

Prepared By: The Ontario Clean Water Agency

Prepared for: The Township of McGarry

SYSTEM OVERVIEW

October 1 to December 31, 2022

HIGHLIGHTS

Virginiatown-Kearns Drinking Water System

- Once (1) complaint was documented this quarter. Refer to “*Complaint*” below for details.
- Three (3) adverse incidents in the fourth quarter. Refer to “*Incidents*” below for details.
- The MECP conducted a focused inspection of the drinking water system on October 27th. Refer to “*Regulatory-Inspections*” below for findings.

McGarry Wastewater Treatment Lagoon

- McGarry Pumping Station flow meter lost signal. Wiring harness water damaged. OCWA’s Instrumentation Technician’s replaced damaged parts on October 3rd and signal was restored.
- Kearns Pumping station generator – Generator had failed to start and required a replacement battery.
- Lagoon effluent flow meter lost signal at the end of November. Issue was with the 24VDC power supply on the output of isolator. Changed 120VAC feed on January 4, 2023
- A smoke test of the sanitary sewage collection system was completed in November to determine if and where leaks are occurring. A report was provided to the Owner with the findings.
- A report was developed to show if the “spill” discharge is from the lagoon, groundwater or other possible source. The report which was provided to the MECP on November 15th. A respond from the MECP is pending.

CAPITAL PLAN PROGRESS

Status of capital work completed to date in 2022.

| CAPITAL WORK – WATER TREATMENT SYSTEM | STATUS |
|---|---------------------------|
| Generator maintenance | Complete in May |
| Lifting device inspections | Complete in May |
| DWQMS – third party surveillance (desk-top) audit | Complete on June 10, 2022 |
| DWQMS – third party systems (on-site) audit | Complete on July 26, 2022 |
| Membranes and electrolyte for the chlorine analyzer | Complete |

| CAPITAL WORK - WASTEWATER LAGOON SYSTEM | STATUS |
|---|---------------------------------------|
| Replaced Jockey pump at the V-Town SPS | Complete on January 20, 2022 |
| Generator maintenance | Complete in May |
| Lifting device inspections | Complete in May |
| Spill – dye test | June 6 (Cell 2 & 3), July 20 (Cell 1) |

| CAPITAL WORK - WASTEWATER LAGOON SYSTEM | STATUS |
|--|----------------------|
| Fuel pump for generator at lagoon | Complete in July |
| Repaired effluent flow meter | Complete |
| Replaced generator battery at the Kearns SPS | Complete in November |
| Smoke test of the sanitary collection system | Complete in November |
| Fuel pump for generator at the Lagoon | Complete |

INCIDENTS

Virginiatown Drinking Water System:

Three (3) incidents occurred in the fourth quarter.

| Date | Type of Incident | Details |
|-------------|--|--|
| November 14 | Category 2 Watermain Break, Boil Water Advisory (AWQI No. 160659) | <p>Category 2 watermain break at 15 Cockeram Street. The isolation of the break caused 35 homes on Connel Avenue, Cockeram Street, and Waite Avenue to be without pressure. The local Health Unit was notified and a BWA was issued for the affected area.</p> <p>After the repair was complete, the pressure was restored, the area was flushed and free chlorine residuals fell within acceptable concentrations. Two sets of 3 bacteriological samples were collected (upstream, downstream and at the site of the break) on November 15th and 16th. Sample results indicated no total coliforms or <i>E.coli</i>. BWA was lifted on November 18th at approximately 9:35 AM.</p> |
| December 6 | Category 2 Watermain Break, Drinking Water Advisory AWQI No. (160899) | <p>Category 2 watermain break on Kerr Crescent in the community of Virginiatown. The isolation of the break caused 45 homes on Waite Avenue (east of Munroe), Cockeram Street, and Hilltop Crescent to be without water.</p> <p>The Temiskaming Health Unit issued a Drinking Water Advisory (DWA) for the affected area due to concerns risen about the water entering the dig site. Possible arsenic contamination.</p> <p>The municipality provided all residences affected with an alternate source of potable water.</p> <p>Due to the suspected chemical contamination of the surrounding water in and around the water main break, a metal scan of the surrounding water was performed by an accredited laboratory, as repairs could not be made under pressure and no proper air gap was created prior to isolation.</p> <p>Lab results returned positive for contamination (arsenic) and a Plan was developed for disinfection, decontamination and sampling in consultation with the MOH and MECP.</p> <p>All metal scans indicated no contamination and after 2 consecutive sets of 3 bacteriological sample results were acceptable, having zero TC and EC, the DWA was lifted on December 19th.</p> |

| Date | Type of Incident | Details |
|--------|-------------------------------------|--|
| | | <ul style="list-style-type: none"> Once the pipe could be tapped and flushed, a metal scan was sampled and tested. Results indicated no contamination. <p>Incident resolved on December 22, 2022</p> |
| Jul 28 | Total Coliform (AWQI No. 159341) | <p>One (1) drinking water sample collected in response to a category 2 watermain on Kerr Crescent in the community of Virginiatown had one (1) total coliform present. The sample was collected at 5 Connell Avenue on December 11th at 1450 hours (FCR = 1.04 mg/L).</p> <p>A drinking water advisory (DWA) was already in place due to a water main break. The advisory was lifted on December 16th after two sets of 3 bacteriological samples indicated zero total coliforms and <i>E. coli</i>.</p> |

COMPLAINTS

One (1) brown water complaint was documented this quarter. The town flushed the system near the residence a number of times which clears the water for a short period of time however the water becomes discolored again over time. The issue has been persistent for 2 years and appears to be worsening. Resident advised to run the water until clear.

Sample collected on October 20th and 24th for total coliforms, *E.coli*., iron and manganese. Bacti results were acceptable and very small traces of iron and manganese in water.

CALL-OUT SUMMARY

| | | |
|--|---|-------------------|
| Number of Call-outs this Quarter: | 1 (water system) | 0 (sewage lagoon) |
| Total Call-outs to Date (2022): | 11 | |
| Annual Call-out Allowance: | 8 | |
| Details of the Call-outs: | Refer to Appendix A for a call-out summary. | |

Note: Not all call backs are billed to the Owner; depends on the nature of the call.

REGULATORY

Inspections

- The MECP inspection Report for the Virginiatown-Kearns Drinking Water System; dated December 9, 2022 identified four (4) non-compliances and one (1) best management practice (BMP)/recommendation.

Non-compliances:

- During a Category 2 watermain break, no notes were made on the required post-repair flushing, such as flushing time, residuals during flushing and where the flushing had occurred. By no later than December 21, 2022, the owner and operating authority shall review the 2020 Watermain Disinfection Procedure with all operators and provide records to Ministry's Water

Inspector Rachel Hamelin upon completion. Training was completed with all operators including the Town operator in December.

2. Logbook entries are to be clearly entered for every day an operator makes any adjustments, calibrations or maintenance on any parts of the WTP or distribution system. Also, entries are to clearly state the names of all operators on duty during the shift, which were missing in the entries. Training was completed with all operators including the Town operator in December.
3. On May 9, 2022, a PTTW pump hours exceedance was reported to the Ministry for May 7 and May 8, 2022. As per PTTW #8844-C6UQEY, Well T3/91 can run for a maximum of 10 hours per day. On May 7, 2022, and May 8, 2022, the main production well was left in the off position, resulting in Well T3/91 to run for 11 hours and 10.25 hours respectively. Upon discovering that the main production well pump was off, the operator turned the pump back on and the wells resumed normal operation. No further actions required.
4. All continuous analysers were not calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation. A review of the information provided for the inspection period indicate that calibrations were not properly done on multiple occasions at the Virginiatown- Kearns WTP free chlorine analyzer. Training was completed with all operators.

BMPs/Recommendations:

1. Several Boil Water Advisory's (BWAs) were issued to various parts of the Virginiatown-Kearns water distribution system due to watermain breaks which caused low to no pressure in the system. All of the watermain breaks were attributed to aging infrastructure and corrosion.

It is recommended the owner and/or the operating authority investigate options for maintaining distribution infrastructure to help prevent/minimize expensive emergency repair costs due to unplanned breaks and to restore the consumers faith in their drinking water system. OCWA has identified a corrosion control system in the capital letters on multiple occasions.

Quality & Environmental Management System (QEMS)

- Annual QEMS Management Review was conducted on December 7th (review period from November 1, 2021 to October 31, 2022). The following staff suggestion was identified:
 - Recent breaks in plastic piping in distribution system reveal issues with plastic welds that should be investigated.

Sampling, Testing and Monitoring

- Refer to Appendix B for Quarterly Data Summaries.

Reporting

- No reports required this quarter.

FLOW SUMMARIES

Virginiatown-Kearns Water Treatment Plant (Tower Flows)

| Year | Total Treated Flows (m ³) | Average Daily Treated Flow (m ³ /d) | Maximum Treated Flow (m ³ /d) | Maximum % of Rated Capacity (2045 m ³ /d) |
|--------------------------|---------------------------------------|--|--|--|
| Jan. to Dec. 2022 | 167,244 | 458 | 1254 | 61.3% |
| 2021 | 142,720 | 391 | 789 | 38.6% |
| 2020 | 188,494 | 515 | 889 | 43.5% |
| 2019 | 230,717 | 632 | 991 | 45.5% |
| 2018 | 337,340 | 924 | 1870 | 91.4% |

McGarry Lagoon

| Year | Total Influent Flow (m ³) | Maximum Influent Flow (m ³ /d) | Average Daily Influent Flow (m ³ /d) | Average Day % of Design Capacity (1135 m ³ /d) |
|--------------------------|---------------------------------------|---|---|---|
| Jan. to Dec. 2022 | 514,595 | 7897 | 1410 | 124% |
| 2021 | 349,792 | 10,000 | 958 | 84.4% |
| 2020 | 476,828 | 6191 | 1303 | 115% |
| 2019 | 475,681 | 7585 | 1303 | 115% |
| 2018 | 575,627 | 7896 | 1580 | 139% |

Refer to Appendix C historical flow trends from 2018 to 2022.

HEALTH AND SAFETY

- All safety equipment at the plant was checked monthly to ensure that they are in good working order.
- Health and Safety Training/Sessions completed this quarter include:
 - ✓ Understanding the Importance of Lock-out Tag-out
 - ✓ Hearing Protection
 - ✓ Don't Walk By and Near Miss Programs
 - ✓ Loss of Service



APPENDIX A

Call-Out Summary

Workorder Summary Report

Report Start Date: Oct 1, 2022 12:00 AM

Report End Date: Dec 31, 2022 11:59 PM

Location: 5085*

Work Order Type: CALL,

Work Order Class:

| | | | | WorkOrder | | PM Schedule | | Workorder Details | | | | | |
|-------------------------|----------|-------------------|--|-----------|------------|-------------|-------|----------------------------|--------|----------------|------------------|------------------|--|
| WO # | Asset ID | Asset Description | Location Description | Type | Class | FEQ | Units | Work Order Description | Status | Schedule Start | Actual Start | Actual Finsh | WorkLog Detail |
| 3064491 | | | 5085, McGarry WTP Pump House, Facility | CALL | Compliance | 0 | | Alarm Low tower level 5085 | CLOSE | | 10/9/22 06:45 PM | 10/9/22 10:45 PM | Alarm Low tower level 5085 - When I arrived at tower low lift pump #1 failed light on panel, Got to well house and reset low lift #1 breaker and plant started, Primed hypo pump as per Pat Roy, Monitored plant |



APPENDIX B

Quarterly Data Summaries

McGARRY (Virginiatown-Kearns) DRINKING WATER SYSTEM

Quarterly Data Report



Q4: October 1 to December 31, 2022

| McGarry Drinking Water System | | October | November | December | Compliance |
|------------------------------------|-------------------|---------|----------|----------|------------------------------------|
| Flows | | | | | |
| Total Raw Flow - Max. Daily Volume | m ³ /d | 613 | 792 | 1124 | Max. = 2044.8 |
| Well 1 Flow - Maximum Daily Volume | m ³ /d | 592 | 792 | 1119 | Max. = 2044.8 |
| Well 1 Flow - Maximum Flow Rate | L/min | 1367 | 1356 | 1335 | Max. = 1420 |
| Well 2 Flow - Maximum Daily Volume | m ³ /d | 68 | 69 | 114 | Max. = 1500 |
| Well 2 Flow - Maximum Flow Rate | L/min | 1099 | 1101 | 1095 | Max. = 1105 |
| Tower Flow - Maximum Daily Volume | m ³ /d | 592 | 763 | 1172 | Max. = 2045 |
| Tower Flow - Maximum Flow Rate | L/min | 2176 | 1669 | 1471 | N/A |
| Raw Water | | | | | |
| Well 1 Total Coliforms - Maximum | c/100mL | 0 | 0 | 0 | N/A |
| Well 1 <i>E.coli</i> - Maximum | c/100mL | 0 | 0 | 0 | N/A |
| Well 2 Total Coliforms - Maximum | c/100mL | 0 | 0 | 0 | N/A |
| Well 2 <i>E.coli</i> - Maximum | c/100mL | 0 | 0 | 0 | N/A |
| Well 1 Turbidity - Maximum | NTU | 0.163 | 0.32 | 0.34 | N/A |
| Well 2 Turbidity - Maximum | NTU | 1.12 | 0.36 | 0.53 | N/A |
| Treated Water | | | | | |
| Free Chlorine Residual - Minimum | mg/L | 1.09 | 1.09 | 1.30 | Min. = 0.10 (CT) ¹ |
| Total Coliforms - Maximum | c/100mL | 0 | 0 | 0 | Max. = 0 |
| <i>E.coli</i> - Maximum | c/100mL | 0 | 0 | 0 | Max. = 0 |
| Nitrite | mg/L | < 0.01 | - | - | Max. = 1 |
| Nitrate | mg/L | < 0.1 | - | - | Max. = 10 |
| Distribution Water | | | | | |
| Free Chlorine Residual - Minimum | mg/L | 0.25 | 0.71 | 0.95 | Min. = 0.05 |
| Total Coliforms - Maximum | c/100mL | 0 | 0 | 0 | Max. = 0 |
| <i>E.coli</i> - Maximum | c/100mL | 0 | 0 | 0 | Max. = 0 |
| Trihalomethanes (THMs) | µg/L | 1.5 | - | - | Max. = 100 µg/L (RAA) ² |
| Haloacetic Acids (HAAs) | µg/L | < 8 | - | - | Max. = 80 µg/L (RAA) ³ |

MCGARRY (Virginiatown-Kearns) DRINKING WATER SYSTEM

Quarterly Data Report



Q4: October 1 to December 31, 2022

| Distribution Water | | | | | |
|----------------------|------|---|---|---|-----------------------------|
| Lead – Maximum | µg/L | - | - | - | Max. = 10 µg/L ⁴ |
| Alkalinity - Maximum | mg/L | - | - | - | N/A ⁵ |
| pH - Average | mg/L | - | - | - | N/A ⁵ |

Notes:

- ¹ CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the Virginiatown-Kearns water plant if the free chlorine residual level drops below 0.10 mg/L to ensure primary disinfection is achieved. Primary disinfection was achieved this quarter.
- ² Maximum Allowable Concentration (MAC) for Trihalomethanes (THMs) = 100 ug/L (Four Quarter Running Average). The annual running average to the end of the quarter = 1.70 ug/L
- ³ Maximum Allowable Concentration (MAC) for Haloacetic Acids (HAAs) = 80 ug/L (Four Quarter Running Average). The annual running average to the end of the quarter = < 8 ug/L
- ⁴ Lead testing required every 3 year. Next sampling due in 2023.
- ⁵ Alkalinity and pH testing required twice per year. Sampling done in March and September 2022.

McGARRY WASTEWATER SYSTEM

Quarterly Data Report



Q4: October 1 to December 31, 2022

| McGarry Waste Water System | | October | November | December | Compliance |
|--|-------------------|-------------------|-------------------|----------|------------------------|
| Flows | | | | | |
| Influent – Average Daily Flow | m ³ /d | 1701 ¹ | 1630 ¹ | 846 | Average = 1135 |
| Influent – Maximum Daily Flow | m ³ /d | 5315 | 4779 | 1654 | N/A |
| Effluent – Average Daily Flow | m ³ /d | 907 | 1527 | 783 | Average = 1135 |
| Effluent – Maximum Daily Flow | m ³ /d | 2429 | 4919 | 1147 | N/A |
| Influent | | | | | |
| BOD ₅ – Average | mg/L | < 2.1 | < 91 | 4.5 | N/A |
| Total Suspended Solids (TSS) – Average | mg/L | < 11 | < 423 | < 4.5 | N/A |
| Total Phosphorus (TP) – Average | mg/L | 0.450 | 6.85 | 0.359 | N/A |
| Total Ammonia (TKN) – Average | mg/L | 0.240 | < 0.314 | <1.13 | N/A |
| Effluent¹ | | | | | |
| cBOD ₅ – Average | mg/L | < 1.20 | < 2.06 | 1.55 | Monthly Average = 25 |
| cBOD ₅ Loading | kg/d | < 1.09 | < 3.16 | 1.21 | Monthly Average = 28.4 |
| TSS – Average | mg/L | < 4.0 | < 3.9 | < 2.3 | Monthly Average = 25 |
| TSS Loading | kg/d | < 3.63 | < 5.96 | < 1.67 | Monthly Average = 28.4 |
| TP – Average | mg/L | 0.199 | 0.227 | 0.167 | Monthly Average = 0.5 |
| TP Loading | kg/d | 0.180 | 0.347 | 0.130 | Monthly Average = 0.6 |
| Total Ammonia Nitrogen (TAN) – Average | mg/L | 0.240 | < 0.314 | < 1.125 | Monthly Average = 5 |
| TAN Loading | kg/d | 0.218 | < 0.479 | < 0.881 | Monthly Average = 5.7 |
| <i>E.coli</i> (geometric mean) | cfu/100mL | 52.9 | 992 | 1144 | N/A |

Notes:

¹ High flows in October and November due to heavy rains.

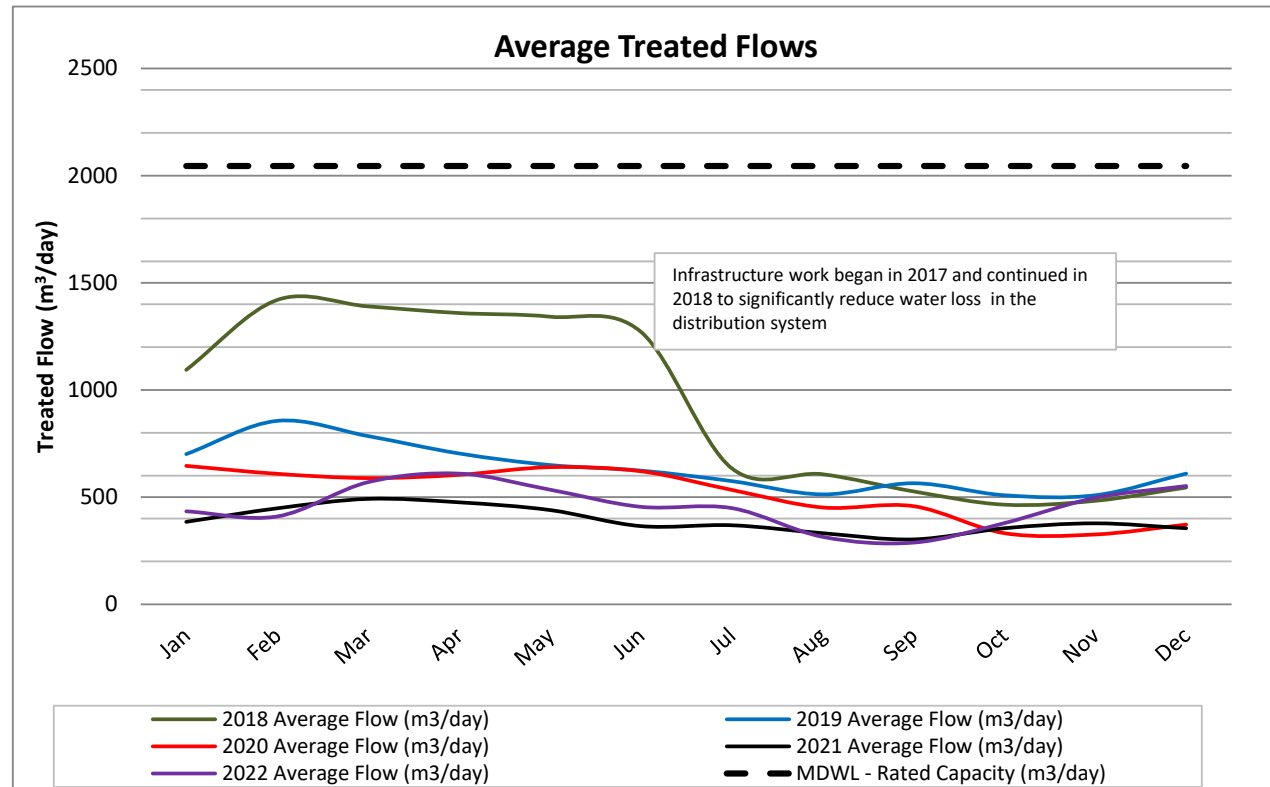


APPENDIX C

Historical Flow Trends

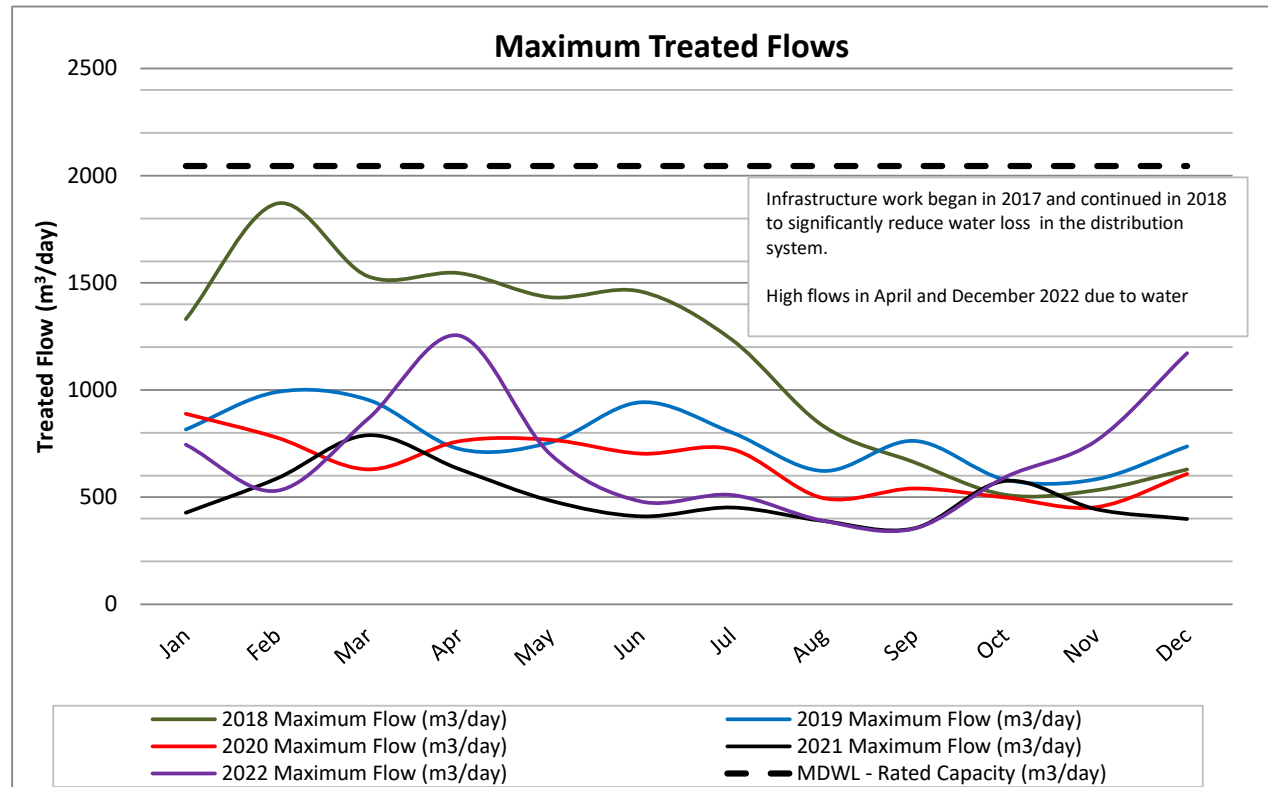
Virginiatown-Kearns Water Treatment System - Average Treated Water Tower Flows from 2018 to 2022

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| 2018 Average Flow (m ³ /day) | 1094 | 1420 | 1390 | 1359 | 1342 | 1272 | 635 | 607 | 527 | 465 | 483 | 545 |
| 2019 Average Flow (m ³ /day) | 701 | 856 | 785 | 704 | 650 | 624 | 575 | 513 | 565 | 509 | 509 | 610 |
| 2020 Average Flow (m ³ /day) | 646 | 609 | 589 | 604 | 640 | 621 | 534 | 452 | 458 | 332 | 326 | 372 |
| 2021 Average Flow (m ³ /day) | 385 | 448 | 492 | 476 | 440 | 365 | 369 | 332 | 303 | 355 | 378 | 355 |
| 2022 Average Flow (m ³ /day) | 434 | 410 | 570 | 610 | 535 | 455 | 449 | 315 | 288 | 379 | 497 | 552 |
| MDWL - Rated Capacity (m ³ /day) | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 |



Virginiatown-Kearns Water Treatment System - Maximum Treated Water Tower Flows from 2018 to 2022

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| 2018 Maximum Flow (m ³ /day) | 1331 | 1870 | 1531 | 1545 | 1433 | 1459 | 1234 | 833 | 663 | 511 | 532 | 629 |
| 2019 Maximum Flow (m ³ /day) | 816 | 991 | 954 | 725 | 755 | 943 | 801 | 622 | 763 | 582 | 584 | 737 |
| 2020 Maximum Flow (m ³ /day) | 889 | 778 | 630 | 761 | 768 | 703 | 724 | 496 | 541 | 499 | 454 | 608 |
| 2021 Maximum Flow (m ³ /day) | 427 | 587 | 789 | 632 | 484 | 411 | 452 | 389 | 355 | 576 | 444 | 398 |
| 2022 Maximum Flow (m ³ /day) | 745 | 530 | 865 | 1254 | 702 | 480 | 510 | 390 | 353 | 593 | 763 | 1172 |
| MDWL - Rated Capacity (m ³ /day) | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 | 2045 |



McGarry Lagoon - Average Influent Flows from 2018 to 2022

2018 Average Flow (m³/day)

2019 Average Flow (m³/day)

2020 Average Flow (m³/day)

2021 Average Flow (m³/day)

2022 Average Flow (m³/day)

ECA - Rated Capacity (m³/day)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--|------|------|------|------|------|------|------|------|------|------|------|------|
| 2018 Average Flow (m ³ /day) | 1304 | 1457 | 1459 | 2244 | 2394 | 1837 | 1017 | 1141 | 1766 | 2434 | 1187 | 729 |
| 2019 Average Flow (m ³ /day) | 769 | 874 | 1118 | 2679 | 3352 | 1611 | 696 | 699 | 849 | 1117 | 1064 | 802 |
| 2020 Average Flow (m ³ /day) | 683 | 632 | 802 | 3533 | 1840 | 1322 | 1255 | 775 | 1156 | 1975 | 1236 | 447 |
| 2021 Average Flow (m ³ /day) | 447 | 422 | 1519 | 1653 | 1148 | 824 | 2024 | 608 | 981 | 690 | 524 | 634 |
| 2022 Average Flow (m ³ /day) | 412 | 389 | 839 | 3311 | 1635 | 1081 | 1340 | 1328 | 2398 | 1701 | 1627 | 846 |
| ECA - Rated Capacity (m ³ /day) | 1135 | 1135 | 1135 | 1135 | 1135 | 1135 | 1135 | 1135 | 1135 | 1135 | 1135 | 1135 |

