client	: City of Portage la Prairie	Laboratory	: ALS Environmental - Winnipeg
Contact	: Aaron Stechesen	Account Manager	: Judy Dalmajer
Address	: 97 Saskatchewan Avenue East Portage la Prairie MB Canada R1N 0L8	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg MB Canada R2J 3T4
Telephone	: 204 239 8361	Telephone	: +1 204 255 9720
Project	: Wastewater	Date Samples Received	: 14-Aug-2024 14:47
PO	: W24024	Date Analysis Commenced	: 15-Aug-2024
C-O-C number	: —	Issue Date	: 04-Sep-2024 11:36
Sampler	: —		
Site	: Wastewater		
Quote number	: 2024 Wastewater_V2		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Lee McTavish		Metals, Winnipeg, Manitoba
Oleksandr Busel		Inorganics, Winnipeg, Manitoba
Oleksandr Busel		Metals, Winnipeg, Manitoba

Page : 2 of 4
Work Order : WP2419810 Amendment 1
Client : City of Portage la Prairie
Project : Wastewater



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	Description
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Amendment (04/09/2024): This report have been amended to report Cu in the metal Scan.

Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Page : 3 of 4
 Work Order : WP2419810 Amendment 1
 Client : City of Portage la Prairie
 Project : Wastewater



Analytical Results

Sub-Matrix: Wastewater

(Matrix: Water)

					LRAR		B513		
Client sample ID					24-08-14	24-05-15	24-08-16	24-08-17	24-08-18
Client sampling date / time					13-Aug-2024 15:30	13-Aug-2024 15:30	13-Aug-2024 15:30	13-Aug-2024 15:30	13-Aug-2024 15:30
Analyte	CAS Number	Method/Lab	LOR	Unit	WP2419810-001	WP2419810-002	WP2419810-003	WP2419810-004	WP2419810-005
					Result	Result	Result	Result	Result
Physical Tests									
Conductivity	---	E100/WP	2.0	µS/cm	2640	---	---	4820	---
pH	---	E108/WP	0.10	pH units	6.95	---	---	7.15	---
Solids, fixed suspended [FSS]	---	E170/WP	3.0	mg/L	32200	---	---	6560	---
Solids, total [TS]	---	E157/WP	10	mg/L	65600	---	---	21300	---
Solids, total suspended [TSS]	---	E180/WP	3.0	mg/L	73400	---	---	23500	---
Solids, volatile suspended [VSS]	---	EC167/WP	3.0	mg/L	41200	---	---	16900	---
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/WP	0.0050	mg/L	186	---	---	507	---
Nitrate (as N)	14797-55-8	E235.N03/WP	0.020	mg/L	<0.400 ^{CLM}	---	---	<0.400 ^{CLM}	---
Nitrate + Nitrite (as N)	---	EC235.N+N/W P	0.0050	mg/L	<0.447	---	---	<0.447	---
Nitrite (as N)	14797-85-0	E235.N02/WP	0.010	mg/L	<0.200 ^{CLM}	---	---	<0.200 ^{CLM}	---
Nitrogen, total organic	---	EC363/WP	0.050	mg/L	2490	---	---	1340	---
Phosphorus, total	7723-14-0	E372/WP	0.020	mg/L	187	---	---	260	---
Kjeldahl nitrogen, total [TKN]	---	E318/WP	0.200	mg/L	---	---	---	1850	---
Kjeldahl nitrogen, total [TKN]	---	E318/WP	0.200	mg/L	2680	---	---	---	---
Total Metals									
Cadmium, total	7440-43-9	E420/WP	0.0000050	mg/L	---	0.209	---	---	0.0199
Chromium, total	7440-47-3	E420/WP	0.00050	mg/L	---	1.55	---	---	0.617
Copper, total	7440-50-8	E420/WP	0.00050	mg/L	---	1.02	---	---	---
Copper, total	7440-50-8	E420/WP	0.00050	mg/L	---	---	---	---	9.04
Lead, total	7439-92-1	E420/WP	0.0000050	mg/L	---	0.590	---	---	0.273
Mercury, total	7439-97-6	E508/WP	0.0000050	mg/L	---	---	0.000622 ^{CLM}	---	---
Nickel, total	7440-02-0	E420/WP	0.00050	mg/L	---	2.37	---	---	0.717
Phosphorus, total	7723-14-0	E420/WP	0.050	mg/L	---	367	---	---	369
Potassium, total	7440-09-7	E420/WP	0.050	mg/L	---	421	---	---	254
Zinc, total	7440-66-6	E420/WP	0.0030	mg/L	---	51.0	---	---	7.57



Please refer to the General Comments section for an explanation of any result qualifiers detected.
Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Wastewater
(Matrix: Water)

					Client sample ID	24-08-19	---	---	---	---
					Client sampling date / time	13-Aug-2024 15:30	---	---	---	---
Analyte	CAS Number	Method/Lab	LOR	Unit	WP2419810-006	---	---	---	---	---
					Result	---	---	---	---	---
Total Metals										
Mercury, total	7439-97-6	E508/WP	0.0000050	mg/L	0.00446 ^{ULM}	---	---	---	---	---

Please refer to the General Comments section for an explanation of any result qualifiers detected.
Please refer to the Accreditation section for an explanation of analyte accreditations.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: WP2419810	Page	: 1 of 9
Amendment	: 1		
Client	: City of Portage la Prairie	Laboratory	: ALS Environmental - Winnipeg
Contact	: Aaron Stechesen	Account Manager	: Judy Dalmajer
Address	: 97 Saskatchewan Avenue East Portage la Prairie MB Canada R1N 0L8	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: 204 239 8361	Telephone	: +1 204 255 9720
Project	: Wastewater	Date Samples Received	: 14-Aug-2024 14:47
PO	: W24024	Issue Date	: 04-Sep-2024 11:36
C-O-C number	: ---		
Sampler	: ---		
Site	: Wastewater		
Quote number	: 2024 Wastewater_V2		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "—" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers**Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur.
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Page : 3 of 9
 Work Order : WP2419810 Amendment 1
 Client : City of Portage la Prairie
 Project : Wastewater



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Matrix: Water			Evaluation: 13-Aug-2024				Evaluation: 15-Aug-2024			
Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 24-08-14	E298	13-Aug-2024	20-Aug-2024	28 days	7 days	✓	20-Aug-2024	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 24-08-17	E298	13-Aug-2024	20-Aug-2024	28 days	7 days	✓	20-Aug-2024	28 days	7 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 24-08-14	E235.NO3	13-Aug-2024	15-Aug-2024	3 days	2 days	✓	15-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 24-08-17	E235.NO3	13-Aug-2024	15-Aug-2024	3 days	2 days	✓	15-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 24-08-14	E235.NO2	13-Aug-2024	15-Aug-2024	3 days	2 days	✓	15-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 24-08-17	E235.NO2	13-Aug-2024	15-Aug-2024	3 days	2 days	✓	16-Aug-2024	3 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 24-08-14	E318	13-Aug-2024	17-Aug-2024	28 days	4 days	✓	17-Aug-2024	28 days	4 days	✓

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 Work Order : WP2419810 Amendment 1
 Client : City of Portage la Prairie
 Project : Wastewater



Matrix: Water Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method			Method	Sampling Date	Extraction / Preparation			Evaluation	Timing and Measurement			Event / Testing Date
Container / Client Sample ID(s)	Preparation Date	Holding Times			Eval	Analysis Date	Holding Times		Eval			
		Rec					Actual			Rec	Actual	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)												
Amber glass total (sulfuric acid) 24-08-17	E318	13-Aug-2024	17-Aug-2024	28 days	4 days	✓	17-Aug-2024	28 days	4 days	✓		
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)												
Amber glass total (sulfuric acid) 24-08-14	E372	13-Aug-2024	20-Aug-2024	28 days	7 days	✓	21-Aug-2024	28 days	8 days	✓		
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)												
Amber glass total (sulfuric acid) 24-08-17	E372	13-Aug-2024	20-Aug-2024	28 days	7 days	✓	21-Aug-2024	28 days	8 days	✓		
Physical Tests : Conductivity in Water												
HDPE 24-08-14	E100	13-Aug-2024	16-Aug-2024	28 days	3 days	✓	16-Aug-2024	28 days	3 days	✓		
Physical Tests : Conductivity in Water												
HDPE 24-08-17	E100	13-Aug-2024	16-Aug-2024	28 days	3 days	✓	16-Aug-2024	28 days	3 days	✓		
Physical Tests : FSS by Gravimetry												
HDPE 24-08-14	E170	13-Aug-2024	---	---	---		19-Aug-2024	7 days	6 days	✓		
Physical Tests : FSS by Gravimetry												
HDPE 24-08-17	E170	13-Aug-2024	---	---	---		19-Aug-2024	7 days	6 days	✓		
Physical Tests : pH by Meter												
HDPE 24-08-14	E108	13-Aug-2024	16-Aug-2024	0.25 hrs	77 hrs	✖ EHTR-FM	16-Aug-2024	0.25 hrs	77 hrs	✖ EHTR-FM		
Physical Tests : pH by Meter												
HDPE 24-08-17	E108	13-Aug-2024	16-Aug-2024	0.25 hrs	77 hrs	✖ EHTR-FM	16-Aug-2024	0.25 hrs	77 hrs	✖ EHTR-FM		

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Matrix: Water			Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time							
Analyte Group : Analytical Method	Method	Sampling Date	Extraction / Preparation				Eval	Analysis		
			Preparation Date	Holding Times		Analysis Date		Holding Times		Eval
				Rec	Actual			Rec	Actual	
Container / Client Sample ID(s)										
Physical Tests : TS by Gravimetry										
HDPE 24-08-14	E157	13-Aug-2024	---	---	---		16-Aug-2024	7 days	3 days	✓
Physical Tests : TS by Gravimetry										
HDPE 24-08-17	E157	13-Aug-2024	---	---	---		16-Aug-2024	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 24-08-14	E160	13-Aug-2024	---	---	---		19-Aug-2024	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE 24-08-17	E160	13-Aug-2024	---	---	---		19-Aug-2024	7 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 24-08-16	E508	13-Aug-2024	21-Aug-2024	28 days	8 days	✓	21-Aug-2024	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 24-08-19	E508	13-Aug-2024	21-Aug-2024	28 days	8 days	✓	21-Aug-2024	28 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 24-05-15	E420	13-Aug-2024	22-Aug-2024	180 days	9 days	✓	22-Aug-2024	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 24-08-18	E420	13-Aug-2024	22-Aug-2024	180 days	9 days	✓	22-Aug-2024	180 days	9 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended
 Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Water		QC		QC		QC		QC	
Quality Control Sample Type	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation		
Analytical Methods									
Laboratory Duplicates (DUP)									
Ammonia by Fluorescence	E298	1605755	1	20	5.0	5.0	✓		
Conductivity in Water	E100	1607536	0	2	0.0	5.0	✗		
FSS by Gravimetry	E170	1606420	1	3	33.3	5.0	✓		
Nitrate in Water by IC	E235.NO3	1600096	1	4	25.0	5.0	✓		
Nitrite in Water by IC	E235.NO2	1600097	1	4	25.0	5.0	✓		
pH by Meter	E108	1607535	0	2	0.0	5.0	✗		
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1600327	1	20	5.0	5.0	✓		
Total Mercury in Water by CVAAS	E508	1607762	1	20	5.0	5.0	✓		
Total Metals in Water by CRC ICPMS	E420	1610148	1	17	5.8	5.0	✓		
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	1607323	1	20	5.0	5.0	✓		
TS by Gravimetry	E157	1600443	1	4	25.0	5.0	✓		
TSS by Gravimetry	E160	1603163	1	20	5.0	5.0	✓		
Laboratory Control Samples (LCS)									
Ammonia by Fluorescence	E298	1605755	1	20	5.0	5.0	✓		
Conductivity in Water	E100	1607536	1	2	50.0	5.0	✓		
Nitrate in Water by IC	E235.NO3	1600096	1	4	25.0	5.0	✓		
Nitrite in Water by IC	E235.NO2	1600097	1	4	25.0	5.0	✓		
pH by Meter	E108	1607535	1	2	50.0	5.0	✓		
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1600327	1	20	5.0	5.0	✓		
Total Mercury in Water by CVAAS	E508	1607762	1	20	5.0	5.0	✓		
Total Metals in Water by CRC ICPMS	E420	1610148	1	17	5.8	5.0	✓		
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	1607323	1	20	5.0	5.0	✓		
TS by Gravimetry	E157	1600443	1	4	25.0	5.0	✓		
TSS by Gravimetry	E160	1603163	1	20	5.0	5.0	✓		
Method Blanks (MB)									
Ammonia by Fluorescence	E298	1605755	1	20	5.0	5.0	✓		
Conductivity in Water	E100	1607536	1	2	50.0	5.0	✓		
FSS by Gravimetry	E170	1606420	1	3	33.3	5.0	✓		
Nitrate in Water by IC	E235.NO3	1600096	1	4	25.0	5.0	✓		
Nitrite in Water by IC	E235.NO2	1600097	1	4	25.0	5.0	✓		
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1600327	1	20	5.0	5.0	✓		
Total Mercury in Water by CVAAS	E508	1607762	1	20	5.0	5.0	✓		
Total Metals in Water by CRC ICPMS	E420	1610148	1	17	5.8	5.0	✓		
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	1607323	1	20	5.0	5.0	✓		
TS by Gravimetry	E157	1600443	1	4	25.0	5.0	✓		

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Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Matrix: **Water**

Evaluation: * = QC frequency outside specification, + = QC frequency within specification

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Method Blanks (MB) - Continued							
TSS by Gravimetry	E160	1603163	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1605755	1	20	5.0	5.0	✔
Nitrate in Water by IC	E235.NO3	1600096	1	4	25.0	5.0	✔
Nitrite in Water by IC	E235.NO2	1600097	1	4	25.0	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1600327	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	1607762	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1610148	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	1607323	1	20	5.0	5.0	✔



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Description
Conductivity in Water	E100 ALS Environmental - Winnipeg	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Winnipeg	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TS by Gravimetry	E157 ALS Environmental - Winnipeg	Water	APHA 2540 B (mod)	Total Solids (TS) are determined by drying an aliquot of a well-mixed sample in a pre-weighed dish to constant weight in an oven at 104 ± 1°C. The final weight minus the empty dish represents the total solids.
TSS by Gravimetry	E160 ALS Environmental - Winnipeg	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
FSS by Gravimetry	E170 ALS Environmental - Winnipeg	Water	APHA 2540 E (mod)	Fixed Suspended Solids (FSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. This residue is ignited to constant weight at 550°C. The remaining solids represent the Fixed Suspended Solids (FSS), while the weight lost on ignition represents the Volatile Suspended Solids (VSS). Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Nitrite in Water by IC	E235.NO2 ALS Environmental - Winnipeg	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 ALS Environmental - Winnipeg	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 ALS Environmental - Winnipeg	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Winnipeg	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Phosphorus by Colourimetry (0.02 mg/L)	E372 ALS Environmental - Winnipeg	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Winnipeg	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Winnipeg	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
VSS by Gravimetry	EC167 ALS Environmental - Winnipeg	Water	APHA 2540 E (mod)	Volatile Suspended Solids (VSS) are determined by filtering a well-mixed sample through a weighed standard glass-fiber filter and the residue retained on the filter is dried to a constant weight at $104 \pm 1^\circ\text{C}$. This residue is ignited to constant weight at 550°C . The remaining solids represent the fixed suspended solids while the weight lost on ignition is the volatile suspended solids.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Winnipeg	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
Total Organic Nitrogen (Calculation)	EC363 ALS Environmental - Winnipeg	Water	APHA 4500-NORG (TKN)/NH3-NITROGEN (NH3)	Total Organic Nitrogen is a calculated parameter. Total Organic Nitrogen = Total Kjeldahl Nitrogen - Ammonia.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Winnipeg	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 ALS Environmental - Winnipeg	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Winnipeg	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

QUALITY CONTROL REPORT

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Client	City of Portage la Prairie	Laboratory	ALS Environmental - Winnipeg
Contact	Aaron Stechesen	Account Manager	Judy Dalmajjer
Address	97 Saskatchewan Avenue East Portage la Prairie MB Canada R1N 0L8	Address	1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	204 239 8361	Telephone	+1 204 255 9720
Project	Wastewater	Date Samples Received	14-Aug-2024 14:47
PO	W24024	Date Analysis Commenced	15-Aug-2024
C-C-C number	---	Issue Date	04-Sep-2024 11:36
Sampler	---		
Site	Wastewater		
Quote number	2024 Wastewater_V2		
No. of samples received	6		
No. of samples analysed	6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Lee McTavish		Winnipeg Metals, Winnipeg, Manitoba
Oleksandr Busel		Winnipeg Inorganics, Winnipeg, Manitoba
Oleksandr Busel		Winnipeg Metals, Winnipeg, Manitoba

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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "—" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1600443)											
WP2419810-004	24-08-17	Solids, total [TS]	—	E157	400	mg/L	21300	21500	0.934%	20%	—
Physical Tests (QC Lot: 1603163)											
WP2419812-001	Anonymous	Solids, total suspended [TSS]	—	E160	3.0	mg/L	31.1	27.3	3.8	Diff <2x LOR	—
Physical Tests (QC Lot: 1606420)											
WP2419804-001	Anonymous	Solids, fixed suspended [FSS]	—	E170	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	—
Anions and Nutrients (QC Lot: 1600096)											
WP2419717-001	Anonymous	Nitrate (as N)	14797-55-8	E235 NO3	0.020	mg/L	0.041	0.040	0.001	Diff <2x LOR	—
Anions and Nutrients (QC Lot: 1600097)											
WP2419717-001	Anonymous	Nitrite (as N)	14797-65-0	E235 NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	—
Anions and Nutrients (QC Lot: 1600327)											
WP2419782-002	Anonymous	Kjeldahl nitrogen, total [TKN]	—	E318	0.050	mg/L	0.169	0.168	0.001	Diff <2x LOR	—
Anions and Nutrients (QC Lot: 1605755)											
WP2419817-003	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0052	0.0062	0.0009	Diff <2x LOR	—
Anions and Nutrients (QC Lot: 1607323)											
WP2419799-003	Anonymous	Phosphorus, total	7723-14-0	E372	0.020	mg/L	0.184	0.183	0.001	Diff <2x LOR	—
Total Metals (QC Lot: 1607762)											
WP2419224-005	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	—
Total Metals (QC Lot: 1610148)											
WP2419796-001	Anonymous	Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	—
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	—
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00143	0.00148	0.00004	Diff <2x LOR	—
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000061	0.000059	0.000002	Diff <2x LOR	—
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00055	0.00055	0.000006	Diff <2x LOR	—
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	0.050	0.072	0.022	Diff <2x LOR	—
		Potassium, total	7440-09-7	E420	0.050	mg/L	1.57	1.57	0.421%	20%	—
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0057	0.0056	0.0002	Diff <2x LOR	—

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1600443)						
Solids, total [TS]	—	E157	10	mg/L	<10	—
Physical Tests (QCLot: 1603163)						
Solids, total suspended [TSS]	—	E160	3	mg/L	<3.0	—
Physical Tests (QCLot: 1606420)						
Solids, fixed suspended [FSS]	—	E170	3	mg/L	<3.0	—
Physical Tests (QCLot: 1607536)						
Conductivity	—	E100	1	µS/cm	<1.0	—
Anions and Nutrients (QCLot: 1600096)						
Nitrate (as N)	14797-55-8	E235.N03	0.02	mg/L	<0.020	—
Anions and Nutrients (QCLot: 1600097)						
Nitrite (as N)	14797-55-0	E235.N02	0.01	mg/L	<0.010	—
Anions and Nutrients (QCLot: 1600327)						
Kjeldahl nitrogen, total [TKN]	—	E318	0.05	mg/L	<0.050	—
Anions and Nutrients (QCLot: 1605755)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	—
Anions and Nutrients (QCLot: 1607323)						
Phosphorus, total	7723-14-0	E372	0.02	mg/L	<0.020	—
Total Metals (QCLot: 1607762)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	—
Total Metals (QCLot: 1610148)						
Cadmium, total	7440-43-8	E420	0.000005	mg/L	<0.0000050	—
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	—
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	—
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	—
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	—
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	—
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	—
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	—

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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Results are expressed as percent recovery, and are used to monitor and control method accuracy and precision; independent of test sample matrix.

Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Target Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1600443)									
Solids, total [TS]	—	E157	10	mg/L	1150 mg/L	99.5	85.0	115	—
Physical Tests (QCLot: 1603163)									
Solids, total suspended [TSS]	—	E160	3	mg/L	150 mg/L	93.2	85.0	115	—
Physical Tests (QCLot: 1607535)									
pH	—	E108	—	pH units	7 pH units	100	98.0	102	—
Physical Tests (QCLot: 1607536)									
Conductivity	—	E100	1	µS/cm	1410 µS/cm	101	90.0	110	—
Anions and Nutrients (QCLot: 1600096)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	97.8	90.0	110	—
Anions and Nutrients (QCLot: 1600097)									
Nitrite (as N)	14797-85-0	E235.NO2	0.01	mg/L	0.5 mg/L	97.3	90.0	110	—
Anions and Nutrients (QCLot: 1600327)									
Kjeldahl nitrogen, total [TKN]	—	E318	0.05	mg/L	4 mg/L	97.5	75.0	125	—
Anions and Nutrients (QCLot: 1605755)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.3	85.0	115	—
Anions and Nutrients (QCLot: 1607323)									
Phosphorus, total	7723-14-0	E372	0.02	mg/L	0.5 mg/L	94.8	80.0	120	—
Total Metals (QCLot: 1607762)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	97.0	80.0	120	—
Total Metals (QCLot: 1610148)									
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.1	80.0	120	—
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	90.2	80.0	120	—
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	89.8	80.0	120	—
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.2	80.0	120	—
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	88.4	80.0	120	—
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	90.8	80.0	120	—
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	85.8	80.0	120	—
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	92.9	80.0	120	—

Page : 6 of 6
 Work Order : WP2419810 Amendment 1
 Client : City of Portage la Prairie
 Project : Wastewater



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level $\geq 1 \times$ spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1600096)										
WP2419717-001	Anonymous	Nitrite (as N)	14797-55-8	E235.NO3	2.60 mg/L	2.5 mg/L	104	75.0	125	---
Anions and Nutrients (QCLot: 1600097)										
WP2419717-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.518 mg/L	0.5 mg/L	104	75.0	125	---
Anions and Nutrients (QCLot: 1600327)										
WP2419782-002	Anonymous	Kjeldahl nitrogen, total [TKN]	---	E318	2.38 mg/L	2.5 mg/L	95.3	70.0	130	---
Anions and Nutrients (QCLot: 1605755)										
WP2419817-003	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0959 mg/L	0.1 mg/L	95.9	75.0	125	---
Anions and Nutrients (QCLot: 1607323)										
WP2419870-002	Anonymous	Phosphorus, total	7723-14-0	E372	0.238 mg/L	0.25 mg/L	95.2	70.0	130	---
Total Metals (QCLot: 1607762)										
WP2419224-005	Anonymous	Mercury, total	7439-97-6	E508	0.0000995 mg/L	0 mg/L	99.5	70.0	130	---
Total Metals (QCLot: 1610148)										
WP2419796-001	Anonymous	Cadmium, total	7440-43-9	E420	0.00400 mg/L	0.004 mg/L	100.0	70.0	130	---
		Chromium, total	7440-47-3	E420	0.0369 mg/L	0.04 mg/L	92.2	70.0	130	---
		Copper, total	7440-50-8	E420	0.0178 mg/L	0.02 mg/L	89.0	70.0	130	---
		Lead, total	7439-92-1	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	---
		Nickel, total	7440-02-0	E420	0.0352 mg/L	0.04 mg/L	88.0	70.0	130	---
		Phosphorus, total	7723-14-0	E420	9.16 mg/L	10 mg/L	91.6	70.0	130	---
		Potassium, total	7440-09-7	E420	3.65 mg/L	4 mg/L	91.2	70.0	130	---
		Zinc, total	7440-66-6	E420	0.371 mg/L	0.4 mg/L	92.8	70.0	130	---



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 658 9878

COC Number: 22 -

Page 1 of 1

Report To Contact and company name below will appear on the final report Company: City of Portage La Prairie Contact: Aaron Stecheson Phone: 1-204-239-8361 Company address below will appear on the final report Street: 97 Saskatchewan Avenue East City/Province: Portage La Prairie Postal Code: R1N 0L8 Invoice To Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO Company: Contact:		Reports / Recipients Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: astecheson@city-plap.com Email 2: astecheson@city-plap.com Email 3: Invoice Recipients Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: astecheson@city-plap.com Email 2: Location:		Turnaround Time (TAT) Requested <input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [D] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests. Additional Time Requested for All Samples: dd-mm-yy hh:mm am/pm For all tests with rush TATs requested, please contact your ARM to confirm availability.		AFFIX ALS BARCODE LABEL HERE (ALS use only)																																																																																																																								
Project Information ALB Account # / Quote #: GMPP100 / WP2022GMPP1000002 Job #: PO / AFE: W24024 LSD:		AFS/Cost Center: Major/Minor Code: Regulation: Location:		PO# W24024 Routing Code:		Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below <table border="1"> <tr> <th rowspan="2">NUMBER OF CONTAINERS</th> <th rowspan="2">E100 Conductivity</th> <th rowspan="2">E108 pH</th> <th rowspan="2">E235 NH</th> <th rowspan="2">E310 Total Kjeldahl Nitrogen</th> <th rowspan="2">E303 Ammonia</th> <th rowspan="2">E3083 Total Organic Nitrogen</th> <th rowspan="2">E372 Total Phosphorus</th> <th rowspan="2">E170 FSS by Gravity</th> <th rowspan="2">E157 Total Solids</th> <th rowspan="2">E160 Total Suspended Solids</th> <th rowspan="2">E167 Volatile Suspended Solids</th> <th rowspan="2">E420 Total Metal in Water</th> <th rowspan="2">E508 Total Mercury in Water</th> <th rowspan="2">SAMPLES ON HOLD</th> <th rowspan="2">EXTENDED STORAGE REQUIRED</th> <th rowspan="2">SUSPECTED HAZARD (see notes)</th> </tr> <tr> </tr> <tr> <td>2</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		NUMBER OF CONTAINERS	E100 Conductivity	E108 pH	E235 NH	E310 Total Kjeldahl Nitrogen	E303 Ammonia	E3083 Total Organic Nitrogen	E372 Total Phosphorus	E170 FSS by Gravity	E157 Total Solids	E160 Total Suspended Solids	E167 Volatile Suspended Solids	E420 Total Metal in Water	E508 Total Mercury in Water	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)	2	R	R	R	R	R	R	R	R	R	R	R	R	R				1																	1																	2	R	R	R	R	R	R	R	R	R	R	R	R	R				1																	1																
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ALS Lab Work Order # (ALS use only):		ALS Contact:		Sampler:		Drinking Water (DW) Samples¹ (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO																																																																																																																								
Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only) Please include phosphorus in metals testing results!		Cooling Method Submission Cool Cooler Custody: INITIAL		Telephone: +1 204 265 9720		COOLING INITIATED <input type="checkbox"/> YES <input type="checkbox"/> NO Body Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A COOLER TEMPERATURES °C																																																																																																																								
SHIPMENT RELEASE (client use) Released by: <i>Aaron Stecheson</i> Date: 14-Aug-24 Time: 9:30		INITIAL SHIPMENT RECEPTION (ALS use only) Received by: <i>[Signature]</i> Date: Aug 14 2024		Time:		Time:																																																																																																																								

Environmental Division
Winnipeg
Work Order Reference
WP2419810



Telephone: +1 204 265 9720

REFER TO BACKPACKS FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

F03 2021 P004

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.
1. If any water samples are taken from a Regulated Drinking Water (DW) System please submit using an Authorized DW COC form

Sample Intake							
Client: Portage la Prairie				COC receipt info complete <input type="checkbox"/>			
Express TAT?	no	same day	1 day	2 day	3 days	4 day	
Short hold time?	no	<24 hrs	1 day	2 days	3 days	4 days	
Matrix	Water	Spill/solid	Air	Biota	Food/micro	Other	
Total number of bottles/fractions: 8							
Green/white		Orange/black					
Purple/white		Dark blue/white					
Red/white	2x125	Black/white					
Dark green/white		Brown/white					
Grey/white		Pink/white					
Yellow/black		Beige/white					
Light blue/white		Other (specify)		4x 60ml LT 2x 40ml yellow			
Comments: 16.5, as is							

Sample Login					
Receipt Window	✓/X	N/A	Bottles	✓/X	N/A
# of fractions, matrix and submatrix			All received bottles have IDs		
Client, office, contact, quote, project			Type, volume, and locations		
Receipt time/date, PO, project, site			Labels and internal COCs printed		
Temp, cooling method, sampler			Client Contacts	✓/X	N/A
Sample Info	✓/X	N/A	Report/invoice/EDD recipients		
Sample date/time			Report types/formats		
Sample ID/description			Post-committing	✓/X	N/A
Sales items			Runs built and field data entered		
Guidelines/thresholds			Billing information entered		
Additional sample/WO information			Action Required?	Yes	No
Due Dates	✓/X	N/A	Update default receipt data		
COC/GEL/client due dates match			Update default report data		
Express TAT surcharges			Add sales/billing items to quote		
Clock running for all samples			SIF initiated (elaborate in comments)		
Comments:					